Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

# REPORT, GENERAL

# STAKEHOLDER ENGAGEMENT REPORT

## NEAR SURFACE DISPOSAL FACILITY PROJECT

## 232-513400-REPT-002

## Revision 0

| | | |
|---|---|---|
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## REVISION HISTORY

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# 1. INTRODUCTION

This document is Canadian Nuclear Laboratories (CNL) Stakeholder Engagement Report in support of the Near Surface Disposal Facility (NSDF) Project. Stakeholder engagement is a key element of the environmental assessment process and the purpose of this report is to describe past, ongoing and proposed public and stakeholder engagement activities and events in accordance with the Generic Guidelines for the Preparation of an Environmental Impact Statement (EIS) (CNSC) 2016), 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 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, the CNSC and Canadian Environmental Assessment Agency (CEAA) guidance documents require that the following topics are to be included as part of public engagement activities:

- Current project information (Guidelines Section 2.3)
- Alternative Means (Reference: https://www.ceaa-acee.gc.ca/Content/1/B/0/1B095C22-675E-41D1-B96D-081DFF16F9A3/Purpose%20Of%20and%20Alternative%20Means%20-%20ENG%20-%20March%202015.pdf)
- Valued Components (Guidelines Section 5.2.1)
- Spatial and Temporal Boundaries (Guidelines Section 5.2.2)
- Follow-up monitoring program (Guidelines Section 12)

This document summarizes the public engagements activities undertaken for the NSDF Project from 2017 August to 2019 June, which fulfill the requirements above. Future planned engagements as the project proceeds through the Environmental Assessment process are identified at a high level but will be captured in future Stakeholder Engagement Reports.

## 1.1 Acronyms

| | |
|---|---|
| AECL | Atomic Energy of Canada Limited |
| CEAA | Canadian Environmental Assessment Agency |
| CNL | Canadian Nuclear Laboratories |
| CNSC | Canadian Nuclear Safety Commission |
| CRL | Chalk River Laboratories |
| ECM | Engineered Containment Mound |
| EIS | Environmental Impact Statement |
| EMR | East Mattawa Road |
| ESC | Environmental Stewardship Council |
| MP | Member of Parliament |
| MPP | Member of Provincial Parliament |
| NGO | Non-Governmental Organization |
| NPD | Nuclear Power Demonstration |
| NSDF | Near Surface Disposal Facility |
| PFP | Participant Funding Program |
| PostSA | Post Safety Assessment |
| WWTP | Waste Water Treatment Plant |

## 2. ENGAGEMENT OBJECTIVES

CNL is required to ensure that project information is made available to local and host communities and stakeholder groups through a variety of mechanisms to ensure accessibility of fact-based information. Communication activities are conducted in support of this requirement; CNL's specific communication objectives include:

1. Initiating and maintaining two-way communication channels between CNL and host communities and stakeholder groups, determining the best methods for communicating project information and facilitating input at appropriate junctures in the project schedule.
2. Developing meaningful, user-friendly information and communication products geared for host communities and stakeholders, ensuring accessible and current information on project activities.
3. Demonstrating CNL's long-term commitment and approach to safely and cost-effectively reducing Canada's nuclear legacy liabilities.
4. Informing and educating host communities and stakeholders about nuclear decommissioning, environmental remediation and radioactive waste management.
5. Meeting all regulatory-based communication and engagement requirements.

CNL has employed a variety of methods and activities to achieve the stated objectives. The following section outlines these methods.

Section 3.0 summarizes the engagement methods and activities through which communication objectives were achieved; each method or activity was applied to inform, educate and discuss the project with specific stakeholders. These methods and activities provided valuable feedback for the project to incorporate, as presented in Section 4.0. Section 5.0 details planned future engagements aimed at continuing to meet the regulatory requirements for the Project. Section 6.0 serves as the conclusion of this document.

# 3. ENGAGEMENT METHODS AND ACTIVITIES

Engagement activities commenced on 2015 October 29, with the introduction of CNL's near and longer term plans, including high-level introduction to the project, to the CNL Environmental Stewardship Council (ESC), discussed below. Since then, CNL has conducted a stakeholder engagement campaign to reach out and discuss the project, as well as collect input and feedback into the project.

This section details project specific engagement methods and activities that occurred from 2017 August to 2019 June:

- presentations to various stakeholders (members of the public, industry, elected officials and employees);
- publishing and updating project specific web page content;
- posting and publishing of infographics (i.e. fact sheets);
- publishing and distribution of newsletters with project content (i.e. CONTACT, Voyageur);
- conduct of site visits and tours;
- conduct of public information sessions;
- conduct of quarterly online webinars
- meetings and information sessions for interested stakeholders;
- bi-monthly breakfast briefings;
- participation in public events;
- increased use of social media, including uploading project specific videos to YouTube;
- advertising campaigns (online, intranet, newspapers, flyer insert, radio public service announcement, social media, paid Facebook advertising);
- distribution of draft EIS to local libraries, to function as an information repository and support public input; and
- emails to stakeholders including notifications of the draft EIS submission and responses to questions submitted.

It should be noted that when applicable materials were prepared in both official languages.

The following subsections outline specific engagement methods and activities undertaken for the Project.

## 3.1 Presentations, Meetings and Site Tours

CNL uses presentations and meetings to help inform and educate stakeholders on the proposed NSDF project and also hosts stakeholder tours to the proposed NSDF site.

These presentations and tours provide an opportunity for a general project overview, information sharing and open dialogue about the project between CNL and stakeholders. These visits are used as one of several means of engaging with stakeholders and have induced discussion that helps to inform the project throughout the regulatory process.

See Appendix A for an example of a typical NSDF meeting agenda.

See Appendix B for an example of a general NSDF overview presentation.

All records of meeting agendas and presentations are kept by the project and can be provided upon request.

### 3.1.1 Meeting with the Bloc Québécois – 2017 August 10

CNL hosted Martine Ouellet, the leader of the Bloc Québécois, to Chalk River Laboratories (CRL) to discuss CNL's activities, in particular the proposed NSDF and the Nuclear Power Demonstration (NPD) Closure Project. The meeting included a presentation and dialogue on both projects. A reporter with the Canadian Press also attended and reported on the meeting.

Stakeholder(s): Elected official, media

### 3.1.2 Nuclear Energy Agency Site Tour – 2017 October 3

The CNSC and Natural Resources Canada hosted a meeting of the Nuclear Energy Agency's Working Party on Decommissioning and Dismantling in 2017 October. This included a visit to CRL and the NSDF site to learn more about CNL's proposal to build the facility. International representatives from the member nations had the opportunity to tour the proposed site and discuss the project with experts from the project team.

Stakeholder(s): Industry

### 3.1.3 Environmental Stewardship Council – 2017 October 26

Established in 2006, the ESC meets three times annually with the objective of building working relationships and creating opportunities for open dialogue between various stakeholder groups, local communities and CNL. These conversations are integral in providing CNL with a wide range of viewpoints. During independently facilitated meetings, ESC members are presented with information about CNL, CNL's environmental practices, and have the opportunity to ask questions and discuss the information presented. Each meeting is documented (i.e. presentations and actions) and members are asked to take meeting information back to their respective constituents, organizations and communities.

On 2015 October 29, the NSDF project was first introduced to the members of the ESC as a part of a Decommissioning and Waste Management update. Updates on the NSDF project have been a standing agenda item at ESC since this time.

In 2017 October, the ESC was briefed on the NSDF design completion, and the removal of Intermediate Level Waste from the NSDF. A second presentation was given to members on the proposed valued components of the NSDF Project. During this meeting, members took a walking tour of the Chalk River campus to gain an understanding of the buildings that would be demolished, remediated and destined for the proposed NSDF if waste acceptance criteria is met. Throughout these updates, members had the opportunity to seek clarification and raise any concerns they had with the NSDF Project.

Stakeholder(s): Local elected officials, local environmental organizations, local Indigenous peoples and local Non-Governmental Organizations (NGOs).

For all ESC meeting notes and agendas: www.cnl.ca/esc

### 3.1.4 Take Our Kids to Work Day – 2017 November 01

CNL participates annually in Take Our Kids to Work Day for students in grade nine to introduce them to different careers and areas of work. Approximately 80 students came to the CRL site and a presentation and tour component were included about the NSDF Project.

Stakeholder(s): Employees, general public (students).

### 3.1.5 Ottawa Riverkeeper Presentation and Site Tour – 2017 November 16

CNL hosted Ottawa Riverkeeper, a charitable organization advocating for the Ottawa River watershed, at the CRL site for a tour with presentations on the NSDF Project. Attendees had the opportunity to seek clarification and raise any concerns they had with subject matter experts available to answer their questions.
Stakeholder(s): Local environmental organizations

### 3.1.6 NSDF Technical Discussion Meetings – 2017 December 6 & 14

CNL hosted two meetings to discuss technical aspects of the project with former employees (alumni) and other members of the local scientific community. These meetings were planned in response to a request from a local community member, who assisted in coordinating the discussion.

Stakeholder(s): Concerned public, industry, alumni, elected officials.

### 3.1.7 Meeting with Hull-Aylmer MP Greg Fergus – 2018 February 26

At the request of Greg Fergus, the Member of Parliament (MP) for Hull-Aylmer, project staff met with him to discuss the proposed NSDF project. This gave him the opportunity to gain understanding of the project and seek clarification on issues his constituents had brought up to him.

Stakeholder(s): Government officials

### 3.1.8 Town Hall with MP Greg Fergus – 2018 March 05

At the invitation of Greg Fergus, the MP for Hull-Aylmer, CNL attended an open Town Hall for the public in Gatineau, Quebec to share information about CNL, in particular, the proposed NSDF and the NPD Closure Project.

Stakeholder(s): Members of the public, elected officials

### 3.1.9 Nuclear Footprints Program Presentation and Site Tour – 2018 March 06 & 07

As a part of an international program, participants traveled to different nuclear facilities in Canada to learn about Canada's nuclear industry. On day one, participants had a tour and presentation to discuss the proposed NSDF project. On day two, the participants had a breakfast panel with local elected officials and members of the CNL staff to further discuss the proposed project and gain perspective from host community leaders.

Stakeholder(s): International industry, local elected officials.

### 3.1.10 Renfrew-Nipissing-Pembroke MPP John Yakabuski Site Visit – 2018 April 03

John Yakabuski, the member of Provincial Parliament (MPP) for Renfrew-Nipissing-Pembroke, attended the Deep River offices of CNL to learn about the proposed NSDF and the NPD Closure Project. He had the

opportunity to speak directly with subject matter experts about concerns constituents had raised to him and gain understanding of the projects and CNSC processes that are being adhered to for the proposed projects.

Stakeholder(s): Government official.

### 3.1.11 Pontiac MP Will Amos Site Visit – 2018 April 04

Will Amos, the MP for Pontiac visited the CRL site to learn about the proposed NSDF and the NPD Closure Project. He had the opportunity to tour the proposed NSDF site and speak directly with subject matter experts about concerns constituents had raised to him. He also had the opportunity to gain understanding of the projects and CNSC processes that are being adhered to for the proposed projects.

Stakeholder(s): Government official.

### 3.1.12 Environmental Stewardship Council Meeting – 2018 April 05

In 2018 April, the ESC was briefed on the updated project schedule, completion of stage 3 and 4 archeological assessments, design improvements based on feedback and key stakeholder issues relevant to the NSDF performance assessment. Following these updates, members had the opportunity to seek clarification and raise any concerns they had with the NSDF Project.

Stakeholder(s): Local elected officials, local environmental organizations and local NGOs.

### 3.1.13 Canadian Nuclear Council Workers Presentation – 2018 June 19

Members of the Canadian Nuclear Council Workers (collective voice of organized labour in Canada's Nuclear Industries) were given a presentation on the NSDF Project. Following the presentation, members had the opportunity to seek clarification and raise any concerns they had with the NSDF Project.

Stakeholder(s): Industry

### 3.1.14 Environmental Stewardship Council Meeting – 2018 June 21

In 2018 June, the ESC was briefed on common themes identified from the federal and public comments submitted on the draft EIS, these included proximity to the river, waste acceptance criteria, international standards, facility design and follow-up monitoring programs. During this presentation an ESC action was addressed on comparing the NSDF to similar facilities that have been capped/closed for over ten years. Following these updates, members had the opportunity to seek clarification and raise any concerns they had with the NSDF Project.

Stakeholder(s): Local elected officials, local environmental organizations and local NGOs.

### 3.1.15 Eastern Ontario Water Works Association Conference – 2018 October 24

CNL staff attended the Eastern Ontario Water Works Association Conference to present on the proposed NSDF and NPD Closure Projects. The presentation offered attendee’s fact based information about both projects and the opportunity to gain understanding of what is being proposed as well as opportunity to ask questions.

Stakeholder(s): Municipal water works professionals.

### 3.1.16 Environmental Stewardship Council Meeting – 2018 October 18

The ESC was briefed on project timeline and planning basis, treated effluent transfer design with a review of considerations and benefits of the proposed change. Following these updates, members had the opportunity to seek clarification and raise any concerns they had with the NSDF Project.

Stakeholder(s): Local elected officials, local environmental organizations and local NGOs.

### 3.1.17 Carleton University Journalism Master's Students Presentation and Site Visit – 2018 November 28

Two Master's students, who were writing a piece for the media, from Carleton University (Ottawa, ON) were given a CNL overview presentation with a focus on the proposed NSDF and the NPD Closure Project. Following the presentations they went on a site tour of the proposed NSDF site and had the opportunity to seek clarification and raise any concerns they had with the projects.

Stakeholder(s): Academia (media)

### 3.1.18 MRC Pontiac Warden Jane Toller and MRC Pontiac Staff Presentation and Site Visit – 2018 December 11

MRC Pontiac Warden, Jane Toller and MRC Pontiac staff were given a CNL overview presentation with a focus on the proposed NSDF and the NPD Closure Project. Following the presentations they went on a site tour of the proposed NSDF site and had the opportunity to seek clarification and raise any concerns they had with the projects.

Stakeholder(s): Local elected officials.

### 3.1.19 Renfrew and Pontiac Counties Elected Officials Information Day – 2019 February 15

Local elected officials from both Renfrew and Pontiac County were invited to the CRL site for updates and presentations on CNL, the proposed NSDF and the NPD Closure Project. Officials were also invited to tour the CRL site. Throughout the day officials had the opportunity to seek clarification and raise any concerns they had with the projects and ask questions about CNL.

Stakeholder(s): Local elected officials.

### 3.1.20 Meeting with Representatives of the Province of Quebec – 2019 February 28

NSDF and NPD project staff went to Quebec City to meet with representatives from the Province of Quebec to discuss the proposed NSDF and the NPD Closure Project. Throughout the day representatives had the opportunity to seek clarification and raise any concerns they had with the projects.

Stakeholder(s): Government of Quebec officials.

### 3.1.21 Carleton University Civil and Environmental Engineering Students Presentation and Site Tour – 2019 March 08

Students from Carleton University (Ottawa, ON) visited the CRL site for a tour and presentations on the proposed NSDF and the NPD Closure Project. Throughout the day students had the opportunity to seek clarification and raise any concerns they had with the projects and ask questions about CNL.

Stakeholder(s): Academia (engineering).

### 3.1.22 Environmental Stewardship Council Meeting – 2019 March 28

The ESC was briefed on the geomembrane testing program, enabling activities including the final archeological assessment and turtle road mortality plan. During this presentation two ESC actions were covered on the revised NSDF study area and the detailed inventory of the NSDF. ESC members were the first audience for the NSDF water video which detailed how risk from precipitation would be mitigated. Following these updates, members had the opportunity to seek clarification and raise any concerns they had with the NSDF Project.

Stakeholder(s): Local elected officials, local environmental organizations and local NGOs.

### 3.1.23 Breakfast Briefing – 2019 April 24

Bi-monthly Breakfast Briefings were introduced in 2019 April. The Breakfast Briefings offer an opportunity for Alumni and interested members of the public to gain a further technical understanding of the NSDF project. In this session the NSDF team presented on factors affecting radioactive waste disposal decisions, and attendees had the opportunity to seek clarification and raise any concerns they had with the NSDF Project to subject matter experts.

Stakeholder(s): Alumni, Interested members of the public, local elected officials.

### 3.1.24 Presentation to Laurentian Valley Township Council – 2019 May 07

Project staff attended the Laurentian Valley Township's council meeting and gave a presentation on the NSDF project. Council members had the opportunity to seek clarification and raise any concerns they had with the project.

Stakeholder(s): Local elected officials

### 3.1.25 NSDF Effluent Discharge Alternatives Focus Group – 2019 May 10

CNL invited members of different interest groups to participate in a focus group discussing effluent discharge alternatives for the proposed NSDF. Members input and discussion was used to determine options and path forward for the proposed effluent discharge options analysis process.

Stakeholder(s): Alumni, local environmental organizations.

### 3.1.26 Hill Times Journalist Presentation and Site Visit – 2019 May 27

A journalist from the Hill Times was given an overview presentation with a focus on the proposed NSDF project. Following the presentation the journalist had the opportunity to interview project staff for a piece and had the opportunity to seek clarification and ask any questions they had about the project.

Stakeholder(s): Media

### 3.1.27 Gatineau Moderated Forum Councillor Duggan – 2019 May 30

At the invitation of Mike Duggan, City Councillor for the City of Gatineau, CNL attended a moderated forum for the public in Gatineau, Quebec to share information about CNL, in particular, the proposed NSDF and the NPD Closure Project. Council members and members of the public had the opportunity to seek clarification and raise any concerns they had with the project. NSDF Project subject matter experts were in attendance.

Stakeholder(s): Members of the public, elected officials.

### 3.1.28 Environmental Stewardship Council Meeting – 2019 June 20

The ESC was briefed on ESC actions that had been addressed. They were then given project update, project justification and CRL clean-up plan presentations. Following these updates, members had the opportunity to seek clarification and raise any concerns they had with the NSDF Project.

Stakeholder(s): Local elected officials, local environmental organizations and local NGOs.

### 3.1.29 Breakfast Briefing – 2019 June 26

The bi-monthly Breakfast Briefings offer an opportunity for Alumni and interested members of the public to gain a further technical understanding of the NSDF project. In this session Dr. Kerry Rowe (Queen's University) presented on a barrier system for a 550 year design life, and attendees had the opportunity to seek clarification and raise any concerns they had with NSDF Project subject matter experts.

Stakeholder(s): Alumni, Interested members of the public.

## 3.2 Public Information Sessions

Public information sessions were conducted to help CNL inform, educate and obtain feedback from members of the public and host communities surrounding the NSDF proposed site. Beginning in 2018 January webinar sessions were introduced as an evolution of public information sessions as a more modern approach to disseminate information to the public and answer their questions. However CNL remains available to provide a community based public information session when there is an expressed interest from stakeholders.

### 3.2.1 Public Information Session

There was one public information session held during the time period of this report. This information session took place on August 03, 2017 in L'Isle aux-Allumettes, Quebec. Nine individuals attended this session and no feedback forms were submitted.

At all public information sessions subject matter experts were available for answering questions and engaging in one-on-one dialogue with event guests. An effort was made to share updated information that responded to specific areas of interest.

Subject matter experts included: Communications Officers, Environmental Specialists, NSDF Project Managers, Safety and Licensing Analysts, Design and Engineering Specialists and Waste Specialists.

Stakeholder(s): Quebec local public

### 3.2.2 Webinars

The webinars were conducted from the CRL site, however were accessible to anyone with internet access. The webinars were designed to provide an overview and quarterly updates of the proposed NSDF and the NPD Closure Project. They provided updated information and addressed questions from the public, based on the themes from public review of the draft EIS. Webinar sessions also provided opportunity for members of the public to ask their questions directly to the staff members taking part in the webinar through an online forum. Webinars were conducted in both official languages and all videos were uploaded to CNL YouTube channel after broadcast.

Stakeholder(s): General public.

**Table 3-1: NSDF Webinars**

| Date | NSDF/NPD | Topic | Peak Concurrent Viewers | Total Number of Views (to date) |
|---|---|---|---|---|
| 2018 October 17 | NSDF/NPD | • Engineering and design<br>• Waste acceptance criteria<br>• Long-term performance<br>• Protection of the Ottawa River | 42 | 703 |
| 2019 March 20 | NSDF/NPD | • Justification for project<br>• Proposed inventory Geomembrane performance<br>• Archeological significance | 37 | 247 |
| 2019 June 17 | NSDF/NPD | • NSDF's Project application of IAEA standards | 20 | 212 |

Watch recorded webinars: https://www.youtube.com/channel/UC2GCEfZQgsURh4t_QZ-JwCw

### 3.3 Employee-focused Events

To reach internal stakeholders (employees), different methods were employed including a MyCNL TV broadcast, which is a live broadcast similar to the Webinars however sent out via CNL's intranet. A 3-dimensional scale model of the proposed NSDF model was also created and put on display at different CNL offices along with informational banners and a video for staff to gain understanding of the facility.

All new employees take part in New Employee Orientation during which they are introduced to the proposed NSDF project and have the opportunity to ask questions and learn about the project.

Stakeholder(s): Employees

See Appendix C for examples from all three events.

**Table 3-2: Employee-focused Events**

| Event | Date |
|---|---|
| MyCNL TV | 2018 May 18 |
| NSDF 3-D Model Display | 2019 February (month long) |
| New Employee Orientation | Ongoing – every two weeks |

## 3.4 Community Events and Conferences

One approach to initiating two-way communications and informing and educating was to have CNL representatives attend community events local to the proposed NSDF site, industry conferences and are expanding to reach stakeholders beyond the local community. Attendance at each event is described in the following sections.

Stakeholder(s): General public, local elected officials, industry, local environmental organizations and local NGO's.

See Appendix D for examples from Community Events.

### 3.4.1 CNL Open House – 2017 August 12

CNL hosted an Open House on the CRL site. The Open House had over 2,000 people register and as a part of the day presentations and site tours of the proposed NSDF site were offered. Interested attendees could learn about the project, see the proposed site and seek clarification from subject matter experts.

### 3.4.2 Renfrew County Plowing Match – 2017 September 16

CNL attended the Renfrew County Plowing Match. Interested attendees could learn about the proposed NSDF project, and seek clarification from subject matter experts with regards to their concerns. Additionally, informational handouts were available at the booth

### 3.4.3 Canadian Nuclear Association Conference – 2018 February 21 - 23

CNL has a presence at the Canadian Nuclear Association conference annually and at the 2018 conference had information on CNL as well as both the proposed NSDF and the NPD Closure Project on interactive touch screens, as well as informational handouts at the booth.

### 3.4.4 Waste Management Symposium – 2018 March 18 - 22

CNL attended the Waste Management Symposium and had information on CNL as well as both the proposed NSDF and the NPD Closure Project at the corporate booth. Subject matter experts also attended to discuss the projects as part of conference sessions. A paper titled *"Identification of Waste Streams and Chemicals of Concern for CNL's Near Surface Disposal Facility"* was presented as a part of the conference proceedings.

### 3.4.5 Petawawa Showcase – 2018 April 27 - 29

CNL annually attends Petawawa Spring Showcase as it is one of the largest community events in the Ottawa Valley. It gives CNL a direct means to discuss CNL activities, including the proposed NSDF project with members of the general public that otherwise may not engage with us. General questions, concerns and rumours can be addressed directly with those that have an interest.

### 3.4.6 Downtown Connect Pembroke – 2018 May 11 & 12

CNL annually attends Downtown Connect Pembroke as it is one of the largest community events in the Ottawa Valley. It gives CNL a direct means to discuss CNL and the proposed NSDF project with members of the general public that otherwise may not engage with us. General questions, concerns and rumours can be addressed directly with those that have an interest.

### 3.4.7 Canadian Nuclear Society Conference – 2018 June 03 - 07

CNL has a presence at the Canadian Nuclear Society conference annually, and at the 2018 conference had information on CNL as well as both the proposed NSDF and the NPD Closure Project on interactive touch screens, as well as informational handouts on both projects at the booth.

### 3.4.8 Canadian Nuclear Association Annual Conference – 2019 February 28 – March 02

CNL has a presence at the Canadian Nuclear Association conference annually. At the conference CNL had information on both the NSDF Project and NPD Closure Project on interactive touch screens, as well as informational handouts at the booth.

### 3.4.9 NSDF 3D Model – 2019 February & March

A 3-dimensional model of the proposed NSDF and proposed CRL site location was constructed and put on display in the Deep River Town Hall for two weeks, along with informational banners, and a video to give members of CNL's "host community" detailed information on the project. At the Deep River location NSDF project staff were available Monday – Friday during lunch hours for additional information and questions.

### 3.4.10 NSDF 3D Model – 2019 March & April

A 3-dimensional model of the proposed NSDF and proposed CRL site location was constructed and put on display in the Laurentian Valley Township office for two weeks, along with informational banners, and a video to give members of community detailed information on the project.

### 3.4.11 NSDF 3D Model – 2019 May

A 3-dimensional model of the proposed NSDF and proposed CRL site location was constructed and put on display in the Town of Petawawa office for two weeks, along with informational banners, and a video to give members of community detailed information on the project.

### 3.4.12 Downtown Connect Pembroke – 2019 May 10 & 11

CNL annually attends Downtown Connect Pembroke as it is one of the largest community events in the Ottawa Valley. It gives CNL a direct means to discuss CNL and the proposed NSDF project with members of the general public that otherwise may not engage with us. General questions, concerns and rumours can be addressed directly with those that have an interest.

### 3.4.13 Canadian Nuclear Society Conference – 2019 June 23 - 27

CNL has a presence at the Canadian Nuclear Society conference annually and at the 2019 conference had information on CNL as well as both the proposed NSDF and the NPD Closure Project on interactive touch screens, as well as informational handouts on both projects at the booth.

## 3.5 Web Page Content

CNL has established a project-specific webpage: www.CNL.ca/NSDF. In addition, quick links have been added to the landing page, raising project visibility and easing access to the appropriate pages. Since August 2016, updated information has been added to the project webpage, and webpage activity continues to be tracked and analyzed using Google Analytics.

The webpage has been updated with new content as it becomes available. Frequently asked questions, Project infographics, informational videos, a Project description, the draft EIS, poster boards, quick facts, the Project timeline and public comments on the draft EIS broken down into themes have all been added to the NSDF Project webpage.

In an effort to improve EIS supporting document access and transparency, CNL continues to post key EIS technical support documents and any revisions and updates to these documents as they become available.

In addition, starting 2019 March CNL has committed to posting all external project presentations to the NSDF Project webpage.

See presentations webpage: https://www.cnl.ca/en/home/environmental-stewardship/nsdf/november-2018-project-update/default.aspx

Stakeholder(s): All stakeholders.

See Appendix E for an example of a NSDF webpage update.

### 3.5.1 Audience Analytics

Web page activity has been tracked and analyzed using Google Analytics. These web page analytics provide insight into public interaction with the project, as it excludes visitors from within the CNL network. This allows CNL to continue to improve web content and respond to how users are accessing information.

Table 3-3 shows the web page audience analytics for the NSDF pages in comparison to CNL.ca web pages. The analytics indicate that those interested in the NSDF project spent more time on average on the project pages and went to more of the pages than the average CNL visitor. This demonstrates that the dedicated project pages are an effective avenue for interested parties to find project information as they, on average, stayed on the pages longer and visited more of the informational pages.

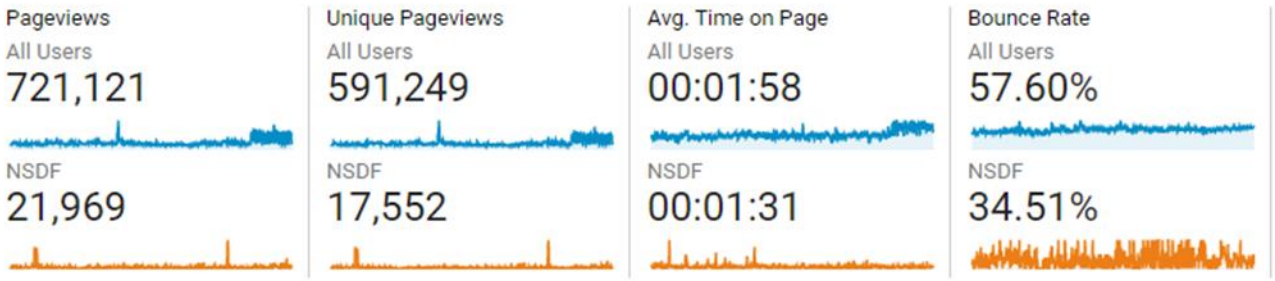
Bounce rates are the percentage of visits in which a user left the site from the entrance page without interacting with the page. This rate on the NSDF project pages continues to demonstrate that users are engaged with the information made available. A pattern of low percentages indicates that upon accessing project pages visitors remained and interacted with the available material.

Stakeholder(s): All stakeholders.

**Table 3-3: Audience Analytics Summary**

| | August 2017 – March 2019 | |
|---|---|---|
| | **cnl.ca Webpages** | **NSDF Webpages** |
| **Page Views** | 721,121 | 21,969 |
| **Unique Page Views** | 591,249 | 17,552 |
| **Pages per session** | 2.18 | 4.77 |
| **Average Session Duration** | 00:02:22 | 00:05:49 |
| **Bounce Rate** | 57.60% | 34.51% |

**Table 3-4: Audience Analytics Raw Data**




### 3.5.2 Acquisition Analytics

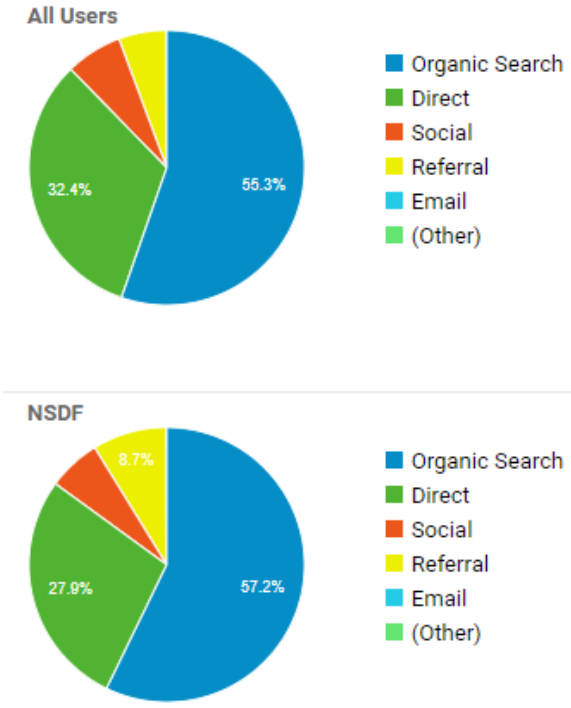
Analysis seems to indicate that it is not difficult for interested stakeholders to find information on the project as the majority of project web page traffic is organic, meaning most users are finding the web pages via a key word search using a search engine.

Means of acquisition to project web pages:

- Referral – link provided by a third party website, email, etc.
- Organic – key word search via search engine
- Direct – input of specific URL
- Social media – from a social media channel, such as Facebook, LinkedIn, Twitter, etc.
- Email – link provided within an email

The charts below show how the mode of accessing NSDF's web page and/or its associated webpages (meaning those web pages that are about NSDF and are accessible through the main www.cnl.ca/nsdf web page) has tended to be in very similar fashion to the general www.cnl.ca webpages. Organic being the most prevalent way of accessing all CNL webpage(s) indicates that content is readily accessible to those actively searching for it.

**Table 3-5: Means of Acquisition for CNL.ca and NSDF project pages**




### 3.5.3 Downloads

Since the NSDF Project was proposed, the web content has continuously been updated for visitors to download as it has become available. Downloadable information available for the NSDF Project, via the project webpage, includes:

- Infographics/fact sheets
- An updated timeline
- EIS documents
    1. Draft EIS
    2. EIS Executive Summary
    3. EIS Appendices
- CNL-CNSC Administrative Protocol for the NSDF Project at CRL
- Appendix A to the Administrative Protocol for the NSDF Project at CRL
- The Project Description document
- Three sets of posters from Public Information Sessions:
    1. April 2017
    2. October 2016
    3. July 2016

- Five issues of CNL's CONTACT newsletter featuring information about the NSDF Project:
    1. Summer 2018 CONTACT
    2. Winter 2018 CONTACT
    3. Spring 2017 CONTACT
    4. Winter 2017 CONTACT
    5. Summer 2016 CONTACT

Over the period of time between 2017 August and 2019 March, this information was downloaded 2,307 times. Table 3-6 details how many times each document was downloaded in order of most frequently to least frequently downloaded.

**Table 3-6: 2017-2019 Downloads**

| Document Label | Page Link | Total Events |
|---|---|---|
| www_ceaa-acee_gc_ca/118380E.pdf | /en/home/environmental-stewardship/nsdf/eis.aspx | 257 |
| CONTACT_December_2017_Eng.pdf | /en/home/news-and-publications/newsletters.aspx | 204 |
| CONTACT_April_2017.pdf | /en/home/news-and-publications/newsletters.aspx | 182 |
| CRL-CONTACT-Winter_2018-2.PDF | /en/home/news-and-publications/newsletters.aspx | 173 |
| CRL-CONTACT-July-2018.pdf | /en/home/news-and-publications/newsletters.aspx | 172 |
| NSDF_Infographic_2018%20_EN.pdf | /en/home/environmental-stewardship/nsdf/default.aspx | 160 |
| Size%20Comparison%20ENG.jpg | /en/home/environmental-stewardship/nsdf/default.aspx | 157 |
| NSDF_infographic_Eng.pdf | /en/home/environmental-stewardship/nsdf/default.aspx | 138 |
| 232-509200-ENA-001.pdf | /en/home/environmental-stewardship/nsdf/default.aspx | 132 |
| www_ceaa-acee_gc_ca/118412E.pdf | /en/home/environmental-stewardship/nsdf/eis.aspx | 109 |
| 2016_CONTACT_DWM-Projects_CRL_FINAL_EN.pdf | /en/home/news-and-publications/newsletters.aspx | 63 |
| NSDF_quick_facts.pdf | /en/home/environmental-stewardship/nsdf/default.aspx | 59 |
| www_ceaa-acee_gc_ca/118411E.pdf | /en/home/environmental-stewardship/nsdf/eis.aspx | 59 |
| NSDF_Posters_Apr_2017(1).pdf | /en/home/environmental-stewardship/nsdf/default.aspx | 58 |
| WAC-232-508600-WAC-002-R2.pdf | /en/home/environmental-stewardship/nsdf/default.aspx | 45 |
| Feb_2019_NSDF_Timeline.png | /en/home/environmental-stewardship/nsdf/november-2018-project-update.aspx | 43 |
| www_ceaa-acee_gc_ca/119103F.pdf | /fr/home/gerance-environnementale/nsdf/eis.aspx | 21 |
| NSDF_Infographic_2018%20_EN.pdf | /en/home/environmental-stewardship/nsdf/eis.aspx | 19 |
| 232-509200-ENA-001.pdf | /en/home/environmental-stewardship/nsdf/eis.aspx | 18 |
| Admin_protocol.pdf | /en/home/environmental-stewardship/nsdf/default.aspx | 18 |
| PSA-NSDF-Eng.pdf | /en/home/environmental-stewardship/nsdf/default.aspx | 17 |
| Size%20Comparison%20ENG.jpg | /en/home/environmental-stewardship/nsdf/eis.aspx | 17 |
| Translated_executive_summary.pdf | /fr/home/gerance-environnementale/nsdf/eis.aspx | 17 |
| NSDF_infographic_Eng.pdf | /en/home/environmental-stewardship/nsdf/eis.aspx | 15 |
| 232-509200-ENA-001_FRE_rev2.pdf | /fr/home/gerance-environnementale/nsdf/default.aspx | 11 |
| NSDF_Posters_Apr_FR(1).pdf | /fr/home/gerance-environnementale/nsdf/default.aspx | 11 |

| Document Label | Page Link | Total Events |
|---|---|---|
| Size%20Comparison%20FRE.jpg | /fr/home/gerance-environnementale/nsdf/default.aspx | 11 |
| NSDF_infographic_Fre.pdf | /fr/home/gerance-environnementale/nsdf/default.aspx | 10 |
| PSA-NSDF-Eng_July.pdf | /en/home/environmental-stewardship/nsdf/default.aspx | 10 |
| NSDF_quick_facts.pdf | /en/home/environmental-stewardship/nsdf/eis.aspx | 8 |
| CRL-CONTACT-Winter_2018-Fre2.PDF | /fr/home/Nouvelles-et-publications/newsletters.aspx | 7 |
| CRL-CONTACT-Winter_2018.PDF | /en/home/news-and-publications/newsletters.aspx | 7 |
| FR_232-508600-WAC-002.pdf | /fr/home/gerance-environnementale/nsdf/default.aspx | 7 |
| PSA-NSDF-Fre-juillet.pdf | /fr/home/gerance-environnementale/nsdf/default.aspx | 7 |
| www_ceaa-acee_gc_ca/115492E.pdf | /en/home/environmental-stewardship/nsdf/default.aspx | 7 |
| www_ceaa-acee_gc_ca/125519E.pdf | /en/home/environmental-stewardship/nsdf/default.aspx | 7 |
| CONTACT_April_2017_Fre.pdf | /fr/home/Nouvelles-et-publications/newsletters.aspx | 6 |
| NSDF_Infographic_2018_FR.pdf | /fr/home/gerance-environnementale/nsdf/default.aspx | 6 |
| NSDF_quickfacts_Fre.pdf | /fr/home/gerance-environnementale/nsdf/default.aspx | 6 |
| www_nuclearsafety_gc_ca/2016-protocol-CNL-near-surface-disposal-facility-eng.pdf | /en/home/environmental-stewardship/nsdf/default.aspx | 6 |
| NSDF_Infographic_2018_FR.pdf%20 | /fr/home/gerance-environnementale/nsdf/default.aspx | 4 |
| NSDF_infographic_Fre.pdf | /fr/home/gerance-environnementale/nsdf/eis.aspx | 4 |
| PSA-NSDF-Fre.pdf | /fr/home/gerance-environnementale/nsdf/default.aspx | 4 |
| www_ceaa-acee_gc_ca/118411F.pdf | /fr/home/gerance-environnementale/nsdf/eis.aspx | 4 |
| CONTACT_December_2017.pdf | /en/home/news-and-publications/newsletters.aspx | 3 |
| CRL-CONTACT-July-2018-Fre.pdf | /fr/home/Nouvelles-et-publications/newsletters.aspx | 3 |
| 2016_CONTACT_DWM-Projects_CRL_FINAL_FR.pdf | /fr/home/Nouvelles-et-publications/newsletters.aspx | 1 |
| Admin_protocol_Fre.pdf | /fr/home/gerance-environnementale/nsdf/default.aspx | 1 |
| CONTACT_December_2017_Fre.pdf | /fr/home/Nouvelles-et-publications/newsletters.aspx | 1 |
| Size%20Comparison%20FRE.jpg | /fr/home/gerance-environnementale/nsdf/eis.aspx | 1 |
| www_ceaa-acee_gc_ca/125519F.pdf | /fr/home/gerance-environnementale/nsdf/default.aspx | 1 |

### 3.5.4 Infographic/Fact Sheets

Two infographics, or fact sheets, were created and made available online and in hard copy to better convey information in a succinct digestible format for members of the public. The first was 10 facts about the proposed NSDF and the second was a volume comparison to put the proposed amount of waste in perspective.

The infographics are published on the web page and used at Public Information Sessions, Open Houses, and many other community events. The NSDF infographics have proven to be an effective method for relaying some technical aspects of the project in a simplistic format that the general public can understand.

In addition, copies of the fact sheets have been sent to seven local municipal offices to function as an information repository and to support greater awareness in local host communities.

Stakeholder(s): All stakeholders.

See Appendix F for an example of a NSDF infographic.

### 3.5.5 Project Webpage Feedback Mechanisms

On the project web page, there are mechanisms for the user to share feedback on the project through an online submission form which was used 11 times between August 2017 and March 2019. There is also a "mailto" hyperlink on every project page that sends an email into the CNL Corporate Communications general mail box. There were 65 community inquiries through the Communications mail box within the time span of 2017 August – 2019 June. All submissions are recorded as a part of public feedback and receive a reply from a CNL representative. Detailed information on feedback can be found in section 4.0.

## 3.6 External Newsletter - CONTACT

CNL's CONTACT newsletter is published and mailed to approximately 55,000 residences in the Renfrew and Pontiac Counties and is available on CNL.ca. This publication informs the reader on activities undertaken at CNL's various sites and profiles CNL's community activities.

There are currently five issues of CONTACT that have discussed aspects of the NSDF project. The first was the Spring 2016 issue of CONTACT, which focused on CNL's major projects (including the NSDF Project), and related EA activities.

The following issues had an update or feature on the NSDF project included within it during the time frame of this report.

1. Spring 2019 CONTACT
2. Summer 2018 CONTACT
3. Winter 2018 CONTACT
4. Winter 2017 CONTACT

Stakeholder(s): Local and host communities.

See Appendix G for an example of a CONTACT newsletter.

## 3.7 Email

Emails have been used to connect with internal and external stakeholders, as well as with NGOs. In particular, emails were sent out to promote different events, to advise of the public comment period on the draft EIS and to provide responses to questions submitted electronically. Stakeholders are encouraged to be added to an email distribution list to receive notices of upcoming events related to NSDF (webinars, breakfast briefings, etc.). The current list has over 250 stakeholders.

Stakeholder(s): Local and host communities, local elected officials, media, Indigenous groups

See Appendix H for an example of a stakeholder email.

## 3.8 Advertising

CNL has used many different means of advertising including advertisements in local newspapers, radio advertisements, flyer inserts in local distributions and social media posts to publicize public information sessions and project information.

### 3.8.1 Advertising Methods

- Advertisements posted on CNL.ca landing page and the project-specific webpage: www.cnl.ca/nsdf
- Advertisements have been included in online version of CNL's CONTACT newsletter when applicable.
- Newspaper advertisements (See Table 3-7 for circulation numbers of main newspapers utilized).
- Radio advertisements – CNL has dedicated public service announcement spots on Star 96.7, when applicable it was used to advertise specific project events.
- Paid Facebook advertising via "Boosted Posts".

**Table 3-7: Newspaper Circulation Numbers**

| Newspaper | Circulation |
|---|---|
| North Renfrew Times | 4,000 |
| Pontiac Journal (bi-weekly) | 9,400 |
| Shawville Equity | 4,046 |
| The Valley Gazette | 2,300 |
| Eganville Leader | 6,200 |
| Renfrew Mercury | 13,394 |
| Arnprior Chronicle | 8,130 |
| Petawawa Post | 13,225 |
| The News | 29,000 |
| Daily Observer | 3,000 |
| Flyer Insert | 30,000 |

Stakeholder(s): All stakeholders.

See Appendix I for a sample advertisement.

### 3.8.2 Public Service Announcements

CNL has had dedicated spots on the local radio station Star 96.7, based in Pembroke, ON, for over 10 years. CNL utilizes these to promote local events and not-for profit organizations, however, when there are events such as public information sessions Public Service Announcements are used for advertising. The Public Service Announcement run on the radio station four times a day and have an average reach of 35,000 listeners.

Stakeholder(s): All stakeholders.

See Appendix J for a sample script of a PSA.

### 3.9 Intranet – myCNL

The internal website has been used to communicate with internal stakeholders with updates on the project and publicizing events related to the project. Six posts on the NSDF Project were shared on myCNL to educate, inform and provide updates on the project to employees between 2017 August and 2019 June:

1. 2019 June 17 – Webinar: CNL's Environmental Remediation Project Updates
2. 2019 March 20 – Webinar: NPD and NSDF Projects
3. 2019 January 22 – Video How the proposed NSDF will handle rain

4. 2018 December 21 – NSDF Webinar & Follow-up Questions
5. 2018 December 21 – myCNL TV: NSDF Update
6. 2018 October 17 – Webinar: NSDF and NPD Closure Project

Stakeholder(s): CNL Employees

See Appendix K for an example of a myCNL posting.

### 3.10 Internal Newsletter – Voyageur

CNL's internal newsletter, Voyageur, is published each month to update current and former CNL employees (former employees can sign up as "CNL Alumni" to receive updates and the Voyageur newsletter from CNL, there are around 600 individuals on this distribution list). Over this time period the following three articles on the NSDF Project were published in the newsletter:

1. 2019 February – Archaeological Assessment of the NSDF site has been completed
2. 2019 January – Built to Last: Designing the NSDF Liner System
3. 2018 August – Executive Priorities: Kurt Kehler – NSDF

Stakeholder(s): CNL employees, industry

See Appendix L for an example of a Voyageur NSDF article.

### 3.11 CNL Social Media

Social media is used to inform, educate, and promote awareness for all of CNL's activities including NSDF events and to receive feedback on the project. Seven videos covering topics such as: "Why the NSDF? ", "Responsible Water Management" and project updates have been uploaded to YouTube. The videos have been added in an effort to make information and technical information more accessible. Facebook is our largest platform where we see the strongest engagement through "comments, shares and likes" of posts. When CNL wished to raise the profile of project events or information "boosted" posts were used to target by location and demographics. "Boosted" posts are paid posts through Facebook. Twitter has not been used as broadly as Tweets have been found to receive very little traction, and comparatively CNL has a much larger Facebook following. While numbers are significantly larger on LinkedIn the demographics are far more industry based, rather than general public. Therefore, CNL utilizes LinkedIn, but in a much lower capacity than Facebook to ensure engagement is a balanced approach with general public in comparison to those actively part of the nuclear industry.

The CNL social media accounts continue to gain followers and build communication through multiple social media accounts, including adding an Instagram account.

Stakeholder(s): All stakeholders.

**Table 3-8: CNL Social Media Accounts**

| Social | Link | Followers |
|---|---|---|
| Facebook | www.facebook.com/CanadianNuclearLaboratories | 3,306 |
| Twitter | www.twitter.com/CNL_LNC | 1,046 |
| YouTube | www.youtube.com/channel/UC2GCEfZQgsURh4t_QZ-JwCw | 271 |
| Instagram | www.instagram.com/canadiannuclearlaboratories/ | 147 |
| LinkedIn | www.linkedin.com/company/canadian-nuclear-laboratories/ | 10,296 |

Followers as of October 28, 2019

### 3.11.1 Facebook

Facebook is our largest platform where we see the strongest engagement through "comments, shares and likes" of posts. When CNL wished to raise the profile of project events or information "boosted" posts were used to target by location and demographics. "Boosted" posts are paid posts through Facebook.

**Table 3-9: NSDF Facebook Analytics**

| Metric | Total |
|---|---|
| Number of posts | 18 |
| Reach | 52,908 |
| Shares, Comments and Reactions (Engagement) | 5,372 |
| Boosted Reach | 10,543 |
| Boosted Engagements | 1,364 |

***Reach:*** *Number of users who have seen the post*

***Shares:*** *Comments & Reactions (Engagement): A comment, like and/or sharing of a post*

***Boosted Reach:*** *The number of individuals who have seen the post through paid and targeted posts.*

***Boosted Engagements:*** *Comments, likes and/or shares from those reached through paid and targeted posts.*

See Appendix M for an example of an NSDF Facebook post and "boosted post".

### 3.11.2 Twitter

Twitter has not been used as broadly as Tweets have been found to receive very little traction, and comparatively CNL has a much larger Facebook following.

**Table 3-10: NSDF Twitter Analytics**

| Metric | Total |
|---|---|
| Number of Tweets | 15 |
| Impressions | 13,118 |
| Engagements | 337 |

***Impressions****: number of times a user saw the Tweet on Twitter*

***Engagement****: total number of times a user interacted with the Tweet*

See Appendix N for a sample of a NSDF Twitter tweet.

### 3.11.3 YouTube

Seven videos covering topics such as: "Why the NSDF? ", "Responsible Water Management" and project updates have been uploaded to YouTube. The videos have been added in an effort to make information and technical information more accessible.

Seven videos on the NSDF project were posted

- June 17, 2019 - NSDF and NPD Webinar: https://www.youtube.com/watch?v=o5fCbD327rg

  Total views - 222
- March 20, 2019 – NSDF/NPD Webinar: https://www.youtube.com/watch?v=Y1B3G9zXT1k
  Total views - 269
- March 20, 2019 – Why the NSDF?: https://www.youtube.com/watch?v=C64xpVgE_pg
  Total views: 194
- March 20, 2019 - Pourquoi l'Installation de gestion des déchets près de la surface?:
  https://www.youtube.com/watch?v=UglytxSkX5Q
  Total views: 19
- February 21, 2019 - Installation de gestion des déchets près de la surface:
  https://www.youtube.com/watch?v=Em3dEXlYoz8
  Total views: 63
- February 21, 2019 – NSDF – Responsible Water Management:
  https://www.youtube.com/watch?v=ejUFheJDLp8
  Total views: 1,080
- October 17, 2018 – NSDF and NPD Project Update: https://www.youtube.com/watch?v=iANGbldw7tA
  Total views: 726

### 3.11.4 LinkedIn

While numbers are significantly larger on LinkedIn the demographics are far more industry based, rather than general public. Therefore, CNL utilizes LinkedIn, but in a much lower capacity than Facebook to ensure engagement is a balanced approach with general public in comparison to those actively part of the nuclear industry.

**Table 3-11: NSDF LinkedIn Analytics**

| Metric | Total |
|---|---|
| Number of posts | 4 |
| Impressions | 18,544 |
| Reactions | 217 |

See Appendix O for an example of a NSDF LinkedIn post.

## 3.12 Media

The NSDF project was covered in the media 72 times between 2017 August and 2019 June.

See Table 3-12 for the full list of NSDF coverage.

During the 2017 summer coverage of the NSDF project grew significantly with detractors of the project gaining traction in their messaging. However, CNL began actively utilizing a "detect and correct" method in sending in responses to articles that held misinformation. This method proved effective in getting more factual information out and overall has led to more balanced coverage with some media outlets now reaching out to CNL for information about the project before printing articles.

CNL has responded to and sought media coverage much more actively. Through this more active approach there has been a decline in negative/inaccurate coverage of the project.

**Table 3-12: Media Coverage**

| Date | Article Title | Outlet |
|---|---|---|
| August-10-17 | Pourquoi ce silence autour de chalk river | La Presse |
| August-10-17 | Martine Ouellet veut stopper le projet | Le Devoir |
| August-10-17 | Bloc joins the fight against NSDF | The Pembroke Daily Observer |
| August-12-17 | Ouellet, environmentalists wary of proposed nuclear disposal plan | Canadian Press |
| August-14-17 | Chalk River: Opposition to Radioactive Waste Disposal Increases | Radio-Canada |
| August-16-17 | Environmental Assessment Reform Not Applicable to Chalk River | Radio-Canada |
| August-16-17 | Proposed CNL Facility Meeting Resistance From Communities Along Great Lakes | MyFM |
| August-16-17 | Deadline for Comments on proposed waste site | North Renfrew Times |
| August-16-17 | Sentinelle Outaouais déposera un document aux consultations sur Chalk River | Radio-Canada |
| August-17-17 | Ottawa Riverkeeper calls out gaps in Chalk River nuclear site plan | CBC.ca |
| August-18-17 | Riverkeeper opposes Chalk River waste storage site | Ottawa Citizen |
| August-21-17 | Chalk River: McKenna relies on evaluation | La Presse/Le Droit |

| Date | Article Title | Outlet |
|---|---|---|
| August-23-17 | Ontario town [Deep River] rejects nuclear-waste plan | Globe and Mail |
| August-24-17 | Chalk River:  Coalition says no to nuclear dump project | L'Actualité |
| September-04-17 | CNSC completes review of disposal facility draft EIS | World Nuclear News |
| September-06-17 | 'That's how reconciliation works': Why Ottawa pressed pause on Ontario's nuclear waste dump, | TVO (related) |
| September-21-17 | L'abandon du projet de Chalk River est réclamé – Projects to Abandon at Chalk River is Claimed | La Presse |
| October-02-17 | Opposition mounts to radioactive waste near Ottawa River | Inside Ottawa Valley |
| October-11-17 | Too Many Unanswered Questions ~ MRC Pontiac Opposes Chalk River Nuclear Dump | Pontiac Journal |
| October-27-17 | Les Laboratoires nucléaires canadiens réévaluent leur projet à Chalk River | Radio Canada |
| October-31-17 | Toujours <<beaucoup de preoccupations>> | Le Droit |
| November-03-17 | CNL to re-evaluate proposed disposal facility | Pembroke Observer |
| November-14-17 | CNL teams up with Chuck Commanda to build traditional birch bark canoe | Renfrew Today |
| November-27-17 | Revised schedule for Canadian repository | World Nuclear News |
| November-29-2017 | CNL needs more time for NSDF | North Renfrew Times |
| December-07-17 | Massive nuclear waste dump could be coming to Chalk River | Rabble |
| January-31-18 | Chalk River prepares for a disaster | Pontiac Journal |
| February-06-18 | Critics oppose plan to allow nuclear waste disposal near Ottawa River | Centretown News |

| Date | Article Title | Outlet |
|---|---|---|
| February-12-18 | Les Laboratoires nucléaires canadiens expliquent leurs projets | CHGA FM |
| February-12-18 | Déchets radioactifs à Chalk River | L'Aut' Journal |
| February-14-18 | They think we are idiots ? | Pontiac Journal |
| February-19-18 | Interview with Kurt Kehler and Meredith Brown | MATV CityLife |
| March-21-18 | CBC documentary on Chalk River NSDF debate | The Equity |
| March-25-18 | Épisode du dimanche 25 mars 2018 | Decouverte |
| March-30-18 | Environnement et lobby nucléaire au Canada | Mondialisation |
| April-06-18 | Anishinabek stand with Iroquois Caucus condemning decision for a radioactive dump at Chalk River licensed for ten years | The Manitoulin Expositor |
| April-11-18 | NSDF: Threat To Drinking Water On National Television | Pontiac Journal |
| April-18-18 | Environmental Assessment to Continue Through 2018 on Near Surface Disposal Facility in Chalk River | Star 96.7 |
| April-23-18 | Schacherl: Canada has a dirty, big nuclear secret at Chalk River | Ottawa Citizen |
| April-23-18 | Déchets nucléaires: 40 groupes demandent une enquête internationale | The Canadian Press |
| April-23-18 | The Current for April 23, 2018 | CBC Radio – The Current |
| April-23-18 | Canada mishandling nuclear waste plans warn First Nations, environmental groups | The Canadian Press |
| April-23-18 | First Nations plead for help to stop government plan to close nuclear lab | APTN National News |
| April-25-18 | Canada mishandling nuclear waste plans warn First Nations, environmental groups | Pembroke Observer |
| April-26-18 | Les maires du Grand Montréal s'opposent au projet de dépotoir nucléaire de Chalk River | Radio Canada |
| April-26-18 | Chalk River: 82 municipalités s'opposent | The Canadian Press |
| April-26-18 | Montreal-area mayors unanimously oppose nuclear waste dump in Chalk River, Ont. | CBC |

| Date | Article Title | Outlet |
|---|---|---|
| April-28-18 | Letter to the editor -<br>April 24, Raisa Patel: Canada mishandling nuclear waste plans warns First Nations, environmental groups | Pembroke Observer |
| May-14-18 | Arnprior reeve defends nuclear waste disposal site plan | Inside Ottawa Valley |
| May-June-18 | Nuclear Waste Dump on the Ottawa River | Madawaska Highlander |
| August-21-18 | First Nations, citizen groups call for auditor general to investigate nuclear waste disposal | APTN National News |
| August-22-18 | Pourquoi l'Installation de gestion des déchets près de la surface? | All in a Day with Allan Neal |
| August-23-18 | Chalk River Labs the Focus of Nuclear Safety Commission Meeting in Ottawa | Star 96.7 |
| August-24-18 | Experts urge Canada to stop producing nuclear waste until new disposal policy | TechnoStalls |
| September-07-18 | Projet de dépotoir radioactif à Chalk River au Canada : expertise du projet par l'ACRO | ACRO –Association pour le contrôle de la radioactivite dans l'ouest |
| October-01-18 | Concern over nuclear waste increases following September 21 tornadoes | MyFm Pembroke |
| October-05-18 | Make nuclear waste site Ottawa Valley election issue : coalition | Arnprior Chronicle-Guide |
| October-15-18 | CNL responds to Ottawa Valley coalition's claims –Lettter to the Editor | Arnprior Chronicle-Guide |
| October-15-18 | CNL responds to Ottawa Valley coalition's claims –Lettter to the Editor | Inside Ottawa Valley |
| October-19-18 | Ottawa Votes : Most Ottawa candidates oppose nuclear dump at Chalk River | Ottawa Citizen |
| November-05-18 | Nuclear waste disposal plan can't be good news –Letter to the Editor | Arnprior Chronicle-Guide |
| November-05-18 | Concerned citizens counter CNL's claims – Letter to the Editor | Arnprior Chronicle-Guide |
| March-27-19 | Deep River to study impact of NSDF on community | MyFm Pembroke |
| April 08-19 | How safe is nuclear waste? | Canada's National Observer |

| Date | Article Title | Outlet |
|---|---|---|
| May 03-19 | CNL Letter to the Editor: Re. What this climate crisis can teach us | CNL to Aylmer Bulletin |
| May 08-19 | No risk to NSDF from river flooding (Page 8) | North Renfrew Times |
| May 13-19 | Radioactive waste management sound in Canada, says Crown agency head | The Hill Times |
| May 27-19 | Parliament should investigate what Canadians have gotten for their nuclear waste fundings | The Hill Times |
| May 29-19 | Decommissioning of NPD at Chalk River could start next Summer | Pembroke Today |
| June 06-19 | Nuclear Dump Meeting | Aylmer Bulletin |
| June 10-19 | Fight over Ottawa River nuclear waste dump getting political, but Liberals downriver standing behind the project - or staying quiet | The Hill Times |
| June 19-19 | Many Canadians concern with "gigantic" Chalk River radioactive waste mound, says reader (Page 8) | The Hill Times |

See Appendix P for an example of a NSDF news article.

See Appendix Q for an example of a “detect and correct” response from CNL.

### 3.13 Document Repository

Canadian Nuclear Laboratories made four hard copies of the draft EIS publicly available, functionally creating a document repository for the draft EIS volumes. One hard copy of the draft EIS was available at the Deep River Public Library, two copies were made available through two separate branches of the Laurentian Hills Public Library and a French version of the draft EIS was made available through the Rapides-des-Joachim municipal office. CNL commits to providing hard copies of the final EIS in the same locations.

### 3.14 Release of Documents

When requested, supporting documents were provided to different groups and individuals to aid in their review of the draft EIS. Upon submission of the draft EIS, an email was sent to more than 200 individual and group stakeholders offering additional information on the NSDF project upon request.

To ease accessibility and transparency of the project, supporting documents were uploaded onto the NSDF pages of www.cnl.ca. These technical documents are available for any interested member of the public to download.

Stakeholder(s): Members of the public, host communities.

Technical support documents: https://www.cnl.ca/en/home/environmental-stewardship/nsdf/november-2018-project-update/supporting-documents.aspx

## 3.15 Participant Funding

The CNSC offered participant funding through its Participant Funding Program (PFP) to assist members of the public, Indigenous groups and other stakeholders in participating in the Environmental Assessment, licence application review and Commission hearing processes for the CNL NSDF project. Recipients provide value-added and relevant information that contributes to a better understanding of the anticipated effects of the project. Recipients also participate in the CNSC's proceedings for this project. The CNSC's decision on who has received funding to participate is available in the CNSC PFD 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 PFP is relevant to CNL's stakeholder engagement efforts as it identifies individuals or groups who have expressed interest in the 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 project.

# 4. FEEDBACK

The engagement activities discussed in this section provide CNL with an opportunity for dialogue with public on their concerns with respect to the NSDF Project. This feedback helps CNL gauge public views and points out areas where CNL can improve elements of the NSDF Project or EIS on current project information, alternative means, valued components, spatial and temporal boundaries and the follow-up monitoring program. This section summarizes the key themes that have been raised during outreach activities, including web inquiries and formal feedback on the draft EIS. It also demonstrates how CNL has responded and, when possible, incorporated this feedback into the development and design of the NSDF Project as well as the final EIS. Additionally, the project has posted these key themes and how they will be incorporated into the final EIS on the NSDF Project webpage.

Table 4-1**Error! Reference source not found.** presents a comparison of the themes identified through public engagement (informal feedback) and those identified through formal public comments during review of the draft EIS. At a high level, public engagement feedback tends to be informal and based around general areas of interest such as “what and why,” whereas the formal feedback centred more on technical aspects of the NSDF Project such as “how.”

**Table 4-1: Theme Comparison**

| Themes from Public Engagement | Themes from Formal Public Comment Period on Draft EIS |
|---|---|
| | Justification of the Project |
| Waste acceptance criteria | Waste Inventory |
| Origins of material for disposal in the NSDF facility | |
| Engineering containment mound construction materials | Design/engineering |
| | Long-term accountability |
| | Alternative means assessment (including site selection) |
| Future impact of natural disasters and climate change on the Project | Environmental events (e.g., flooding, earthquakes) |
| Seismic qualifications vs. seismic activity | |
| Water quality monitoring for groundwater and the Ottawa River | Protection of the Ottawa River |

## 4.1.1 Informal Public Engagement Feedback

This section summarizes informal feedback received during NSDF Project public engagement outreach activities. Section 5 of the EIS describes the environmental effects. Table 4-2 provides a summary of relevant environmental effects, describing the extent to which this feedback was incorporated into the design of the project and demonstrates how the public influenced the scope of the environmental assessment.

**Table 4-2: Summary of Interest Raised During Public Engagement Activities that Influenced the Scope of the Environmental Assessment**

| Interest Expressed During Public Engagement | Incorporation of Public Key Issues into the Final EIS |
|---|---|
| Information on monitoring air contamination, including dust. | The monitoring program proposed for air quality includes monitoring of fugitive dust emissions and is described in Section 5.2.1. Fugitive Dust Monitoring is captured through the implementation of CNL's procedure for *Management and Monitoring of Emissions* (CNL 2018), which includes operational control monitoring and air verification monitoring. In addition, the *Dust Management Plan* (AECOM 2018) to be implemented for the NSDF Project will include information on dust mitigation and monitoring for the NSDF Project. |
| Potential for changes in groundwater quality to affect uses downstream of the Engineered Containment Mound (ECM) | Potential changes in groundwater quality from the NSDF Project were evaluated in the hydrogeology assessment described in Section 5.3.2 and included potential changes from construction activities (e.g., erosion and blasting activities), changes from treated effluent discharge from the Waste Water Treatment Plant (WWTP) and leakage from the ECM during the post-closure phase following decommissioning of the WWTP. |
| Treatment of leachate and waste water | The design of the NSDF includes capture and treatment of waste water (including leachate) from the ECM as described in Section 3.4.2. The potential changes in groundwater and surface water quality, as well as the ambient radioactivity in the environment, as a result of the treated effluent discharges are discussed in Sections 5.3.2, 5.4.2 and 5.7 respectively. |
| Potential leakage of leachate from the ECM | Potential leakage of leachate from the ECM during operations will be mitigated through the design and implementation of a composite base liner system, a leachate detection system and a leak collection system as discussed in Section 3.4.1. Potential leakage from the ECM during the operations and post-closure phases is considered in the hydrogeology assessment (Section 5.3.2) as well as the human and ecological health assessments (Sections 5.7 and 5.8). |
| Long-term monitoring of groundwater | A conceptual long-term monitoring program for the NSDF Project as it relates to groundwater has been developed and evaluated in the hydrogeology assessment described in Section 5.3.2. A detailed monitoring program will be provided in the follow-up monitoring report to be submitted as a part of the license application. |

| Interest Expressed During Public Engagement | Incorporation of Public Key Issues into the Final EIS |
|---|---|
| Potential for contamination in the Ottawa River from the NSDF Project. | The original spatial boundaries of the surface water assessment in the draft EIS were selected to include consideration of potential effects to the Ottawa River. As described in Section 5.4.2 surface water quality modelling was completed to estimate contaminant concentrations within the Perch Creek basin, which flows directly into the Ottawa River. Meeting effluent discharge targets within the Perch Creek basin is considered to be protective of the Ottawa River. In response to comments received from the public, the Regional Study Area for surface water in the final EIS was expanded further to include a reach of the Ottawa River extending 8 km downstream of the CRL site. Additionally, in response to public concerns, 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. |
| Effects to fish from potential for contamination in the Ottawa River from the NSDF Project. | The original spatial boundaries of the surface water assessment in the draft EIS were selected to include consideration of potential effects to the Ottawa River. As described in Section 5.4.2 surface water quality modelling was completed to estimate contaminant concentrations and compared to aquatic quality guidelines. As discussed in Section 5.5 meeting aquatic quality guidelines within the Perch Creek and Perch Lake Watershed is considered to be protective of fish in the Ottawa River. In response to comments received from the public, the Regional Study Area for surface water in the final EIS was expanded further to include a reach of the Ottawa River extending 8 km downstream of the CRL site. Therefore, effects to fish within the Regional Study area is consider in the human and ecological health assessments (Sections 5.7 and 5.8). |
| Potential for radioactivity from gases from the capped facility | Potential changes in air quality from the NSDF Project were evaluated in the human and ecological health assessment (Sections 5.7 and 5.8) during the pre-closure and post-closure phases. |
| Inclusion of migratory birds in the assessment | Because of their ecological importance and because they are protected by federal legislation (*Migratory Birds Convention Act, 1994*), the suite of migratory birds with the potential to be affected by the NSDF Project was included as a terrestrial biodiversity VC in Section 5.6. Some individual migratory bird species that are federally listed species at risk were also included as VCs assessed at the species level. |
| Inclusion of bird and other species at risk in the assessment | The species-level assessment in Section 5.6 focused on species identified on Schedule 1 of the federal *Species at Risk Act*. Species at risk evaluated in the assessment include Canada warbler, eastern whip-poor-will, eastern wood pewee, wood thrush and golden-winged warbler, bats, Blanding's turtle, eastern milksnake and monarch butterfly. Most of the species-level VCs identified for the terrestrial biodiversity assessment are also useful indicators for broader groups of species. |

| Interest Expressed During Public Engagement | Incorporation of Public Key Issues into the Final EIS |
|---|---|
| Concern over the conversion of terrestrial habitat | Sections 5.6 includes an evaluation of the change in habitat availability and habitat distribution in the vicinity of the Project is completed for each of the wildlife species selected as VCs. |
| Concern with road mortality to Blanding's turtle and what can be done to reduce this risk | Increased risk of injury/mortality of Blanding's turtle on roads is a key interaction evaluated as part of the residual effects assessment in Section 5.6. Mitigation to be implemented to reduce this risk is described and monitoring programs are recommended for Blanding's turtle. |
| Indigenous and non-Indigenous interest expressed in relation to potential effects on fish and fish harvesting due to concerns of potential contamination or radioactive seepage into Perch Creek, the Ottawa River and other waterbodies from the NSDF Project. | The original spatial boundaries of the land use assessment in the draft EIS were selected to include consideration of potential effects on water quality and include the aquatics study areas. CNL continues to monitor the aquatic environment extensively, specifically Perch Creek. The NSDF Project has used recent modelling to understand the potential for effects within the Perch Creek basin. Existing land use with regards to fishing is described in Section 5.9.4.1.3.2 (outdoor tourism and recreation) and existing traditional land use with regard to fishing is described in Section 6.4.4.1. Potential effects on these VCs are assessed in Section 5.9.5 and Section 6.4.5. CNL conducts monitoring of fish in the Ottawa River for radioactive contamination as part of its Environmental Monitoring Program. In response to concerns received the Regional Study Area for the land use assessment in the final EIS was expanded further to include a reach of the Ottawa River extending 8 km downstream of the CRL site. To address potential future safety concerns of Indigenous peoples, the Post Safety Assessment (PostSA) explicitly modelled a Self-Sufficient Indigenous Group receptor and is summarized in Section 6.6. |
| Interest expressed in relation to potential effects on recreational activities (i.e., boating and swimming) due to concerns of potential contamination or radioactive seepage into the Ottawa River and other waterbodies from the NSDF Project. | The land use assessment included outdoor tourism and recreation as a VC. The spatial boundaries for the land use assessment include consideration of potential effects to the aquatic environment, and specifically include the aquatics study areas. CNL continues to monitor the aquatic environment extensively. The NSDF Project has used recent modelling to understand the potential for effects within the Perch Creek basin. CNL conducts environmental monitoring for tritium and other radionuclides in environmental media including fish from the Ottawa River. Outdoor tourism and recreation is addressed in Section 5.9.4.1.3. In response to comments received from the public, the Regional Study Area for the land use assessment in the final EIS was expanded further to include a reach of the Ottawa River extending 8 km downstream of the CRL site. Additionally in response to public concerns, 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. |

| Interest Expressed During Public Engagement | Incorporation of Public Key Issues into the Final EIS |
|---|---|
| Will consideration be given to provide jobs or buy material, such as sand that could be delivered by barge, to the closest full-time residents to the site, in Sheenboro QC? | Industries throughout the County of Renfrew and the Ottawa area in Ontario and the Region of Outaouais in Quebec, are anticipated to supply the NSDF Project with many of the required goods and services (e.g., manufacturing, wholesale, transport) be. CNL will competitively procure material and services for the NSDF Project (see Section 5.10.6.2.1).<br><br>The construction workforce is anticipated to be sourced from firms within the County of Renfrew and the Ottawa area in Ontario and the Region of Outaouais (which includes the Municipality of Sheenboro and City of Gatineau) in Quebec. CNLs employment opportunities that may arise due to NSDF Project activities will be posted on the vendor portal at www.cnl.ca website (see Section 5.10.6.2.1). |

See Appendix R for the complete table of informal feedback and issued responses.

### 4.1.2 Formal Public Comments Feedback

In addition to the informal feedback that the public engagement outreach activities offer, the environmental assessment process provides an opportunity for formal feedback from the public. This process began with the formal public and Indigenous comment period on the NSDF Project Description in May 2016. Followed by a formal public and Indigenous comment period on the draft EIS for the proposed NSDF Project from May 2017 until August 2017. Comments from members of the public, Indigenous peoples and NGO's on the draft EIS were consolidated by the CNSC (as the responsible authority) and received by CNL. CNL prepared responses to the formal comments which will be submitted to the CNSC and posted on the CEAA Registry under project #80122. Through analysis of all formal public comments, key themes were identified. Table 4-3 includes a summary of the key themes and how they were incorporated into the final EIS.

**Table 4-3: Incorporation of Public Key Issues into the Draft Environmental Impact Statements**

| Themes from Formal Public Comment Period on Draft EIS | Incorporation of Public Key Issues into the Final EIS |
|---|---|
| Justification for the Project | Section 2.3 (Purpose of the Project) has been revised to improve the clarity on the justification for the project. The development of a NSDF for solid low-level radioactive waste at the CRL site will reduce potential risks associated with Atomic Energy of Canada Limited's (AECL) 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. |

| Themes from Formal Public Comment Period on Draft EIS | Incorporation of Public Key Issues into the Final EIS |
|---|---|
| Waste inventory | The original inventory proposed for NSDF Project in the draft EIS 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 EIS (Section 3.3), as well as supporting modelling and assessments such as the PostSA, and the revised Waste Acceptance Criteria.<br><br>Consistent with International Atomic Energy Agency 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 ECM design life of 500 years has been established to meet the required time period to allow for radiologic decay of the waste inventory.<br><br>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.<br><br>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 WWTP.<br><br>The reference inventory identified in Section 3.3.1 establishes a representative radionuclide inventory by extrapolating waste already currently in storage, as well as waste forecasts from environmental remediation projects and decommissioning projects data to an assumed total volume of the NSDF at time of closure. All waste that is expected to be generated is meticulously described, or “characterized” before its generations to ensure the cumulative total inventory of NSDF is tracked against the reference inventory. |

| Themes from Formal Public Comment Period on Draft EIS | Incorporation of Public Key Issues into the Final EIS |
|---|---|
| Design/engineering | At the time of submission of the draft EIS, CNL had completed the preliminary design of the NSDF. Since then, CNL has continued development of the design of the ECM, WWTP and supporting facilities. While the overall design has generally remained the same, several improvements have been made in many cases as a result of the decision to include only low-level radioactive waste, but also in response to valuable public and Indigenous input. An increase in detail and explanation of the ECM and wastewater treatment plan has been included in Section 3. CNL has also made the NSDF Design Description available for download on the NSDF Project website as well as summarized the intended operation of the NSDF in the YouTube video "NSDF Responsible Water Management".<br><br>A number of comments were received questioning CNL's confidence in the 550-year design-life of the ECM, a key component of which is are the High Density Polyethylene Geomembranes. 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.<br><br>To ensure the integrity of the High Density Polyethylene materials and quality of installation, the project will apply a Construction Quality Assurance program. The Construction Quality Assurance 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. |
| Long-term accountability | As discussed in updates to Section 3, as the owner of the CRL site and of the associated liabilities, AECL - a federal Crown corporation - will ensure that the site is safely managed and controlled for as long as necessary. |

| Themes from Formal Public Comment Period on Draft EIS | Incorporation of Public Key Issues into the Final EIS |
|---|---|
| Alternative means assessment (including site selection) | The revised EIS will have an expanded Alternative Means in Section 2 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.<br><br>**Why the Chalk River site?**<br><br>CRL 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.<br><br>**Why the East Mattawa Road Location on the Chalk River Site?**<br><br>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.<br><br>Placing the NSDF at the EMR site allows us to consolidate it within an area that is currently affected by historic and ongoing 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.<br><br>**Why a near surface disposal facility?**<br><br>Near surface disposal facilities, as proposed for the NSDF project, are suitable for the disposal of low-level waste as noted by International Atomic Energy Agency guidance. An ECM 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. |

| Themes from Formal Public Comment Period on Draft EIS | Incorporation of Public Key Issues into the Final EIS |
|---|---|
| Environmental events (e.g., flooding, earthquakes) | Section 10 (Effects of the Environment) 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 analysed in the safety assessments, considering both during the operations phase: Safety Analysis Report and PostSA.<br><br>***Earthquakes*:** The analysis has shown that the design of the ECM is robust and can withstand a 1:10,000 year earthquake.<br><br>Design changes to the ECM 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 ECM.<br><br>***Tornadoes*:** The design of the WWTP has been made more robust to withstand potential tornadoes and high winds.<br><br>***Precipitation***: The design basis increases the capacity for the collection tanks for the WWTP to accommodate for 100-year back to back storm events.<br><br>***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 CRL site or its operations during the 2019 high-water conditions, nor would it have impacted the NSDF. |

| Themes from Formal Public Comment Period on Draft EIS | Incorporation of Public Key Issues into the Final EIS |
|---|---|
| Protection of the Ottawa River | As discussed in Section 3.0 (Project Description), 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 waste water during operation of the ECM. CNL has also summarized the intended operation of the NSDF in the YouTube video "NSDF Responsible Water Management".<br><br>A state of the art WWTP has been designed to remove both radiological and chemical contaminants. CNL has performed pilot testing of the proposed wastewater treatment process utilizing simulated waste water 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.<br><br>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 EIS. In response to concerns received the Regional Study Area for the land use assessment in the final EIS was expanded further to 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.<br><br>Lastly CNL's environmental and effluent monitoring program will be expanded to include the NSDF WWTP effluent, surface water in the Perch Lake Basin, and groundwater to confirm performance of the ECM and ongoing monitoring of the Ottawa River. |

See Appendix S for the analysis of formal public comments on the draft EIS.

Through the wide range of communications strategies undertaken, the NSDF project has continued to collect valuable input from stakeholders on current project information, alternative means, valued components, spatial and temporal boundaries, follow-up monitoring program and has incorporated informal and formal feedback into the final EIS. The project is continually developing and strives to maintain transparency and open communication with the general public as the project moves forwards. Feedback will continue to be tracked, collected and incorporated (when possible) as a part of the engagement activities into the future.

## 4.2 Feedback on Valued Components

Section 5.1.2 of the EIS outlines the process that was followed to develop the list of VCs. The list of VCs was presented on poster boards at the 2016 October public information sessions, as well as an updated list at the 2017 April public information sessions. These poster boards are also on CNL's external website.

2016 October: http://www.cnl.ca/site/media/Parent/PSA-NSDF-Eng.pdf

2017 April: http://www.cnl.ca/site/media/Parent/NSDF_Posters_Apr_2017(1).pdf

The informational poster boards also included CNL contact information for feedback on VCs.

In general, organically generated feedback from public information sessions indicated that there are certain areas of interest from the public that correspond to what the NSDF Project has determined to be VCs so far. Specifically, there have been comments and questions that unambiguously express value in the Ottawa River (water quality) and the Blanding's turtle (Emydoidea blandingii) as VCs. The Ottawa River is represented in the EIS through the VC surface water quality (Section 5.4.2.2). In addition to assessing surface water quality, the environmental pathway of surface water, which leads to an assessment of human health effects and other representative VCs, including aquatic biota, fishing and residents use and enjoyment of land.

The Blanding's turtle is represented in the EIS through effects on species at risk in the terrestrial environment (Section 5.6). This species further acts as an indicator species representing a larger pool of reptile species that use a variety of similar wetland habitats.

## 4.3 Feedback on Spatial Boundaries

Section 5.1.3.1 of the EIS outlines the process that was followed to develop the spatial boundaries.

The spatial scales were developed to respect the Generic EIS Guidelines (CNSC 2016). Based on feedback received from the public, CNL has expanded the Regional Study Area for appropriate disciplines to include a portion of the Ottawa River (i.e., roughly 8 km downstream of the Ottawa River to Harrington Bay). The expansion of the Regional Study Area will assess the concerns of the public regarding the effects of the NSDF Project on surface water quality and aquatic biodiversity along the Ottawa River.

## 4.4 Feedback on the Monitoring and Follow-up Programs

Section 5.1.9 of the EIS describes at a conceptual level the follow-up monitoring programs that will be developed to verify effects predictions from the EIS. A plan for follow-up monitoring detailing environmental components that will be monitored, locations, parameters and frequency will be developed. The Follow-up Monitoring Plan will be submitted to the CNSC for review and acceptance.

Public comments received from review of the draft EIS included requests to participate in review of the follow-up monitoring programs. CNL will be seeking feedback from the public on the follow-up programs and will consider all comments received. Results of monitoring and follow-up will be communicated with the public through CNL's Public Information Program.

## 5. PLANNED FUTURE ENGAGEMENTS

The summary presented within this Stakeholder Engagement Report is based on engagement activities up to 2019 June 30. CNL has additional engagements for the remainder of 2019 and looking ahead to 2020. Planned future engagements are described by quarter.

### Fiscal Year 2019/20 - Second Quarter (Q2)

In Q2 (2019 July 01 – 2019 September 30) there are a number of activities and events focussed on continuing to address the feedback and areas of interest that were identified after the submission of the draft EIS.

CNL will provide updates to the public, local elected officials, industry and interest groups, as well as continuing engagement with Indigenous groups, detailed in the NSDF Indigenous Engagement Report 232-513130-REPT-001.

Engagements in Q2 that will provide general information to external stakeholders include: a dinner meeting with local elected officials, to be held in Pembroke in July; site visits with the Canadian Ecology Centre (a program for high school students); the summer edition of the community newsletter – CONTACT; and, a site tour with visitors from the Nuclear Waste Management, Decommissioning and Environmental Restoration Conference. Internal stakeholders will also be updated at the All Staff meeting in September and through internal newsletter content.

Engagements in Q2 that provide specific information related to the feedback from the submission of the draft EIS will include the following:

1. Breakfast briefing for interested members of the public in Deep River concentrating on the seismic capacity of the ECM and liquefaction mitigation, in response to two of the key issues raised, design/engineering details and environmental effects.
2. Public webinar, titled *Overcoming Engineering Challenges*, in response to two of the key issues raised, design/engineering details and environmental effects.

### Fiscal Year 2019/20 - Third Quarter (Q3)

In Q3 (2019 October 01 – 2019 December 31) CNL will submit the EIS and revised supporting documents to the CNSC. Activities in this quarter will support this submission, while continuing to respond to the original feedback and key issues put forth on the draft EIS.

Engagement activities focussed on supporting the submission to the CNSC will include: social media posts, updated web content, updated presentation content and notification of CNL's stakeholder list.

Engagements in Q3 that will highlight particular aspects of importance include:

1. ESC Meeting # 41. At this meeting the NSDF Project will provide current information on potential impact and mitigation measures for species at risk.
2. Breakfast briefing in Deep River for interested members of the public.
3. Public webinar.

**Fiscal Year 2019/20 - Fourth Quarter (Q4)**

Looking into 2020, CNL has plans to have a 3D model of the proposed NSDF located in Laurentian Hills for members of the public to view. Regular engagement activities such as Breakfast Briefings in Deep River and quarterly webinars will continue to focus on particular issues of interest to the public.

Any key information updates, regulatory milestones on the EIS submission or project will be shared with the public through email and through the website.

CNL will also continue to share information in more interactive ways, such as video and infographics.

Engagements in Q4 (2020 January 01 – 2020 March 31) that will highlight particular aspects of importance include:

1. ESC Meeting # 42. At this meeting the NSDF Project will provide an update.
2. Breakfast briefing in Deep River for interested members of the public.
3. Public webinar.

**Fiscal Year 2020/21**

To facilitate the release of the EIS, Q1 (2020 April 01 – 2020 June 30) will concentrate on the direct interaction with intervenors through open and transparent dialogue which will include the review and disposition of their comments as well as an option of one-on-one meetings and discussions.

In preparation of the two-part CNSC Commission Hearing that is anticipated to take place in Q3 (2020 October 01 – 2020 December 31) and Q4 (2021 January 01 – 2021 March 31), CNL will continue to engage the public through a variety of mechanisms demonstrating transparency in the process and access to information. CNL will continue to be pro-active with the media and engaged stakeholders to communicate the benefits of the project and to correct errors. CNL will promote all milestones and significant events for the project through public information sessions, site tours, meetings of the Environmental Stewardship Council and engagement with Indigenous peoples. CNL will continue to use social media to engage the public featuring key milestones and project information. Information shared leading up to the two-part Hearing will focus on how individuals and groups can participate.

Engagements in 2020/21 will highlight particular aspects of importance include:

1. ESC Meetings. At these meetings the NSDF Project will provide an update.
2. Breakfast briefings in Deep River for interested members of the public.
3. Public Webinars.
4. Renfrew County Municipal Council meetings – project updates
5. MRC Pontiac Municipal Councils – project updates
6. Stakeholder updates via email, newsletters and advertising.

## 6. CONCLUSIONS

Methods employed to date have helped to inform, educate and discuss the NSDF Project with stakeholders, and have enabled the public to provide valuable feedback into the Project. CNL will continue stakeholder engagement efforts to support growth in awareness and understanding of the NSDF Project.

There will always remain those in the public whose perception of nuclear waste remains negative and whose perception of the actual risk posed by the NSDF will remain grossly out of skew. CNL understands that it is an impossible task to convince all publics that the NSDF represents a safe and modern facility for the management of low level nuclear liabilities at CNL sites. This however will not stop CNL from continuing to educate the public on the safe management of nuclear waste now and into the future, because it is the right thing to do.

CNL makes it a priority to build public awareness, understanding and a supportive appreciation of the laboratories value and relevance to Canadians. CNL works to ensure that the general public, Indigenous peoples, news media, and other stakeholders are informed about the ongoing activities at all CNL sites. While there is a stigma/fear of nuclear present in the general public, CNL continues to develop relationships and programs, as a part of the Public Information Program, to educate different demographics of the population about the perceived risk vs the actual risk of nuclear.

CNL has proactively addressed the key issues raised by stakeholders, in many cases resolving those concerns. However, there remain persistent negative issues including the perception of a potential negative effect of the NSDF Project on the Ottawa River and other off-site effects. Follow-up monitoring will be used to verify predictions made in the final EIS, which will be communicated through CNL's Public Information Program. CNL will continue with these efforts to inform the public on the NSDF Project and address the perception of risk.

Continuing to provide information as it becomes available will encourage transparency, and further feedback, which can assist CNL in understanding and incorporating stakeholder perspectives into Project planning, future communications and the environmental assessment process.

## APPENDIX A NSDF MEETING AGENDA EXAMPLE

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

UNRESTRICTED

**Chalk River Laboratories (CRL) Site Visit: Renfrew & Pontiac Counties Elected Officials Information Day**

**Date: Friday, February 15, 2019**

| Time | Details | Lead |
|---|---|---|
| 0930 hrs. | Arrive at Chalk River Laboratories Outer Gate and proceed to the Brockhouse Building (Building 700) for registration | Met by CNL escorts<br>• Nicole LeBlanc<br>• Lauren Kinghorn |
| 0945 – 1000 hrs. | CRL Cafeteria:<br>• Welcome, introductions and safety brief<br>• President & CEO, AECL - Welcome | • Patrick Quinn<br>• Richard Sexton |
| 1000 – 1015 hrs. | CNL Business Update | • Mark Lesinski |
| 1015 – 1030 hrs. | CNL Supply Chain | • Chad Charbonneau |
| 1030 – 1200 hrs. | Site Walking Tour<br>Site Revitalization/Capital Projects | • Steven Innes |
| 1200 – 1230 hrs. | Lunch – Video presentations | |
| 1230 – 1315 hrs. | Near Surface Disposal Facility (NSDF) Update<br>Nuclear Power Demonstration (NPD) Update | • Meggan Vickerd<br>• Kristan Schruder |
| 1315 – 1400 hrs. | Alpha Therapy<br>Small Modular Reactors (SMR) Introduction | • Joanne Ball<br>• Gina Strati |
| 1400 – 1500 hrs. | CRL Site Walking Tour | • Philip Kompass |
| **1500 hrs.** | **Depart site** | |

**Reminders:**

- Photo taking is restricted.
- Chalk River Laboratories is a non-smoking site. Please smoke only in designated areas.
- Advise of severe allergies, pregnancy or medical conditions / devices.
- Note: There are food and drink restrictions in certain areas of the Laboratories. Please inquire with your escort.
- We encourage visitors to ask questions about CNL and our operations.

**Visitors**:

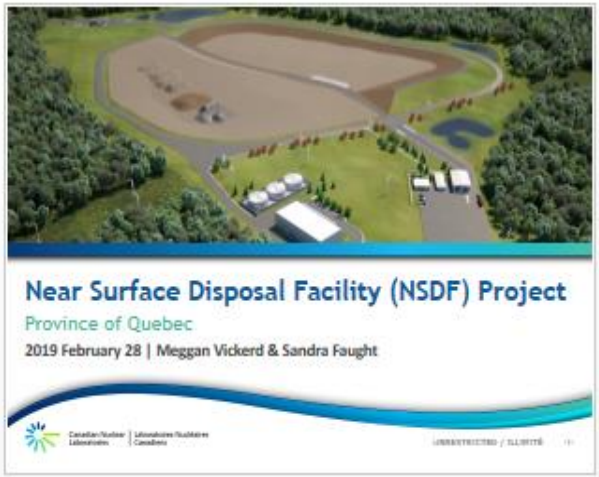
**City of Arnprior**
Mayor Walter Stack
Councillor Ted Strike
**City of Pembroke**
Mayor Mike LeMay
**L'Isle-aux-Allumettes**
Mayor Winston Sunstrum
**Municipality of Alleyn & Cawood**
Mayor Carl Mayer
Director General Isabelle Cardinal
Melinda Lafleur
**Municipality of Clarendon**
Mayor John Armstrong
**Municipality of Mansfield-et-Pontefract**
Director General Eric Rochon
Councillor Claudette Beland
Councillor Sandra Armstrong
**Municipality of Sheenboro**
Councillor Lorna Brennan Agnesi
Vince Agnesi
**Town of Deep River**
Mayor Sue D'Eon
Councillor Kathy Hughes
**Town of Laurentian Hills**
Councillor Brenda Blimkie
Councillor John Hoyle
Councillor Bruce Boucher
Deputy Mayor Anne Giardini
Mayor Jed Reinwald
**Township of Horton**
Councillor Tom Webster
**Town of Petawawa**
Mayor Bob Sweet
Councillor Theresa Sabourin
CAO Dan Scissons
**Township of Killaloe, Hagarty and Richards**
Mayor Janice Visneskie-Moore
**Township of Laurentian Valley**
Councillor Chris Pleau
**Township of Madawaska Valley**
Mayor Kim Love

**Visitors continued:**

**Township of North Algona Wilberforce**
Mayor James Brose
**Whitewater Region**
Councillor Chris Olmstead
Reeve Cathy Augier
**County of Renfrew**
Director of Development & Property Craig Kelley
Deputy Clerk Rosalyn Gruntz
CAO Paul Moreau
Director of Finance Jeffrey Foss
**MRC Pontiac**
Warden Jane Toller

**CNL Participants**:
*President & CEO, CNL*, Mark Lesinski
*President & CEO, AECL*, Richard Sexton
*Director, Corporate Communications*, Patrick Quinn
*Director, CNL Supply Chain*, Chad Charbonneau
*Manager, Lab Renewal Projects*, Steven Innes
*Director, NSDF*, Meggan Vickerd
*General Manager, NPD Closure Project*, Kristan Schruder
*Director, Environmental Radiation & Chemical Sciences*, Joanne Ball
*Director, Energy Program*, Gina Strati
*Section Head, Corporate Communications*, Philip Kompass
*Communications Officer, Corporate Communications*, Nicole LeBlanc
*Public Affairs Officer, Corporate Communications*, Lauren Kinghorn
*Vice President, Corporate Affairs*, Lou Riccoboni
*Vice President, Capital Projects*, Ted Preisig
*Vice President, Operations*, Phillip Boyle
*Vice President, Environmental Remediation Management*, Michael Gull

## APPENDIX B NSDF PRESENTATION EXAMPLE

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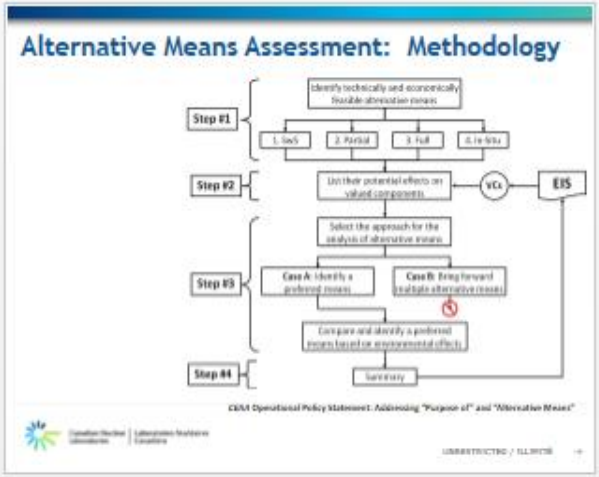


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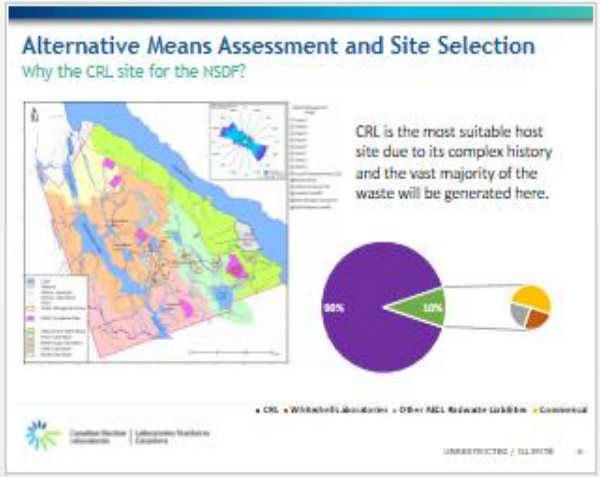


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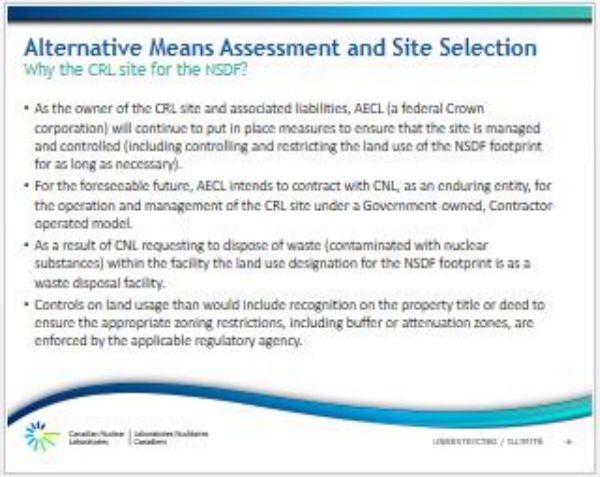


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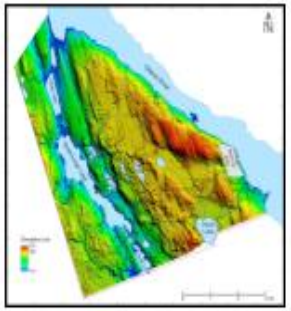
## Alternative Means Assessment and Site Selection

Why this location at CRL for the NSDF?

Groundwater flow and contaminant migration at CRL site has been studied for over six decades and the Perch Lake Basin is well understood.

Groundwater transit times from the proposed location to the Ottawa River are longer for than the alternative sites evaluated.

The selected site is preferable in terms of protection of species at risk.



CRL Site Topography and General Geology

7

Protection of the Ottawa River is as important to CNL and its employees, as it is to you, and is achieved by adherence to regulatory limits and guidelines established to protect human health and aquatic life. It is CNL's commitment to demonstrate the NSDF design can achieve these guidelines and limits now as well as for future generations.

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## NSDF Engineered Containment Mound


9

## NSDF Engineered Containment Mound

Communicating with the Public - YouTube

**Published on Feb 21, 2019**

Building a Near Surface Disposal Facility at Chalk River Laboratories will allow CNL to clean up the Chalk River site after decades of world class nuclear science and research. It will also allow CNL to revitalize to support the nuclear research needs of the Canadian government and the ever evolving science and technology needs of the Canadian and global nuclear industry.
But will it be safe?

The NSDF team has made sure the design of the facility is robust enough to handle anything nature throws at it, including heavy rain. The following video follows a raindrop through the facility. Watch as the drop comes into contact with the waste and then goes through a treatment process to ensure regulatory limits and guidelines are met prior to discharging thus ensuring the protection of the public and the environment.

The care and effort going into the design of the NSDF is reflective how CNL puts the environment and people first.

English
French

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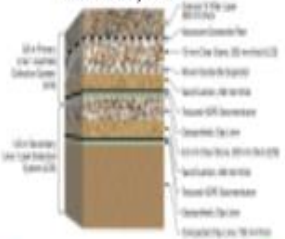
## Base Liner System and Cover System

**Final Cap & Cover System**

The Near Surface Disposal Facility design will provide **containment** for hundreds of years...

**Base Liner System**



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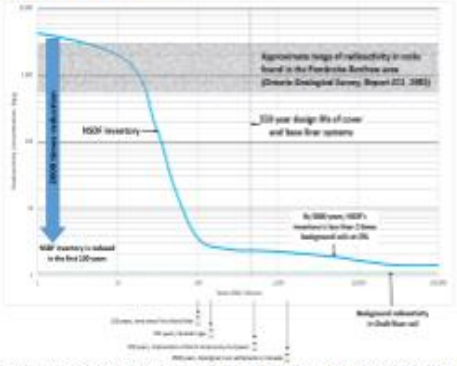
## NSDF Decay Curve




...allowing for radiologic decay of the waste inventory ensuring **negligible risk** to the public.

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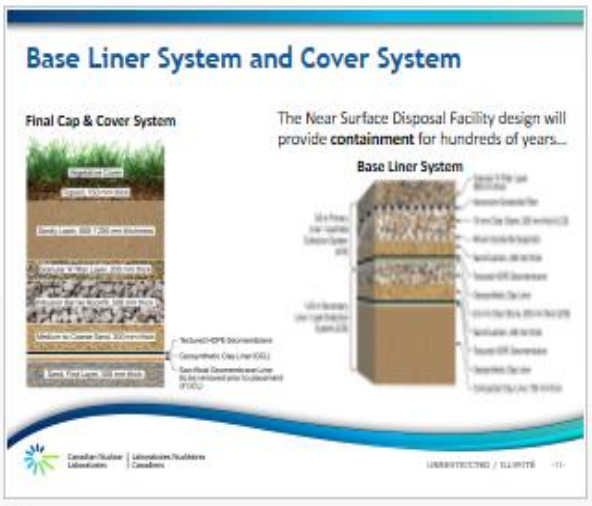

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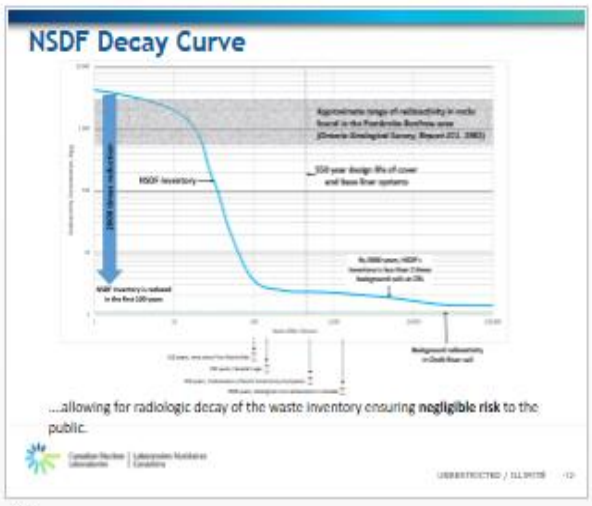

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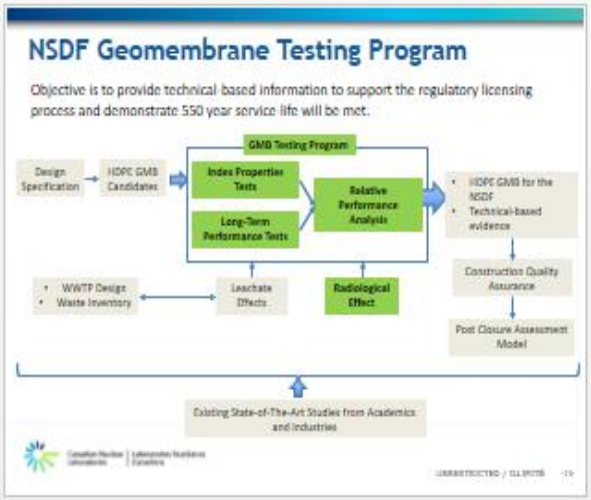

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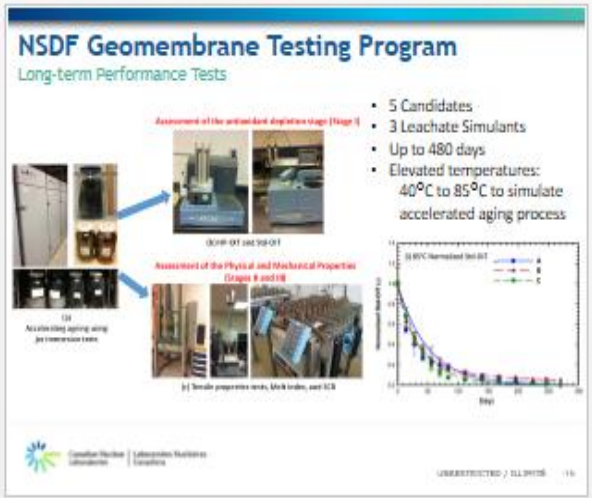

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## NSDF Geomembrane Testing Program

Relative Performance Analyses

Based on a comparison with 20 years database:

(a) the relative performance and the most suitable GMBs for the NSDF facility based on the available data, and

(b) The likelihood of these GMBs having a service-life that exceed the required 550 years based on the projected long-term performance for these GMBs.

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## NSDF Geomembrane Testing Program

Radiological Effect - Absorbed dose

- A reasonable absorbed dose limit for high-density polyethylene geomembranes is 2,600,000 Rad before significant impact is observed (*M.A. Phifer, et al, 2014*).
- Absorbed dose to NSDF's high-density polyethylene geomembrane material was calculate including radioactivity in the waste (gamma) and in the leachate (alpha/beta/gamma).
- Result of 11 Rad over 550 year design life which is well below the threshold where impact is expected.

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## Limiting Contamination in Effluent

Contact Water Management

- Contact water is water which comes into contact with potentially contaminated waste or fill materials.
- Contact water generation is limited through operational requirements for:
  - Package requirements for higher contamination waste,
  - Compaction of waste and soils thus reducing hydraulic conductivity,
  - Daily (soil or fixative) and interim covers (also known as sacrificial liners) to keep waste dry after placement,
  - Grading to avoid ponding, and
  - Minimizing the working face of the mound.
- Contact water and leachate is treated at the Wastewater Treatment Plant.
- The efficiencies of the treatment processes were confirmed by the pilot-scale test campaign.

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## Limiting Contamination in Effluent

Proposed Concentration Limits for Bulk and Packaged Waste

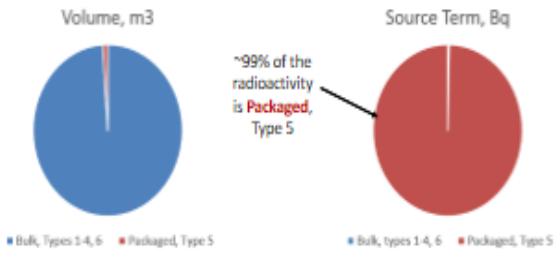
| Radionuclide | Bulk Waste Concentration Limit (Bq/g) | Packaged Waste Concentration Limit (Bq/g) |
|---|---|---|
| Alpha emitters | 100 | 400 |
| Long lived beta gamma emitters ($t_{1/2}$ > Cs 137) | 1,000 | 10,000 |
| Short lived beta gamma emitters ($t_{1/2}$ < Cs 137) | 10,000 | 10,000 |
| Tritium | 100,000 | 10,000,000 |

Purpose of packaging some waste is to reduce contact with precipitation thus mobility of radionuclides in higher concentration (e.g. tritium, Sr 90, Cs 137).

19

## Limiting Contamination in Effluent

Volume and activity comparison - bulk and packaged

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## Application of Industry Experience

Facilities Visited

Benchmarking trips to the following facilities for the purposes of gaining operational experience:

- Waste Control Specialists, Texas
- Energy Solutions Clive, Utah
- Environmental Management Waste Management Facility, Oak Ridge, Tennessee
- Environmental Disposal Facility, Hanford Washington
- Barnwell, South Carolina
- Port Hope and Port Granby, Ontario

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## Environmental Management Waste Management Facility, Oak Ridge, TN

- Disposal of bulk LLW
- 1.3 million $m^3$ capacity
- Liner – clay and HDPE
- Cover – dual layer HDPE
- Leachate collection pipes under liner, stored in tanks, shipped off-site for processing.

- Challenge: Management of contact water has been a problem.
- Lesson learned: Temporary covers brought in for use during the operational phase to reduce contact water.

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## Port Hope & Port Granby Long Term Waste Management Facilities, ON

- Management of bulk LLW
- 2 million $m^3$ planned total capacity
- Liner – dual layer HDPE over clay
- Cover – HDPE and clay layers
- Leachate treatment – collected, processed on-site

- Challenges: Excess volumes of surface and contact water generated.
- Lesson learned: Design for additional water storage capacity.

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## Application of Industry Experience

- The design of each facility is specific to its waste and environmental conditions.
- Industry practices can be used to optimize the design.
- Lessons applied to the design and operation of NSDF include:
  - Temporary or sacrificial cover incorporated into design during the operational phase to reduce contact water.
  - Design of equalization tanks have incorporated additional water storage capacity.
- Remain open to additional opportunities for optimization once in operations.

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## NSDF Project Timelines

NSDF PROJECT TIMELINE

25

cnl.ca/nsdf
cnl.ca/youtube
communications@cnl.ca

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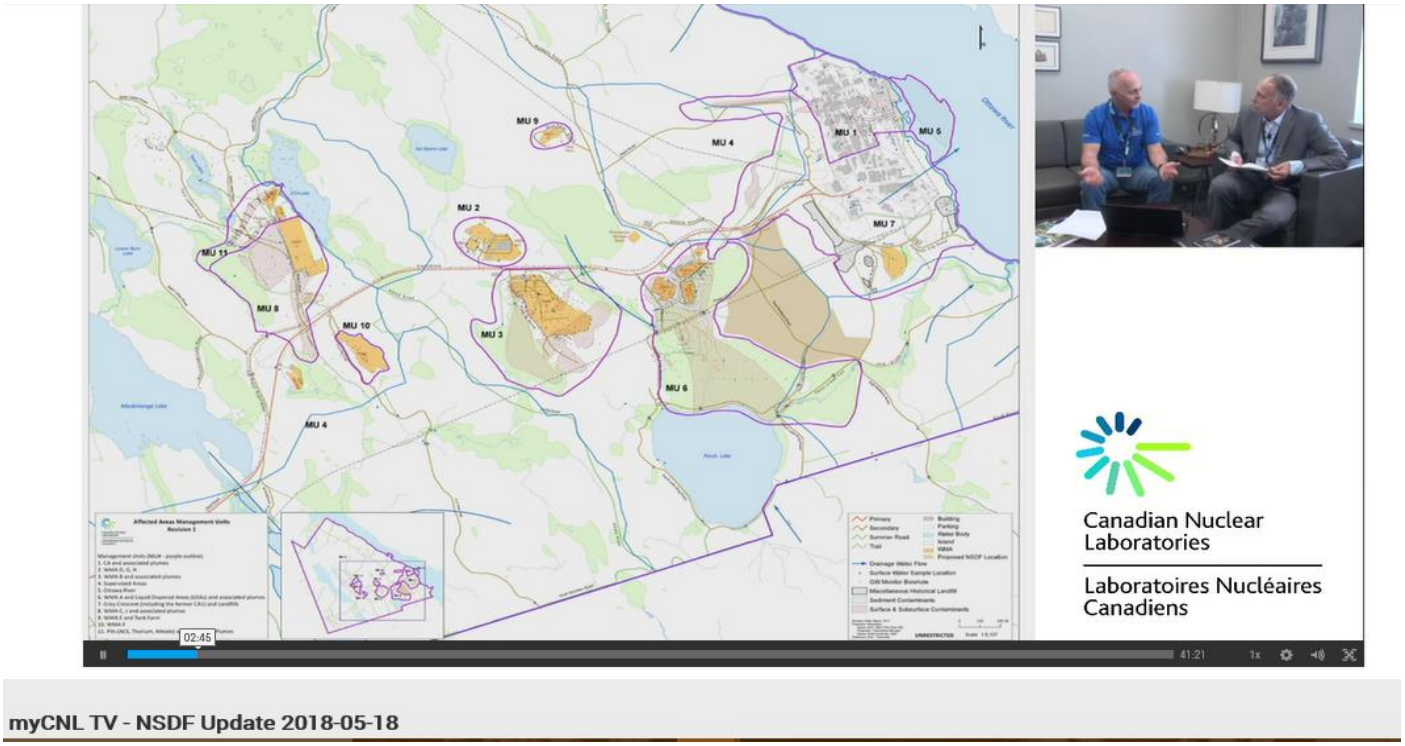
## APPENDIX C EMPLOYEE ENGAGEMENT EXAMPLES

MyCNL TV Session – May 18, 2018




myCNL TV - NSDF Update 2018-05-18

3-D Model Display


New Employee Orientation Slide

# Taking care of our waste...

## Near Surface Disposal Facility (NSDF)

- Enables revitalizing the laboratories through decommissioning of 100+ buildings and structures
- Safely disposes of low level radioactive waste

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

UNRESTRICTED / ILLIMITÉ

## APPENDIX D COMMUNITY EVENTS EXAMPLES

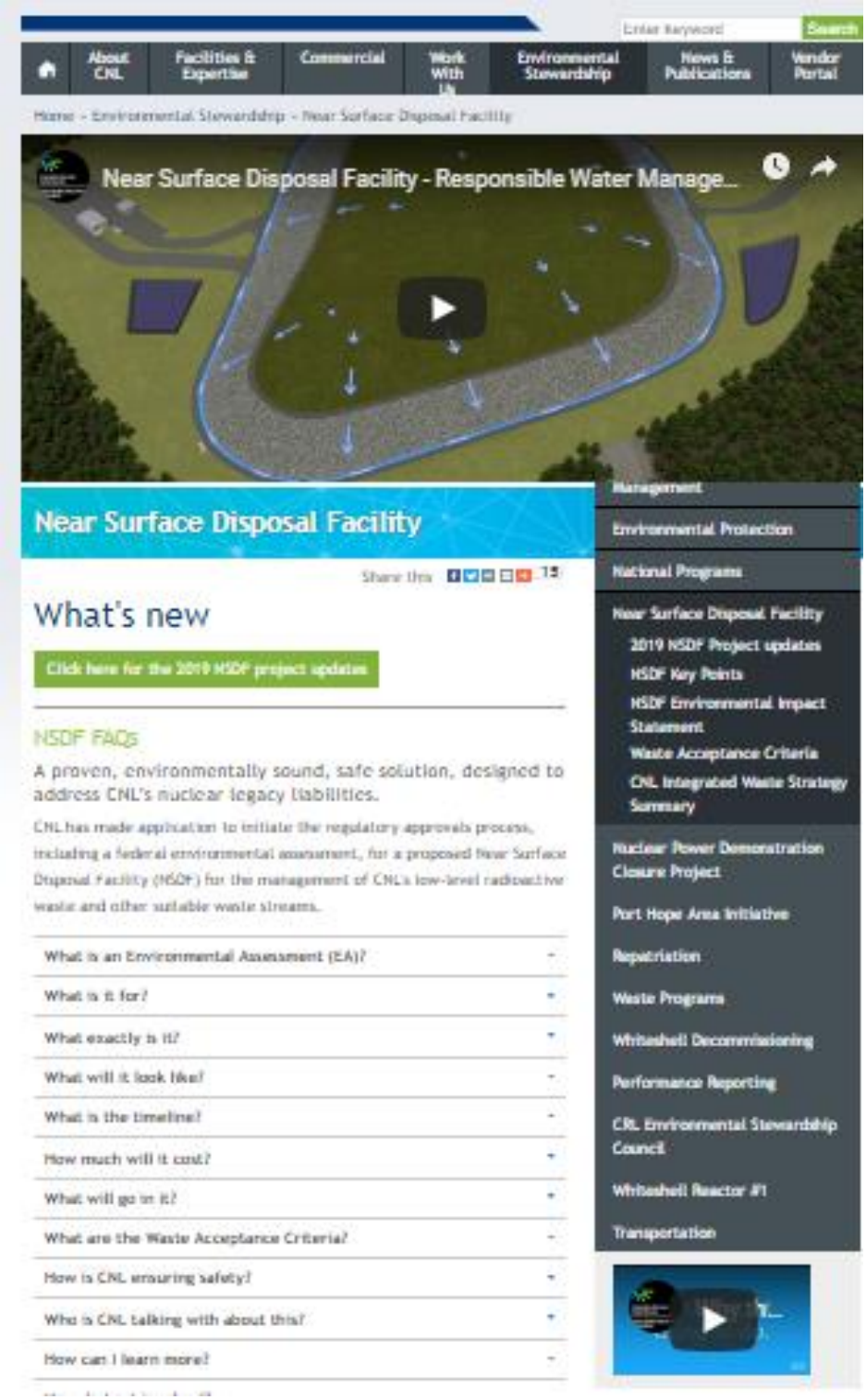
Pembroke Downtown Connect


CNL Open House August 2017 NSDF Display

3D Display in the Town of Petawawa

## APPENDIX E NSDF WEBPAGES

NSDF Landing Webpage



NSDF 2019 Project Update Webpage

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

Français | Contact | Additional Resources

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About CNL | Facilities & Expertise | Commercial | Work With Us | Environmental Stewardship | News & Publications | Vendor Portal

Home » Environmental Stewardship » Near Surface Disposal Facility » 2019 NSDF Project updates

# 2019 NSDF Project updates

Share this


## Purpose of the Project

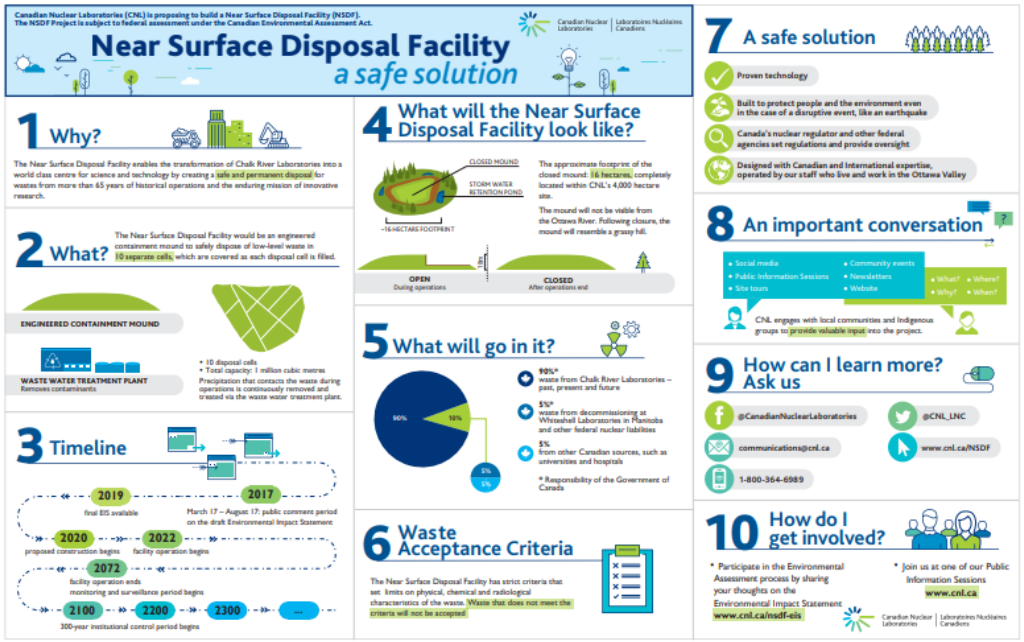
For more than 70 years Canadian Nuclear Laboratories (CNL) has been making advances in nuclear science and technology in the interest of Canadians. This includes the production of medical isotopes that have treated over 1 billion patients worldwide, as well as developments in clean energy which help ensure clean air to breathe and reduced greenhouse gas emissions. Through investments in the revitalization of the laboratories, that mission of innovative science will continue into the future.

Environmental Stewardship

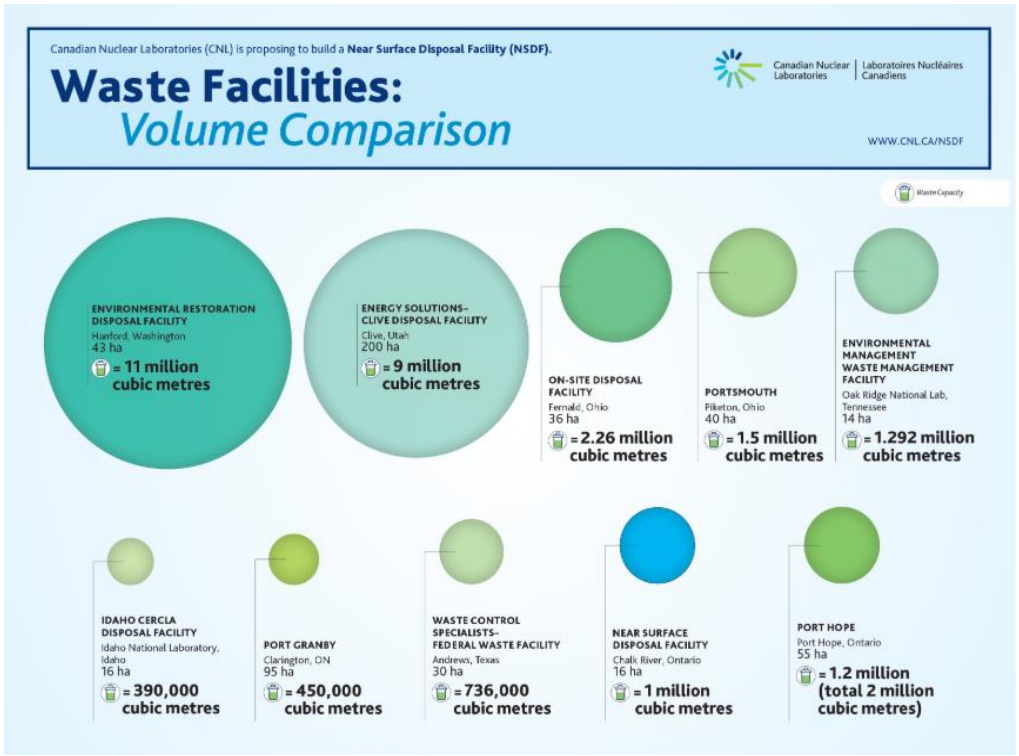
- Environmental Remediation Management
- Environmental Protection
- National Programs
- Near Surface Disposal Facility
  - 2019 NSDF Project updates
  - NSDF Key Points
  - NSDF Environmental Impact Statement
  - Waste Acceptance Criteria
  - CNL Integrated Waste Strategy Summary
- Nuclear Power Demonstration Closure Project
- Port Hope Area Initiative
- Repatriation
- Waste Programs
- Whiteshell Decommissioning
- Performance Reporting

## APPENDIX F INFOGRAPHICS

NSDF Infographic 10 Key Facts




NSDF Infographic Waste Facilities Volume Comparison



## APPENDIX G CONTACT



# A MORE SUSTAINABLE CNL

## CNL's commitment goes beyond research programs

At CNL, we are contributing to a sustainable world in so many ways. First and most importantly, one of CNL's core programs is the development and pursuit of clean, sustainable energy solutions. Among other projects, CNL is working to demonstrate the commercial viability of small modular reactors as a future source of clean energy, we are supporting the life-extension and long-term reliability and safety of the world's existing fleet of nuclear power reactors, and we are leading pioneering research into the large-scale production of hydrogen to help decarbonize Canada's transportation sector.

CNL is also responsible for the management of Atomic Energy of Canada Limited's (AECL) nuclear legacy liabilities, and is carrying out environmental remediation activities at a number of contaminated and affected areas at nuclear sites across the country. This work includes a number of major projects, such as the Near Surface Disposal Facility (NSDF) Project, the NPD Closure Project, and the WR-1 Closure Project, three proposals to provide safe and permanent disposal of nuclear waste liabilities within Canada.

But this commitment to sustainability goes beyond the work we do for our customers – it also looks at our own operations. In recent years, we have shifted our environment policy to be more progressive in the way we make decisions, so that environmental sustainability is at the forefront of everything we do. This ensures that our plans and goals are aligned – where possible – with the Federal Sustainable Development Strategy, which outlines the Government's plan and vision for a more sustainable Canada.

So, it is with pleasure that I invite you to learn more about CNL's commitment to a sustainable community for future generations through this special edition of Contact. We want to show you what CNL has achieved in the past, the projects now underway, and what we hope to achieve in the future in areas such as carbon reduction, clean energy research, environmental remediation, resources conservation, waste management, and the revitalization of the Chalk River Laboratories site.

We look forward to working alongside members of the community in the years ahead as we continue our pursuit of a more sustainable future.

## CANADA'S PLAN & VISION

CNL plans are aligned with the Federal Sustainable Development Strategy, which outlines the Government of Canada's plan and vision for a more sustainable Canada, including:

- Effective Action on Climate Change
- Low-Carbon Government
- Clean Growth
- Modern & Resilient Infrastructure
- Clean Energy
- Healthy Coasts & Oceans
- Pristine Lakes & Rivers
- Sustainably Managed Lands and Forests
- Healthy Wildlife Populations
- Clean Drinking Water
- Sustainable Food
- Connecting Canadians with Nature
- Safe & Healthy Communities

Mike Gull & Kurt Kehler

## MEET OUR NEW HEAD OF ERM, MIKE GULL

Last year, CNL made an important leadership change. Kurt Kehler, who served as a vice president at CNL since 2015, had reached the end of his three year assignment and returned to the United States. During his tenure, Kurt played a key role in leading CNL's work to restore and protect the environment by reducing and effectively managing Canada's nuclear liabilities.

In October 2018, Mike Gull replaced Kurt as the VP of our Environmental Remediation Management (ERM) team. A seasoned industry executive from the United Kingdom, Mike has 32 years of leadership experience that includes the delivery of high value nuclear decommissioning and waste management programs. Most recently, Mike served as the Market Director of Nuclear Fuel Cycles in the United Kingdom and Europe, where he led the design and construction of major nuclear liability projects, which eliminated hazards through the application of innovative decommissioning techniques and technology.

Mike has already hit the ground running, assuming leadership of waste management activities, decommissioning, environmental remediation and other work to support the Government of Canada's commitment to a clean and healthy environment for Canadians. Mike will lead a number of CNL's critical environmental remediation projects, including the Near Surface Disposal Facility (NSDF) Project, the NPD Closure Project, the Whiteshell Closure Project, and the Port Hope Area Initiative, all of which are designed to manage Canada's nuclear liabilities.

## NEW NAME, SAME MISSION

In addition to Mike's arrival, another major change is the renaming of our decommissioning and waste management organization to Environmental Remediation Management (ERM), a name which more accurately reflects the positive impact the work has on the environment. CNL's ERM team has and continues to do innovative, world-class work to improve Canada's environment, whether it be demolishing historic buildings, remediating contaminated soil, entombing a below grade reactor using sound scientific and engineering principles, or designing a facility that will safely hold one million cubic metres of low level waste, among many other projects.

"Environmental Remediation Management really captures the environmental focus of our work, which is at the centre of the department's mission," explained Mike Gull, Vice President of ERM. "It is felt that this will enable improved understanding of the environmental benefits of the work we execute on behalf of our customers, particularly with members of the general public."

## REDUCING ROAD SALT PAYS OFF!

The use of road salt during our winter season can wreak havoc on our roads, sidewalks and the environment. To reduce damage to the environment and infrastructure, CNL's Maintenance Department recently launched an initiative to utilize more sand than road salt, while maintaining the same level of service.

The maintenance staff easily adjusted their winter maintenance regime and to date CNL has realized significant savings, reducing road salt consumption by 57% and saving over $100,000. With many weeks of winter still to come, the Maintenance Department will continue to minimize the use of road salt on site in an effort to ensure that we reduce the environmental and infrastructure impact in the years to come.

# PURSUING A CLEAN & GREEN FUTURE

## CNL is confronting major international issues through its research

As part of the revitalization of the Chalk River Laboratories and the pursuit of a sustainable future, CNL is working to renew and grow its science and technology capabilities, combining federal and commercial priorities into research and development programs in clean energy, public health, nuclear safety and security, and environmental stewardship.

Many of the projects within these programs are designed to confront major international issues, including energy challenges, pollution and waste management. Here's a few examples:

### Hydrail Feasibility Study

In 2017, CNL completed a Hydrail Feasibility Study on behalf of Metrolinx that examined the viability and economic impacts of adopting hydrogen fuel cell (HFC) trains on the GO rail network. The study, which was carried out in partnership with Jacobs Engineering Group and Ernst & Young, supports Metrolinx's long-term goal to decarbonize the GO transit system fleet, and replace diesel with clean energy alternatives that reduce greenhouse gas (GHG) emissions.

With its expertise in hydrogen technologies, CNL contributed to the technical assessment, safety review and operational simulation model for the report, which was used to estimate infrastructure and vehicle fleet costs and operating details. Overall, the report confirmed that it is technically and economically feasible to build and operate the GO train network using HFC-powered rail vehicles.

### Hydrogen Business Council

CNL is an active member of the Hydrogen Business Council, a community of like-minded organizations that is dedicated to making the hydrogen economy a reality in Canada.

CNL's research and development staff work alongside other members to encourage the integration of new hydrogen technology, conduct large-scale demonstration projects – such as hydrogen power vehicles – as a member of the Canadian Urban Transit Research and Innovation Consortium, and participate in the Nuclear Innovation Clean Energy (NICE) Future initiative as part of the Clean Energy Ministerial.

### Clean Energy Research Projects

CNL has many ongoing research projects that contribute directly to the reduction of GHGs and the production of clean energy. These projects include the development of an innovative process to produce large quantities of GHG-free hydrogen, and work on innovative, sustainable and efficient ways to store energy, electricity and hydrogen.

*"As a safe, reliable and low carbon source of energy, small modular reactors have a number of unique features that could make them a unifying technology here in Canada."*

- Mark Lesinski, CNL President & CEO

## Environmental Remediation Management

CNL is working to pair its own research with its decommissioning, environmental and waste management projects. This allows CNL to leverage its in-house technical strengths to support CNL's Environmental Remediation Management (ERM) mission by addressing technical gaps, reducing project risks and seeking innovative solutions. All of this work contributes to the environmental sustainability of the Chalk River Laboratories site. This initiative also aims to increase CNL's profile in decommissioning and waste management worldwide, where it can provide its services on a commercial basis.

## Small Modular Reactors

CNL has identified small modular reactors (SMR) as one of the strategic initiatives that the company plans to pursue as part of its Long-Term Strategy, with the goal of siting an SMR on one of the sites it manages by 2026. The company is working to demonstrate the commercial viability of SMRs and position itself as a global hub in SMR prototype testing and technology development support.

SMRs are recognized as a potential alternative to large-scale nuclear reactors, offering several advantages over traditional technologies, including a reduced size, the ability to purchase and construct them in a modular way, less complex plants, and reduced staffing requirements. SMRs are also considered ideal for deployment both on-grid and off-grid in remote locations such as mine sites or the oil sands, as well as willing, remote communities that are currently reliant on diesel fuel. These technologies can also be utilized in other applications such as the production of hydrogen, local area heating, or process heating systems.

## Clean Energy Research Park

CNL is exploring a new strategic direction that could broaden the company's vision – the creation of a Clean Energy Research Park (CERP) at the Chalk River Laboratories campus, where nuclear research can be carried out alongside work to develop other clean energy technologies. Through this change, CNL hopes to use SMRs to enable the demonstration of other technologies, where the value of each technology is maximized as part of a bigger system.

This could include the use of SMRs to provide baseload power for intermittent renewable energy sources like wind and solar, or using excess heat from SMRs to produce hydrogen for clean energy purposes or to enable district heating. Overall, CNL wants to examine how these technologies can be used in tandem with one another to maximize their potential.

## Harriet Brooks Building

The newly-constructed Harriet Brooks Building houses cutting-edge research activities as CNL's new materials science laboratory. The facility was awarded LEED® Silver Certification in 2018, which serves as independent verification that a building achieves the best standards in human and environmental health. Building features include rain-water capture for use in washrooms, reduced heat island effect by using a white roof, low flow fixtures, drought tolerant landscaping and 20 per cent less energy consumption compared to a similar building. This is the first LEED® certified building at CNL, but it likely won't be the last.

# BUILDING A SUSTAINABLE CAMPUS

## A 10-YEAR TRANSFORMATION TO REVITALIZE THE CHALK RIVER LABORATORIES

CNL's vision for the future of the Chalk River Laboratories is a modern and energy efficient campus where our inventiveness is matched by our intelligent treatment of the land and wildlife around us. We have laid the ground work for this future over the last five years, with some essential upgrades to our site infrastructure and the construction of an exciting new facility.

**Chalk River Site Upgrades**

CNL has built a brand new storm-water management system, which has reduced storm-water flow into the Ottawa River by managing rainfall runoff, and enhanced silt reduction and removal. In 2018, a new sanitary sewage treatment facility was also completed. Instead of chemicals, the new facility uses ultraviolet light to manage sanitary wastewater, and ensures that discharges from the Chalk River site meet the federal wastewater regulations.

Finally, a new water supply line and reservoir has been built to bring potable water from the Town of Deep River to the Chalk River site. The long-term goal of this initiative is to reduce dependency on bottled water and maintain a consistent supply of safe, drinkable water for the site.

**The Future**

CNL recently began site preparation for the construction of non-nuclear buildings that are being planned and built with sustainability in mind. In the design of these buildings, CNL is exploring the use of similar strategies to those used in the Harriet Brooks Building, including sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality to make them both environmentally sustainable and a pleasure to work in. CNL is also examining the use of renewable materials in these facilities, such as cross-laminated timber products made in Canada, instead of concrete and steel. Wood is recyclable and biodegradable, which would help CNL reduce its carbon footprint. Using wood also aligns with the logging and lumber heritage of the Ottawa Valley.

The project is investigating many other innovative methods to deliver sustainability features through the design of these buildings, such as storm water capture, high performing exteriors, and high efficiency mechanical systems. The buildings will also be designed to be energy efficient with the capability to connect to renewable energy sources in the future.

## CNL'S NEW ANMRC LAB

Last year, CNL issued a Request for Proposals for the design and construction of its Advanced Nuclear Materials Research Centre (ANMRC), a modern laboratory research complex that will serve as the backbone of its research and development infrastructure.

This new building will allow CNL to consolidate existing radioisotope laboratories and hot cells into a modern, efficient facility. The project team will also work to reduce CNL's environmental footprint in the design of this facility to ensure the building includes sustainable, low-energy and low-carbon features.

# A MORE ENERGY EFFICIENT COMPANY

## REDUCING ENERGY USAGE IN OUR OWN BUILDINGS & OPERATIONS

As a world-class nuclear facility with a focus on developing clean energy solutions, CNL is constantly exploring methods to reduce energy use in its own buildings and operations. This is one way we can contribute to the Government of Canada's Sustainable Development Strategy, which calls for a reduction in Canada's total green house gas emissions by 30 per cent (relative to 2005 levels) by the year 2030. Here's a look at some of the ways we are optimizing our energy efficiency.

**Next steps**

Looking ahead, CNL continues to explore new and innovative ways to improve energy efficiency on the Chalk River site. Some of these activities and ideas include combining heat and power units for buildings at remote locations; solar-powered lighting for walkways; researching the use of low carbon, electric, and hydrogen vehicle options; and exploring replacement options for the powerhouse.

A CNL employee involved in converting the heating systems at the Chalk River Laboratories to natural gas, reducing site GHG emissions.

In 2017, CNL converted the heating systems of its powerhouse and several other buildings to natural gas from other forms of heat, including propane and oil. This conversion has resulted in a significant reduction of greenhouse gas emissions generated at the Chalk River Laboratories site.

Other ongoing sustainability initiatives at CNL include High Occupancy Vehicle (HOV) parking, which has been available to employees since November 2016 to encourage carpooling; the installation of six Electric Vehicle (EV) charging stations and preferred parking spots to encourage employees to choose more energy efficient automobiles; and the installation of energy efficient lighting upgrades around the Chalk River site. The majority of existing walkway and exterior building light fixtures have been updated to LED high efficiency technology, a measure which not only reduces maintenance costs and energy consumption, but also improves the safety of our employees.

Because facilities are heated through steam generated at the powerhouse, CNL has condensate lines which return hot water from buildings to the powerhouse that can be re-used to produce steam, reducing energy and natural gas requirements. These systems have also recently been improved by repairing system leaks, increasing condensate return by 41 per cent, helping to further reduce greenhouse gas emissions.

Finally, CNL will also be working with the Government of Canada, universities and industry partners to develop and integrate practical concepts and technologies into its buildings in order to optimize energy efficiency.

### DID YOU KNOW?

CNL's powerhouse, which provides site utilities at the Chalk River Laboratories, has experienced a dramatic drop in emissions since switching to natural gas in late 2017, resulting in:

- 21% REDUCTION IN GHG EMISSIONS
- 36% REDUCTION IN $NO_2$ EMISSIONS
- 96% REDUCTION IN $SO_2$ EMISSIONS

# ENVIRONMENTAL REMEDIATION AT CNL

## Guided by its environmental policy, CNL is remediating areas at the Chalk River site

For over 70 years, the Chalk River Laboratories has been home to groundbreaking innovations in nuclear science and technology. While this work has led to clean energy solutions and life-saving medical discoveries that have benefited millions of people around the world, it has also generated nuclear waste that must be properly addressed. CNL is developing new techniques and using best practices to plan and execute remediation activities, reduce waste inventory and to make sure that our work does not impact the environment around us.

**Reducing Risk through Remediation**

To ensure that contaminated areas on the Chalk River Laboratories site are responsibly remediated, human health and environmental risks are reduced, and AECL's liabilities are effectively decreased, CNL must establish consistent and clear direction in its remediation planning. This includes the adoption of Canadian and international best practices, the development of progressive, interim and long-term cleanup objectives for the Chalk River site, agreement of the principles and priorities that will be used to direct environmental remediation activities, and ongoing characterization to fully understand site conditions and ensure sound decision-making.

A gate being installed in South Swamp

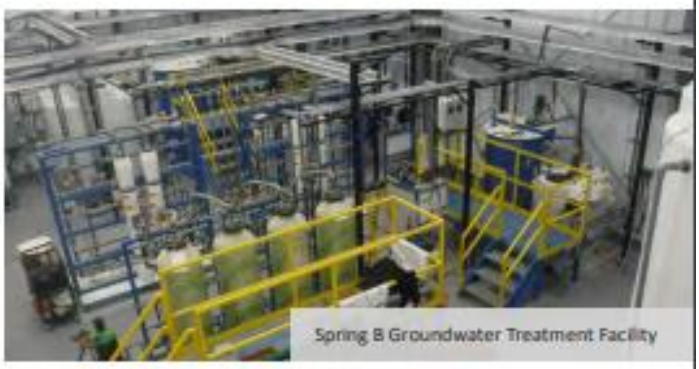
While CNL has already made significant progress in cleaning up the Chalk River Laboratories site through environmental remediation activities, a significant amount of buried waste, soil contamination and groundwater contamination remains in specific locations across the site grounds. In the years ahead, CNL will continue to take action to further reduce risks to the environment and to make sure future generations are not left to deal with these wastes at Chalk River Laboratories.

**Legacy Pipeline Removal**

Due to corrosion, historic leaks to a 1,500 metre legacy pipeline that was used to transport radioactive liquid waste on the Chalk River site have resulted in two small areas of soil contamination along the pipeline. CNL successfully conducted a trial removal of 150 metres of pipeline in 2018 to test the techniques to be used for full scale remediation, which will take place during the upcoming field season. Once complete, all contaminated soil will be remediated, and an estimated 85 cubic metres of contaminated metal will be removed from the site subsurface.

**Treatment for Groundwater Entering South Swamp**

Due to an outdated practice of burying waste that occurred over many decades, a slow-moving contaminated groundwater plume has flowed from one of CNL's waste management areas to an on-site area called South Swamp. In the Summer of 2013, a permeable reactive barrier was installed to prevent further contamination of South Swamp. The barrier funnels the plume into 'gates' where the contaminant, Strontium-90, is safely removed with a naturally occurring mineral called zeolite.



Spring B Groundwater Treatment Facility

**Upgrades to Spring B Groundwater Treatment Facility**

One of CNL's groundwater treatment facilities, located in a contaminated spring, is designed to remove radionuclides from groundwater. After 20 years of successful operation, it is nearing the end of its life and an upgrade is underway. Scheduled for completion in 2019, the new system will feature capacity and efficiency improvements to better treat the groundwater.

### WHAT'S NEXT?

CNL has plans to remediate the remaining contaminated areas at the Chalk River site, which includes buried waste, soil contamination and groundwater contamination. For the work to proceed on a large scale, however, it will be necessary to have a proper, safe location to place the contaminated materials – the proposed Near Surface Disposal Facility will provide for this.

# WASTE PREVENTION & MINIMIZATION

Sustainability starts by preventing waste from being generated in the first place

At CNL, our commitment to improving environmental performance and sustainability starts with preventing waste from being generated, wherever possible. If that can't be avoided, we implement the principles of Reduce, Reuse, and Recycle. Disposal is used only as a last resort if no alternative is available.

This prevention means less waste in landfills and other disposal facilities, stopping contaminants from entering the environment, maximizing the use of raw materials, reducing the footprint of landfill areas, and saving energy that would have been required to create new consumer products. Overall, waste minimization is a key element of CNL's Environment Policy. CNL has established a recycle target rate of 35 per cent in 2018 and has, on average, exceeded this rate.

**Integrated Waste Strategy**
CNL's Integrated Waste Strategy guides CNL employees in managing different kinds of waste. The purpose of the strategy is to ensure that responsible waste management is an integral component of every aspect of our work, and that it is carried out uniformly in every location across the country. It is also an aspirational document, encouraging employees to constantly seek waste management improvements and take action when and where they can.

**The Waste Analysis Facility**
The Waste Analysis Facility is a critical part of the waste management process at the Chalk River Laboratories. Waste from decommissioning projects and day-to-day operations is sent to this facility to be sorted for reuse, recycling or disposal. Waste that is cleared is sent off-site to a variety of local waste receivers – organics and recycling are sent to the Ottawa Valley Waste Recovery Center, electronics are sent to Redi Recycling, garbage is sent to landfill, metals are sent to Kimco for recycling or reuse, and concrete is crushed and can be reused on site in other construction projects.

**Waste Characterization, Sorting and Segregation**
CNL is in the process of commissioning a Waste Characterization Facility as well as a Waste Sorting and Segregation Facility. Waste that is not sent off-site will be sent for further sorting in these facilities, where sampling and analysis are undertaken to determine physical, chemical and radionuclide content, and then to identify appropriate storage and disposal paths.

## 67 BUILDINGS DECOMMISSIONED!

To revitalize the Chalk River Laboratories site, CNL must first address the outdated buildings and infrastructure. This means decommissioning old facilities and safely managing the demolition waste in an environmentally responsible manner.

Since 2016, 67 buildings have been demolished, which represents a footprint of 240,000 square feet. From those buildings, 420 cubic metres of low level waste will be destined for the proposed NSDF, while 40 cubic metres of intermediate level waste has been removed and stored.

**Near Surface Disposal Facility**
CNL has proposed the construction of a Near Surface Disposal Facility (NSDF) for low-level radioactive waste, which includes building debris, contaminated soils and personal protective equipment. If the NSDF is approved by the Canadian Nuclear Safety Commision (CNSC) and constructed, this waste will be consolidated into the new, engineered containment mound, designed to isolate the waste by securely encapsulating it on the top and bottom with multiple layers of natural and specifically manufactured materials.

# HEALTH AND WELLNESS ON CAMPUS

CNL is a company with world-class expertise in physics, metallurgy, chemistry, biology and engineering, and with two Nobel Prizes to our credit. So, without a doubt, CNL's greatest asset is its people, and we are committed to ensuring that our people are healthy, happy and supported. One of the best ways to do that is to help our employees connect with the beautiful environment the Ottawa Valley has to offer. And we don't need a company directive to make that happen – many employees come to CNL because of what the area has to offer, and choose to stay here after retirement that same reason.

**Connecting with Nature**

CNL's approach to employee wellness fits perfectly with the Federal Sustainable Development Strategy, which seeks to connect Canadians with nature. Spending time in nature can improve physical and mental health, and getting out and experiencing nature also inspires Canadians to help protect it.

For decades, Chalk River Laboratories employees have been encouraged to bike and cross-country ski to work through the permitted use of scenic roads and trails in the Summer and Winter months. Volunteers even help to ensure the safety of the trails in the winter. On-site walking trails can take employees from their office to view the beautiful Ottawa River and historic Oiseau Rock in less than ten minutes. Trails and walk-ways are also maintained to encourage lunchtime walks and allow employees to try a variety of different options, from 500 meters to over four kilometers!

Employees have also organized off-site activities through social clubs and adventure outings, including hiking in Algonquin Park, white water rafting and cross-river swims on the Petawawa and Ottawa Rivers, mud-runs in Ontario, zip lining in Quebec and family skates on the Laurentian Valley Skating Trail.

**Health & Wellness Programs**

CNL supports employee health and wellness through a number of different services. CNL maintains an on-site Health Centre with registered nurses and registered practical nurses, hosts weekly visits from a number of regulated health professionals (including counselors trained in cognitive behavioral therapy), and offers a comprehensive Employee and Family Assistance Program to help families navigate life's challenges. CNL also offers mental health training and provides supportive, accommodating return to work programming with care for acute and chronic mental health conditions. In 2019, CNL also aims to continue the implementation of the Canadian Standard Association's Psychologically Safe Workplace standard.

To help employees stay physically healthy, CNL has a fitness centre at its Chalk River site and hosts weekly exercise classes with an on-site registered kinesiologist. A team of Occupational Safety and Health professionals are also available to consult on physical issues, such as acute and chronic pain, offer support for industrial and office ergonomics, and provide field assessments to encourage safe lifting and good ergonomic habits for various types of work.

**What's Next?**

Looking to the future, CNL will be developing a new Health Centre as part of its revitalization program. We are also working to bring regulated health professionals onto site regularly to provide employees with more convenient treatment services. And we will continue to pursue improvements in support of employee health, including the implementation of a ten year health and wellness strategy, and the creation of a Renfrew County Health Workplace initiative to better collaborate with our local communities.

# WILDLIFE PROTECTION AT CNL

## BEING MINDFUL OF THE IMPACT OF OUR OPERATIONS ON NATURE

At the Chalk River Laboratories, we're fortunate to work on a beautiful site that is surrounded by a rich variety of plant and animal species. On the drive into work, it isn't out of the ordinary for employees to see a family of bears scavenging in the forest, foxes walking alongside employees as they make their way to their office, wild turkeys squabbling with one another over food, or any number of other species that make the site such a fun and interesting place to work.

As part of our official Environment Policy, CNL has made a commitment to be mindful of the impact of our operations on this wildlife and the lands that surrounds us, and to reduce or eliminate that impact wherever possible. We want to ensure the protection of biodiversity that inhabit the Chalk River campus – the unique variety of plants, animals, insects and aquatic life – for future generations.

CNL Environmental Protection employees examine a Blandings Turtle at the Chalk River Laboratories site.

With that goal in mind, Environmental Protection employees at CNL have spent the last decade assessing this wildlife in order to build a thorough database of species which exist on the Chalk River site, with a particular focus on 'species at risk.' Using this list, CNL has been able to determine which species could be affected by our operations, allowing us to concentrate our attention on these vulnerable plants and animals.

**Protecting Birds, Bats & Turtles**

If you've visited the Chalk River Laboratories, you may have noticed road signs that warn drivers to watch for turtles. This is the result of a CNL study, conducted in partnership with the University of Ottawa, that examined the habitat preferences and movements of Blanding's turtles throughout the site. To protect this species, CNL has already installed one tunnel under a major road to encourage safe travel for turtles during mating season, and several other tunnels are scheduled to be installed under our main road. In another study, this time with Trent University, CNL examined the roosting behaviour of Chimney Swifts, another species at risk that is found in two locations on AECL sites – the ventilation stack at CNL's Nuclear Power Demonstration (NPD) project site in Rolphton, and a similar stack at CNL's Chalk River campus. Our study determined that these stacks have become essential roosting locations for the birds during their annual migration, so CNL has a goal to preserve these structures.

CNL has taken steps to accommodate other species which might be disturbed through our ongoing work activities. For example, CNL has installed four artificial nesting structures for Barn Swallows, which we hope will be used this summer. We have also installed 16 bat boxes in suitable habitat which can be used as maternity roosts during the summer months. To date, CNL has detected Little Brown Myotis bats, also an endangered species, using 75 per cent of the boxes.

**Future Activities**

As CNL's decommissioning and revitalization activities continue, so do our efforts to study, understand and mitigate the impacts of our work on wildlife and the land around us. We have initiated another research project with Trent University to find maternity roosting sites for endangered bat species, including the Little Brown Myotis bat, the Northern Myotis bat, the Tri-colored bat or the Eastern Small-footed Myotis bat, to help protect their sensitive habitat. CNL is also planning to identify and protect Monarch Butterfly habitats, which are essential to the lifecycle of these endangered butterflies. Through these activities and many others, our Environmental Protection team is working to ensure that we can peacefully co-exist with these creatures in the environments we share.

## A GOLD CERTIFIED SITE

CNL has been awarded Wildlife Habitat Council (WHC) Conservation Gold Certification for the Chalk River Laboratories site. Companies achieving WHC Conservation Certification are considered environmental leaders, voluntarily managing their lands to support sustainable ecosystems and the communities that surround them.

# CALLING ALL STUDENTS!

*Do you care about nature and the environment? Do you love to write and draw? With Earth Day coming up on April 22, we need your help!*

## CHILDREN 10 & YOUNGER

CNL's Chalk River site is home to a small population of turtles that tend to use our roads.

To help drivers look out for turtles on the road, we are looking for your help to replace our traditional turtle crossing sign with one designed by you. Remember, sometimes less is more, we don't want to distract drivers!

All submissions will be reviewed by a panel of judges here at CNL and then the winning design will be made into a permanent road sign.

## CHILDREN OVER 10 YEARS OLD

Protecting the many animal species that live within the Chalk River Laboratories campus - nearly 10,000 acres - is one of CNL's top priorities.

If you feel the same way, great! We want to hear all about it. In 500 words or less, tell us why it's important that we treat animals with respect, and what you do to make sure that animals in your community are protected.

All submissions will be reviewed by a panel of judges here at CNL and the winning essay will be published in our next issue of CONTACT. Good luck!

Please send your submissions to Lisa Theil at CNL no later than May 03, 2019. Submissions can be made either by email at lisa.theil@cnl.ca, or through regular mail at 286 Plant Road, Chalk River, ON, K0J 1J0.

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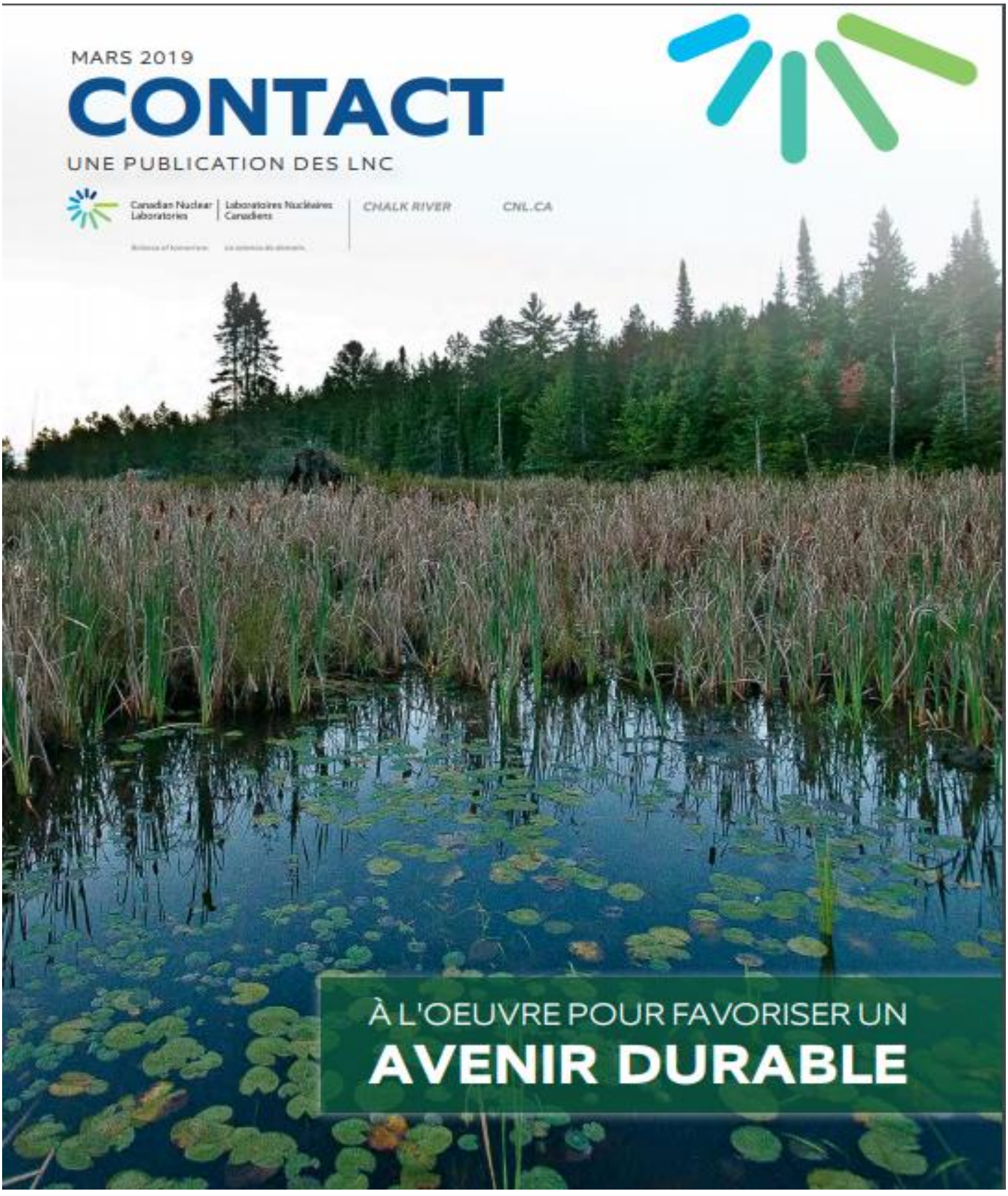
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À L'OEUVRE POUR FAVORISER UN
AVENIR DURABLE



# UNE DURABILITÉ ACCRUE AUX LNC

L'engagement des LNC va au-delà des programmes de recherche

Aux LNC, nous contribuons à un monde durable de bien des façons. D'abord et avant tout, l'un des principaux programmes des LNC concerne le développement et la recherche de solutions énergétiques propres et durables. Entre autres projets, les LNC s'efforcent de démontrer la viabilité commerciale des petits réacteurs modulaires en tant que source future d'énergie propre, appuient la prolongation de la durée de vie, la fiabilité à long terme et la sécurité du parc existant de réacteurs nucléaires dans le monde et dirigent des recherches d'avant-garde sur la production à grande échelle d'hydrogène pour aider à décarboniser le secteur des transports du Canada.

Les LNC sont également chargés de la gestion des responsabilités nucléaires héritées d'Énergie atomique du Canada Limitée et ils s'occupent de l'assainissement environnemental d'un certain nombre de zones contaminées et touchées dans des sites nucléaires, partout au pays. Ces travaux comprennent un certain nombre de grands projets, comme le projet d'installation de gestion des déchets près de la surface (IGDPS), le projet de fermeture du réacteur NPD et le projet de fermeture du réacteur WR-1, trois propositions visant à assurer, dans le cadre des responsabilités nucléaires héritées, l'élimination sûre et permanente des déchets nucléaires au Canada.

Cet engagement à l'égard de la durabilité va au-delà du travail que nous accomplissons pour nos clients – il englobe également nos propres activités. Au cours des dernières années, nous avons modifié notre politique environnementale pour qu'elle soit plus progressiste dans la façon dont nous prenons des décisions, de sorte que la durabilité environnementale soit à l'avant-plan de tout ce que nous faisons. Nous sommes ainsi mieux en mesure d'harmoniser nos plans et nos objectifs, dans la mesure du possible, avec la Stratégie fédérale de développement durable, qui décrit le plan et la vision du gouvernement pour un Canada plus durable.

C'est donc avec plaisir que je vous invite à en apprendre davantage sur l'engagement des LNC à l'égard d'une collectivité durable pour les générations futures dans cette édition spéciale de Contact. Nous voulons vous montrer ce que les LNC ont accompli dans le passé, les projets en cours et ce que nous espérons accomplir dans des domaines comme la réduction des émissions de carbone, la recherche sur l'énergie propre, l'assainissement de l'environnement, la conservation des ressources, la gestion des déchets et la revitalisation du site des Laboratoires de Chalk River.

Nous envisageons avec enthousiasme de travailler avec les membres de la collectivité dans les années à venir alors que nous poursuivons notre quête d'un avenir durable.

## PLAN ET VISION DU CANADA

Les plans des LNC sont harmonisés avec la Stratégie fédérale de développement durable, qui décrit le plan et la vision du gouvernement du Canada pour un Canada plus durable, ce qui comprend notamment les éléments suivants :

- Mesures efficaces à l'égard des changements climatiques
- Gouvernement à faibles émissions de carbone
- Croissance propre
- Infrastructure moderne et résiliente
- Énergie propre
- Océans et littoraux sains
- Lacs et cours d'eau vierges
- Terres et forêts gérées de façon durable
- Populations d'espèces sauvages en santé
- Eau potable
- Alimentation durable
- Rapprochement des Canadiens avec la nature
- Collectivités sûres et saines

Mike Gull et Kurt Kehler

## RENCONTREZ NOTRE NOUVEAU CHEF DE LA GAE DES LNC

L'année dernière, les LNC ont effectué un important changement de leadership. L'affectation de trois ans de Kurt Kehler, qui était vice-président des LNC depuis 2015, a pris fin, et celui-ci est retourné aux États-Unis. Pendant son mandat, Kurt a joué un rôle clé dans le travail des LNC visant à restaurer et à protéger l'environnement en réduisant et en gérant efficacement les responsabilités dans le domaine du nucléaire du Canada.

En octobre 2018, Mike Gull a remplacé Kurt au poste de VP de notre équipe de la gestion de l'assainissement de l'environnement (GAE). Dirigeant chevronné de l'industrie au Royaume-Uni, Mike compte 32 années d'expérience en leadership, notamment dans l'exécution de programmes de déclassement à valeur élevée et de gestion des déchets nucléaires. Plus récemment, Mike a été directeur du marché des cycles de combustible nucléaire au Royaume-Uni et en Europe, où il a dirigé la conception et la construction de grands projets de responsabilité nucléaire, qui ont permis d'éliminer des dangers grâce à l'application de techniques et de technologies de déclassement novatrices.

Mike s'est mis au travail sans tarder, en assumant la direction des activités de gestion des déchets, de déclassement, d'assainissement de l'environnement et d'autres travaux afin d'appuyer l'engagement du gouvernement du Canada à l'égard d'un environnement propre et sain pour les Canadiens. Mike dirigera plusieurs projets essentiels d'assainissement de l'environnement des LNC, y compris le projet d'installation de gestion des déchets près de la surface (IGDPS), le projet de fermeture du réacteur NPD, le projet de fermeture du site de Whiteshell et l'Initiative de la région de Port Hope, qui sont tous conçus pour gérer les responsabilités nucléaires du Canada.

## LE NOM CHANGE, LA MISSION RESTE LA MÊME

En plus de l'arrivée de Mike, un deuxième changement important a touché l'organisation de DGD, dont le nom a changé pour devenir « Gestion de l'assainissement de l'environnement » (GAE), ce qui reflète plus fidèlement l'effet positif de son travail sur l'environnement. L'équipe de la GAE des LNC poursuit ses travaux novateurs de calibre mondial pour améliorer l'environnement au Canada, qu'il s'agisse de démolir des bâtiments historiques, d'assainir le sol contaminé, d'assurer le confinement sous-terrain d'un réacteur en se fondant sur de solides principes scientifiques et techniques, ou de concevoir une installation qui contiendra en toute sécurité un million de mètres cubes de déchets de faible activité, entre autres projets.

« La gestion de l'assainissement de l'environnement saisit vraiment l'objectif environnemental de notre travail, qui est au cœur de la mission du Ministère », explique Mike Gull, vice-président de la GAE. « Nous estimons que cela favorisera une meilleure compréhension des avantages environnementaux du travail que nous accomplissons pour le compte de nos clients, en particulier auprès des membres du grand public. »

## RÉDUIRE LE SEL DE VOIRIE, C'EST PAYANT!

L'utilisation du sel de voirie pendant la saison hivernale peut faire des ravages sur nos routes, nos trottoirs et l'environnement. Afin de réduire les dommages causés à l'environnement et aux infrastructures, le service d'entretien des LNC a récemment lancé une initiative visant à utiliser plus de sable que de sel de voirie, tout en maintenant le même niveau de service.

Le personnel d'entretien a facilement ajusté son régime d'entretien hivernal et, jusqu'à maintenant, les LNC ont réalisé des économies considérables, réduisant ainsi leur consommation de sel de voirie de 57 % et économisant plus de 100 000 $. Comme il reste encore de nombreuses semaines d'hiver à venir, le service d'entretien continuera de limiter autant que possible l'utilisation de sel de voirie sur place afin de réduire l'impact sur l'environnement et l'infrastructure dans les années à venir.

# VERS UN AVENIR PROPRE ET VERT

## Les LNC relèvent d'importants défis internationaux grâce à la recherche

Dans le cadre de la revitalisation des Laboratoires de Chalk River et de la quête d'un avenir durable, les LNC s'efforcent de renouveler et d'accroître leurs capacités en sciences et en technologie, en enchâssant les priorités fédérales et commerciales dans des programmes de recherche et de développement dans les domaines de l'énergie propre, de la santé publique, de la sûreté et de la sécurité nucléaires et de la gérance de l'environnement. Bon nombre des projets de ces programmes visent à relever de grands défis internationaux, notamment en ce qui a trait à l'énergie, à la pollution et à la gestion des déchets. En voici quelques exemples :

### Étude de faisabilité Hydrail

En 2017, les LNC ont mené, au nom de Metrolinx, une étude de faisabilité sur la viabilité et les répercussions économiques de l'adoption de trains à pile à hydrogène sur le réseau ferroviaire GO. L'étude, menée en partenariat avec le Jacobs Engineering Group et Ernst & Young, appuie l'objectif à long terme de Metrolinx de décarboniser le parc de véhicules du réseau GO et de remplacer le diesel par des énergies de remplacement propres qui réduisent les émissions de gaz à effet de serre (GES).

Grâce à leur expertise dans les technologies de l'hydrogène, les LNC ont contribué à l'évaluation technique, à l'examen de la sûreté et au modèle de simulation opérationnelle pour le rapport, qui a servi à estimer les coûts de l'infrastructure et du parc de véhicules et à définir les détails du fonctionnement. Dans l'ensemble, le rapport a confirmé qu'il est techniquement et économiquement faisable de construire et d'exploiter le réseau ferroviaire GO à l'aide de véhicules ferroviaires à pile à hydrogène.

### Gestion de l'assainissement de l'environnement

Les LNC s'efforcent de conjuguer leurs propres travaux de recherche avec leurs projets de déclassement, d'environnement et de gestion des déchets. Ce jumelage permet aux LNC de tirer parti de leurs forces techniques internes à l'appui de la mission de gestion de l'assainissement de l'environnement (GAE) des LNC en comblant les lacunes techniques, en réduisant les risques des projets et en cherchant des solutions novatrices. Tous ces travaux contribuent à la durabilité environnementale du site des Laboratoires de Chalk River. Cette initiative doit également rehausser le profil des LNC en matière de déclassement et de gestion des déchets dans le monde entier, qui est un chantier sur lequel ils peuvent fournir leurs services comme activité commerciale.

### Hydrogen Business Council

Les LNC sont un membre actif du Hydrogen Business Council, une communauté d'organisations aux vues similaires qui se consacre à faire de l'économie de l'hydrogène une réalité au Canada. Le personnel de recherche et de développement des LNC travaille aux côtés d'autres membres pour encourager l'intégration de la nouvelle technologie à l'hydrogène, mener des projets de démonstration à grande échelle – comme les véhicules à hydrogène – en tant que membre du Consortium de recherche et d'innovation en transport urbain au Canada, et participer à l'initiative « Innovation nucléaire : Un futur d'énergie propre » dans le cadre de la réunion ministérielle sur l'énergie propre.

## Projets de recherche sur l'énergie propre

Les LNC ont de nombreux projets de recherche en cours qui contribuent directement à la réduction des GES et à la production d'énergie propre. Ces projets comprennent l'élaboration d'un processus novateur pour la production de grandes quantités d'hydrogène sans GES et des travaux sur des façons novatrices, durables et efficaces de stocker l'énergie, l'électricité et l'hydrogène.

## Petits réacteurs modulaires

Les LNC ont désigné les petits réacteurs modulaires (PRM) comme l'une des sept initiatives stratégiques qu'ils prévoient mettre en œuvre dans le cadre de leur stratégie à long terme, dans le but d'installer un PRM sur l'un des sites qu'ils gèrent d'ici 2026. L'entreprise s'efforce de démontrer la viabilité commerciale des PRM et de se positionner en tant que plaque tournante mondiale de la mise à l'essai de prototypes de PRM et du soutien au développement technologique.

Les PRM sont reconnus comme une solution de rechange potentielle aux réacteurs nucléaires de grande taille, car ils offrent plusieurs avantages par rapport aux technologies traditionnelles, notamment une taille réduite, la possibilité de les acheter et de les construire de façon modulaire, des centrales moins complexes et des besoins en personnel réduits. On considère également que les PRM sont la solution idéale pour le déploiement sur le réseau et hors réseau dans des endroits éloignés comme les sites miniers ou d'extraction des sables bitumineux, ainsi que dans des collectivités éloignées qui dépendent actuellement du carburant diesel et qui sont disposées à les adopter comme solution. Ces technologies peuvent également être utilisées dans d'autres applications telles que la production d'hydrogène, le chauffage local ou les systèmes utilisant la chaleur pour des procédés industriels.

## Parc de recherche sur l'énergie propre

Les LNC explorent présentement l'orientation stratégique qui élargira la vision de l'entreprise, soit la création d'un parc de recherche sur l'énergie propre (CERP) sur le campus des Laboratoires de Chalk River, où la recherche nucléaire pourra être menée parallèlement au développement d'autres technologies d'énergie propre. Grâce à ce changement, les LNC espèrent utiliser des PRM pour permettre la démonstration d'autres technologies, où la valeur de chaque technologie est maximisée dans le cadre d'un système plus vaste.

Cela pourrait comprendre l'utilisation de PRM afin de fournir de l'énergie de base là où sont exploitées des sources d'énergie renouvelable intermittentes comme l'énergie éolienne et solaire, ou l'utilisation de la chaleur excédentaire des PRM pour produire de l'hydrogène à des fins d'énergie propre ou pour permettre le chauffage urbain. Dans l'ensemble, les LNC veulent examiner comment ces technologies peuvent être utilisées en tandem afin de maximiser leur potentiel.

## Édifice Harriet Brooks

Le nouvel édifice Harriet Brooks abrite des activités de recherche de pointe en tant que nouveau laboratoire de sciences des matériaux des LNC. L'installation a obtenu la certification LEED® Argent en 2018, une attestation indépendante qu'un bâtiment respecte les normes les plus élevées en matière de santé humaine et environnementale. Les caractéristiques du bâtiment comprennent la capture de l'eau de pluie pour utilisation dans les toilettes, la réduction de l'effet d'îlot de chaleur par l'utilisation d'un toit blanc, des appareils à faible débit, un aménagement paysager tolérant la sécheresse et une consommation d'énergie inférieure de 20 % à celle d'un bâtiment semblable. Il s'agit du premier bâtiment certifié LEED® aux LNC, et il ne sera probablement pas le dernier.

# BÂTIR UN CAMPUS DURABLE

## UNE TRANSFORMATION DE 10 ANS POUR REVITALISER LES LABORATOIRES DE CHALK RIVER

La vision des LNC pour l'avenir des Laboratoires de Chalk River est un campus moderne et écoénergétique où notre inventivité n'est égalée que par notre gestion responsable du territoire et de la faune qui nous entourent. Ces cinq dernières années, nous avons jeté les bases de cet avenir en apportant des améliorations essentielles à l'infrastructure de notre site et en construisant une nouvelle installation très prometteuse.

**Modernisation du site de Chalk River**

Les LNC ont construit un tout nouveau système de gestion des eaux pluviales, qui a réduit le débit des eaux pluviales dans la rivière des Outaouais par la gestion du ruissellement pluvial ainsi qu'une réduction et un enlèvement accrus du limon. En 2018, une nouvelle installation de traitement des eaux usées a également été achevée. Au lieu des produits chimiques, la nouvelle installation utilise des rayons ultraviolets pour gérer les eaux usées sanitaires et s'assure que les rejets du site de Chalk River respectent la réglementation fédérale sur les eaux usées.

Enfin, une nouvelle conduite d'alimentation en eau et un nouveau réservoir ont été construits pour acheminer l'eau potable de la ville de Deep River au site de Chalk River. L'objectif à long terme de cette initiative est de réduire la dépendance à l'égard de l'eau embouteillée et de maintenir un approvisionnement constant en eau potable et salubre pour le site.

**L'avenir**

Les Laboratoires Nucléaires Canadiens (LNC) ont récemment commencé à préparer un site pour la construction de bâtiments non nucléaires qui sont conçus et construits selon les principes de durabilité. Les stratégies de conception des bâtiments des LNC seront semblables à celles utilisées pour l'édifice Harriet Brooks, notamment pour ce qui est de l'aménagement durable du site, des économies d'eau, de l'efficacité énergétique, de la sélection des matériaux et de la qualité de l'environnement intérieur, afin qu'elles soient durables sur le plan environnemental et agréables à utiliser. Les LNC envisagent également d'utiliser des matériaux renouvelables dans ces installations, comme des produits de bois en stratifié croisé fabriqués au Canada, plutôt que du béton et de l'acier. Le bois est recyclable et biodégradable, ce qui aidera les LNC à réduire leur empreinte carbone. L'utilisation du bois s'aligne également avec le patrimoine forestier et du bois d'œuvre de la vallée de l'Outaouais.

L'équipe du projet étudie de nombreuses autres façons novatrices d'intégrer des caractéristiques de durabilité dans la conception de ces bâtiments, comme le captage des eaux pluviales, les systèmes extérieurs très performants et les systèmes mécaniques à haute efficacité. Les bâtiments seront également conçus pour être écoénergétiques et dotés de la capacité de se connecter à des sources d'énergie renouvelable à l'avenir.

## LE NOUVEAU CRAMN DES LNC

L'an dernier, les LNC ont publié une demande de propositions pour la conception et la construction de leur Centre de recherche avancée sur les matières nucléaires (CRAMN), un complexe de laboratoire de recherche moderne qui servira de base à leur infrastructure de recherche et de développement.

Ce nouveau bâtiment permettra aux LNC de regrouper les laboratoires de radio isotopes existants et les cellules chaudes dans une installation moderne et efficace. L'équipe du projet travaillera également à réduire l'empreinte environnementale des LNC dans la conception de cette installation afin de s'assurer que le bâtiment comprend des caractéristiques durables, à faible consommation d'énergie et à faibles émissions de carbone.

# UNE ENTREPRISE PLUS ÉCOÉNERGÉTIQUE

## RÉDUCTION DE LA CONSOMMATION D'ÉNERGIE DANS NOS IMMEUBLES ET NOS ACTIVITÉS

En tant qu'installation nucléaire de calibre mondial axée sur le développement de solutions d'énergie propre, les LNC explorent constamment des méthodes possibles en vue de réduire la consommation d'énergie dans leurs propres bâtiments et activités. Il s'agit de l'une des façons dont nous pouvons contribuer à la Stratégie de développement durable du gouvernement du Canada, qui prévoit une réduction de 30 % des émissions totales de gaz à effet de serre du Canada d'ici 2030. Voici quelques-unes des façons dont nous optimisons notre efficacité énergétique :

**Prochaines étapes**

Pour l'avenir, les LNC continuent d'explorer des façons novatrices d'améliorer l'efficacité énergétique de leur site de Chalk River. Parmi les activités et les idées envisagées, notons la combinaison d'unités de chauffage et d'électricité pour les bâtiments situés dans des endroits éloignés; l'éclairage alimenté à l'énergie solaire pour les allées piétonnières; la recherche sur l'utilisation de véhicules à faibles émissions de carbone, électriques et à hydrogène; et l'étude des options de remplacement de la centrale.

Un employé des LNC participe à la conversion des systèmes de chauffage des Laboratoires de Chalk River au gaz naturel, ce qui réduit les émissions de GES sur le site.

En 2017, les LNC ont converti au gaz naturel les systèmes de chauffage de leur centrale électrique et de plusieurs autres bâtiments au moyen d'autres formes de chaleur, y compris le propane et le mazout. Cette conversion a permis de réduire considérablement les émissions de gaz à effet de serre du site des Laboratoires de Chalk River.

Les autres initiatives de durabilité en cours aux LNC comprennent le stationnement pour véhicules multi-occupants (VMO), qui est offert aux employés depuis novembre 2016 pour encourager le covoiturage; l'installation de six bornes de recharge pour véhicules électriques (VE) et de places de stationnement privilégiées afin d'encourager les employés à choisir des voitures plus écoénergétiques et l'installation de systèmes d'éclairage écoénergétiques autour du site de Chalk River. La majorité des luminaires des allées piétonnières et des bâtiments existants ont été mis à niveau en fonction de la technologie à DEL à haut rendement, une mesure qui non seulement réduit les coûts d'entretien et la consommation d'énergie, mais améliore aussi la sécurité de nos employés.

Comme les installations sont chauffées par la vapeur produite à la centrale, les LNC ont des conduites de condensat qui renvoient l'eau chaude des bâtiments à la centrale qui peut être réutilisée pour produire de la vapeur, ce qui réduit les besoins en énergie et en gaz naturel. Ces systèmes ont également été améliorés récemment en réparant les fuites du système, ce qui a augmenté le rendement du condensat de 41 %, contribuant ainsi à réduire davantage les émissions de gaz à effet de serre.

Enfin, les LNC travailleront également de concert avec le gouvernement du Canada, des universités et des partenaires de l'industrie à l'élaboration et à l'intégration des concepts et des technologies pratiques à leurs bâtiments afin d'en optimiser l'efficacité énergétique.

### LE SAVIEZ-VOUS?

La centrale électrique des LNC, qui fournit des services publics aux Laboratoires de Chalk River, a connu une baisse spectaculaire des émissions depuis le passage au gaz naturel à la fin de 2017, ce qui a entraîné :

- UNE RÉDUCTION DE 21 % DES ÉMISSIONS DE GES
- UNE RÉDUCTION DE 36 % DES ÉMISSIONS DE NOx
- UNE RÉDUCTION DE 96 % DES ÉMISSIONS DE $SO_2$

# ASSAINISSEMENT DE L'ENVIRONNEMENT AUX LNC

Guidés par leur politique environnementale, les LNC assainissent des zones sur le site de Chalk River

Depuis plus de 70 ans, les Laboratoires de Chalk River permettent de réaliser des innovations révolutionnaires en sciences et technologies nucléaires. Bien que les travaux à cet égard aient mené à des solutions d'énergie propre et à des découvertes médicales qui ont permis de sauver des vies et qui ont profité à des millions de personnes dans le monde, ils ont également généré des déchets nucléaires qui doivent être traités de façon appropriée. Les LNC élaborent de nouvelles techniques et utilisent des pratiques exemplaires pour planifier et exécuter des activités d'assainissement, réduire les déchets accumulés et s'assurer que leurs travaux n'ont pas d'incidence sur l'environnement qui nous entoure.

**Réduire les risques par l'entremise de l'assainissement**

Afin de s'assurer que les zones contaminées sur le site des Laboratoires de Chalk River sont assainies de manière responsable, que les risques pour la santé humaine et l'environnement sont réduits et que les responsabilités d'Énergie atomique du Canada Limitée sont réduites de façon efficace, les Laboratoires Nucléaires Canadiens (LNC) doivent établir des directives uniformes et claires dans le cadre de sa planification des activités d'assainissement. Cela comprend l'adoption de pratiques exemplaires canadiennes et internationales, l'élaboration d'objectifs de nettoyage progressifs, provisoires et à long terme pour le site de Chalk River, une entente sur les principes et les priorités qui doivent être utilisées pour guider les activités d'assainissement de l'environnement, et la caractérisation continue afin de bien comprendre les conditions du site et d'assurer une prise de décision éclairée.

Installation d'une barrière dans le marais Sud

Bien que les LNC aient déjà fait de grands progrès pour nettoyer le site des Laboratoires de Chalk River grâce aux activités d'assainissement de l'environnement, une quantité importante de déchets enfouis, de contamination du sol et de contamination des eaux souterraines demeure à des endroits précis du site. Au cours des prochaines années, les LNC continueront de prendre des mesures afin de réduire les risques pour l'environnement et de veiller à ce que les générations futures ne soient pas laissées à elles-mêmes pour s'occuper de ces déchets au site des Laboratoires de Chalk River.

**Enlèvement de l'ancien pipeline**

En raison de la corrosion, les fuites qui se sont produites par le passé dans un ancien pipeline long de 1 500 mètres, qui était utilisé pour le transport de déchets liquides radioactifs sur le site de Chalk River, se sont soldées par la contamination de deux petites superficies du sol le long du pipeline. Dans le cadre d'un essai effectué en 2018, les LNC ont réussi à enlever 150 mètres de pipelines afin de mettre à l'épreuve les techniques qui seront utilisées pour la remise en état à grande échelle, qui aura lieu au cours de la prochaine saison de travaux sur le terrain. Lorsque les travaux seront terminés, tout le sol contaminé sera assaini, et environ 85 mètres cubes de métal contaminé seront retirés du sous-sol du site.

Installation de traitement des eaux souterraines de Spring B

**Traitement des eaux souterraines entrant dans le marais Sud**

En raison d'une pratique désuète d'enfouissement des déchets utilisée pendant de nombreuses décennies, un panache d'eau souterraine contaminée qui se déplace lentement a coulé de l'une des zones de gestion des déchets des LNC vers une zone appelée le marais Sud. À l'été 2013, une barrière réactive perméable a été installée pour empêcher la contamination du marais Sud. La barrière canalise le panache vers des « vannes » où le contaminant, le Strontium-90, est retiré en toute sécurité avec un minéral d'origine naturelle appelé zéolite.

**L'installation de traitement des eaux souterraines de Spring B**

L'une des installations de traitement des eaux souterraines des LNC, située dans une source d'eau contaminée, est conçue pour éliminer les radionucléides des eaux souterraines. Après 20 ans d'exploitation réussie, elle approche de la fin de sa vie utile et sa modernisation est en cours. Le nouveau système, dont l'achèvement est prévu pour 2019, comprendra des améliorations de la capacité et de l'efficacité afin de mieux traiter les eaux souterraines.

## PROCHAINES ÉTAPES

Les Laboratoires Nucléaires Canadiens prévoient d'assainir les dernières zones contaminées du site de Chalk River, dont des sites d'enfouissement de déchets, et des sols et des eaux souterraines contaminés. Toutefois, pour que les travaux puissent se dérouler à grande échelle, il est nécessaire qu'on puisse placer dans un endroit sûr et approprié les matières contaminées, et l'installation d'élimination près de la surface proposée a été désignée à cet effet.

# PRÉVENTION ET RÉDUCTION DES DÉCHETS

La durabilité commence par la prévention de la production de déchets

Aux LNC, notre engagement à améliorer la performance et la durabilité environnementales commence par la prévention de la production de déchets, dans la mesure du possible. Si cela ne peut être évité, nous appliquons les principes de réduction, de réutilisation et de recyclage. L'élimination n'est utilisée qu'en dernier recours si aucune solution de rechange n'est disponible. Les activités de prévention permettent d'envoyer moins de déchets dans les sites d'enfouissement et les autres installations d'élimination, ce qui empêche les contaminants de pénétrer dans l'environnement, maximise l'utilisation des matières premières, réduit l'empreinte des sites d'enfouissement et permet d'économiser l'énergie qui aurait été nécessaire pour créer de nouveaux produits de consommation. Dans l'ensemble, la réduction des déchets est un élément clé de la politique environnementale des LNC. Ceux-ci ont établi un taux cible de recyclage de 35 % en 2018 et ils ont, en moyenne, dépassé ce taux.

**Stratégie intégrée de gestion des déchets**
La Stratégie intégrée de gestion des déchets des LNC oriente les employés des LNC dans la gestion de différents types de déchets. L'objectif de la stratégie est de veiller à ce que la gestion responsable des déchets fasse partie intégrante de tous les aspects du travail et qu'elle soit effectuée uniformément dans tous les emplacements des LNC au pays. Il s'agit également d'un document de référence qui encourage les employés à chercher constamment à améliorer la gestion des déchets et à prendre des mesures là où il est possible de le faire.

**Installation d'analyse des déchets**
L'installation d'analyse des déchets est un élément essentiel du processus de gestion des déchets aux Laboratoires de Chalk River. Les déchets provenant des projets de déclassement et des activités quotidiennes sont envoyés à cette installation pour être triés aux fins de réutilisation, de recyclage ou d'élimination. Les déchets qui sont assainis sont envoyés hors site à divers récepteurs locaux de déchets – les matières organiques et recyclables sont envoyées au centre de récupération des déchets de la vallée de l'Outaouais, les produits électroniques sont envoyés à Redi Recycling, les déchets sont envoyés à la décharge, les métaux sont envoyés à Kimco pour recyclage ou réutilisation, et le béton est concassé et peut être réutilisé sur place dans le cadre d'autres projets de construction.

**Caractérisation, tri et séparation des déchets**
Les LNC sont en train de mettre en service une installation de caractérisation des déchets ainsi qu'une installation de tri et d'isolement des déchets. Les déchets qui ne sont pas envoyés à l'extérieur du site seront envoyés pour un tri plus poussé dans ces installations, où des activités d'échantillonnage et d'analyse permettent de déterminer la teneur en substances physiques, chimiques et radionucléides, puis de déterminer les voies d'entreposage et d'élimination appropriées.

## DÉCLASSEMENT DE 67 BÂTIMENTS

Pour revitaliser le site de Chalk River, les LNC doivent s'occuper des bâtiments et des infrastructures désuets. Pour ce faire, ils doivent déclasser de vieilles installations et assurer la gestion sécuritaire des déchets de démolition d'une manière respectueuse de l'environnement.

Depuis 2016, la démolition de 67 bâtiments a eu lieu, ce qui représente une superficie de 240 000 pieds carrés. Cette démolition a produit 420 mètres cubes de déchets de faible activité qui seront destinés à l'IGDPS proposée, tandis que 40 mètres cubes de déchets de moyenne activité ont été enlevés et entreposés.

**Installation d'élimination près de la surface**
Les LNC ont proposé la construction d'une installation de gestion des déchets près de la surface (IGDPS) pour les déchets radioactifs de faible activité, ce qui comprend les débris de bâtiments, les sols contaminés et l'équipement de protection individuelle. Si l'IGDPS est approuvée par la Commission canadienne de sûreté nucléaire (CCSN) et construite, ces déchets seront regroupés dans le nouveau monticule artificiel de confinement, conçu pour isoler les déchets en les encapsulant de façon sécuritaire en surface et au sous-sol avec de multiples couches de matières naturelles et spécialement transformées.

# SANTÉ ET BIEN-ÊTRE AUX LNC

Les CNL sont une entreprise qui possède une expertise de calibre mondial dans les domaines de la physique, de la métallurgie, de la chimie, de la biologie et de l'ingénierie, et qui a remporté deux prix Nobel. Il ne fait donc aucun doute que le plus grand atout des LNC, sont leurs ressources humaines. Nous sommes déterminés à tout faire pour que nos employés soient en santé, heureux et soutenus. L'une des meilleures façons d'y parvenir est d'aider nos employés à se rapprocher du magnifique environnement qu'offre la vallée de la rivière des Outaouais. Inutile de se doter d'une politique d'entreprise pour ce faire – de nombreux employés se joignent aux LNC en raison de ce que la région a à offrir, et ils choisissent de rester dans la région au moment de leur retraite, pour la même raison.

**Rapprocher les gens de la nature**

L'approche des LNC en matière de mieux-être des employés cadre parfaitement avec la Stratégie fédérale de développement durable, qui vise à rapprocher les Canadiens de la nature. Passer du temps en nature peut permettre d'améliorer la santé physique et mentale et le plein air et l'expérience de la nature inspirent également les Canadiens à protéger leur environnement.

Depuis des décennies, les Laboratoires de Chalk River encouragent les employés à utiliser le vélo et le ski de fond pour se rendre au travail en empruntant des routes et des sentiers panoramiques à usage autorisé pendant les mois d'été et d'hiver. Des bénévoles aident même à assurer la sécurité des sentiers en hiver. Les sentiers pédestres sur place permettent aux employés d'admirer la magnifique rivière des Outaouais et l'historique Oiseau Rock, à moins de dix minutes de leur lieu de travail. Les sentiers et les promenades sont également entretenus, de manière à encourager les employés à faire des randonnées à l'heure du midi et à essayer divers parcours, de 500 mètres à plus de 4 kilomètres! Les employés ont également organisé des activités hors site dans le cadre d'activités sociales et d'excursions d'aventure, y compris des randonnées dans le parc Algonquin, des descentes en eau vive, des traversées à la nage des rivières Petawawa et des Outaouais, des courses sur pistes boueuses en Ontario, de la tyrolienne au Québec et le patin en famille sur la piste de patinage de la vallée Laurentienne.

**Programmes de santé et de bien-être**

Les LNC soutiennent également la santé et le bien-être des employés grâce à divers services. Ils sont dotés d'un centre de santé sur place où travaillent des infirmières autorisées et des infirmières auxiliaires, prévoient des visites hebdomadaires de plusieurs professionnels de la santé réglementés (y compris des conseillers ayant reçu une formation en thérapie cognitivo-comportementale) et offrent un programme complet d'aide aux employés et aux familles pour aider les familles à relever les défis de la vie. Les LNC offrent également de la formation en santé mentale et des programmes de soutien et de retour au travail avec des soins pour les problèmes de santé mentale aigus et chroniques. En 2019, les LNC visent à poursuivre la mise en œuvre du milieu de travail sécuritaire sur le plan psychologique de l'Association canadienne de normalisation.

Pour aider les employés à demeurer en bonne santé physique, les LNC offrent un centre de conditionnement physique à leur site de Chalk River et organisent des cours de conditionnement physique hebdomadaires avec un kinésiologue agréé sur place. Une équipe de professionnels de la santé et de la sécurité au travail est également disponible pour des consultations sur des problèmes physiques, comme la douleur aiguë et chronique, pour offrir du soutien en matière d'ergonomie industrielle et de bureau, et pour fournir des évaluations sur place en vue d'encourager le levage sécuritaire et de bonnes habitudes ergonomiques pour divers types de tâches.

**Prochaines étapes**

Les LNC prévoient créer un nouveau centre de santé dans le cadre de leur programme de revitalisation. Nous travaillons également à faire venir régulièrement sur place des professionnels de la santé réglementés afin d'offrir aux employés des services de traitement plus pratiques. Nous continuerons de chercher à améliorer la santé des employés, notamment par la mise en œuvre d'une stratégie décennale sur la santé et le mieux-être et par la création d'une initiative sur la santé en milieu de travail dans le comté de Renfrew afin de mieux collaborer avec nos collectivités locales.

# PROTECTION DE LA FAUNE AUX LNC

## PRISE EN COMPTE DE L'IMPACT DE NOS ACTIVITÉS SUR LA NATURE

Aux Laboratoires de Chalk River, nous avons la chance de travailler dans un magnifique environnement riche d'une grande variété d'espèces végétales et animales. En route vers le travail, il n'est pas rare que les employés aperçoivent une famille d'ours se faufiler dans la forêt, des renards qui empruntent les mêmes chemins qu'eux pour se rendre à destination, des dindes sauvages qui se chamaillent pour de la nourriture ou d'autres espèces qui font de ce site un lieu de travail des plus agréable et intéressant.

Dans le cadre de leur politique environnementale officielle, les LNC se sont engagés à tenir compte de l'impact de leurs activités sur cette faune et les terres environnantes, et à réduire ou éliminer cet impact dans la mesure du possible. Nous voulons assurer la protection de la biodiversité qui caractérise notre campus de Chalk River – la variété unique de plantes, d'animaux, d'insectes et de vie aquatique – pour les générations futures.

Les employés de la Protection de l'environnement des LNC examinent une tortue mouchetée sur le site des Laboratoires de Chalk River.

En gardant cet objectif à l'esprit, les employés du programme de protection de l'environnement des LNC ont passé la dernière décennie à évaluer cette faune afin de constituer une base de données exhaustive des espèces qui habitent le site de Chalk River, en mettant particulièrement l'accent sur les « espèces en péril ». En utilisant cette liste, les LNC ont pu déterminer quelles espèces risquaient d'être touchées par leurs activités, ce qui leur a permis de concentrer leur attention sur ces plantes et animaux vulnérables.

**Protection des oiseaux, des chauves-souris et des tortues**

Si vous avez visité le campus de Chalk River, vous avez peut-être remarqué des panneaux routiers qui invitent les conducteurs à prendre garde aux tortues. Ils sont le résultat d'une étude des LNC, menée en partenariat avec l'Université d'Ottawa, qui a examiné les préférences en matière d'habitat et les déplacements des tortues mouchetées dans l'ensemble du site. Pour protéger cette espèce, les LNC ont déjà installé un tunnel sous une route importante pour favoriser le déplacement des tortues en toute sécurité pendant la saison de reproduction, et plusieurs autres tunnels seront aménagés sous notre route principale. Dans une autre étude, menée cette fois avec l'Université Trent, les LNC ont examiné le comportement des martinets ramoneurs, une autre espèce en péril que l'on trouve à deux endroits sur les sites d'EACL, soit à la cheminée de ventilation au site du projet de réacteur nucléaire de démonstration (NPD) à Rolphton, et à une cheminée semblable au campus de Chalk River. Notre étude a déterminé que ces cheminées sont des dortoirs essentiels pour les oiseaux pendant leur migration annuelle, et les LNC ont donc pour objectif de préserver ces structures.

Les LNC ont pris des mesures pour protéger d'autres espèces qui pourraient être perturbées par leurs activités en cours. Par exemple, les LNC ont installé quatre structures de nidification artificielle pour les hirondelles rustiques, qui, nous l'espérons, seront utilisées cet été. Nous avons également installé, dans un habitat convenable, 16 perchoirs à chauves-souris qui peuvent servir de gîtes de maternité pendant les mois d'été. À ce jour, les LNC ont repéré des petites chauves-souris brunes, également une espèce en voie de disparition, qui utilisent 75 p. 100 des boîtes.

**Activités futures**

À mesure que les activités de déclassement et de revitalisation des LNC se poursuivent, nos efforts pour étudier, comprendre et atténuer les répercussions de notre travail sur la faune et les terres environnantes se poursuivent. Nous avons mis en œuvre un autre projet de recherche avec l'Université Trent pour trouver des sites de repos optimaux pour les espèces de chauves-souris en voie de disparition, dont la petite chauve-souris brune, la chauve-souris nordique, la pipistrelle de l'Est ou la chauve-souris pygmée de l'Est, afin de protéger leurs habitats sensibles. Les LNC prévoient également de déterminer et de protéger l'habitat des monarques, qui est essentiel au cycle de vie de ces papillons en voie de disparition. Grâce à ces activités et à de nombreuses autres, notre équipe de protection de l'environnement s'efforce de s'assurer que nous pouvons cohabiter pacifiquement avec ces créatures dans les environnements que nous partageons.

## UN SITE CERTIFIÉ OR

Les LNC ont obtenu la certification or en conservation du Wildlife Habitat Council (WHC) pour leur site des Laboratoires de Chalk River. Les entreprises qui obtiennent la certification en conservation du WHC sont considérées comme des chefs de file en matière d'environnement qui gèrent volontairement leurs terres de manière à soutenir des écosystèmes durables et les collectivités qui les entourent.

# APPEL À TOUS LES ÉLÈVES!

*Vous souciez-vous de la nature et de l'environnement? Aimez-vous écrire et dessiner? Le 22 avril, Jour de la Terre, approche et nous avons besoin de votre aide!*

## ENFANTS DE 10 ANS ET MOINS

Le site de Chalk River des LNC abrite une petite population de tortues qui ont tendance à utiliser nos routes.

Pour aider les conducteurs à repérer les tortues sur la route, nous avons besoin de votre aide pour remplacer notre panneau indicateur traditionnel de passage de tortues par un panneau de votre cru. N'oubliez pas que la simplicité est parfois préférable, car nous ne voulons pas distraire les conducteurs!

Toutes les propositions seront examinées par un groupe de juges ici aux LNC et la conception retenue servira à la confection du panneau routier permanent.

## ENFANTS DE PLUS DE 10 ANS

La protection des nombreuses espèces animales qui vivent sur le campus des Laboratoires de Chalk River – près de 10 000 acres – est l'une des principales priorités des LNC.

Si vous êtes du même avis, voilà qui est formidable! Nous voulons vous entendre. En un maximum de 500 mots, dites-nous pourquoi il est important de traiter les animaux avec respect et ce que vous faites pour vous assurer que les animaux de votre communauté sont protégés.

Tous les textes soumis seront examinés par un jury ici aux LNC et la composition gagnante sera publiée dans notre prochain numéro de CONTACT. Bonne chance!

Veuillez faire parvenir votre texte à Lisa Theil, aux LNC, au plus tard le 03 mai 2019. Les textes peuvent être transmis par courriel à lisa.theil@cnl.ca ou envoyés par la poste au 286, chemin Plant, Chalk River (Ontario) K0J 1J0.

Canadian Nuclear Laboratories
Laboratoires Nucléaires Canadiens

Communications des LNC
286, rue Plant, Stn 700 A
Chalk River (Ontario)
K0J 1J0

Numéro sans frais : 1-800-364-6989
Télécopieur : 613-584-8272
communications@cnl.ca
www.cnl.ca

CONTACT est une publication du Service des communications des LNC.

# APPENDIX H STAKEHOLDER ENGAGEMENT

**From:** >Communications
**Sent:** June 18, 2019 3:12 PM
**Subject:** Join us for the next in our series of bi-monthly breakfast briefings!

Good afternoon,

We would like to invite you to join Canadian Nuclear Laboratories (CNL) for our next in our series of bi-monthly breakfast briefings that will keep you up to date on the Near Surface Disposal Facility (NSDF) and Nuclear Power Demonstration (NPD) Closure project activities. As someone with an interest in the laboratories and a familiarity with nuclear science, we encourage you to join one or all of our discussions.

Our June meeting will host a presentation with guest speaker Dr. Kerry Rowe from Queen's University, followed by a presentation on the Chimney Swifts at NPD.

**Wednesday, June 26, 2019**
**Deep River Public Library (Downstairs)**
**8:00 a.m. – 10:00 a.m**.

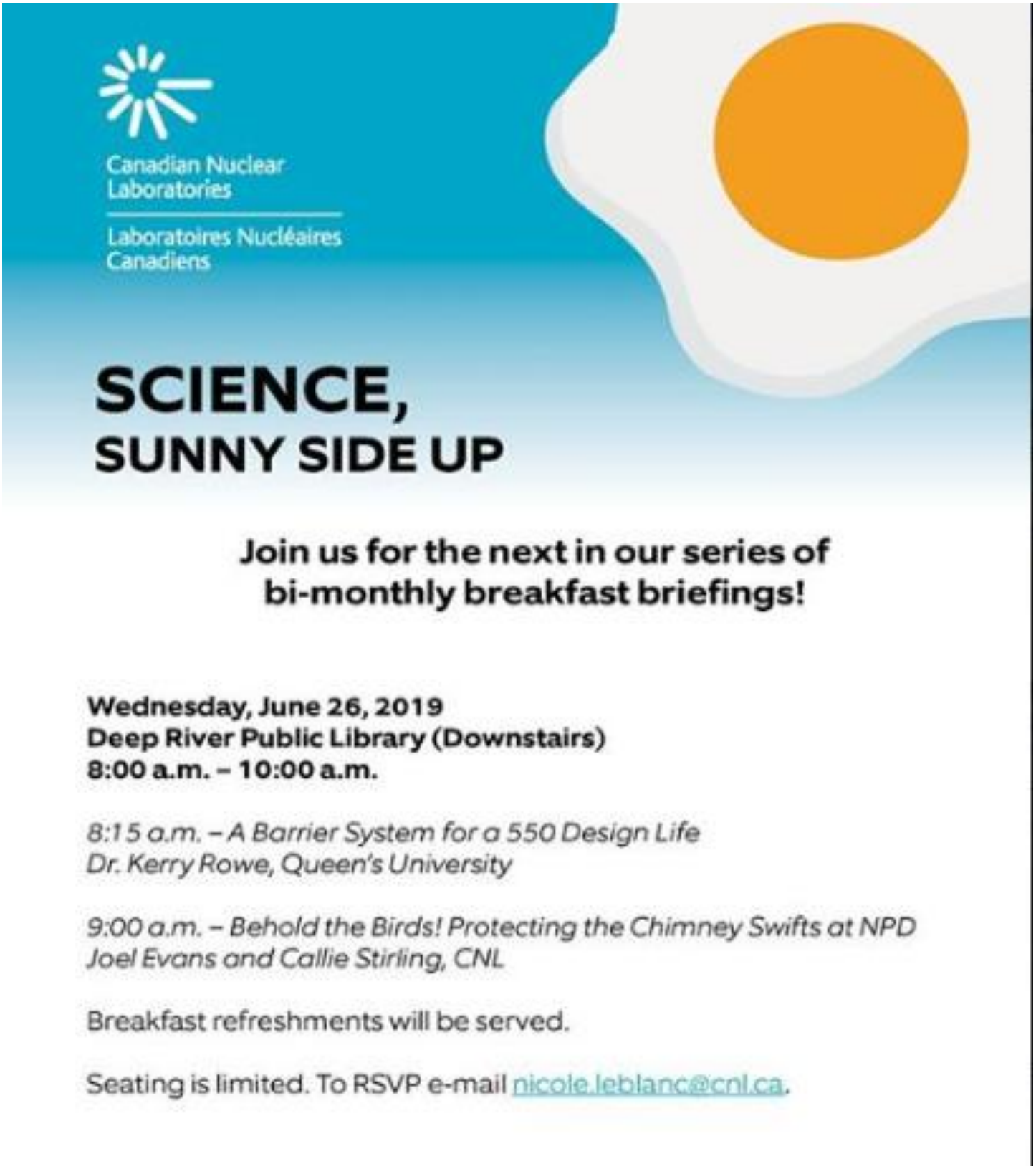
**8:15 a.m. – A Barrier System for a 550 Design Life - Dr. Kerry Rowe, Queen's University**
**9:00 a.m. – Behold the Birds! Protecting the Chimney Swifts at NPD - Joel Evans & Callie Stirling, CNL**

Breakfast refreshments will be served. Seating is limited and to ensure we have enough refreshments, we would ask that you RSVP no later than Monday, June 24 to Nicole LeBlanc.

Thank you, and we hope to see you there. Mark your calendars, our next Breakfast Briefing will be held on Wednesday, September 18, 2019.

**CNL Corporate Communications**
Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

**APPENDIX I ADVERTISEMENT**



## APPENDIX J PUBLIC SERVICE ANNOUNCEMENT SCRIPT

*Canadian Nuclear Laboratories will be holding Public Information Sessions to discuss updates on two important projects: the Near Surface Disposal Facility, and the NPD Closure Project. For dates, locations and times – go to c-n-l dot c-a.*

## APPENDIX K MYCNL POSTING

# Video: How the proposed NSDF will handle rain

Unfollow Environmental Remediation Management

Home > Environmental Remediation Management > Video: How the proposed NSDF will handle rain

Last updated by Philip Kompass on January 22, 2019


Building a Near Surface Disposal Facility at Chalk River Laboratories will allow CNL to clean up the Chalk River site after decades of world class nuclear science and research. It will also allow CNL to revitalize to support the nuclear research needs of the Canadian government and the ever evolving science and technology needs of the Canadian and global nuclear industry.

But will it be safe?

The NSDF team has unique international experience and technical knowledge of radioactive waste disposal. The team has made sure the design can handle anything nature can throw at it, including heavy rain. The following video follows the lifecycle of a raindrop through the NSDF system. Watch as the drop comes into contact with the waste but is not released back into the environment unless it meets regulatory limits. The care and effort going into the design of the NSDF, reflect how CNL put the environment and people first.

Let us know what you think in the comments section. Are there other topics you would like us to cover?

LIKE 35 LIKES 9 COMMENTS

**RECENT POPULAR NEWS**

Facilities Decommissioning gains access to difficult tanks in B220
August 12, 2019

Video: ERM July Highlights
August 12, 2019

New Waste Form Data Form launches August 1
July 24, 2019

**ARCHIVE**

2019

2018

## APPENDIX L VOYAGEUR ARTICLE

# BUILT TO LAST: DESIGNING THE NSDF LINER SYSTEM

**Testing program results show that anticipated design life of NSDF liner system exceeds 550 years**

To enable environmental cleanup of the Chalk River site, CNL has proposed the construction of the NSDF, an engineered containment mound that would allow us to safely dispose of low-level radioactive waste generated from environmental remediation and decommissioning activities. This facility features a liner system designed to contain radionuclides in the waste for an appropriate length of time, allowing for radioactive decay and ensuring the risk to the environment and public is acceptably low.

Collaborations between CNL and world-leading experts from waste disposal industries and academia, including Dr. Kerry Rowe, an international expert in liner systems, have been a major part of the NSDF project. One interesting initiative focuses on the design of composite liner systems and testing of what's known as the 'High Density Polyethylene (HDPE) geomembrane.' This collaboration has enabled CNL to apply state-of-the-art technology and best engineering practice in the liner system design, including protective sand cushion layers, features that have been proven by Queen's University researchers to effectively reduce maximum strain in the HDPE geomembrane and increase its service life.

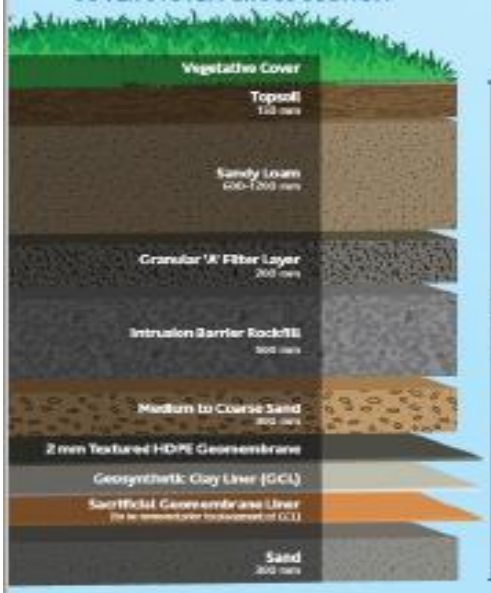
In order to build confidence in the durability of this key safety barrier for the facility, the project initiated a testing program to systematically select the most suitable HDPE geomembrane. The program included a series of tests to assess the properties and expected service life of multiple geomembrane candidates when immersed in simulants comparable to those anticipated for the NSDF, including subjecting the material to elevated heat conditions to simulate accelerated aging process. This method to assess its long-term performance has been used in numerous peer-reviewed journals and accepted by the scientific community. The results have provided scientific-based evidence that more than one geomembrane candidate will significantly exceed the NSDF design service-life requirements of 550 years, and the anticipated service life of some candidates is close to 1,000 years.

The project will apply best practices during construction, including stringent quality assurance. Despite all of CNL's best efforts to reduce imperfections in the system, small defects of the HDPE geomembrane are anticipated during construction. However, this issue has been taken into consideration in the design of the broader liner system and in the safety assessment of the NSDF's engineered containment mound, and does not pose an issue to the integrity of the facility or its overall performance.

This program has brought benefits beyond the NSDF project. The testing program has advanced Canadian research for the development of modern landfill and hazardous disposal facilities. And, at least one new expert in liner systems will be born from this testing program in the next few years.

## Cover and base liner systems

### COVER SYSTEM CROSS SECTION

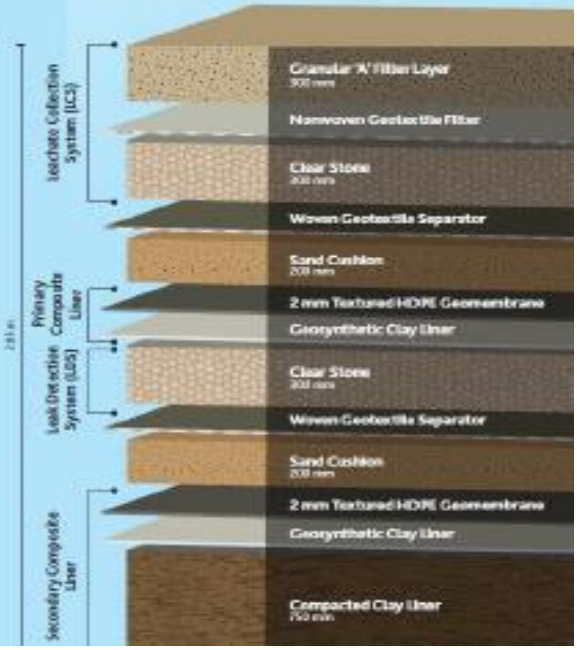



### DEFENCE IN DEPTH

There will be multiple engineered barriers to enhance the safety & reliability of the NSDF.

- A complex cover system to protect against erosion, provide drainage and prevent intrusion of plant roots and burrowing animals.
- A double composite base liner system with primary & secondary liners that will fully encapsulate the waste and restrict the movement of water, precluding the release of contaminants to the environment.
- A leachate collection system to collect and convey leachate generated in the ECM to the Waste Water Treatment Plant.
- A leak detection system to ensure the primary composite liner is functioning as designed.
- Performance monitoring systems to confirm the integrity and effectiveness of the wastewater treatment process and to enable repairs.
- Environmental monitoring systems (ground, surface, water, air) to verify compliance for at least 100 years following the end of operation.

### BASE LINER SYSTEM CROSS SECTION



## APPENDIX M FACEBOOK POSTS

CNL Facebook Post

**Canadian Nuclear Laboratories**
Published by Nicole LeBlanc [?] · 26 August ·

Did you know the proposed NSDF will allow for the environmental remediation and local, long-term, safe disposal of low-level radioactive waste currently in temporary storage on-site?

It is responsible to deal with this waste now, and not pass it along to future generations. By building a state of the art waste disposal facility at Chalk River Laboratories, CNL will reduce risk to the public, our workers and the environment.

For more information about the proposed NSDF: https://www.cnl.ca/ .../environmental-stewar.../nsdf/default.aspx


**3,340**
People reached

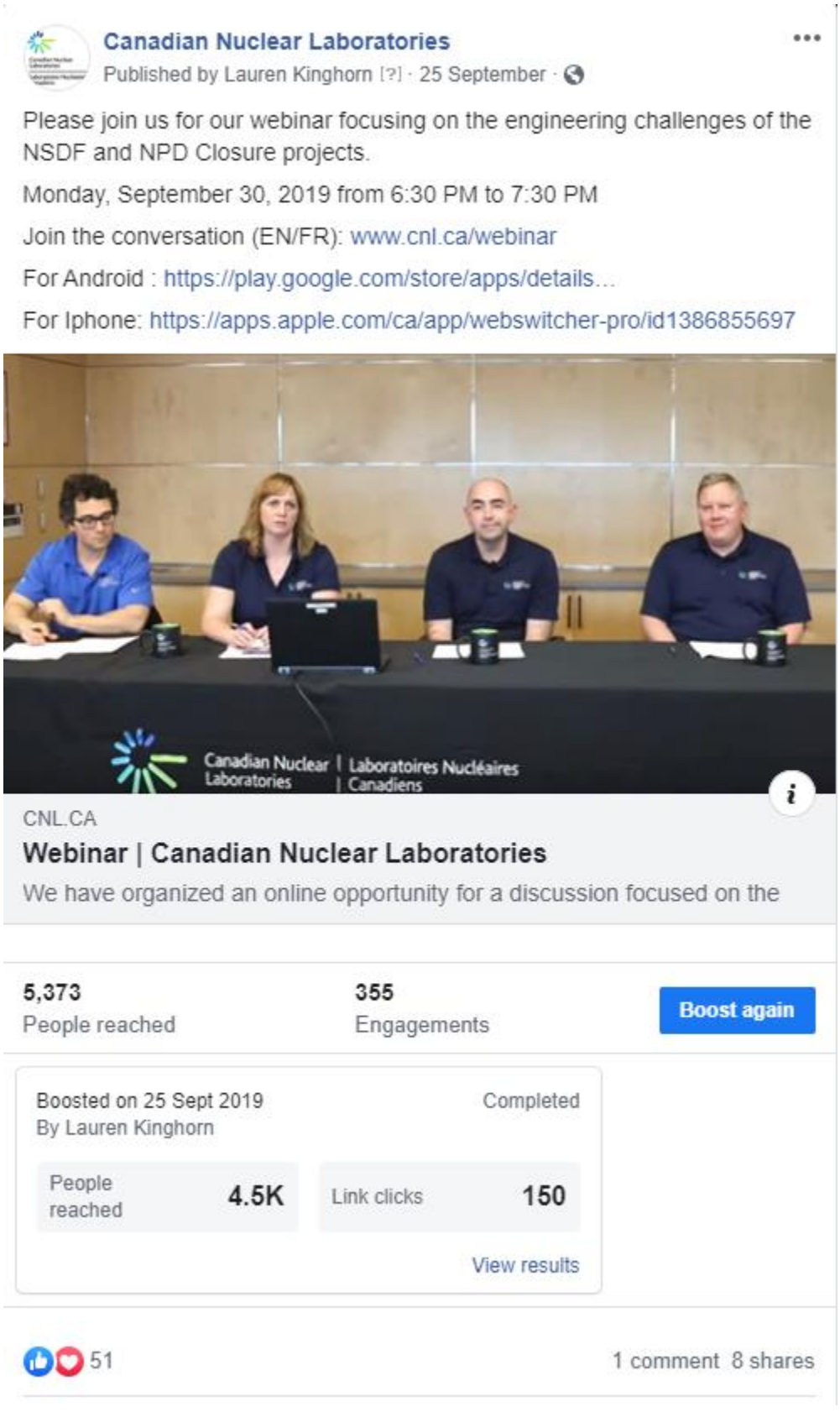
**438**
Engagements

**Boost Post**

55

5 comments 16 shares

CNL Boosted Facebook Post



**APPENDIX N NSDF TWEET**

**CNL | LNC**
@CNL_LNC

📣 Calling all those who want to learn more & discuss the #NSDF & #NPD projects.
We are hosting a #webinar on March 20, 2019 beginning at 6:30 p.m.
Join the conversation: cnl.ca/webinar
We will allow plenty of time for Q&A. Your input is important to us.

## APPENDIX O LINKEDIN POST

**Canadian Nuclear Laboratories**
10,375 followers
8mo

📣 Calling all those who want to learn more and discuss two of our key environmental remediation projects: the Near Surface Disposal Facility (NSDF) and the closure of the Nuclear Power Demonstration (NPD) reactor.

We are hosting a webinar on March 20, 2019 beginning at 6:30 p.m.

Join the conversation: www.cnl.ca/webinar

We will allow plenty of time for questions and answers. Your input, comments and feedback are important to us.

More information on the projects and how you can get involved can be found at www.cnl.ca/nsdf or www.cnl.ca/npd.

47 • 1 Comment

Like Comment Share Top Comments

## APPENDIX P NSDF NEWS ARTICLE

**NEWS** LOCAL

# Bloc joins the fight against NSDF

By Stephen Uhler, The Daily Observer
Thursday, August 10, 2017 2:49:29 EDT PM

Image: 1 of


Stephen Uhler/Pembroke Daily Observer/Postmedia Network A small crowd watches as Martine Ouellet, leader of the Bloc Quebecois, speaks at the Nuclear Guardianship Picnic, held in Riverside Park Tuesday. The event was held to protest the near surface disposal facility proposed for the Chalk River site by Canadian Nuclear Laboratories.

The people opposed to Canadian Nuclear Laboratories' (CNL) near surface disposal facility project have gained a political ally.

Martine Ouellet, leader of the Bloc Québécois who sits as an independent member of Quebec's National Assembly, has been on a fact findin tour of the area, meeting with Outaouais environmental groups, the mayor of Gatineau and the Old Fort William Cottagers Association, and touring the Chalk River site.

She wrote the Water Protection Charter for the Parti Quebecois and was Environment Minister in Quebec for two years. She is also a mechanical engineer by trade and before entering politics worked for Hydro Quebec for 20 years.

Ouellet was the guest speaker at the Nuclear Guardianship Picnic, held Tuesday at Pembroke's Riverside Park, hosted by the Concerned Citizens of Renfrew County and Area. She came out strongly against the idea of the NSDF project, which if approved by the Canadian Nucle Safety Commission will be used to dispose of mainly low-level radioactive materials, most of which is generated or already stored on-site for the next 50 years.

She said it didn't make sense to build such a mound a kilometre away from the Ottawa River, which supplies water for millions. Any leakage which may occur on land will end up in the river, following the flow of groundwater.

"You don't play with radioactivity," Ouellet said. "I don't understand how people would have something like that so close to the river. How can they think about that and put people at risk? It is nonsense. It is basic. One plus one equals two."

The MNA said if the NSDF was constructed, it would have an impact on the other side of the Ottawa River as well as the Ontario side. She s Quebec municipalities are being mobilized to register their objections with the project, and she encouraged opponents in Ontario to do the same.

"The power of people is a lot stronger," Ouellet said. "When we work together, we can stop anything."

CNL has maintained the site will be engineered to be safe, complete with layers of liners to contain the material and a water treatment facility on site to deal with water that trickles through the mound, but doesn't get out.

The company said the NSDF will be used to dispose of mostly low-level waste and a small amount of intermediate-level waste, mainly contaminated soil and building debris resulting from the decommissioning and demolition of more than 100 buildings and structures at the Chalk River site – a necessary part of revitalizing the site. Some 10 per cent of the material will come from off-site sources such as hospitals and universities, and from AECL facilities like Whiteshell, Manitoba.

It is designed to also provide a safe and permanent disposal for waste from 65 years of science and technology and the laboratories' continuing operations.

Opponents have criticized its location, the containment mound's design and the fact waste from other Atomic Energy of Canada Ltd. sites outside the area will be allowed to be transported to it.

Lynn Jones of the Concerned Citizens of Renfrew County and Area, said Canada has to do a lot better job of disposing its radioactive waste.

"No country anywhere else in the world would consider piling one million cubic metres of long-lived radioactive wastes in a giant mound besi a river that flows past the Houses of Parliament and provides drinking water for millions of its citizens," she said.

Jones said there are better ways to deal with this material than this "cheap and dirty" proposal, such as a more fully engineered site done to international standards located further away from the river.

She said while this multi-million dollar project looks impressive, if CNL did it the way the Concerned Citizens have been pushing for, the mon invested in the area could be in the billions.

The deadline for comments on CNL's draft environmental impact statement (EIS) regarding the disposal facility is Aug. 16. If it is approved by the Canadian Nuclear Safety Commission, with public hearings likely to start in mid-2018, construction would begin later that same year.

SUhler@postmedia.com

## APPENDIX Q DETECT AND CORRECT RESPONSE

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

**October 10, 2018**

**Attention:** Editor, Arnprior Chronicle-Guide

**RE:** Make nuclear waste site Ottawa Valley election issue: coalition

Dear Editor,

Earlier this week, the Arnprior Chronicle-Guide published an article which contained a number of factual errors and inaccurate claims about CNL's proposed Near Surface Disposal Facility (NSDF) project that must be corrected. First and most importantly, the NSDF is designed to protect the environment, not to harm it. As local residents, CNL employees care deeply about the surrounding area and the Ottawa River, and have a shared interest in responsibly managing and addressing waste on behalf of the Government of Canada.

And we are very good at it. For over 70 years, Chalk River Laboratories has been a world leader in the development of technologies that have improved public health, clean energy, national security and environmental protection. Today, the Chalk River Laboratories is undergoing a major transformation, funded through an ongoing federal investment of more than $1.2 billion over ten years. This involves decommissioning aging buildings and the construction of new, world-class science facilities. Once complete, the transformation will ensure CNL retains its position as a world leader in the development of peaceful and innovative applications of nuclear science and technology.

The NSDF is a key part of this site revitalization plan, allowing CNL to clean up and isolate historic, low-level contamination that is currently present at Chalk River Laboratories site, and dispose of the waste in a facility designed to withstand extreme events, including flooding and earthquakes – a concern that was raised in your article. These facilities are recognized internationally as a safe and appropriate way to dispose of low-level waste, and are being used successfully in Canada and the United States.

The NSDF will not be open to the elements for 50 years. The facility will contain 10 cells, each of which will be filled with low-level radioactive waste made up of clothing, contaminated building debris, and contaminated soils. During waste placement, each cell will be capped once it is filled, leading towards the installation of a final cover system. Water contact will be minimized throughout the entire process, and any precipitation that does contact the waste will be collected and treated to remove contaminants through a dedicated water treatment plant.

The NSDF will also be under institutional control for over 300 years, a period during which CNL will regularly monitor and inspect the closed facility to ensure it continues to perform as designed. I hope this makes it clear that people who use the Ottawa River as a source of drinking water, including nearly 2,800 CNL employees and their families – who live closest to the facility – that the Ottawa River will be fully protected by this facility.

Protection of the public, its employees and the local environment is CNL's top priority. The implication that we are ignoring public safety, the health and well-being of the local environment or our strict regulatory requirements in the design and completion of this project is unfounded and inaccurate.

Finally, this project is also subject to a federal government-led, and very public, environmental assessment process. In order to proceed, CNL requires an environmental assessment decision and authorization from the Canadian Nuclear Safety Commission. Members of the public are welcome to participate in this assessment, and are encouraged to raise any concerns they have through this formal review process.

Readers are also invited to follow CNL's social media accounts on Facebook and Twitter for the latest news and information on the NSDF and our other important projects, or visit our website at www.CNL.ca.

**Pat Quinn**
Director, Corporate Communications
Canadian Nuclear Laboratories

## APPENDIX R 2016 MAY – 2019 JUNE NSDF INFORMAL FEEDBACK

| Informal Feedback 2016 | | | | | |
|---|---|---|---|---|---|
| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| June 2016 | QC | Public Information Session feedback form | I am not clear on the crew that will be hired to demolish the old site - what qualifications are necessary? | **Proposed Response:** CNL will be employing CNL staff to lead and conduct demolition activities at the Chalk River site. At times, demolition activities may be supplemented with contractor support. Demolition activities will be conducted per all regulatory requirements. This includes all necessary health and safety qualifications, environmental protection and operator licences etc. Any external employment opportunities at CNL for in support of these or other project related activities will be posted on www.cnl.ca website with all needed qualifications listed within the job description. | No |
| June 2016 | QC | Public Information Session feedback form | Very good to know that all environmental issues are being studied. | **Action:** Comment recorded, no response required. | No |
| June 2016 | QC | Public Information Session feedback form | Excellent presentation. No questions. | **Action:** Comment recorded, no response required. | No |

| Informal Feedback 2016 | | | | | |
|---|---|---|---|---|---|
| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| June 2016 | ON | Email | Request: Site Visits to Project Sites for Near Surface Disposal Facility at Chalk River and NPD Decommissioning Project at Rolphton. | **Action:** Site tour with Northwatch occurred in 2016 July. | Yes |
| June 2016 | QC | Public Information Session feedback form | Why does Canada continue to take waste from the U.S.? Or is it vice versa? | **Verbal Response:** Explanation of GTRI program was provided explaining that Canada is currently repatriating material to the US. On 2016 July 11 a follow-up call was placed to confirm that the commenter had received sufficient information. No further information was required. | Yes |
| June 2016 | QC | Public Information Session feedback form | Still waiting on cell service for the ZEC. Great presentation and we do need the workforce in our area. | **Verbal Response:** Request unrelated to NSDF/ NPD projects. This request is in direct relations to Emergency Preparedness measures for the ZEC. Corporate Communications and Emergency Protection Branch re-issued relevant correspondence to commenter. | Yes |
| June 2016 | QC | Public Information Session feedback form/Email | Design of disposal facility built to withstand what magnitude of earthquake and what safety measures are in place should this occur? | **Response:** The design for the Near Surface Disposal Facility (NSDF) is not yet complete. The NSDF will be designed to meet all applicable international, national and provincial codes and standards. The design begins with an analysis that measures the amount of radiation that will be released in the unlikely event of failure of | Yes |

| Informal Feedback 2016 | | | | | |
|---|---|---|---|---|---|
| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | | | the isolation system that consists of the baseliner and cover systems. The analysis will determine exactly how earthquake-resistant the facility should be. This approach is consistent with the way seismic design is performed for all of CNL's nuclear structures, which aims at achieving an adequate margin of safety against failure. In studies conducted to date at the two candidate sites, both concluded that the soils are of adequate stability and integrity and are not subject to liquefaction in the event of an earthquake. With respect to safety measures, the multi-layer base liner and cover systems are key safety features of the engineered containment mound. They are made from synthetic materials (such as high-density polyethylene geomembrane and non-woven geotextile fabric) and natural materials (such as clay, sand and cobblestone) that work together to ensure that waste is isolated within the mound and that no contaminants escape into the environment. Within the base-liner is a piping system that collects water which has made direct contact with the waste. A wastewater treatment plant built specifically for this purpose will treat this water to remove any contaminants. As the design of the facility progresses more information on this subject will be made available. Please continue to visit our project site, www.cnl.ca/nsdf for further updates, or contact us directly. | |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| June 2016 | QC | Public Information Session feedback form/Email | Information on monitoring air, water contaminations. | **Response:** CNL's Environmental Protection Program maintains a comprehensive effluent and environmental monitoring program of more than 400 sampling locations with approximately 30,000 analyses performed each year at our Chalk River Laboratories (CRL). Monitoring is regularly conducted on various media, including ambient air, surface water, vegetation, soil and sediments, and game animals, at various locations on and off the site. CNL publishes monitoring results in summary on our website. The Environmental Performance – Chalk River Laboratories report can be found by selecting CRL Environmental Reporting at the following web page: http://www.cnl.ca/en/home/environmental-stewardship/performance-report/default.aspx You can also find monitoring information specifically related to the Nuclear Power Demonstration (NPD) site there, as well http://www.cnl.ca/site/media/Parent/NPD_Environmental_Performance_Eng.pdf Annual Environmental Monitoring Program results are also published in the Annual Safety Report which is submitted to the Canadian Nuclear Safety Commission. An executive summary of this report is available on our website, the full report can be provided to interested individuals upon request: | Yes |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | | | http://www.cnl.ca/site/media/Parent/CRL-509243-ASR-2014_Eng.pdf | |
| June 2016 | QC | Public Information Session feedback form/Email | Will consideration be given to provide jobs or buy material such as sand that could be delivered by large, to the closest full time residents to the site in Sheenboro, QC? Will you continue to monitor and publish post-test reflects on the fish we catch and eat from the Ottawa River. | **Response:** The NPD Closure and NSDF Projects will competitively procure material and services. This could include local suppliers. CNL employment opportunities may arise due to project activities and will be posted on the www.cnl.ca website. Local suppliers may be engaged directly by CNL or as sub-contractors to a prime supplier. One point of access for potential suppliers is through our external website: http://www.cnl.ca/en/home/work/supply-chain/default.aspx<br><br>CNL will continue to conduct and post results of the Chalk River Laboratories (CRL) Environmental Monitoring Program. Monitoring is conducted through the routine collection and analysis of environmental samples from numerous locations at the CRL site and in surrounding communities in order to measure the concentrations of contaminants in every significant environmental compartment involved in the migration of contaminants throughout the environment. Monitored media include ambient air, foodstuff (e.g. milk, fish, garden produce, large game, and farm animals), groundwater, Ottawa River water, and other surface waters on and off the site. Monitoring of beach sand, ground surfaces, and meteorological conditions is | Yes |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | | | also performed. Results are published in the Annual Safety Report which is submitted to the Canadian Nuclear Safety Commission. An executive summary is available on our website and the full report can be provided to interested individuals upon request: http://www.cnl.ca/site/media/Parent/CRL-509243-ASR-2014_Eng.pdf<br><br>For additional reading specific to sport fish, you may want to review the results of the "Edibility of Sport Fishes in the Ottawa River near Chalk River Laboratories" this study was published in 2014. A PDF copy of the article can be found at: http://pubs.cnl.ca/doi/abs/10.12943/ANR.2013.00020<br><br>CNL is committed to both studying and continuously improving the low impact of our operations on the environment. The Environmental Protection Program maintains a comprehensive effluent and environmental monitoring program of more than 400 sampling locations with approximately 30,000 analyses performed each year at our Chalk River Laboratories (CRL).Updated environmental performance reporting results can be found here (these are published quarterly): http://www.cnl.ca/site/media/Parent/CRL_Performance_Eng.pdf | |

| Informal Feedback 2016 | | | | | |
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| June 2016 | QC | Letter/Email | Questions from the Old Fort William Cottagers Association (OFWCA). | **Response:** See questions and responses to OFWCA below (Note 1). | Yes |
| July 2016 | ON | Public Information Session feedback form | Good plan, build away. | **Action:** Comment recorded, no response required. | No |
| July 2016 | ON | Public Information Session feedback form | We need more projects to happen at CNL. This is a very good thing for the surrounding area (economy). | **Action:** Comment recorded, no response required. | No |
| July 2016 | ON | Public Information Session feedback form | Long overdue. Biggest concern is the destruction of habitat. I believe the best site is the EMR site because it is near currently active areas. | **Action:** Comment recorded, no response required. | No |
| July 2016 | ON | Public Information Session | This facility is very much needed to cost effectively handle the volume of low level waste from the CNL | **Action:** Comment recorded, no response required. | No |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | feedback form | site decommissioning and historical waste. Questions were well answered by Christine. | | |
| July 2016 | ON | Public Information Session feedback form/Email | 1. Interested to see the calculations on the leachate control and how the leachate will be treated.<br>2. Would like access to the consultant study on the natural environment with specific reference to the SAR Blanding Turtles and Eastern Whip-poor-will." | **Response:** 1. A waste water treatment plant will be built to manage any leachate and waste water from the NSDF. Details on calculations are not available at this time. As part of ongoing work the rate and volume of leachate path will be calculated. Peak flows will be used to specify sizing of related infrastructure, including leachate collection piping in the NSDF and the process piping in the waste water treatment plant. The technologies used to remove contaminants from the leachate will be standard for these plants (e.g. ion exchange, reverse osmosis, microfiltration and clarification). Please continue to visit our project site, www.cnl.ca/nsdf for further updates.<br>2. All species at risk work at Chalk River Laboratories was conducted in-house and we do not have consultant reports. Some research on Blanding's Turtles was completed in collaboration with the University of Ottawa. The thesis related to this study should be published and available to the public in the next few months.<br>In terms of species at risk locations, for conservation reasons we do not disclose this information to the | Yes |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | | | public directly. The Ministry of Natural Resources (MNR) has a process to permit access to species at risk data on a need to know basis through the Natural Heritage Information Centre. The Natural Heritage Information Centre tracks over 2000 species and maintains and manages a database of locations. CNL species at risk sightings are provided to the NHIC for inclusion in their database on an annual basis, this data is available on the NHIC website to assist with conservation of species. Information available online is on general locations of species in a one km grid. To access exact location of species at risk from the NHIC, requestor must complete sensitivity training and enter into a confidentiality agreement with the MNR to ensure the data points are not disclosed to the public. Detailed information is available upon request at the NHIC website: https://www.ontario.ca/page/natural-heritage-information-centre | |
| July 2016 | ON | Public Information Session feedback form | The collection systems/buildings for Port Granby and Port Hope took years to be designed and built. How can this facility be built in the very short time line that is being | **Action:** Comment recorded, no response required. Information on project timeline was incorporated into messaging. | No |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | | proposed for this LLW disposal facility? | | |
| July 2016 | ON | Public Information Session feedback form | Very informative posters and the staff on hand were extremely helpful. | **Action:** Comment recorded, no response required. | No |
| July 2016 | ON | Public Information Session feedback form | Fire protection for NSDF? | **Proposed Response:** The design of the NSDF must satisfy Canadian Standard Association codes and National Fire Protection Association codes. CNL's fire protection program is engaged with the review and oversight of the NSDF design and will ensure all requirements are met. There will be fire detection and suppression systems in all normally occupied buildings. The Chalk River site has a full-time fire response force. | No |
| July 2016 | ON | Public Information Session feedback form | The EMR site seems to be the best choice given the two options. I'm glad to see they're taking a conservative approach. | **Action:** Comment recorded, no response required. | No |
| July 2016 | QC | Email | In response to the presenters statement that the technology was proven I asked for some examples of | **Response:** I am pleased to provide you with the presentation material covered at the October 2016 meeting of the ESC. This material includes the response to your question on sites and general geologic | Yes |

| Informal Feedback 2016 | | | | | |
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| | | | the technology being proposed for the Near Surface Disposal Facility with similar sites to CNL having fractured bedrock and being in what is considered as an earth quake zone. I would like to have this information for my annual report to the cottage association if it is available. Also would like an update on what was decided with the municipality of Sheen regarding sirens and cell phones in case of emergency at CNL. Some cottagers have asked me about this and I am not sure what was decided. | descriptions for those sites. Project representatives provided the update; a copy of the deck is attached to this e-mail.<br><br>You may recall the action was recorded at the 2016 June 16 ESC meeting held at Chalk River Laboratories. The action identifier is ESC Action 160616:03 - Provide information to ESC members referencing where (globally), the current NSDF design has been implemented at other nuclear sites. The question came up during the Tour of the Near Surface Disposal Facility - East Mattawa Road Site & Site 11A proposed sites.<br><br>ESC Action 160616:03 response is outlined on slides 16 and 17, this includes the geological descriptions. I understand that Jim was also able to relay some of this information to you during the Sheenboro public information session held after the October ESC meeting.<br><br>The slides do not contain information on proximity to a major water body – I will reach back to the project to see what information can be retrieved. I will note that proximity to the Ottawa River was discussed as part of the full presentation.<br><br>The presentation itself provides a 2016 October perspective of the project, topics include:<br><br>· Engagement activities and Feedback | |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | | | · Biodiversity and Archeological findings<br>· Site recommendation<br>· Waste Acceptance<br>· Waste Types, and<br>· Design update.<br>Please let me know if you have any additional information needs, I am happy to assist in any way.<br>As a friendly reminder, in future you can identify a designate for the ESC so that OFWCA has representation at all meetings. | |
| July 2016 | QC | Email | Requested NSDF poster boards. | **Action:** Commenter was sent link to online posters. | Yes |
| July 2016 | ON | Telephone | Wanted more information in regards to our NSDF/NPD public open houses. | **Action:** CNL called her back and gave her a brief description of the plans for the open house sessions and encouraged her to attend the Chalk River public open house scheduled for 2016 July 12. | Yes |
| July 2016 | ON | Public Information Session feedback form | Will waste from Whiteshell MB be coming to Chalk River? I do hope that CNL goes with the preferred site (near Perch Lake) for the NSDF as it seems to have a | **Action:** Comment recorded, no response required. Information responding to these questions was incorporated into messaging. | No |

| Informal Feedback 2016 | | | | | |
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| | | | lower environmental impact as well as being further away from the community. Plus it will be nicer not having to see it as you drive in, in the morning coming down the hill by Maskinonge Lake | | |
| July 2016 | ON | Public Information Session feedback form/Email | Comments written within document: pg. 3-1.Therefore CRL is to undergo final closure less than 50 years from now? pg. 4-1. 42 football fields. | **Proposed Response:** The NSDF will help create the conditions for the revitalization of the Chalk River Laboratories, as CNL will be decommissioning more than 100 buildings and structures that are no longer needed to make way for new science buildings. It will also remediate various waste management areas at the Chalk River site, contributing to reducing Canada's liabilities. The NSDF will be receiving waste and operating supporting infrastructure – such as the water treatment plant – until approximately 2070. | Yes |
| July 2016 | ON | Public Information Session feedback form | See my comments on the project description submitted to CNSC. Some of my questions were answered this evening. I spoke to Director, Corporate Communications about | **Verbal Response:** Comment recorded and incorporated answer into public messaging. | Yes |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | | starting some sort of continuing dialogue with local interested members of the public about development at the lab. USDOE handling of public engagement at Fernald is an excellent model. | | |
| July 2016 | ON | Public Information Session feedback form | East Mattawa Road site would be the best plan. | **Action:** Comment recorded, no response required. | No |
| July 2016 | ON | Email | I'm looking to speak to someone about the Near Surface Disposal Facility being proposed for Chalk River CNL. I was not able to find any information on your website. Can you direct me to the appropriate person? This is for an article in Ottawa Valley Business. | **Response:** Thank for your interest in the Near Surface Disposal Facility. The link for the project page is below. CNL would be happy to speak with you about the project, perhaps after you have gone over some of the background information on the website, you can indicate what aspects of the project you're interested in and when your deadline is. I will then work to have the appropriate project representative available for an interview.<br>http://www.cnl.ca/nsdf | Yes |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| July 2016 | ON | Email | Ensure no leakage! | **Action:** Comment recorded, no response required. | No |
| Sept. 2016 | ON | Site tour - feedback form | How will you accumulate the hummocky + sloping existing topography? Will this affect the performance of the bottom liner? | **Verbal Response:** Comment recorded and incorporated answer into public messaging. | Yes |
| Sept. 2016 | ON | Site tour - feedback form | It was mentioned that waste from Whiteshell will go to the NSDF. With their planned closure date of 2024, are scheduling conflicts likely with the NSDF construction? | **Verbal Response:** Comment recorded | Yes |
| Sept. 2016 | ON | Site tour - feedback form | It was good to learn about CNL plans for NSDF. And, it was good to see and drive thru the area but the fact is there not much to see except for some excavation and clearing going on. However, it was good to get an idea on the overall CNL site. How much will the | **Verbal Response:** Comment recorded and incorporated answer into public messaging. | Yes |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | | project cost to be built on site and then ultimately operate until 2070? | | |
| Sept. 2016 | ON | Site tour - feedback form | What is the scale (M8m8m) of repository? Can we consider all radioactive wastes (except used nuclear fuel) stored/will be generated in CRL will be disposed of? What is the meaning/definition of near? I guess non-shallow but non-subsurface. Is there any unique point in the safety assessment of NSDF, compared with that of LLW disposal in US, UK and Japan? | **Verbal Response:** Comment recorded and incorporated answer into public messaging. | Yes |
| Oct. 2016 | ON | Email | Interested in more information. | **Action:** Commenter email added to stakeholder list for future information correspondence. | Yes |
| Oct. 2016 | ON | Telephone | Wanted more information in regards to our NSDF/NPD public open houses. | **Action:** CNL called commenter back and gave her more information regarding the upcoming public open houses | Yes |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| Oct. 2016 | ON | Public Information Session feedback form | Aussi tres interessant et bien explique. Merci a Annie. | **Action:** Comment recorded, no response required. | No |
| Oct. 2016 | ON | Public Information Session feedback form | It is interesting to understand the advantages of potentially contaminating a contaminated lake (Perch) compared to potentially contaminating a clean lake. | **Action:** Comment recorded, no response required. | No |
| Oct. 2016 | ON | Public Information Session feedback form | I believe that there is a need for an onsite disposal site and hopefully all will work out with the plans. Keeping the waste onsite, I believe is the best option. | **Action:** Comment recorded, no response required. | No |
| Oct. 2016 | ON | Public Information Session feedback form/Email | Seismic event- can't relate to 1 in 100,000 year event. How big is the Ion Richter scale or by reference to a past quake? | **Verbal Response:** Comment recorded and information to response incorporated into public messaging. | Yes |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| Oct. 2016 | ON | Public Information Session feedback form/Email | Time, health and safety, engineering. | **Proposed Response:** The NSDF project timeline is as follows: project development is planned to occur from 2016 – 2020, after which, pending regulatory decisions, the facility will be operated for 50 years, between 2020 and 2070. Between 2070 and 2100 the facility will be closely monitored. 2400. More information can be found in the draft Environmental Impact Statement (EIS) for the NSDF, which is accessible at www.cnl.ca/NSDF-eis.<br><br>Health and safety of the public, workers and our environment is paramount in all stages of the project. In particular, CNL is required to perform a safety analysis and a performance assessment to demonstrate that the facility will be built in such a way that enhances health and safety precautions and mitigates risk.<br><br>A safety analysis must show how protection for workers, the public and the environment is incorporated into the design of the facility, taking into account operational events, natural disasters or human-related events.<br><br>The performance assessment evaluates the project's impact to humans and biota under normal and abnormal conditions that may occur during the NSDF operational period and following closure of the mound. The conditions considered include climate change | Yes |

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| | | | | impacts, severe erosion due to glaciation and human intrusion scenarios.<br><br>The NSDF design will be developed based on the codes and standards set by the International Atomic Energy Agency (IAEA), federal regulators and provincial authorities. It will build on the large base of experience from comparable facilities that exist in the U.S. Europe and Canada. These codes and standards are developed through rigorous technical studies. The design also takes into account consideration of a potential seismic event or earthquake.<br><br>Again, for more information on how these aspects of the project, please see the draft EIS for the NSDF, which is accessible at www.cnl.ca/NSDF-eis | |
| Oct. 2016 | ON | Public Information Session feedback form/Email | No new questions now but would like updates. | **Action:** Commenter added to stakeholder list for future information correspondence. | Yes |
| Oct. 2016 | ON | Public Information Session feedback form | Looks like a very viable approach to remove low level building materials. | **Action:** Comment recorded, no response required. | No |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| Oct. 2016 | QC | Public Information Session feedback form | Chalk River should not be a waste disposal for other nuclear plants i.e. Whiteshell. Given the land mass of Canada to nuclear waste disposals would not be out of the question. The west could benefit with the same disposal as Chalk River. Good to know about sustained jobs Pontiac/Renfrew counties. Feeling confident about project. Our community is highly dependent on CNL to encourage young families to locate in our region given that our population is about 80 % senior. | **Action:** Comment recorded, no response required. Information responding to these questions was incorporated into messaging. | No |
| Oct. 2016 | QC | Letter/Email | Questions from OFWCA. | **Response:** See questions and responses to OFWCA below (Note 2). | Yes |
| Oct. 2016 | QC | Public Information Session | Sounds safe; very good presentation. | **Action:** Comment recorded, no response required. | No |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | feedback form | | | |
| Oct. 2016 | ON | Public Information Session feedback form | This facility is long overdue, great to see the biggest public concerns have been considered and responded to with clear/detailed plans. Clear the EMR Site is best suited for the NSDF. | **Action:** Comment recorded, no response required. | No |
| Oct. 2016 | ON | Public Information Session feedback form | What % of the waste destined for the site may come from offsite services? | **Verbal Response:** Comment recorded and information responding to this question incorporated into public messaging. | No |
| Oct. 2016 | ON | Telephone | Wanted someone to call him back to answer questions on the upcoming Public information sessions | **Action:** CNL called and gave him more information regarding the upcoming public open houses | Yes |
| Oct. 2016 | ON | Public Information Session feedback form/Email | You probably built it for earth quakes? Weather is changing because of Global Warming and because we are removing too much oil which keeps the core of our | **Proposed Response:** 1.a. Yes - Earthquakes are considered in the design and decommissioning plans of the NPD Closure Project. NPD lies within an earthquake zone categorized as a region with moderate seismic risk. Based upon a probabilistic estimate of seismic disturbances for the next 100 years, the magnitude of | Yes |

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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | | earth cool. Is your set up designed to take heavy rains wash out proof? Is your bunkers, lightning proof for natural storms which might get stronger with time? Now my future question. We know that man will be able to control lightning strikes which can be good. But very bad in the hands of dangerous countries. With all this satellite technology. This idea will happen just a matter of time. Every nuclear site or bomb could be a potential site. We could be destroyed by our own technology if we don't beat the bad guys to it. North Korea won't even need a missile to reach us. | peak horizontal velocity and peak horizontal acceleration have been shown to be quite low. As required by Section 7.5.2 of G-320, the Canadian Nuclear Safety Commission's (CNSC) regulatory guide for Assessing the Long Term Safety of Radioactive Waste Management. Assessing the Long Term Safety of Radioactive Waste Management, our post closure safety assessment will include disruptive event scenarios, such as seismic activity, and will assume that cracks will develop as a result of mechanical and chemical degradation which could result in infiltration of water. Our safety assessment will identify any actions required to be incorporated into our strategy to ensure the end state objectives of protecting the safety of the environment and humans are met. More information will be available in the NPD Closure Project's Environmental Impact Statement, which will be available to the public once it is submitted to the CNSC, on schedule, in September 2017.<br>b. The NSDF at Chalk River Laboratories is being designed to resist an earthquake with a magnitude of 6.0 on the Richter scale. This will ensure that hazards to workers, the public and the environment are contained. The NSDF is located in a very stable and inactive seismic zone where a 6.0 or greater earthquake has not occurred for 10,000 years. Earthquakes of a magnitude of 6.0 on the Richter scale are at the low-end US | |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | | | Geological Survey Strong category of earthquakes.<br>2. a. Yes, the design for the decommissioning of NPD takes into account the possibility of heavy rains. Once the site below grade structure is filled with grout, a concrete cap will be installed to prevent human intrusion and reduce water infiltration. Additionally, on top of this, there will be an engineered barrier, similar to a conventional landfill cap, to reduce water infiltration from precipitation even further.<br>b. All of CNL's projects must consider a wide variety of site characteristics, and the surrounding environment that may influence the design and operation of our facilities. This includes consideration of flooding due to the combination of extreme precipitation with dam failure.<br>Using Official Emergency Planning data, it has been estimated that should the two upstream dams fail due to precipitation or other complex events, it would require buildings to be at least 130.1 metres above sea level to avoid damage. This means that facilities located at a higher elevation will not be subject to flooding caused by rising river water levels in the event of large scale precipitation or dam failures.<br>Given that the base of the proposed NSDF is located at approximately 160 metres above sea level, it is unlikely that flooding from the scenario involving the failure of two dams will compromise the facility. | |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | | | 3. a. Yes. The final structure at the NPD site will be a solid underground concrete block structure and it will be appropriately grounded, as will the ventilation stack. Extreme weather events are also considered in our safety assessment for the NPD Closure Project.<br>b. The NSDF will be designed to meet all applicable international, national and provincial codes and standards, including those relevant to extreme weather.<br>4. a. NPD is a Class I Nuclear Facility licensed under the Nuclear Safety and Control Act and Regulations which makes it subject to a number of security requirements as set by the Canadian Nuclear Safety Commission (CNSC). Any known or potential threat would be immediately communicated to CNL management and appropriately safeguards taken.<br>b. The General Nuclear Safety and Control Regulations and Nuclear Safety Security Regulations prescribe specific security requirements at Chalk River Laboratories, where the proposed NSDF will be located. These security requirements are made mandatory under the CNL Physical Security Program and specified in the Chalk River Laboratories Site Licence issued by the CNSC. As a licensee, CNL must ensure that required security measure are in place to ensure the entire Chalk River Laboratories site is protected from such threats. Prevention measures includes and are not limited to security risk assessment, facility fencing, area intrusion | |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | | | detection, facility surveillance, security response presence and forces. | |
| Oct. 2016 | ON | Public Information Session feedback form | It is reassuring to see a plan finally in place to address the last 50 years of legacy waste. Science and engineering looks very sound, even down to the turtles. That much effort for the turtles (and the Chimney Swifts) is very reassuring as it speaks to the level of concern for human impact. | **Action:** Comment recorded, no response required. | No |
| Oct. 2016 | ON | Public Information Session feedback form | Christine was very helpful and informative. She covered every one of my questions and touched on topics that I found very important to be known. I am very impressed with the progression of the project and am greatly satisfied with the direction it is heading. I really enjoyed the | **Action:** Comment recorded, no response required. | No |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | | display cards and models; they were visually pleasing and very easy and fun to read. | | |
| Oct. 2016 | ON | Public Information Session feedback form/Email | Wanted more information; especially link to videos. | **Action:** CNL sent links to online content to commenter and added to stakeholder list for future information correspondence. | Yes |
| Oct. 2016 | ON | Public Information Session feedback form/Email | Question re: HDPE Geomembrane - doesn't appear to be a means to detect detrition/damage of the membrane (other than, "we have a whole lot of water balance through from somewhere"). How can you locate the leak/damage area in order to perform a repair? | **Proposed Response:** The NSDF is being designed to incorporate groundwater monitoring that will provide an early warning if any issues arise. There are decades of successful industry experience constructing and operating facilities similar to the NSDF.<br>There have also been technologies proposed that could possibly be implemented as part of the design, which would create a leak detection system for the NSDF's engineered containment mound. Technologies include conductive liners in conjunction with leak sensors (electrical grid method, diffusion hoses, capacitor sensors, tracers, electro-chemical sensing cables, etc.). However, such systems have not been practically deployed and would change the project scope. | Yes |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| Oct. 2016 | ON | Public Information Session feedback form/Email | What are the expected concentrations of radioactive isotopes in the waste? Total Bq/m3 | **Response:** CNL will be able to share more details on the projected calculations for the concentration of radioactive isotopes in the waste intended for the Near Surface Disposal Facility (NSDF) in the future. In general, the anticipated concentrations will be well below the CSA N292.0-014 guidance for low level wastes (e.g. 1 x E5 Bq/g of long-lived beta /gamma). | Yes |
| Oct. 2016 | ON | Public Information Session feedback form | Interesting. | **Action:** Comment recorded, no response required. | No |
| Oct. 2016 | ON | Public Information Session feedback form/Email | Wanted more information. | **Action:** Added to stakeholder list for future information correspondence. | Yes |
| Oct. 2016 | ON | Public Information Session feedback form/Email | Wanted more information. | **Action:** Added to stakeholder list for future information correspondence. | Yes |

| Informal Feedback 2016 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| Oct. 2016 | ON | Public Information Session feedback form | Much more information than round one. Renderings and life size examples of base layer and cover are particularly effective; latest poster boards for both projects look great! | **Action:** Comment recorded, no response required. | No |
| Oct. 2016 | ON | Public Information Session feedback form | Very comprehensive plan. | **Action:** Comment recorded, no response required. | No |
| Oct. 2016 | ON | Public Information Session feedback form/Email | How will institutional control over centuries be provided? How much will it cost and how will the costs be funded? There is no mention of any intermediate level waste repository. That will be needed for some CRL wastes, and is a missing piece of the status quo option for NPD. What will the situation be after one or | **Proposed Response:** 1. Before CNL proceeds with either the Near Surface Disposal Facility (NSDF) Project or the Nuclear Power Demonstration (NPD) Closure Project, any potential long-term impacts to the health and safety of humans and environment, including the potential impact of the waste that is intended to remain at the NPD site, must be resolved or the level of risk must be demonstrated to be at such a minimal level as to be acceptable.<br>This is done through the Environmental Assessment (EA) process, which works from a quantitative framework, including long-term modelling and analysis, and from a qualitative framework, taking into account stakeholder | Yes |

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| | | | more ice ages because that is the timescale involved? | feedback from stakeholders in local communities, the nuclear industry and Indigenous communities and organizations.<br>We welcome the involvement of individuals like you to help us understand the impact of this project on local communities, and we will use your comments to inform both projects about how the plan can incorporate mitigation measures.<br>The federal government oversees the EA process and the licensing process according to the Canadian Environmental Assessment Act (CEAA) 2012 and CNSC Regulations, including the CNSC Regulatory Guide G-320: Assessing the Long Term Safety of Radioactive Waste Management.<br>Chapter 5.0 of G-320 states that "Demonstrating long term safety consists of providing reasonable assurance that waste management will be conducted in a manner that protects human health and the environment."<br>For the NPD Closure Project, during the institutional control period, the total radioactivity will decay below regulatory threshold criteria (in other words lower than what would pose a potential risk to human health and the environment). Thereby, the need for institutional control will be within a limited timeframe; this timeframe is still being developed to satisfy health and safety requirements. CNL will demonstrate this in the post-closure safety assessment, which is being prepared | |

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| | | | | as part of the environmental assessment and licensing process.<br>For the NSDF Project, information on the Project's approach to long-term safety can be found in the draft Environmental Impact Statement (EIS), accessible from www.cnl.ca/NSDF-eis.<br>2. Currently CNL, as well as more broadly Canada, does not have disposal capabilities for the reactor systems and components present at NPD. Given CNL may be 50 years from having an intermediate level waste repository it was not considered as part of the status quo option given the Government of Canada has requested CNL accelerate efforts to reduce the overall legacy liability and complete the closure of the NPD site. With respect to the different kinds of wastes currently in storage at CNL's Chalk River Laboratories' site, some information is available in the draft EIS for the NSDF and more information will on CNL's Integrated Waste Strategy (IWS), which gives a path forward for other waste materials at the Chalk River site, is forthcoming.<br>3. The NPD Closure Project's post-closure safety assessment and the Near Surface Disposal Facility's (NSDF) safety analysis and performance assessment will consider extreme events such as glaciation periods and will address health and environmental impact.<br>Thank you to for helping coordinate the Technical Discussion with Director, Corporate Communications, | |

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| | | | | which provided involved community members and former AECL employees with the opportunity to delve deeper into questions surrounding both of the proposed projects: the NSDF and the NPD Closure Project. | |
| Nov. 2016 | ON | Email | Hi- I was perusing the pages of the CNL website this afternoon, and I have a few questions about what I will be getting as a taxpayer for the extra $800 million AECL recently received from the federal government. The poster boards from the recent Public Information Session on the NSDF and NPD projects mention a new integrated Waste Strategy (IWS). I would like to see the document and the Waste Criteria for the NSDF, as I wonder where all the waste will go from the decommissioning over 100 buildings at CRL in the next ten years. Much waste from demolishing these buildings | **Verbal Response:** Comment recorded and information responding to this question incorporated into public messaging. | Yes |

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| | | | will not be suitable to put in the NSDF. For example where will the NRX reactor and the contaminated concrete from the NRX basement go? Where will the contaminated materials from the hot cells be sent? What will be done with the plutonium extraction vault in Building 220? How will the concrete from the NRX and NRU fuel handling and storage bays be dealt with? The first poster board is entitled" Site Revitalization Chalk River Laboratories", but the set of posters gives no details on what the revitalized site will look like and what activities will be o going there in 2026. CNL made a presentation on its Integrated Decommissioning and Waste Management Strategy to the CNSC on | | |

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| | | | September 21. Slides 8 and 9 show that by 2025 most of the existing buildings in Controlled Area 2 and about half the buildings in Controlled Area 1 will be decommissioned (and presumably removed). It appears that almost no new buildings will be erected in Controlled Area 2. What will be done with that freed-up area? How will the capacity of the few new buildings devoted to research and development compare to the current facilities? How many people doing research and development, decommissioning and waste management, and site support operations? The Decommissioning and Waste Management page on the CNL website mentions the Comprehensive Preliminary | | |

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| | | | Decommissioning Plan for CRL, but I can't locate the document itself. Where can I find it? | | |
| Dec. 2016 | QC | Public Information Session feedback form/Email | Everything looks good and well thought out for years to come. Questions. What will you do if the USA decides not to accept highly radioactive material since you do not have any facilities capable of storing it? | **Response:** CNL has the facilities capable of storing highly radioactive material and has been storing such material for decades. As part of the CNL Integrated Waste Strategy, capabilities for interim storage will be maintained within the Waste Management Areas until a final disposition path for all waste types becomes available. | Yes |
| Dec. 2016 | ON | Email | (Re: Industry day) Since the NSDF proposal is of concern to this community, could you please provide me copies of the overheads and a "transcript" of the presentation? | **Action:** CNL sent presentation to commenter: | Yes |

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| Jan. 2017 | ON | Email | This project seems to the be the most prudent and cost-effective way forward for Canada to deal with this level of nuclear legacy and to support medical, industrial and educational/scientific uses of nuclear materials. | **Action:** Comment recorded, no response required. | No |
| Jan. 2017 | ON | Online form/Email | Design of top cover for leak monitoring + repair, plus design of recovery of under-mound liquid release (if any) and perimeter leachate releases for early warning and repair? As at ANDRAS Centre de la Manche near Cherbourg, France, would be worth considering in the design of the NSDF, I would be pleased to discuss further. | **Response:** Thank you for the information. Our design team will review the application at ANDRA's Centre de La Manche, as noted. | Yes |
| Feb. 2017 | ON | Email | Thank you for the follow up, a few questions<br>1. Do you have any elevation views of the NSDF?<br>2. Who will be making the | **Response:** Please find attached two documents supplied in response to your questions.<br>1. Do you have any elevation views of the NSDF?<br>2. Who will be making the liner for the NSDF?<br>3. When was the first public meeting held re: NSDF?<br>4. What is the alternate plan? | Yes |

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| | | | liner for the NSDF?<br>3. When was the first public meeting held re: NSDF?<br>4. What is the alternate plan?<br>5. Where can I find the most recent audits by the CNSC of the Chalk River site? | 5. Where can I find the most recent audits by the CNSC of the Chalk River site?<br>The first document provide answers to the five questions, the second is reference material to support your request for audit information. Do not hesitate to let me know if you require any additional information. | |
| March 2017 | ON | Email | I have been researching the examples use sent me of the NSDF technology on January 17. One of the examples you sent me is listed as being from Portsmouth England, however it appears to be from Portsmouth, Ohio. Could you verify that for me? Thanks. | **Response:** Yes you are correct it is Portsmouth Ohio – the reference to England should have been corrected to indicate Ohio, apologies for the confusion. | Yes |
| April 2017 | ON | Email | When will CNL visit Arnprior to provide a public briefing on the CNL Near Surface Disposal Facility? . | **Response:** A public information session will be held in Arnprior on 2017 May 09. | Yes |
| April 2017 | ON | Email | I have a note that there were to be public information sessions held this spring related to the NSDF/NPDP EAs but can find no details of them on the | **Response:** The material is now posted to the web site – the following link appears on the landing page http://www.cnl.ca/site/media/Parent/NSDF_NPD_PIS_Eng.pdf<br>The information is also provided on the project specific pages as well. | Yes |

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<tr><th colspan="5">Informal Feedback 2017</th></tr>
<tr><th>Date</th><th>Province</th><th>Feedback Mechanism</th><th>Comment/Inquiry</th><th>Disposition/Response</th><th>Response Requested*</th></tr>
<tr><td></td><td></td><td></td><td>CNL web site, and have not received any notice. Can you please provide an update, and an indication of when details will be posted on the CNL web site / distributed to the public?</td><td><table><tr><th>Town</th><th>Dates (2017)</th></tr><tr><td>Deep River</td><td>Thursday, April 20</td></tr><tr><td>Stonecliffe</td><td>Monday, April 24</td></tr><tr><td>Chalk River</td><td>Tuesday, April 25</td></tr><tr><td>Rapides-des-Joachims</td><td>Wednesday, April 26</td></tr><tr><td>Petawawa</td><td>Monday, May 01</td></tr><tr><td>Sheenboro</td><td>Tuesday, May 02</td></tr><tr><td>Pembroke</td><td>Wednesday, May 03</td></tr></table>We will be running print etc. advertisements later this month.</td><td></td></tr>
<tr><td>April 2017</td><td>ON</td><td>Online form</td><td>Everyone I talk to in my community is supporting the construction of the NDSF. However I continue to hear through some media outlets a small but vocal group of citizens that are protesting the construction. Thanks for providing the NSDF centerfold in the North Renfrew Times. Good science applied to solve the disposal of radioactive materials make good policy and supports the continued</td><td>Action: Comment recorded, no response required.</td><td>No</td></tr>
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| | | | science and technology mission at CNL.<br>A few environmental protestors don't deserve to have their minority opinion count for anything but social unrest.<br>You have my vote and the community of Deep River supports the construction of NSDF." | | |
| April 2017 | ON | Email | I am very interested in the Near Surface Disposal Facility (NSDF) for radioactive waste being proposed at the Chalk River Laboratories Site. I have been very occupied with other waste facilities (WWMF and the proposed DGR) and have not had a chance to review material on the NSDF, and may not be able to submit comments by May 17. I expect that there would be a public hearing on this Project, and if so, that would allow me | **Verbal Response:** Comment recorded and information responding to this question incorporated into public messaging.<br>Action: Hard copy of the draft EIS was mailed to commenter. | Yes |

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| | | | an opportunity to provide comments on the EIS and other pertinent material. Could you please let me know if this is the case and if a date has been set? Also, the EIS is a very large file. Is it possible to receive hard copies of these documents? | | |
| April 2017 | QC | Public Information Session feedback form/Email | I have reviewed examples of NSDF technology supplied to me by CNL staff, and wonder how you can suggest these examples are comparable. I would like you to answer questions sent to you by the Old Fort William Cottage Association. | **Response:** Thank you for your feedback related to the Near Surface Disposal Facility. The input that you and other members of our community share helps Canadian Nuclear Laboratories (CNL) develop a path forward that takes into account the interests of the public. The purpose of this email is to respond to your feedback from our Spring 2017 Public Information Sessions, which was as follows:<br>I have reviewed examples of NSDF Technology supplied to me by CNL staff, and wonder how you can suggest these examples are comparable.<br>We've consulted the Near Surface Disposal Facility team and we think the information you are looking for may be found in the information we provided to the Old Fort William Cottagers' Association (OFWCA). Please find this additional information attached.<br>Please feel welcome to reach out at any time for information about either the Near Surface Disposal | Yes |

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| | | | | Facility or the Nuclear Power Demonstration (NPD) Closure Project, or about CNL in general. | |
| April 2017 | ON | Public Information Session feedback form | I am super impressed with the project thus far. It is obvious that care and fastidious research has gone into the planning of the facility and I for one feel safe and confident about the work moving forward. Love the visual aids. A great addition to the presentation. | **Action:** Comment recorded, no response required. | No |
| April 2017 | ON | Public Information Session feedback form | No comments today but I appreciated the opportunity to speak with CNL and NSDF staff. | **Action:** Comment recorded, no response required. | No |
| April 2017 | ON | Public Information Session feedback form/Email | Why are you proposing to touch 2500-3000 truckloads of active waste 1900km from Whiteshell? If you have a safe procedure for the NSDF here with good experience at Port Hope and Port Granby why are Manitoba wastes not stored safely in a similar small, | **Response:** The Near Surface Disposal Facility proposed for the Chalk River Laboratories' site is an engineered waste containment facility that is uniquely suited for low and (limited) intermediate-level waste. Building such a specialized facility for the small amount of this waste at Whiteshell was not deemed to be appropriate. Atomic Energy of Canada Limited and CNL have safely transported radioactive material nationally and internationally for more than 45 years by road, rail, water and air without radiological incident. It is a highly | Yes |

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| | | | monitored mound next to the OVRI entombment site? Hwy 17 has its share of accidents and bottlenecks without adding a large traffic of active material being moved. | regulated activity that must meet the stringent requirements of both Transport Canada and the Canadian Nuclear Safety Commission (CNSC). Canada has decades of experience in transporting radioactive materials, and has an excellent safety record. Thousands of shipments containing radioactive material are transported safely in Canada each year. | |
| April 2017 | ON | Public Information Session feedback form | Very well displayed forum. Very knowledgeable people all questions answered. | **Action:** Comment recorded, no response required. | No |
| April 2017 | ON | Public Information Session feedback form/Letter /Email | Questions from a member of the public on the recent NSDF infographic (ad) in the North Renfrew Times newspaper. | **Response:** See questions and responses to commenter below (Note 3). | Yes |
| April 2017 | ON | Public Information Session feedback form/Email | I have ongoing concerns about the proximity to the Ottawa River for the disposal site. I question the terminology of "near surface" when it will be 60 feet high. I have already spoken to one other County Official who was under the impression that this was all | **Response:** There is no direct pathway to the Ottawa River from the Near Surface Disposal Facility (NSDF) site. While it seems counterintuitive, due to the hydrogeology of the Chalk River Laboratories site, the location for the proposed NSDF is a good location. Also, extensive monitoring will be conducted to assure and demonstrate that NSDF will perform as expected:<br>• CNL's Environmental Protection Program maintains a comprehensive effluent and environmental monitoring program of more than 400 sampling locations with | Yes |

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| | | | underground, but "near surface" I get nervous with misleading terms. Especially with nuclear waste. | approximately 30,000 analyses performed each year.<br>• CNL's Groundwater Monitoring Program will be expanded to cover the NSDF site. Groundwater monitoring will provide further assurance the leachate collection system is functioning and that there are no leaks to groundwater from the Engineered Containment Mound.<br>In the unlikely event of a breach of the engineered barriers of the Near Surface Disposal Facility, CNL would be able to repair and/or put into place measures that would protect the environment from harm.<br>Near surface disposal is a particular term in nuclear waste management, referring to waste facilities that are partially under the surface. In contrast to geological or deep geological waste facilities, which are entirely underground, near surface facilities are near the surface – on both sides of the surface.<br>The proposed NSDF at Chalk River Laboratories is designed to be 18 metres high and would not be visible from the Ottawa River. | |
| April 2017 | ON | Public Information Session feedback form | No questions. Seems well engineered with all aspects that would be of concern considered. | **Action:** Comment recorded, no response required. | No |
| April 2017 | ON | Public Information Session | Overall I am disturbed by the way the project has proceeded. It should have | **Proposed Response:** The Near Surface Disposal Facility (NSDF) consists of an engineered containment mound (in which the waste will be contained), a waste water | Yes |

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| | | feedback form/Email | begun with a discussion with the community to decide if it was a willing host for a disposal facility. This not NIMBY- it is the respectful Canadian prefer siting option. This facility could be developed but it must be demonstrated to meet IAEA standards- not US ones.<br>Please provide dimensions for the facility including height above ground. The facility is described as 'near surface' which implies near to the surface but also said to be an engineered mound. Dimensions of height, depth, and width would be helpful. Please provide a pictorial illustration that reflects the design dimensions. What type of Facility is this? It is described in the draft EIS as a disposal facility. In what ways does it differ from the | treatment plant, support facilities (such as change rooms), and infrastructure (power lines, roads, etc.)<br>The engineered containment mound will be 18 metres high and have an approximate total 'footprint' of 16.4 hectares. Of that, the surface area of the lined portion of the mound will be approximately eight hectares.<br>The entire NSDF site, including the aforementioned components, will occupy an area of just over 33 hectares.<br>The design of the NSDF has recently been completed, so we look forward to sharing a level of detail that was not possible to do previously. We agree that a pictorial illustration that includes the design dimensions is a good idea and will take that into consideration as we develop new educational materials.<br>NSDF is designed to be a permanent solution and is, therefore, referred to as a disposal facility. As such, the facility has been designed to ensure that the wastes will be safely managed long-term without a need for retrieval. Although the intent is not to retrieve the waste, consistent with international practices, the design of NSDF does not preclude future generations from retrieving NSDF contents, should they so wish.<br>Although the designs are similar, facility in Port Hope is referred to as a long-term storage facility. Similar to the NSDF, it will be up to future generations to choose whether or not to retrieve the wastes contained.<br>The NSDF would be licensed as a Class IB nuclear facility, | |

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| | | | long term managed storage facility at Port Hope? What extra protections does this facility offer beyond the Port Hope Facility? Will CNL publish the "waste acceptance criteria"? In public presentations CNL asserts the facility is 'safe' and that any material placed in the facility must meet the criteria. It is implied that meeting the criteria means the facility will be safe. Thus, the criteria must be published showing what radionuclides may be present, in what concentration, and what other hazardous materials may also be present? Will CNL put this application on hold until the details waste acceptance criteria information is released? How will the waste be treated before it is brought to the facility to ensure it | which means that, compared to the Port Hope long-term waste management facility, NSDF is subject to more stringent regulatory requirements. Both facilities include a robust multi-barrier system, but compared to Port Hope, NSDF will be equipped with additional engineered barriers.<br>Yes, please find attached the preliminary waste acceptance criteria document which will also be posted to www.cnl.ca upon translation prior to the Canadian Nuclear Safety Commission's public hearing on the NSDF Project. The waste acceptance criteria for NSDF provides limits on a range of physical, radiological and chemical properties of the waste to protect workers, the public and the environment. These limits have been set to ensure safety during the operational phase, as well as long-term safety once the NSDF has been closed.<br>Yes, please find attached the preliminary waste acceptance criteria document which will also be posted to www.cnl.ca upon translation prior to the Canadian Nuclear Safety Commission's public hearing on the NSDF Project.<br>The NSDF has been designed to facilitate disposal of a wide range of waste streams without requiring treatment, so wastes that meet the waste acceptance criteria without prior treatment will not be treated before emplacement in the NSDF. Some wastes will, however, require treatment in order to meet the waste acceptance criteria. For instance treatment could | |

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| | | | meets the waste acceptance criteria? Some waste will be in containers that will fail. Please identify that waste (radionuclides, hazardous etc.). Once the containers have failed, how will the waste released be prevented from impacting future generations? How will alpha contaminated buildings be identified? Will all buildings that have alpha contamination be excluded from the facility? The EIS states that only one alternative location was considered. Were there no other suitable locations on the 38sq km site? If the only location on-site is on a swamp draining into a lake and is within 1km of the Ottawa River, were other sites explored in Ontario or in the rest of Canada>? This preferred site has radioactive plumes in the | include the removal of liquids in liquid-containing waste streams prior to placement into the NSDF.<br>As part of CNL's plans for decommissioning and site restoration, a comprehensive waste characterization program is being developed. The program will ensure that a robust process is in place to accommodate the wide range of waste streams that will be generated during the revitalization activities at Chalk River and other CNL sites. Known hazards, such as alpha contaminated buildings, will be an important input to the waste characterization process.<br>Waste streams that meet the waste acceptance criteria can be emplaced in the NSDF, regardless of origin. In practice, this may mean that parts of certain buildings are not suitable for disposal in NSDF.<br>CNL Site Planning and Property Management (SPPM) utilize an accepted site-wide process for facility site selection. Therefore, the methodology used to establish potential Very Low Level Waste (VLLW) disposal facility locations was the same as was used to determine potential locations for the NSDF. In every case, attribute and exclusion criteria are developed to determine a potential site in the prescribed approach.<br>In 2012, the VLLW disposal facility site selection criteria were prepared by an external contractor, and from these, the VLLW disposal facility attribute and exclusion criteria were established.<br>In February 2013, SPPM utilized the CRL Geographic | |

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| | | | near vicinity. How will the facility combine with these plumes? How will this short-lived (500 years) facility ensure the biosphere is protected in the future? Since the proposal can include long-lived (thousands of years) radionuclides, how will future generations be protected? The EIS states this is a disposal facility. It is surprising therefore that in siting it CNL is using "Decide, Announce, Defend" as a planning method. This has not been used in Canada for many years for such a facility. Instead, using the OECD's preferred approach, Canada has used the "willing host community' model. Why has CNK reverted to the old model? Has the government of Canada agreed to the use of the Decide, Announce, | Information System (GIS) to apply the VLLW attribute and exclusion criteria to the entire CRL site (3700 ha). Twelve potential locations were identified as viable for the VLLW disposal facility. In this calculation, the slope requirement at each location was 10% or less even though the slope could be up to 25%.<br>With a relaxation in the slope requirement to above 10%, but still well below 25%, the GIS application was processed again and two more suitable sites were identified. A total of 14 sites were available for consideration at that time. These sites represented 247 ha.<br>The VLLW Project Team completed a walk down of the 14 sites in March 2013 and the acceptability of the locations was scrutinized even further. As a result, the number of potential sites was reduced from 14 to five. These represented an area of 103 ha.<br>In April 2013, the five sites were examined by the VLLW Project Team, as well as internal stakeholders, against the criteria and a series of qualitative assessment criteria. The results of the evaluation indicated that two sites were potential candidates for the VLLW disposal facility location (upon further geotechnical review at a later date).<br>The NSDF siting process began in the fall of 2015 and the results of the VLLW disposal facility site selection process were revisited. The VLLW disposal facility and NSDF attribute criteria are fundamentally the same | |

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| | | | Defend model? Having decided to forgo the willing host model, CNL is also using short timelines. CNL is hoping to secure construction license from the CNSC by January 2018. Why is CNL pushing for such a short timeline? Are there financial or commercial considerations, such as bonuses, that would result from meeting this timeline? The facility has not yet been approved. Will CNL commit that no waste will be transported from Whitesell, Manitoba to the Chalk River site until such approval is granted? If waste is brought to the Chalk River site, but the project is not approved, will the waste be returned to Manitoba, or will the residents of Ontario have to store it? | except for the facility footprint size. The VLLW disposal facility footprint was considerably smaller than the NSDF (8 ha for the VLLW disposal facility location versus 14 ha for the NSDF location – which has since expanded to 30 ha).<br>The exclusion criteria for the VLLW disposal facility and NSDF are the same, except in the geotechnical category:<br>• The requirement of overburden thickness (minimum of 6 ha in a continuous land area) was removed as an NSDF requirement and<br>• The locations which are susceptible to liquefaction potential and do not include active fault lines were added.<br>SPPM once again utilized the GIS application with the NSDF attribute and exclusion criteria to the entire CRL site. For the NSDF GIS application, the slope evaluation was relaxed to include right up to 25%. If new locations were discovered as a result the slope relaxation, these would be considered as well.<br>It was determined that one of the two potential VLLW disposal facility sites was acceptable for NSDF review (the Alternate site or 11 A from the VLLW review), and a new location, the East Mattawa Road (EMR) site, was also a credible location (upon further geotechnical review).<br>Sites beyond Chalk River were also considered in the alternative means assessment of the EIS, see response to question #11. | |

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| | | | | The majority of the waste destined for the proposed Near Surface Disposal Facility is already located at Chalk River Laboratories. While Atomic Energy of Canada Limited does have waste located at other sites in Ontario and across Canada, locating the NSDF elsewhere in the province or country would require significant increases in the transportation of nuclear waste. Moreover, Chalk River Laboratories has existing security and environmental protection programs in place, which protect the environment and public.<br>The benefits with choosing Chalk River Laboratories as the preferred site for the NSDF was confirmed as part of the alternative means assessment in the Environmental Impact Statement. That assessment included consideration of other locations both in Ontario (the Nuclear Power Demonstration site) and in Manitoba (Whiteshell) and concluded that both alternatives are less favourable than Chalk River Laboratories.<br>The plumes are expected to be part of the site-wide soil remediation. Some of the plumes, based on their category, will be destined for disposal in the NSDF provided they meet the waste acceptance criteria.<br>The engineered containment mound of the NSDF will feature a double, composite base liner system and a cover system, both of which are comprised of multiple engineered barriers that work together as a system to contain the waste and isolate it from the environment. Both natural and synthetic (man-made) materials will be | |

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| | | | | employed in the construction of the base liner and cover systems.<br>The vast majority of the radionuclides that will be accepted for disposal in NSDF will be relatively short lived, so after 500 years, the overall radioactive inventory in the mound will have decayed substantially compared to when they were emplaced.<br>The Environmental Assessment process will demonstrate that long-term safety can be achieved for both humans and non-human biota.<br>While the practice to date of storing radioactive waste on-site in individual facilities is safe, consistent with international best practices, it is not viewed as a viable permanent solution. For this reason, the NSDF Project is rooted in the requirements established by Atomic Energy of Canada Limited, on behalf of the Government of Canada, to substantially reduce the risks associated with the CNL legacy wastes, liabilities, and to create the conditions for the revitalization of the CRL property.<br>There has not been a regulatory decision on whether the NSDF Project will go forward. The NSDF Project is currently in its Environmental Assessment process, governed by the Canadian federal legislation, the Canadian Environmental Assessment Act (CEAA). As per the CEAA, public and Indigenous input is being sought before any decision has been made.<br>The decision on the NSDF will be made by Canada's nuclear regulator, the Canadian Nuclear Safety | |

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| | | | | Commission, and a public hearing is part of that decision-making process.<br>The NSDF as a waste disposal solution was included as a part of the contract with the Crown Corporation, Atomic Energy of Canada Limited to operate Canadian Nuclear Laboratories.<br>Canadian Nuclear Laboratories has established target dates leading to completion of the project. Canadian Nuclear Laboratories is proceeding according to a schedule establisher per the requirements of the Canadian Environmental Assessment Act (CEAA) and the regulatory requirements set by the Canadian Nuclear Safety Commission. Canadian Nuclear Laboratories first began engaging with the public and Indigenous groups on the subject of the proposed Near Surface Disposal Facility in October 2015. Since then, regular updates on design developments and the information about the regulatory and Environmental Assessment process have been shared with the public and Indigenous groups.<br>You can reference the protocol between Canadian Nuclear Laboratories and the Canadian Nuclear Safety Commission on the CEEA website at: http://www.ceaa.gc.ca/050/documents/p80122/116946E.pdf<br>Every single employee of CNL receives remuneration that takes into consideration individual performance and employees are compensated accordingly.<br>This could be reflected in performing work on schedule, | |

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| | | | | however health, safety, security, environmental protection and regulatory requirements are not compromised for the sake of schedule.<br>Whether the waste is located at Whiteshell Laboratories in Manitoba or Chalk River Laboratories in Ontario, all radioactive waste on any Canadian Nuclear Laboratories' site is the property of the Government of Canada through the crown corporation, Atomic Energy of Canada Limited.<br>Atomic Energy of Canada Limited in the past (and now Canadian Nuclear Laboratories) has been transporting waste and other nuclear materials between Whiteshell Laboratories and Chalk River Laboratories for decades and will continue to do so. Whiteshell is a licensed site undergoing closure, therefore any wastes received would not be returned.<br>Transportation of nuclear materials is stringently regulated by the Canadian Transportation Agency with oversight by Canada's nuclear regulator, the Canadian Nuclear Safety Commission. | |
| April 2017 | ON | Public Information Session feedback form/Email | 1. What is the total inventory of the waste to be emplaced in the engineered containment mound (ECM), in Bq?<br>2. What is the breakdown by radionuclide (in Bq) of the total inventory of the | **Verbal Response:** Received verbal responses when they attended information sessions, technical discussions and spoke with technical and communications staff. Responses to many of initial questions were also incorporated into public messaging. | Yes |

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| | | | waste to be emplaced in the ECM?<br>3. What is the low level waste component (in Bq) of the total inventory of the waste to be emplaced in the ECM?<br>4. What is the breakdown by radionuclide (in Bq) of the low level waste component of the total inventory of the waste to be emplaced in the ECM?<br>5. What is the intermediate level waste component in (Bq) of the total inventory of the wasted to be emplaced in the ECM?<br>6. What is the breakdown by radionuclide (in Bq) of the intermediate level waste component of the total inventory of the waste to be emplaced in the ECM?<br>7. What is the breakdown by radionuclide (in Bq) of the intermediate level waste component of the total | | |

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| | | | inventory of the waste to be emplaced in the ECM?<br>8. What is the total inventory of the waste to be emplaced in the ECM (in Bq), broken down by individual component radionuclides, over the next 1 million years?<br>9. What is the inventory (inBq) of waste to be emplaced in the ECM, broken down by radionuclide that derives from work to produce material for the construction of nuclear weapons?<br>10. What is the basis for considering that an inventory derived from Chalk River's "Waste Inventory Program" is an accurate reflection of inventory of the various radionuclides that are to be emplaced in the ECM?<br>11. Is each package to be | | |

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| | | | emplaced in the ECM going to be verified for radionuclide content?<br>12. Is gamma spectrometry going to be used to verify the content of packages to be emplaced in the ECM?<br>13. Is neutron activation analysis going to be used to verify the content of packages to be emplaced in the ECM?<br>14. What radiochemical techniques are going to be used to verify the content of packages to be emplaced in the ECM?<br>15. What statistical sampling techniques are going to be used to verify the content of packages to be emplaced in the ECM?<br>16. Is unpackaged waste to be emplaced in the ECM going to be verified for radionuclide content?<br>17. What statistical sampling techniques are | | |

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| | | | going to be used to verify the content of unpackaged waste to be emplaced in the ECM?<br>18. Is gamma spectrometry going to be used to verify the content of unpackaged to be emplaced in the ECM?<br>19. Is neutron activation analysis going to be used to verify the content of unpackaged to be emplaced in the ECM?<br>20. What radiochemical techniques are going to be used to verify the content of unpackaged waste to be emplaced in the ECM?<br>21. Where are activities to verify the radionuclide content of waste going to take place?<br>22. Why is the cover system of the ECM less advanced than the cover system of the Port Hop project?<br>23. Where are the schematics, cross- sections, | | |

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| | | | and elevations of the ECM?<br>24. What are the plans for the NRX reactor? 24. What are the plans for the NRU reactor?<br>25. What are the plans for the MAPLE reactors?<br>26. What are the plans for the Plutonium Tower (Building 223)?<br>27. What are the plans for the Plutonium Recovery Laboratory (Building 2200)<br>28. What are the plans for the Waste Water Evaporator Building (Building 228)?<br>29. Why are the plans for NRX, NRU, MAPLEs, Plutonium Tower, Plutonium Recovery Laboratory and Waste Water Evaporator Building not considered as part of the draft EIS with respect to cumulative effects?<br>30. Why does the draft EIS's Regional Study Area not | | |

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| | | | include those communities that consume water from the Ottawa River and hence may consume water contaminated by radionuclides from the ECM?<br>31. When is CNL having Open Houses in Ottawa and Gatineau?<br>32. If, as stated in the recent publicity material concerning waste acceptance criteria " Waste that does not meet the criteria will not be accepted", doe the draft EIS contain a section on the "Waste Acceptance Criteria Variance Process" (which allows 'unacceptable' waste to be accepted) | | |
| April 2017 | QC | Public Information Session feedback form | Radioactive seepage into the Ottawa River or air, affecting communities and residents downriver from the NSDF | **Action:** Comment recorded, no response required. Information responding to this concern was incorporated into messaging. | No |

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| April 2017 | ON | Public Information Session feedback form | Why community should accept waste from elsewhere? Hazards/risks throughout the long term of the lifetime of facility. | **Action:** Comment recorded, no response required. Information responding to this concern was incorporated into messaging. | No |
| May 2017 | ON | Public Information Session feedback form/Email | I have ongoing concerns about the proximity to the Ottawa river for disposal. I question the terminology of "near surface" when it will be 60 feet high. I have already spoken to one other County official who was under the impression that this was all underground but "Near Surface". I get nervous with the misleading terms. Especially with nuclear waste. | **Response:** There is no direct pathway to the Ottawa River from the Near Surface Disposal Facility (NSDF) site. While it seems counterintuitive, due to the hydrogeology of the Chalk River Laboratories site, the location for the proposed NSDF is a good location.<br>Also, extensive monitoring will be conducted to assure and demonstrate that NSDF will perform as expected:<br>• CNL's Environmental Protection Program maintains a comprehensive effluent and environmental monitoring program of more than 400 sampling locations with approximately 30,000 analyses performed each year.<br>• CNL's Groundwater Monitoring Program will be expanded to cover the NSDF site. Groundwater monitoring will provide further assurance the leachate collection system is functioning and that there are no leaks to groundwater from the Engineered Containment Mound.<br>In the unlikely event of a breach of the engineered barriers of the Near Surface Disposal Facility, CNL would be able to repair and/or put into place measures that would protect the environment from harm.<br>Near surface disposal is a particular term in nuclear waste management, referring to waste facilities that are | Yes |

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| | | | | partially under the surface. In contrast to geological or deep geological waste facilities, which are entirely underground, near surface facilities are near the surface – on both sides of the surface.<br>The proposed NSDF at Chalk River Laboratories is designed to be 18 metres high and would not be visible from the Ottawa River. | |
| May 2017 | ON | Public Information Session feedback form | Information about the Waste Risk Assessment-ranking Water Monitoring of Basin, Ground-Colossal failure scenarios (climate change) Drinking water standards/Discharge? CNL monitoring program data siting- 1 location selected cancer-AECL-evidence? Comfort to citizens? Acceptable doses? Executive summary- poor. Where is presentation of information risk factors, quality of water standards? | **Action:** Comment recorded, no response required. Information responding to this concern was incorporated into messaging. | No |
| May 2017 | ON | Public Information Session feedback form | The site is too close to the river. I find it strange that out of 4,000 hectares there is not a location much farther away from the river. | **Action:** Comment recorded, no response required. Information responding to this concern was incorporated into messaging. | No |

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| | | | Rather than design as proposed, the disposal facility could be below ground encased in concrete with the liner within that bunker. The footprint could be much less ex. 500 m by 4 metres deep - 1,000,000 cubic metres, divided in sections if necessary and put a lid on it. I doubt it would be much more expensive - we do it all the time with parking garages under block long apartment or commercial buildings. | | |
| May 2017 | ON | Public Information Session feedback form/Email | The site is too close to the Ottawa River. It is false economy to locate the disposal site so close to the river. | **Response:** There is no direct pathway to the Ottawa River from the Near Surface Disposal Facility (NSDF) site. While it seems counterintuitive, due to the hydrogeology of the Chalk River Laboratories site, the location for the proposed NSDF is a good location. Also, extensive monitoring will be conducted to assure and demonstrate that NSDF will perform as expected:<br>• CNL's Environmental Protection Program maintains a comprehensive effluent and environmental monitoring program of more than 400 sampling locations with approximately 30,000 analyses performed each year.<br>• CNL's Groundwater Monitoring Program will be | Yes |

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| | | | | expanded to cover the NSDF site. Groundwater monitoring will provide further assurance the leachate collection system is functioning and that there are no leaks to groundwater from the Engineered Containment Mound.<br>In the unlikely event of a breach of the engineered barriers of the Near Surface Disposal Facility, CNL would be able to repair and/or put into place measures that would protect the environment from harm. | |
| May 2017 | ON | Public Information Session feedback form | What happens if nuclear accident? | **Action:** Comment recorded, no response required. Information responding to this concern was incorporated into messaging. | No |
| May 2017 | ON | Public Information Session feedback form | Excellent presentation but I am opposed to transporting radioactive materials anywhere. It should not be so close to the Ottawa River | **Action:** Comment recorded, no response required. Information responding to this concern was incorporated into messaging. | No |
| May 2017 | ON | Public Information Session feedback form/Email | I remain concerned that the location for the NSDF is too close to the Ottawa River. The assurance that models state a "10 years 'leaching' is secure. Geological timeline? | **Response:** There is no direct pathway to the Ottawa River from the Near Surface Disposal Facility (NSDF) site. While it seems counterintuitive, due to the hydrogeology of the Chalk River Laboratories site, the location for the proposed NSDF is a good location.<br>Also, extensive monitoring will be conducted to assure and demonstrate that NSDF will perform as expected:<br>• CNL's Environmental Protection Program maintains a comprehensive effluent and environmental monitoring | Yes |

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| | | | | program of more than 400 sampling locations with approximately 30,000 analyses performed each year.<br>• CNL's Groundwater Monitoring Program will be expanded to cover the NSDF site. Groundwater monitoring will provide further assurance the leachate collection system is functioning and that there are no leaks to groundwater from the Engineered Containment Mound.<br>In the unlikely event of a breach of the engineered barriers of the Near Surface Disposal Facility, CNL would be able to repair and/or put into place measures that would protect the environment from harm. | |
| May 2017 | ON | Public Information Session feedback form | Seismic study conversion in rector scale? Leak/spill could affect property values? Management plan for used fuel? Fuel repatriation plan? If there is an earthquake, nothing will move onsite? When will the summer residents be informed & presented to regarding NSDF? What are the release limits? What is the origin/source of the fraction of ILW? Why this facility near the river and not somewhere else in | Action: Comment recorded, no response required. Information responding to this concern was incorporated into messaging. | No |

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| | | | middle of Ontario or away from water? An earthquake happened in Alaska and entire river shifted, how would this not happen here? What are the protective measures? What is alternative to NSDF? Explanation of HLW/ILW/LLW? Why not a concrete liner- concern is on how we ensure the liner is installed correctly. | | |
| May 2017 | ON | Public Information Session feedback form | I came here with several questions regarding operational and long-term safety requirements, the ensurance of capacity and only 10% from other sites, long-term responsibility after the ten year term of the contract ends, effects of DGR on the environment, etc. Spoke at length with Director, Corporate Communications who answered my questions and | **Action:** Comment recorded, no response required. | No |

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| | | | helped me to understand the industry's position. | | |
| May 2017 | ON | Public Information Session feedback form/Email | Would like poster links once they are up. | **Response:** Happy to assist! For an idea of the timeline for the Near Surface Disposal Facility (NSDF) and the Nuclear Power Demonstration (NPD) Closure Project, you can check out the Administrative Protocol for each project, found on the CEAA website. See links below, and then scroll to bottom of each page for the Administrative Protocol documents. The timeline is found towards the end of each document:<br>NSDF Project<br>NPD Closure Project<br>Each project's Administrative Protocol includes the timeline for the public hearing and the periods for public comment throughout each project's Environmental Assessment.<br>Currently, the date for the NSDF's public hearing is projected for January 2018 and the date for the NPD Closure Project's public hearing is projected for December 2018. | Yes |
| May 2017 | QC | Telephone | Not specific, just to contact. | **Action:** CNL called and the commenter had some questions on the GoCo model and NSDF. WAC, monitoring, responsible parties? | Yes |
| May 2017 | ON | Email | This is a terrible idea and our family who lives in Renfrew County and boat on the Ottawa are vehemently opposed. | **Action:** Comment recorded, no response required. Information responding to these concerns was sent to the OFWCA and incorporated into public messaging. | No |

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| | | | 1. What man made facility will be leak proof in perpetuity? None. So the lovely description of a 300 year control period means a leak eventually, just a matter of when not if.<br>2. It will be open, rain gets in, and what about ground water? And the precipitation is treated at the waste water treatment plant which spills into the river ALL the time with flooding, heavy rain, etc. So there is a guarantee that there will be untreated water that has contacted nuclear waste going into our River. Not interested in dying of multiple kinds of cancer or destroying the historic Ottawa river, no matter how pretty you make the info-graphic or nice words used to sell (or blind) the public to this. Not that the Lab will listen but | | |

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| | | | we will join Concerned Citizens, as a family not usually activists in any way, to protest this until we run out of breath. Which won't matter because this project will lead to us to poor heath in any case. | | |
| June 2017 | ON | Public Information Session feedback form | I think more time and study is needed before a final decision is reached - re Near Surface Disposal Facility/A Safe Solution. I am having a lot of difficulty and real concern about accepting waste from other areas of the country. I feel that if one creates a mess then it is up to that individual/ individuals to look after their waste! Let each area look after their own waste! | **Action:** Comment recorded, no response required. | No |
| June 2017 | ON | Public Information Session feedback form | I'm curious as to why you don't propose waste storage in the very far north where permanent freezing temperatures might provide a fairly inert environment to | **Action:** Comment recorded, no action required. | No |

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| | | | slow corrosion of any waste containers, etc.; and where there are virtually no close neighbours to be concerned? I believe (but could very well be wrong) that the area is geologically stable – so it would seem ideal? | | |
| July 2017 | ON | Public Information Session feedback form | This is long overdue and EMR should be the site chosen for the project because of its benefits over the other. | **Action:** Comment recorded, no response required. | No |
| July 2017 | ON | Public Information Session feedback form | What type pf wastes would be disposed? Are any of the wastes suitable for reprocessing? Will the facility have a cap? Have you worked at any of the example facilities? I would like to speak to someone on the TRM repatriation. | **Action:** Comment recorded, no response required. Information responding to these questions was incorporated into public messaging. | No |
| July 2017 | QC | Email | Madame Martine Ouellet, Députée à l'Assemblée nationale du Québec et chef du Bloc Québécois sera de | **Response:** Merci pour votre courriel. Nous accusons réception de votre demande et examinons actuellement nos horaires pour déterminer si les personnes concernées sont disponibles pour effectuer une visite guidée à ces dates précises. | Yes |

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| | | | passage dans la région le 9 et 10 août prochain.<br>Est-ce qu'il serait possible de visiter les installations de Chalk River ?<br>Dans l'attente d'une réponse de votre part<br>Meilleures salutations. | Pour aider à déterminer les ressources pour une visite guidée, pouvez-vous fournir des détails supplémentaires - Qu'est-ce que Mme Ouellett serait intéressé à visiter/voir? Temps prévu - soit une demi-journée ou une journée complète?<br>Cordialement. | |
| July 2017 | ON | Email | I have a question regarding NSDF. It has a total capacity which could easily be filled up if we use it as a grab all. I want to know what initiatives are or will be put into place so that people continue to segregate clean waste from contaminated and use the NSDF for truly low to intermediate waste rather than clean waste that just hasn't been checked/sorted. | **Response:** Essentially, each waste generator will be responsible for characterizing their own waste intended for disposal in the NSDF. And, prior to disposal, the waste will also be verified to see if the waste packages are accurately characterized.<br>However, I think your question was more about how non-radioactive waste will be separated from radioactive waste. As you may have heard, one of the largest single origins of waste destined for the NSDF is demolition debris related to site revitalization activities. To ensure that non-radioactive material is segregated from radioactive materials, there are existing processes in everyday operations surrounding the decommissioning of structures. For instance, a concrete structure may be divided into affected areas and non-affected areas such that the non-affected areas are managed as clean waste and the affected areas (even though they are surface contaminated big blocks of concrete) managed as low-level waste. | Yes |

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| | | | | This strategy is taken in the site hazard assessment phase of planning the decommissioning of a structure and carried through the decommissioning, such that as far as reasonably achievable, clean wastes are segregated from the radioactive waste materials. Decommissioning economics do play a role in determining how much effort can reasonably be committed to removing low amounts of radioactivity from a large volume or mass of materials, like a contaminated concrete structure.<br>Using the example of a concrete building, the affected area materials would then be screened through the NSDF Waste Acceptance Criteria in order to classify it for disposal and the non-affected area materials would be managed as clean waste according to our current practices.<br>The NSDF Waste Acceptance Criteria ensures we know exactly what is going in the NSDF by laying out a number of future CNL administrative practices. The Waste Acceptance Criteria describes the expectations of generators to create a waste profile for each waste destined for the NSDF. The document also describes the six specific waste types allowed in the NSDF and the physical, chemical and radiological qualities and limits on NSDF wastes.<br>All waste disposed of in the NSDF will be required to fall within the NSDF Waste Acceptance Criteria. The | |

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| | | | | preliminary Waste Acceptance Criteria document is available on our external website and in TRAK.<br>The Waste Acceptance Criteria will evolve, as it is being done in parallel with other parts of the NSDF Project (i.e., the Environmental Assessment process) and with another, related initiative – the Integrated Waste Strategy.<br>To clarify, the NSDF is a part of a bigger picture that is being laid out in the Integrated Waste Strategy (IWS), an emerging holistic mapping tool that aims to develop a cradle to grave path for all CNL-managed wastes, both radioactive and non-radioactive, while at the same time enhancing transparency and alignment in waste management practices across CNL. The IWS, which is intended to be an iterative planning document, starts with identifying existing gaps (i.e., incorrect segregation or storage capacity) in the current waste management strategies and creating an action plan to close these gaps.<br>The first revision of the Integrated Waste Strategy CW-508600-PLA-002 Rev. 0 is available in TRAK and the IWS Summary will be published on our external website soon (we are waiting on the translated copy, to ensure it is available in both official languages). | |
| Aug. 2017 | QC | Online form/Email | May I get a digital map of the Chalk River site with the following items mapped on it? | **Response:** Thank you for your interest in the Near Surface Disposal Facility Project. I have attached a map found in the draft Environmental Impact Statement that outlines (in brown) where all the waste management | Yes |

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| | | | - . The location of the Near Surface Disposal Facility.<br>- The location of Waste Management Area A<br>- The location of Waste Management Area B and FPS.<br>I would appreciate that the map be sufficiently high level to illustrate proximity to the Ottawa River, not other features are required to be mapped on this digital map. | areas at our Chalk River Laboratories site are located, as well as the location for the proposed Near Surface Disposal Facility and the location of the Ottawa River. The Ottawa River is also visible on this map.<br>Unfortunately, for security purposes, we cannot indicate which waste management areas are FPS, WMA-A or WMA-B.<br>I hope this is helpful and please do not hesitate to reach out if you have further questions or are looking for other information. | |
| Aug. 2017 | ON | Online form/Email | What radionuclides will be included?<br>What radionuclides will be rejected? | **Response:** Thank you for your recent web inquiry. The operation of Chalk River and other Canadian Nuclear Laboratories sites has given rise to a variety of radioactive waste streams, all of which comprise a combination of many radionuclides. Similarly, wastes generated as part of decommissioning, demolition and remediation activities will contain a wide range of radionuclides. As such, excluding a set of radionuclides from the Near Surface Disposal Facility (NSDF) is not practical nor required.<br>Prior to emplacement in NSDF, all wastes will be screened against defined Waste Acceptance Criteria (WAC). The WAC for NSDF provide limits on the physical, chemical and radiological characteristics of the waste to | Yes |

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| | | | | protect workers, the public and the environment. The limits have been set to ensure safety both during the operational phase and long term, once the NSDF has been closed.<br>With regards to the radiological limits, the NSDF WAC specify both:<br>• Radionuclide concentrations (expressed in Becquerel/gram).<br>• Total activity for the following 11 radionuclides, which were defined as significant in the context of the long-term safety performance: Am-241, C-14, C-36, I-129, Nb-94, Pu-239, Ra-226, Tc-99, Th-230, U-234 and U-238.<br>Although no specific radionuclides are excluded, the NSDF WAC do prohibit certain wastes based on their chemical and physical properties. Examples of this include wastes that contain corrosive, ignitable or explosive materials, pathogens, asphyxiating gases or free standing liquids.<br>For further details on the NSDF WAC, please see: http://www.cnl.ca/site/media/Parent/WAC-232-508600-WAC-002-R2.pdf. | |
| Sept. 2017 | QC | Online form/Email | Very concerned about NSDF Particularly its location and design. | **Response:** Thank you for your recent online information request:<br>Very concerned about NSDF/ Particularly its location and design<br>The NSDF will provide a permanent solution for the waste that has been generated over the past 65 years | Yes |

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| | | | | and is already stored here, and operational waste that will be generated here in the coming years. The NSDF will also be used to dispose of building materials and debris as we transform Chalk River Laboratories into a globally-recognized centre of excellence and innovation. The carefully chosen site for the NSDF at Chalk River Laboratories is approximately 1 km from the Ottawa River. CNL knows the exact make-up of the 10,000 acres of our Chalk River site. In fact, some say that our site is one of the most studied pieces of land in the world. In identifying the ideal setting for the NSDF, we examined potential locations even more rigorously. The geotechnical and hydrogeological tests that we carried out confirmed that the chosen site is truly the most suitable place to put this kind of facility. CNL's Environmental Protection Program maintains a comprehensive effluent and environmental monitoring regime, which involves taking hundreds of samples each year and conducting tens of thousands analyses. CNL's Environmental Protection Program provides an added degree of insurance in the very unlikely event of an incident. The 2,800 people that work at CNL and Chalk River Laboratories are your neighbours. Our families – some for many generations – have grown up here in the Ottawa Valley enjoying the river for swimming, fishing and boating. The people who are designing and who will build and operate the NSDF are just as concerned about protecting our environment, including the Ottawa River, | |

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| | | | | as anyone else in our community. Please feel free to read the scientific and technical documents that are publicly available and find out more. Many of these resources are available at www.CNL.ca/NSDF. | |
| Dec. 2017 | QC | Email | In your text on the web, you speak only of waste of low nuclear activity, Yet there is waste of average activity. What do you do with this waste? As they are more dangerous, it would be essential to know what their treatment is. | **Proposed Response:** CNL Objective for Intermediate Level Waste:<br>To consolidate ILW at CRL and place in safe, secure and suitable storage facilities, making use of existing capacity, until disposal facilities become available.<br>To manage suitable ILW in situ when acceptable.<br>Solid ILW at CRL is segregated, processed and packaged as required, and stored at the CRL site in Modular Above Ground Storage facilities and tile holes. Solid ILW from other CNL sites, with the exception of NPD and WL WR-1 waste which will be managed by proposed in-situ decommissioning, will be processed as required to meet transport regulations and transferred to CRL for storage until a final ILW disposal is identified. Liquid ILW is treated (immobilized) and stored as solid ILW. At CRL, treatment is undertaken where liquid is evaporated and bituminized in drums and stored as solid ILW. | Yes |

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| Feb. 2018 | ON | Email | This is to express interest in being kept informed about activities related to the Near Surface Disposal Facility project. | **Action:** Added to stakeholder list for future information correspondence. | Yes |
| March 2018 | ON | Email/Mail | With C14 having a half life of 5,715 years, what are the chances of multiple simultaneous integrity breaching events happening before the level of C14 emissions are less than those prescribed for release into the Ottawa River safely by the regulations? I'm thinking floods, ice ages, earthquakes, tornadoes, landslides, terrorists, and the many more threats ... Remember that these will prevent or at least hamper active mitigation efforts as proven in Japan. | **Response:** Thank you for your inquiry related to the Near Surface Disposal Facility. The input that you and other members of our community share helps Canadian Nuclear Laboratories (CNL) develop a path forward that takes into account the interests of the public. The purpose of this letter is to respond to your online inquiry, which was as follows:<br><br>*With C14 having a half life of 5,715 years, what are the chances of multiple simultaneous integrity breaching events happening before the level of C14 emissions are less than those prescribed for release into the Ottawa River safely by the regulations?*<br><br>*I'm thinking floods, ice ages, earthquakes, tornadoes, landslides, terrorists, and the many more threats... Remember that these will prevent or at least hamper active mitigation efforts as proven in Japan.*<br><br>We've consulted the Near Surface Disposal Facility team and our response to your feedback is as follows: Carbon-14 is a long-lived radionuclide that is present in the NSDF inventory. The concentration of carbon-14 | Yes |

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| | | | | and other long-lived radionuclides is limited to specific amounts, as prescribed by the NSDF's Waste Acceptance Criteria.<br>CNL submitted the NSDF Environmental Impact Statement (EIS) in March 2017. The EIS evaluated an inventory of radionuclides that was being proposed for the NSDF. This inventory has since been drastically reduced, with many radionuclides being reduced by 99% of the previously reported activity values as a result of the removal of specific waste streams. For C-14, the average concentration has been reduced by about 96%. At the time of closure, the average concentration of C-14 in the NSDF is now lower than the Unconditional Clearance Level, as defined in the Nuclear Substances and Radiation Devices Regulations, SOR/2000-207.<br>Studies have been performed to determine the effects of accidents and malfunctions on the NSDF. With the exception of tsunami, which is not a credible event here and a glacier postulated 100,000 years in the future, those disruptive events you highlighted (and more) are considered in our assessments. Environmental contaminant transport models have been developed to assess how material in the NSDF could move through the environment, if the multiple and robust barrier systems were to fail. The results of these studies indicate that the small and dilute quantities of material that could potentially make their way to the Ottawa | |

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| | | | | River are so small that there is no significant impact to the environment, biota, or humans living downstream. Please feel free to reach out at any time for information about either the Near Surface Disposal Facility or the Nuclear Power Demonstration (NPD) Closure Project, or about CNL in general.<br>You can reach us by email: communications@cnl.ca or telephone: 1-(800)-364-6989.<br>For continuing updates on the Near Surface Disposal Facility, you can also visit our website: www.CNL.ca/NSDF. | |
| March 2018 | ON | Email | Questions about the NSDF Environmental Assessment- 1. How the waste will be segregated and stored? 2. Who are the environmental groups that responded to the EA process and what were their concerns? 3. What remediation will be in place should there be a failure of the protective barrier? | **Response:** 1. CNL has been generating, segregating, and storing waste for decades. Currently, the majority of the waste is stored in a variety of Waste Management Areas around the site. As CNL moves forward with the NSDF in mind, waste is beginning to be separated into "appropriate for NSDF" and "not appropriate for NSDF". The intention is to move select waste from storage to the NSDF. In the case of decommissioned and demolished buildings, the plan is to demolish a building, load the rubble into trucks, and deliver the loads directly to the NSDF. This eliminates the need for temporary waste storage. On the issue of segregation, it's important to note that only Low-Level Radioactive Waste is accepted into the NSDF. Waste that does not meet the Waste Acceptance Criteria will continue to be stored on-site in various Waste Management Areas, just as it has been done for decades. | Yes |

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| | | | | 2. Many groups have submitted comments to the Canadian Nuclear Safety Commission (CNSC) with regards to CNL's NSDF project, specifically on the Environmental Impact Statement (EIS). Some of the groups include:<br>• Canadian Environmental Law Association<br>• Concerned Citizens of Renfrew County<br>• Old Fort Williams' Cottagers Association<br>• Northwatch<br>All of the submissions made from the public can be found on the Canadian Environmental Assessment Registry, at this link: http://www.ceaa-acee.gc.ca/050/documents-eng.cfm?evaluation=80122&type=3<br>The public's main concerns are on the following topics:<br>• Types and quantities and types of waste included for disposal,<br>• Risk to the Ottawa River,<br>• Risk to the environment,<br>• Consequences of accidents,<br>• AECL or CNL's long-term commitment to the site.<br>It is very important to note that the project has come a long way since the public has provided comments. Many issues and concerns have been resolved. The best example would be the waste – no Intermediate Level Waste will be accepted into the NSDF.<br>3. AECL or CNL will continue to monitor the site and facility for many decades after the NSDF is full and | |

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| | | | | closed. If a protective barrier is found to be defective or in need of repair, commitments have been made to fix them. The cover system is easier to fix because it is easily accessible from the surface. Problems with the bottom liner systems are more difficult to fix, but not impossible. The first thing to understand is that the base liner system contains many layers to separate the waste from the environment. This system includes 2 separate high-density polyethylene and geosynthetic clay liners. If one should fail or develop a hole, the second one provides containment. In addition, the ultimate protection is the 0.75 meters of compacted clay. This clay layer is a completely natural material, hundreds of thousands of years old. Clay doesn't "fail" like a man-made material could. I have included diagrams of both the top cover and bottom liner systems to give an idea of just how many different barriers there are between the waste and the environment. | |
| May 2018 | ON | Email | Je viens de terminer la lecture de votre site Internet et j'aimerais obtenir des précisions concernant le type de déchets qui seront envoyés à l'IGDPS. Dans le texte vous dites que 95 % seront des déchets gérés par les LNC. Quelle est la provenance | **Response:** 90% des déchets seront des laboratoires de Chalk River; 5% des autres sites des Laboratoires Nucléaires Canadiens (par exemple le réacteur prototype Gentilly 1). Le dernier 5% sont d'autres sources canadiennes, comme les universités et les hôpitaux. (http://www.cnl.ca/site/media/Parent/NSDF_quickfacts_Fre.pdf et http://www.cnl.ca/site/media/Parent/NSDF_Infographic_2018_FR.pdf) | Yes |

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| | | | des autres 5 %. Enfin, de ce 95 %, vous précisez la provenance de 90 % de ceux-ci et d'un autre 5 %, mais il reste un 5 % manquant de ce 95 %. Encore une fois, qu'elle est est la provenance ?<br>Autre question :<br>Vous expliquez les normes d'acceptation des déchets et vous précisez que les déchets qui ne rencontrent pas les normes seront stockés temporairement en attendant qu'on trouve une solution. Puis, plus bas, vous dites que vous avez une procédure de vérification à l'arrivée des déchets afin de vous assurer qu'ils sont acceptables. Donc, s'ils ne rencontrent pas les normes, allez-vous les renvoyez (et si oui, comment ?) ou allez-vous les entreposer temporairement ?<br>Merci de vos précisions. | Les déchets destinés pour l'IGDPS sont caractérisé et approuvé avant le transfert vers l'IGDPS (http://www.cnl.ca/site/media/Parent/FR_232-508600-WAC-002.pdf). Si le processus de vérification trouve des déchets non-conformes, ces déchets pourraient être retourné au générateur, selon les règlements CCSN; ou pourraient être mis dans le bon flux de déchets, les déchets radioactifs de moyenne activité ne seront pas stockés dans l'IGDPS (http://www.cnl.ca/site/media/Parent/IWS_Aug_Fre.pdf ). Cordialement. | |

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| July 2018 | ON | Public Information Session feedback form | What seismic event (size of earthquake) is the basis for the design? Tell me more about the layers of the liner system and how they work to protect the environment. Will there be waste imported from other "atomic plants"? | **Action:** Comment recorded, no response required. Information responding to these questions was incorporated into messaging. | No |
| July 2018 | ON | Public Information Session feedback form | Describe the liner system, are their failure scenarios? Seismic? How are inner berms within the disposal all constructed? A Clay layer or other material? | **Action:** Comment recorded, no response required. Information responding to these questions was incorporated into messaging. | No |
| July 2018 | ON | Public Information Session feedback form | I am concerned about what will happen to leachate collected during abnormal conditions. Will leachate be released when the collection system overflows, as often happens with conventional water treatment systems? A large snow melt in Spring (especially if the water diverting cap has not been placed on the mound yet) | **Action:** Comment recorded, no response required. Information responding to these questions was incorporated into messaging. | No |

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| | | | could cause water treatment over flow | | |
| July 2018 | ON | Public Information Session feedback form | How deep is Perch Lake? How many wells? How does it discharge? Do you monitor it closely so that no contaminant gets out? How is the mound constructed? How do you plan for disasters? What about tech tonic plates? | **Action:** Comment recorded, no response required. Information responding to these questions was incorporated into messaging. | No |
| Sept. 2018 | ON | Email | When is the next Open House at CNL? I would like the opportunity to visit your facility and view the plans for the NSDF | **Response:** Thank you for following up with us, CNL does not have a planned open house in the calendar – if that should change, we would be happy to let you know.<br>We are planning some public updates on the NSDF and NPD projects – as those dates become final we will pass them along to you.<br>In the meantime if you have any questions about CNL activities please do not hesitate to ask. | Yes |
| Oct. 2018 | QC | Webinar/ Email | Re: CNL is hosting an online webinar for the NSDF & NPD Projects - Thank you for organizing this, unfortunately I already have an engagement at that time. Is there a way to access the webinar afterwards | **Response:** Thank you for your recent email inquiry. You can view the webinar afterwards at the same web address of www.cnl.ca/webinar.<br>If you have any questions or issues accessing it please contact us as communications@cnl.ca.<br>Thank you for your interest. | Yes |

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| Oct. 2018 | ON | Webinar/ Email | Re: CNL is hosting an online webinar for the NSDF & NPD Projects - Following your request to forward concerns about participation, I would like to say that It is regrettable that this webinar is scheduled on the same evening as our Council Meeting which begins at 6:00pm. Will the session be recorded and available after? Needless to say, the topic is of great interest to our Council and community. | **Response:** Thank you for your recent email inquiry. You can view the webinar afterwards at the same web address of www.cnl.ca/webinar.<br>If you have any questions or issues accessing it please contact us as communications@cnl.ca.<br>Thank you for your interest. | Yes |
| Oct. 2018 | ON | Webinar/ Email | Re: CNL Update for Municipal Candidates \| Mise à jour de LNC aux candidats municipaux - If you record the event, please send me a link. Regardless of the election outcome, I will watch it to become better informed. | **Response:** Thank you for your recent email inquiry. You can view the webinar afterwards at the same web address of www.cnl.ca/webinar.<br>If you have any questions or issues accessing it please contact us as communications@cnl.ca.<br>Thank you for your interest. | Yes |
| Oct. 2018 | ON | Webinar/ Email | Re: CNL is hosting an online webinar for the NSDF & NPD Projects - Hi!! I am so glad to hear about that | **Response:** Thank you for your recent email inquiry. Please feel free to share! You can view the webinar afterwards at the same web address of www.cnl.ca/webinar. | Yes |

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| | | | webinar!! Would you allowed me to share that information on my Facebook campaign page? I think it would be a great opportunity for people to learn about that facility. The October 17th happens to be the same night of the fundraising for Petawawa Heritage Village which I would be attending, so would it be possible to have access to the webinar at any other time? | If you have any questions or issues accessing it please contact us as communications@cnl.ca.<br>Thank you for your interest. | |
| Oct. 2018 | ON | Webinar/ Email | Re: CNL Update for Municipal Candidates \| Mise à jour de LNC aux candidats municipaux - Thanks for the information and invitation. Unfortunately I have a class that I cannot miss at that time. Will it be available for viewing afterwards or will notes be taken? I'd be interested in either. | **Response:** Thank you for your recent email inquiry. You can view the webinar afterwards at the same web address of www.cnl.ca/webinar.<br>If you have any questions or issues accessing it please contact us as communications@cnl.ca.<br>Thank you for your interest. | Yes |

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| Oct. 2018 | ON | Webinar/ Email | Re: CNL is hosting an online webinar for the NSDF & NPD Projects - Thank you for this communication keeping me informed. Is this webinar the same or similar in nature to the one that was delivered back in February of this year? | **Response:** It is an update on two of the major projects the NSDF and NPD Closure Project - the schedule and major feedback themes.<br>If you cannot watch the live broadcast, you can view it afterwards at the same web address of www.cnl.ca/webinar.<br>If you have any questions or issues accessing it please contact us as communications@cnl.ca.<br>Thank you for your interest. | Yes |
| Oct. 2018 | QC | Webinar/ Email | Thank you for your message.<br>Can you please provide a link for the webinar as the one in your message directs us to an error page? | **Response:** I apologize for the inconvenience, the link has been updated.<br>Additionally, you can view the webinar afterwards at the same web address of www.cnl.ca/webinar.<br>If you have any questions or issues accessing it please contact us as communications@cnl.ca<br>Thank you for your interest. | Yes |
| Oct. 2018 | QC | Webinar/ Email | I would like to listen to the webinar tomorrow. Could you send me the information to register and participate? | **Response:** We have organized an online opportunity for a discussion focused on the Near Surface Disposal Facility (NSDF) and the Nuclear Power Demonstration (NPD) Closure Project. We will open the webinar with a short presentation on scheduling and Environmental Impact Statement (EIS) feedback themes as well as allow plenty of time for questions. Your input, comments and feedback are important to us, and we hope you can join in the discussion.<br>*Wednesday, October 17, 2018 from 6:30 PM to 7:30 PM*<br>*Join the conversation: www.cnl.ca/webinar* | Yes |

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| | | | | We hope you can join us and we encourage you to share the information with others who may be interested. More information on the projects and how you can get involved can be found at www.cnl.ca/nsdf or www.cnl.ca/npd.<br>Do not hesitate to contact us if you have any questions or concerns on participation in our webinar. Please note that registration is not required. | |
| Oct. 2018 | QC | Telephone | A community member from Gatineau, QC, left a message on the Community Line. He has reviewed the DRAFT EIS for NSDF and he has some questions regarding the Project. He can be reached at XXX-XXX-XXXX. | Verbal Response | Yes |
| Nov. 2018 | ON | Email | I have been doing research about the Near Surface Disposal Facility you are implementing on site. How can I learn more about this project than what is on the general website? I am familiar with Environmental Site Assessments but I'm interested in what will be done with the water | **Response:** Thank you for contacting us directly to learn more about the Near Surface Disposal Facility (NSDF). We are in the process of updating the project's webpage so there will be more information online very soon. Canadian Nuclear Laboratories also hosts public information sessions both in communities as well as through webinars where our technical staff are available for a dialogue about the proposed project. If you are interested we can add you as a contact for notification of future opportunities. In the meanwhile please feel free to check out a recent webinar on the project. | Yes |

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| | | | collected in the treatment plant, and what the discharge criteria is—- I know you do not have to follow provincial EPA guidelines as you are a federal facility. | Treated effluent from the NSDF Wastewater Treatment Plant will be monitored prior to discharge and will be routed to ground via an infiltration area and to a surface water body (Perch Lake) on the CRL Site.<br>The effluent will be treated to protect human health and the environment.<br>For radiological constituents, Health Canada Drinking Water Guidelines at the point of release are applied.<br>The one exception to this is tritium. Tritium concentrations will meet drinking water guidelines at the point of release from the CRL site. The tritium discharges are protective of biota.<br>For non-radiological constituents, federal Canadian Council of Ministers of the Environment guidelines and provincial guidelines for protection of aquatic biota are applied at the boundary of the mixing zone.<br>Further I would like to mention Canadian Nuclear Laboratories is transparent about the environmental performance at its sites. This includes ensuring effluent monitoring results would be made available to the public on an annual basis in the CRL Environmental Performance Report.<br>The draft Environmental Impact Statement (EIS) for the NSDF is available, however we are working now to update it and address requests for more information from regulatory agencies, the public and Indigenous groups. This will include an update of our proposed effluent criteria. The final EIS will reflect improvements | |

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| | | | | to the project as a result of the received comments. If you are interested, we can let you know when further information is available on our proposed project including the final EIS and the publication of our responses to the requests for more information. | |

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| Jan. 2019 | ON | Email | Hi I've worked at a very advanced waste treatment facility and was concerned about your leachate issues. But test video was very good PR. Just wanted to touch base with you. | **Action:** Comment recorded, no response required. | No |
| Feb. 2019 | ON | Letter | I refer to the December 2018 edition of "Contact" published by Canadian Nuclear Laboratories. In the section under NSDF Project, CNL reports that they have been provided with "state of the art" research and testing for the geomembrane barrier; They further report that this provides evidence that the service life of the liner system will reach 550 years. I am writing to request the documentation provided to CNL which enables them to reach the above noted conclusion on the liner system. I am making this request to you as I | **Response:** Please find attached Near Surface Disposal Facility (NSDF) Geomembrane Relative Performance Report – Public Version (Redacted).<br>Summary: The High Density Polyethylene (HDPE) Geomembrane (GMB) testing program was part of the NSDF project aiming to provide scientific-based information that will: (1) support the regulatory licensing process, (2) demonstrate 550 year service-life will be met and (3) refine procurement specifications to specific brand/product/formulation, prior to acquisition. Methods for testing and data analyses have been performed in accordance with applicable standards and published in a number of peer-reviewed journals. Based on the data and associated interpretation, two candidate GMBs are considered suitable for the NSDF ECM and have predicted service-lives to be well in excess of the required 550-year design-life. To ensure the integrity of the HDPE materials and installation, the project will apply a Construction Quality Assurance (CQA) program. The CQA Program will include | Yes |

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| | | | understand your organization has the overall responsibility for this project. Thank-you for your assistance | confirmatory tests and inspection by qualified personnel prior to and during liner installation.<br>About Public Version (Redacted): The NSDF HDPE GMB testing program is a collaborative effort between CNL, Queen's University at Kingston, TRI/Environmental, Inc., GMB manufacturers, and Subject Matter Experts from industries. The Public Version (Redacted) of the report includes all technical content from the original report with some commercially sensitive information removed. This version includes additional clauses and watermarks and exclusionary language related to proprietary information.<br>Thank you very much for your interest in the NSDF Project.<br>Should you have information regarding the report or the NSDF project, please do not hesitate to contact us. | |
| March 2019 | QC | Webinar/ Email | CNL's Environmental Remediation Project Updates (Webinar) 20 mars 2019 - Will the Webinar be available in French? | **Response:** Please utilize the following link for webinar video: www.cnl.ca/webinar<br>Mute video sound and join by telephone for French translation:<br>Dial number below:<br>613-584-3311 ex. 21000 (Canada) English (United States)<br>1-866-513-2325 ex. 21000 (Canada) English (United States)<br>Find a local number<br>When prompted for conference ID:<br>conference ID: 5713899, then press # | Yes |

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| | | | | Please feel free to contact me if you have any questions. | |
| March 2019 | ON | Webinar/ Email | RE: Join us Wednesday evening: CNL's Environmental Remediation Project Updates (Webinar) - Thanks for the invite however the timing conflicts with our council meeting. If there is a video or another session I would appreciate it if you could let me know. | **Response:** Good afternoon, If you utilize the same link after the event, the recorded version will be available. Let me know if you have any issues. | Yes |
| March 2019 | QC | Webinar/ Email | Ce webinar n'est pas un succès car le son était très mauvais. Il faudrait parler plus lentement en anglais avec des phrases courtes pour que le traducteur puisse comprendre et traduire de façon compréhensible. Faites un test avant de diffuser. C'est difficile de poser des questions. Laissez nous le temps .. Voici d'autres questions: Quels sont les déchets radioactifs de moyenne activité qui on été retirés du projet initial du | **Response:** Please find below the response to your webinar question:<br>FR: Question: Les déchets de type 5 seront-ils mis dans le dépotoir?<br>L'inventaire initial comportait deux types de déchets de type 5; déchets en colis et déchets stabilisé. Les déchets stabilisés de type 5 représentaient les déchets d'activité supérieure (c'est-à-dire les déchets de niveau intermédiaire) et, par le biais du processus itératif et les commentaires du public, ne seront plus placés dans le monticule de confinement artificiel. Les déchets en colis de type 5, qui sont des déchets de faible activité, seront placés dans le monticule de confinement artificiel.<br>EN: The initial inventory had two types of Type 5 waste in the inventory; Type 5 Packaged and Type 5 Stabilized. The type 5 stabilized waste represented the higher activity waste (i.e., Intermediate Level Waste) and | Yes |

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| | | | dépotoir. De quel type ( 1 à 6)? Quels radionucléides ont été exclus?<br>Pouvez-vous nous fournir la preuve qu'il n'y aura que des déchets radioactifs de faible activité dans ce dépotoir? SVP fournir un tableau détaillé car nous sommes tous très inquiets.<br>Je vous remercie de transmettre ces questions. | through the iterative process and public feedback will no longer be placed in the engineered containment mound. The type 5 packaged waste, which is low level waste will be placed in the engineered containment mound. | |
| April 2019 | QC | Email | Questions from Ralliement contre la pollution radioactive (RCPR). | **Response:** See questions and responses to Ralliement contre la pollution radioactive below (Note 4). | Yes |
| April 2019 | ON | Email | CNL's presentation to last week's meeting of the Environmental Stewardship Council included a slide #8 entitled "CRL Waste Management Area H". It shows a picture of sea-land containers being stacked 3-high with a crane, and says "WMA H Expansion will support ~72,000 m3 (~4,000 sea cans) of LLW." | **Response:** Good following up with you on the margins of the ESC on the 28th. As discussed, I am providing the following responses to your questions on the subject of Waste Management Area H and emplacement of materials in the proposed NSDF.<br>Here are the responses to your questions, please let me know if I can be of further assistance.<br>1. Is that an actual picture of WMA H? Are there already containers there?<br>Yes – the photograph used in the update presentation to the ESC is an actual picture of WMA H and these containers of low level waste in interim storage at the | Yes |

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| | | | I asked if the plan is to put these containers directly into the NSDF and was told "Yes".<br>My questions:<br>1. Is that an actual picture of WMA H? Are there already containers There? How many? Where are they from? Are any of them from the Whiteshell Laboratories? What's in them?<br>2. Can a sea-land container full of soil (or other material at a density of 1.5 g/cm3) be transported on a highway without violating load limits?<br>3. Can a sea-land container filled with material of a density well below 1.5 g/cm3 be put in the NSDF? Would this risk creating void spaces that would impair the structural stability of the mound (e.g., cause a risk of collapse during compaction | CRL site. All material stored and managed at the CRL site meet all current licence conditions.<br>2. How many [containers]?<br>Currently there are approximately 150 containers stored at WMA H.<br>3. Where are they from [the containers]?<br>The vast majority of the stored waste is from activities occurring at CRL, including decommissioning and demolition activities underway, and a small volume of the waste is from other CNL sites including the Whiteshell Closure Project as well as the Douglas Point and Gentilly-1 sites.<br>The presence of this material is consistent with information made available to the ESC and the public though public presentations, written updates and web content.<br>4. Are any of them from the Whiteshell Laboratories?<br>Yes – as mentioned in the response to question 3, some of the waste packages are from the Whiteshell Closure Project.<br>5. What's in them [the containers]?<br>In this instance, the containers are used to store low level radioactive waste. For example they contain, building decommissioning and demolition debris including concrete rubble, masonry, structural steel, rebar, wooden supports and structures, lab refuse and personal protective clothing. Prior to relocation to the | |

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| | | | operations)? Please don't hesitate to contact me for clarification on any of these questions!<br>Thank you for the responses to my questions on the materials in Waste Management Area H and their emplacement in the NSDF.<br>I'd be grateful for your help with two follow-up questions:<br>Follow-up question to question 5: "What information is available on the radiological, physical, chemical and biological properties of the radioactive waste contents of the containers already shipped to CRL and stored at WMA H? Could CNL provide data for one of the containers?"<br>Follow-up question to question 7 (part 1): "Regarding the prohibition of degradable waste types | proposed NSDF, these materials will be characterized and subject to the facility's Waste Acceptance Criteria.<br>6. Can a sea-land container full of soil (or other material at a density of 1.5 g/cm3) be transported on a highway without violating load limits?<br>When undertaking transportation activities CNL follows all regulations. This includes the transportation of material as referenced in your question, soil. In such instances load limits are fully understood and adhered to per transportation regulations.<br>7. (Part 1) Can a sea-land container filled with material of a density well below 1.5 g/cm3 be put in the NSDF?<br>Prior to emplacing any material, packaged or bulk, into the NSDF, it is characterized and assessed versus the Waste Acceptance Criteria.<br>The facility's design takes into consideration management of voids to ensure the structural integrity of the facility during its design life.<br>For example, waste placement is conducted in accordance with the NSDF Waste Placement and Compaction Plan. Waste placement and daily cover soil placement in the Engineered Containment Mound are conducted to reduce the potential for waste settlement and minimize void space in the cells.<br>Other measures employed to ensure minimum voids include:<br>• Waste compaction, | |

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| | | | from being disposed of in the NDSF, as per the NSDF waste acceptance criteria, how are degradable waste types defined? | • Staging of various waste types to strategically amalgamate waste,<br>• Grouting between waste packages and containers done to make a solitary form,<br>• General methods of waste placement in controlled lifts and management of waste layers,<br>• The Waste Acceptance Criteria prohibits degradable waste types from being disposed in the NSDF.<br>(Part 2) Would this risk creating void spaces that would impair the structural stability of the mound (e.g., cause a risk of collapse during compaction operations)?<br>Per response above (question 7 Part 1), placement of any material, packaged or bulk, is subject to the NSDF Waste Placement and Compaction Plan.<br>1. Follow-up question to question 5: "What information is available on the radiological, physical, chemical and biological properties of the radioactive waste contents of the containers already shipped to CRL and stored at WMA H? Could CNL provide data for one of the containers?"<br>Waste generators at CNL provide information on the radiological, physical, chemical and biological characteristics of waste streams utilizing the guidance of CSA N292.0-14 General principles for the management of radioactive waste and irradiated fuel. All wastes stored in WMA H comply with these requirements through the provision of a waste stream profile which | |

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| | | | | documents the physical properties, chemical, biological and radiological characterization.<br>Below an example of data for one of the containers.<br>*Waste Stream: Whiteshell Laboratories Cesium Pond Soil*<br>*Package Type: Marine Container NOTE: soft sided packages (PakTek bags) inside marine container*<br>*Physical State: Solid*<br>*Waste Material: Soil*<br>*Reg 347 Hazard: Not applicable*<br>*Weight: 9,348 kg*<br>*Volume: 36 m3*<br>*Package Radiation: <0.1 mR/hr*<br>*List of Contaminants:*<br>*Cs-137 3.19E+07 Bq*<br>2. Follow-up question to question 7 (part 1): "Regarding the prohibition of degradable waste types from being disposed of in the NDSF, as per the NSDF waste acceptance criteria, how degradable waste types defined are?"<br>CNL is will limiting the concentrations of degradable organics placed in the NSDF for the purpose of controlling conventional landfill gases. This includes biodegradable wastes such as food wastes which CNL presently manages though an ongoing waste segregation program which diverts such waste from disposal into composting programs. | |

| Informal Feedback 2019 | | | | | |
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| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| April 2019 | ON | Email | Now that we know a similar plan in France, with the waste being uncovered, was not successful, such that a major revision was required, what have you learned from that, and how might you revise your plans? | **Response:** Thank you for your recent email inquiry. The NSDF project team have provided the following information in response to your questions:<br>A near-surface disposal facility (NSDF) for low-level radioactive wastes, the majority of which are currently stored on the Chalk River site, is being proposed by Canadian Nuclear Laboratories (CNL) and the environmental assessment process and licensing through the Canadian Nuclear Safety Commission (CNSC) is underway.<br>As part of CNL's requirements for both the environmental assessment and licensing, a review of Canadian and International Operating Experience (Opex) is completed. CNL staff have also participated in benchmarking visits to a number of similar disposal sites, including those in France. Based on your question, we believe you are referring to the Manche waste disposal facility (CSM) that was in operation from 1969 - 1994, covering from 1991-1997 and closed in 2003. The storage started in ordinary trenches, in the open ground. CSM then adopted the safer and exploitable surface storage (concrete blocks are poured around barrels, then they are covered with a plastic film and earth). This facility did have a mechanism to collect water, but did not treat the collected water - rather, it was monitored. Based on our understanding, there were operational challenges with water infiltration into waste packages that resulted in contamination of | Yes |

| Informal Feedback 2019 | | | | | |
|---|---|---|---|---|---|
| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| | | | | groundwater. The facility did have some challenges with settling and landslip of the cover, which were detected and fixed through the monitoring program in place. The cap construction at CSM was a world first.<br>The NSDF design has both a baseliner and cover system made up of multiple layers of both natural and synthetic materials, providing robust protection to the encapsulated waste. The baseliner for NSDF has a leachate collection system, where any water contaminated by the waste will be collected and treated at a new waste water treatment plant. After treatment, the NSDF facility will test the effluent prior to any discharge to ensure that the water quality meets discharge targets protective to the environment. This video provides information on water management for the NSDF: https://www.youtube.com/watch?v=ejUFheJDLp8.<br>During construction of both the baseliner and cover, CNL will have quality assurance/control to ensure the installation meets the design requirements. Following completion of the NSDF, monitoring of the facility will continue for a number of years, which will be regulated by the CNSC.<br>Thank you for your question - we at CNL also live and play in the Ottawa River and share your concerns. Further information on the NSDF project can be found here: www.cnl.cansdf Please do not hesitate to contact us with any further questions. | |

| Informal Feedback 2019 | | | | | |
|---|---|---|---|---|---|
| Date | Province | Feedback Mechanism | Comment/Inquiry | Disposition/Response | Response Requested* |
| May 2019 | ON | Email/ Telephone | I worked for Security.<br>In the latest Contact Issue it was mentioned that since 2016, 67 bldgs. Had been demolished. Is there any way that you could tell me the bldg. numbers and their location Also, in this issue you mentioned that in 2018 a new sewage treatment facility had been built.<br>What is the bldg. number and where is this located.<br>Also where is the ANMRC located and does it have a bldg. number?<br>Where is the South Swamp located and where is the NSDF to be located.<br>Any help will be greatly appreciated.<br>Thanking you in advance. | **Verbal Response.**<br>**Action:** CNL sent unrestricted maps for additional information purposes. | Yes |

***Response Requested:** Public Information Session and online forms can be anonymous and have the option of either: "response required" or "no response required".

## APPENDIX S ANALYSIS OF FORMAL PUBLIC COMMENTS FROM THE DRAFT EIS

| Topic/Theme | | Key Points | Formal Comment Number (CEAA Registry #80122) |
|---|---|---|---|
| Waste | Non-CRL waste/ shipment of waste | • Require more detail on volume of non-CRL waste and detail on shipment of waste<br>• Concerned about safety<br>• Radionuclides content cannot be discerned from off-site sources | 3, 4, 7, 18, 32, 81, 82, 124, 141, 147, 128, 132 |
| | ILW/ mixed waste | • Need to ensure that the EIS has remained consistent with mention of percent or volume of ILW or mixed waste<br>• Describe radioactive content<br>• Describe disposal pathway<br>• Clarify how the small percent of ILW meets IAEA standards.<br>• Provide quantities or percent of ILW from decommissioning | 2, 55, 61, 62, 154,138, 141, 155, 153 |
| | Legacy waste | • Describe how NSDF fits into Canada's management of legacy waste<br>• Provide estimate of risk of legacy waste<br>• Provide waste class or type of legacy waste<br>• Site selection unfavorable due to proximity to waste management areas<br>• Distinguish between legacy waste and storage facilities<br>• Provide estimates of quantity of legacy waste | 7, 11, 12, 51, 77, 153, 203 |
| | Waste Acceptance Criteria (WAC) | • Specify that no liquid radioactive waste will be accepted. How will no free liquids be enforced?'<br>• How was consultation considered in development of the WAC<br>• Define "long-term safety objectives", "proven track record", "safety case", "safety argument"<br>• List acceptance criteria<br>• Describe the process of converting non-compliant waste to compliant<br>• Elaborate on packaged waste<br>• What happens when the waste doesn't meet acceptance criteria?<br>• How will CNL limit ILW to 1%?<br>• Describe the steps of waste characterization – i.e. how will the waste be characterized? | 158, 175, 165, 173, 170, 176, 177, 163, 174, 180, 184, 191, 197, 295 |

| Topic/Theme | | Key Points | Formal Comment Number (CEAA Registry #80122) |
|---|---|---|---|
| | | • Readability of the section is poor – jumps between topics and lacks quantifiable definitions<br>• Disposal of fissile material<br>• Define phase 1 and phase 2 waste types<br>• Bales may not be suitable due to inventory of long lived radionuclides<br>• Provide detail of training for waste inventory technicians | |
| | Clarity | • Describe how waste packaging will withstand compaction<br>• Waste hierarchy – how is CNL reducing waste? Recycling waste?<br>• Distinguish between Very Low Level Waste (VLLW) and LLW<br>• Is waste profiling the responsibility of the generator?<br>• Provide clarity on criteria for designating a substance a COPC | 88, 92, 118, 188, 210 |
| | Radiological characteristics | • Check the dose rate limits of type 5 waste<br>• Describe how CNL established the max quantities for rads<br>• Recovery of wastes from Waste Management Areas B & C<br>• Many comments on the Performance Assessment Document (217-225)<br>• Provide distinction between short-lived and long-lived radionuclides<br>• Please provide documentation on a number of rads (228-237)<br>• Lacking an explanation of how inventory was determined in order for reviewers to check accuracy<br>• Use of bounding inventories<br>• Tritium inventory and tritium emissions<br>• How will CNL prevent tritium release into Perch Creek from exceeding the set threshold?<br>• Provide justification of limits for radionuclides | 211, 214, 217, 218, 227, 238, 261, 268 |
| Alternative Means | Site selection | • Justify site selection on banks of the Ottawa river<br>• Selected site on geologically unstable terrain<br>• Provide criteria in table form<br>• No mention of outside expert review<br>• Makes Emergency Road #3 unavailable in the event of a nuclear accident and disrupts East Mattawa Road (cultural heritage site) | 7, 13, 14, 28, 78, 79, 85 |

| Topic/Theme | | | Key Points | Formal Comment Number (CEAA Registry #80122) |
|---|---|---|---|---|
| | | | • Selection based on operational convenience | |
| | Assessment criteria/methodology | | • Provide criteria for considering GWMF vs NSDF<br>• Lack quantitative evaluation<br>• Too much emphasis on economic justification<br>• No mention of sustainability | 11, 16, 25, 26, 20, 22 |
| Design Description | ECM | Geomembrane/ base liner | • How can the geomembrane prevent upward migration of radon and other gases?<br>• Describe the process for testing the integrity of the geomembrane<br>• Geomembrane is not sufficient, not waterproof – compared to a liner used in a landfill<br>• Why is the geomembrane not concrete?<br>• Provide description of the liner being used in other locations<br>• Describe the integrity of the liner over time | 96, 119, 111, 115, 114, 112 |
| | | Cover (daily, final, cell) | • Where and how will the excavated soil be stored until use for the daily and final cover?<br>• Unclear how the active disposal cell cover will limit water infiltration | 117, 95, 116, 482 |
| | Waste water treatment system | | • Effluent discharge criteria should be established<br>• How will WWTP prevent leachate migration?<br>• Describe integrity of the leachate collection system overtime<br>• How the effluent generated from the WWTP be characterized?<br>• What will happen in the event of an extended power outage of the WWTP?<br>• Elaborate on the lifespan on the WWTP and plans for decommissioning | 102, 104, 112, 272, 273, 275 |
| Project description/justification | | | • Repeated requests for CNL to cite examples (and elaborate) demonstrating how the proposed technology has been used successfully in the past – with the cover, geomembrane, other NSDFs, disposal of LLW and ILW<br>• EIS does not clearly specify the problems and opportunities that NSDF is intended to satisfy<br>Repeated comparison between landfill type facility and NSDF<br>NSDF deviates from internationally-accepted waste management principles with IAEA<br>Repeated requests to elaborate on “proven technology” | 9, 298, 300, 303-307, 411 |

| Topic/Theme | | Key Points | Formal Comment Number (CEAA Registry #80122) |
|---|---|---|---|
| | | To revaluate predictions to include technology changes | |
| Project timeline | Project lifespan (500 years) | • EIS does not address very long term implications of the project – i.e. uranium 238<br>• Are any of the facilities being designed with decommissioning in mind?<br>• Cumulative effects<br>• How will monitoring and follow-up be conducted into the future? | 312, 313, 572 |
| | Construction | • Provide hours of operation for trucks | |
| | Operation | • | |
| | Closure/ Post-closure | • How will future generations will be warned to stay away?<br>• Needs to acknowledge that abandonment is a necessary phase of the project<br>• How will the site be protected or fixed in the event of an institutional failure or in 100+ years?<br>• Describe what would occur if the ECM fails in 100+ years | 316, 317, 319, 322 |
| Engagement/consultation | | • Consultation will improve social acceptance – social license must be earned<br>• NSDF should be a societal decision not just a scientific one<br>• Consultation has been inadequate – need to increase public awareness<br>• Written responses are triggering more questions<br>• Lack of consultation with host communities with respect to accidents and malfunctions<br>• Lack of consultation with Quebec<br>• Accused of using the “Decide-Announce-Defend” approach to consultation<br>• Unhappy with poster board sessions<br>• Feel excluded from the alternative means assessment<br>• Transparency<br>• How was the public involved in making judgements on key terms: “ALARA”, “technically and economically feasible”, “significant”, “ “acceptable”<br>• Was the public consulted in the selection of VCs? | 323, 324, 325, 328, 329, 333, 352, 356, 370 |

| Topic/Theme | | Key Points | Formal Comment Number (CEAA Registry #80122) |
|---|---|---|---|
| Safety/human health | | • Worker and public safety<br>• Elaborate on the basis for the Safety Analysis Report (SAR) – is it written on the basis that all is well on the mound?<br>• "zero-risk" management practices<br>• 300 year institutional control<br>• Plutonium<br>• There has never been a long term study of human health downstream of CRL<br>• Include Garrison Petawawa<br>• Many concerns about radioactivity affecting human health<br>• What is CNL's follow-up program for human health?<br>• No specific consideration for pregnant women | 366, 382, 476, 477, 482-487, 503 |
| Environmental Effects | Aquatic & Surface Water Environments | • Ottawa River<br>• Elaborate on the aquatic food chain<br>• Impacts of tritium on aquatic biota<br>• Provide baseline of radionuclides levels in waters surrounding Chalk River (i.e. Ottawa River)<br>• Describe cumulative effects in Perch Lake<br>• Concerns for tritium and strontium 90<br>• Define limits in Surface Water Management Plan<br>• Suggests setting safe drinking water levels for tritium to 20 Bq (CELA, 455) | 380, 381, 383, 413, 433, |
| | Atmospheric Environment | • How does CNL accept the release of radioactive gases during construction, operation and post-closure?<br>• Elaborate on the passive landfill gas (FG) venting system<br>• Provide results of dispersion modelling<br>• Provide estimates of GHG emissions in the closure/post-closure phases | 394, 396 |
| | Species at Risk | • Blanding's Turtles and Bats – how will CNL protect their critical habitat? Requesting additional mitigation measures<br>• Lack of ecological risk assessment - Are risks acute or chronic? | 456, 458 |
| Study Areas | SSA | • | |
| | LSA | • | |

| Topic/Theme | | Key Points | Formal Comment Number (CEAA Registry #80122) |
|---|---|---|---|
| | RSA | • Garrison Petawawa<br>• Inconsistent definitions | 457, 472 |
| Socio-economic implications | | • Concerns that this project will reduce tourism and industry from coming to the Valley<br>• Lack of consideration during consultation<br>• Property value | 507, 508, 509 |
| Accidents and Malfunctions | | • Shipment of waste<br>• Emergency protocols<br>• Leaks<br>• Failure of the ECM due to excessive settlement<br>• Define “credible event”<br>• Include power failures<br>• Breach of the ECM by animals and humans<br>• Bounding hazard scenarios should extend beyond the site<br>• Criticality<br>• Fires | 511-544 |
| Cumulative effects | | • SMRs<br>• Surface and groundwater contamination | |
| Extreme weather and seismic events | | • Will extreme drought concentrate leachate concentrations?<br>• Use other examples of similar projects to support NSDFs ability to withstand extreme weather events<br>• Assessment of flooding on the project – dam breach, “bathtub scenario”<br>• Earthquakes – how will NSDF measure up in a 6.0+ event<br>• Soil liquefaction<br>• Consider events far into the future 10,000+ years | 558, 559, 560, 564 |
| Monitoring and follow-up | | • Data should be made publically available<br>• Describe monitoring and follow up procedures<br>• Post-closure phase<br>• Many commenters feel this section was not properly explained in the EIS | 572-583 |

Through analysis of all formal public comments from the draft EIS, the following themes were identified as the key issues raised:

- Justification for the Project
- Waste Inventory
- Design/engineering details
- Long-term Accountability
- Alternative Means Assessment (including site selection)
- Environmental Events (flooding, earthquakes, etc.)
- Protection of the Ottawa River