Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

Report, General

STAKEHOLDER ENGAGEMENT REPORT - NPD CLOSURE PROJECT

NPD DECOMMISSIONING

64-513440-REPT-001

Revision 0

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1. INTRODUCTION

This document is Canadian Nuclear Laboratories (CNL) Stakeholder Engagement Report in support of the Nuclear Power Demonstration (NPD) Closure 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 (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, CNSC and 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 NPD Closure Project up to March 31, 2017, which fulfill the requirements above. Future planned engagements as the project proceeds through the EA process are identified at a high level within this document as well.

1.1 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 2 and 3 summarize 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. Section 5 outlines the participant funding process and Section 6 details planned future engagements aimed at continuing to meet the regulatory requirements for the Project. Section 7 serves as the conclusion of this document.

2. ENGAGEMENT METHODS AND ACTIVITIES

Engagement activities commenced on October 29 2015, with the introduction of CNL's near and longer term plans, including high-level introduction to the project, to the CNL Environmental Stewardship Council (ESC), discussed below. This section details project specific engagement methods and activities, including the following:

- 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 project specific fact sheets;
- publishing and distribution of "Project Issue" of CONTACT community newsletter;
- conduct of project site visits;
- conduct of project specific public information sessions
- public information sessions;
- conduct of project specific employee information sessions;
- participation in public events;
- increased use of social media, including uploading project specific videos to YouTube;
- advertising campaign in support of public information sessions (online, intranet, newspapers, flyer insert, radio public service announcement, social media, paid Facebook advertising); and
- distribution of factsheets and comment cards to local municipal offices in Ontario and Quebec, to function as an information repository and support public input.

Project materials were prepared and distributed in both French and English.

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

2.1 Presentations/Site Tours

CNL uses presentations to help inform and educate stakeholders on the project. These presentations have triggered discussion that helps to inform the project through the regulatory process.

As part of its Public Information Program, CNL periodically hosts stakeholder visits to the NPD site. These visits provide an opportunity for 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

2.1.1.1 Environmental Stewardship Council – October 2015

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 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 and members are asked to take meeting information back to their respective constituents, organizations and communities. Since October 2015 the ESC has received regular project updates at subsequent meetings.

On October 29, 2015 the NPD Closure Project was first introduced to the members of the ESC as a part of a Decommissioning and Waste Management update.

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

2.1.2 Environmental Stewardship Council – March 2016

At a meeting held on March 24, 2016, a presentation was provided on the NPD closure project by HSSE Director of the NPD Closure Project. The presentation encompassed the proposed decommissioning approach, measures to minimize impacts to Species at Risk (SAR) and the near-term schedule. Following this presentation, ESC members had the opportunity to seek clarification and raise any concerns they had with the project.

See Appendix A – Q1 of the Stakeholder Activities TSD.

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

2.1.3 Environmental Stewardship Council Meeting – June 2016

ESC members visited the NPD site in the evening, and were given the opportunity to view the evening roosting of the chimney swifts and ask questions related to the project.

See Appendix A - Q1.

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

2.1.4 World Nuclear University Site Visit – July 2016

The World Nuclear University (WNU) is an organization that provides training to young professionals in the nuclear industry. The WNU brings an international industry perspective with participants from more than 20 countries.

Every year during their six-week summer institute, the WNU arranges tours of the local nuclear institutions in the host country. In 2016, the WNU was hosted in Ottawa and on July 15, 2016, 80 nuclear industry representatives/ students toured CNL's CRL and NPD sites. Students were able to tour the NPD site where subject matter experts presented on the proposed in-situ decommissioning technique. Comment cards on the project were provided to this group to receive international nuclear industry feedback.

See Appendix A - Q1.

Stakeholder(s): Industry

2.1.5 Non-Governmental Organizations Site Visit – July 2016

Northwatch, the Canadian Environmental Law Association (CELA), and the Concerned Citizens of Renfrew County represent three stakeholder groups interested in the EA activities for the project. Northwatch and CELA participated in the CNSC request for comments on the project description and provided their comments

The site visit included discussion about the project, SAR and groundwater monitoring. Questions from the group focused on groundwater monitoring and how the chimney swift habitat will be managed to ensure the success of the species.

See Appendix A - Q1.

Stakeholder(s): NGOs

2.1.6 Organization of Canadian Nuclear Industries Suppliers' Day – September 2016

On September 8, 2016, the Organization of Canadian Nuclear Industries (OCI) Suppliers Day was held at the CRL site. This event was open to OCI and local non-OCI member companies and provided an opportunity for CNL to engage representatives from more than 45 companies in the Canadian nuclear supply chain. A presentation on CNL D&WM initiatives informed the industry participants about the plan for the project.

See Appendix B - Q2-3.

Stakeholder(s): Industry.

2.1.7 Nuclear Waste Management, Decommissioning and Environmental Restoration Conference Presentation – September 2016

At this industry conference, hosted by the Canadian Nuclear Society and held in Ottawa, ON between September 11 and 14, 2016, Patrick Daly, General Manager NPD Closure Project, gave a presentation on the project It was an opportunity to inform, educate and receive feedback within the nuclear industry.

See Appendix B - Q 2-3.

Stakeholder(s): Industry, local elected officials

2.1.8 Canadian Nuclear Society Site Visit – September 2016

A group of 19 individuals from the Canadian Nuclear Society's Conference on Nuclear Waste Management, Decommissioning and Environmental Restoration visited the NPD site on September 15, 2016. The site visit provided an opportunity to elicit feedback on the project from a cross-section of the nuclear industry. The site visit included a tour of the NPD site.

See Appendix B - Q2-3.

Stakeholder(s): Industry

2.1.9 Ontario Power Generation Tour of NPD Site – September 2016

On September 26, 2016 Ontario Power Generation (OPG) employees, mostly from the Des Joachims Generating Station, located approximately 1.5 km north west of the NPD Site, visited the site to learn about the project. The visit included a presentation and tour. One goal of this meeting was to solicit information from OPG on planned upgrades to dams, for consideration in the Cumulative Effects assessment (EIS Chapter 9).

See Appendix B - Q2-3.

Stakeholder(s): Industry

2.1.10 Canadian Nuclear Society and Women in Nuclear Seminar – September 2016

The CNS (Canadian Nuclear Society) and WiN (Women in Nuclear) jointly hosted Meggan Vickerd, Manager, NPD Operations, to give a talk, called "In-Situ Decommissioning of the Nuclear Power Demonstration (NPD) Reactor" at the Chalk River Legion on September 27, 2016. It was open to the public, advertised in a local newspaper and on CNL's intranet with approximately 40 individuals in attendance. A question and answer period following the presentation provided an opportunity for members of the public to learn more about the project and voice their queries.

See Appendix B - Q2-3.

Stakeholder(s): All stakeholders

2.1.11 Environmental Stewardship Council Meeting – October 2016

On October 13, 2016, the ESC was briefed on updates to the NPD closure project. Following these updates, members had the opportunity to seek clarification and raise any concerns they had with the project.

See Appendix B - Q2-3.

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

2.1.12 Municipality of Laurentian Hills NPD Site Visit – November 2016

Councillors and municipal staff were invited to the NPD site to learn more about the project. The visit included a presentation and a tour of the site and structures. It was an opportunity for local government stakeholders to learn more about the project, which is considered especially important given that residents of the municipality may have questions about the project. Subject matter experts were available to provide further information in response to questions.

See Appendix B - Q2-3.

Stakeholder(s): Local elected officials

2.1.13 Renfrew County Council Meeting and Presentation – December 2016

In December, CNL hosted the Renfrew County Council. The meeting included an overview presentation of CNL, as well as a specific presentation on the project. It provided an opportunity to offer updated information to local elected officials and answer questions.

See Appendix B - Q2-3.

Stakeholder(s): Local elected officials

2.1.14 Ottawa Valley Economic Development Meeting – December 2016

The Ottawa Valley Economic Development (OVED) Committee is comprised of economic development officers from the local municipalities, as well key regional employers, for example, Garrison Petawawa, CNL and Algonquin College. OVED holds bi-monthly meetings to discuss economic issues and opportunities throughout Ottawa Valley and Eastern Ontario. On December 15, 2016, CNL hosted a meeting which included a presentation on the project.

See Appendix B - Q2-3.

Stakeholder(s): Municipality, Industry

2.1.15 Meeting and Project Briefing with Pontiac MP – December 2016

At the request of the Pontiac MP, William Amos, CNL attended a meeting at the MP's constituency office in Campbell's Bay, Quebec. The meeting, held on December 21 2016, briefed the MP on the project and enabled the MP to discuss the project with CNL.

See Appendix B - Q2-3.

Stakeholder(s): Local elected officials

2.1.16 Technical Discussion Meeting – January 2017

A meeting to discuss technical aspects of the Project with former employees and other members of the local scientific community was held on January 19 in Deep River, Ontario. This meeting was planned in response to a request from a local community member, who assisted in coordinating the discussion.

See Appendix C - Q4.

Stakeholder(s): Public within local community, industry

2.1.17 Presentation and Meeting with Renfrew County Council – January 2017

On January 25, CNL representatives met with the Renfrew County Council. The meeting included more in-depth updates on the Project. It also provided an opportunity to answer questions.

See Appendix C - Q4.

Stakeholder(s): Local elected officials

2.1.18 Presentation to the Town of Deep River – January 2017

On January 25, 2017 CNL representatives presented to the Deep River Town Council at an open council meeting. The presentation was an overview of CNL activities with specific updates on the Project. It also provided an opportunity to answer questions to local government and members of the public.

See Appendix C - Q4.

Stakeholder(s): Local elected officials, public within the local and host communities

2.1.19 Presentation to the Upper Ottawa Valley Chamber of Commerce – January 2017

On January 27, 2017 CNL representatives presented to the Upper Ottawa Valley Chamber of Commerce at the organization's annual general meeting in Pembroke, Ontario. The presentation was an overview of CNL activities with specific updates on the Project. It also provided an opportunity to answer questions to the local business community and share information on CNL's economic impact.

See Appendix C - Q4.

Stakeholder(s): Public within local and host communities

2.1.20 Presentation to the Eastern Ontario Wardens' Caucus – January 2017

On January 31, 2017 CNL representatives attended the Rural Ontario Municipal Association conference and presented to the Eastern Ontario Wardens' Caucus on CNL's activities, with a specific look at the Project. It led to another presentation with the United Counties of Prescott Russell.

See Appendix C - Q4.

Stakeholder(s): Local elected officials

2.1.21 Presentation to the United Counties of Prescott Russell – February 2017

CNL representatives attended the United Counties of Prescott and Russell's council meeting, by invitation, on February 8, 2017. The presentation included an overview of CNL, with a focus on the NSDF Project and the NPD Closure Project.

See Appendix C - Q4.

Stakeholder(s): Local elected officials, media

2.1.22 Presentation to (MRC) Pontiac Regional County Municipality – February 2017

CNL representatives attended the MRC Pontiac's council meeting on February 14, 2017. The presentation included an overview of CNL, with a focus on the NSDF Project and the NPD Closure Project.

See Appendix C - Q4.

Stakeholder(s): Local elected officials

2.1.23 ESC Meeting – March 2017

On March 23, 2017, one of the three annual ESC meetings was held. Members were briefed on updates to the NPD Closure Project. Following these updates, members had the opportunity to seek clarification and raise any concerns they had with the project.

See Appendix C - Q4.

Stakeholder(s): Local elected officials, local environmental organizations and local non-governmental organizations (NGO).

2.2 Public Information Sessions

Public information sessions were conducted in June/July 2016 and October 2016 to help CNL inform, educate and solicit feedback from members of the local and host communities surrounding the NPD site.

The topics presented at the June/July Public information sessions included a description of the project and facility (including an area map), the proposed project timeline, Valued Components (soliciting feedback from visitors on which VCs are important to them) and an overview of the CEAA process and regulatory approvals required.

In addition to the poster boards presented for the June/July sessions, poster boards were displayed at the October 2016 public information sessions reflecting the additional project information that was available. For example, topics such as the Post-Closure Safety Assessment, Spatial and Temporal Boundaries, Alternative Means, and Chimney Swifts and the decision to keep the existing ventilation stack were presented.

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 and to provide a broader context of how the project fits into CNL's overarching goals.

In June/July and October 2016, a total of 14 public information sessions were scheduled, advertised and held. The locations were chosen based on proximity to the proposed project site and population size. While advertising was more extensive for the October sessions, the number of individuals who attended was the same as the number who attended the June and July sessions. The October sessions provided CNL the opportunity to address specific areas of questioning that had arisen through feedback from the initial information sessions in June/July.

See Appendix A - Q1 for information on the June and July Public Information Sessions.
See Appendix B - Q2-3 for information on the October Public Information Sessions.

Dates and locations are summarized in Table 2-1, which shows attendance and feedback for both sets of information sessions.

Stakeholder(s): Local and host communities, local elected officials.

Table 2-1
Public Information Session Dates and Locations

Location	June/July Information Sessions		October Information Sessions	
	Attendance	Formal Feedback	Attendance	Formal Feedback
Rapides-des-Joachims	7	6	10	6
Deep River	17	2	22	6
Stonecliffe	2	0	5	0
Sheenboro	29	10	12	2
Pembroke	13	10	20	8
Chalk River	11	10	18	4
Petawawa	17	7	9	2
Total	**96**	**45**	**96**	**28**

2.2.1 Poster Boards

2.2.1.1 Q1 Poster Boards (June/July 2016 public information sessions)

The poster boards listed below according to subject were developed with the intent to educate and prompt discussion about the project. The poster boards were used to support tactics such as presentations, public open houses, employee information sessions, site visits and public events.

- Poster board topics included: What is an Environmental Assessment? (Overview of the CEAA 2012 Environmental Assessment process)

- Valued Components – NPD Closure Project (VCs identified for the NPD Closure project so far, and seeking feedback on VCs)
- Preferred Technique (an overview of the alternative means for decommissioning and the benefits of in-situ decommissioning)
- Project Description (the key steps involved in in-situ decommissioning)
- Project Timeline (an overview of the history of the facility and the schedule of the NPD Closure Project)
- NPD Area Map (map of the NPD property)

See Appendix A - Q1.

2.2.1.2 Q2 and Q3 Poster Boards (2016 October public information sessions)

CNL created several new informational poster boards with updated information to share with the local communities at the second round of public information sessions in October. The posters were arranged to describe the narrative of why CNL is planning the project and how CNL is proposing to perform the project. The poster boards were a versatile tactic used in conjunction with other tactics such as presentations, employee information sessions, site visits and community events, such as the Petawawa Showcase.

See Appendix B - Q2-3.

Poster board topics include:

- Legacy Liability (history of NPD and its transfer to AECL and how CNL has the responsibility to decommission the reactor);
- Decommissioning Solution (information on in-situ decommissioning);
- Alternative Means for the NPD Closure Project
- Safe by Design (information on the post closure safety assessment – how the project is planning for disruptive scenarios as well as normal evolution of the site);
- Chimney Swifts (updated information on habitat retention decision);
- What do you think? (information on the valued components and spatial/temporal boundaries and how to share feedback with CNL);
- Protecting the Environment (information on how CNL's Environmental Protection branch operates, and on how an environmental monitoring program is designed);
- Regulatory Oversight (information on the CNSC and the requirements of the licensing and the Environmental Assessment process).

2.2.2 Communications Materials at Information Sessions

Communications materials at the Public information sessions were provided in several formats:

- Informational poster boards
- Project factsheets (See Appendix A - Q1.)
- Project description (http://www.cnl.ca/site/media/Parent/64-509200-ENA-003.pdf)
- Feedback form

2.3 Employee Information Sessions

To reach internal stakeholders, employee information sessions were held for the project (Table 2-2). These internal events were similar to the public information sessions with the same communications products used and a similar level of access with subject matter experts for the project.

Table 2-2
Employee Information Sessions

Location	Date	Attendance	Written Feedback Received
Deep River	June 21, 2016	7	0
CRL Site	June 24, 2016	3	2
Deep River	November 16, 2016	35	0
Chalk River	November 17, 2016	10	0

3. COMMUNITY EVENTS AND UPDATES

One tactic to support the stated communications objectives of initiating two-way communications and informing and educating was to have CNL representatives attend community events local to the NPD site. Attendance at each event is described in the following sections.

Stakeholder(s): Local and host communities.

3.1 School House Museum – Strawberry Social – June 2016

The School House Museum is located in Laurentian Hills, Ontario, in close proximity to the site and includes a historical display of the NPD reactor. It is open to the public and owned by a local historical society – the Rolph, Buchanan, Wylie and McKay Historical Society. The museum also hosts an exhibit on NPD.

CNL representatives, including subject matter experts, attended the annual Strawberry Social at the School House Museum on June 26, 2016. Poster boards and factsheets regarding the Project were made available for event attendees. CNL's attendance was well received; the historical society invited CNL to attend a later event, the annual Fun Day in August.

See Appendix A - Q1.

3.2 Rotary Club of North Renfrew – Annual Dinner – July 2016

CNL was invited to present at the Rotary Club of North Renfrew's Annual Dinner. President and CEO Mark Lesinski presented on CNL's Vision 2026 with a focus on the Project on July 20, 2016.

There were no questions and comments related to the project.

See Appendix A - Q1.

3.3 School House Museum – Fun Day – July 2016

The School House Museum's Annual Fun Day is a community event open to members of the public. CNL was invited to send representatives to discuss the project. CNL's subject matter experts were present to discuss the project on July 26, 2016. Poster boards and factsheets were available to the public.

3.4 Petawawa Showcase – September 2016

CNL attended Petawawa Showcase September 23 through September 25. It is, the Ottawa Valley's largest spring and fall home, consumer and leisure show in September. The event drew approximately 10,000 visitors from across the Ottawa Valley and western Quebec. To ensure visibility of CNL's presence CNL secured a 20x20 foot exhibitor space. Informational posters on the project were displayed and subject matter experts described project activities, facilitated discussion about the project and responded to public inquiries.

See Appendix B - Q2-3.

3.5 Letter to NPD Neighbours– October 2016

The NPD Closure Project sent a letter to households within the vicinity of the NPD site in order to inform the projects' closest "neighbours" of the ongoing work at the site and to invite community members to the October information sessions.

See Appendix B - Q2-3

Stakeholder(s): Public within the local community

3.6 Webpage Content

CNL has established a project-specific web page: www.cnl.ca/NPD. 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 web page, and webpage activity continues to be 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.

See Appendix A - Q1 for website analytics from Q1.

See Appendix B - Q2-3 for website analytics from August through December of 2016.

On the project web page, there are mechanisms for the visitor to share feedback on the project through an online submission form and a "mailto" hyperlink.

Stakeholder(s): All stakeholders.

3.7 Fact Sheets

Project-specific fact sheets were prepared for use in conjunction with a number of other activities. The fact sheets were available for download on the project website, at each public information sessions, at public events and at employee information sessions.

In addition, copies of the fact sheets have been sent to seven local municipal offices to function as an information repository, as recommended by the CSA (2014), and to support greater awareness in local host communities.

See Appendix A - Q1.

Stakeholder(s): All stakeholders.

3.8 Newsletter

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.

The June 2016 issue of CONTACT focused on CNL's major projects (including the NPD closure project), and related EA activities.

See Appendix A - Q1.

Stakeholder(s): Local and host communities.

3.9 Advertising

3.9.1 Q1 Advertising

The goal of advertising the public information sessions was to announce and increase awareness of the events. Advertising began June 10, 2016 on the cnl.ca website and on the radio via public service announcements (Star 96.7) on June 14, 2016; newspaper advertisements also ran in appropriate regions in the weeks leading up to the public open houses. Dates were provided in the most recent June 2016 edition of CNL's CONTACT newsletter (posted online on June 10, 2016 – see Section 3.8 above).

See Appendix A - Q1.

Stakeholder(s): All

3.9.2 Q2 and Q3 Advertising

The goal of advertising the October public information sessions was to announce and increase awareness of the events. Advertising began in early October on the CNL.ca website and on the radio via public service announcements (Star 96.7); paid newspaper advertisements ran in three community newspapers in weeks leading up to the information sessions. A flyer insert was published as well, with a reach of approximately 30,000 households across the local region. Facebook advertising via a "Boosted Post" geo located CNL's online advertising to the locations of each of seven public information sessions that were undertaken for the project. See Table 4-2.

See Appendix B - Q2-3.

Stakeholder(s): All

3.9.3 Online Advertising

Public information sessions were advertised online in the following ways:

- Dates were posted on the www.cnl.ca landing page and the project-specific web page. http://www.cnl.ca/site/media/Parent/PSA-Eng.pdf.
- Dates for the June and July public information sessions were also included in the online version of CNL's CONTACT newsletter (Appendix A - Q1).
- Paid Facebook advertising via a "Boosted Post" (see Section 3.9.8 below)

3.9.4 Newspapers Advertising – Print and Online

Public information sessions were advertised in the newspapers listed in Table 3-1.

Table 3-1
Newspaper Advertisements for Public Information Sessions

Newspaper	Release date	Circulation	Event(s)
North Renfrew Times	June 15	4,000	Rapides des Joachims QC, Deep River ON, Stonecliffe ON, Sheenboro QC, Pembroke ON, Petawawa ON
Pontiac Journal (bi-weekly)	June 15	9,400	
Shawville Equity	June 22	4,046	Sheenboro QC, Pembroke ON, Petawawa ON
The Valley Gazette	June 29, 2016	2,300	Pembroke ON, Petawawa ON, Chalk River ON
Eganville Leader	June 29, 2016	6,200	
North Renfrew Times	June 29, 2016	4,000	
Renfrew Mercury	June 30, 2016	13,394	
Arnprior Chronicle	June 30, 2016	8,130	
Petawawa Post	June 30, 2016	13,225	
The News	June 30, 2016	29,000	
Daily Observer	July 02, 2016	3,000	
North Renfrew Times	July 06, 2016	4,000	
North Renfrew Times	Oct 5 and 12, 2016	4,000	All October public information sessions.
Pontiac Journal	Oct 5, 2016	9,400	
Daily Observer	Oct 8 and 15, 2016	3,000	
Flyer Insert	Oct 13, 2016	30,,000	

3.9.5 Newsletter Advertising

CONTACT, CNL's community newsletter, is published, mailed to residences and is available on CNL.ca. The back cover of the spring 2016 edition of CONTACT advertised the June and July public information sessions, inviting people to attend, learn about the project and provide feedback on options.

3.9.6 Radio Advertising

Radio advertising was used to promote awareness of, and increase attendance at, public information sessions in June, July and October of 2016. Please note that CNL changed its terminology from 'public open houses' to 'public information sessions' between July and October.

June and July:

CNL ran radio advertisements four times daily from: June 14, 2016 until July 07, 2016 detailing the public information sessions for a total of 92 air times. The advertisement was aired on STAR 96.7, which serves the Renfrew and Pontiac Counties and parts of Ottawa. STAR 96.7 reaches approximately 40, 000 listeners each week.

Radio copy:

"*Canadian Nuclear Laboratories will be holding Public Open Houses to discuss two proposed projects: the Near Surface Disposal Facility, and the Nuclear Power Demonstration Closure Project. For meeting dates, locations and times – go to cnl dot c-a*."

October:

CNL ran radio advertisements from October 2 – 15, 2016. The advertisement was a public service announcement advertising the information sessions and ran 50 times over the two-week period. The advertisement was aired on STAR 96.7, a local country music station, which that serves the Renfrew and Pontiac Counties and parts of Ottawa. STAR 96.7 reaches approximately 40,000 listeners each week.

Radio copy:

"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.

3.9.7 Intranet – myCNL

The employee and public information sessions were advertised to CNL employees via the corporate intranet – myCNL.

Stakeholder(s): CNL Employees

3.9.8 Social Media

CNL extensively promoted the public information sessions via Facebook. Social media is also used to inform, educate, promote awareness for events and receive feedback on the project. Three videos have been uploaded to YouTube and promoted via Facebook. Twitter has not been used as broadly as Tweets have been found to receive very little traction, and CNL has a comparatively much larger Facebook following. See Table 3-2 below.

Some verbal feedback at the information sessions referenced hearing of the public information sessions through Facebook. This emphasizes what the metrics show – social media has proven to be an effective communications tool for engaging with the public.

The CNL social media accounts continue to gain followers. Details on these accounts are in Table 3-2 below.

Stakeholder(s): All

Table 3-2
CNL Social Media Account Details

Social	Link	Followers
Facebook	www.facebook.com/CanadianNuclearLaboratories	722
Twitter	www.twitter.com/CNL_LNC	218
YouTube	https://www.youtube.com/channel/UC2GCEfZQgsURh4t_QZ-JwCw	30

Q1 Social media posts:

Total number of posts: 7

Total Reach: 1,636

Total Engagements (Likes, Shares, Retweets, Comments): 56

See Appendix A - Q1.

Q2 and Q3 Social Media Posts:

Total number of posts: 19

Total Reach: 37,574

Total Clicks (Engagement): 2,362

Total Shares, Comments and Reactions (Engagement): 508

See Appendix B - Q2-3.

4. FEEDBACK

This section provides a summary of the feedback from project specific engagement activities, including the following:

- 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 project specific fact sheets;
- publishing and distribution of "Project Issue" of CONTACT community newsletter;
- conduct of project site visits;
- production of project specific poster boards;
- conduct of project specific public information sessions poster board sessions;
- conduct of project specific employee information sessions;
- participation in public events;
- increased use of social media, including uploading project specific videos to YouTube;
- advertising campaign in support of public information sessions (online, intranet, newspapers, flyer insert, radio public service announcement, social media, paid Facebook advertising); and,
- distribution of factsheets and comment cards to local municipal offices in Ontario and Quebec, to function of an information repository and support public input.

4.1 Public Feedback

The public feedback section incorporates comments from the public, as well as local elected officials.

4.1.1 Q1 Feedback Analysis

This initial feedback provides valuable insight into what issues are important to stakeholders, enabling CNL to respond to and incorporate the issues of the local community and the broader public into the planning stages. Stakeholders had opportunities to provide formal feedback to CNL on the project via the seven public information sessions, an online submission form, mail (a self-addressed and stamped envelope was made available), telephone and email.

The majority of feedback was received through the public information sessions with a small number of respondents submitting comments through mail and email.

Key issues that emerged from the formal and recorded feedback on the project include:

- effects on the chimney swifts roosting in the NPD Stack;
- cost of this option in comparison to alternative methods;
- water monitoring – groundwater and the Ottawa River;

- release of unaffected land after the project is finished;
- post decommissioning NPD site monitoring; and,
- the site's seismic qualifications - consideration for effects of seismic activity.

These key issues and how they are addressed in the EIS is described in Table 4-4.

CNL has received formal feedback (written feedback from the public or CNL staff) through public information sessions, online submission, mail, telephone or email. In Q1, CNL received 30 questions and/or comments focused on the project.

See Appendix A - Q1.

The formal comments are categorized by theme in Table 4-1, which illustrates the public feedback and issues outlined above.

Table 4-1
Distribution of Public Formal Comment Topics in Q1

Topic of Public Formal Question or Comment	Number of Total Comments
In support	12
Satisfied	9
Monitoring	2
Work execution	1
Precedence	1
Cost	1
EA specific	1
Post project	1
Community	1
Continuing storage with surveillance	1

4.1.2 Q2 and Q3 Feedback Analysis

From August 2016 to December 14, 2016, there have been 28 formal comments related to the project. Where individuals requested a response to their comment, Communications and the NPD Closure Project team dispositioned a written response.

Previously identified areas of interest surrounding the project continue to be prevalent. For instance, the chimney swifts at the site continue to draw interest. Three individuals indicated support for, or interest in, the project's decision to retain the ventilation stack: "I think the in-situ option is the best option and I like the idea of keeping the stack for the swifts."

Interest in how climate change or natural disaster, in particular, an earthquake, would affect the project also came up, with two individuals mentioning seismic events and/or concern with global warming causing heavy rains and stronger storms. This interest in the seismic qualifications is consistent with feedback from the first round of information sessions.

Another previously identified topic identified was an interest in the cost. Three individuals in the feedback from the October 2016 information sessions mentioned the project's cost and/or funding: "Who funds all this?"

Four questions were concerning what will happen to the site post-closure (in particular, after the release of the non-impacted lands at the project site) and one individual indicated concern for protection of the Ottawa River. These are both areas of interest that have arisen before.

A key topic which emerged more concretely in the Q2/Q3 information sessions was an interest in the timeline of the project. Three comments mentioned the timeline of the project.

Other feedback indicated approval or interest in when and how the information was being presented. Three individuals indicated explicit approval with the project plan and eight individuals conveyed that they were satisfied with the information and/or explanations given by CNL staff: "Excellent presentation by presenter, interested to see the future plans for the site."

Seven comments/questions indicated a desire to access more information, especially the videos of NPD.

See Appendix B - Q2-3.

The formal comments are categorized by topic in Table 4-2, which illustrates the public feedback and key topics outlined above.

Table 4-2
Distribution of Public Formal Comment Topics in Q2/Q3

Topic of Received Question or Comment	Number of Comments
Satisfaction with information	8
Desire for more information	7
Post-closure use of the site	4
Timeline of the project	3
Indicated approval with project plan	3
Cost and/or funding	3
Chimney swifts	3
Risk to Ottawa River/water	2
Climate change and natural disasters	2
Transportation of radioactive material	1
Non-proliferation of nuclear materials	1
Interest in grouting	1
Indicated dissatisfaction with information	1
Health and safety	1
Engineering	1
Containment of calandria	1
Community access to facilities at the NPD site	1

4.2 Industry Feedback

4.2.1 Q1 Industry Feedback

The WNU visit (July 15, 2016) provided an opportunity to elicit industry feedback. Individuals completed feedback forms after visiting the project site and learning about the project.

See Appendix A - Q1.

Topics of feedback are summarized in Table 3-2.

Table 4-3
Distribution of Concerns from WNU Respondents in Q1

Concern Related to In-situ Decommissioning	% of Total Comments
No concerns	32
N/A – no answer	14
Seepage	14
Monitoring	9
Funding	9
Post project	9
Public acceptance	4
EA specific	4
Safety	5

4.2.2 Q2 and Q3 Industry Feedback

The comments on the CNL tour indicated an appreciation and satisfaction with the information provided by CNL's subject matter experts. Consistent with public feedback, water was also identified as an area of interest. Industry feedback on the project is summarized in Figure 4-1.

See Appendix B - Q2-3.

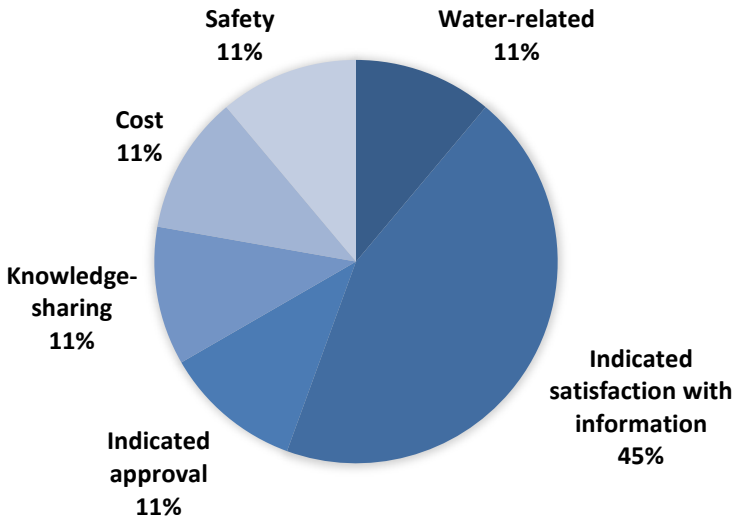


Figure 4-1 Summary of Concerns from NWMD&ER Conference Industry Feedback in Q2/Q3

4.3 Summary of Feedback

4.3.1 Feedback on Valued Components

Section 5.2.4.1 of the EIS outlines the process that was followed to develop the list of Valued Components. The list of VCs (Table 4-4) was presented on informational poster boards during the June/July 2016 and October 2016 public information sessions (see Section 6.2.5.7 of the EIS), as well as on CNL's external website http://www.cnl.ca/en/home/environmental-stewardship/npd-closure-project/default.aspx. The informational poster boards also included CNL contact information for feedback on Valued Components. In the October 2016 public information sessions, a questionnaire for visitors to identify the VCs of interest to them was offered, but none of these questionnaires were completed (no visitors chose to complete the questionnaire).

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 project has determined to be VCs so far. Specifically, there have been comments and questions, which unambiguously express value in the Ottawa River (water quality) and Land Use and Planning (indicated by concern for future land use at the NPD site) as VCs. Comments and concerns also indicate general public interest and concern about protection of the Chimney Swift.

The Ottawa River is represented in the EIS through representative VCs, including aquatic biota, fishing and residents use and enjoyment of land. Land Use and Planning and Chimney Swifts are both included as VCs in the EIS. These topics are also captured in the EIS as Key Issues raised during public engagement activities.

4.4 Key Issue Raised

Feedback on the project helps CNL understand the areas of concern identified by the public. Addressing these concerns will help to further inform stakeholders and improve the project design and EIS. The main concerns voiced from all outreach activities are summarized as Key Issues, outlined in Table 4-4. This table demonstrates how CNL is meeting the regulatory requirements by listing key issues raised related to the Project and its potential environmental effects, and describing the extent to which this feedback was incorporated in the design of the project, as well as into the EIS.

Table 4-4
Key Issues and how issue is addressed in EIS and/or project design

Issue	Incorporation into Consultation, Project Design and/or EIS
Species at Risk: How will the decommissioning affect the chimney swifts roosting in the NPD Stack?	• The original decommissioning design included building an alternative habitat and demolition of the existing ventilation stack. In order to minimize the risk to the Chimney Swifts, CNL decided to retain the existing ventilation stack, instead of demolishing it and replacing it with an alternative habitat. This decision was made with input from a panel of experts composed of academia, government agencies and Non-Governmental Organizations (NGOs). • Chapter 9 of the EIS includes an assessment of the potential impact on the Chimney Swifts as a result of the project decommissioning activities (e.g. noise, dust, vibration and light) which is a summary of the Chimney Swift TSD. Since their current roost will be retained, the project predicts the effects will be minimal given project activities will occur during daylight hours when the Chimney Swifts are out foraging. • A subject matter expert on Chimney Swifts provided advice to CNL on how to protect the Chimney Swifts during decommissioning activities using best practices, mitigation measures and how to monitor the impacts to the birds. Chapters 9 and 10 of the EIS discusses the mitigation measures and follow-up actions related to the Chimney Swift.
Ottawa River: How will the Ottawa River be protected?	• The Ottawa River is important for many reasons (water quality, flow, recreational use, fishing, ecology). We have captured these aspects through other VCs, including aquatic biota, fishing and residents use and enjoyment of land. Chapter 9 of the EIS assesses the impact of the project on these VCs. • Consideration was given to the benefit of in-design mitigation measures in preventing or reducing environmental effects. “In-design” mitigation measures are features included in the project design for the purpose of pre-empting possible environmental effects, based on good practice and CNL experience. For example, the use of grout to fill the structure is expected to delay the release of contaminants to groundwater and subsequently to the Ottawa River. Other “in-design” mitigation measures can be found in Section 3 (System Description) of the PostSA TSD.
Effects of the environment on the project: Has this project examined the potential effects of an	• The effects of the environment on the project (e.g., earthquakes, tornados, climate change) are assessed in Section 9.13 of the EIS.

Issue	Incorporation into Consultation, Project Design and/or EIS
earthquake or climate change or other natural disasters on the NPD?	• Preliminary results have indicated that the potential radiological doses to both human and non-human biota receptors are magnitudes less than the CNSC established dose criteria which protects the public and environment under all plausible conditions.
Monitoring: How will monitoring occur around the site and how long will the NPD site be monitored post-decommissioning?	• Proposed follow-up monitoring activities for the Decommissioning Execution and Institutional Controls phases are described in Sections 9 and 12 of the EIS. Note that the EIS presents a conceptual description of the follow-up monitoring activities. The detailed follow-up monitoring program will be developed incorporating federal reviewer and stakeholder feedback from the draft EIS review. • The proposed follow-up monitoring during demolition and grouting activities will include emission and effluent monitoring as well as regular Chimney Swift counts during their seasonal presence at NPD. • The proposed follow-up monitoring during the Institutional Control period will include visual inspections and monitoring the groundwater for parameters that would be indicative a failure of a safety feature.
Financial: What is the cost of this option in comparison to alternative methods, and who is funding this project?	• The Alternative Means TSD presents a high-level cost analysis of the in-situ decommissioning option compared to other alternatives considered. • Funding for the project is provided by Natural Resources Canada and managed by AECL. • In response to earlier public feedback, at the October Public Information Sessions CNL included information on the approximate costs of alternative methods.
Land Use: How will the unaffected land be released after the project is finished?	• As clarified in previous open houses and within the EIS, AECL is the Crown Corporation that owns the site and CNL is the operator of the NPD site contracted by AECL to perform the closure of the NPD Site. • The final decision on dispositioning of non-impacted land on the NPD site rests with AECL.

5. PARTICIPANT FUNDING

The Canadian Nuclear Safety Commission (CNSC) offered participant funding through its Participant Funding Program (PFP) to assist members of the public, Aboriginal groups and other stakeholders in participating in the environmental assessment, licence application review and Commission hearing processes for the Canadian Nuclear Laboratories (CNL) Nuclear Power Demonstration Closure Project. Recipients provide value-added and relevant information that contributes to a better understanding of the anticipated effects of a project. Recipients also participate in the CNSC's proceedings for this project. The CNSC's decision on who has received funding on to participate is available in the CNSC Participant Funding Program Decision: Canadian Nuclear Laboratories' Nuclear Power Demonstration Closure Project.

Please find information on participant funding for the NPD Closure Project at this link: http://nuclearsafety.gc.ca/eng/pdfs/participant-funding-program/2017/CNL-NPD-closure-2016-eng.pdf.

6. PLANNED FUTURE ENGAGEMENTS

The summary presented within this Stakeholder Engagement Report is based on engagement activities up to March 31 2017. CNL has additional engagements planned for the remainder of 2017 which will be summarized in future final revision of the EIS. Planned future engagements are described by quarter.

6.1 Fiscal Year 2017/18 - First Quarter (Q1)

In Q1 there are a series of eight Public Information Sessions scheduled to take place in April and May. Updated information on the NPD Closure Project with respect to safety barriers, waste inventory, proposed follow-up monitoring as well as how public feedback is incorporated into the EIS will be shared at these Public Information Sessions and on the NPD Closure Project's web page. Internal information sessions for CNL employees are also planned. Letters to households within the vicinity of the NPD site (i.e., Rolphton and Des-Joachim) will be mailed to increase awareness of the Public Information Sessions in these communities.

CNL will attend Petawawa Showcase, a public event that provides an opportunity for the community members to ask questions to CNL representatives and learn about CNL's activities – including the NPD Closure Project.

The Project will also be inviting specific stakeholder groups to attend Chimney Swift Count Nights at the NPD site. These events will provide opportunities for conversation about how the NPD Closure Project has adjusted the proposed decommissioning plans accordingly including an effects assessment of the impact the proposed decommissioning activities may have on the Chimney Swifts as they continue to use the existing stack. As part of our preparation of the environmental impact statement, we have identified mitigation measures to eliminate the potential impact and we have developed a proposed monitoring program for the Chimney Swifts during, and shortly after, the decommissioning activities.

Information on the Project will also be featured in the spring 2017 edition of CNL's community newsletter, CONTACT.

In late June one of the three annual meetings of the CNL Environmental Stewardship Council occurs. This will be another opportunity to update stakeholders, specifically, community groups and non-governmental organizations on developments in the NPD Closure Project, with particular focus on Chimney Swift protection.

An industry engagement is also planned with the CANDU® Owners Group Decommissioning and Waste Management Working Group to introduce representatives to the NPD Closure Project, give a site tour of the facility and information on the planned decommissioning. This will also be an opportunity for industry to ask questions on the Project to CNL's subject matter experts.

6.2 Fiscal Year 2017/18 - Second Quarter (Q2)

For Q2, engagement activities will be concentrated on informing stakeholders about the Project's submission of the draft Environmental Impact Statement (EIS), particularly emphasizing how stakeholders can provide feedback to the CNSC.

Activities will include the creation of a new webpage focused on the NPD Closure Project's draft EIS, creation of communications materials specific to the draft EIS, media relations and social media engagement will occur towards the end of Q2.

Letters to households in the vicinity of NPD site and articles for the internal and external newsletter will also help boost awareness of the draft EIS and encourage stakeholder participation.

Over the summer months, more stakeholder outreach is planned with different groups invited to more Chimney Swift Count Nights. Again, this engagement activity helps inform and educate on planned mitigation measures to ensure protection of the Chimney Swift population.

CNL is planning a community open house for August 2017, which will allow members of the local and host communities to visit the Chalk River Laboratories site. The NPD site will also be involved in the Open House Day, to highlight the decommissioning plan to members of the local and host communities.

6.3 Fiscal Year 2017/18 - Third Quarter (Q3)

Presentation and meetings with local elected officials, in the regional and municipal governments will be key in this quarter to ensure awareness of the regulatory process and public comment period on the draft EIS for the NPD Closure Project. The Project and other CNL representatives will plan and attend meetings to share an overview of the draft EIS and inform local elected officials on how the public can participate.

An industry engagement is also planned with the National Energy Agency to introduce representatives to the NPD Closure Project, give a site tour of the facility and information on the planned decommissioning. This will also be an opportunity for industry to ask questions on the Project to CNL's subject matter experts.

Internal engagement activities, in the form of employee information sessions and articles on the intranet and in the internal newsletter, are also planned for this quarter. These activities will help to involve internal stakeholder by keeping employees abreast of the Project's submission of the draft EIS.

The third CNL Environmental Stewardship Council occurs in October. This will be another opportunity to update stakeholders, specifically, community groups and non-governmental organizations on developments in the NPD Closure Project, with particular focus on the submission of the draft EIS and how their respective groups can participate.

A fourth round of Public Information Sessions will be planned for early in Q3.

6.4 Fiscal Year 2017/18 - Fourth Quarter (Q4)

Engagement activities in Q4 will continue to update stakeholders on the Project and provide information on the next steps in the Environmental Assessment process. Planned activities include the CNL Environmental Stewardship Council in March, updated web page content and continued responses to any questions that stakeholders may have about the Project and/or the Environmental Assessment process.

7. CONCLUSIONS

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

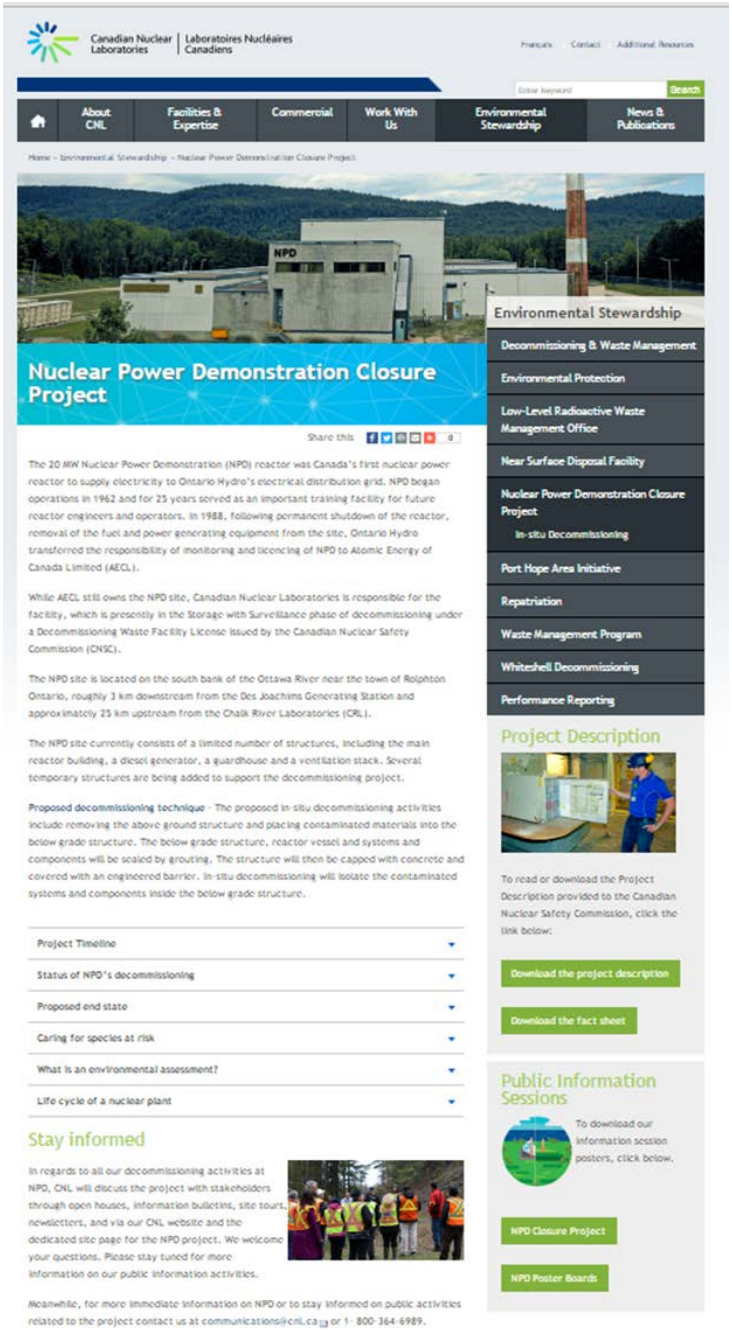
While most of the key issues that stakeholders have brought forth have been resolved or incorporated into the design of the project, one outlier is with regards to land use of the non-impacted land of the NPD site. To address this issue, CNL has clarified through consistent messaging and communications with stakeholders that the NPD property belongs to AECL, a federal Crown corporation. Once CNL completes the decommissioning of the NPD reactor, AECL will look at the future of the lands. AECL will take into account consideration for stakeholder engagement, as appropriate, and the duty to consult with Indigenous peoples.

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 EIS.

Appendix A

Q1

A.1 Web Content



A.2 Fact Sheets

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

Nuclear Power Demonstration Site Closure Project

PROJECT BACKGROUND

The 20 MW Nuclear Power Demonstration (NPD) reactor was Canada's first nuclear power reactor to supply electricity to the electrical distribution grid. NPD began operations in 1962 and served as an important training facility for future reactor engineers and operators. In 1988, following permanent shutdown of the reactor, and removal of the fuel and power generating equipment from the site, Ontario Hydro transferred the responsibility of monitoring and licensing of NPD to Atomic Energy of Canada Limited (AECL).

The NPD site is located on the south bank of the Ottawa River near the town of Rolphton Ontario, roughly three kilometres downstream from the Des Joachims Generating Station and approximately 25 km upstream from the Chalk River Laboratories (CRL).

The NPD site currently consists of a limited number of structures and several temporary structures which are being added to support the decommissioning project work.

THE STATUS OF NPD'S DECOMMISSIONING

At the time of NPD shutdown, deferred decommissioning was the preferred strategy for management of the reactor and the associated systems. The deferment period has allowed a significant reduction of radiation fields within the facility, which helps to reduce the risks to staff working on the closure project. The NPD site is now in an ideal strategic position for completion of the remainder of the site decommissioning.

The closure project will safely reduce Canada's nuclear legacy liabilities at this property.

PROJECT GOAL

To safely decommission the NPD site by 2020, thereby reducing long term nuclear liabilities.

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

For more information on this project contact: Email: communications@cnl.ca
Canadian Nuclear Laboratories 1-866-886-2325 or visit: www.cnl.ca

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

For more information on this project contact: Email: communications@cnl.ca
Canadian Nuclear Laboratories 1-866-886-2325 or visit: www.cnl.ca

THE PLAN

The plan is to remediate the NPD site. Execution of the plan involves a thorough environmental assessment as well as a licence amendment to perform decommissioning activities. This will include the development of detailed decommissioning plans, safety analysis, an environmental impact statement, a decommissioning strategy, a waste management plan and characterization of the site.

CNL proposes to decommission NPD through an in-situ decommissioning process. In-situ decommissioning will use tailored grout recipes to create a robust below surface concrete monolith. This area will then be capped with an engineered barrier. The end state is to encase radioactivity in a stable, proven form to allow for continued decay with long-term care and maintenance activities for an agreed to period.

DECOMMISSIONING ACTIVITIES

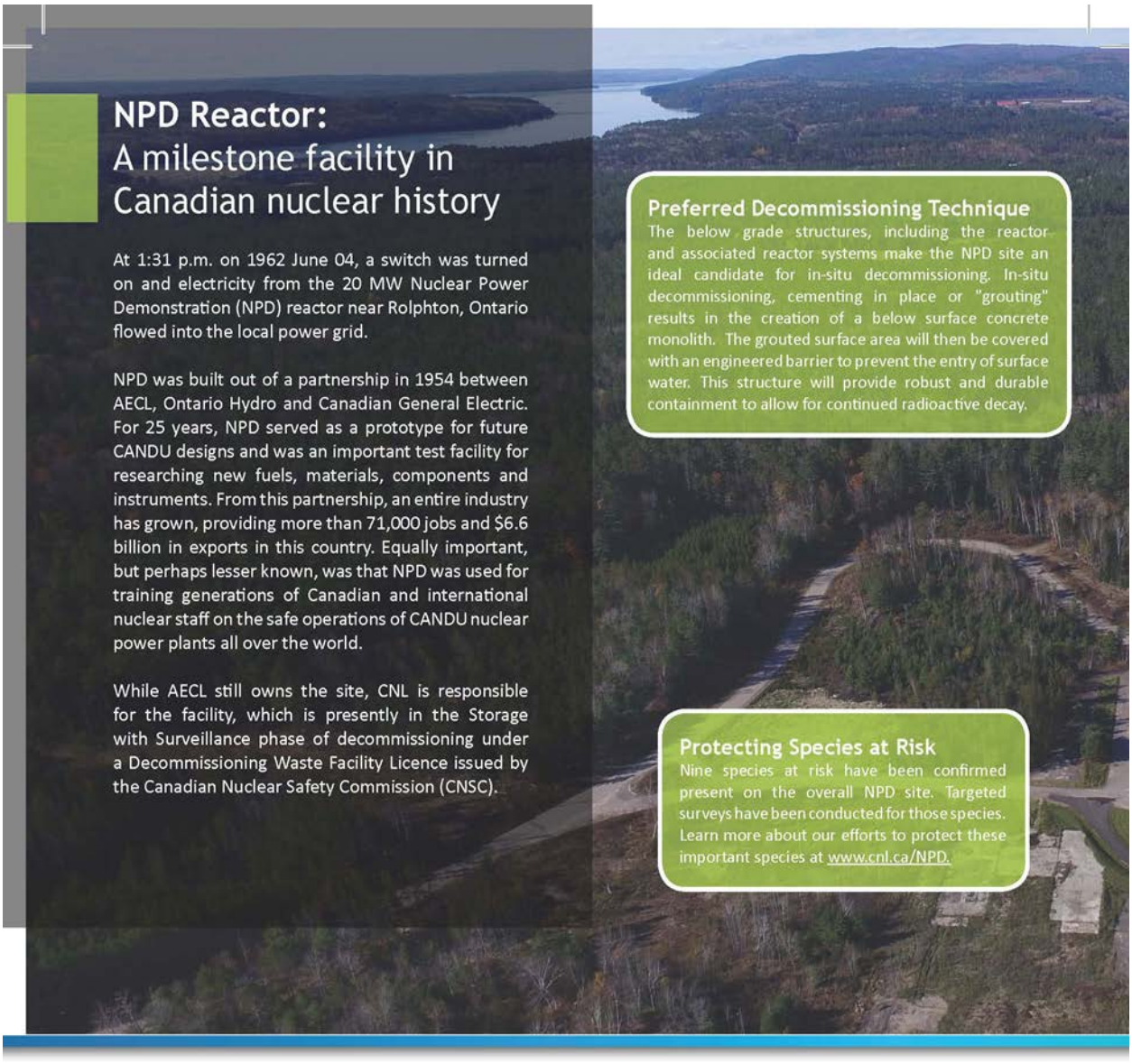
- Assembly and operation of the grout batch mixing plant
- Grouting of below grade structures
- Removal of above grade structures to be used as backfill
- Installation of concrete cap and engineered barrier over the grouted area
- Final site restoration
- Preparation for long-term care and maintenance activities

Date of Issue: June 2016

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

For more information on this project contact: Email: communications@cnl.ca
Canadian Nuclear Laboratories 1-866-886-2325 or visit: www.cnl.ca

A.3 Newsletter – CONTACT – Project Issue June 2016



NPD Reactor: A milestone facility in Canadian nuclear history

At 1:31 p.m. on 1962 June 04, a switch was turned on and electricity from the 20 MW Nuclear Power Demonstration (NPD) reactor near Rolphton, Ontario flowed into the local power grid.

NPD was built out of a partnership in 1954 between AECL, Ontario Hydro and Canadian General Electric. For 25 years, NPD served as a prototype for future CANDU designs and was an important test facility for researching new fuels, materials, components and instruments. From this partnership, an entire industry has grown, providing more than 71,000 jobs and $6.6 billion in exports in this country. Equally important, but perhaps lesser known, was that NPD was used for training generations of Canadian and international nuclear staff on the safe operations of CANDU nuclear power plants all over the world.

While AECL still owns the site, CNL is responsible for the facility, which is presently in the Storage with Surveillance phase of decommissioning under a Decommissioning Waste Facility Licence issued by the Canadian Nuclear Safety Commission (CNSC).

Preferred Decommissioning Technique

The below grade structures, including the reactor and associated reactor systems make the NPD site an ideal candidate for in-situ decommissioning. In-situ decommissioning, cementing in place or "grouting" results in the creation of a below surface concrete monolith. The grouted surface area will then be covered with an engineered barrier to prevent the entry of surface water. This structure will provide robust and durable containment to allow for continued radioactive decay.

Protecting Species at Risk

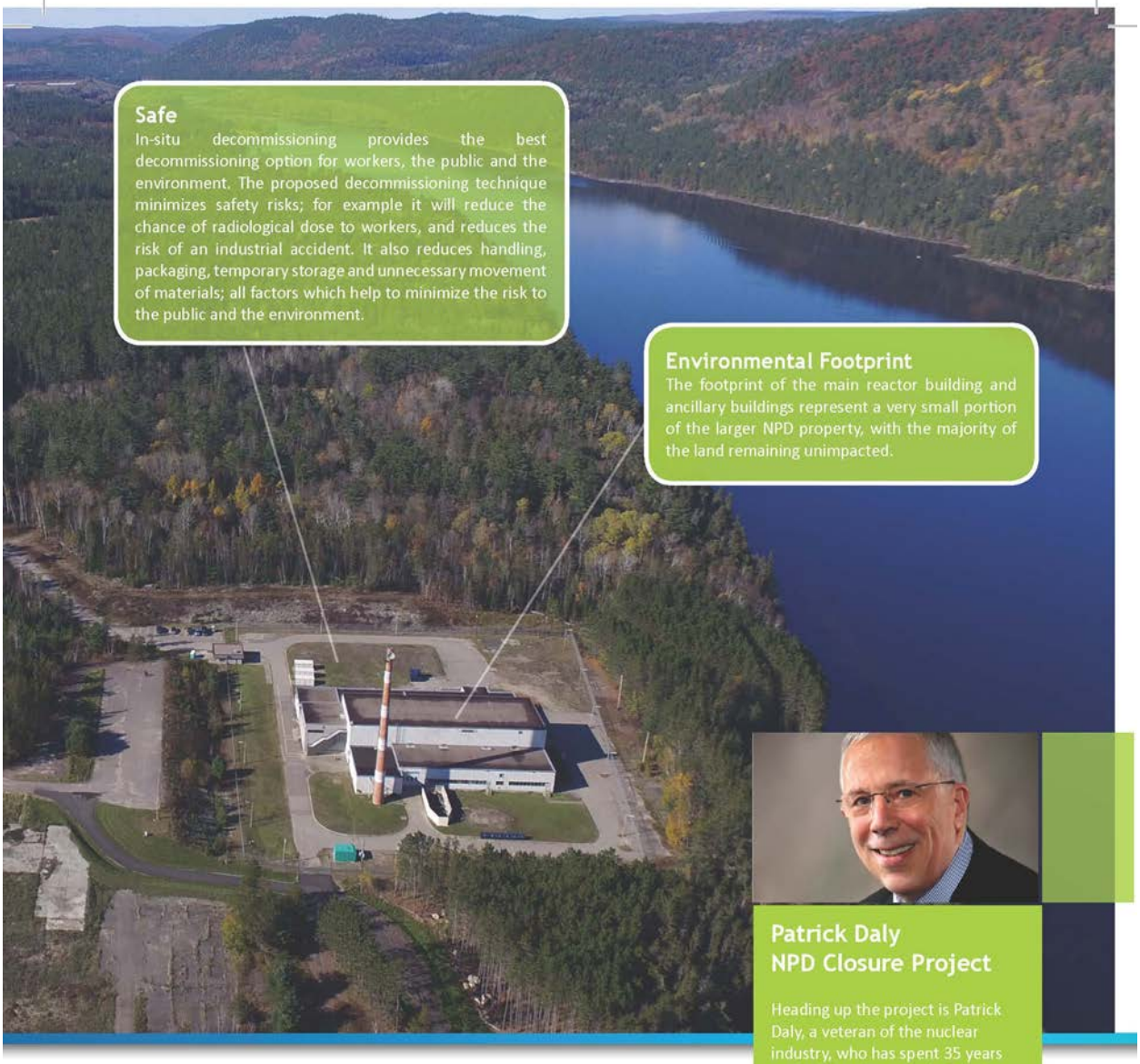
Nine species at risk have been confirmed present on the overall NPD site. Targeted surveys have been conducted for those species. Learn more about our efforts to protect these important species at www.cnl.ca/NPD.

Decommissioning at NPD
At the time of NPD shutdown in 1987, deferred decommissioning was the preferred strategy for management of the site. The deferment period has allowed a significant reduction of radiation fields within the facility which helps to reduce the risks to staff working on the closure project.

The NPD site is now in an ideal strategic position for completion of the remainder of the site decommissioning. The closure project will safely reduce Canada's nuclear legacy liabilities at this property.

Proven technology
In-situ decommissioning has been in use for over five decades in the United States. A well understood decommissioning solution, in-situ technology and expertise has been developed and grown over this period. Several sites in the United States have used this approach.

Rolphton, Ontario



Environmentally Sound

The Environmental Assessment (EA) is one of the first steps in assessing CNL's decommissioning option. The EA process will determine CNL's actions, guaranteeing continued responsible environmental stewardship. CNL has a solid record of accomplishment on environmental protection. The EA process will ensure that the best and most environmentally compatible solutions for implementing the decommissioning process is chosen. CNL's environmental policy, Environmental Management System and processes, guide, monitor and inform reporting on CNL's environmental performance.

Patrick Daly
NPD Closure Project

Heading up the project is Patrick Daly, a veteran of the nuclear industry, who has spent 35 years on both the 'front end' of nuclear reactor operations and the so called 'back end', decommissioning nuclear sites. He recently wrapped up his time at the Zion Nuclear site, just north of Chicago, Illinois, where he was decommissioning two Pressurized Light Water reactors.

Pictured: The Environmental Stewardship Council visits the NPD reactor in Rolphton, Ontario.

Engaging our communities

What is an Environmental Assessment (EA)?
Consideration for the environment is part of every project undertaken by CNL. The projects featured in this issue are subject to federal assessment under the Canadian Environmental Assessment Act.

As part of the project proposal phase the EA process thoroughly assesses and predicts environmental effects of proposed initiatives. The EA:

- provides opportunity for stakeholder input,
- identifies potential adverse environmental effects,
- proposes measures to mitigate adverse environmental effects,
- predicts whether there will be significant adverse environmental effects, after mitigation measures are implemented, and, includes a follow-up program to verify the accuracy of the environmental assessment and the effectiveness of the mitigation measures.

For more information on the EA process visit: www.ceaa.gc.ca

Open Houses and Public Information Sessions
CNL welcomes the opportunity to discuss the projects featured in this issue. Please join us at one of the events below, and we would be happy to answer your questions and listen to your feedback.

Rapides-des-Joachims, Quebec
Town Hall
June 20, 6:00 - 9:00 p.m.

Deep River, Ontario
J.L. Gray Building
June 21, 6:00 - 9:00 p.m.

Stonecliffe, Ontario
Township Hall & Community Centre
June 22, 6:00 - 9:00 p.m.

Sheenboro, Quebec
Community Centre
June 29, 6:00 - 9:00 p.m.

Pembroke, Ontario
Best Western Pembroke Inn
July 6, 6:00 - 9:00 p.m.

Petawawa, Ontario
Petawawa Civic Centre
July 7, 6:00 - 9:00 p.m.

Canadian Nuclear Laboratories
Laboratoires Nucléaires Canadiens

CNL Corporate Communications
286 Plant Road, Stn 700 A
Chalk River ON, K0J 1J0

1-800-364-6989
communications@cnl.ca
www.cnl.ca

CONTACT is a publication of CNL's Corporate Communications department.

A.4 Print Advertising

Public Information Sessions

NPD Closure Project | Near Surface Disposal Facility

Near Surface Disposal Facility
EA Start Date: May 5, 2016
CEAR Reference Number: 80122
www.CNL.ca/NSDF

NPD Closure Project
EA Start Date: May 5, 2016
CEAR Reference Number: 80121
www.CNL.ca/NPD

Rapides-des-Joachims, Quebec
Town Hall
June 20, 6:00 - 9:00 p.m.

Deep River, Ontario
J.L. Gray Building
June 21, 6:00 - 9:00 p.m.

Stonecliffe, Ontario
Township Hall & Community Centre
June 22, 6:00 - 9:00 p.m.

Sheenboro, Quebec
Municipal Hall
June 29, 6:00 - 9:00 p.m.

Pembroke, Ontario
Best Western Pembroke Inn
July 6, 6:00 - 9:00 p.m.

Petawawa, Ontario
Petawawa Civic Centre
July 7, 6:00 - 9:00 p.m.

Please join us at one of the events and we would be happy to answer your questions and listen to your feedback. For more immediate information or to stay informed on public activities related to these important projects contact us at **communications@cnl.ca**, call **1-800-364-6989** or visit **www.cnl.ca**.

Canadian Nuclear Laboratories
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Séances d'information publiques

Projet d'installation d'élimination près de la surface
Début de l'EE : le 5 mai 2016
Numéro de référence du RRCE : 80122
www.CNL.ca/NSDF

Projet de fermeture du réacteur NPD
Début de l'EE : le 5 mai 2016
Numéro de référence du RRCE : 80121
www.CNL.ca/NPD

Rapides-des-Joachims, Quebec
Salle municipale
le 20 juin, 18h à 21h.

Deep River, Ontario
Centre J.L. Gray - 20, avenue forest
le 21 juin, 18h à 21h.

Stonecliffe, Ontario
Salle municipale
le 22 juin, 18h à 21h.

Sheenboro, Quebec
Salle municipale
le 29 juin, 18h à 21h.

Pembroke, Ontario
Best Western Pembroke Inn
le 6 juillet, 18h à 21h.

Petawawa, Ontario
Centre Civique
le 7 juillet, 18h à 21h.

Les LNC sont heureux de pouvoir s'entretenir avec leurs voisins au sujet des projets mentionnés dans le présent numéro. Ils vous invitent à l'une des séances d'information communautaires indiquées ci-dessus afin de fournir des réponses à vos questions.

Pour plus de renseignements immédiats ou pour rester informés sur les activités publiques liées à ces projets importants, veuillez communiquer avec nous à l'adresse de courriel suivante :communications@cnl.ca ou au numéro de téléphone suivant : 1-800-364-6989.

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Public Information Sessions

NPD Closure Project | Near Surface Disposal Facility

Near Surface Disposal Facility
EA Start Date: May 5, 2016
CEAR Reference Number: 80122
www.CNL.ca/NSDF

NPD Closure Project
EA Start Date: May 5, 2016
CEAR Reference Number: 80121
www.CNL.ca/NPD

Pembroke, Ontario
Best Western Pembroke Inn
July 6, 6:00 - 9:00 p.m.

Petawawa, Ontario
Petawawa Civic Centre
July 7, 6:00 - 9:00 p.m.

Chalk River, Ontario
Chalk River Lions Hall
July 12, 6:00 - 9:00 p.m.

Please join us at one of the events and we would be happy to answer your questions and listen to your feedback. For more immediate information or to stay informed on public activities related to these important projects contact us at **communications@cnl.ca**, call **1-800-364-6989** or visit **www.cnl.ca**.

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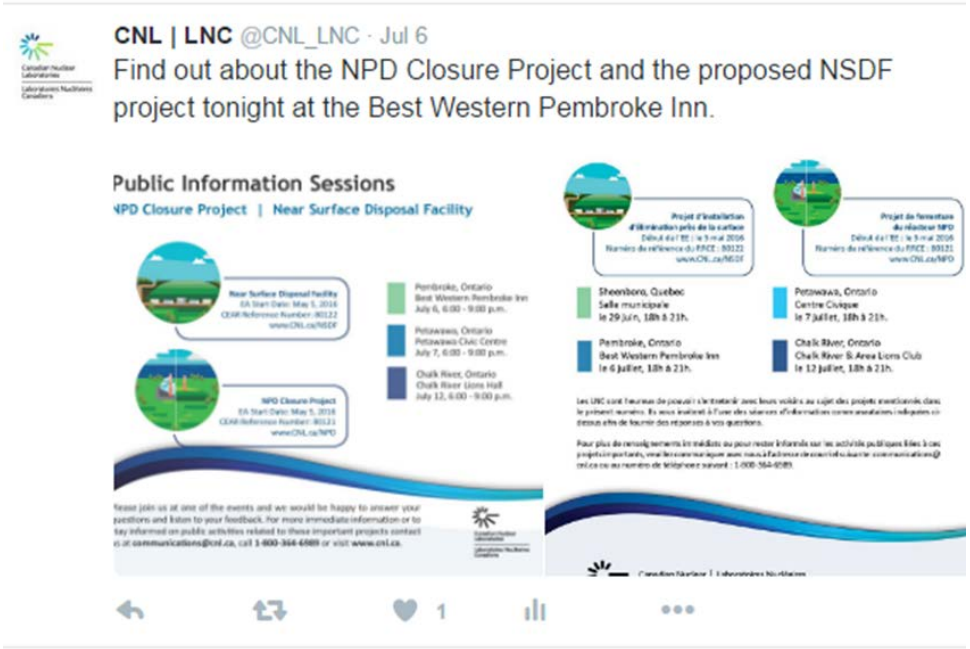
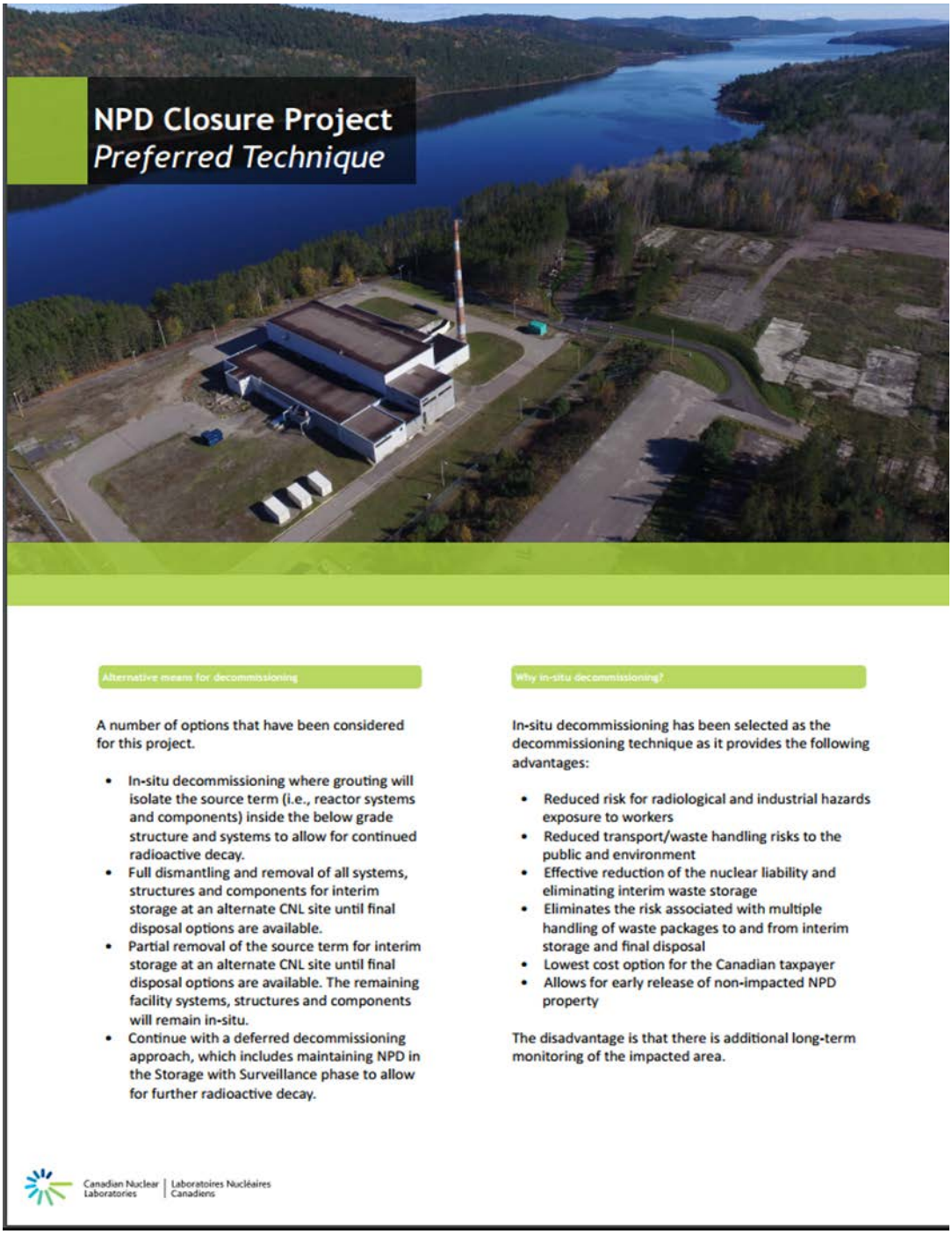
A.4.1 Sample Facebook Advertising Post

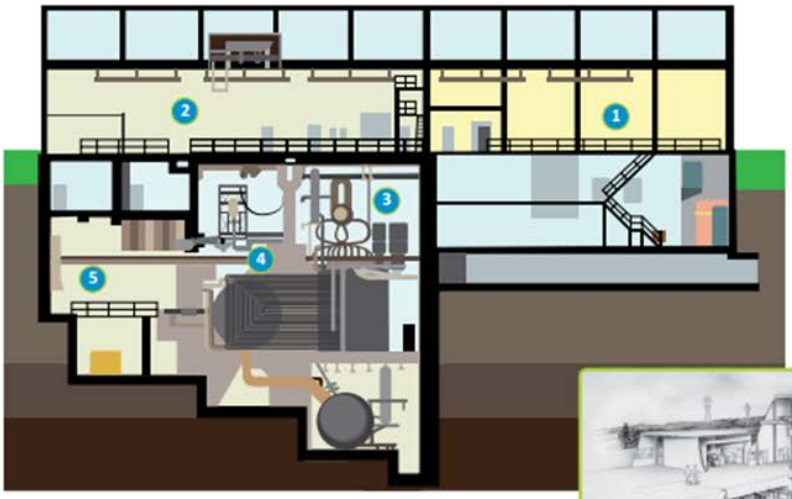
A.4.2 Sample Twitter Advertising Post

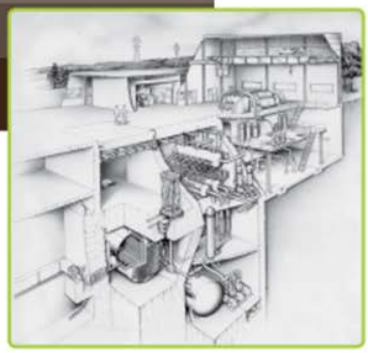


A.5 Poster Boards



NPD Closure Project
Project Description





Project Objective
To safely decommission NPD ensuring the prompt reduction of Canadian long-term legacy liabilities

End State

Key Steps

In-situ decommissioning activities are:

- Assembly and operation of the grout batch mixing plant
- Grouting of below grade structures
- Removal of above grade structures to be used as backfill
- Installation of concrete cap and engineered barrier over the grouted area
- Final site restoration
- Preparation for long-term care and maintenance activities

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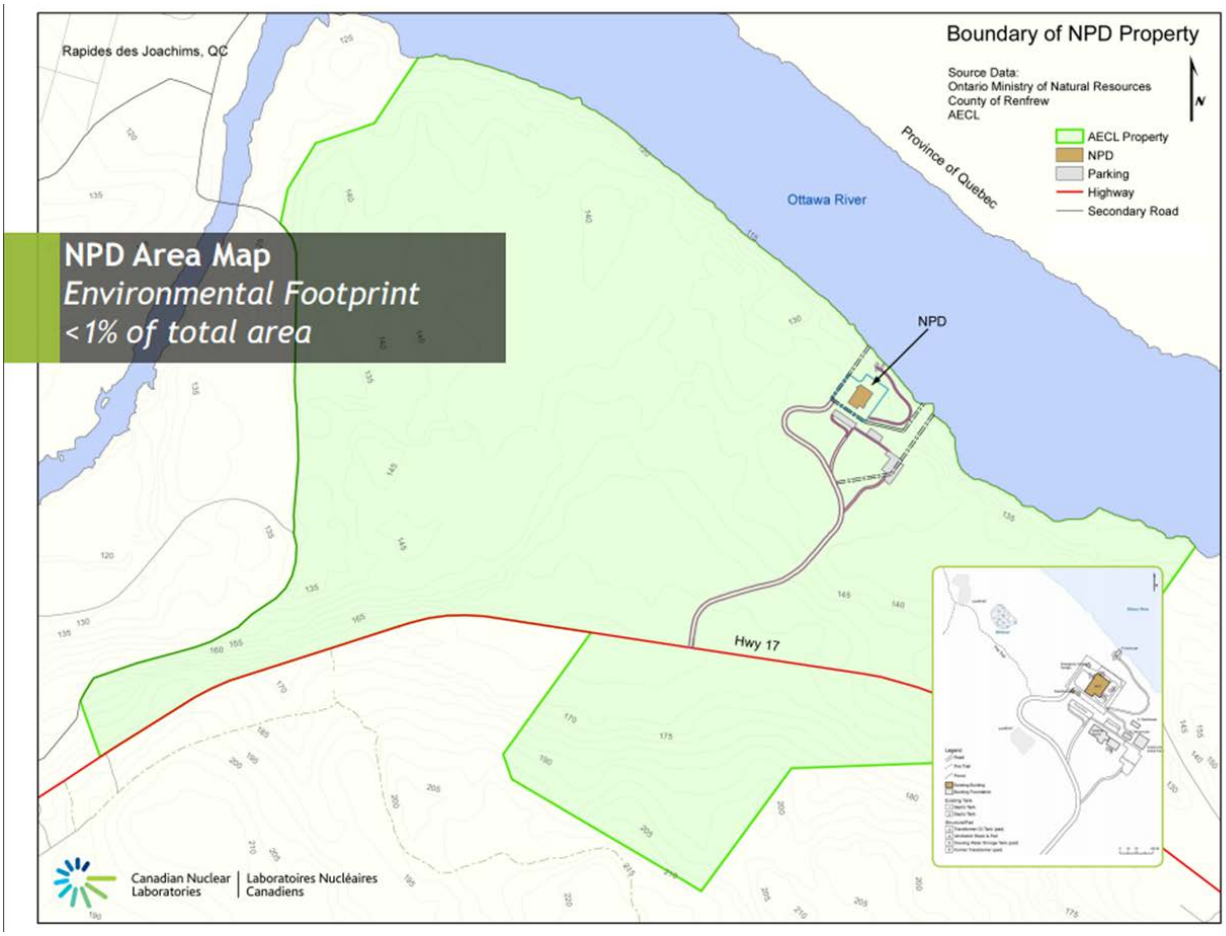
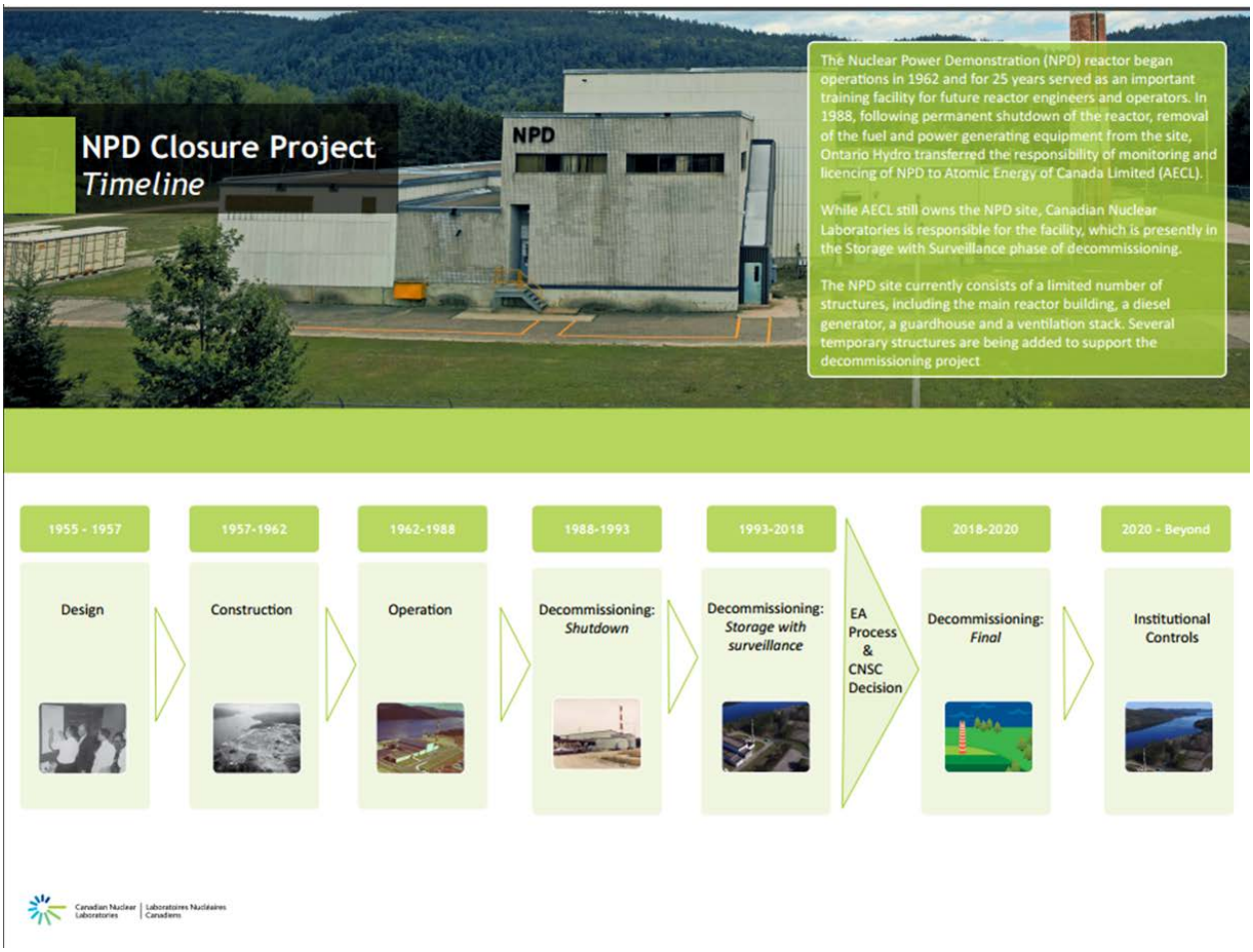

NPD Area Map
Environmental Footprint
<1% of total area
Boundary of NPD Property
Source Data:
Ontario Ministry of Natural Resources
County of Renfrew
AECL
AECL Property
NPD
Parking
Highway
Secondary Road
Rapides des Joachims, QC
Ottawa River
Province of Quebec
NPD
Hwy 17
Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens


NPD Closure Project
Timeline
NPD
The Nuclear Power Demonstration (NPD) reactor began operations in 1962 and for 25 years served as an important training facility for future reactor engineers and operators. In 1988, following permanent shutdown of the reactor, removal of the fuel and power generating equipment from the site, Ontario Hydro transferred the responsibility of monitoring and licencing of NPD to Atomic Energy of Canada Limited (AECL).
While AECL still owns the NPD site, Canadian Nuclear Laboratories is responsible for the facility, which is presently in the Storage with Surveillance phase of decommissioning.
The NPD site currently consists of a limited number of structures, including the main reactor building, a diesel generator, a guardhouse and a ventilation stack. Several temporary structures are being added to support the decommissioning project
1955 - 1957
Design
1957-1962
Construction
1962-1988
Operation
1988-1993
Decommissioning: Shutdown
1993-2018
Decommissioning: Storage with surveillance
EA Process & CNSC Decision
2018-2020
Decommissioning: Final
2020 - Beyond
Institutional Controls
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Valued Components
NPD Closure Project

Valued Components (VC) are defined as being any part of the environment that is considered important by the proponent, the public, scientists and government involved in the assessment process.

VC identification followed a systematic approach to identify values in five categories representing a cross section of environmental values: 1) federal legal requirements, 2) proposed federal legal requirements, 3) provincial requirements, 4) regionally significant values, and 5) values proposed by the public.

After a review of historical reports, data provided by the Ontario Ministry of Natural Resources and Forestry, data available in the *Atlas of the Breeding Birds of Ontario*, the NatureServe database, several in-house surveys, and a round of public consultation we have identified 119 potential and 26 confirmed VCs to date.

Feedback

What components are valuable to **you**?

VC Identified for the NPD Closure Project

- Fish Species
- Species at Risk
- Migratory Birds
- Ottawa River
- Water Quality
- Wetlands

Contact Us!

For more information or to share your thoughts on the Valued Components related to this project, contact us at communications@cnl.ca, call 1- 800-364-6989 or visit www.cnl.ca/NPD.

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What is an *Environmental Assessment?*
Environmental assessment is a process to predict environmental effects of proposed projects before they are carried out.
Both the Near Surface Disposal Facility, and the NPD Closure Project require an Environmental Assessment (EA) under the Canadian Environmental Assessment Act (CEAA 2012). The Canadian Nuclear Safety Commission (CNSC) is the authority responsible for making the Environmental Assessment Decision on whether the project may proceed.
Purpose:
• To identify the possible adverse environmental effects of a proposed project.
• To determine mitigation measures to minimize adverse environmental effects.
• To ensure that opportunities are provided for meaningful public participation.
NPD Closure Project
EA Start Date: May 5, 2016
CEAR Reference Number: 80121
Location: Rolphton, Ontario
Near Surface Disposal Facility
EA Start Date: May 5, 2016
CEAR Reference Number: 80122
Location: Chalk River, Ontario
Contact Us!
For more immediate information or to stay informed on public activities related to the projects contact us at communications@cnl.ca, call 1- 800-364-6989 of visit www.cnl.ca.
CANADIAN NUCLEAR LABORATORIES: Project Description
• Overview of project and surrounding environment
• Submitted to CNSC on 2016 April 1
CANADIAN NUCLEAR SAFETY COMMISSION: Decision on Project Scope
• CNSC reviews the Project Description
• Project Description and guidelines posted for public review (2016 May)
• CNSC Commission considers comments received from public and makes a decision on the scope of project.
CNL: Environmental Impact Statement (EIS)
• Prepares EIS in accordance with guidance provided by the CNSC
• Evaluates environmental impact of project (e.g. impact on air, water, Species at Risk, long-term performance, alternatives)
• Determines mitigation measures to minimize environmental impacts
• Involves public and Aboriginal engagement
• Target date for EIS to reach the CNSC: 2017 Spring
CNSC STAFF: Environmental Assessment Report (EA)
• EIS review (CNSC and federal authorities)
• CNSC staff summarize EIS into an Environmental Assessment (EA) report
• Public review period
CNSC COMMISSION: Decision: Can the project proceed?
• CNSC Commission reviews EA report
• Makes a decision on whether the project may proceed
• Determine required mitigations, follow monitoring and reporting requirements
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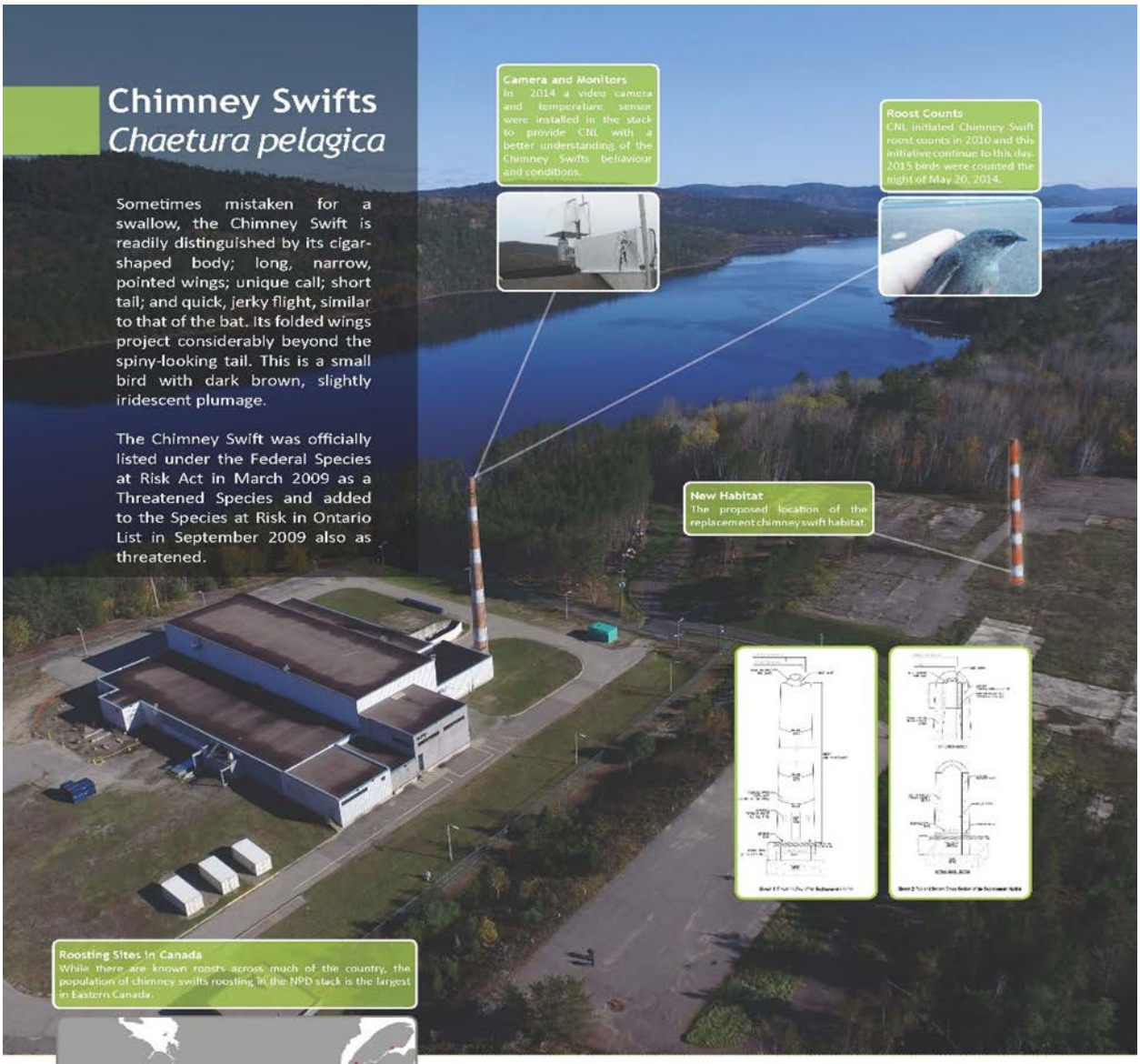

CNL recognizes two paths forward for the Chimney Swift habitat. The preferred option would be to built an new habitat (shown above). The alternative would be to leave the current stack structure in place.

For more immediate information on NPD or to stay informed on public activities related to the project contact us at communications@cnl.ca, call 1- 800-364-6989, or visit www.CNL.ca/NPD.

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A.6 Formal Public Feedback

Table A-1
Formal Public Feedback

NSDF – Formal Feedback and Draft Response (2016 August 12)

Project	Date	Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required
NPD	20-06-16	Public Information Session	N/A	Yes	It is very reassuring to receive this information directly from AECL/CNL. This presentation answered my numerous questions. Very clear!	Comment recorded, no response required.
NPD	20-06-16	Public Information Session	N/A	Yes	A very good presentation, very detailed. My questions were all answered clearly.	Comment recorded, no response required.
NPD	20-06-16	Public Information Session	No	Yes	Very clear presentation of materials. Good level of detail, plain language without being patronizing to the reader. Staff who presented the material were very knowledgeable justified the concept well.	Comment recorded, no response required.

Project	Date	Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required
NPD	20-06-16	Public Information Session	No	No	Excellent Presentation - questions were answered as to why NPD had not been decommissioned until now and the process of how waste will be contained.	Comment recorded, no response required.
NPD	24-06-16	Employee Information Session	No	No	What are the U.S. closed sites (entombed) struggling with? Will we face similar issues?	Recommended action – project ensure response in existing Q&A's – DRAFT Response: Required information per Todd Butz
NPD	24-06-16	Employee Information Session	No	Yes	Interesting to see how the project has progressed since my last visit at NPD, 5 years ago. This should become a regular event (once a year for example), to update on progress and keep us and the communities informed on what's going on.	Comment recorded, no response required. Recommended action – project ensure response in existing Q&A's – DRAFT Response: Thank you for your comment on the NPD project. Over the coming months, CNL will continue to update CNL staff through myCNL, Voyageur, etc. and, external parties though our external web site and meeting opportunities i.e. open houses. Please note that a second round of public open house poster sessions is planned for late October 2016. Dates will be advertised in local media and CNL websites.
NPD	26-06-16	Employee Information Session	No	Yes	Looks good. Capping and return to green site is the way to go.	Comment recorded, no response required.

Project	Date	Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required
NPD	29-06-16	Public Information Session	No	No	I support in-situ option.	Comment recorded, no response required.
NPD	29-06-16	Public Information Session	N/A	N/A	Please send PDF of English boards! Thx.	Response provided 2016 07 11 - Thank you for taking the time to speak with me earlier. As discussed here are the links to the poster boards – you can down load the complete set from our webpage (www.cnl.ca): 1. Near Surface Disposal Facility (NSDF): NSDF Poster Boards 2. NPD Closure Project: NPD Poster Boards Let me know if this meets your needs.
NPD	29-06-16	Public Information Session	No	No	I am satisfied with what was presented.	Comment recorded, no response required.
NPD	29-06-16	Public Information Session	No	Yes-Mail invitation	Worked at NPD 1957-1962, WR1 1962 - 1964, In support	Comment recorded, no response required.

Project	Date	Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required
NPD	29-06-16	Public Information Session	Yes	No	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?	Proposed response to commenter: The NPD Closure and NSDF Projects will competitively procure material and services. This could include local suppliers. CNL employment opportunities that may arise due to project activities will be posted on the www.cnl.ca website.
NPD	29-06-16	Public Information Session	No	Yes	Information on monitoring air, water contaminations.	Response provided 2016 06 30: As requested yesterday at the CNL Open House in Sheenboro, please find attached a copy of the CNL Environmental Monitoring report for 2015. In this report you will find information about CNL environmental monitoring on and around the CRL site for air, surface water, produce, beach sand etc...
NPD	06-07-16	Public Information Session	No	Yes	Good plan, build away	Comment recorded, no response required.
NPD	06-07-16	Public Information Session	No	No	Excellent approach to this project. Really covered all angles in terms of waste management and disposal.	Comment recorded, no response required.
NPD	06-07-16	Public Information Session	No	No	This project is long overdue, make it happen.	Comment recorded, no response required.

Project	Date	Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required
NPD	06-07-16	Public Information Session	No	Yes	It is good to see the project proceeding. Some additional information on the cost and dose/project issues between In-situ decommissioning vs. Full dismantling options would have been appreciated on the poster boards and /or website. Questions were well answered by Kristan and Brian	Recommended action – project ensure response in existing Q&A's: Will look to address request for additional information in updated communication materials.

Project	Date	Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required
NPD	06-07-16	Public Information Session	Yes	Yes	Would like access to the consultant study on the natural environment with specific reference to the SAR Blanding Turtles and Eastern Whip-poor-will	Proposed response to commenter: Draft prepared by Environmental Protection - CNL provides all of their species at risk data to the Ontario Ministry of Natural Resources Pembroke Office on an annual basis. The MNR then send all of the Renfrew County's SAR data to the Natural Heritage Information Centre (NHIC) (https://www.ontario.ca/page/natural-heritage-information-centre). The NHIC manages data about the location of species of conservation concern. General species locations are available on the NHIC website and if specific geographic locations is required by any individuals, it can be requested to the NHIC. The NHIC will be providing data on a need to know basis and under a confidentiality agreement as some species at risk are highly sensitive and must be protected from poaching (e.g. Wood turtle or Blanding's turtle). CNL has a confidentiality agreement with the NHIC and I can assure you that all of CNL's data are included in the NHIC database (at least up to 2014).

Project	Date	Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required
NPD	06-07-16	Public Information Session	No	No	I believe it is in best interest of the surround community to grout the NPD reactor. My biggest concern is maintaining the habitat of the chimney swifts. However I am confident it can be done correctly after hearing the plan.	Comment recorded, no response required.
NPD	07-07-16	Public Information Session	Yes	Yes	I support the preferred method as it seems the most effective approach.	Comment recorded, no response required.
NPD	07-07-16	Public Information Session	No	Yes	No issues/problems/concerns now! Go to it!	Comment recorded, no response required.
NPD	07-07-16	Public Information Session	No	Yes	Will there be a collection system at the NPD site? If not, why not. How will this be done with a structure already in place?	Comment recorded, no response required Recommended action – project ensure response in existing Q&A's: Response TBD
NPD	07-07-16	Public Information Session	No	Yes	Very informative posters and the staff on hand were extremely helpful.	Comment recorded, no response required.
NPD	07-07-16	Public Information Session	Yes	Yes	Cost of NPD Closure Project?	Recommended action – project ensure response in existing Q&A's: Will look to address request for additional information in updated communication materials.

Project	Date	Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required
NPD	12-07-16	Public Information Session	Yes	Yes	I feel future generations are going to have to deal with your proposal. Using technology that future generations will have, they will be able to deal with decommissioning NPD in a safer manner. Eventually all the components will have to be removed! In the meantime CNL can deal with some of the contaminated material that is not too active. You may want to consider putting a cap on the structure and back filling it with nitrogen to eliminate your concerns with corrosion.	Proposed response to commenter: CNL would like to assure you that the proposed approach of in-situ decommissioning is safe. This approach to decommissioning the site reduces worker exposure to various industrial and radiological hazards, while the in-situ disposal provides a safe, secured and controlled final disposal site. In-situ decommissioning has been in use for over 60 decades and is a proven technology. Addressing the legacy liability now, prevents future generations of having to deal with the problem. Leaving the site as is for future generations and their potential technology is not a solution to reduce Canada`s legacy liabilities.

Project	Date	Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required
NPD	12-07-16	Public Information Session	Yes	Yes	See my comments on the project description submitted to CNSC. Some of my questions were answered this evening. I spoke to Pat Quinn about 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.	NOTE: Only 1 POH participant made this request. Proposed response to commenter: There will be a second set of Open Houses in the Fall where the public can attend. There are continual avenues available for communication including email, phone and social media.
NPD	12-07-16	Public Information Session	No	Yes	What does the future have in store for the lands (both sides of the highway) once the site is decommissioned?	Comment recorded, no response required. Recommended action – project ensure response in existing Q&A's: The scope of the NPD decommissioning project is to complete decommissioning of the site and turn it over for post-closure monitoring, referred to as institutional control. The final determination of how the NPD remaining non-impacted 900 plus acres (386 ha) lands will be the decision of AECL and Government of Canada.

Project	Date	Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required
NPD	24-07-16	Fun Day	N/A	No	I feel it's well thought out. Leave the Stack!	Comment recorded, no response required
NPD	15-07-16	Received by Mail	No	Yes	Do not move, reducing risks to personnel. Bury as explained. Ensure no leakage!	Comment recorded, no response required.
NPD	26-06-16	Strawberry Social	No	No	Good information!! Keep it as inexpensive as possible (ALARA).	Comment recorded, no response required.

Table A-2
WNU Feedback

Project	Does your country of origin have an active decommissioning program and/or nuclear waste disposal available? (Yes/No) If yes: What does the decommissioning and/or nuclear waste program look like?	Were you familiar with in-situ decommissioning prior to this discussion? (Yes/No) If no: Was the information provided today sufficient enough for the process to be understood?	Do you have any concerns (if any) with in-situ decommissioning as a decommissioning option?	What do you believe are the benefits (if any) of in-situ decommissioning?	In your opinion, is in-situ decommissioning a viable option for NPD?	Other Questions/Comments
1. NPD	No	No - Yes, I think it is sufficient, though time is so limited to do so.	No- I have not any concerns because I think everything were done carefully and efficiently.	It's safe and reliable.	Yes, I think so.	No.
2. NPD	Yes -Some research facilities are decommissioned.	Yes	Yes because of the long-term safety is not approved/demonstrated.	Simple, economic.	Maybe -the radioactivity is low.	The site is very close to the river, the measures must be deployed to make sure the core embed is safe. No radioactivity could reach the river or water could reach the core.
3. NPD	Yes a research reactor.	No, I got enough information	No	It will cost less.	Yes, I think so.	When will the long-term monitoring end and how much will it cost
4. NPD	Yes-Vaalports waste disposal. Intermediate/low level.	Yes	Water seepage, but otherwise no.	No transportation contamination, radiation decay where it lies.	Yes.	Thank you so much for your hospitality and friendliness
5. NPD	Yes - demonstration phase for: generation 1 reactors (graphite moderated, gas cooled reactors) 1 Heavy water reactor, 1 sodium cooled fast breeder, 1 PWR- go to edf.fr- or I can send material	Yes- to do more would need to read the safety case in detail!	Water seeping through would be a concern (no engineered outside leak-proof barrier). But I understand this is done through concept of the "highest Peak" of possible contamination (Need to monitor site for a long time)	A lot -saves money, no transportation of waste, using the existing "containment"	Yes -isolated place. Easy to monitor and radioactivity already decreased a lot.	I guess there were battery backed-up lighting system in the rooms we visited (I did not look for them, as no torches were carried with us) Big Thank You!
6. NPD	Yes- The decommissioning at Fukushima Daiichi NPP is taking place.	No -Yes.	In case where the facilities are located near local resident or the place where agriculture or fisheries	There are no risk in transporting materials and site choosing.	As long as EA and FS are conducted properly and public acceptance are met. I	

Project	Does your country of origin have an active decommissioning program and/or nuclear waste disposal available? (Yes/No) If yes: What does the decommissioning and/or nuclear waste program look like?	Were you familiar with in-situ decommissioning prior to this discussion? (Yes/No) If no: Was the information provided today sufficient enough for the process to be understood?	Do you have any concerns (if any) with in-situ decommissioning as a decommissioning option?	What do you believe are the benefits (if any) of in-situ decommissioning?	In your opinion, is in-situ decommissioning a viable option for NPD?	Other Questions/Comments
			dominates, in-situ decommissioning might be a concern.		have no disagreement.	
7. NPD	Yes-We have just started a project management plan to decommission one open pit mine.	Yes- I really learnt a lot about in-situ decommissioning process today.	For me it is the best solution for small facilities.	Low costs. Easier to handle. Low risks. Low negative image. Low exposure levels.	Yes - I think the project has a strong technical environmental and social basis. Decommissioning is a business and needs to be feasible for the companies.	
8. NPD	Yes - We have a repository for low and intermediate level waste. It is in operation from last year. We are planning to do the decommissioning of a nuclear reactor in South Korea.	No- Yes	I don't have any concerns about this. But the proper environmental assessment should be done before decommissioning.	It is more economical in comparison to complete decommissioning. There are not any concerns about building deep repository for the decommissioning and local residents more easily take this measure rather than moving every components from the plant.	Yes there are good enough technologies for in-situ decommissioning. There are not any repository for storage of radioactive waste from NPD.	
9. NPD	No	No- Yes, the information about concrete fill decommission was very clearly explained.	No, I think it is a great, simpler idea.	The first is I believe, the cost reduction of the operation, since no transportation is involved.	Yes it is.	The guides were excellent and very patient with all of us.
10. NPD	No	No - Yes it was.	No, I haven't. If the shielding is well-done won't have problems.	It is faster, less complex, less exposure for workers, does not need a	Definitely it is.	

Project	Does your country of origin have an active decommissioning program and/or nuclear waste disposal available? (Yes/No) If yes: What does the decommissioning and/or nuclear waste program look like?	Were you familiar with in-situ decommissioning prior to this discussion? (Yes/No) If no: Was the information provided today sufficient enough for the process to be understood?	Do you have any concerns (if any) with in-situ decommissioning as a decommissioning option?	What do you believe are the benefits (if any) of in-situ decommissioning?	In your opinion, is in-situ decommissioning a viable option for NPD?	Other Questions/Comments
				repository, cheaper, it is safe.		
11. NPD	Yes- Generally defuel and place into long term care and maintenance ahead of long term plans for full dismantling to designated waste storage facilities.	N/A	I think it is the most sensible option for NPD, but in the very long term, I would think bringing waste to a single repository would reduce monitoring burden and control of the site.	Yes, reduction in dose that would be received un-necessarily if the core was removed and reduced risk from not moving the waste material large distances.	I think it is a favourable option. Technically it is very suitable, financially beneficial to the tax payer and a low risk option in terms of public safety. The only (and possibly largest) challenge will be public perception of "burying" nuclear waste in open forest.	It is interesting to see the visible decay of the facility due to the atmospheric conditions. Clearly this has limited impact on the safety of the facility but I wonder if the visual impact alone would cause concern in anyone unsure about the facility. As a lessons learnt it would be interesting to assess the cost saving of not heating and maintaining the facility vs. costs of remedial work due to water and moisture ingress as well as the cost of justifying this approach with the regulator and the public who oppose the work as it looks "abandoned".
12. NPD	No	Yes	Water flow into reactor. Interaction between concrete and components.	Low cost.	Yes	
13. NPD	Yes	No				
14. NPD	Yes- We made a decision to shut down the oldest reactor (Kori Unit 1) last year. We are preparing to decommission this reactor. In case of waste disposal we built up the low and medium radioactive waste disposal.	No-I have got the sufficient information by a technical staff.	After finishing in-situ decommission how to use the place and how to control this place.	In terms of nowadays technology it would be a solution to solve the decommissioning.	All major components should be removed and then fill in the concrete. This is the in-situ decommissioning I prefer to.	No.
15. NPD	Yes- Same as yours. :)	Yes.	Yes, I fear that the public will not like the idea of	All that you stated.	Yes, I hope it gets approved.	No. Great tour! Thank you!

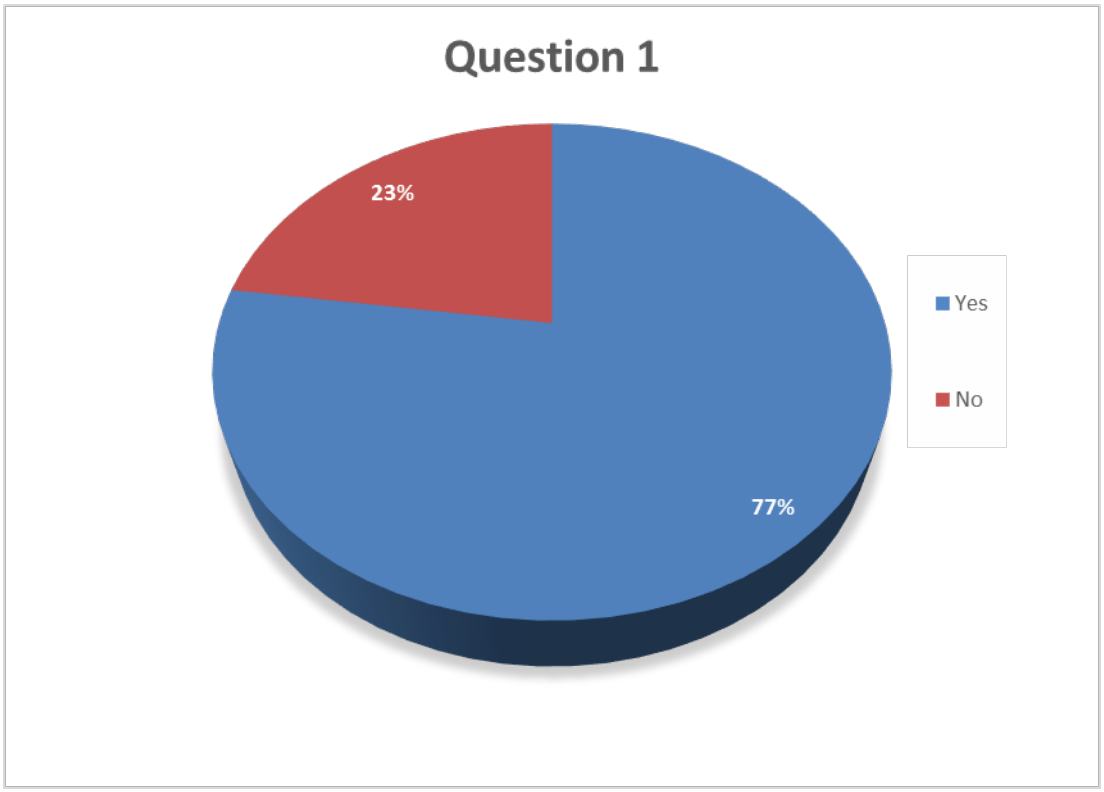
Project	Does your country of origin have an active decommissioning program and/or nuclear waste disposal available? (Yes/No) If yes: What does the decommissioning and/or nuclear waste program look like?	Were you familiar with in-situ decommissioning prior to this discussion? (Yes/No) If no: Was the information provided today sufficient enough for the process to be understood?	Do you have any concerns (if any) with in-situ decommissioning as a decommissioning option?	What do you believe are the benefits (if any) of in-situ decommissioning?	In your opinion, is in-situ decommissioning a viable option for NPD?	Other Questions/Comments
			"covering" up the site, even if it is technically the right thing to do. Typically we count on the government to do the right thing even if it is not the cheapest option.			
16. NPD	Yes- low and intermediate level waste management facility.	Yes	Economic perspective, required funding strategy and plan how to fund to be required in the decommissioning phase from early operation stage to the end stage, who will be managing that funding?	Successful completion of decommissioning gives a trust of safety and clean energy source to a society and no impact to environmental condition.	Sure because this is a prototype of CANDU reactor will be example of nuclear decommissioning to other companies.	
17. NPD	Yes- The place of NPP becomes green ground.	Yes.	Yes- I'm interested in the problem which is occurred.	Works with expertise involve the decommissioning.		
18. NPD	No-Only at "planning" phase for the time being. Only low level waste repatriation.	No-Yes.	Long term monitoring of contamination at sea level and of groundwater should be ensured.	No need to chop up all components =less doses for workers. No transport and associated risks. Cost effective. Looks like an efficient and pragmatic solution for low and intermediate level waste.	Yes. At first sight looks like the best option.	Thank you for the very interesting tour!
19. NPD	Yes- It's ongoing. But procedure is not good. Decommissioning is technically difficult I feel.	No-Yes.	Some components remain under ground. I concern this effect.	Economical, Easy.	Yes	None
20. NPD	Yes- A couple of old reactors are now being dismantled. Japan has no in-situ decommissioning	Public image of "giving up difficult decommissioning	Low cost. Safety to workers (low dose and industrial safety)			

Project	Does your country of origin have an active decommissioning program and/or nuclear waste disposal available? (Yes/No) If yes: What does the decommissioning and/or nuclear waste program look like?	Were you familiar with in-situ decommissioning prior to this discussion? (Yes/No) If no: Was the information provided today sufficient enough for the process to be understood?	Do you have any concerns (if any) with in-situ decommissioning as a decommissioning option?	What do you believe are the benefits (if any) of in-situ decommissioning?	In your opinion, is in-situ decommissioning a viable option for NPD?	Other Questions/Comments
	so far. It seems difficult to take the in-situ approach due to public acceptance. Teco are trying to decommission damaged Fukushima Daiichi Nuclear Power Station.	work"				
21. NPD	Yes	No -Yes.		Less radiation less workers	Yes	
22. NPD	Yes	No-Yes		Reduce the transportation, reduce the radiation of the workers	Yes	

A.6.1 Questions

Question 1

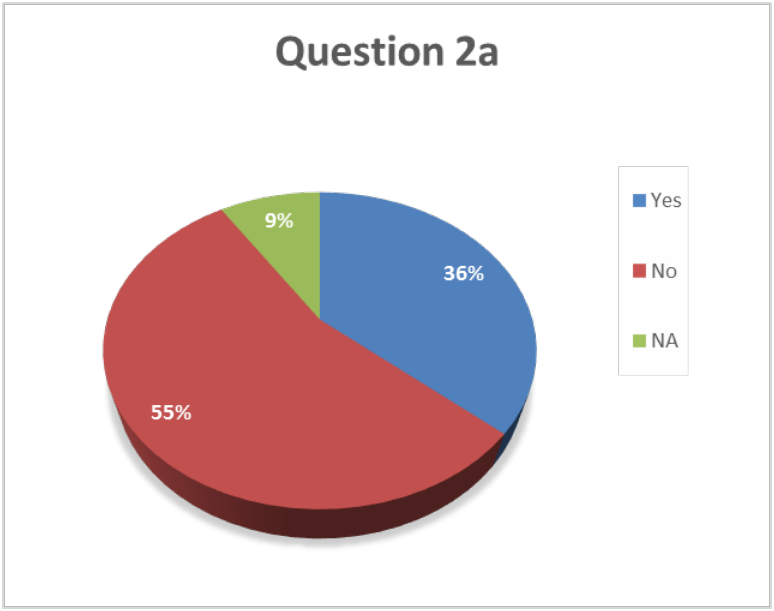
Does your country of origin have an active decommissioning program and/or nuclear waste disposal available? (Yes/No) If yes: What does the decommissioning and/or nuclear waste program look like?

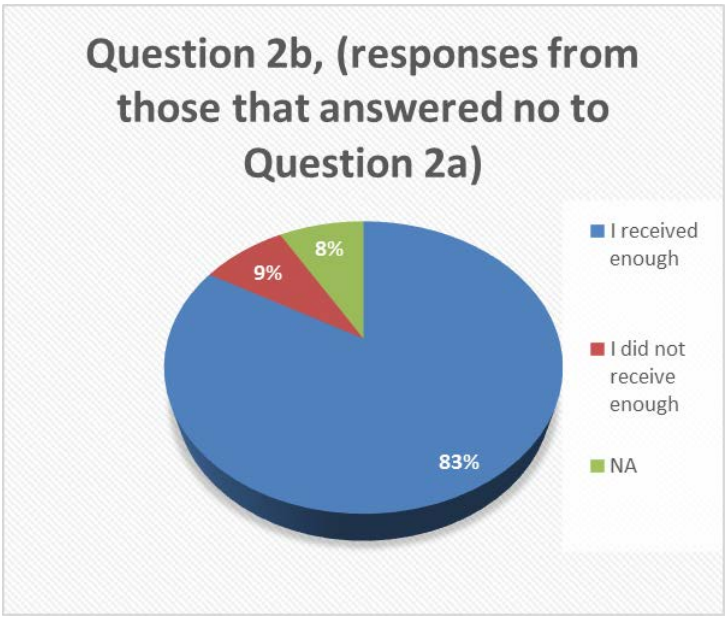


Question 2

2a: Were you familiar with in-situ decommissioning prior to this discussion? (Yes/No)

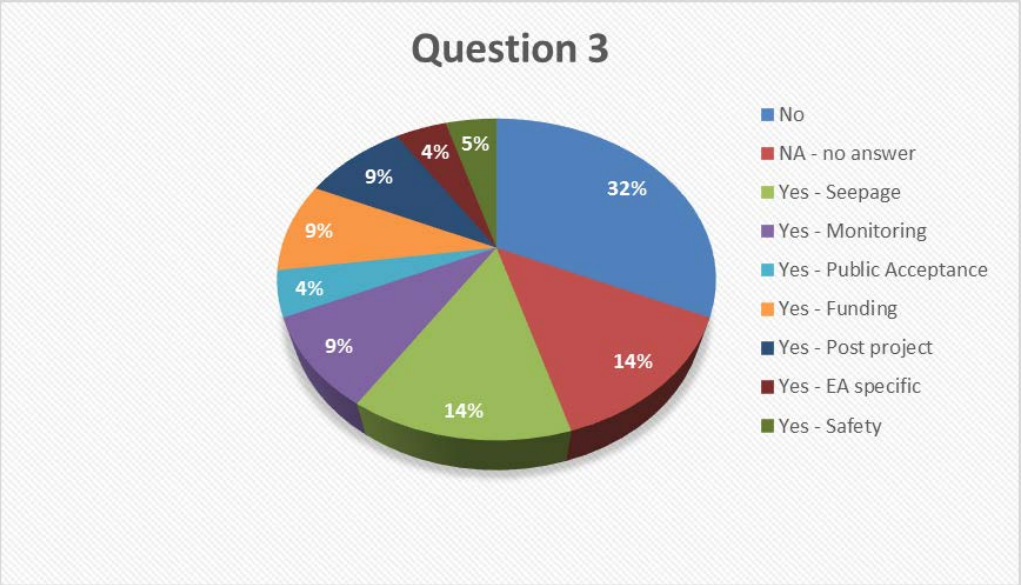
2b: If no: Was the information provided today sufficient enough for the process to be understood?





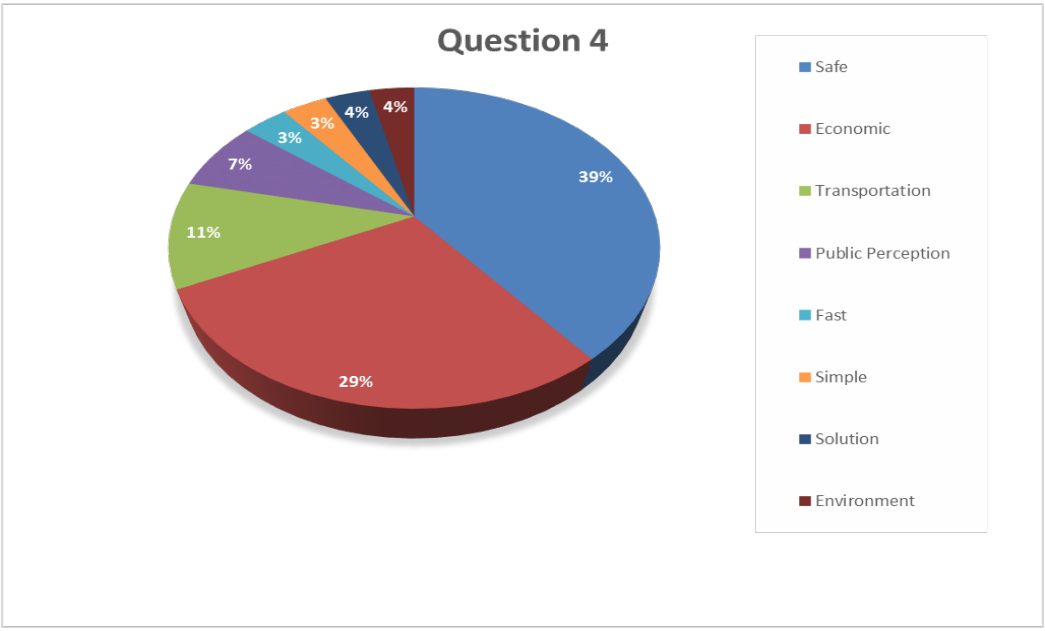
Question 3

Do you have any concerns (if any) with in-situ decommissioning as a decommissioning option?



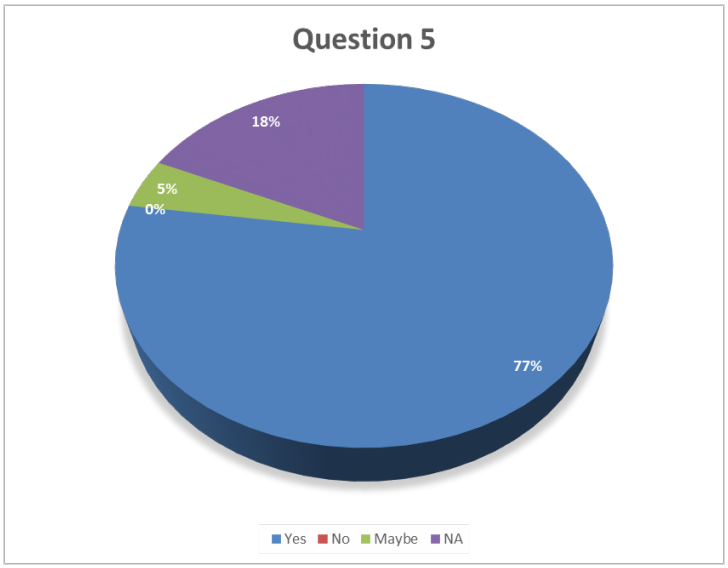
Question 4

What do you believe are the benefits (if any) of in-situ decommissioning?



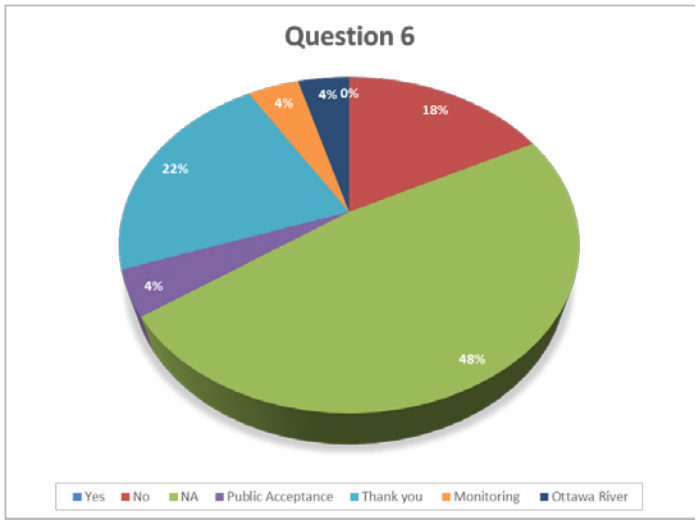
Question 5

In your opinion, is in-situ decommissioning a viable option for NPD?



Question 6

Are there any other questions or comments?



A.7 ESC Membership Listing

Table A-3
ESC Member Organization

- Petawawa Research Forest
- Deep River Horticultural Society
- Ottawa Riverkeeper
- City of Pembroke
- Pontiac MRC
- Parkline Sportsmen Club
- Concerned Citizens of Renfrew County
- Garrison Petawawa
- Pembroke Area Field Naturalists
- Canadian Nuclear Safety Commission
- Public Dialogue Alternatives
- Canadian Nuclear Safety Commission
- Renfrew County Council
- Métis Nation of Ontario
- Town of Deep River
- Upper Ottawa Valley Ducks Unlimited
- Four Seasons Conservancy
- Algonquins of Pikwàkanagàn
- Town of Laurentian Hills
- Old Fort William Cottagers' Association
- Town of Petawawa
- Ontario Ministry of Natural Resources and Forestry

A.7.1 ESC Meeting 2016 March 24 – Agenda, Presentations and Meeting Notes

Environmental Stewardship Council (ESC)
AGENDA FOR MEETING #30 (DRAFT UNTIL ACCEPTED)
Thursday, March 24, 2016 – Best Western Pembroke Inn

9:15 – 9:30 AM	Refreshments	
9:30 AM	Safety briefing, welcome and introductions	Pat Quinn
9:40 – 9:50 AM	Review of actions, previous meeting record and new business	John Vincett
9:50 – 10:10 AM	CNL Business Update	Mark Lesinski
10:10 – 10:45 AM	Decommissioning & Waste Management Update	Kurt Kehler
10:45 – 11:00 AM	Bio break	
11:00 – 12:00 PM	MODAR Technology	Greg Hersak
12:00 – 12:45 PM	Lunch	
12:45 – 1:30 PM	NPD Decommissioning Update	Dr. Todd Butz
1:30 – 2:00 PM	Quarterly Environmental Performance Report	George Dolinar
2:00 – 2:15 PM	Bio Break	
2:15 – 3:00 PM	Blanding's Turtle Research at CRL	Annie Morin / Gabriel Blouin-Demers
3:00 – 3:15 PM	In the Community	Nicole LeBlanc
3:15 – 3:30 PM	Recap | Review of Actions | Date for next mtg: 2016 June 16 at CNL	John Vincett

List of Participants

ESC Participants:

Peter Arbour, Petawawa Research Forest

Bruce Bigham, Deep River Horticultural Society

Meredith Brown, Ottawa Riverkeeper

James Gibson, Municipalité régionale de comté de Pontiac

Steve Gutzman, Parkline Sportsmen Club

Ole Hendrickson, Concerned Citizens of Renfrew County

Meghan Hendry, Garrison Petawawa

Ken Hooles, Pembroke Area Field Naturalists

Bob Kingsbury, Renfrew County Council

Marc Laurin, Métis Nation of Ontario, North Bay

Joan Lougheed, Town of Deep River

Bob MacKenzie, Upper Ottawa Valley Ducks Unlimited

John McKay, Four Seasons Conservancy

Jim Meness, Councillor, Algonquins of Pikwàkanagàn

Jed Reinwald, Town of Laurentian Hills

Craig Robinson, Old Fort William Cottagers' Association

Theresa Sabourin, Councillor, Town of Petawawa

Karen Stokes, Ontario Ministry of Natural Resources, Pembroke

ESC Alternates: Christine Reavie, City of Pembroke

CNL participants:

Shaun Cotnam, Senior Director, Compliance

Kevin Daniels, Health, Safety, Security and Environment (HSSE)

George Dolinar, Environmental Program Authority

Kurt Kehler, Vice President Decommissioning and Waste Management

Nicole LeBlanc, Public Affairs Officer

Mark Lesinski, President and CEO

Steve Liblong, Director, DWM Science & Technology Transition Advisor

Mitch MacKay, Communications Officer

Pat Quinn, Director, Corporate Communications

Invited Observers:

Wasif Islam, CRL Compliance and Licensing Division, Canadian Nuclear Safety Commission

Maude-Émilie Pagé, Director, Communication, AECL

Facilitator: John Vincett, Public Dialogue Alternatives

Invited Guest:

Gabriel Blouin-Demers, University of Ottawa

Brian Colby, CNL

Todd Butz, CNL

Greg Hersak, CNL

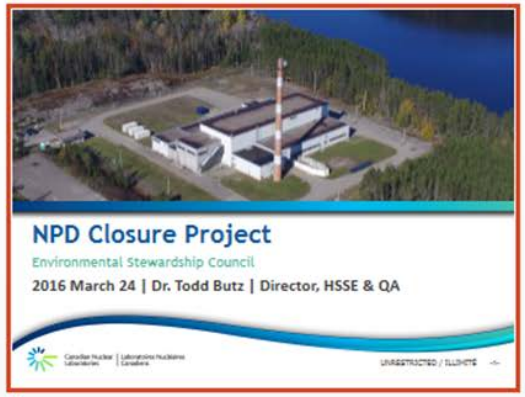
Annie Morin, CNL

Absent:

Ron Gervais, City of Pembroke

David Lee, Environmental Scientist, Environmental Technologies

A.7.1.1 NPD Closure Project ESC Presentation – 2016 March 24



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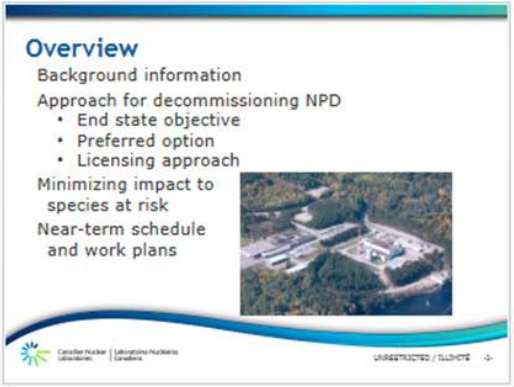

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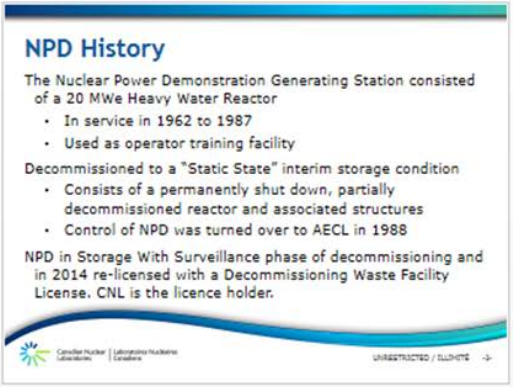

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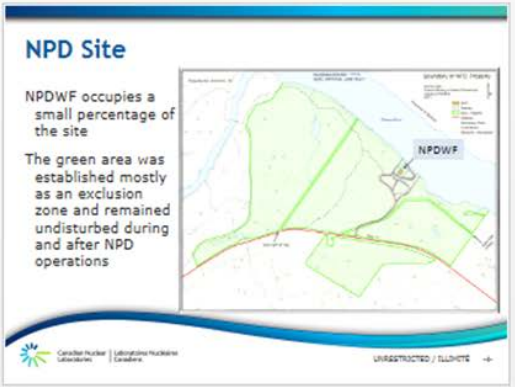

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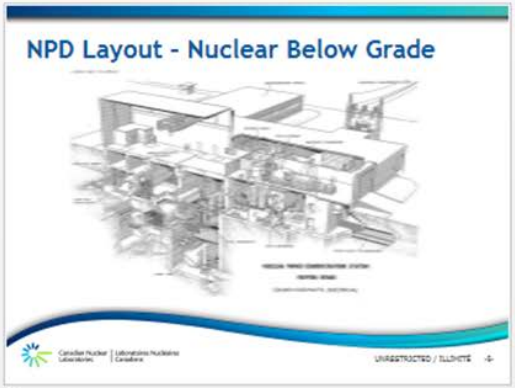

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6

NPD 1962 and 2016

Since shut down much of the non-active equipment was removed

7

Effluent Monitoring

Activity monitoring over the past 10 years show discharges far below regulatory limits - radioactivity is staying in place and decaying away

Tritium is the most mobile radionuclide at NPD - effluent monitoring shows Tritium, Carbon-14 and Beta/Gamma in air or liquid all <0.001% of derived release limit

(Annual Compliance Report for Off-site Decommissioning Facilities)

8

CNL's Project Objectives for NPD

Safely decommission the NPD site:

- Ensure employee/contractor safety (Target Zero)
- Protect public safety
- Protect the environment

Meet AECL contractual objectives:

- Completing in-situ decommissioning by 2020 May

Provide alternate habitat for species at risk

Reduce legacy long-term liabilities and the burden on the tax payer

9

Proposed End State

The reactor, associated systems and below grade structures grouted

Above grade structures demolished and removed

The grouted area covered with an engineered barrier

Replacement habitat accommodates Chimney Swift

Long-term care and maintenance activities continued for an agreed to performance period

- Release criteria subject to regulatory approval
- Remaining land (approximately 900 acres) could be evaluated by AECL for alternate uses at the end of decommissioning

10

NPD Closure Sequence

Planning & Licensing

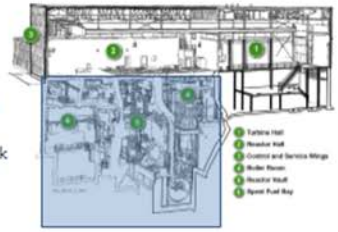
Procurement & Mobilization

Facility Preparation

Nuclear Side Grouting Operations

Superstructure & Stack Demolition – fill and grout

Long-term Care Operations



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13

Chimney Swifts at NPD

Chimney Swifts

Chimney Swift is a threatened species under Species at Risk Act

Plan to remove the stack during decommissioning

Stack removal requires Environment Canada approval

14

Chimney Swifts at NPD

Environment Canada Permit options:

- Replacement habitat
- Environmental stewardship
- Leave ventilation stack

Construction of an alternative habitat is the best path forward

Operational experience from other replacement habitat attempts is being incorporated – as well as ideas from interested stakeholders

15

Chimney Swifts at NPD

Request for Expressions of Interest sent out resulting in responses from eight interested stakeholders including:

- Academia (Trent and Brock University)
- Birds Study Canada
- Canadian Wildlife Services – Ontario & Quebec
- Quebec Oiseaux Response
- Pembroke Area Field Naturalists Club

Workshop for replacement habitat design 2016 April 7

Design completion by 2016 May

Construction of alternate habitat by 2016 October allowing overlap with ventilation stack for two seasons

16

Overall Project Schedule

Regulatory Submissions and Decisions	
Project Description	2016 March
EIS Guidelines Issued by CNSC	2016 July
Species at Risk Act Permit Submission - stack	2016 July
Public and Aboriginal Consultation by CNSC	2016/2017
Environmental Impact Statement	2017 April
Public and Aboriginal Consultation by CNSC	2018/2019
Environmental Assessment Decision	2018/2019
Environment Canada Permit Decision - stack	2018 October
Project Complete (AECL contract)	2020 May

*Timelines to be confirmed during protocol establishment with CNSC

17

Why In-situ Decommissioning?

Options considered range from removal of the source term for storage at Chalk River to in-situ decommissioning

Conclusion: in-situ decommissioning offers the safest approach:

- Reduces worker risk for radiological exposure and industrial accidents
- Reduces transportation and waste handling risks to the public and environment
- Effective reduction of the liability – lowest cost option
- Eliminates multiple handling of waste packages to and from storage and final disposal at Chalk River

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A.7.2 ESC Meeting Notes – 2016 March 24

ENVIRONMENTAL STEWARDSHIP COUNCIL (ESC)
MEETING NOTES FOR MEETING #30 (DRAFT UNTIL ACCEPTED)
THURSDAY, MARCH 24, 2016 – BEST WESTERN PEMBROKE INN – PEMBROKE, ON

9:00 - 9:30 AM	Refreshments
9:30 AM Safety brief, Welcome and Introductions Pat Quinn	Pat Quinn welcomed the council and provided a safety briefing. ➢ ESC alternate members o Christine Reavie – City of Pembroke ➢ ESC guest speakers o Gabriel Blouin-Demers – University of Ottawa o Dr. Todd Butz – CNL o Greg Hersak – CNL o Annie Morin – CNL
9:40 – 9:50 AM Review of actions, previous meeting record and new business. John Vincett	John facilitated a round table discussion and introduction of all participants. He inquired if there were any comments regarding the meeting notes. There were none. John then reviewed actions updated since the last meeting in October 2015. ESC Action 150617:2 – ONGOING – Decommissioning & Waste Management will update ESC members on Waste Data Tracking System software implementation. Kurt Kehler is responsible for this action. ESC Action 151029:01 – COMPLETE ESC Action 151029:02 – COMPLETE ESC Action 151029:03 – COMPLETE ESC Action 151029:04 – COMPLETE ESC Action 151029:05 – COMPLETE
9:50 – 10:50 AM CNL Business Update Mark Lesinski	Mark Lesinski – President & CEO at CNL provided the ESC with a business update on the upcoming Canadian Nuclear Safety Commission (CNSC) hearing scheduled for 2016 April 6. He provided details of new fiscal year plans and explained the proposed change to Manufacturing services at CRL. QUESTIONS: 1. What is the new licence extension date for NRU? 2. Will you continue to produce Cobalt 60? 3. You mentioned that CNL would produce revenues of $58 million; what projects will generate these revenues? 4. When will the domestic water line project be complete?
10:10 – 10:45 AM Decommissioning & Waste Management Update Kurt Kehler	Kurt Kehler – Vice President, Decommissioning and Waste Management at CNL gave an update about decommissioning and waste management activities at Chalk River including the annual summary of CRL volumes of waste. He noted the Nuclear Environmental Stewardship Strategic Outcome and highlighted 2014/15 projects. These projects include the following: decommissioning of 122 buildings with current decommissioning and demolition of building 456 south and central wings as well as buildings 200 and 204. Additionally, upcoming 2016/2017 DWM projects include:

	• Proposed Near Surface Disposal Facility (NSDF) candidate sites and conceptual layout at the preferred site • Integrated waste strategy • Shielded Modular Above Ground Storage 3 (SMAGS) nearly complete • Establishing an Environmental Remediation Framework Agreement • First retrieval and transfer completed at the Fuel Package and Storage Facility (FPS) • Repatriation Kurt also provided details regarding the CNSC meeting in January related to the NRX Fuel Caddy failure occurrence. QUESTIONS: 1. East Mattawa Road is the preferred site for the NSDF; where does the water flow? 2. In comparing the SMAGS (long term storage facility) with NSDF (disposal facility) what is the safer way to dispose? 3. In the caddy failure you mention improving your communication; what is the communication plan and how are you going to go forward with this? 4. Are you going to dig up all the NRX accident burials in WMA A? 5. What is low level waste (LLW)? Your challenge is to be upfront with the public on what the waste is, what if intermediate level waste (ILW) is discovered? What goes into the facility and how will you determine what goes in? 6. Target residue material in the FISST is controversial, any possibility to manage this material onsite, through down blending or cementation? 7. How will you disseminate information on your Environmental Assessment? 8. What is the process on emergency preparedness in Quebec?
10:45 – 11:00 AM	Bio break
11:00 – 12:00 PM MODAR Technology Greg Hersak	Greg Hersak – Manager with Mechanical Engineering Development (MED) Branch at CNL gave a presentation on MODAR Technology. Modal Detection and Repositioning technology extends the life of CANDU fuels channels by detecting and relocating tight fitting annulus spacers through vibration. QUESTIONS: 1. Who manufactures your pressure tubes? 2. How often do you have to replace a pressure tube? 3. What is the life cycle of this tool? 4. What is the decontamination process for this tool? 5. How far do the spacers deviate? 6. What is the magnitude of the vibration?
12:00 – 12:45 PM	Lunch

12:45 – 1:30 PM NPD Decommissioning Update Dr. Todd Butz	Todd Butz – Director of Health, Safety, Security, Environment (HSSE) & Quality Assurance (QA) at CNL presented to the council an update on the decommissioning closure project of NPD. This included the project approach (end state objective, preferred option, licencing), minimizing impact to species at risk and the near-term schedule and work plans based on an in-situ decommissioning strategy. QUESTIONS: 1. Have you considered maintaining the NPD stack for the chimney swifts versus an alternate habitat? 2. Who is responsible for maintaining the new habitat/s? 3. Have you considered the end state of NPD to become parkland? 4. In regards to in-situ decommissioning; do you have a way to verify if the grout gets into all the required areas? 5. Will you utilize a local cement company? 6. Where will the grout come from? 7. What is the Government of Canada's liability if nothing is done to NPD and is left as is? 8. What impact would it have on the project if you had to re-consider demolition of the NPD stack and what are the alternatives? 9. Where in the project timeline is the demolition of the NPD stack? 10. Will NPD remain licenced once decommissioning is complete?
1:30 – 2:00 PM Quarterly Environmental Performance Report George Dolinar	George Dolinar - Environmental Program Authority within the Environmental Protection Branch (EPB) at CNL presented the Chalk River Laboratories (CRL) Environmental Performance Summary. The overview included updates on the environmental monitoring program, monitoring updates and an update on current activities. These included: • ISO 14001 Re-certification Audit (April) • National Pollutant Release Inventory (NPRI) submission to Environment Canada (March) • 2015 Annual Safety Report (April) • Gap Analysis of CSA N288.7 (groundwater monitoring) complete • Commercial contract with NB Power to assist with CSA standard updates George also addressed ESC Action 151029:01 and 151029:02 providing information to address and complete the actions. QUESTIONS: 1. The CRL Environmental Performance Report indicated a spike in liquid emissions in February 2014; what caused this?
2:00 – 2:15 PM	Bio Break
2:15 – 3:00 PM Blanding's Turtle Research at CRL Gabriel Blouin-Demers/Annie Morin	Gabriel Blouin-Demers – Professor at University of Ottawa and Annie Morin – Environmental Specialist at CNL gave a presentation on the Blanding's turtle research results at CRL. The data included population size, movement patterns, habitat selection and effects of road mortality as well as future direction to protect the species at CRL. QUESTIONS:

	1. What can be done to decrease road mortality at CRL? 2. Is there a time of the year that females move more frequently that increases road mortality? 3. Do you have an issue with protecting nests; are raccoons a problem? 4. Is there an opportunity to mimic roadside conditions elsewhere on site to reduce road mortality? 5. What is the success rate of moving small populations to other locations? 6. What are the other types of mortality? 7. Have you considered additional signage to reduce road mortality? 8. What would the process be to reduce the speed limits on Plant Road? 9. Is it possible there are other Blanding turtle populations on site; perhaps in the unchartered areas? ESC Action 160324:01 – What would the process be to reduce the speed limits on Plant Road. George Dolinar is responsible for this action.
3:00 – 3:15 PM In the Community Nicole LeBlanc	Nicole LeBlanc - Public Affairs Officer at CNL gave an update on CNL activities with the public since the last meeting in October 2015 including the CNL site United Way campaign/s success, Let's Talk Energy activities and the recent Canadian Nuclear Association (CNA) and Waste Management conferences. Upcoming community engagements include Petawawa SHOWCASE, National Science and Technology Week (NSTW), the Canadian Cancer Society Mud Run and the CNL Advanced Reactor Forum being held on May 10-11 in Ottawa, ON.
3:15 – 3:30 PM Closing John Vincett	ESC Action 160324:02 – Environmental Stewardship Council - Terms of Reference (TOR) have not been updated since 2010; CNL Corporate Communications will update the TOR for the ESC membership and alternate list for review and approval. Nicole LeBlanc is responsible for this action. John Vincett gave a recap of the meeting and reviewed the actions and reminded council to fill out evaluation forms. Next ESC meeting – Thursday, June 16, 2016 at Canadian Nuclear Laboratories Chalk River site. There were no comments on the new actions or about the recap of the meeting.

List of Participants

ESC Participants:

Peter Arbour, Petawawa Research Forest

Bruce Bigham, Deep River Horticultural Society

James Gibson, Municipalité régionale de comté de Pontiac

Steve Gutzman, Parkline Sportsmen Club

Meghan Hendry, Garrison Petawawa

Ken Hooles, Pembroke Area Field Naturalists

Robert Kingsbury, Renfrew County Council

Joan Lougheed, Town of Deep River

John McKay, Four Seasons Conservancy

Craig Robinson, Old Fort William Cottagers' Association

Theresa Sabourin, Town of Petawawa (PM only)

ESC Alternates: Christine Reavie, City of Pembroke

CNL participants:

Shaun Cotnam, Senior Director, Compliance

Kevin Daniels, General Manager, HSSE

George Dolinar, Environmental Program Authority

Kurt Kehler, Vice President Decommissioning and Waste Management Nicole LeBlanc, Communications Officer, Corporate Communications

Mark Lesinski, President & CEO

Steve Liblong, Director, DWM S&T Transition Advisor

Mitch MacKay, Communications Officer, DWM

Pat Quinn, Director, Corporate Communications

Invited Observers:

Wasif Islam, CRL Compliance and Licensing Division, Canadian Nuclear Safety Commission

Maude-Émilie Pagé, Director, Communication, AECL

Facilitator: John Vincett, Public Dialogue Alternatives

Invited Guest:

Blouin-Demers, Gabriel, University of Ottawa

Butz, Todd, CNL

Colby, Brian, CNL

Hawkins, Emily, University of Ottawa (student)

Hersak, Greg, CNL

Morin, Annie, CNL

Absent:

Meredith Brown, Ottawa Riverkeeper

Marc Laurin, Métis Nation of Ontario, North Bay

David Lee, Environmental Scientist, Environmental Technologies

Bob MacKenzie, Upper Ottawa Valley Ducks Unlimited

Jim Meness, Algonquins of Pikwakanagan

Jed Reinwald, Town of Laurentian Hills

Karen Stokes, Ontario Ministry of Natural Resources, Pembroke

A.7.3 ESC Meeting 2016 June 16 – Agenda, Presentation, Recorded Comments and Meeting Notes

ENVIRONMENTAL STEWARDSHIP COUNCIL (ESC)

AGENDA FOR MEETING #31 (DRAFT UNTIL ACCEPTED)
Thursday, June 16, 2016 – CNL Chalk River Laboratories

1:30 - 2:00 PM	Arrive at Chalk River Laboratories, B700 Room 201	
2:00 PM	Safety briefing, Welcome and Introductions	Pat Quinn
2:10 – 2:20 PM	Review of actions, previous meeting record and new business.	John Vincett
2:20 – 2:35 PM	CNL Business Update	Mark Lesinski
2:35 – 3:00 PM	Decommissioning & Waste Management Update	Kurt Kehler
3:00 – 3:15 PM	Refreshments & Bio Break	
3:15 – 3:30 PM	Approach to Environmental Remediation at CRL	Brian Colby
3:30 – 3:45 PM	What is an Environmental Assessment (EA)?	George Dolinar
4:00 – 5:30 PM	Near Surface Disposal Facility - East Mattawa Road Site & Site 11A • Ecological Study • Archaeological Study	Annie Morin/Sue Titterington/Jim Buckley
5:30 – 6:30 PM	Travel to Rolphton	
6:30 PM	Dinner - Rolphton Motel	
7:00 – 7:15 PM	Quarterly Environmental Performance Report (during dinner)	George Dolinar
7:15 – 7:30 PM	Recap / Review of Actions / Next meeting	John Vincett
8:00 PM	NPD Site – Viewing of Chimney Swift Roosting • Roosting is scheduled to begin around sunset ~ 9:03 p.m.	Annie Morin
9:15 PM	Adjournment - Depart NPD Site & Return to CRL	

List of Participants

ESC Participants:

Peter Arbour, Petawawa Research Forest
Bruce Bigham, Deep River Horticultural Society
James Gibson, Municipalité régionale de comté de Pontiac
Ole Hendrickson, Concerned Citizens of Renfrew County
Ken Hooles, Pembroke Area Field Naturalists
Marc Laurin, Métis Nation of Ontario, North Bay
Joan Lougheed, Town of Deep River
John McKay, Four Seasons Conservancy
Craig Robinson, Old Fort William Cottagers' Association
Theresa Sabourin, Councillor, Town of Petawawa

ESC Alternates:

Matthew Cybulski, Garrison Petawawa
Ann Giardini, Town of Laurentian Hills
John Muff, Pembroke Area Field Naturalists
Cynthia Williams, Health, Safety, Security and Environment (HSSE)

CNL:

Shaun Cotnam, Senior Director, Compliance
George Dolinar, Environmental Program Authority
Kurt Kehler, Vice President Decommissioning and Waste Management
Nicole LeBlanc, Public Affairs Officer
David Lee, Environmental Scientist, Environmental Technologies
Mark Lesinski, President & CEO
Steve Liblong, Director, Waste Management & Environmental Restoration
Mitch MacKay, Communications Officer
Pat Quinn, Director, Corporate Communications

Invited Observers:

Wasif Islam, Canadian Nuclear Safety Commission (CNSC)
Maude-Emilie Page, AECL

Facilitator: John Vincett, Public Dialogue Alternatives

Invited Guests:

Jim Buckley, CNL

Brian Colby, CNL

Annie Morin, CNL

Sue Titterington, CNL

Absent:

Meredith Brown, Ottawa Riverkeeper

Kevin Daniels, Health, Safety, Security and Environment (HSSE)

Christina Davis, Ontario Ministry of Natural Resources & Forestry

Ron Gervais, City of Pembroke

Steve Gutzman, Parkline Sportsmen Club

Meghan Hendry, Garrison Petawawa

Bob Kingsbury, Renfrew County Council

Bob MacKenzie, Upper Ottawa Valley Ducks Unlimited

Jim Meness, Councillor, Algonquins of Pikwàkanagàn

Jed Reinwald, Town of Laurentian Hills

A.7.4 ESC Meeting Notes – 2016 June 16

Environmental Stewardship Council (ESC)
MEETING NOTES FOR MEETING #31 (DRAFT UNTIL ACCEPTED)
Thursday, June 16, 2016 – CNL Chalk River Laboratories/Nuclear Power Demonstration (NPD) – Chalk River/Rolphton, ON

1:30 - 2:00 PM	Refreshments
2:00 PM Safety brief, Welcome and Introductions Pat Quinn	Pat Quinn welcomed the council and provided a safety briefing. ➢ ESC alternate members o Matthew Cybulski, Garrison Petawawa o Ann Giardini, Town of Laurentian Hills o John Muff, Pembroke Area Field Naturalists o Cynthia Williams, CNL ➢ ESC guest speakers o Jim Buckley, CNL o Brian Colby, CNL o Annie Morin – CNL o Sue Titterington – CNL
2:10 – 2:20 PM Review of actions, previous meeting record and new business. John Vincett	John facilitated a round table discussion and introduction of all participants. He inquired if there were any comments regarding the meeting notes. There were none. John then reviewed actions updated since the last meeting in March 2016. ESC Action 150617:2 – ONGOING – Decommissioning & Waste Management will update ESC members on Waste Data Tracking System software implementation. Kurt Kehler is responsible for this action. ESC Action 160324:2 – ONGOING – Environmental Stewardship Council - Terms of Reference (TOR) have not been updated since 2010; CNL Corporate Communications will update the TOR for the ESC membership and alternate list for review and approval. Nicole LeBlanc is responsible for this action.
2:20 – 2:35 PM CNL Business Update Mark Lesinski	Mark Lesinski – President & CEO at CNL provided the ESC with a business update on the April CNSC – CRL licence amendment hearing, making Vision 2026 a reality including environmental stewardship, science & technology and operations. He also discussed the Voluntary Separation Program (VSP), a new employee program and the recent rod bay fuel caddy and ZED-2 heavy water loss events. QUESTIONS: 5. As part of the 10 year plan, are you planning to pursue any research on the linear no threshold biological effect of low level ionizing radiation? 6. Do you have any further information on the rumoured fire incident? *ESC Action 160616:01 – Does the CNSC have plans to pursue any research on the linear no threshold biological effect of low level ionizing radiation? Wasif Islam (CNSC) is responsible for this action.*
2:35 – 3:00 PM Decommissioning & Waste Management	Kurt Kehler – Vice President, Decommissioning and Waste Management at CNL gave an update about decommissioning and waste management activities at Chalk River including facilities decommissioning, waste management and environmental remediation, fuel package and storage facility and HEU fuels and

Update Kurt Kehler/Jim Buckley	target residue material. Incorporated into Kurt's presentation, Jim Buckley gave an overview on the Near Surface Disposal Facility (NSDF) including an overview of the project, proposed sites, and public communications activities related to the NSDF and NPD. QUESTIONS (Kehler): 9. Do any of the buildings planned for decommissioning and demolition have large chimneys attached to them? QUESTIONS (Buckley): 1. How large and what would the depth be of the NSDF? 2. Where will you source the clay for the facility? 3. How long does the waste stay in the ground and what is done when it is decontaminated? 4. Would this facility sustain glaciation? 5. How long will it be radioactive? 6. How much long-lived radionuclides will be in the facility?
3:00 – 3:15 PM	Bio break
3:15 – 3:30 PM Approach to Environmental Remediation at CRL Brian Colby	Brian Colby – Director, Waste Management & Environmental Remediation Projects at CNL gave an introductory presentation on the approach to environmental remediation at CRL.
3:30 – 3:45 PM What is an Environmental Assessment? George Dolinar	George Dolinar – Environmental Program Authority within the Environmental Protection Branch (EPB) at CNL explained to members the process and overview of an Environmental Assessment. *ESC Action 160616:02 – Describe opportunities to comment and share feedback of group one and group two chapters of the NSDF environmental assessment to ESC members. George Dolinar is responsible for this action.*
4:00 – 5:30 PM Site Tour - NSDF Jim Buckley/Annie Morin/Sue Titterington	Tour of Near Surface Disposal Facility - East Mattawa Road Site & Site 11A proposed sites • Ecological Study • Archaeological Study QUESTIONS: 1. What is meant by valued components? 2. Are there any species at risk that are birds and can they be re-located? 3. Will your reports indicate how you will mitigate species at risk? 4. What is the date to complete alternative means? 5. Will we see the alternative means presented at the ESC? 6. Looking at the map it doesn't line up with the site footprint schematic found on the poster board, why is this? 7. Is Perch Lake self-contained? 8. What is the dark green area on the map? 9. Do you have a topographic map? 10. Is the light green area wetlands? 11. Is this facility similar to the WMA-C? 12. When the facility is capped and the grass is down, what is the radioactivity off the top? 13. Which of the purple are will be cleared first? (Note purple indicates EMR and 11A locations) 14. Can you provide present day examples of this technology and how old are some of these facilities?

	15. Can you provide examples of facilities that are located in a similar climate, geology (earthquake), soil type etc.? 16. Could you provide us with some examples of NSDF? 17. What was the pre 1945 population of the general area before expropriation of the CRL land? 18. Which site affects the environment more, the 11A site appears to have less environment impact? 19. Could Plutonium material be disposed of in the NSDF? *ESC Action 160616:03 – Provide information to ESC members referencing where (globally), the current NSDF design has been implemented at other nuclear sites. Jim Buckley/Mitch MacKay are responsible for this action.*
7:00 – 7:15 PM Quarterly Environmental Performance Report George Dolinar	George Dolinar - Environmental Program Authority within the Environmental Protection Branch (EPB) at CNL presented the Chalk River Laboratories (CRL) Environmental Performance Summary. The overview included updates on the environmental monitoring program, monitoring updates and an update on current activities. These included: • ISO 14001 Re-registration Audit • Potable water supply project update (start of construction on CRL property) George also addressed ESC Action 160324:01 providing information and a hand-out to address and complete the action. QUESTIONS: 2. Are turtle rescues on Plant Road reported?
7:15 – 7:30 PM Closing John Vincett	John Vincett gave a recap of the meeting and reviewed the actions and reminded council to fill out evaluation forms. Next ESC meeting – Thursday, October 13, 2016 at Best Western Pembroke Inn. There were no comments on the new actions or about the recap of the meeting.
8:00 – 9:30 PM Site Tour – NPD Pat Daly/Annie Morin/Meggan Vickerd	NPD Site – Viewing of Chimney Swift Roosting • Roosting is scheduled to begin around sunset ~ 9:03 p.m. QUESTIONS: 1. Why is the callandria being left in place? 2. Does the CNSC have any questions about this option? 3. Have you considered alternate means; taking callandria out? 4. How often has the relocation of chimney swifts been attempted? 5. How far away do they fly in the winter? 6. How will you identify the time period for the stack removal? 7. Where are the chimney swifts reproducing? 8. Are the swifts nesting in the chimney? 9. How do they hang upside down? 10. Is there a protocol on how you count the swifts?

List of Participants

ESC Participants:

Peter Arbour, Petawawa Research Forest

Bruce Bigham, Deep River Horticultural Society

James Gibson, Municipalité régionale de comté de Pontiac

Ken Hooles, Pembroke Area Field Naturalists

Marc Laurin, Métis Nation of Ontario, North Bay
Joan Lougheed, Town of Deep River
John McKay, Four Seasons Conservancy
Craig Robinson, Old Fort William Cottagers' Association
Theresa Sabourin, Town of Petawawa

ESC Alternates:
Matthew Cybulski, Garrison Petawawa
Ann Giardini, Town of Laurentian Hills
John Muff, Pembroke Area Field Naturalists
Cynthia Williams, Health, Safety, Security and Environment (HSSE)

Canadian Nuclear Laboratories:
Shaun Cotnam, Senior Director, Compliance
George Dolinar, Environmental Program Authority
Kurt Kehler, Vice President Decommissioning and Waste Management
Nicole LeBlanc, Communications Officer, Corporate Communications
David Lee, Environmental Scientist, Environmental Technologies
Mark Lesinski, President & CEO
Steve Liblong, Director, DWM S&T Transition Advisor
Mitch MacKay, Communications Officer, DWM
Pat Quinn, Director, Corporate Communications

Invited Observers:
Wasif Islam, Canadian Nuclear Safety Commission (CNSC)
Page, Maude, Director of Communications, AECL

Facilitator: John Vincett, Public Dialogue Alternatives

Invited Guests:
Buckley, Jim, CNL
Colby, Brian, CNL
Morin, Annie, CNL
Titterington, Sue, CNL

Absent:

Meredith Brown, Ottawa Riverkeeper

Kevin Daniels, General Manager, HSSE

Christina Davis, Ontario Ministry of Natural Resources & Forestry

Steve Gutzman, Parkline Sportsmen Club

Meghan Hendry, Garrison Petawawa

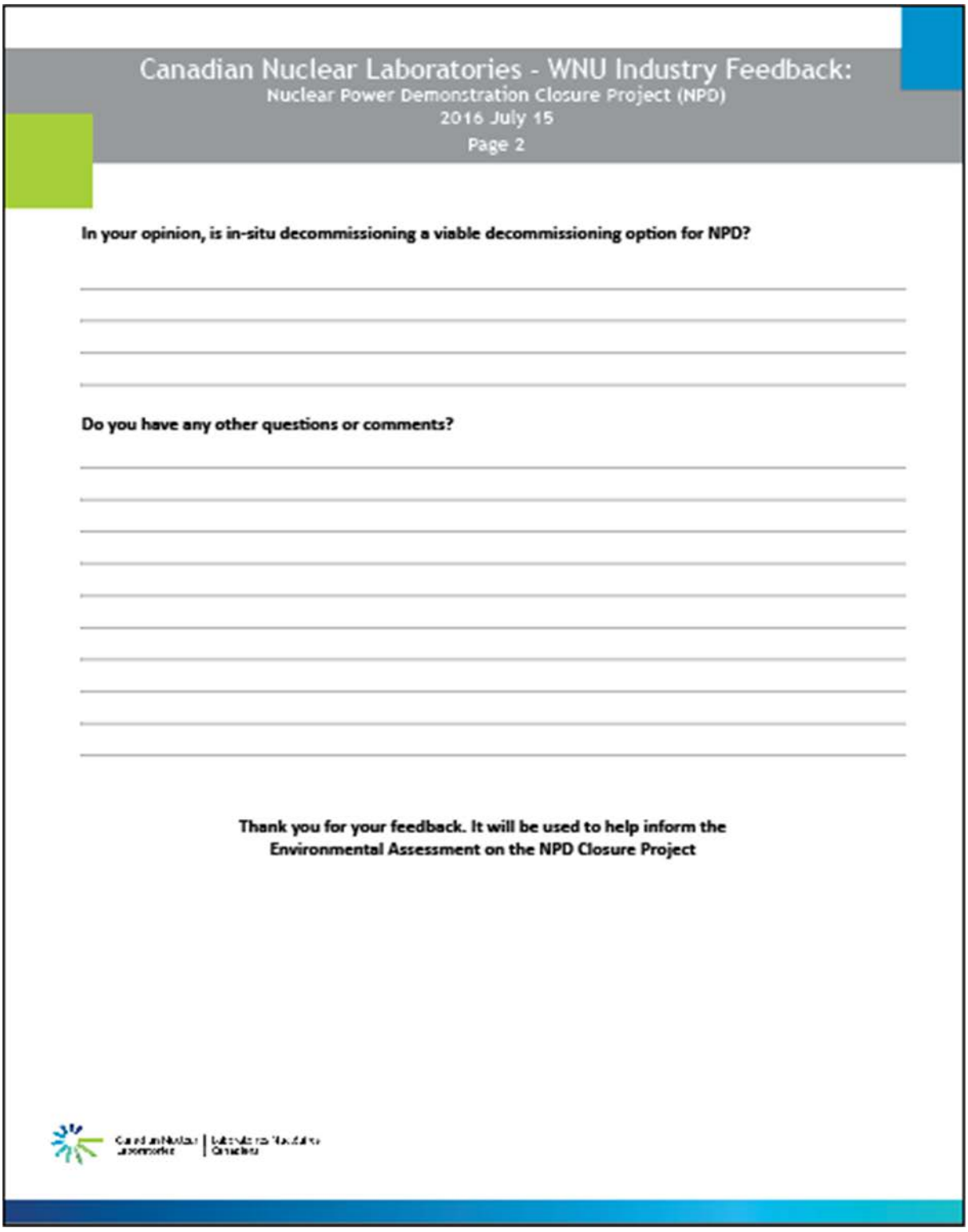
Robert Kingsbury, Renfrew County Council

A.7.5 WNU Site Visit 2016 July 15 – Agenda, Presentation and Feedback Form

WNU Tour Agenda – 2016 July 15

Time	Details					
0830 hrs.	Participants depart Best Western Pembroke Inn for CNL					
0900 hrs.	Arrive at CNL Outer Gate. Park buses in front of the Brockhouse Building and register inside.					Met by CNL escorts
0930 – 1015 hrs.	B432 Library Auditorium: Welcome & Overview presentation					Mark Lesinski / Philip Kompass
	GROUP 1	**GROUP 2**	**GROUP 3**	**GROUP 4**	**GROUP 5**	**GROUP 6**
1030 – 1115 hrs.	B150 NRU	B456 Mechanical Equipment Development	B469 Fuel & Fuel Channel Safety Lab	B375 Fuel & Material Cells	B380 Autoclave Facility	**NPD** • Grab boxed lunches from B700 and depart at 1030 hrs. • NPD tour: 1100 – 1300 hrs. • Depart NPD at 1300 hrs. and drop off in front of B700
1130 – 1215 hrs.	B466 Thermalhydraulics	B330 Analytical Chemistry	B145 Small-Scale Burst Test Facility	B375 Surface Science Lab	B145 CRIPT	
1230 – 1300 hrs.	B432 Library Auditorium: Lunch					
1315 – 1400 hrs.	B432 Codes & Modelling presentation	B375 Surface Science Lab	B300 Fuel Development Lab	B137 Hydrogen Isotopes Technology Lab	B466 Thermalhydraulics	**NSDF** • B700, Rm. 201: poster session / discussion from 1330 – 1430 hrs. • Tour – 1430 – 1500 hrs. (bus to depart B700 at 1430 hrs. • After tour, bus to return to B700
1415 – 1500 hrs.	B137 Hydrogen Isotopes Technology Lab	B234 Universal Cells	B150 NRU	B456 Mechanical Equipment Development	B432 Codes & Modelling presentation	
1500 hrs.	**Depart site.**					

A.7.5.1 WNU Site Visit Feedback Forms – 2016 July 16, Page 1



Canadian Nuclear Laboratories - WNU Industry Feedback:
Nuclear Power Demonstration Closure Project (NPD)
2016 July 15
Page 2

In your opinion, is in-situ decommissioning a viable decommissioning option for NPD?

Do you have any other questions or comments?

Thank you for your feedback. It will be used to help inform the Environmental Assessment on the NPD Closure Project

Canadian Nuclear Laboratories - WNU Industry Feedback:

Near Surface Disposal Facility

2016 July 15

Name:

Email:

Company:

Country:

Do you have any questions or comments about the Near Surface Disposal Facility?

Thank you for your feedback. It will be used to help inform the Environmental Assessment on the Near Surface Disposal Facility

A.7.6 NGO Site Visit 2016 July 26 – Agenda, Presentation and Meeting Notes

Northwatch and CELA Site Visit Agenda – 2016 July 26

ENVIRONMENTAL ASSESSMENTS – TOURS
AGENDA FOR NORTHWATCH TOUR
TUESDAY JULY 26, 2016 – CNL CHALK RIVER LABORATORIES
NOTE TIMINGS ARE SUBJECT TO LEVEL OF DISCUSSION etc.

08:00 – 08:20	Visitor arrival at Outer Gate - Chalk River Laboratories – met by Corporate Communications (Van) *(Note: visitors may want access to their own vehicle to travel to NPD – arrangements will be made for parking near Outer Gate)*	
08:20 – 08:30	Building 700, Room 201 - Safety briefing, Welcome and Introductions	Pat Quinn
08:30 – 08:45	CNL Overview	Pat Quinn
08:45 - 09:00	NSDF Overview	Jim Buckley
09:00 – 09:15	NPD Overview	Patrick Daly
09:15 – 09:45	Environmental Monitoring at CNL - Questions and answers	George Dolinar
09:45 – 10:00	Bio break and refreshments – Board bus	
10:15 – 11:00	NSDF - East Mattawa Road Site/ 11A Drive by • Ecological Study • Archaeological Study • Questions and answers	Jim Buckley
11:00 – 11:30	Depart CRL - Drive to NPD *(Note: visitors may want access to their own vehicle to travel to NPD – arrangements will be made for parking near Outer Gate)*	
11:30 – 12:15	NPD • Preferred Option • Timeline of work • Questions and answers	Patrick Daly
12:15 – 12:30	Depart site	Pat Quinn

List of Participants

TBC – Northwatch Participants

Meredith Brown, Ottawa River Keeper

Ole Hendrickson, Concerned Citizens of Renfrew County

Brennain Lloyd, Northwatch

Theresa McClenaghan, Canadian Environmental Law Association

TBC – CNL Participants

Jim Buckley

Todd Butz

Patrick Daly

George Dolinar

Crystal Donak

Martin Klukas

Nicole LeBlanc

Mitch MacKay

Annie Morin

Pat Quinn

Sue Titterington

Meggan Vickerd

A.7.6.1 Northwatch Presentation – 2016 July 26

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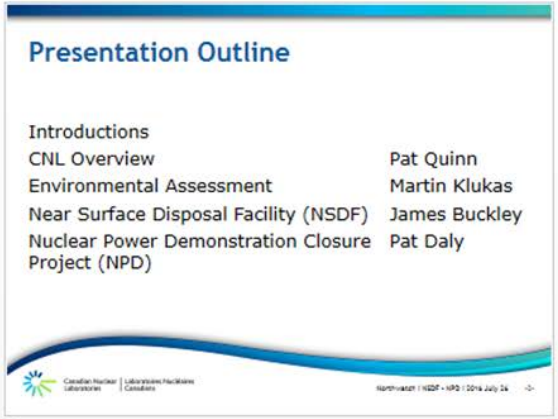

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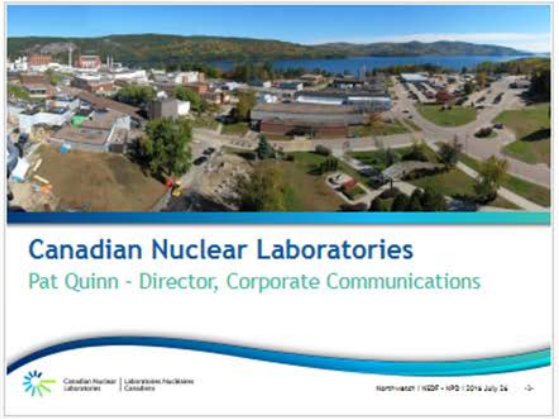

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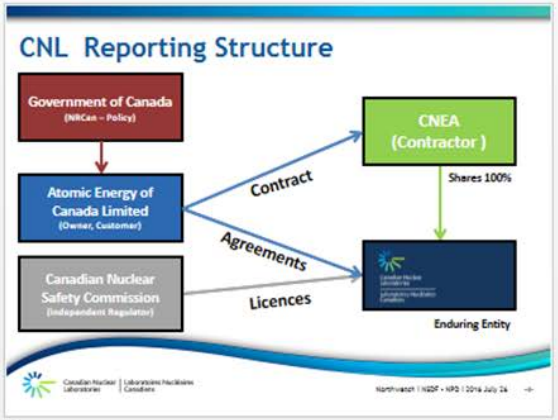

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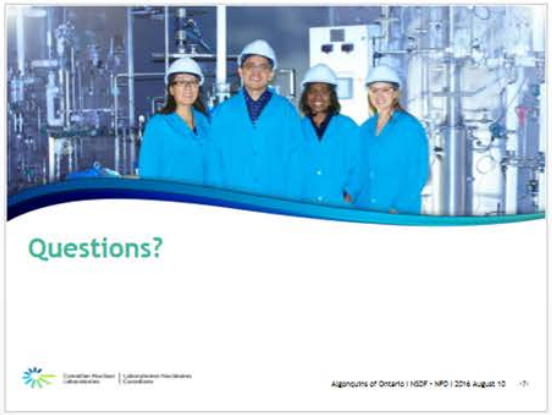
Questions?

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Environmental Assessment
George Dolinar - Director, Environmental Protection

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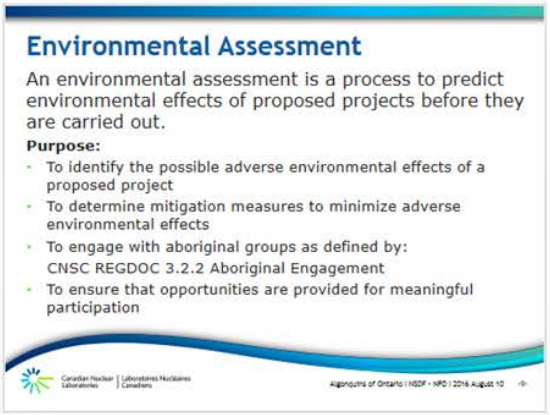
Environmental Assessment
An environmental assessment is a process to predict environmental effects of proposed projects before they are carried out.
Purpose:
To identify the possible adverse environmental effects of a proposed project
To determine mitigation measures to minimize adverse environmental effects
To engage with aboriginal groups as defined by:
CNSC REGDOC 3.2.2 Aboriginal Engagement
To ensure that opportunities are provided for meaningful participation

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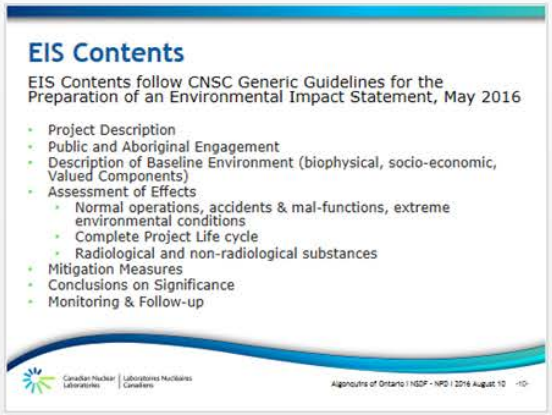
EIS Contents
EIS Contents follow CNSC Generic Guidelines for the Preparation of an Environmental Impact Statement, May 2016
Project Description
Public and Aboriginal Engagement
Description of Baseline Environment (biophysical, socio-economic, Valued Components)
Assessment of Effects
Normal operations, accidents & mal-functions, extreme environmental conditions
Complete Project Life cycle
Radiological and non-radiological substances
Mitigation Measures
Conclusions on Significance
Monitoring & Follow-up

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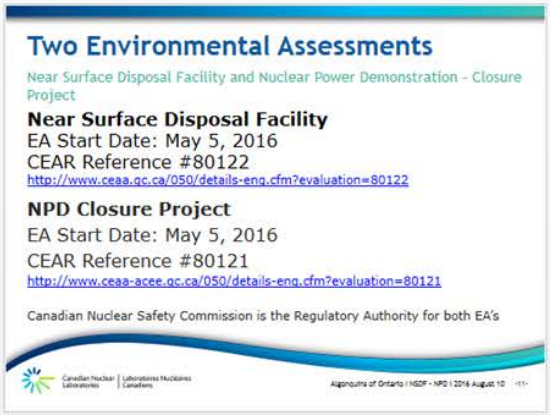
Two Environmental Assessments
Near Surface Disposal Facility and Nuclear Power Demonstration - Closure Project
Near Surface Disposal Facility
EA Start Date: May 5, 2016
CEAR Reference #80122
http://www.ceaa.gc.ca/050/details-eng.cfm?evaluation=80122
NPD Closure Project
EA Start Date: May 5, 2016
CEAR Reference #80121
http://www.ceaa-acee.gc.ca/050/details-eng.cfm?evaluation=80121
Canadian Nuclear Safety Commission is the Regulatory Authority for both EA's

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NPD
Project Locations
NSDF

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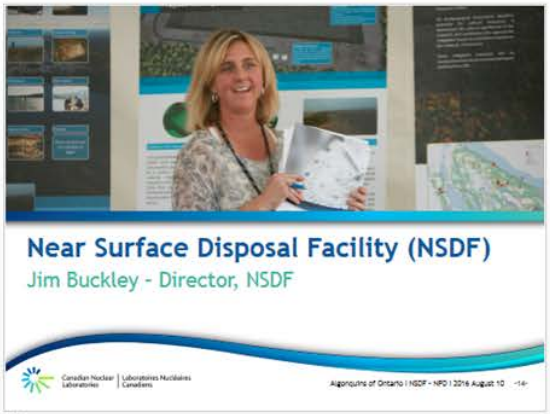

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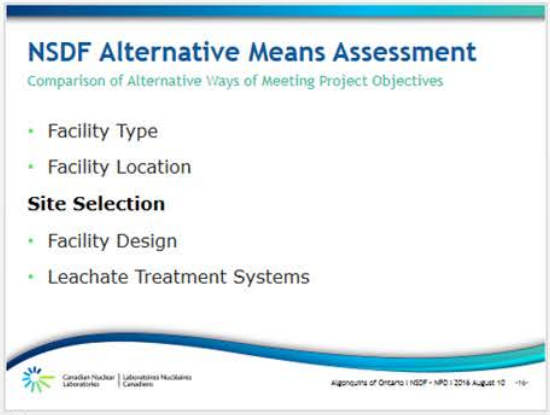

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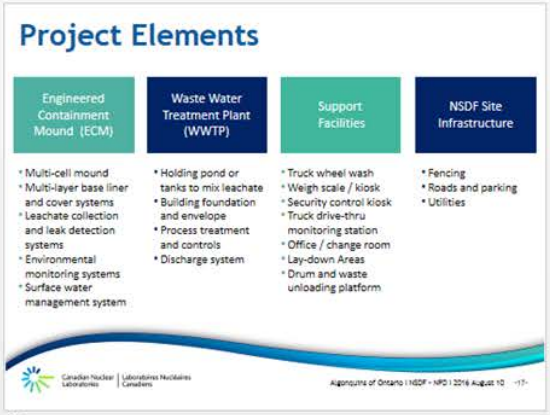

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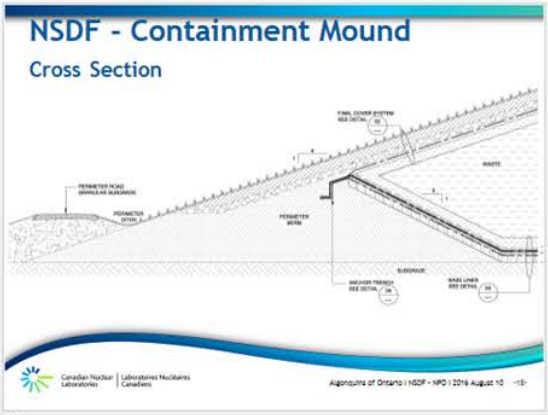

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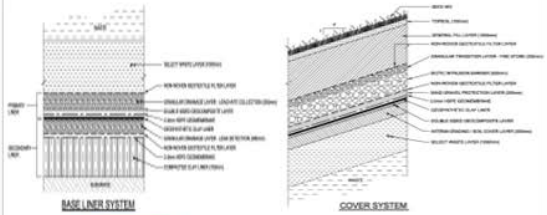
Conceptual Facility Layout (15%)

19

Conceptual: Base Liner & Cover System



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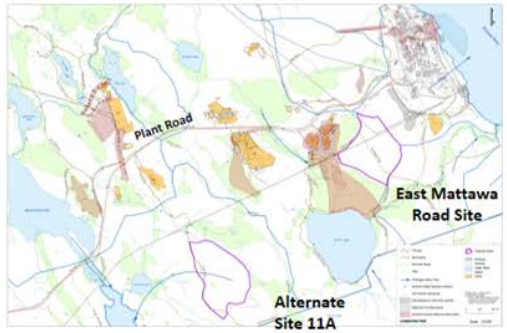
Two Sites Under Consideration



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Site Selection

Evaluation Criteria

- Environment
- Health & Safety
- Cost
- Suitability of Location
- Constructability

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NSDF Waste Streams

Legacy & new wastes arising from operations, D&D

- CRL building demolitions, Environmental Remediation
- Legacy Waste currently in storage at CRL
- Whiteshell Laboratories closure wastes
- Port Hope Area Initiative post-closure wastes
- Waste from commercial activities
- Gentilly-1 and Douglas Point prototype reactor decommissioning waste

Facility Waste Acceptance Criteria

- Physical, Radiological and Chemical parameters
- Conceptual Waste Acceptance Criteria (WAC) ; Final WAC by design consultant – based on Performance Assessment

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NSDF Life-Cycle Timeline

Project	Operation & Expansion up to 1,000,000 m³ Waste Capacity	Decommissioning + Monitoring & Surveillance	Institutional Control
Following EA Decision - Construction			
5 years: 2015-2020	50 years: 2020 – 2070	30 years: 2070-2100	100s of years: 2100 – 2400 -.....

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Cultural Resource Management

56 registered heritage sites on the CRL site

East Mattawa Road Site

- Stage 2 Archaeological Assessment (2016 – active)
- Two relic shorelines exist at 170 and 180 metres above sea level which indicates pre-contact potential
- European settlement on Mattawa Road until 1944

Alternative Site 11A

- Stage 2 Archaeological Assessment (2014)
- Historic Site - Low Archaeological Significance
- Material collected and stored at Algonquin Cultural Center, Golden Lake

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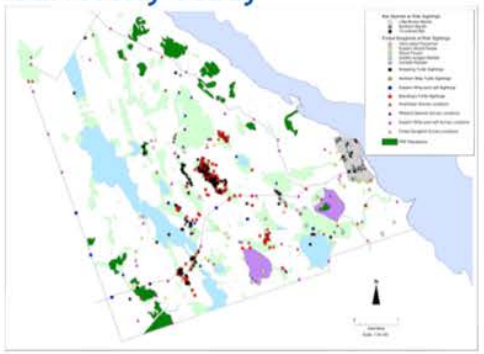
Biodiversity Study



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Valued Components - NSDF

What components are valuable to you?

- Species at Risk
- Ottawa River
- Wetlands
- Cultural Heritage – Archaeological sites
- Fish Species
- Water Quality
- Migratory Birds

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NPD Closure Project

Pat Daly - Head of NPD Closure Project

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Project Overview

The NPD Closure Project objective is to safely carry out decommissioning of a nuclear power plant and permanently dispose of all legacy materials

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NPD Timeline

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NPD 1962 and 2016

Since shut down much of the non-active equipment was removed


Turbine Hall


Pressure tubes


Control Room

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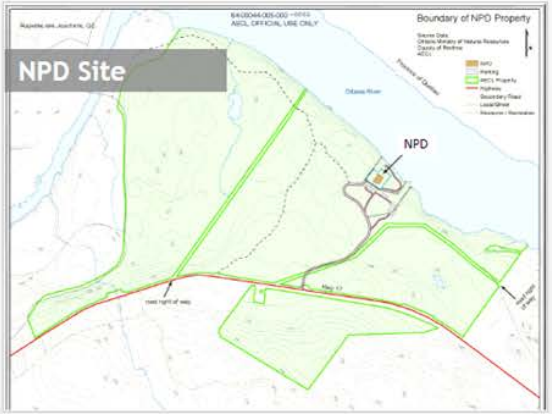
NPD Site



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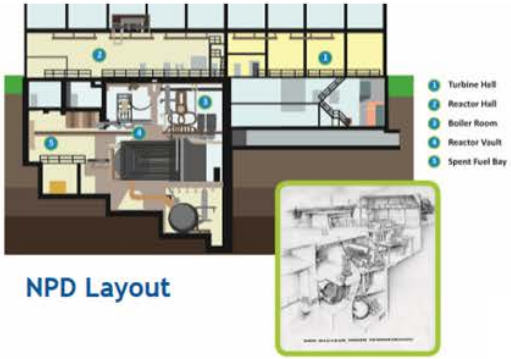

NPD Layout

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CNL's Project Objectives for NPD

Safely decommission the NPD site:

- Ensure employee/contractor safety
- Protect public safety
- Protect the environment

Provide alternate habitat for species at risk

Reduce legacy long-term liabilities

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Alternative Means

Options considered range from removal of the source term for storage at Chalk River to in-situ decommissioning

Conclusion: in-situ decommissioning offers the safest and most practicable approach:

- Reduces worker risk for radiological exposure and industrial accidents
- Reduces transportation and waste handling risks to the public and environment
- Eliminates multiple handling of waste packages
- Effective reduction of the liability – economically feasible using demonstrated technology

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North American Precedence for ISD Projects

1969	1969	1970	2007	2010	2011	2015
Hallam Nuclear Power Facility - Nebraska	Piqua Nuclear Power Facility - Ohio	BONUS - Puerto Rico	Super Kukla Reactor - Nevada	Heavy Water Component Test Reactor - South Carolina	Savannah River Site R & P Reactors- South Carolina	EBR II (Experimental Breeder Reactor II)- Idaho

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Proposed End State for NPD Site

- The reactor, associated systems and below grade structures grouted
- Above grade structures will be removed and grouted below grade
- The grouted area will be covered with an engineered barrier
- Long-term care and maintenance activities will continue for an agreed to performance period
- The final dose will be below public exposure thresholds as established by the CNSC
- Remaining land released for unrestricted use to AECL

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NPD Closure Sequence

Planning & Licensing

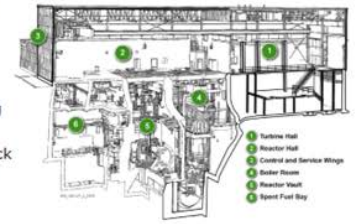
Procurement & Mobilization

Facility Preparation

Nuclear Side Grouting Operations

Superstructure & Stack Demolition – fill and grout

Long-term Care Operations



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NPD Closure Schedule

Decommissioning Phase	Associated Activities	Duration
Preparation	*Planning and Licensing*	*2016-2018*
	Procurement and Mobilization	
	Characterization	
	Hazard Abatement	
Execution	*Batch Plant	2018-2019
	Grouting of below grade structure	
	Removal of above grade structures and backfill	
	Install concrete cap and engineered barrier	
Closeout	Final site restoration	2020 - TBD
	Long-term care and maintenance activities	

** Start of "Project Activities" under Environmental Assessment scope.*

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Environmental Stewardship

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Effluent Monitoring

- Activity monitoring over the past 10 years show discharges far below regulatory limits - radioactivity is staying in place and decaying away
- Tritium is the most mobile radionuclide at NPD - effluent monitoring shows Tritium, Carbon-14 and Beta/Gamma in air or liquid all <0.001% of derived release limit

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Potential Valued Components - NPD

What components are valuable to you?

- Species at Risk – Chimney Swifts
- Ottawa River
- Wetlands
- Migratory Birds
- Fish Species
- Water Quality

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In-situ Decommissioning as a strategy:

- Proposed end state is to encase radioactivity in a very stable matrix to allow for continued decay – using demonstrated technology
- Incorporates regulatory, Aboriginal and public engagement
- Attentive to environmental stewardship

45

Thank you

Questions?

www.cnl.ca/npd

46

Species at Risk Conservation

There are nine (9) species at risk at the NPD site but only one (1) in the impacted area.

Chimney Swift is a threatened species and roosts in the NPD ventilation stack, thus stack removal linked to Environment Canada approval.

The NPD Closure Project is assessing the options:

1. Establishing an alternate habitat in order to remove the stack.
2. Complete decommissioning with current stack remaining.

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A.7.7 Northwatch and CELA Site Tour Meeting Notes – 2016 July 26

Environmental Assessments – Tours

MEETING NOTES FOR NORTHWATCH

Tuesday, July 26, 2016 – CNL NSDF and NPD Closure Project

8:00 – 8:20 AM	Arrive at Chalk River Laboratories –Met at outer gate, proceed to site in Corporate Communications van		
8:20 – 8:30 AM	Safety briefing, Welcome and Introductions	Pat Quinn	Photo consent forms signed by all except B. Lloyd
8:30 – 8:45 AM	CNL Overview	Pat Quinn	**Slide 4** B. LLOYD: When you produced the project descriptions did AECL have any review of the project descriptions? Would have AECL reviewed before releasing publically? T. MCCLENAGHAN: What do you mean the “enduring entity”? B. LLOYD: But within CNEA the competition of company members, within CNEA could change? Was Energy Solutions absorbed by Atkins? (Pat Daly answered) So the composition of companies within CNEA can change over time? What makes CNL an enduring entities if the CNEA”s companies can change? How is the commercial track changed or evolving with the transition from AECL to CNL?
8:45 - 9:00 AM	Environmental Assessment	Martin Klukas	**Slide 11** T. MCCLENAGHAN: Where there any comments apart from the three of us? B. LLOYD: Fall hearing? I haven’t seen a hearing notice? You are expecting a hearing in the Fall? Abridged meeting, as in a closed private meeting? Do you have a date for that? And Martin, what is you sense of the overall timeline? Just speculating, when do you expect the hearing to be when it is open?

			And the third project, the Whiteshell reactor decommissioning? Are you thinking of having of bringing Rolphton and Whiteshell closure to public review? How do you intend to approach the WR1 project in respect to the NPD? I mean, did you think they are going to continue to move on the same track because they started together? This is a little out of scope but what about Douglas Point, in terms of decommissioning? (Directed to Pat Quinn) The focus is on the CNL property? T. MCCLENAGHAN: Do you hope that CNL will move before WR-1? (Pat Daly answered) O. HENDRICKSON: In terms of the EIS contents: mentioned financial guarantees, performance bonds. Is there any money set aside as a contingency plans, to cover the cost of possibility to something happen, more than just what is there for operating. ? B. LLOYD: That raises for me the relationship the EA and the licencing. So my understanding and it may be wrong, these EA's are being done but it is a site-wide licence for the CRL. Am I correct? That there won't be a separate licence for these projects? What is your expectation? Let's take Rolphton for example: you have an EA, how do you anticipate moving from the EA stage to the licencing process. (Directed to Pat Daly) So Rolphton's licence term expires in 2018, is that correct? (Directed to Pat Daly) When you say all the prototypes you mean: Douglas Point Gentile 1 and NPD? In the case of the Whiteshell Licence, will there be a site wide licence? So do you anticipate doing a licence amendment as a group? (directed to Ole Hendrickson) The financial guarantee are part of the licence aren't they Ole? O. HENDRICKSON: You mentioned that this is a disposal project, are there any EA requirements, and are there any specific guidance in regards to a disposal project? B. LLOYD: In the EA, there will be a summary of the safety case, is CNL developing and making available at the time, for the licencing; so we aren't doing things over again? We are very interested in the integration, there has been at least one case where we have had an environmental assessment, key questions around the safety case. Very

			harmful to the credibility of the EA process for that safety question/ documents not to be provided at the same time. So that the safety case is not be punted to the future. I would recommend that it be done at the same time. If you are taking an integrated approached, is the safety case at the same time as the EA process? 4 We want it to be integrated. We are very interested in the long term outcome. We are very interested in having out safety questions answered at the same time. T. MCCLENAGHAN: I would request that you take it as given that we would like the safety analysis documents. If you could send this out so they don't have to look. B. LLOYD: Advice that these project be subject to a panel review was asked of the CNSC. In the event that that this isn't done, we want an information request process. (Quinn) We should proceed that this an information exchange. T. MCCLENAGHAN: I would take it that if we see where we have questions we will ask. B. LLOYD: When do you expect the EIS to be available? Complete EIS spring of 2017 Are those drafts that you are expected to revise? So you anticipate the final EIS in the spring of 2017?
9:00 – 9:30 AM	NSDF Overview	Jim Buckley	**Slide 16** B. LLOYD: What does VLLW mean? **Slide 19** T. MCCLENAGHAN: Is the 525, is that the whole diagram or one of the cells: B. LLOYD: So the perimeter we see outlined is for the 525, and would the remainder be the same, side by side? O. HENDRICKSON: I'm confused by the 15% figure? B. LLOYD: This is the East Mattawa site, do you have a similar level of detail for the other site? The difference between the 525 and the 1 million, is the difference between site need and commercial?

			So do you expect to have a detailed report on waste inventory prior to submission of the EIS? Do you expect to provide a detailed and enduring a WAC? Wouldn't you design to your WAC vs. developing it after? I would have thought your WAC drove your design. In your PJ the word commercial showed up in a few places, today you said hospital and university. In the future how do you define the commercial opportunity O. HENDRICKSON: Any kind of ball pack between contaminated debris and construction material? **Slide 23** B. LLOYD: Do you have an amount of waste for commercial, there was a number for the others? What are the numbers for Gentille 1 and Douglas Point? (will have to send them to her do have them) **Slide 29:** B. LLOYD: So the map how will 20 years out look? Will that map change in respect for this Project? The miscellaneous landfall, will this map change, in respect to the contaminated landfills and areas, as a result of this project and how will that change be reflected. **Slide 21:** B. LLOYD: Will surface contamination be remediated as a result of the project Will the broad site remediation, how will that be affected as a result of the project? The numbers that you gave us? Do they include volumes outside of the developed area? Can you show us on the map where the waste is coming from? So then, what is the sequencing in terms of getting the necessary characterization for around the property, relative to the EA submission, how do you sequence those activities?. I didn't get an understanding of the sequencing of the project. O. HENDRICKSON: I don't have a handle on the waste management areas like the people in the room. I always raise the question, about the NRX fuel bay soils and do they need to be removed, and have this came up in the discussions? We need some sort explanation about the NRX Plumes they are important.

9:30 – 10:00 AM	NPD Overview	Patrick Daly started at 10:25 AM	**Slide 39**: B. LLOYD: Land returned back to the provincial crown? **Slide 41** T. MCCLENAGHAN: All the above ground material that you are removing is going where? So it is staying on site? **Slide 40**: B. LLOYD: What is underneath the turbine hall? But that cap will go across the full width? Is the grouting work, research, formula development, will it be the same or similar for Pinawa?
10:00 – 10:15 AM	Refreshments / Preparation for departure / Board van		
10:20 – 11:20 AM	NSDF - East Mattawa Road Site and 11 A Site Poster Boards - Ecological Study, Archaeological Study Questions and answers	Annie Morin / Sue Titterington 18	**Annie Morin presenting:** B. LLOYD: Does East Mattawa Road run through the site? T. MCCLENAGHAN: What is the berm constructed of? So the species at risk, what are they on this site? Why is that central area so dark (red black area on the biodiversity poster board)? So that represents an individual siting on an individual day? O. HENDRICKSON: Do you have any evidence of the migration song birds nesting on the site (NSDF Preferred location)? T. MCCLENAGHAN: If you found that they were on the site would you plan any mitigation measures? (directed to Sue Titterington) T. MCCLENAGHAN: What is involved in a stage 3 archeological assessment? B. LLOYD: When are you going forward with the proposed vs alternative site? When is site selection going to be complete? So fall will be confirmed? The deep geological repository is it off the shelf? So the NSDF doesn't take the place of the GWMF? **Sue Titterington presenting:**

			T. MCCLENAGHAN: As you go into Stage 3, do you have to partner with the Algonquin's, Métis, the AOO? O. HENDRICKSON: Are there any AOO legends about this area? I have from Robert Whiteduck that there was a demon on site? **(On the road after NSDF)** B. LLOYD: How many families were displaced in the 30's O. HENDRICKSON: Idaho falls site? This site has seismic activities, does that affect it at all? B. LLOYD: That track we see, what is it for? (track along fence, fire break) B. LLOYD: (looking at a site map) Is this contamination from WMA C?
11:20 – 11:45 AM	Drive to NPD *Note: Guests will have the option to drive in their own vehicles or remain in the CNL van*		
11:45 – 12:45 PM	NPD – Upper Parking Deck Poster Board Overview Questions and answers	Patrick Daly	B. LLOYD: Was there blasting done during the build? Is there a lasting pin, at what depth is that? How deep is the River at NPD O. HENDRICKSON: What how much about the river is about the River? Where would monitoring wells be? B. LLOYD: Is there currently no ground water monitoring? Where are the current ground water monitoring locations? O. HENDRICKSON: Has there been evidence on elevated radiation in the wells? T. MCCLENAGHAN: If you're coming down the river, can you see the site? Same process for NPD as NSDF? We know about Chimney swifts, did you find anything else in the foot print? O. HENDRICKSON: Interested in needed to replace the air flow in the stack is this mean the Chimney swifts

			need the air? B. LLOYD: Todd, how did you get on this project? T. MCCLENAGHAN Is there potential radionuclides, do you know anything about potential migration? B. LLOYD: How did the open houses go?
12:45	Depart NPD Site		
Actions and questions that remain unanswered			
Request	T. McClenaghan	Would like to be provide the safety analysis documents, as soon as available.	
Questions to answer	B. Loyld	**Slide 21:** The numbers that you gave us? Do they include volumes outside of the developed area? Can you show us on the map where the waste is coming from? **Slide 21:** So then, what is the sequencing in terms of getting the necessary characterization for around the property, relative to the EA submission, how do you sequence those activities. I didn't get an understanding of the sequencing of the project **Slide 23:** What is the amount of decommissioning waste expected to be received at the NSDF from Gentille 1 and Douglas Point? **In van:** How many families were displaced in the 30's? **At NPD Site:** How deep is the River at NPD?	
	O. Hendrickson	**At NSDF site:** Are there any AOO legends about this area? I have from Robert Whiteduck that there was a demon on site?	

List of Participants

Northwatch Participants:

1. Meredith Brown, Riverkeeper, Ottawa Riverkeeper (Could not attend)
2. Ole Hendrickson, Researcher, Concerned Citizens of Renfrew County (Attended - OH)
3. Brennain Lloyd, Project Coordinator, Northwatch (Attended – BL)
4. Theresa McClenaghan, Executive Director and Counsel, Canadian Environmental Law Association (Attended – TM)
5. Jacqueline Wilson, Counsel, Canadian Environmental Law Association (Could not attend)

CNL Participants:

6. Jim Buckley, Director NSDF
7. Patrick Daly, Head of NPD Closure Project
8. Crystal Donak, Communications Officer
9. Treavor Grant, Senior Counsel Major Projects
10. Martin Klukas – Environmental Assessment Analyst
11. Pat Quinn, Director, Corporate Communications
12. Annie Morin, Environmental Specialist
13. Nancy Stack, Legal Counsel, Major Projects
14. Sue Titterington Environmental Analyst

A.7.8 Feedback Form

Canadian Nuclear Laboratories - Public Open Houses:
Nuclear Power Demonstration Closure Project (NPD) and Near Surface Disposal Facility (NSDF)

☐ Rapides-des-Joachims (June 20) ☐ Stonecliffe (June 22) ☐ Pembroke (July 6)
☐ Deep River (June 21) ☐ Sheenboro (June 29) ☐ Petawawa (July 7)

Name: _____ Street Address: _____
City: _____ _____
Province: _____ Phone: _____
Postal Code: _____ Email: _____

Please write any questions or comments you may have on the **NPD Closure Project**.

_____
_____
_____
_____
_____

Please write any questions or comments you may have on the **Near Surface Disposal Facility.**

_____
_____
_____
_____
_____

Would you like to receive a call from a team member about your questions, concerns or issues?

YES NO

Would you like to be added to the mailing list for information on future public open houses?

YES NO

If you have any future questions or comments about either project, please contact:

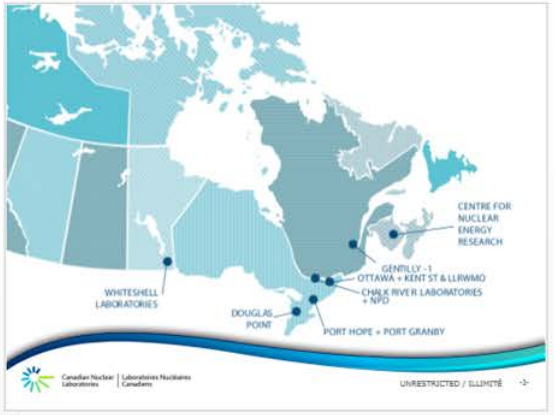
CNL Corporate Communications
ATTN: Environmental Assessments
286 Plant Road
Chalk River, ON
K0J 1J0
communications@cnl.ca *or*
www.cnl.ca/feedback

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

A.8 Rotary Club of North Renfrew Presentation

1

2



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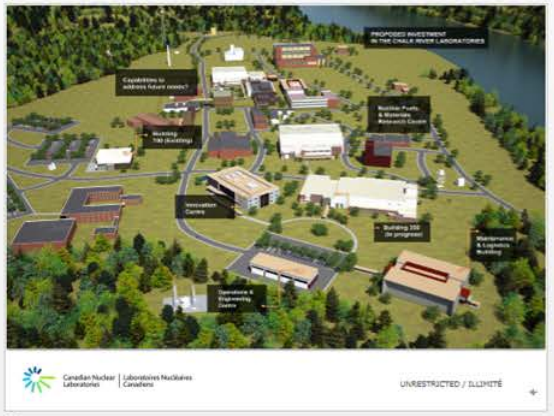

6

Vision 2026

Investments being made in the future of the laboratories.

Nuclear Materials & Fuels Research Centre

Replaces Bldg. 234, 375, 380 and NRU (fuel pools)

Innovation Centre

An opportunity to interface with customers, suppliers and academia.

Logistics & Maintenance Complex

Brings together materials and teams; consolidates numerous shops

UNRESTRICTED / ILLIMITÉ -7-

7

Vision 2026

Infrastructure and enabling investments

Infrastructure

New natural gas line, electrical switchyard, domestic waterline and a wastewater treatment facility are underway bring much needed upgrades to important site services.

UNRESTRICTED / ILLIMITÉ -8-

8

Two Key Projects

Near Surface Disposal Facility | NPD Closure

A key enabling facility for site revitalization. Provides disposal for LLW and ILW.

First power reactor in Canada to be decommissioning. In-situ disposal is proposed.

UNRESTRICTED / ILLIMITÉ -9-

9

Upcoming 12 months

Setting the stage for future work

- Transforming how we do business: our processes, our procedures, our approaches
- Advancing decommissioning and waste management work
- Science Advisory Board / Long Term 5 and10 year plans
- Physical site transformation
- Building 350 ready for service
- Routine Moly-99 production mission ceases (October)
- Voluntary Severance Program

UNRESTRICTED / ILLIMITÉ -10-

10

UNRESTRICTED / ILLIMITÉ -11-

11

Thanks.
Questions?

communications@cnl.ca
613 584 3311

UNRESTRICTED / ILLIMITÉ -12-

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A.9 Media Coverage

10 May 2016

WASTE & RECYCLING: Progress on US legacy cleanup
The US Nuclear Regulatory Commission and Department of Defense have signed a memorandum of understanding outlining their respective roles in the cleanup of radium and other unlicensed radioactive materials at military sites. Meanwhile, workers at the Y-12 National Security Complex have completed a project to remove over 2000 containers of legacy wastes two years ahead of schedule.

NUCLEAR POLICIES: US organizations' plea to keep nuclear 'czar'
Four US organizations have urged the US administration to keep the position of director of nuclear energy policy at the National Security Council, saying that the so-called 'nuclear energy policy czar' is crucial to the coordination of US nuclear trade, security and climate policy.

NUCLEAR POLICIES: UK grants $115 million to boost nuclear training
The UK government has announced details of almost £80 million ($115 million) in funding to support the creation of five new National Colleges that it says will support the delivery of major infrastructure projects, including new nuclear. The centres of high-tech training will "ensure the UK has skilled people in industries crucial to economic growth - high speed rail, nuclear, onshore oil and gas, digital skills and the creative industries", the Department for Business, Innovation and Skills said yesterday.

IN OTHER NEWS:

Unit 1 of Shikoku Electric Power's Ikata nuclear power plant in Japan's Ehime prefecture officially entered the decommissioning phase today. The company's board of directors made the decision at a meeting on 25 March to decommission the 538 MWe (net) pressurized water reactor, which began commercial operation in September 1977, as it would be too costly to carry out the required safety upgrades. It is the sixth Japanese reactor to be officially taken out of service since the "accounting-related system to smoothly proceed with decommissioning" was introduced in March 2015.

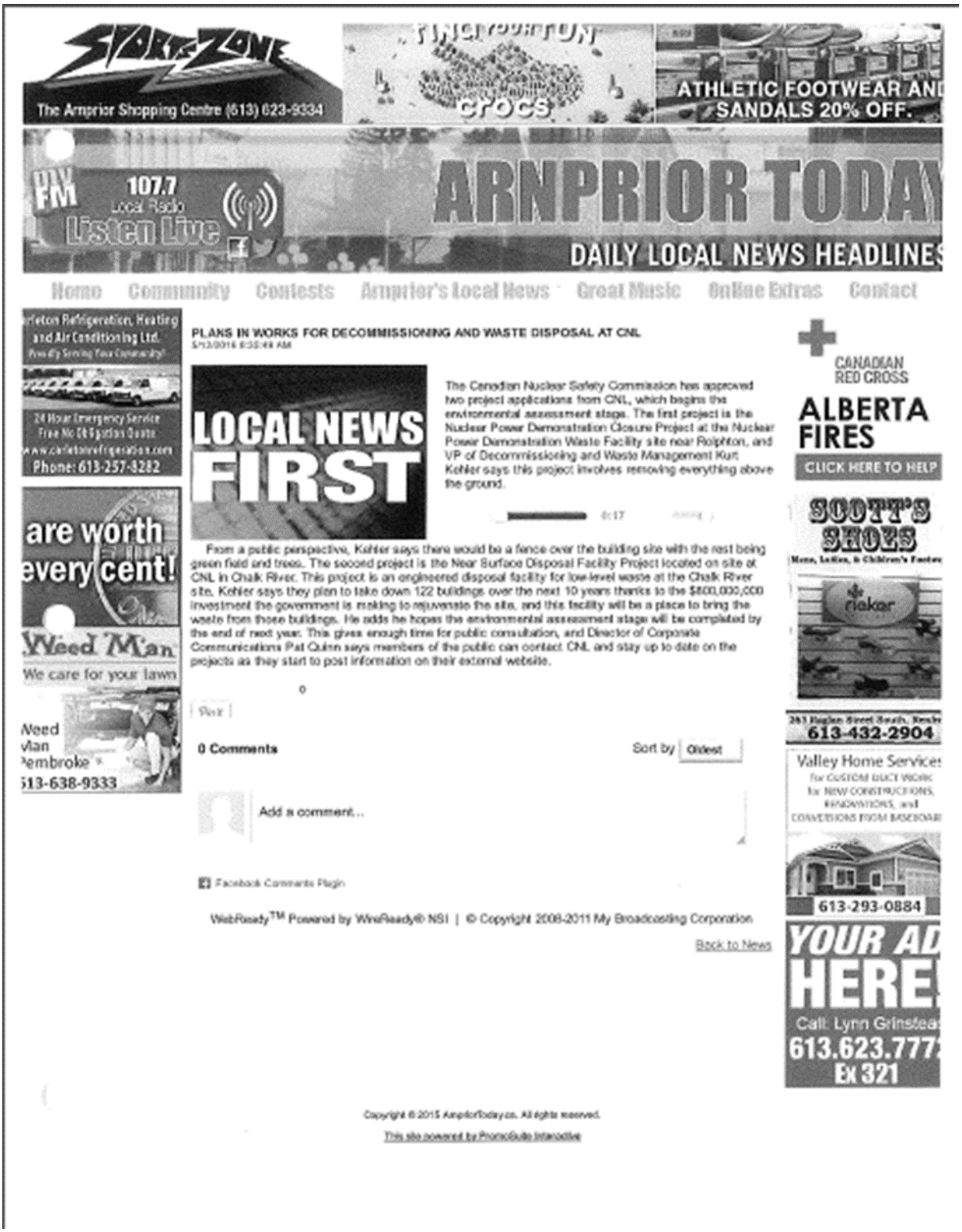
USA-based small modular reactor developer NuScale Power announced today that it will hold a supplier day in Sheffield, UK, on 13 July. "Potential suppliers are being invited to participate in a day of presentations, workshops and one-to-one meetings designed to inform them of the company's plans for the UK market and how they can become involved in NuScale's program," the company said. In March, NuScale said it will put its power module design forward as part of the UK's competition to identify the best value SMR design for the UK.

The Canadian Nuclear Safety Commission has begun federal environmental assessments for two projects submitted by Canadian Nuclear Laboratories. They are the Nuclear Power Demonstration Closure Project - CNL's proposed in-situ decommissioning of the Nuclear Power Demonstration Waste Facility site in Ontario - and the Near Surface Disposal Facility Project - an engineered facility for low-level waste at the Chalk River Laboratories site. The assessments aim to identify possible adverse environmental effects of the proposed projects and determine whether these can be mitigated.

Adi Patterson has been appointed to another five-year term as chief executive officer of the Australian Nuclear Science and Technology Organisation. Patterson has held the position since March 2009 and was formally reappointed by Ansto chair Jim McDowell on 29 April after endorsement by the Australian cabinet.

Correction: JSC Akkuyu has corrected a statement issued yesterday and reported by *World Nuclear News*. A correct version of the news item is as follows:

JSC Akkuyu Nuclear is focused on its current strategic goal to attract investment into its project to build a nuclear power plant in Turkey. The announcement yesterday follows a decision made in April by its board of directors. To help achieve this goal, Fuad Akhundov has been appointed as deputy chairman of the board in accordance with Article 5.5 of the 2010 intergovernmental agreement between Russia and Turkey, and with the consent of the Ministry of Energy and Natural Resources. Oleg Titov has been recently appointed as Akkuyu Nuclear's deputy CEO, it added.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PLANS IN WORKS FOR DECOMMISSIONING AND WASTE DISPOSAL AT CNL
LOCAL NEWS FIRST
The Canadian Nuclear Safety Commission has approved two project applications from CNL, which begins the environmental assessment stage. The first project is the Nuclear Power Demonstration Closure Project at the Nuclear Power Demonstration Waste Facility site near Rolphton, and VP of Decommissioning and Waste Management Kurt Kohler says this project involves removing everything above the ground.
From a public perspective, Kohler says there would be a fence over the building site with the rest being green field and trees. The second project is the Near Surface Disposal Facility Project located on site at CNL in Chalk River. This project is an engineered disposal facility for low-level waste at the Chalk River site. Kohler says they plan to take down 122 buildings over the next 10 years thanks to the $800,000,000 investment the government is making to rejuvenate the site, and this facility will be a place to bring the waste from those buildings. He adds he hopes the environmental assessment stage will be completed by the end of next year. This gives enough time for public consultation, and Director of Corporate Communications Pat Quinn says members of the public can contact CNL and stay up to date on the projects as they start to post information on their external website.
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Canada CMCA Audited

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Please recycle

This week in history

10 years ago

MAY 24, 2006: A presentation at the Deep River Library informed business owners of the rules behind the legislation that will force smokers across Ontario to "butt out" by the end of May. The Smoke-Free Ontario Act will be in effect as of May 31, 2006, prohibiting smoking in all enclosed work and public places.

MAY 24, 2006: Jay Morrison, the canoeist who is "paddling Canada for a cause," reached Deep River on Sunday. Morrison has begun a journey that has never before been completed - canoeing from the Atlantic to the Arctic Ocean in less than a year.

20 years ago

MAY 22, 1996: Officials at CFB Petawawa say that public access to the Petawawa Research Forest will be retained as much as possible. But the military is also making it clear that there will be limitations to hunting and other activities that have taken place there for generations. The Department of National Defence owns the 100 sq km property that is home to the Petawawa National Forestry Institute, which is closing its doors at the end of August.

MAY 22, 1996: Just the facts. That is what at least one bargaining unit at the Chalk River Laboratories is seeking from Atomic Energy of Canada Ltd on the issue of contracting out. About 200 positions are being eliminated at CRL and Whiteshell Laboratories in Manitoba, and more reductions are anticipated. However, the move toward contracting out of certain services within AECL is causing concern to members of the clerical and secretarial union at Chalk River.

30 years ago

MAY 21, 1986: All stores in Deep River may, if they so wish, be open for business on Sundays and statutory holidays between the hours of 11 am and 6 pm. Deep River council in a majority vote of 7-1 approved a bylaw to that effect at a special meeting last Tuesday, in time for the Victoria Day weekend.

MAY 21, 1986: Hockey player Drew Garneau, a native of Deep River, was presented with an athletic letter at the recent Athletic Awards dinner held at Saint Mary's University, NS for his outstanding contribution to the varsity program. Selected team captain this year, Garneau led by his example, both on and off the ice, in a difficult transition year for the Huskies.

40 years ago

MAY 19, 1976: Firefighters in Deep River are objecting strongly to any decrease in the size of their force. As well, by the end of last week, approximately 600 residents had signed a petition supporting the firemen in their efforts. The storm of protest is a result of a notice of motion presented at council May 5, that the fire department be reduced by three men, from nine to six.

MAY 19, 1976: In what could be the last try to revitalize the sagging minor baseball program in Deep River, a special task force recommended last week that immediate improvements be made to the area of the ball diamonds in Cedar Park. In its report to the Municipal Recreation Committee, the task force proposed improving the backstops, resurfacing the diamonds, and installing a vandal-proof water fountain.

50 years ago

MAY 18, 1966: Eleven men of the Rolph, Buchanan, Wylie and McKay volunteer fire department, including their Chief Carl Gutzman, got some first-hand firefighting practice on Saturday. In addition they helped to rid Mountain View Subdivision of a building long considered an eyesore by residents as they burned down the old farmhouse, once the home of Albert Wagner, and the shed behind.

MAY 18, 1966: Ampior again took top place by a comfortable margin in the Renfrew County High School Track meet held at Mackenzie High School in Deep River on Saturday. Several new records were set during the day's competition. K. Almqvist of Deep River did the senior girls' 440 in 65.8 and the intermediate girls' 220 in 28.6. In the boys division, Archie Smith of Deep River set a new record with a 10 ft pole vault.

55 years ago

MAY 17, 1961: At a special vestry meeting of St. Barnabas Church Sunday, the congregation overwhelmingly voted to obtain financing and detailed plans for the new church to be built in 1962. Jim Kennedy, chairman of the building committee, presented the committee's report and gave some additional descriptions of the new church. The architect's estimate for the building and furnishings is $123,000.

CNL submits projects for EA approval

NPD site, low-level waste facility

The Canadian Nuclear Safety Commission (CNSC) has begun environmental assessments (EA) for two new projects submitted by Canadian Nuclear Laboratories (CNL).

The purpose of an EA under the Canadian Environmental Assessment Act, 2012 is to identify the possible environmental effects of a proposed project, and to determine whether these effects can be mitigated before deciding if the project is allowed to proceed.

The first proposed project is the Nuclear Power Demonstration Closure Project at the NPD site located near Rolphton.

CNL is proposing to decommission the facility using an "in situ" approach, whereby above-ground structures would be removed, placed underground and grouted in place to create a permanent concrete monolith.

The second proposed project is the Near Surface Disposal Facility Project located on the Chalk River Laboratories site.

The proposed project is an engineered disposal facility for low-level waste at the Chalk River Laboratories site.

NPD

As part of its contract with the federal government, CNL is proposing to decommission the Nuclear Power Demonstration waste facility, a former nuclear generating station that operated until 1987.

The structures that currently remain on site include the main reactor building, a diesel generator, a ventilation stack, a pressure relief duct, a guardhouse, foundations from previously removed structures, two landfills, buried utilities and drainage systems, and temporary structures such as sea containers and portable washrooms.

CNL is proposing the following activities:

- assembly and operation of a grout batch mixing plant
- grouting of below-grade (underground) structures
- removal of above-grade structures for use as backfill
- installation of concrete cap and engineered barrier over the grouted area
- final site restoration
- long-term care and maintenance activities.

>CONTINUED ON PAGE 5

Municipal Week

The following is a listing of upcoming local municipal meetings. For more information on meetings listed, visit the websites: www.deep-river.ca, www.laurentianhills.ca and townshipsouthnedelaramaria.ca.

Wednesday, May 18

7 pm, Deep River council, DR town hall
7 pm, Laurentian Hills council, LH municipal hall, Pt. Alexander
7 pm, Head, Clara, Maria recreation committee meeting, HCM township hall, Stonecliffe

Thursday, May 19

7 pm, Deep River council training session, DR town hall

CNL submits projects for approval

CONTINUED FROM PAGE 2

Some temporary infrastructure – such as mobile offices and washrooms, as well as an increase to the electrical services – would also be required in order to carry out the decommissioning.

Water-holding tanks and fuel storage may also be required on site to support the proposed project.

Additional groundwater monitoring wells would be installed, as required, to monitor the performance of the decommissioned facility.

Chalk River

The Near Surface Disposal Facility is a proposed engineered disposal facility for low-level waste planned for the Chalk River Laboratories (CRL).

The Near Surface Disposal Facility is planned to have an operating life of at least 50 years and as proposed, would be an engineered mound built at near-surface level on the CRL site.

The engineered mound would be cellular, made up of multiple disposal cells consisting of:

- base liner and final cover systems
- leachate collection and leak detection systems
- environmental monitoring systems.

The proposed project would also include:

- a wastewater treatment plant
- supporting infrastructure, such as a truck wheel wash, vehicle monitoring and weighing stations, work stations and change facilities, security systems to monitor access and egress, construction trailers, and marine containers or tents for storage of construction materials.

Under the Nuclear Safety and Control Act, both CNL projects require approval by the CNSC and an environmental assessment conducted under the Canadian Environmental Assessment Act.

An EA decision affirming that the proposed activities will not cause serious adverse environmental effects would also be required before the CNSC can make a licensing decision on the proposals.

For more information, see the CNSC website at www.nuclearsafety.gc.ca.

His Excellency Andrzej Duda (centre), president of the Republic of Poland, receives a brief on Canadian Army Airborne equipment during his visit to the 3rd Battalion, The Royal Canadian Regiment at Garrison Petawawa, last Tuesday. Duda visited the base to meet Canadian soldiers who participated in Operation Reassurance in Poland and other Eastern European countries over the past year.

Photo: Patrick Edwards, Directorate of Army Public Affairs

Housing forum lays groundwork

CONTINUED FROM PAGE 3

Loughead also said the day was a great success in bringing together a range of participants.

"It was a positive day in keeping things moving forward in support of our new Official Plan and giving people the opportunity to know that Deep River is open for business," she said.

Guest speaker Vivian Chih of the Canada Mortgage and Housing Corporation (CMHC) noted that the recent federal budget doubled the money available for affordable housing to $2.3 billion.

"These are prosperous times for people who are interested in this kind of housing," she said.

Among the programs CMHC offers, groups can apply for seed funding of up to $50,000 in grants and $200,000 in loans to help with the "soft costs" of getting projects off the ground - the costs of planning and incorporating a non-profit housing corporation, for example.

"We are looking to create momentum," she said, to help projects that might create new affordable housing units within five years.

"There's new opportunities for new players. I hope we'll be able to help some of you here."

Appendix B

Q2 and Q3

B.1 Formal Comments

Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required [Actions and proposed responses]
Public Information Session	Yes	Yes	S'il vous plait, plus d'information, cirteria. Please have decision criteria for NPD for 4 opitons and possibly 5th option for NPD closure, transportation of reactor and storage site options, cost is not only decision factor.	In terms of decision criteria, the Environmental Assessment (EA) process CNL has been following is in compliance with the Canadian Environmental Assessment Act (CEAA) 2012 and a number of regulatory guidelines issued by the Canadian Nuclear Safety Commission (CNSC). The first step in the alternative means assessment process was to determine options that were both technically and economically feasible. Transportation of the reactor and storage at the CRL site was considered as part of Option 2 (Partial Removal) as well as Option 3 (Full Removal). Options that are both technically and economically feasible were then assessed against a number of environmental and socio-economic factors, referred to as Valued Components, which each option may impact. It was the potential impact on these Valued Components that ultimately resulted in the selection of In-Situ Decommissioning as the preferred technique. At the Public Information Sessions in October, CNL shared information on the costs for all options, in response to previous public feedback, and to ensure transparency. While, cost does factor into this decision criteria, it is not the ultimate factor - potential risk to the environment is.

Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required [Actions and proposed responses]
Public Information Session		No	I think the in-situ option is the best option and I like the idea of keeping the stack for the Swifts.	No action required.
Public Information Session			The time line for the project is very ambitious, especially taking into account external factors like regulatory feedback timeline and aboriginal engagement.	No action required.
Public Information Sessions			Very good visuals - billboards, video. Good coverage of different key components of the project, e.g., does not over-emphasize EIS over, say Safety assessment. Television audio could be louder, to compensate for room noise.	No action required
Public Information Session			Bonne explication des Projets tres interresant aussi. Meilleur connaissance.	No action required.
Public Information Session		Yes	[Add to contact list for updates]	Added to contact list for updates.

Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required [Actions and proposed responses]
Public Information Session	Yes	Yes	Containment of the calandria may be a concern to the public. Please ensure this is well explained.	We appreciate your advice and are prepared to make sure we explain this in detail when we have finalized our plan. We are still in the process of assessing which technique would be best suited to provide containment of the calandria. Two possibilities include filling the reactor vault with bentonite or with an aluminum-compatible grout. As we move forward with the project we must provide a safety case for the NPD Closure Project, and containment of the calandria is one of the elements of that process. The results of the post-closure safety assessment will be made public, including how we propose to contain the calandria in the as the project progresses. We are also looking to share a summary of the post-closure safety assessment on the project web page, in order to make this information readily accessible to our local communities, and the broader Canadian public.
Public Information Session		Yes	[Add to contact list for updates]	Added to contact list.
Public Information Session	No	Yes	Good information, well informed. Was impressed with display.	No action required.
Public Information Session		Yes	Answered.	No action required.

Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required [Actions and proposed responses]
Public Information Session	No	No	Is there any nuclear waste that will be entered into the Ottawa River? Who funds all this?	No action required.
Public Information Session	No	Yes	Great displays and explanations	No action required
Public Information Session	No	Yes	[Add to contact list for updates]	Added to contact list.
	No	Yes	Excellent presentation by presenter, interested to see the future plans for the site.	No action required
Public Information Session	No	No	Depth of presentation material significantly enhanced since first round of open houses; presents very well; looks great	No action required.
Public Information Sessions		Yes	[Would like videos; add to contact list for updates]	We have now uploaded these videos to our YouTube Channel. To find the following videos, please visit the following links: · NPD Closure Project: Chimney Swifts - https://www.youtube.com/watch?v=lxhQk9cMIkY · Nuclear Power Demonstration (NPD) Reactor Closure Project - https://www.youtube.com/watch?v=qKTBoL9kOjs · The Story of NPD – https://youtu.be/mdcXAOvRp78

Public Information Session			1. You probably built it for earthquakes. 2. Weather is changing because of Global warming and because we are removing too much oil, which keeps the core of our earth cool. Is your set up designed to take heavy rains wash out proof? 3. Is your bunkers, lightning proof for natural storms which might get stronger with time. 4. 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 destroyed by its own technology if we don't beat the bad guys to it. North Korea won't even need a missile to reach us.	1. 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 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. 2. Yes, the design for the decommissioning of NPD takes into account the possibility of heavy rains. Once the site below grade structure is filled

Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required [Actions and proposed responses]
				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. 3. 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. 4. 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.

Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required [Actions and proposed responses]
Public Information Session	No	No	Very happy about the decision to keep the original stack for the benefit of the Chimney Swifts.	No action required.
Public Information Session	No	Yes	Very impressed with the depth of science and engineering on this project and the safety precautions being functioned into the design and execution. Well documented and explained. I only hope that the decommissioning of Des Joachims Dam is planned as well!	No action required.
Public Information Session	Email	Yes	1. What are the plans for the site post-closure? 2. There are facilities at the site that would be of benefit to the local community: the fire hydrant/dry pipe and the boat launch. Has the Township of Laurentian Hills been contacted regarding assuming ownership or at least access to these features?	1. Following completion of the proposed decommissioning of the Nuclear Power Demonstration (NPD), the immediate area of the entombed reactor will be a waste disposal facility and remain under institutional control and not open to the public. The final determination of how the remaining NPD property will be used is left to Atomic Energy of Canada Limited (AECL). 2. The NPD Closure Project has engaged directly with the Township of Laurentian Hills at several Environmental Stewardship Council meetings as well as in discussions at recent open houses. Additionally, in October the NPD Closure Project hosted the mayor, several councillors and township staff to tour the NPD site and discuss the project.

Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required [Actions and proposed responses]
Public Information Session		Yes	[Would like videos]	We have now uploaded these videos to our YouTube Channel. To find the following videos, please visit the following links: · NPD Closure Project: Chimney Swifts - https://www.youtube.com/watch?v=lxhQk9cMIkY · Nuclear Power Demonstration (NPD) Reactor Closure Project - https://www.youtube.com/watch?v=qKTBoL9kOjs · The Story of NPD – https://youtu.be/mdcXAOvRp78
Public Information Session		Yes	[Would like videos]	We have now uploaded these videos to our YouTube Channel. To find the following videos, please visit the following links: · NPD Closure Project: Chimney Swifts - https://www.youtube.com/watch?v=lxhQk9cMIkY · Nuclear Power Demonstration (NPD) Reactor Closure Project - https://www.youtube.com/watch?v=qKTBoL9kOjs · The Story of NPD – https://youtu.be/mdcXAOvRp78

			The published descriptions of both projects contain enough detail to raise concerns by anyone familiar with waste management and decommissioning, but not enough information to provide sufficient assurances. Both projects will leave intermediate waste in near-surface repositories. Without knowing more than that, their long term safety is a wide open question. How will institutional control over centuries be provided, how much will it cost, and how will the cost 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 more ice ages, because that is the timescale involved. *Pat Quinn plans to call me about organizing a session for AECL retirees and other interested CRL neighbours to go into more details about these and other points than it is possible at an Open House. I will be abroad and unavailable from Nov. 15 - Nov 30.	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. 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 feedback from stakeholders in local communities, the nuclear industry and Indigenous communities and organizations. 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. 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. 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.” For the NPD Closure Project, during the institutional control period, the total radioactivity will decay below regulatory

Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required [Actions and proposed responses]
				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 as part of the environmental assessment and licensing process. 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. 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

Event	Contact with Answer	Add to Mailing List	Written Comment from Stakeholder	CNL Action Required [Actions and proposed responses]
			I would love to observe the grouting of the main building when this is done.	Unfortunately, it will not be possible to observe the grouting of the main building in person due to security requirements as well as the safety precautions that will be followed during grouting operations. Our communications team, together with the NPD Closure Project, will explore the possibility of video capture of grouting activities and if possible this material will be shared with the public on our website.
Public Information Session		Yes	[Add to contact list for updates]	Added to contact list.
Mail	No	Yes	Main concern: radioactive seepage into the Ottawa River or air, affecting communities and residents downriver from the Site Closure Project	Added to contact list
Email			[Information on Chimney Swifts]	Project team member sent information on the Chimney Swifts
Mail	Yes		Looks like a good closure. Hope you will continue to hold the licence just in case of any future development that might be required in this area in the future.	No answer required.

B.2 Website Analytics

Canadian Nuclear Labratories - OneWeb
1. CNL - Filtered

GO TO REPORT

All Traffic

Aug 1, 2016 - Dec 14, 2016

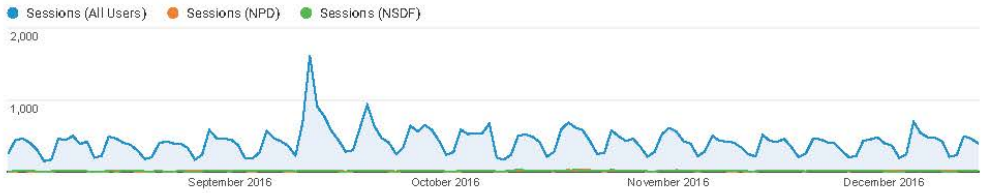
All Users
100.00% Sessions

NPD
1.47% Sessions

NSDF
1.51% Sessions

Explorer

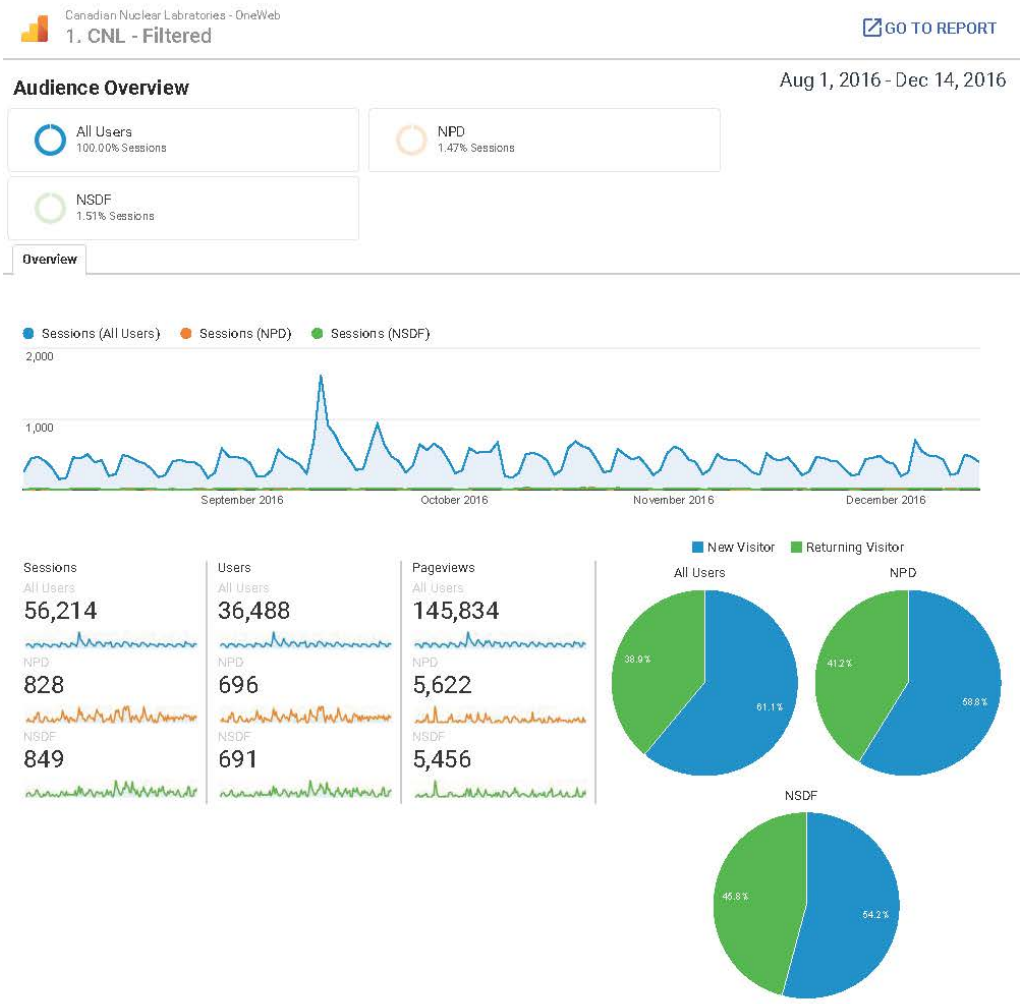
Summary



Source / Medium	Acquisition			Behavior			Conversions Goal 1: Partner Collaboration Inquiry		
	Sessions	% New Sessions	New Users	Bounce Rate	Pages / Session	Avg. Session Duration	Partner Collaboration Inquiry (Goal 1 Conversion Rate)	Partner Collaboration Inquiry (Goal 1 Completions)	Partner Collaboration Inquiry (Goal 1 Value)
All Users	56,214 % of Total: 100.00% (56,214)	61.05% Avg for View: 61.05% (0.00%)	34,321 % of Total: 100.00% (34,321)	47.93% Avg for View: 47.93% (0.00%)	2.59 Avg for View: 2.59 (0.00%)	00:02:06 Avg for View: 00:02:06 (0.00%)	<0.01% Avg for View: <0.01% (0.00%)	2 % of Total: 100.00% (2)	$0.00 % of Total: 0.00% ($0.00)
NPD	828 % of Total: 1.47% (56,214)	58.82% Avg for View: 61.05% (-3.67%)	487 % of Total: 1.42% (34,321)	21.26% Avg for View: 47.93% (-55.65%)	6.79 Avg for View: 2.59 (161.73%)	00:08:27 Avg for View: 00:02:06 (302.61%)	0.00% Avg for View: <0.01% (-100.00%)	0 % of Total: 0.00% (2)	$0.00 % of Total: 0.00% ($0.00)
NSDF	849 % of Total: 1.51% (56,214)	54.18% Avg for View: 61.05% (-11.26%)	460 % of Total: 1.34% (34,321)	22.26% Avg for View: 47.93% (-53.56%)	6.43 Avg for View: 2.59 (147.72%)	00:07:51 Avg for View: 00:02:06 (273.95%)	0.00% Avg for View: <0.01% (-100.00%)	0 % of Total: 0.00% (2)	$0.00 % of Total: 0.00% ($0.00)
1. google / organic									
All Users	**30,185** (53.70%)	61.05%	18,427 (53.69%)	44.26%	2.80	00:02:15	<0.01%	2 (100.00%)	$0.00 (0.00%)
NPD	**488** (58.94%)	55.74%	272 (55.85%)	20.49%	7.12	00:08:47	0.00%	0 (0.00%)	$0.00 (0.00%)
NSDF	**484** (57.01%)	51.45%	249 (54.13%)	22.52%	6.38	00:07:48	0.00%	0 (0.00%)	$0.00 (0.00%)
2. (direct) / (none)									
All Users	**13,980** (24.87%)	59.48%	8,316 (24.23%)	62.15%	1.94	00:01:40	0.00%	0 (0.00%)	$0.00 (0.00%)
NPD	**138** (16.67%)	68.84%	95 (19.51%)	28.26%	5.71	00:08:10	0.00%	0 (0.00%)	$0.00 (0.00%)
NSDF	**120** (14.13%)	69.17%	83 (18.04%)	17.50%	6.28	00:09:05	0.00%	0 (0.00%)	$0.00 (0.00%)
3. trr.tbe.taleo.net / referral									
All Users	**4,155** (7.39%)	61.01%	2,535 (7.39%)	30.85%	2.90	00:01:57	0.00%	0 (0.00%)	$0.00 (0.00%)
NPD	**17** (2.05%)	70.59%	12 (2.46%)	0.00%	14.24	00:16:13	0.00%	0 (0.00%)	$0.00 (0.00%)

	NSDF	14 (1.65%)	50.00%	7 (1.52%)	0.00%	21.64	00:17:35	0.00%	0 (0.00%)	$0.00 (0.00%)
4.	bing / organic									
	All Users	1,815 (3.23%)	57.52%	1,044 (3.04%)	27.16%	3.46	00:03:10	0.00%	0 (0.00%)	$0.00 (0.00%)
	NPD	26 (3.14%)	53.85%	14 (2.87%)	19.23%	6.27	00:08:28	0.00%	0 (0.00%)	$0.00 (0.00%)
	NSDF	41 (4.83%)	46.34%	19 (4.13%)	14.63%	6.46	00:07:56	0.00%	0 (0.00%)	$0.00 (0.00%)
5.	m.facebook.com / referral									
	All Users	1,298 (2.31%)	88.83%	1,153 (3.36%)	84.13%	1.27	00:00:27	0.00%	0 (0.00%)	$0.00 (0.00%)
	NPD	13 (1.57%)	76.92%	10 (2.05%)	38.46%	2.08	00:01:02	0.00%	0 (0.00%)	$0.00 (0.00%)
	NSDF	37 (4.36%)	51.35%	19 (4.13%)	72.97%	1.43	00:01:17	0.00%	0 (0.00%)	$0.00 (0.00%)
6.	nuclearsafety.gc.ca / referral									
	All Users	649 (1.15%)	60.09%	390 (1.14%)	32.97%	2.96	00:02:06	0.00%	0 (0.00%)	$0.00 (0.00%)
	NPD	17 (2.05%)	64.71%	11 (2.26%)	11.76%	7.24	00:07:13	0.00%	0 (0.00%)	$0.00 (0.00%)
	NSDF	28 (3.30%)	42.86%	12 (2.61%)	10.71%	6.14	00:08:45	0.00%	0 (0.00%)	$0.00 (0.00%)
7.	yahoo / organic									
	All Users	437 (0.78%)	70.71%	309 (0.90%)	25.63%	3.69	00:03:05	0.00%	0 (0.00%)	$0.00 (0.00%)
	NPD	11 (1.33%)	45.45%	5 (1.03%)	0.00%	6.45	00:06:47	0.00%	0 (0.00%)	$0.00 (0.00%)
	NSDF	10 (1.18%)	40.00%	4 (0.87%)	10.00%	4.00	00:02:54	0.00%	0 (0.00%)	$0.00 (0.00%)
8.	aecl.ca / referral									
	All Users	349 (0.62%)	67.91%	237 (0.69%)	24.07%	4.49	00:04:21	0.00%	0 (0.00%)	$0.00 (0.00%)
	NPD	41 (4.95%)	75.61%	31 (6.37%)	9.76%	6.95	00:08:27	0.00%	0 (0.00%)	$0.00 (0.00%)
	NSDF	48 (5.65%)	75.00%	36 (7.83%)	8.33%	8.04	00:08:33	0.00%	0 (0.00%)	$0.00 (0.00%)
9.	cnl.ca / referral									
	All Users	337 (0.60%)	3.56%	12 (0.03%)	16.02%	5.37	00:05:07	0.00%	0 (0.00%)	$0.00 (0.00%)
	NPD	6 (0.72%)	0.00%	0 (0.00%)	0.00%	11.17	00:28:00	0.00%	0 (0.00%)	$0.00 (0.00%)
	NSDF	9 (1.06%)	0.00%	0 (0.00%)	0.00%	16.22	00:29:38	0.00%	0 (0.00%)	$0.00 (0.00%)
10.	facebook.com / referral									
	All Users	311 (0.55%)	59.49%	185 (0.54%)	60.13%	2.20	00:01:47	0.00%	0 (0.00%)	$0.00 (0.00%)
	NPD	13 (1.57%)	46.15%	6 (1.23%)	76.92%	3.92	00:03:31	0.00%	0 (0.00%)	$0.00 (0.00%)
	NSDF	7 (0.82%)	57.14%	4 (0.87%)	0.00%	4.29	00:07:02	0.00%	0 (0.00%)	$0.00 (0.00%)

Rows 1 - 10 of 292


Canadian Nuclear Labratories - OneWeb
1. CNL - Filtered
GO TO REPORT
Audience Overview
Aug 1, 2016 - Dec 14, 2016
All Users
100.00% Sessions
NPD
1.47% Sessions
NSDF
1.51% Sessions
Overview
Sessions (All Users)
Sessions (NPD)
Sessions (NSDF)
2,000
1,000
September 2016
October 2016
November 2016
December 2016
Sessions
All Users
56,214
NPD
828
NSDF
849
Users
All Users
36,488
NPD
696
NSDF
691
Pageviews
All Users
145,834
NPD
5,622
NSDF
5,456
New Visitor
Returning Visitor
All Users
38.9%
61.1%
NPD
41.2%
58.8%
NSDF
45.8%
54.2%
Pages / Session
All Users
2.59
NPD
6.79
NSDF
6.43
Avg. Session Duration
All Users
00:02:06
NPD
00:08:27
NSDF
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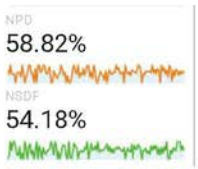
Bounce Rate
All Users
47.93%
NPD
21.26%
NSDF
22.26%
% New Sessions
All Users
61.05%



	Language	Sessions	% Sessions
1.	en-us		
	All Users	33,495	59.58%
	NPD	509	61.47%
	NSDF	531	62.54%
2.	en-ca		
	All Users	11,816	21.02%
	NPD	182	21.98%
	NSDF	186	21.91%
3.	en-gb		
	All Users	7,200	12.81%
	NPD	72	8.70%
	NSDF	69	8.13%
4.	fr		
	All Users	852	1.52%
	NPD	24	2.90%
	NSDF	15	1.77%
5.	fr-ca		
	All Users	389	0.69%
	NPD	16	1.93%
	NSDF	5	0.59%
6.	zh-cn		
	All Users	344	0.61%
	NPD	1	0.12%
	NSDF	2	0.24%
7.	fr-fr		
	All Users	240	0.43%
	NPD	3	0.36%
	NSDF	8	0.94%
8.	ja		
	All Users	156	0.28%
	NPD	1	0.12%
	NSDF	2	0.24%
9.	ja-jp		
	All Users	141	0.25%
	NPD	1	0.12%
	NSDF	1	0.12%
10.	es		
	All Users	110	0.20%

Canadian Nuclear Laboratories - OneWeb
1. CNL - Filtered

GO TO REPORT

Location

Aug 1, 2016 - Dec 14, 2016

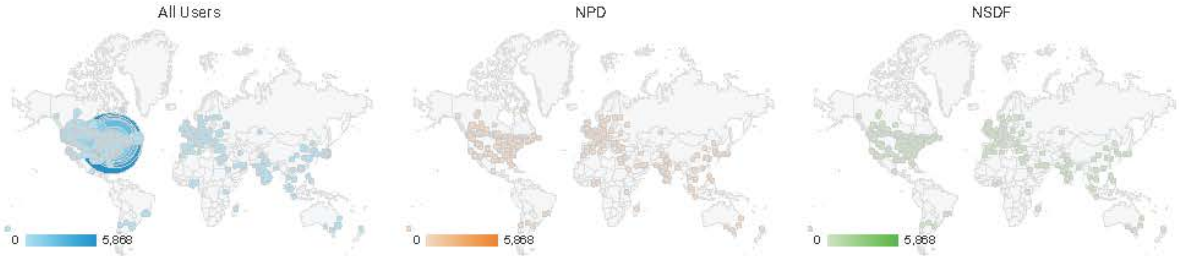
All Users
100.00% Sessions

NPD
1.47% Sessions

NSDF
1.51% Sessions

Map Overlay

Summary



City	Acquisition			Behavior			Conversions	Goal 1: Partner Collaboration Inquiry	
	Sessions	% New Sessions	New Users	Bounce Rate	Pages / Session	Avg. Session Duration	Partner Collaboration Inquiry (Goal 1 Conversion Rate)	Partner Collaboration Inquiry (Goal 1 Completions)	Partner Collaboration Inquiry (Goal 1 Value)
All Users	56,214 % of Total: 100.00% (56,214)	61.05% Avg for View: 61.05% (0.00%)	34,321 % of Total: 100.00% (34,321)	47.93% Avg for View: 47.93% (0.00%)	2.59 Avg for View: 2.59 (0.00%)	00:02:06 Avg for View: 00:02:06 (0.00%)	<0.01% Avg for View: <0.01% (0.00%)	2 % of Total: 100.00% (2)	$0.00 % of Total: 0.00% ($0.00)
NPD	828 % of Total: 1.47% (56,214)	58.82% Avg for View: 61.05% (-3.67%)	487 % of Total: 1.42% (34,321)	21.26% Avg for View: 47.93% (-55.65%)	6.79 Avg for View: 2.59 (161.73%)	00:08:27 Avg for View: 00:02:06 (302.61%)	0.00% Avg for View: <0.01% (-100.00%)	0 % of Total: 0.00% (2)	$0.00 % of Total: 0.00% ($0.00)
NSDF	849 % of Total: 1.51% (56,214)	54.18% Avg for View: 61.05% (-11.26%)	460 % of Total: 1.34% (34,321)	22.26% Avg for View: 47.93% (-53.56%)	6.43 Avg for View: 2.59 (147.72%)	00:07:51 Avg for View: 00:02:06 (273.95%)	0.00% Avg for View: <0.01% (-100.00%)	0 % of Total: 0.00% (2)	$0.00 % of Total: 0.00% ($0.00)
1. Toronto									
All Users	**5,868** (10.44%)	57.55%	3,377 (9.84%)	46.95%	2.65	00:02:09	0.00%	0 (0.00%)	$0.00 (0.00%)
NPD	**88** (10.63%)	60.23%	53 (10.88%)	32.95%	7.98	00:07:20	0.00%	0 (0.00%)	$0.00 (0.00%)
NSDF	**76** (8.95%)	50.00%	38 (8.26%)	22.37%	8.71	00:08:58	0.00%	0 (0.00%)	$0.00 (0.00%)
2. Ottawa									
All Users	**4,703** (8.37%)	57.79%	2,718 (7.92%)	39.49%	2.96	00:02:23	0.00%	0 (0.00%)	$0.00 (0.00%)
NPD	**108** (13.04%)	48.15%	52 (10.68%)	19.44%	6.77	00:06:48	0.00%	0 (0.00%)	$0.00 (0.00%)
NSDF	**107** (12.60%)	36.45%	39 (8.48%)	16.82%	7.11	00:07:34	0.00%	0 (0.00%)	$0.00 (0.00%)
3. Pembroke									
All Users	**3,885** (6.91%)	44.50%	1,729 (5.04%)	51.79%	2.19	00:01:45	0.00%	0 (0.00%)	$0.00 (0.00%)
NPD	**33** (3.99%)	45.45%	15 (3.08%)	18.18%	3.94	00:06:31	0.00%	0 (0.00%)	$0.00 (0.00%)
NSDF	**30** (3.53%)	60.00%	18 (3.91%)	23.33%	4.13	00:07:22	0.00%	0 (0.00%)	$0.00 (0.00%)

4. Deep River									
All Users	3,120 (5.55%)	38.49%	1,201 (3.50%)	57.88%	2.06	00:01:35	0.00%	0 (0.00%)	$0.00 (0.00%)
NPD	29 (3.50%)	55.17%	16 (3.29%)	13.79%	6.00	00:05:47	0.00%	0 (0.00%)	$0.00 (0.00%)
NSDF	47 (5.54%)	63.83%	30 (6.52%)	23.40%	5.04	00:04:22	0.00%	0 (0.00%)	$0.00 (0.00%)
5. Montreal									
All Users	2,786 (4.96%)	56.82%	1,583 (4.61%)	52.69%	2.42	00:01:46	0.00%	0 (0.00%)	$0.00 (0.00%)
NPD	42 (5.07%)	47.62%	20 (4.11%)	21.43%	6.60	00:07:34	0.00%	0 (0.00%)	$0.00 (0.00%)
NSDF	42 (4.95%)	40.48%	17 (3.70%)	28.57%	5.38	00:05:51	0.00%	0 (0.00%)	$0.00 (0.00%)
6. Petawawa									
All Users	2,632 (4.68%)	43.39%	1,142 (3.33%)	54.18%	2.09	00:01:45	0.00%	0 (0.00%)	$0.00 (0.00%)
NPD	22 (2.66%)	54.55%	12 (2.46%)	22.73%	6.59	00:11:00	0.00%	0 (0.00%)	$0.00 (0.00%)
NSDF	24 (2.83%)	54.17%	13 (2.83%)	41.67%	4.50	00:06:53	0.00%	0 (0.00%)	$0.00 (0.00%)
7. (not set)									
All Users	1,696 (3.02%)	66.21%	1,123 (3.27%)	53.01%	2.30	00:01:46	0.00%	0 (0.00%)	$0.00 (0.00%)
NPD	17 (2.05%)	70.59%	12 (2.46%)	11.76%	7.53	00:05:25	0.00%	0 (0.00%)	$0.00 (0.00%)
NSDF	23 (2.71%)	73.91%	17 (3.70%)	39.13%	6.43	00:06:27	0.00%	0 (0.00%)	$0.00 (0.00%)
8. Kingston									
All Users	1,463 (2.60%)	90.84%	1,329 (3.87%)	85.85%	1.38	00:00:29	0.00%	0 (0.00%)	$0.00 (0.00%)
NPD	5 (0.60%)	60.00%	3 (0.62%)	40.00%	3.00	00:08:35	0.00%	0 (0.00%)	$0.00 (0.00%)
NSDF	1 (0.12%)	100.00%	1 (0.22%)	0.00%	6.00	00:36:02	0.00%	0 (0.00%)	$0.00 (0.00%)
9. Winnipeg									
All Users	1,382 (2.46%)	65.92%	911 (2.65%)	43.63%	2.81	00:02:31	0.00%	0 (0.00%)	$0.00 (0.00%)
NPD	23 (2.78%)	52.17%	12 (2.46%)	26.09%	6.30	00:17:50	0.00%	0 (0.00%)	$0.00 (0.00%)
NSDF	11 (1.30%)	45.45%	5 (1.09%)	36.36%	4.64	00:09:43	0.00%	0 (0.00%)	$0.00 (0.00%)
10. Calgary									
All Users	1,067 (1.90%)	66.73%	712 (2.07%)	37.21%	3.02	00:02:42	0.09%	1 (50.00%)	$0.00 (0.00%)
NPD	16 (1.93%)	75.00%	12 (2.46%)	0.00%	9.00	00:10:04	0.00%	0 (0.00%)	$0.00 (0.00%)
NSDF	14 (1.65%)	78.57%	11 (2.39%)	21.43%	7.64	00:07:25	0.00%	0 (0.00%)	$0.00 (0.00%)

Rows 1 - 10 of 2757

Canadian Nuclear Laboratories - OneWeb
1. CNL - Filtered

GO TO REPORT

All Traffic

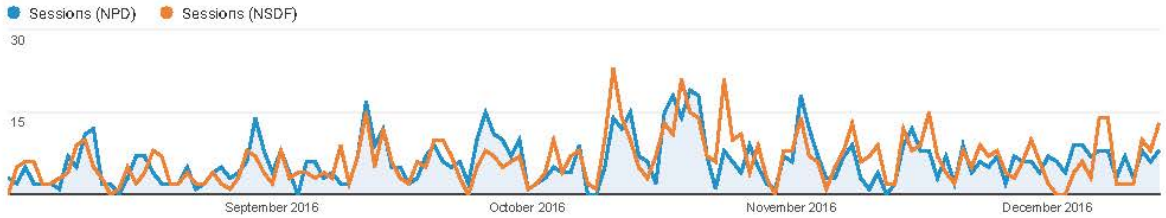
Aug 1, 2016 - Dec 14, 2016

NPD
1.47% Sessions

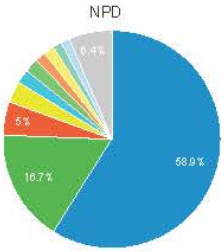
NSDF
1.51% Sessions

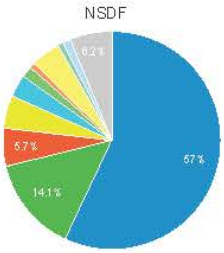
Explorer

Summary



Source / Medium	Sessions	Sessions	Contribution to total: Sessions
NPD	828 % of Total: 1.47% (56,214)	828 % of Total: 1.47% (56,214)	
NSDF	849 % of Total: 1.51% (56,214)	849 % of Total: 1.51% (56,214)	
1. google / organic			
NPD	**488**	58.94%	
NSDF	**484**	57.01%	
2. (direct) / (none)			
NPD	**138**	16.67%	
NSDF	**120**	14.13%	
3. aecl.ca / referral			
NPD	**41**	4.95%	
NSDF	**48**	5.65%	
4. bing / organic			
NPD	**26**	3.14%	
NSDF	**41**	4.83%	
5. nuclearsafety.gc.ca / referral			
NPD	**17**	2.05%	
NSDF	**28**	3.30%	
6. trr.tbe.taleo.net / referral			
NPD	**17**	2.05%	
NSDF	**14**	1.65%	
7. facebook.com / referral			
NPD	**13**	1.57%	





		NSDF	7	0.82%
	8.	m.facebook.com / referral		
		NPD	13	1.57%
		NSDF	37	4.36%
	9.	ceaa-acee.gc.ca / referral		
		NPD	11	1.33%
		NSDF	7	0.82%
	10.	yahoo / organic		
		NPD	11	1.33%
		NSDF	10	1.18%

Rows 1 - 10 of 41

B.3 Social Media

Overview of CNL's social media presence

	Twitter: @CNL_LNC	Facebook: @Canadian Nuclear Laboratories
Followers	235	754
Likes	15	751

Facebook metrics for NSDF and NPD Closure Project

	Date	Facebook post	Subject	Reach	Clicks	Comments, Shares, Reactions
1	10/27/2016	CNL has new information on two D&WM projects and we'll be at the Civic Centre in Town of Petawawa tonight to share more about www.cnl.ca/npd & www.cnl.ca/nsdf Hope to see you there!	Public Information Session (PIS)	120	3	5
2	10/26/2016	Join us for a chat and a coffee this evening Chalk River & Area Lions Club until 8:00 p.m. We're sharing updates about our two projects - the NPD Closure Project and the NSDF.	PIS	479	16	6
3	10/26/2016	CNL will be at Chalk River & Area Lions Club tonight sharing updates on two D&WM projects. Questions or comments? We'll be there to listen and provide information on www.cnl.ca/npd & www.cnl.ca/nsdf	PIS	133	3	5

	Date	Facebook post	Subject	Reach	Clicks	Comments, Shares, Reactions
4	10/24/2016	We're at the Best Western Pembroke Inn & Conference Centre tonight with updates on the NPD Closure Project and the NSDF Project. Join us any time until 8:00 p.m. & bring your questions for our project teams.	PIS	254	52	10
5	10/24/2016	In Pembroke, Ontario? Come out for updated information about two of CNL's decommissioning and waste management solutions. Our experts will be at the Best Western Pembroke Inn & Conference Centre tonight to talk about these projects: http://ow.ly/23jE304GuNi & http://ow.ly/Jacg304GuOP Drop by any time between 6:00 and 9:00 p.m.	PIS	434	22	11
6	10/20/2016	Have questions about our #npd and #nsdf projects? We are in Sheenboro tonight to tell help you #learnmore, come grab a coffee and chat!	PIS	163	35	5
7	10/20/2016	Bring your questions for CNL to the Municipal Hall in Sheenboro tonight.	PIS	86	4	2
8	10/19/2016	We'll be @ the Township Hall in scenic #Stonecliffe 6 - 8 pm tonight for a new info session.	PIS	92	5	1

	Date	Facebook post	Subject	Reach	Clicks	Comments, Shares, Reactions
9	10/18/2016	The information session is underway in Deep River, if you would like to learn more about our #nsdf or #npd projects stop by!	PIS	326	101	13
10	10/18/2016	Hope to see you this evening in Town of Deep River, Ontario for updated information on CNL's D&WM projects.	PIS	144	4	4
11	10/17/2016	We are in Rapides-des-Joachims tonight until 8 p.m. if you have questions about our upcoming projects come ask! #nsdf #npd #learnmore	PIS	301	61	12
12	10/17/2016	Learn about CNL's D&WM projects at Rapides-des-Joachims, Quebec Town hall at 6pm tonight.	PIS	106	2	4
13	10/17/2016*	Interested in learning more about the NPD Closure Project and the NSDF? Join us at our information sessions this month.	PIS	18,500	1,299	270
14	10/11/2016	Starting next week CNL is hosting 7 public information sessions with updates on these projects: http://ow.ly/r6FJ304GtxL & http://ow.ly/aXF1304GtDy . Looking forward to seeing you in Rapides-des-Joachims, Quebec Town of Deep River, Ontario Stonecliffe, Ontario Sheenboro Pembroke, Ontario Town of Petawawa and Chalk River, Ontario http://ow.ly/cJqE304TkuQ	PIS	783	49	8

	Date	Facebook post	Subject	Reach	Clicks	Comments, Shares, Reactions
15	10/03/2016**	We're out in the community this month to hear what you're thinking and share new info. When & where?	PIS	13,300	412	93
16	09/25/2016	Last day of Petawawa Showcase, stop by to chat about upcoming projects or learn more about what's happening at the labs!	Both	440	87	21
17	09/15/2016	We are on tour with a group from the CNS Waste Management, Decommissioning, Environmental Remediation Conference. Learning about our NPD and NSDF projects. Learn more at one of our upcoming Open Houses *watch this space for dates*	PIS	372	86	15
18	08/16/2016	Some sunny aerial shots from our NPD reactor site. NPD is the first power reactor in Canada to undergo decommissioning. Learn more about our proposed approach to this project at www.cnl.ca/NPD	NPD	929	77	14
19	11/22/2016	Did you attend one of our decommissioning and waste management public information sessions and have a lingering question?	Both	612	44	9
		Check out our new online feedback form for the NSDF, NPD Closure Project and WR-1 decommisioning: http://www.cnl.ca/…/home/environmental-stewar…/feedback.aspx	Both			
			Total	37574	2362	508

B.4 Industry Feedback

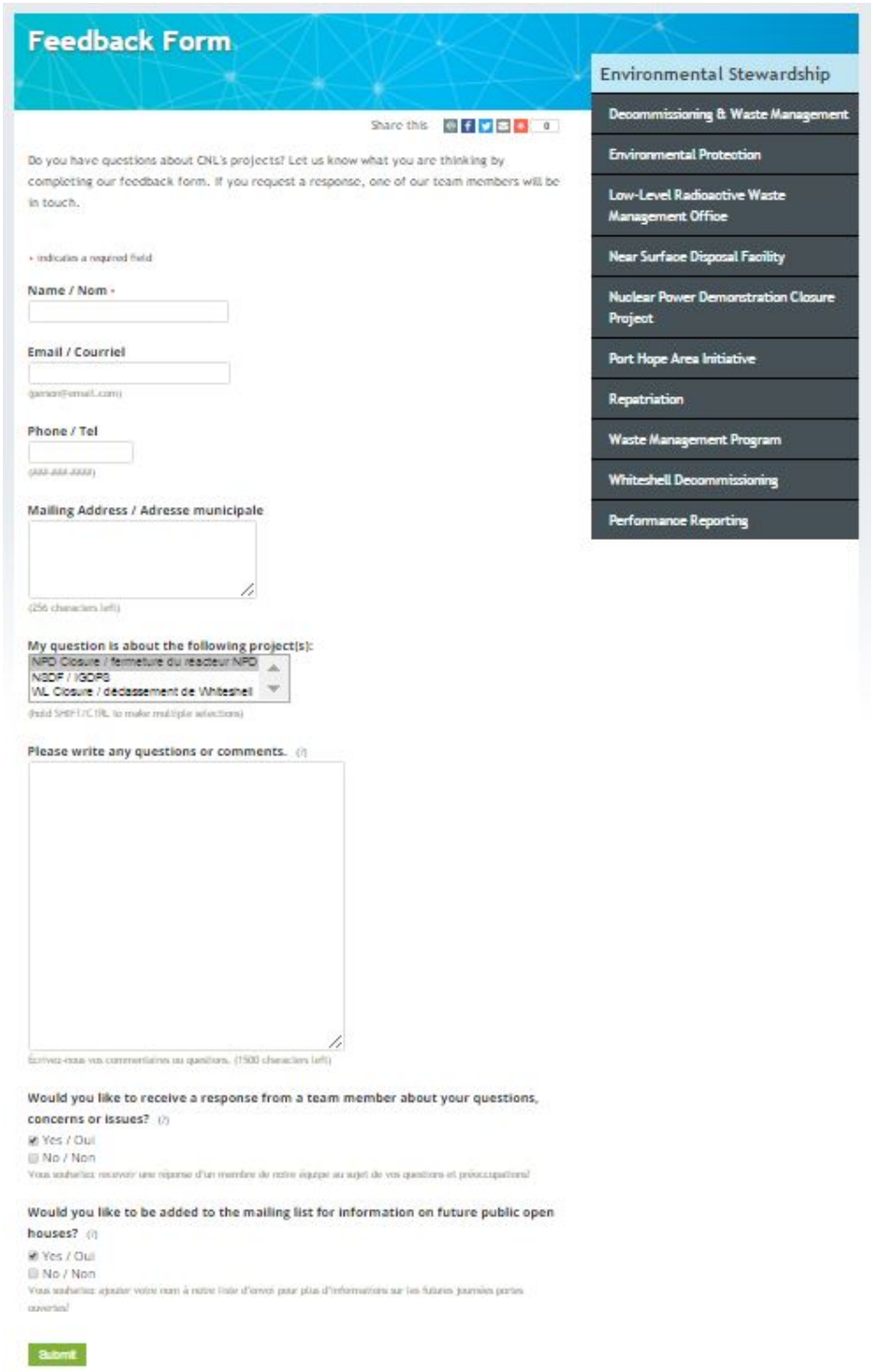
Themes	
Water-related	1
Indicated satisfaction with information	4
Indicated approval	1
Knowledge-sharing	1
Cost	1
Safety	1

Written Comments and Questions

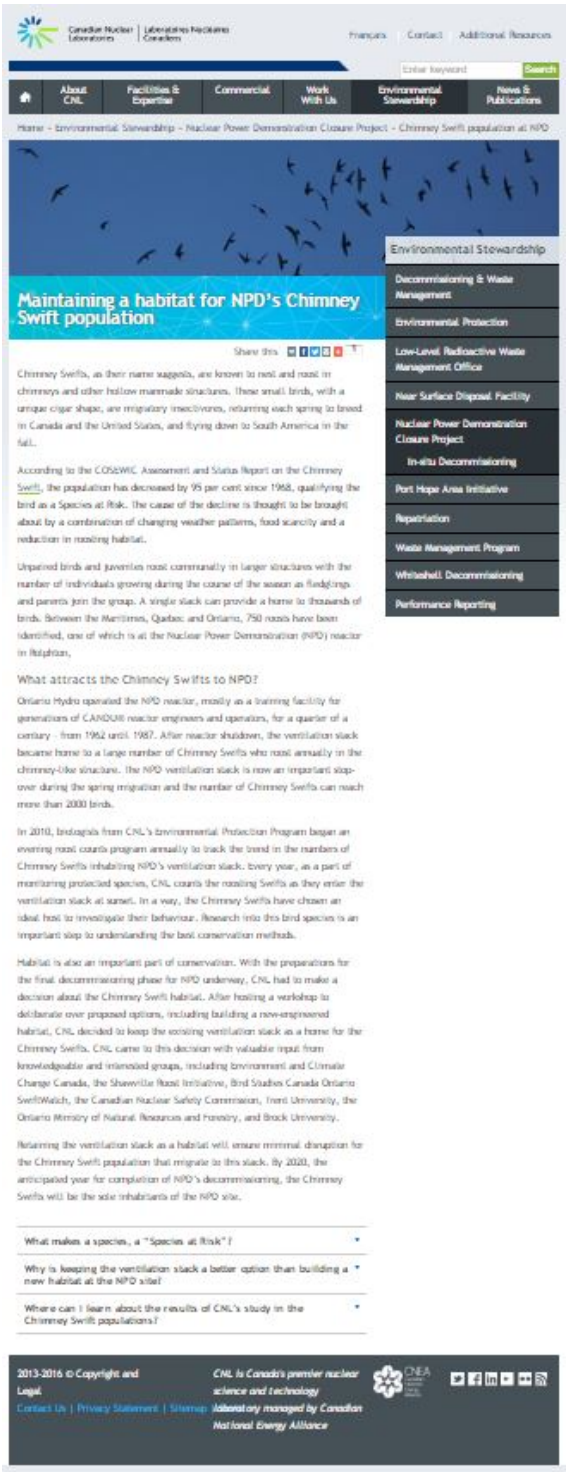
Event	Do you want to be contacted with a response?	Project	Comment/Questions
CNS-DWM Tour	No	NPD	Do you expect the final monolith to become water-saturated?
CNS-DWM Tour	No	NPD	Excellent. Very good cost-effective approach.
CNS-DWM Tour	Yes	NPD	Great tour guide.
CNS-DWM Tour	No	NPD	All questions answered by knowledgeable tour staff
CNS-DWM Tour	No* but yes to response on questions	NPD	For many years, I have wanted to visit NPD and CNL, finally that wish came true today. My boss had started his work at NPD and he gave me a book of all NPD employees from when NPD was commissioned. That mentioned Lorne McConnell, Jim Lawson, and my boss, Jan Krasnodobski. It was good to see how the closing chapter for NPD was being written
CNS-DWM Tour	No* but yes to response on questions	NPD	How to accumulate the knowledge and skills on decommissioning and licensing procedure and to transfer it to industries? How long is it expected to complete the decommissioning and how much will it cost? Which elements will dominate the index of safety (does rate, chemical toxicity)? What is the critical path in the safety assessment?
CNS-DWM Tour	No	NPD	The presentation was to the point and informative. My questions were very well answered by the team at site. I have a lot you know that I was disappointed to see a 2T overhead crane at site when at least 10 crane builders could have provided cover.

B.5 Web Page Content

B.5.1 Online Formal Feedback Mechanism



B.5.2 New web page on Species at Risk protection at the NPD site



B.5.3 Feedback Form

Canadian Nuclear Laboratories - Public Open Houses:
Nuclear Power Demonstration Closure Project (NPD) and Near Surface Disposal Facility (NSDF)

Name: [redacted]
City: Pembroke
Province: Ont.
Postal Code:

Street Address: [redacted]
Phone: [redacted]
Email:

Please write any questions or comments you may have on the **NPD Closure Project**.

I would love to observe the grouting of the main building when this is done

Please write any questions or comments you may have on the **Near Surface Disposal Facility.**

Interesting

Would you like to receive a call from a team member about your questions, concerns or issues?

YES (NO)

Would you like to be added to the mailing list for information on future public open houses?

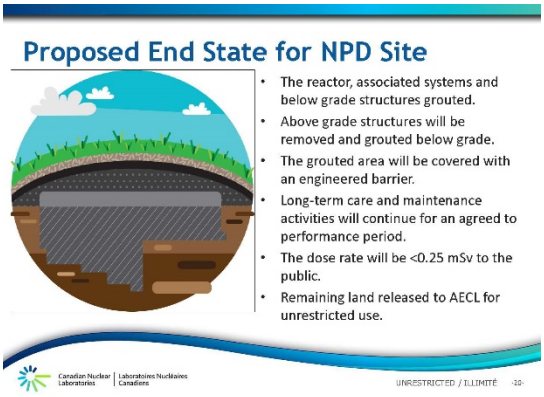
(YES) NO

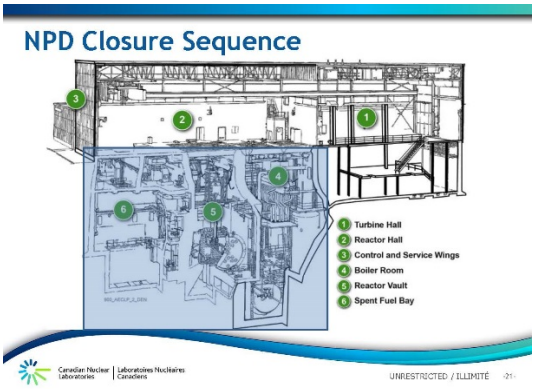
If you have any future questions or comments about either project, please contact:

CNL Corporate Communications
ATTN: Environmental Assessments
286 Plant Road
Chalk River, ON
K0J 1J0
communications@cnl.ca *or*
www.cnl.ca/feedback

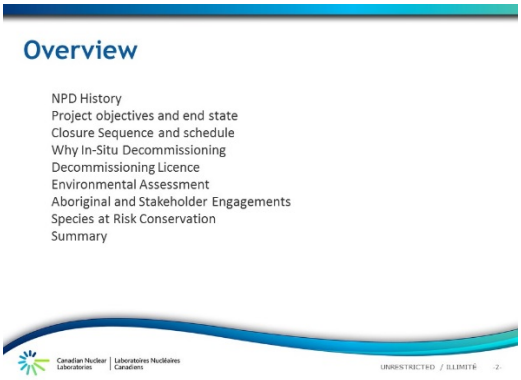
Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

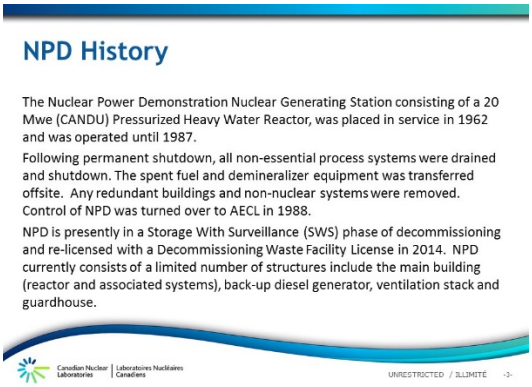
B.6 OCI Suppliers' Day

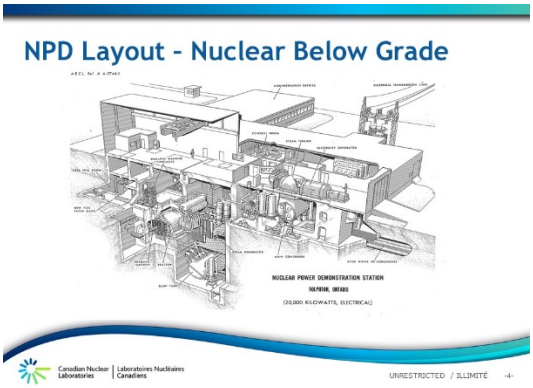




B.7 NWMD&RE Conference Talk

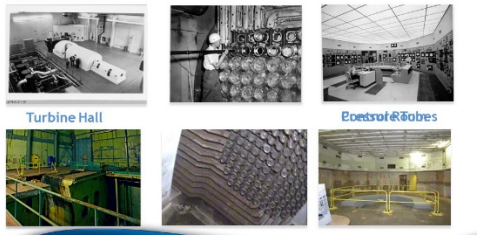




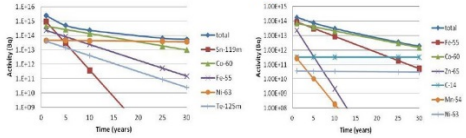


NPD Then and Now

1962 and 2016



NPD Radioactive Decay



Pressure Tubes **Calandria Tubes**

In 1988 the total residual radioactivity in the NPD reactor system was estimated to be 2×10^{15} Bq. Since shut down, 29 years of radioactive decay have reduced radioactivity considerably. By 2017 the total radiological inventory will have declined to 4.1×10^{13} Bq.

CNL's Project Objectives for NPD

Safely decommission the NPD site

- Ensure employee/contractor safety (Target Zero).
- Protect public safety.
- Protect the environment.

Meet AECL contractual obligations including;

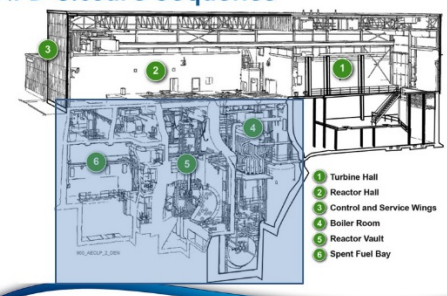
- Completing In-situ Decommissioning by 2020 May.
- Provide alternate habitat for endangered species.

Reduce Canadian legacy long-term liabilities and the burden on the Canadian tax payer.

Proposed End State for NPD Site

- The reactor, associated systems and below grade structures grouted.
- Above grade structures will be removed and grouted below grade.
- The grouted area will be covered with an engineered barrier.
- Long-term care and maintenance activities will continue for an agreed to performance period.
- The dose rate will be <0.25 mSv to the public.
- Remaining land released to AECL for unrestricted use.

NPD Closure Sequence



NPD Closure Schedule

Decommissioning Phase	Associated Activities	Duration
Preparation	*Planning and Licensing*	*2016-2018*
	Procurement and Mobilization	
	Characterization	
	Hazard Abatement	
Execution	*Batch Plant	2018-2019
	Grouting of below grade structure	
	Removal of above grade structures and backfill	
	Install concrete cap and engineered barrier	
Closeout	Final site restoration	2020 - TBD
	Long-term care and maintenance activities	

** Start of "Project Activities" under Environmental Assessment scope.*

Why In-situ Decommissioning?

Alternatives being assessed against in-situ decommissioning:

- Full dismantling and removal of all systems, structures and components for interim storage at CRL.
- Partial removal of source term for interim storage at CRL.
- Continue with deferred decommissioning approach.

In-situ decommissioning offers the safest approach for NPD:

- Safer from standpoint of worker risk, radiological risk, industrial accident risk, and permanence.
- Reduces the risk of public exposure during transportation.
- Effective reduction of the liability (e.g. eliminates interim waste storage at CRL).
- Reduces life cycle cost and risk from shipping waste for interim storage and ultimate disposal at CRL.

North American Precedence for ISD Projects

Reactor	Operated	Entombed	Reactor Type	Entombed Radioactivity Content	Comments
Hallam Nuclear Power Facility, Lincoln, Nebraska	1961-1964	1967 - 1969	240 MW(th) sodium cooled, graphite moderated	1.11E+16 Bq - mostly activation products	US Department of Energy (DOE) plans institutional controls for 100 years. Monitoring wells have been sampled; no detectable rad release from the reactor. Sampling frequency is now every 2 years.
Piqua Nuclear Power Facility, Piqua, Ohio	1963 - 1966	1967 - 1969	45.5 MW organically cooled and moderated	9.62E+15 Bq	The reactor vessel, thermalshield, grid plates, and support barrels remain in place.
Boiling Nuclear Superheater Power Station (BONUS), Puerto Rico		1970	50 MW boiling water reactor	1.85E+15 Bq	The reactor vessel and other components were entombed in place.
Super Kukla and Pluto at Nevada National Security Site	1964 - 1979	2006 - 2007	"Prompt Burst" neutron reactor		Below-grade rooms and equipment grouted in place – performed by CH2M HILL.
Savannah River Site P and R Reactors	1953 - 1987	2009 - 2011	Heavy-water moderated production reactors	8.33E+15 Bq - P 2.22E+15 Bq - R	All below-grade rooms and equipment, including the reactor vessels, grouted in place.
NPD	1962 - 1988		20-MW CANDU, heavy-water moderated	4.07E+13 Bq	Planned to leave the reactor vessel and other components in place.

Decommissioning Licence

The current waste facility licence (WFDL-W4-332.00/2034) outlines process for the licensee to decommission NPD.

"The licensee shall submit a Detailed Decommissioning Plan for acceptance by the Commission or a person authorized by the Commission prior to the commencement of dismantlement activities."

CNL will request to perform decommissioning under the waste facility license with the submission of the Detailed Decommissioning Plan and associated safety case documentation.

Environmental Assessment

- Since in-situ decommissioning will result in an end state that includes the safe disposal of nuclear waste, the NPD Closure Project is a Designated Project under the Canadian Environmental Assessment Act (CEAA) 2012.
- As part of the environmental assessment process the project is preparing an Environmental Impact Statement (EIS) prepared in accordance with issued generic EIS guidelines.
- CNL is submitting the EIS with the request to perform decommissioning as an integrated approach under the environmental assessment process (Draft RegDoc 2.9.1).
- CNSC will make a decision on the request to perform decommissioning following the decision on the environmental assessment.

Summary Regulatory Submittals

Decommissioning Phase	Associated Activities	Regulatory Submittal's
Preparation	Work Planning and Licensing Procurement and Mobilization Characterization Hazard Abatement Facility Preparation	•Revise SWS Plan (*as required*).
Execution	Batch Plant Grouting of below grade structure Removal of above grade structures and backfill Install concrete cap and engineered barrier	Submittal 1 - Request to perform decommissioning (2017 September): •Detailed Decommissioning Plan •Safety Analysis Report •Performance Safety Assessment •Decommissioning Safety Assessment •Environmental Impact Statement (*EA process*).
Closeout	Final site restoration Long-term care and maintenance activities	Submittal 2 – Commencement of long-term institutional controls (2020 April): •Interim End State Report. •Long-term Care and Maintenance Plan. Application to abandon after the institutional control period.

Aboriginal Engagements

The Nuclear Power Demonstration Closure Project Aboriginal Engagements are being planned and executed in accordance with REGDOC-3.2.2.

- Notification of project and invitation to engage.
- Initial meeting and project orientation and agreement on path forward.
- Targeted community initiatives.
- Site visits.
- Aboriginal project information sessions.
- Small Group Meetings.
- Regular project updates.
- Tracking and Recording.

Stakeholder Engagements

Stakeholder consultation activities are being planned to inform, educate and discuss project specific information to stakeholders.

NPD Project Communication activities are performed within context of overall CNL's corporate communications. Project specific objectives include:

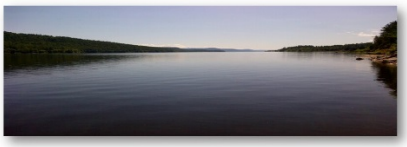
- Positioning the project for success.
- Meeting all regulatory-based communication and engagement requirements (i.e., Environmental Assessment).
- Proactively engaging stakeholders to build a relationship based on transparency and mutual sharing of information.
- Demonstrating CNL's long-term commitment and approach to safety, and cost-effectively reducing nuclear legacy liabilities and associated risks.
- Developing meaningful, user-friendly information and communication products ensuring accessibility and relevancy.

Species at Risk Conservation

- There are nine (9) species at risk at the NPD site but only one (1) in the impacted area.
- Chimney Swift is a threatened species and roosts in the NPD ventilation stack, thus stack removal linked to Environment Canada approval.
- The NPD Closure Project is assessing the options:
  1. Establishing an alternate habitat in order to remove the stack.
  2. Complete decommissioning with current stack remaining.

Summary

The closure of the NPD site will entomb the remaining radiological inventory, meet public dose restrictions, and support ongoing use of the site as a wildlife habitat.



B.8 CNL Site Tour – NWMD&RE Conference

SITE VISIT: CNS Canadian Conference on Nuclear Waste Management,
Decommissioning and Environmental Restoration

DATE: 2016 September 15 (Thursday)

Visitors
John Adams
Tom Calvert
Tim Dalpee
Stacey Geoghegan
Jared Goguen
Jude Gomez
Mohinder Grover
Jessica Clifford
Jason Kenney
Gilles Lafleur
Cynthia Lam
Parames Misra
Shinya Nagasaki
Erin Polka
Thomas Glenn Pringle
Justin Riddoch
Sriram Suryanarayan
Laurie Swami
Larry Taake
Jacques Oullette (bus driver)

CNL Participants
Jennifer Gardner
Philip Kompass
Margot Thompson
Lauren Kinghorn

Time	Details	Lead Contact
1000 hrs.	Arrive at CNL Outer Gate. Proceed to B700 for registration.	Met by CNL escorts
1030 – 1130 hrs.	B543, Rm. 103: NSDF poster session / tour (meet in B700 lobby)	Martin Klukas (613-633-1481)
1145 – 1230 hrs.	B543, Rm. 103: Lunch	
1300 – 1430 hrs.	Tour of NPD (meet at trailers)	Ernie Aikens (613-635-1932)
1430 / 1500 hrs.	Depart NPD site and drop CNL escorts back at CRL	

Reminders:

- Bring government-issued photo ID (driver's licence, Passport, health card, etc.).
- Wear flat-soled, closed-toe shoes, socks, and long pants.
- Most of the day is spent walking outside, dress appropriately for the weather.
- Photo taking is restricted. Please inquire before any photos are taken.
- 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.

B.9 OPG Tour of NPD Site

NPD Closure Project

OPG (Des Joachims)
2016 September 26th

Overview

NPD History
Project objectives and end state
Closure Sequence and schedule
Why In-Situ Decommissioning
Decommissioning Licence
Environmental Assessment
Aboriginal and Stakeholder Engagements
Species at Risk Conservation
Summary

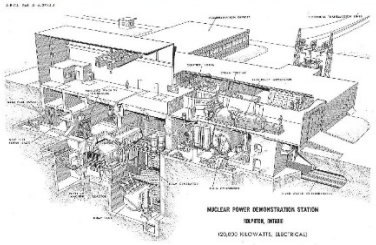
NPD History

The Nuclear Power Demonstration Nuclear Generating Station consisting of a 20 Mwe (CANDU) Pressurized Heavy Water Reactor, was placed in service in 1962 and was operated until 1987.

Following permanent shutdown, all non-essential process systems were drained and shutdown. The spent fuel and demineralizer equipment was transferred offsite. Any redundant buildings and non-nuclear systems were removed. Control of NPD was turned over to AECL in 1988.

NPD is presently in a Storage With Surveillance (SWS) phase of decommissioning and re-licensed with a Decommissioning Waste Facility License in 2014. NPD currently consists of a limited number of structures include the main building (reactor and associated systems), back-up diesel generator, ventilation stack and guardhouse.

NPD Layout - Nuclear Below Grade



NPD Then and Now

1962 and 2016


Turbine Hall


Pressure Tubes


Control Room

CNL's Project Objectives for NPD

Safely decommission the NPD site

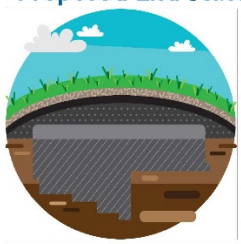
- Ensure employee/contractor safety (Target Zero).
- Protect public safety.
- Protect the environment.

Meet AECL contractual obligations including;

- Completing In-situ Decommissioning by 2020 May.
- Provide alternate habitat for endangered species.

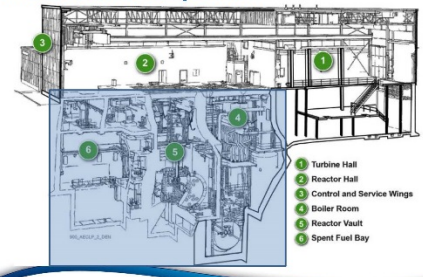
Reduce Canadian legacy long-term liabilities and the burden on the Canadian tax payer.

Proposed End State for NPD Site



- The reactor, associated systems and below grade structures grouted.
- Above grade structures will be removed and grouted below grade.
- The grouted area will be covered with an engineered barrier.
- Long-term care and maintenance activities will continue for an agreed to performance period.
- The dose rate will be <0.25 mSv to the public.
- Remaining land released to AECL for unrestricted use.

NPD Closure Sequence



NPD Closure Schedule

Decommissioning Phase	Associated Activities	Duration
Preparation	*Planning and Licensing*	*2016-2018*
	Procurement and Mobilization	
	Characterization	
	Hazard Abatement	
Execution	*Batch Plant	2018-2019
	Grouting of below grade structure	
	Removal of above grade structures and backfill	
	Install concrete cap and engineered barrier	
Closeout	Final site restoration	2020 - TBD
	Long-term care and maintenance activities	

** Start of "Project Activities" under Environmental Assessment scope.*

Why In-situ Decommissioning?

Alternatives being assessed against in-situ decommissioning:

- Full dismantling and removal of all systems, structures and components for interim storage at CRL.
- Partial removal of source term for interim storage at CRL.
- Continue with deferred decommissioning approach.

In-situ decommissioning offers the safest approach for NPD:

- Safer from standpoint of worker risk, radiological risk, industrial accident risk, and permanence.
- Reduces the risk of public exposure during transportation.
- Effective reduction of the liability (e.g. eliminates interim waste storage at CRL).
- Reduces life cycle cost and risk from shipping waste for interim storage and ultimate disposal at CRL.

Decommissioning Licence

The current waste facility licence (WFDL-W4-332.00/2034) outlines process for the licensee to decommission NPD.

"The licensee shall submit a Detailed Decommissioning Plan for acceptance by the Commission or a person authorized by the Commission prior to the commencement of dismantlement activities."

CNL will request to perform decommissioning under the waste facility license with the submission of the Detailed Decommissioning Plan and associated safety case documentation.

Environmental Assessment (EA)

- NPD Closure project requires a federal EA under CEAA 2012
- EA: predicts environmental effects of a proposed project before it is carried out.
- Mitigation measures are developed to minimize environmental impacts
- Project may proceed (CNSC approval) only if EA demonstrates that no significant adverse environmental effects are likely
- Public and Indigenous engagement are an important part of the EA process (engagement activities + review opportunities)

Project Description → CNSC Guidelines → Env. Impact Statement → CNSC EA Report → CNSC Approval

Cumulative Effects

EA requires an assessment of the cumulative effects of other major projects in the region; including work at OPG Des Joachims.

INFORMATION REQUESTED FROM OPG DES JOACHIMS:

1. Likelihood of the work occurring: is it "reasonably foreseeable"? "Certain"?
2. Provide the estimated time frame for the work, especially start and end dates for construction activities.
3. Describe the work activities to be carried out, along with any details about quantity of materials, estimated number of trucks, number of employees.

Cumulative Effects cont'd

INFORMATION REQUESTED FROM OPG DES JOACHIMS:

4. Will there be any expected impacts on the Ottawa River shoreline? E.g., will scaffolding be built along the shore? Will materials be staged there?
5. Will there be any releases to the Ottawa River?
6. Will there be activities in both Ontario and Quebec (i.e., Swisha)? Please explain.
7. Does OPG have any other upcoming projects or recently completed projects in the area? Or knowledge of non-OPG projects?
8. Predicted decommissioning date of the dam.

Aboriginal Engagements

The Nuclear Power Demonstration Closure Project Aboriginal Engagements are being planned and executed in accordance with REGDOC-3.2.2.

- Notification of project and invitation to engage.
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- Tracking and Recording.

Stakeholder Engagements

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- Positioning the project for success.
- Meeting all regulatory-based communication and engagement requirements (i.e., Environmental Assessment).
- Proactively engaging stakeholders to build a relationship based on transparency and mutual sharing of information.
- Demonstrating CNL's long-term commitment and approach to safety, and cost-effectively reducing nuclear legacy liabilities and associated risks.
- Developing meaningful, user-friendly information and communication products ensuring accessibility and relevancy.

Upcoming Stakeholder Engagements

- Fall issue of community newsletter, CONTACT
- Petawawa Showcase (September 23 – 25)
- CNS and WiN Talk (September 27)
- Environmental Stewardship Council meeting (October 13)
- Seven public open houses (October 17 – 27)
  - Deep River
  - Rapides des Joachims
  - Stonecliffe
  - Sheenboro
  - Pembroke
  - Chalk River
  - Petawawa

Species at Risk Conservation

- There are nine (9) species at risk at the NPD site but only one (1) in the impacted area.
- Chimney Swift is a threatened species and roosts in the NPD ventilation stack, thus stack removal linked to Environment Canada approval.
- The NPD Closure Project has assessed the options:
  1. Establishing an alternate habitat in order to remove the stack.
  2. Complete decommissioning with current stack remaining.

B.10 CNS-WiN Seminar

In-situ Decommissioning of the Nuclear Power Demonstration Reactor

Canadian Nuclear Society and Women in Nuclear

2016 September 27

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

UNRESTRICTED / ILLIMITÉ -1-

Overview

Decommissioning Process
Canada's Prototype Reactor Sites
NPD Closure Project Objectives
In-situ Decommissioning of NPD
Proposed End State
Why In-Situ Decommissioning?
Decommissioning Licence
Environmental Assessment
Species at Risk Conservation
Public Engagements
Summary

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UNRESTRICTED / ILLIMITÉ -2-

Decommissioning Process

Preliminary Decommissioning Plan
→ Operation
→ Shutdown (Phase I)
→ Storage with Surveillance (Phase II)
→ Decommissioning Planning
- ✓ Detailed Decommissioning Plan
- ✓ Environmental and Safety Assessments

→ Regulatory Approval
→ Decommissioning (Phase III)
→ Close Out

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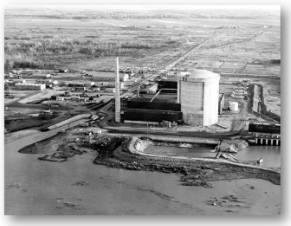
UNRESTRICTED / ILLIMITÉ -3-

Canada's Prototype Reactor Sites

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

UNRESTRICTED / ILLIMITÉ -4-

Gentilly-1



250 Mwe BWR demonstration.
Operated 1970-1977.
Co-located with G2, a 635 MWe Candu.
Hydro Quebec announced shutdown of G2 in 2012.

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UNRESTRICTED / ILLIMITÉ -5-

Douglas Point

200 Mwe full scale Candu.
Operated 1968-1984.
Co-located amid the Bruce reactor complex.
Currently in Storage with Surveillance.
Used fuel in dry storage on site.

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UNRESTRICTED / ILLIMITÉ -6-

Nuclear Power Demonstration (NPD)

20 Mwe Candu.

Operated 1962-1987.

Single site near Chalk River Labs.

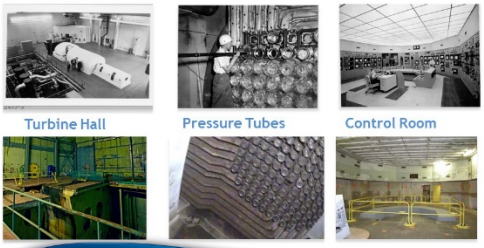
Currently in Storage with Surveillance.

Used fuel in dry storage at CRL.

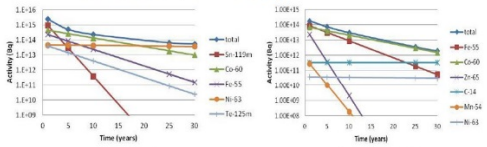
Phase III decommissioning 2016-2024.

NPD Then and Now

1962 and 2016



NPD Radioactive Decay



Pressure Tubes **Calandria Tubes**

In 1988 the total residual radioactivity in the NPD reactor system was estimated to be 2 × 10^{15} Bq. Since shut down, 29 years of radioactive decay have reduced radioactivity considerably. By 2017 the total radiological inventory will have declined to 4.1 x 10^{13} Bq.

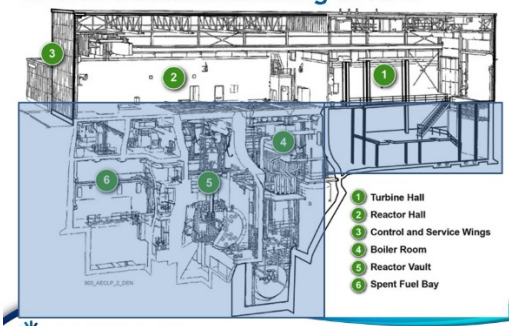
NPD Project Objectives

Safely decommission the NPD site:

- Ensure employee/contractor safety (target no lost time incidents)
- Protect public safety
- Protect the environment (including species at risk habitat)
- Accelerate NPD decommissioning using available technologies with target completion May 2020.

Benefit is earlier reduction of legacy hazards by immobilizing radioactivity in place. Represents reduced burden on the Canadian taxpayer.

In-Situ Decommissioning of NPD



Proposed End State for NPD Site

- The reactor, associated systems and below grade structures grouted.
- Above grade structures will be removed and grouted below grade.
- The grouted area will be covered with an engineered barrier.
- Long-term care and maintenance activities will continue for an agreed to performance period.
- The dose rate will be below to the public exposure limits.
- Remaining land (~ released to AECL for unrestricted use.
- Ensure Chimney Swift habitat is protected.

Why In-situ Decommissioning?

Alternatives being assessed against in-situ decommissioning:

- Full dismantling and removal of all systems, structures and components for interim storage at CRL.
- Partial removal of source term for interim storage at CRL.
- Continue with deferred decommissioning approach.

Conclusion that is to be supported in an EIS: in-situ decommissioning offers the safest approach:

- Reduces worker risk, radiological risk, industrial accident risk, and permanence.
- Reduces the risk of public/environment exposure during transportation
- Eliminates multiple handling of waste packages.
- Effective reduction of the liability (e.g. eliminates interim waste storage at CRL).

North American Experience for ISD Projects

Reactor	Date	Reactor Type	Comments
Hallam Nuclear Power Facility, Lincoln, Nebraska	1967 - 1969	240 MW(th) sodium cooled, graphite moderated	US Department of Energy plans institutional controls for 100 years.
Piqua Nuclear Power Facility, Piqua, Ohio	1967 - 1969	45.5 MW organically cooled and moderated	The reactor vessel, thermal shield, grid plates, and support barrels remain grouted in place.
Boiling Nuclear Superheater Power Station (**BONUS**), Puerto Rico	1970	50 MW boiling water reactor	The reactor vessel and other components were grouted in place.
Super Kukla and Pluto at Nevada National Security Site	2006 - 2007	"Prompt Burst" neutron reactor	Below-grade rooms and equipment grouted in place.
Savannah River Site P and **R** Reactors	2009 - 2011	Heavy-water moderated production reactors	All below-grade rooms and equipment, including the reactor vessels, remain grouted in place.
Experimental Breeder Reactor II (**EBR II**), Idaho	2013 - 2014	62.5 MW(th) Sodium cooled	The reactor vessel and other components remain grouted in place.

Decommissioning Licence

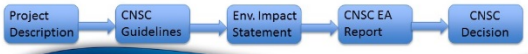
The current waste facility licence (WFDL-W4-332.01/2034) outlines process for the licensee to decommission NPD.

"The licensee shall submit a Detailed Decommissioning Plan for acceptance by the Commission or a person authorized by the Commission prior to the commencement of dismantlement activities."

CNL will request to perform decommissioning under the waste facility license with the submission of the Detailed Decommissioning Plan and associated safety case documentation.

Environmental Assessment (EA)

- NPD Closure project requires a federal EA under CEAA 2012.
- EA: predicts environmental effects of a proposed project before it is carried out.
- Mitigation measures are developed to minimize environmental impacts.
- Project may proceed (CNSC decision) only if EA demonstrates that no significant adverse environmental effects are likely.
- Public and Indigenous engagement are an important part of the EA process (engagement activities + review opportunities).



Species at Risk Conservation

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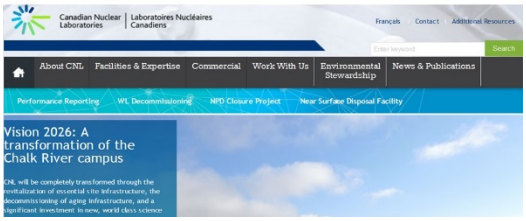
- Chimney Swift is a threatened species and roosts in the NPD ventilation stack, thus stack removal linked to Environment Canada approval.
- The NPD Closure Project is assessing the options:
  1. Establishing an alternate habitat in order to remove the stack.
  2. Complete decommissioning with current stack remaining.

NPD Target Timeline

May 2020 – TBD: NPD site closure followed by institutional control subject to regulatory approval

Public Engagement

- Public engagements activities are planned throughout the EA process.



Upcoming Public Open Houses

- Rapides des Joachims, October 17
- Deep River, October 18
- Stonecliffe, October 19
- Sheenboro, October 20
- Pembroke, October 24
- Chalk River, October 26
- Petawawa, October 27

Summary

The closure of the NPD site will entomb the remaining radiological inventory, meet public dose restrictions, and support ongoing use of the site as a wildlife habitat.

Thank you.
Questions?

B.11 ESC Meeting

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

Environmental Stewardship Council (ESC)
AGENDA FOR MEETING #32 (DRAFT UNTIL ACCEPTED)
Thursday, October 13, 2016 – Best Western Pembroke Inn
List of Participants noted on page 2

9:15 – 9:30 AM	Refreshments	
9:30 AM	Safety briefing, welcome and introductions	Pat Quinn
9:40 – 9:50 AM	Review of actions, previous meeting record and new business	John Vincett
9:50 – 10:15 AM	CNL Business Update	Kurt Kehler
10:15 – 10:45 AM	Quarterly Environmental Performance Report	George Dolinar
10:45 – 11:00 AM	Bio break	
11:00 – 12:00 PM	ESC Terms of Reference review and approval	John Vincett
12:00 – 1:00 PM	Lunch	
1:00 – 1:30 PM	Decommissioning & Waste Management Update	Kurt Kehler
1:30 – 2:00 PM	NPD Closure Project Update	Meggan Vickerd
2:00 – 2:15 PM	Bio Break	
2:15 – 2:45 PM	Near Surface Disposal Facility (NSDF) Project Update	Jim Buckley/Christine Fahey
2:45 – 3:00 PM	In the Community	Nicole LeBlanc
3:00 – 3:30 PM	Recap | Review of Actions | Dates for 2017 meetings	John Vincett

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ESC Participants:

Bruce Bigham, Deep River Horticultural Society
Christina Davis, Ontario Ministry of Natural Resources & Forestry, Pembroke
Ron Gervais, City of Pembroke
James Gibson, Municipalité régionale de comté de Pontiac
Steve Gutzman, Parkline Sportsmen Club
Ole Hendrickson, Concerned Citizens of Renfrew County
Meghan Hendry, Garrison Petawawa
Ken Hooles, Pembroke Area Field Naturalists
Bob Kingsbury, Renfrew County Council
John McKay, Four Seasons Conservancy

ESC Alternates:

Brenda Blimkie, Town of Laurentian Hills
Ron Desroches, Town of Deep River

CNL: Kevin Daniels, Health, Safety, Security and Environment (HSSE)
George Dolinar, Environmental Program Authority
Kurt Kehler, Vice President Decommissioning and Waste Management
Nicole LeBlanc, Communications Officer, Corporate Communications
TBD, Environmental Scientist, Environmental Technologies
Pat Quinn, Director, Corporate Communications

Invited Observers:

Wasif Islam, CRL Compliance and Licensing Division, Canadian Nuclear Safety Commission
Maude-Émilie Pagé, Director, Communication, AECL

Facilitator: John Vincett, Public Dialogue Alternatives

Invited Guests: Jim Buckley, CNL
Christine Fahey, CNL
Meggan Vickerd, CNL

Absent: Peter Arbour, Petawawa Research Forest
Meredith Brown, Ottawa Riverkeeper
Shaun Cotnam, Senior Director, Compliance
Marc Laurin, Métis Nation of Ontario, North Bay
Mark Lesinski, President and CEO
Steve Liblong, Director, DWM Science & Technology Transition Advisor
Joan Lougheed, Town of Deep River
Bob MacKenzie, Upper Ottawa Valley Ducks Unlimited
Jim Meness, Councillor, Algonquins of Pikwàkanagàn
Jed Reinwald, Town of Laurentian Hills
Craig Robinson, Old Fort William Cottagers' Association
Theresa Sabourin, Councillor, Town of Petawawa

Prepared by: Nicole LeBlanc
Tel: 613-584-3311 ext. 46138 | Email: nicole.lelanc@cnl.ca

B.12 Municipality of Laurentian Hills NPD Site Visit

NPD Closure Project

Town of Laurentian Hills Councillors & Staff
November 7, 2016

NPD History

The Nuclear Power Demonstration Nuclear Generating Station consisted of a 20 Mwe (CANDU) Pressurized Heavy Water Reactor

- Placed in service in 1962 and operated until 1987
- Used as CANDU operator training facility

NPD as decommissioned to a Storage with Surveillance state:

- Fuel and heavy water were removed
- Most of the non-reactor systems have been removed
- Consists of a permanently shut down, partially decommissioned reactor and associated structures
- Control of NPD was turned over to AECL in 1988

CNL's Project Objectives for NPD

Safely decommission the NPD site:

- Ensure employee/contractor safety (Target Zero)
- Protect Public Safety
- Protect the environment

Meet AECL contractual obligations including:

- Completing In-situ Decommissioning by 2020 May
- Habitat conservation for endangered species

Reduce Canadian legacy long-term liabilities and the burden on the Canadian tax payer

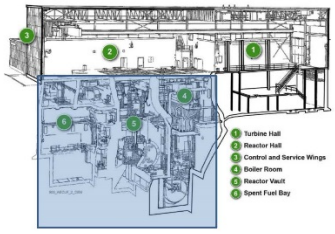
NPD Target Timeline

Activity	2016	2017	2018	2019	2020
Decommissioning Planning					
EA and Licensing					
Decommissioning Execution					

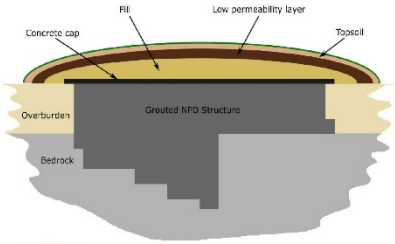
May 2020 – TBD: NPD site closure followed by institutional control subject to regulatory approval.

NPD Closure Sequence

Planning & Licensing
Procurement & Mobilization
Facility Preparation
Nuclear Side Grouting Operations
Superstructure Demolition
Long-term Care Operations



NPD End State



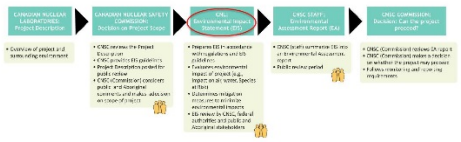
Why In-situ Decommissioning?

Options considered included removal of all source term for shipment to Chalk River and in-situ decommissioning.

Conclusion in-situ decommissioning offers the safest approach:

- Safer from standpoint of worker risk, radiological risk, industrial accident risk, and permanence
- Reduces the risk of public exposure during transportation
- Effective reduction of the liability (e.g. eliminates interim waste storage at CRL)
- Reduces life cycle cost and risk from shipping waste for interim storage and ultimate disposal at Chalk River site

Environmental Assessment Process



Licensing decision is also required under the Nuclear Safety Control Act to proceed with NPD decommissioning.
Submission of the Detailed Decommissioning Plan and Safety Reports with the Environmental Impact Statement.

Responding to Feedback from Public Engagement

October Open Houses

- ✓ Has this project examined the potential effects of an earthquake or climate change or other natural disasters on NPD?
- ✓ How will decommissioning effect the Chimney Swifts roosting in the NPD stack?
- ✓ What is the cost of this option in comparison to alternative methods?

Future Open Houses
(Quarter 1 | 2016/17)

- ➢ How will monitoring occur around the site?
- ➢ How long will the NPD site be monitored post-decommissioning?
- ➢ How will the unaffected land be released after the project is finished?

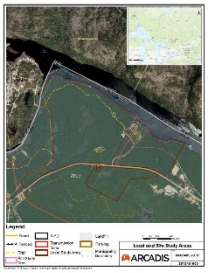
NPD Closure Project Boundaries

Spatial Boundaries

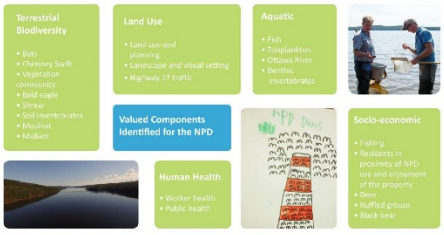
- Site study area (project footprint)
- Local study area (NPD property)
- Regional study area (surrounding area)

Temporal Boundaries

- Decommissioning execution
- Institutional controls (100-300 yrs)
- Post intuitional controls

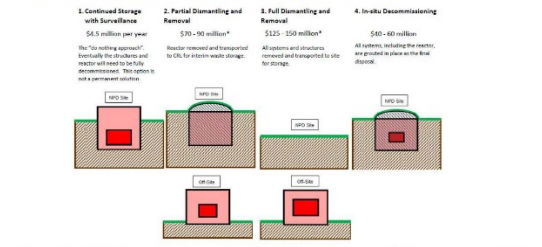


Valued Components - What do you value?



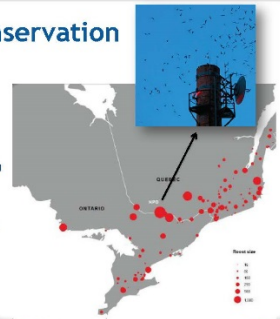
VC selection is based on the potential project-environment interactions.

Alternative Means Assessment

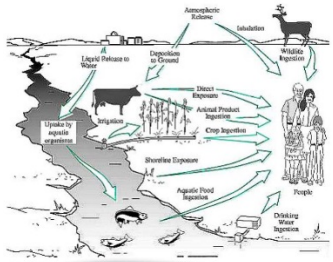


Chimney Swift Conservation

- Through the collaboration of stakeholders the options were assessed and the decision made to retain the existing stack.
- Ensures minimal disruption to the Chimney Swift population roosting in the stack.
- Decision has been endorsed by species at risk conservation experts.
- The potential effects of the project on the Chimney Swifts will still be assessed in the EIS.



Post Closure Safety Assessment



- The post closure safety assessment will demonstrate understanding of the entombed reactor interacting with the environment through long-term evolution of the site.
- Disruptive scenarios are also being assessed:

  Early degradation of grout, seismic activity, early glaciation, groundwater discharge to shore, human intrusion through well or site investigation

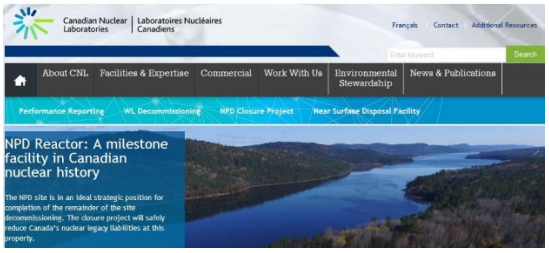
Decommissioning Planning

Characterization Activities

- A historical site assessment has been completed (Phase I Environmental Site Assessment).
- Characterization of potential non-radiological contamination will be performed according to conventional practices (Phase II Environmental Site Assessment).
- Characterization of potential radiological contamination will be performed according to MARSSIM.

Summary

- Both the environmental assessment process and planning for decommissioning are advancing.
- Public sessions are planned throughout the EA process and information will be shared as it is available.



B.13 Renfrew County Council Meeting and Presentation

NPD Closure Project

- History and Timeline
- Project Overview
- Approach for Safe Decommissioning
- Proposed End State
- Species at Risk
- Why In-Situ Decommissioning?
- Safe by Design

History: 1957 - 2016

- First nuclear reactor to contribute electricity to the power grid in Canada
- 25 years in service
- CANdu personnel from all over the province, nation and world were trained at NPD
- 1988: fuel, heavy water and power generating equipment removed
- Ontario Hydro transferred the responsibility of monitoring and licencing of NPD to Atomic Energy of Canada Limited (AECL)
- It is considered in a storage with surveillance (SWS) phase of decommissioning, re-licensed with a CNSC Decommissioning Waste Facility Licence in 2014
- Now, CNL has responsibility to decommission NPD as a part of Canada's commitment to reduce nuclear legacy liabilities

Timeline: 2016 - 2020

Activity	2016	2017*	2018	2019	2020
Decommissioning Planning					
EA and Licensing					
Decommissioning Execution					

*2017 September EIS and licence submission

2020 May – To Be Determined

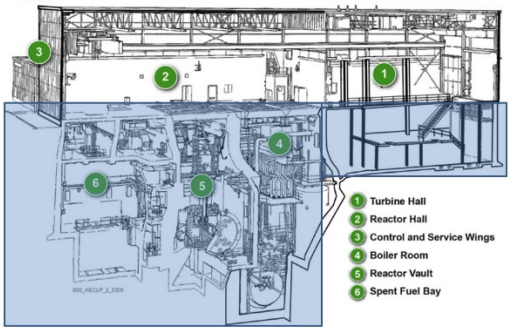
- Nuclear Power Demonstration (NPD) site closure followed by institutional control subject to regulatory approval

Overview: Project Objectives

Safely decommission the NPD site

- Ensure employee and contractor safety (target no lost time incidents)
- Protect public safety
- Protect the environment (including species at risk habitat)
- Accelerate NPD decommissioning using available technologies with target completion May 2020
- Reduce Canadian legacy long-term liabilities and the burden on the Canadian tax payer

Approach for Safe Decommissioning: NPD



Proposed End State

- The reactor, associated systems and below grade structures grouted in place
- Above grade structures demolished and used for backfill
- The grouted area will be covered with an engineered barrier
- Long-term care and maintenance activities will subject to regulatory approval for a set performance period
- Ensure public safety through a safety case which is subject to regulatory approval
- Remaining non-impacted land (approximately 380 hectares) intended to be released for unrestricted use by AECL
- Ensure Chimney Swift habitat is protected

Species at Risk: Chimney Swifts

- There are nine species at risk at the NPD site but only one in the impacted area.
- Chimney Swift is a threatened species and roosts in the NPD ventilation stack
- Through the collaboration of stakeholders the options were assessed and the decision made to retain the existing stack.
- Ensures minimal disruption to the Chimney Swift population roosting in the stack.
- Decision has been endorsed by species at risk conservation experts.
- The potential effects of the project on the Chimney Swifts will still be assessed in the EIS.

Why In-situ Decommissioning?

Alternative means considered:

- Removal of some or all source term for shipment to Chalk River for storage and in-situ decommissioning (ISD)

Conclusion that is to be supported in an EIS:

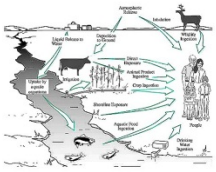
- In-situ decommissioning offers the safest approach:
  - Reduces worker risk, radiological risk, industrial accident risk, and permanence
  - Reduces the risk of public/environment exposure during transportation
  - Eliminates multiple handling of waste packages
  - Effective reduction of the liability (e.g. eliminates interim waste storage at CRL)

Why ISD? North American Experience

Reactor	Date	Reactor Type	Comments
Hallam Nuclear Power Facility, Lincoln, Nebraska	1967 - 1969	240 MW(th) sodium cooled, graphite moderated	US Department of Energy plans institutional controls for 100 years.
Piqua Nuclear Power Facility, Piqua, Ohio	1967 - 1969	45.5 MW organically cooled and moderated	The reactor vessel, thermal shield, grid plates, and support barrels remain grouted in place.
Boiling Nuclear Superheater Power Station (**BONUS**), Puerto Rico	1970	50 MW boiling water reactor	The reactor vessel and other components were grouted in place.
Super Kukla and Pluto at Nevada National Security Site	2006 - 2007	"Prompt Burst" neutron reactor	Below-grade rooms and equipment grouted in place.
Savannah River Site P and **R** Reactors	2009 - 2011	Heavy-water moderated production reactors	All below-grade rooms and equipment, including the reactor vessels, remain grouted in place.
Experimental Breeder Reactor II (**EBR II**), Idaho	2013 - 2014	62.5 MW(th) Sodium cooled	The reactor vessel and other components remain grouted in place.

Safe by Design: Post Closure Safety Assessment

- The post closure safety assessment will demonstrate understanding of the entombed reactor interacting with the environment through long-term evolution of the site.
- Disruptive scenarios are also being assessed:
- Early degradation of grout, seismic activity, early glaciation, groundwater discharge to shore, human intrusion through well or site investigation



Communications

Communications: Public Engagement

- Public Engagement via:
  - Two rounds of public information sessions in seven host communities
  - Site Tours
  - Petawawa Showcase
  - Environmental Stewardship Council
  - Community Events
  - Project specific webpages
  - Social Media
    - Facebook & Twitter
    - Facebook Advertising

Communications: Engagement

From our local communities and indigenous communities:

- General local support for the approach
- Many comments are similar for both projects:
  - institutional control
  - greater degree of detail on technical information
- For the NSDF:
  - A lot of interest in what will be disposed of in the NSDF
  - Questions with respect to natural disasters and climate change
- For the NPD Closure Project:
  - A lot of interest in the end use of the land
  - Questions around international practices for in-situ decommissioning

Communications: What's next?

Continue to provide greater clarity, answer questions and offer opportunities for public and indigenous feedback through:

- Third round of public information sessions in 2017
- Updated web content as more information becomes available
- Meetings (ESC)
- Presentations (Ottawa Branch of the CNS)
- Site visits (Indigenous communities)
- Outreach through local government (factsheets & feedback forms at municipalities)
- Ongoing opportunity to reach projects via online feedback form, email, telephone, social media

B.14 Ottawa Valley Economic Development Meeting

Canadian Nuclear Laboratories

Ottawa Valley Economic Development Committee

2016 December 15

Nuclear Power Demonstration (NPD) Closure Project

Patrick Daly, Head, NPD Closure Project

History: 1957 - 2016

- First nuclear reactor to contribute electricity to the power grid in Canada
- 25 years in service
- Training centre for CANDU® personnel
- 1988: Fuel, heavy water and power generating equipment removed
- 2014: Storage with Surveillance (SWS), re-licensed with a CNSC Decommissioning Waste Facility Licence
- Responsibility to decommission NPD as a part of Canada's commitment to reduce nuclear legacy liabilities

Timeline: 2016 - 2020

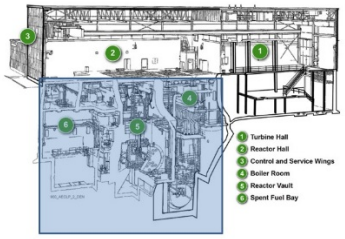
Activity	2016	2017*	2018	2019	2020
Decommissioning Planning					
EA and Licensing					
Decommissioning Execution					

*2017 September EIS and licence submission

Subject to regulatory approval, Nuclear Power Demonstration (NPD) site closure will be followed by a period of institutional control

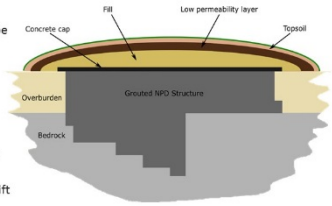
NPD Closure Project: Closure Sequence

- Planning & licensing
- Procurement & mobilization
- Facility preparation
- Nuclear side grouting operations
- Superstructure demolition
- Long-term care operations

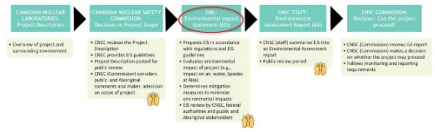


NPD Site: Proposed End State

- Reactor, systems and below grade structures grouted
- Above grade structures will be removed and grouted
- Grouted area covered with engineered barrier
- Long-term care and maintenance activities
- Remaining land (~385 ha) released for unrestricted use by AECL
- Conservation of Chimney Swift habitat (stack retention)

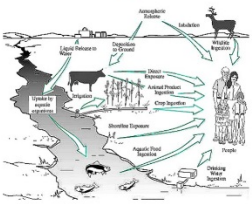


NPD Closure Project: Environmental Assessment



- In order to proceed with decommissioning, under the Nuclear Safety Control Act, a licensing decision is required
- The Detailed Decommissioning Plan and Safety Reports are submitted with the Environmental Impact Statement

NPD Closure Project: Post Closure Safety Assessment



Demonstrates understanding of how the entombed reactor interacts with the environment over the long-term evolution of the site

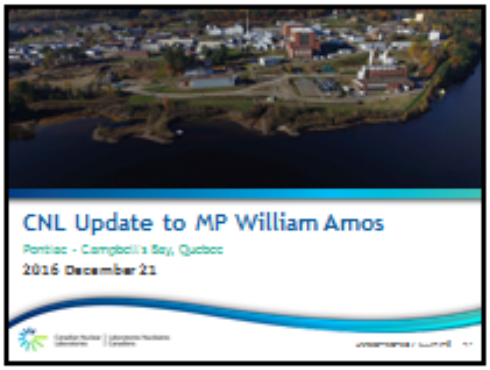
Disruptive scenarios assessed:

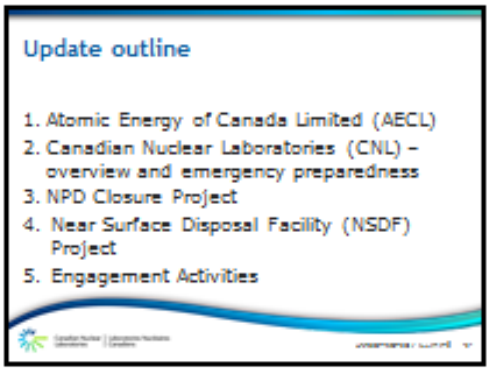
- Early degradation of grout seismic activity
- Early glaciation
- Groundwater discharge to shore
- Human intrusion through well or site investigation

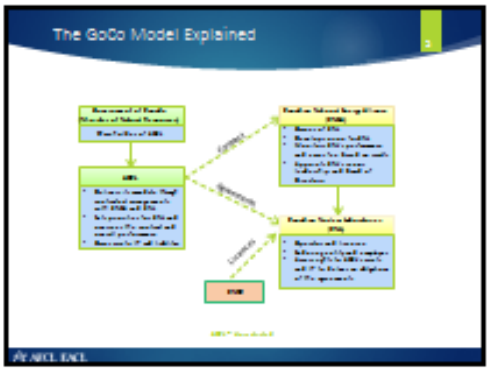
NPD: Contracts in place

- Office trailer complex and washrooms
- Equipment rental
- Safety and licensing
- Engineering design and construction services
- Site maintenance and janitorial services
- Site characterization
- Archaeological and Species at Risk assessments

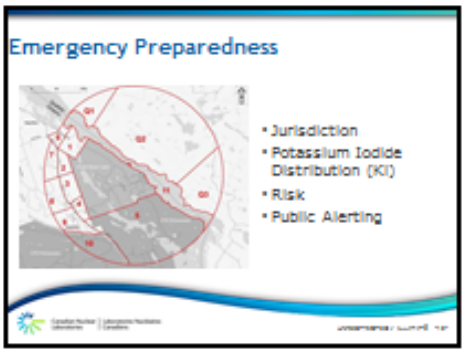
B.15 Meeting and Project Briefing with Pontiac MP







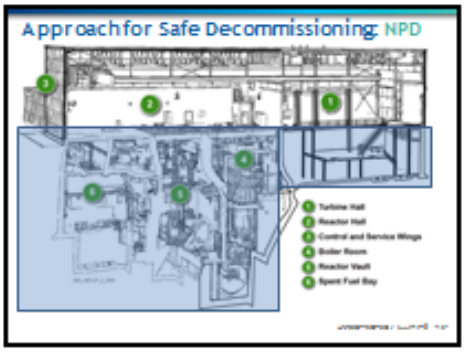

Canadian Nuclear Laboratories

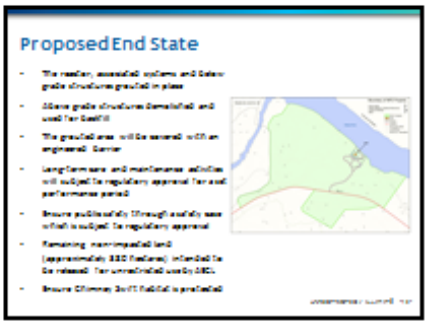

Emergency Preparedness
• Jurisdiction
• Potassium Iodide Distribution (KI)
• Risk
• Public Alerting

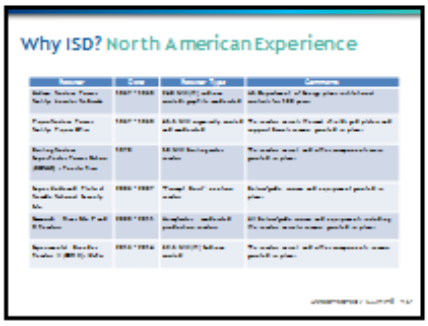

The single largest science and technology laboratory in Canada
- ~9,000 acres in size , ~200 acres lab complex
- 17 nuclear facilities, 70 major buildings
- ~2,900 employees
- 1,600 engineering, scientific, and technical staff, >300 skilled tradespeople
- CNL's annual purchase commitments of goods and services ~$250 and $400 M

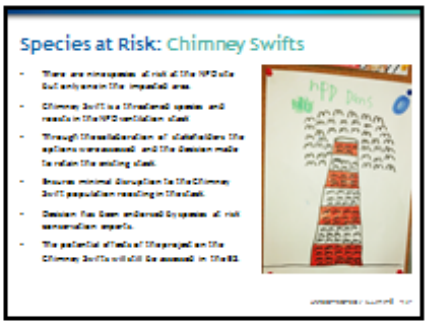

Overview: Project Objectives
Safely decommission the NPD site

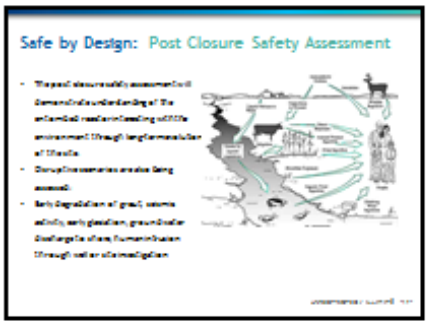

Missions
A unique, three-pronged mandate
Safely address legacy waste and environmental challenges.
Perform science and technology (S&T) activities to meet core federal responsibilities.
Support Canada's nuclear industry through access to S&T facilities and expertise on a commercial basis.

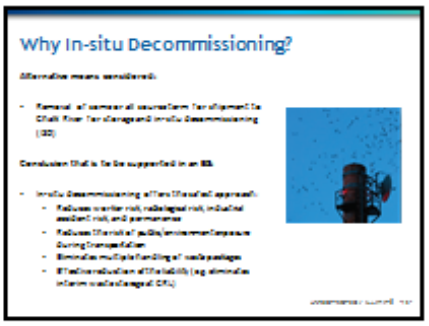

Approach for Safe Decommissioning: NPD

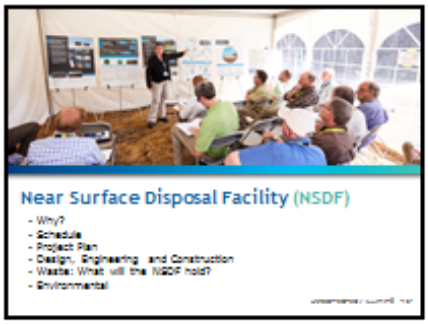

Proposed End State


Why ISD? North American Experience


Species at Risk: Chimney Swifts

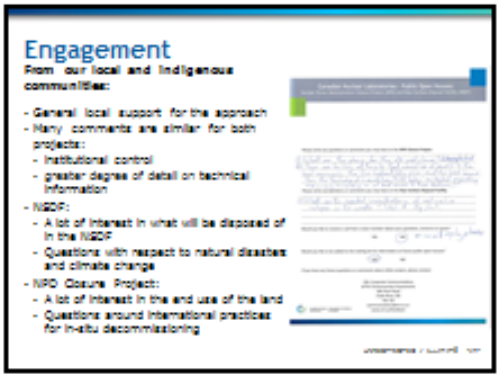

Safe by Design: Post Closure Safety Assessment

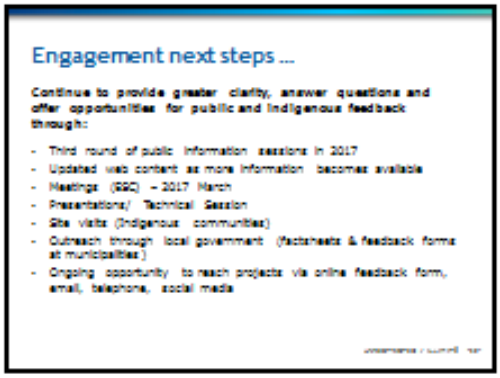

Why In-situ Decommissioning?


Near Surface Disposal Facility (NSDF)
- Why?
- Schedule
- Project Plan
- Design, Engineering and Construction
- Waste: What will the NSDF hold?
- Environmental


Regulatory Affairs: NPD Closure Project


Engagement
Public Engagement via:
Environmental Stewardship Council
Two rounds of public information sessions in seven host communities
Site Tours
Community Events
Project specific webpages
Social Media
Facebook & Twitter
Facebook Advertising


Engagement
From our local and Indigenous communities:
General local support for the approach
Many comments are similar for both projects:
Institutional control
greater degree of detail on technical information
NGDF:
A lot of interest in what will be disposed of in the NGDF
Questions with respect to natural disasters and climate change
NPD Closure Project:
A lot of interest in the end use of the land
Questions around international practices for in-situ decommissioning


Engagement next steps ...
Continue to provide greater clarity, answer questions and offer opportunities for public and Indigenous feedback through:
Third round of public information sessions in 2017
Updated web content as more information becomes available
Meetings (RSC) – 2017 March
Presentations/ Technical Session
Site visits (Indigenous communities)
Outreach through local government (factsheets & feedback forms at municipalities)
Ongoing opportunity to reach projects via online feedback form, email, telephone, social media

B.16 Advertising

invest in the MRC Pontiac

For the second consecutive year, the MRC Pontiac has made $272,000 available to local organisations and municipalities for the implementation of sustainable projects whose objective is to improve the quality of life of citizens.

"With the Territorial Development Fund (FDT), we would like to support the economic and social development of our territory," says Raymond Durocher, MRC warden. "We favour long-term development projects that take into consideration the needs of the community."

The Territorial Development Fund (FDT) is a result of an agreement between the MRC Pontiac and the Ministry of Municipal Affairs (MAMOT). The goal of the fund is to create and maintain jobs and/or promote the revitalisation of living environments in various sectors, such as: agriculture, forestry, tourism, social and community, culture, and heritage.

Organizations interested in applying for a grant can download the program criteria and request forms from the MRC website under the 'programs' tab. The submission deadline is November 11th, 2016. For further information, contact Christine Kluke at 819-648-5689, ext. 210.

(AB)

MANSFIELD – Le samedi 10 septembre, quarante ans après l'obtention de leur diplôme, des finissants des années 1975-1976 de l'école polyvalente Sieur-de-Coulonge se sont réunis pour des retrouvailles à la Ferme Livamia.

Ginette Ladouceur, membre du comité organisateur de l'évenement, affirme que cette rencontre a été absolument incroyable , remplie de rires et de plaisir. C'était comme si on ne s'était jamais quittés.

La journée a débuté à 14 heures avec la rencontre des finissants. À 16 heures, le groupe s'est réuni pour la photo de groupe suivie du souper préparé par la chef Vanessa Zhivkov et son équipe. Par la suite, une des finissantes et vedette locale, Mme Debbie Béchamp, a entamé la soirée musicale alors que le groupe musical de l'école des années 1975-1976 s'est regroupé pour terminer la soirée.

Le groupe des finissants 1975-1976

Les quatre membres originaux du groupe, Paul Bennett, Gontran LeGuerrier, Daniel Haley, et Gaétan Forgues accompagnés de la chanteuse Louise Lapierre et du guitariste JR Griffiths fait vibrer la salle av musique de l'époqu ont gardé la foule s plancher de danse ju la fin de la soirée.

Présents pour cél ces retrouvailles ét le premier directeu

MRC — de la p. 2

PPJ et VTT

Remo Pasteris du comité Green PPJ Verte a demandé au conseil si l'exposé de Cindy Cassidy de Eastern Ontario Trail Alliance (EOTA) la semaine précédente (voir page 2 de l'édition du 21 septembre) aura un impact sur la décision de permettre les VTT sur la PPJ. Selon le préfet Raymond Durocher, l'assemblée aurait été impressionnée par l'exposé, mais rien n'est encore décidé.

« C'est une question d'adaptation. L'EOTA est un très bon système mais ils y travaillent depuis très longtemps… si je sens que le dossier n'avance pas dans le meilleur intérêt de tous et que le rapport du comité VTT n'est pas inclusif, je ne le signerai pas », a-t-il dit.

M. Pasteris a aussi demandé si la MRC s'est informée du pourquoi le Pontiac n'a pas tiré partie du 7 millions $ de l'industrie du cyclisme au Québec et il a insisté sur l'importance d'aborder cette question avant de « réinventer la roue ». M. Durocher répondu que, pe longtemps, la piste P Pontiac était « une île n'était pas reliée à d' pistes tant du côté on que du côté de Gatine

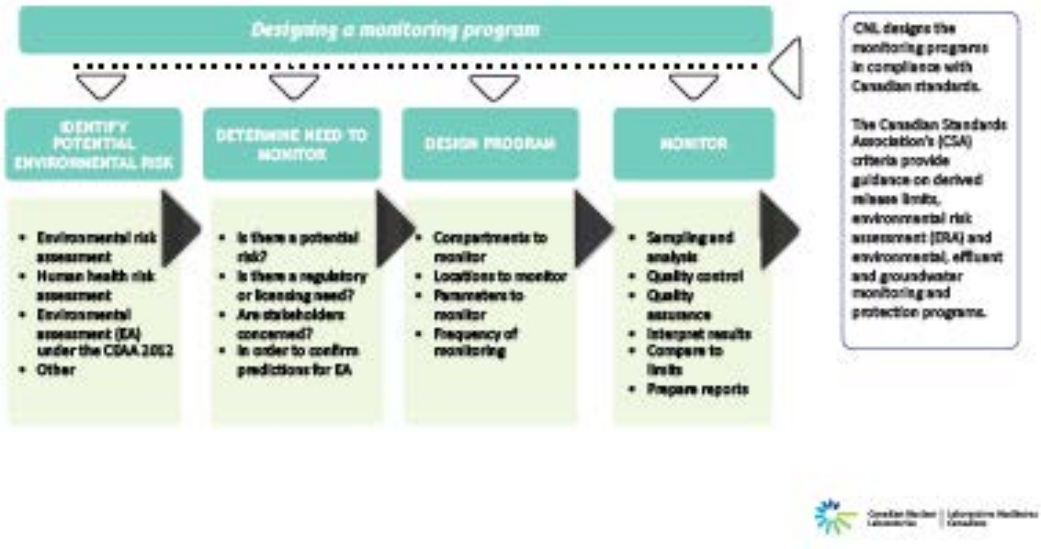
Winston Suns maire de L'Isle Allumettes a déclaré le conseil a besoin de ce dossier au cor « Le réseau EOTA bien planifié dès le c et il avait l'appui partenaires », a-t-il ajo

Location du corridor

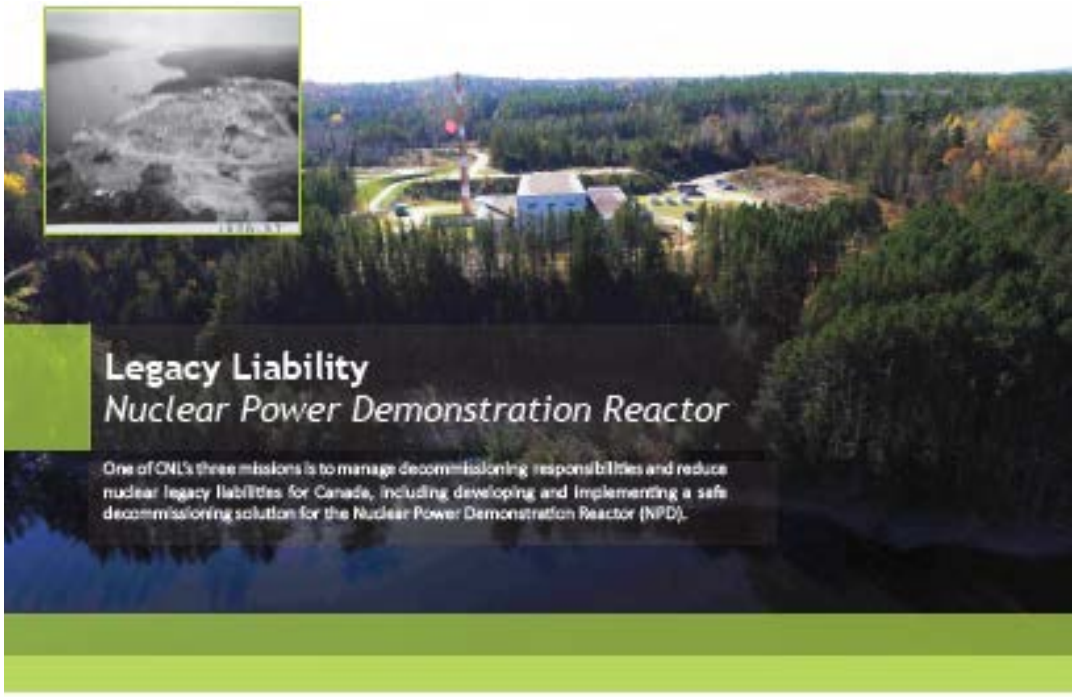
L'Association Motoneigistes de Po (AMP) a demandé MRC de l'aide pour la tion du corridor du C Portage-du-Fort (là c pont entre l'Ontario Québec a été récem construit) jusqu'à B Comme l'AMP es organisme sans but lu le CN ne peut pas lui directement. L'AMP a demandé à la MR louer la propriété ensuite la sous-loue club. Selon l'AMP, le b permettra de profiter subvention de 150 000

Toutefois, l'une clauses du bail stipule

B.16.1 Informational Poster Boards




Regulatory Oversight
Canadian Nuclear Laboratories
In order for the NPD Closure Project and the NSDF to go forward, regulatory approvals are necessary.
Regulatory Approvals
In order for either the Near Surface Disposal Facility (NSDF)or the Nuclear Power Demonstration (NPD) Closure Project to go forward, regulatory approvals are necessary for each project.
Both will have their respective Environmental Impact Statements submitted under the Canadian Environmental Assessment Agency (CEAA) Act 2012.
Then, under the Nuclear Safety Control Act (NSCA), a decision will be made on licensing.
For both projects, a decision of approval under CEAA 2012 would have to be given before a decision is made under the NSCA.
Due to the scope of each project, each project has different requirements under both CEAA 2012 and NSCA.
CEAA 2012 Requirements*
NSCA Requirements*
NSDF
• Environmental Assessment (includes, Environmental Impact Statement, Stakeholder and Aboriginal Engagement)
• Performance Assessment
NPD Closure Project
• Environmental Assessment (includes, Environmental Impact Statement, Stakeholder Engagement and Aboriginal Engagement)
NSDF
• Modification to the Waste Management Areas Facility Authorization (WMA FA) under Site Licence
• Safety Analysis
NPD Closure Project
• Request for licence amendment to perform decommissioning
• Detailed Decommissioning Plan
• Safety Analysis (Decommissioning and Post-Closure)
* There are also other requirements beyond those listed.
Environmental Assessment Process



Legacy Liability
Nuclear Power Demonstration Reactor

One of CNL's three missions is to manage decommissioning responsibilities and reduce nuclear legacy liabilities for Canada, including developing and implementing a safe decommissioning solution for the Nuclear Power Demonstration Reactor (NPD).

A first in Canada

NPD played an important part in the history of nuclear energy in Canada as it was the first nuclear power reactor to contribute to the electrical grid.

25 years of serving Canadian industry

In 1988, following permanent shutdown of the reactor, removal of the fuel, heavy water and power generating equipment from the site, Ontario Hydro transferred the responsibility of monitoring and licencing of NPD to Atomic Energy of Canada Limited (AECL). Now, CNL has a commitment to the government of Canada to permanently decommission the remaining structures.

Ensuring a solution for future generations

Decommissioning NPD will also provide an opportunity to collapse the footprint of the site that is currently in the care of CNL. Once the decommissioning project is complete, approximately one per cent of the land will remain under institutional control for monitoring by CNL.

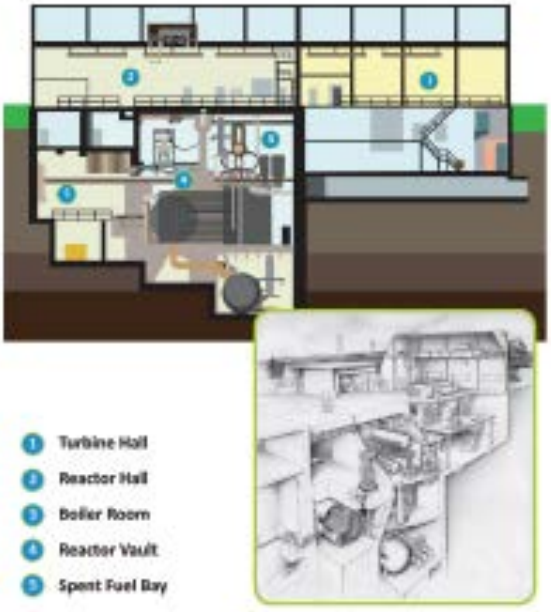
Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

Why in-situ decommissioning?

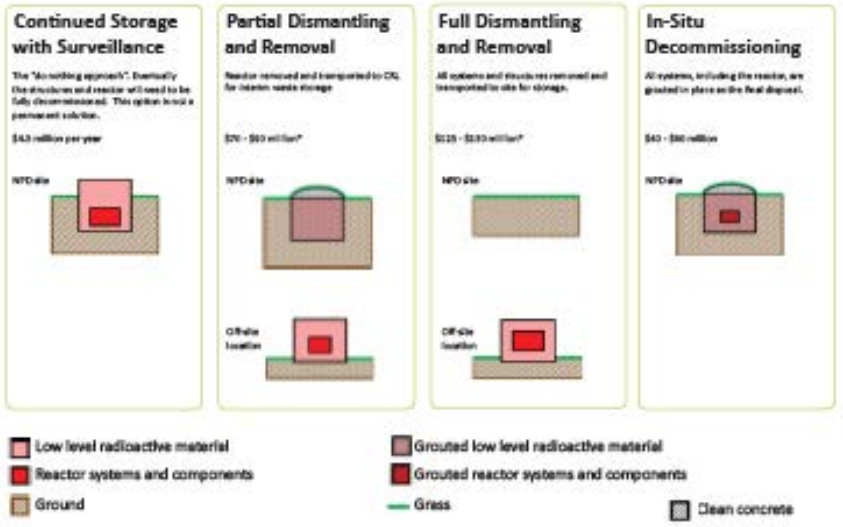
In-situ decommissioning has been selected as the decommissioning technique as it provides the following advantages:

- Reduced risk for radiological and industrial hazards exposure to workers
- Reduced transport/waste handling risks to the public and environment
- Effective reduction of the nuclear liability and eliminating interim waste storage
- Eliminates the risk associated with multiple handling of waste packages to and from interim storage and final disposal
- Allows for early release of non-impacted NPD property

A disadvantage of in-situ decommissioning is that it requires additional long-term monitoring of the impacted area, as a result of the disposal site created.



Alternative Means
NPD Closure Project



*These costs do not include interim waste storage or future waste disposal costs and an estimate for storage, transport and disposal is approximately $50M - $80M.

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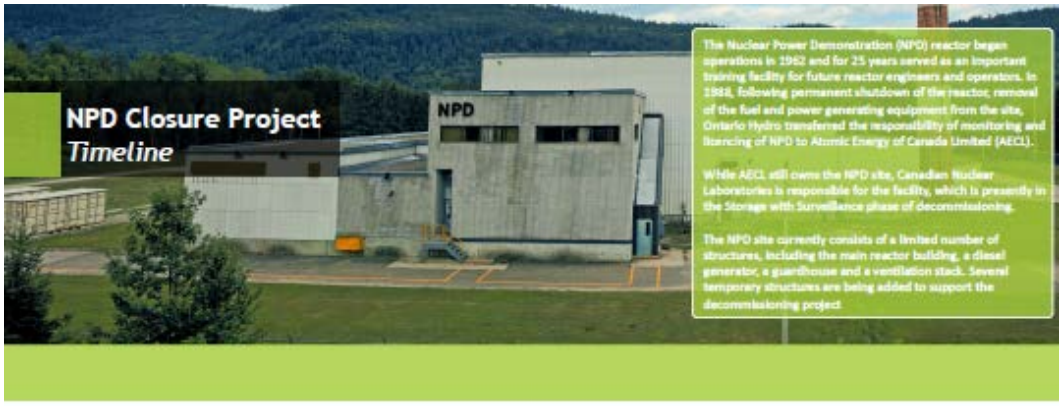
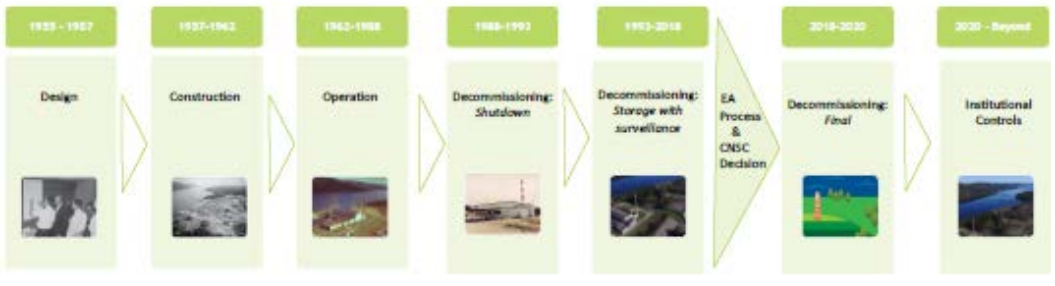
Boundary of NPD Property
Source Data:
Ontario Ministry of Natural Resources
County of Renfrew
AECL
AECL Property
NPD
Parking
Highway
Secondary Road
Rapides des Joachims, QC
Province of Quebec
Ottawa River
NPD
Hwy 17
NPD Area Map
Environmental Footprint
<1% of total area
Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens


NPD Closure Project
Timeline
NPD
The Nuclear Power Demonstration (NPD) reactor began operations in 1962 and for 25 years served as an important training facility for future reactor engineers and operators. In 1988, following permanent shutdown of the reactor, removal of the fuel and power generating equipment from the site, Ontario Hydro transferred the responsibility of monitoring and licencing of NPD to Atomic Energy of Canada Limited (AECL).
While AECL still owns the NPD site, Canadian Nuclear Laboratories is responsible for the facility, which is presently in the Storage with Surveillance phase of decommissioning.
The NPD site currently consists of a limited number of structures, including the main reactor building, a diesel generator, a guardhouse and a ventilation stack. Several temporary structures are being added to support the decommissioning project.


1955 - 1957
Design
1957-1962
Construction
1962-1988
Operation
1988-1992
Decommissioning: Shutdown
1992-2018
Decommissioning: Storage with surveillance
EA Process & CNSC Decision
2018-2020
Decommissioning: Final
2020 - Beyond
Institutional Controls

Safe by Design
NPD Closure Project

Ensuring the wellbeing of future communities through planning for normal evolution and disruptive scenarios

What is a Post-Closure Safety Assessment?

A Post-Closure Safety Assessment is a safety assessment to demonstrate understanding of the waste management system through a well-structured, transparent and traceable

Normal evolution

Normal evolution is the expected long-term evolution of the NPD site following closure. It is the scenario that is predicted based on reasonable extrapolations of present-day site features and receptors' lifestyles. This includes the site's expected degradation with time.

Disruptive scenarios

Disruptive scenarios refer to events or situations unlikely to occur but which lead to the possible penetration of barriers and abnormal loss of containment. The following are being assessed: Early degradation of grout, seismic damage, early glaciation, groundwater discharge to shore, a well and human intrusion or site investigation.

Purpose of the Post-Closure Safety Assessment:

A quantitative assessment of the post-closure radiological and non-radiological safety of the in-situ decommissioning of NPD.

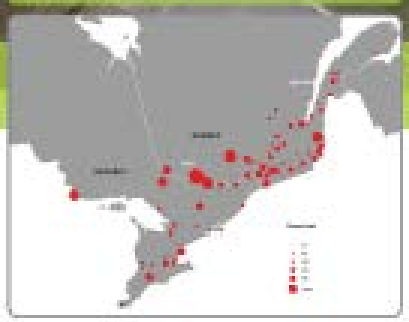
Identify the uncertainties or potential events that have the greatest potential impact on the long-term performance of the in-situ decommissioning.

Chimney Swifts
Chaetura pelagica

Chimney Swifts, as their name suggests, are known to nest and roost in chimneys and other hollow manmade structures. These small birds, with a unique cigar shape, are migratory insectivores, returning each spring to breed in Canada and the United States, and flying down to South America in the fall.

According to the Committee on the Status of Endangered Wildlife in Canada Assessment and Status Report on the Chimney Swift, the population has decreased by 95 per cent since 1968, qualifying the bird as a Species at Risk. The cause of the decline is thought to be brought about by a combination of changing weather patterns, food scarcity and a reduction in roosting habitat.

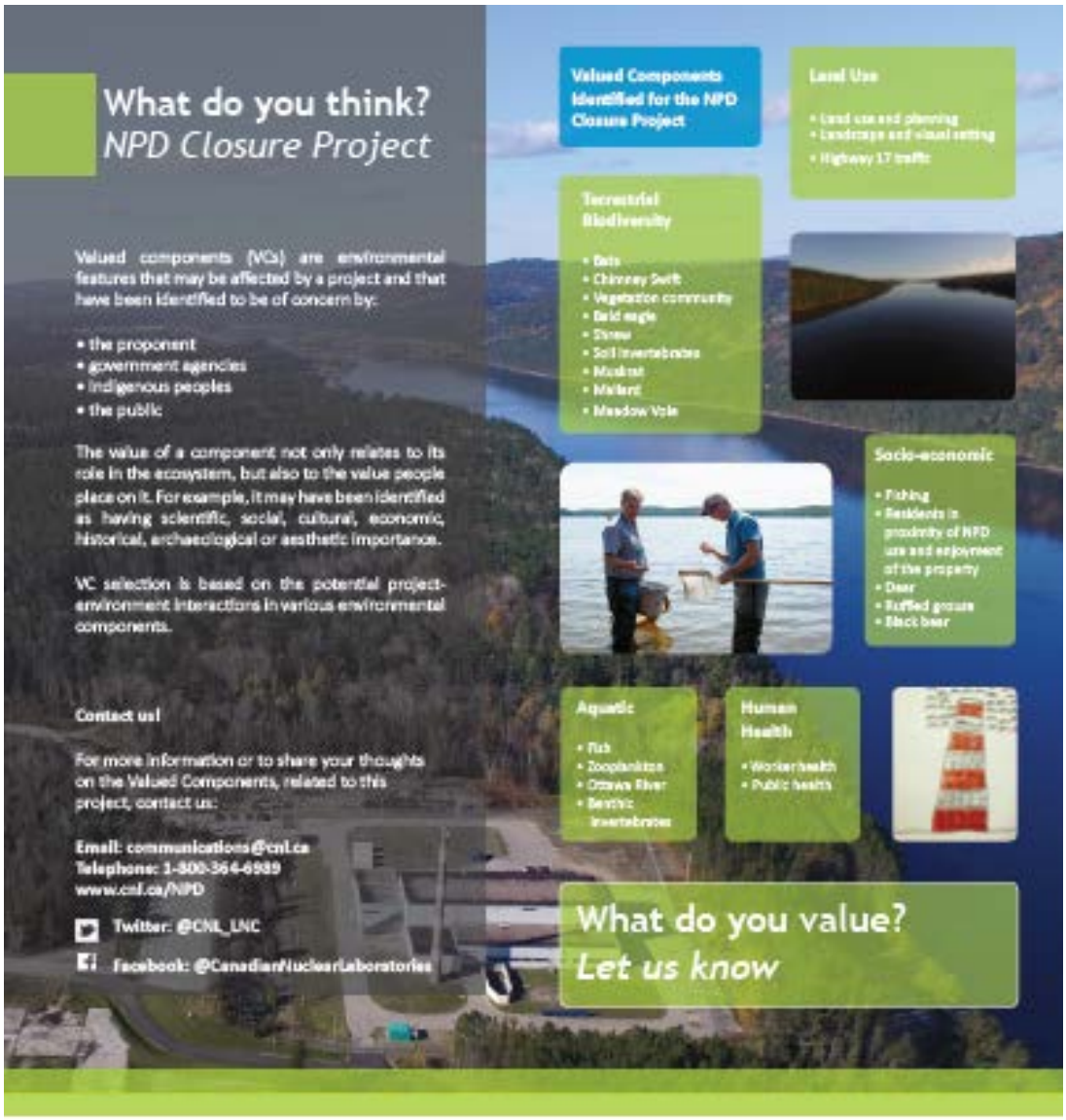
A single stack can provide a roost to thousands of birds. Between the Maritimes, Quebec and Ontario, 750 roosts have been identified, one of which is at the Nuclear Power Demonstration (NPD) reactor in Rolphton, as seen in the photos on the right. Some nights have seen more than 2000 birds entering the roost.



To learn more about the Chimney Swift and or to get involved in the National Evening Roost Count initiative consult the SwiftWatch website:

http://birdscanada.org/volunteer/sl/chew/

With the preparations for the final decommissioning phase for NPD underway, CNL had to make a decision about the Chimney Swift habitat. After hosting a workshop to deliberate over proposed options, including building a new-engineered habitat, CNL decided to keep the existing ventilation stack as a home for the Chimney Swifts. CNL came to this decision with valuable input from knowledgeable and interested groups, including Environment and Climate Change Canada, Shawville Roost Initiative, Bird Studies Canada Ontario SwiftWatch, Canadian Nuclear Safety Commission, Trent University, the Ontario Ministry of Natural Resources and Forestry, and Brock University.



Spatial and temporal boundaries

Spatial boundary: the geographical extent within which likely or potential environmental effects will be considered. Spatial boundaries will vary depending on the VC.

Temporal boundary: the length of an assessment with respect to project phases.

Three proposed study areas

1. The Site Study Area includes anticipated footprint of the project
2. Local Study Area: comprises the entire NPD property and extends into the Ottawa River.
3. Regional Study Area: extends well beyond the NPD site.

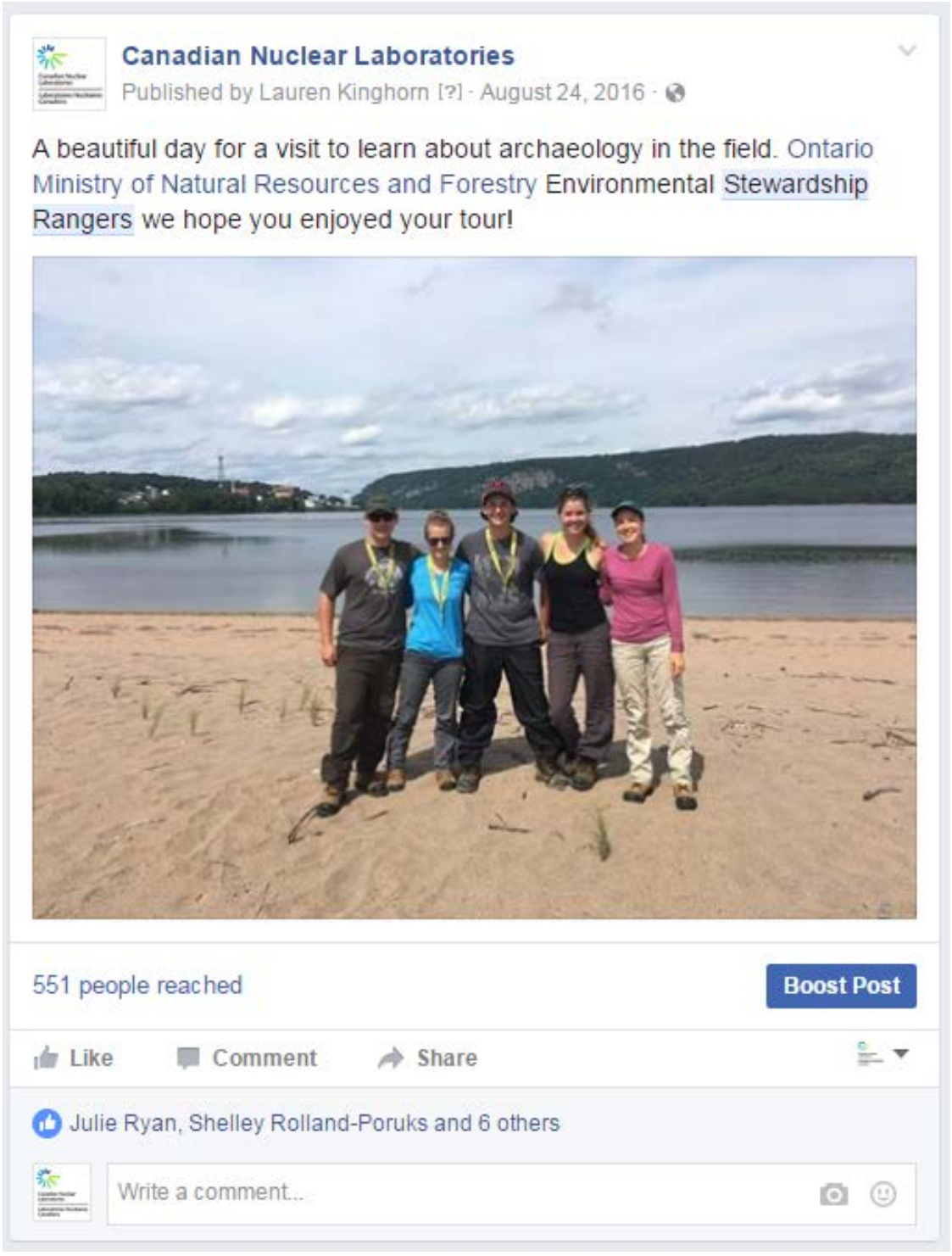
Assessment Timeframe

Decommissioning Execution: The expected active decommissioning phase of the project. This is when workers are expected to be on site, actively working on the facility.

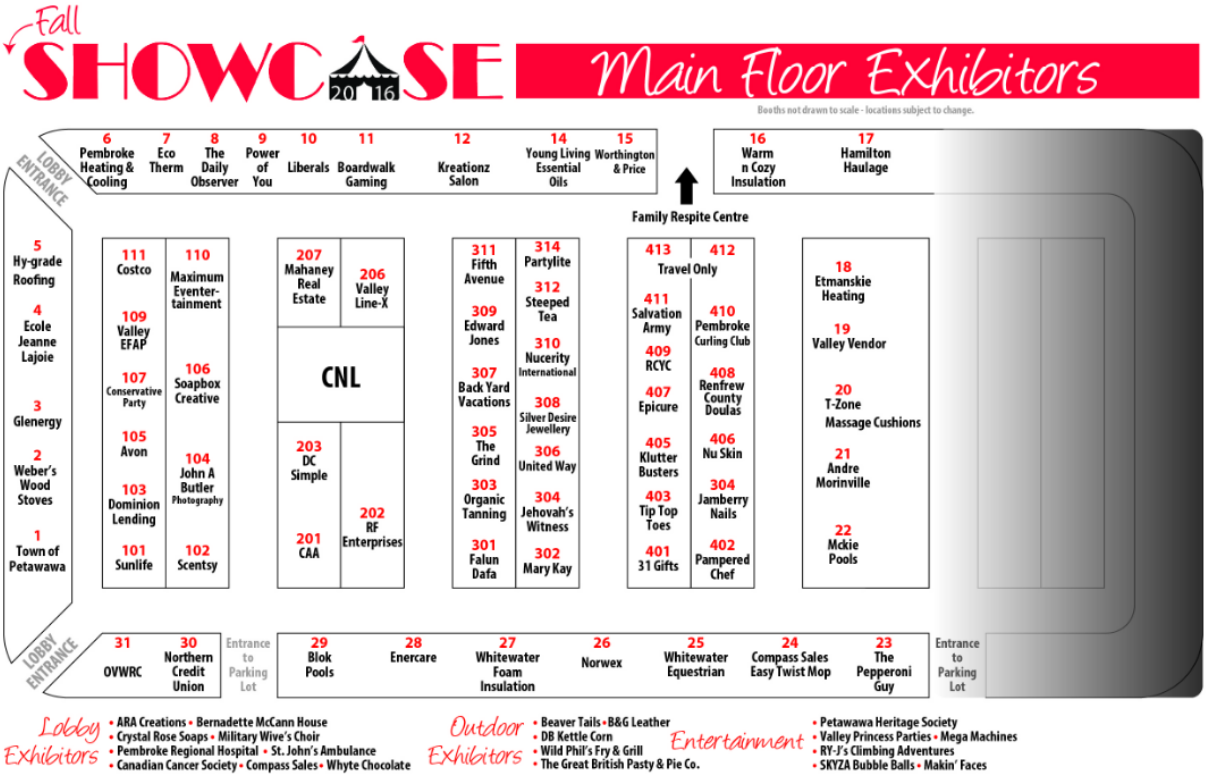
Institutional Control: the monitoring period of the project. This is the period of time where institutional controls are in effect, and there are a small number of workers. For example, in this phase workers will be monitoring the surroundings to ensure that there are no unexpected releases.

Post-Institutional Control: This period of time follows the expected cessation of institutional controls. This timeframe includes all long-term impacts of the facility.

B.17 Stewardship Rangers



B.18 Petawawa Showcase


Fall SHOWCASE 2016
Main Floor Exhibitors
Booths not drawn to scale - locations subject to change.
LOBBY ENTRANCE
6 Pembroke Heating & Cooling
7 Eco Therm
8 The Daily Observer
9 Power of You
10 Liberals
11 Boardwalk Gaming
12 Kreationz Salon
14 Young Living Essential Oils
15 Worthington & Price
16 Warm n Cozy Insulation
17 Hamilton Haulage
Family Respite Centre
5 Hy-grade Roofing
4 Ecole Jeanne Lajoie
3 Glenergy
2 Weber's Wood Stoves
1 Town of Petawawa
111 Costco
109 Valley EFAP
107 Conservative Party
105 Avon
103 Dominion Lending
101 Sunlife
110 Maximum Eventer-tainment
106 Soapbox Creative
104 John A Butler Photography
102 Scentsy
207 Mahaney Real Estate
206 Valley Line-X
CNL
203 DC Simple
201 CAA
202 RF Enterprises
311 Fifth Avenue
309 Edward Jones
307 Back Yard Vacations
305 The Grind
303 Organic Tanning
301 Falun Dafa
314 Partylite
312 Steeped Tea
310 Nucerity International
308 Silver Desire Jewellery
306 United Way
304 Jehovah's Witness
302 Mary Kay
413 Travel Only
411 Salvation Army
409 RCYC
407 Epicure
405 Klutter Busters
403 Tip Top Toes
401 31 Gifts
412
410 Pembroke Curling Club
408 Renfrew County Doulas
406 Nu Skin
304 Jamberry Nails
402 Pampered Chef
18 Etmanskie Heating
19 Valley Vendor
20 T-Zone Massage Cushions
21 Andre Morinville
22 Mckie Pools
LOBBY ENTRANCE
31 OVWRC
30 Northern Credit Union
Entrance to Parking Lot
29 Blok Pools
28 Enercare
27 Whitewater Foam Insulation
26 Norwex
25 Whitewater Equestrian
24 Compass Sales Easy Twist Mop
23 The Pepperoni Guy
Entrance to Parking Lot
Lobby Exhibitors
• ARA Creations • Bernadette McCann House
• Crystal Rose Soaps • Military Wive's Choir
• Pembroke Regional Hospital • St. John's Ambulance
• Canadian Cancer Society • Compass Sales • Whyte Chocolate
Outdoor Exhibitors
• Beaver Tails • B&G Leather
• DB Kettle Corn
• Wild Phil's Fry & Grill
• The Great British Pasty & Pie Co.
Entertainment
• Petawawa Heritage Society
• Valley Princess Parties • Mega Machines
• RY-J's Climbing Adventures
• SKYZA Bubble Balls • Makin' Faces

B.19 Letter to NPD Neighbours

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

UNRESTRICTED / ILLIMITÉE

October XX, 2016

Attention: «Name»
«TITLE»
«ORGANIZATION»
«ADDRESS»

Re: Nuclear Power Demonstration Closure Project

Dear «Name»,

I would like to reach out and personally introduce myself as the Head of the Nuclear Power Demonstration (NPD) Closure Project. As a neighbour to the Canadian Nuclear Laboratories' (CNL) NPD site near Rolphton, you may be familiar with NPD's history. You may have even worked there or know someone who worked there over the years.

Lately, maybe you've have noticed an increase in traffic around the site and are curious. Or, you may have heard that we are planning to complete the decommissioning of NPD, and are wondering what that decommissioning will look like and what it will mean for your community.

The NPD project team and I, who are now working at the NPD site (that's where the traffic is coming from), want to assure that we keep you are aware of our ongoing activities at the site. If you have any questions or comments about the project please contact us – at any point in the project and on any issue of interest to you.

More information on the NPD Closure Project can be found on at www.CNL.ca/NPD.

I also want to take this opportunity to invite you to attend one of our public information sessions in October. After a round of information sessions in the spring, CNL, including members of NPD's project team, will be out in the community again to provide updates on two projects: the NPD Closure Project, and the Near Surface Disposal Facility project at Chalk River. You can find more details on these information sessions enclosed.

Kind regards,

Pat Daly

Head of NPD Closure Project
Canadian Nuclear Laboratories

Canadian Nuclear Laboratories
286 Plant Rd
Chalk River, Ontario
Canada K0J 1J0
Telephone: 613-584-3311
Toll Free: 1-866-513-2325

Laboratoires Nucléaires Canadiens
286, rue Plant
Chalk River, Ontario
Canada K0J 1J0
Téléphone: 613-584-3311
Sans frais: 1-866-513-2325

B.20 Email to Stakeholder List

From: >Communications
To: >Communications
Bcc: "galleriegallera@gmail.com"; "paplodge@outlook.com"; "mark.gerchikov@cogeco.ca"; Dranga, Ruxandra; "alancarmichael@live.ca"; "luptoncl@sympatico.ca"; "swandrews58@gmail.com"; "dcgodin@gmail.com"; "justins454is@hotmail.com"; "lostclockmaker@bell.net"; Brown, Morgan; Thompson, Margot
Subject: Canadian Nuclear Laboratories - Public Information Sessions
Date: October-17-16 12:56:06 PM
Attachments: image001.png

UNRESTRICTED / ILLIMITÉE

Thank you for taking the time to attend one of our project information sessions held earlier this summer. At this session, you requested to be notified of future information sessions on the Nuclear Power Demonstration (NPD) Closure Project and the Near Surface Disposal Facility (NSDF).

This week and next week we will be hosting public information sessions in communities around the region. We would like to welcome you to join us.

Our project teams and staff from Canadian Nuclear Laboratories' (CNL) Environmental Protection will be available to share developments on both projects and help answer any questions you may have about either project. As well, we encourage you to contact us with any questions or comments you may have – at any time.

We hope to see you at one of the following:

Monday, October 17 6:00 p.m. – 8:00 p.m. Town Hall Rapides-des-Joachims	**Tuesday, October 18** 6:00 p.m. – 8:00 p.m. Bennett Room, J.L Gray Deep River
Wednesday, October 19 6:00 p.m. – 8:00 p.m. Township Hall Stonecliffe	**Thursday, October 20** 6:00 p.m. – 8:00 p.m. Municipal Hall Sheenboro
Monday, October 24 6:00 p.m. – 8:00 p.m. Copeland Room, Best Western Pembroke	**Wednesday, October 26** 6:00 p.m. – 8:00 p.m. Lion's Club Hall Chalk River
Thursday, October 27 6:00 p.m. – 8:00 p.m. Rotary Room, Civic Centre Petawawa	

Warm regards,

Margot Thompson
Corporate Communications
Canadian Nuclear Laboratories
Tel. 613 584 8811 Ext. 42252
Email: margot.thompson@cnl.ca

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

B.21 Media Coverage

Canadian Nuclear Society

The Chalk River branches of Women in Nuclear (WiN) and the Canadian Nuclear Society are pleased to offer a seminar, open to the general public, entitled "In-Situ Decommissioning of the Nuclear Power Demonstration (NPD) Reactor."

The talk will take place at the Chalk River Legion on Tuesday, September 27.

The talk begins at 6 pm, with pizza served at 5:30 pm.

Guest speaker is Meggan Vickerd, facility authority for the NPD Closure Project, and admission is free, open to the public.

In her talk, Vickerd will discuss the preferred decommissioning technique for the NPD reactor in Rolphton, as well as provide an overview of the current status of the Gentilly-1 and Douglas Point reactors which are in a safe shutdown state.

NPD began operation in 1962 and was operational until 1987.

CNL intends to safely reduce Canada's nuclear legacy liability by carrying out the decommissioning of NPD by 2020.

Vickerd is the facility authority for the Nuclear Power Demonstration (NPD) Waste Facility and thus part of the project team advancing the decommissioning of the reactor and closure of the NPD site.

Previously she was the operations manager of all three prototype reactor facilities, which included Gentilly-1 and Douglas Point.

NORTH RENFREW TIMES - OCTOBER 12, 2016 - page 5

County aims for 3%

BY TERRY MYERS

Renfrew County will be looking at a tax increase of three per cent for 2017.

The county's mayors and reeves have approved budget guidelines calling for a three per cent increase in the county's total tax levy.

A portion of that increase - 0.5 per cent - will be directed towards the county's long-term capital plan.

The county's operating expenses will be restricted to a 2.5 per cent increase, with the cost of living salary increase for non-union staff set at two per cent.

In a report from the county's finance and administration committee, the county says the first draft of the budget will be prepared using the approved guidelines.

"Overall departmental operating budgets will be prepared making every effort to limit their respective levy increases to two per cent, but no more than the 2.5 per cent operating guideline established by county council."

According to an approved timeline, department budgets will be prepared by November 25 and reviewed by senior staff, the county warden and chair of the finance committee in December.

Each county committee will review its detailed budget in early January, with all of county council meeting for a budget workshop on January 18.

Final approval of the county's 2017 budget is expected to take place at the regular county council meeting of January 25.

NO CNL STUDY

Renfrew County will not be moving ahead with a study on the impact of the Chalk River Laboratories.

The county planned to apply this summer to the Canadian Nuclear Safety Commission's "participant funding program" for money to research the "socio-economic impact" of the Canadian Nuclear Laboratories at Chalk River.

"This research will also identify the present and future potential of the nuclear science, technology and business cluster which is evolving from CNL," Alastair Baird, manager of economic development, said in a report to the county's development and property committee.

The research project would "support and inform" the ongoing efforts of the county to "support and sustain this vitally important economic driver in the county," Baird said.

"While creating a comprehensive picture of the economic impact of CNL and related science and technology business, it will specifically address the new opportunities for economic expansion, diversification and innovation presented by the development of the Near Surface Disposal Facility project at Chalk River and the Nuclear Power Demonstration (NPD) closure project at Rolphton."

The CNSC was offering up to $100,000 in funding for groups wishing to take part in the approvals process for the two disposal projects.

The deadline to apply was September 2.

However, the county's proposal did not fit the "parameters" of the CNSC's program, Baird reported recently.

"The funding only supports the acquisition of new information relevant to public safety and communications" - not "socio-economic impact analysis," Baird said.

"The (CNSC) program officer did suggest that the county have representation at the public hearings on the Nuclear Power Demonstration (NPD) Closure project and the Near Surface Disposal Facility project to express the interests of the county in seeing those projects move forward."

CNL to hold new information sessions

Canadian Nuclear Laboratories will hold a series of public information sessions beginning next week on two major decommissioning projects.

CNL is currently going through the environmental assessment process for the proposed "Near Surface Disposal Facility" (NSDF) and the "NPD Closure Project."

The NSDF would be a massive low-level waste site that would "facilitate" the demolition and decommissioning of more than 100 aging buildings and smaller structures on the site of the Chalk River labs.

The company says it's all part of renewing the Chalk River site for future development.

The NPD Closure Project would see the Nuclear Power Demonstration (NPD) reactor near Rolphton finally decommissioned and much of the property returned to public use.

The proposal is to "grout" the remaining reactor components in place with concrete below ground level.

The entombed reactor would then be capped and covered over with a protective mound and monitored for the next 100-plus years.

Applications for the two projects were filed last spring and public open house sessions were held in July.

CNL says "new information" will be available at the new series of information sessions.

The sessions will begin at the Rapides des Joachims town hall next Monday night, October 17.

A session will be held in Deep River at the JL Gray Centre on Tuesday, October 18 and in the township hall in Stonecliffe on Wednesday, October 19.

After meetings in Pembroke and Sheenboro, Quebec, a session will be held at the Chalk River Lions Hall on Wednesday, October 26 and finally in Petawawa at the Civic Centre on Thursday, October 27.

All sessions are from 6-8 pm.

CNL moving forward on decommissioning projects

"Accelerated" schedule

by Terry Myers

Canadian Nuclear Laboratories is pursuing an "aggressive" schedule on decommissioning at the Chalk River labs and other sites.

But the company has the backing of the federal government to move projects forward faster than originally planned, in some cases by "decades."

That was the message recently from Kurt Kehler, vice-president for decommissioning and waste management for CNL, to members of the Canadian Nuclear Safety Commission (CNSC).

Kehler said decommissioning is part of CNL's "new mandate" associated with the move to a government-owned, contractor-operated (GoCo) management model.

"First and foremost, our mission is to modernize the infrastructure, capabilities and approach to deliver science and technology to the government and to third party customers," he said.

"To support this we need to accelerate the decommissioning, environmental remediation, and establish long-term waste management solutions while reducing costs and the financial risk to the Canadian taxpayer."

CNL is currently doing environmental assessments on two major projects in this area - the "Near Surface Disposal Facility" (NSDF) at Chalk River and the "NPD Closure Project" at Rolphton.

The NSDF would be a massive low-level waste site that would "facilitate" the demolition and decommissioning of more than 120 aging buildings and smaller structures on the site of the Chalk River labs.

The NPD Closure Project would see the Nuclear Power Demonstration (NPD) reactor finally decommissioned and much of the property returned to public use.

The proposal is to "grout" the remaining reactor components in place with cement below ground level.

The entombed reactor would then be capped and covered over with a protective mound and monitored for the next 100-plus years.

CNL recently held a second series of public open houses on both projects.

The company is hoping for approvals for the projects by 2018-2020.

Best practices

Kehler said all of CNL's work is done under the watch of Atomic Energy of Canada Ltd, which oversees the GoCo contract and takes "policy direction" from the federal government through Natural Resources Canada.

"I want to assure the commission that, as a licensee, we understand our responsibilities for safety and protection of the environment, and that these are our highest priorities.

"I can also assure the commission that our contracts with AECL are aligned with these priorities," Kehler said.

"We fully understand the licensing and approvals required to support this work, and we are engaged with CNSC staff to support the multiple concurrent licensing efforts underway."

Kehler said the NSDF in particular is a key part of "Vision 2026" for Chalk River, allowing for the redevelopment of the site with new labs and facilities as older buildings are removed.

Kehler said everything CNL is doing is "informed by international best practices."

"We are confident that our vision represents a safe, technically sound approach to achieve the mandate."

"However," he added, "we understand that none of what we are describing today is predetermined.

"We understand the engagement and the approval is required. We understand and respect both the environment assessment and the licensing process. We aim to be transparent."

Kehler said the company also recognizes that "we are asking the community and the regulator (CNSC) to absorb and evaluate a lot of information over a relatively short period of time."

"We are taking great efforts to make information available and answer any and all questions."

Speaking on NPD, project head Pat Daly said the company has looked at "other alternatives" to its plan, but feels "in-situ decommissioning" is the "most robust approach."

Daly said the remains of the reactor are "already contained within a reinforced concrete containment."

Leaving the reactor where it is "also minimizes exposure to employees both from an industrial safety/industrial hygiene and from an ALARA ("as low as reasonably achievable") point of view, as well as eliminates unnecessary transportation of waste on public highways and multiple handling of waste at the Chalk River site."

CNSC member Andre Harvey said he was impressed with CNL's presentation, but questioned to what extent "it's something achievable and not positive thinking."

Kehler said the GoCo team at CNL has brought in "quite a bit of experience" in "accelerating" decommissioning projects at sites in both the United States and the UK.

"So it is not without substance that we talk about it," he said.

"It comes down to really doing a very detailed plan of building turnover - the steps of decommissioning, decontamination, deactivation and being able to get through demolition."

Environment

But when you talk about reducing the cost and financial risk, Harvey said, "what about the environment?"

"When you cut something, is there a prejudice to the environment and the health of people?"

But Kehler said it's a "good news story."

With an engineered facility, "we are taking buildings which are now decades old, some of them half a century old, wooden structures, fire hazards, in all sorts of states of repair and disrepair, as it might be, and we are removing those structures and putting them, from just being along the edges of the river to being removed and in an engineered disposal facility, where it is much safer for the environment than it is now."

Kehler said doing that also allows for further remediation of the site, including removal of contaminated soil "near and around" the buildings and groundwater problems.

"So it's not that the speed and efficiency is a potential environmental hazard, it's actually the other way around," he said.

"Really all I am," Kehler said on a lighter note, "is a high-paid garbage man... to make the waste and sort the waste in the appropriate streams that it gets safely disposed of in the right places.

"Once you kind of come to that realization, you can look at the project differently."

And will there be enough money to do all the work? Harvey asked.

"Do you have enough commitment from the government to achieve it?"

> CONTINUED ON PAGE 20

Decommissioning schedule

CONTINUED FROM PAGE 4

Shannon Quinn, vice-president of science, technology and commercial oversight for AECL, said all of the work CNL has planned "are all obligations and responsibilities of AECL and indeed the government of Canada, and... are already reflected on the public accounts."

"So perhaps more succinctly to your question, the government of Canada has already made provision for the funds for all of this work," Quinn said.

Kehler also noted that doing the work safely is part of the GoCo contract, with penalties "up to 100 per cent loss of any potential fee" for the companies that make up the contract consortium.

But CNSC member Dan Tolgyesi said that with CNL's "very aggressive timeframe or schedule," it will be "quite a management challenge to avoid shortcuts" and ensure "high-quality execution."

"If there are consequences, they are coming a few years or years after and then the costs are quite higher to correct them," he said.

Learned the hard way

"So there will be a kind of necessary tight supervision, and I think tight verification and supervision from staff also."

Kehler agreed.

"Based on our experience of accelerating projects like this at other sites, we all believe - and we have learned the hard way...that doing the job once, and more importantly, doing the job safely and compliantly to begin with is the most important thing to achieving the schedule and the cost," he said.

Haidy Tadros, director of regulatory improvement and major projects management for the CNSC, said commission staff are also keeping a close eye on CNL, with "close oversight" of the work so far.

"With the anticipation of the work that is yet to come, we have mobilized a dedicated team who are looking at these projects, making sure the regulatory oversight is there but also the regulatory requirements are clear," she said.

"Ongoing conversations do happen on a regular basis with CNL to ensure that we are meeting the timelines as per what has been agreed to."

Questions raised over CNL waste projects

"Lack of clarity will not cut it" - CNSC

by Terry Myers

Canadian Nuclear Laboratories is moving ahead with major decommissioning projects at the Chalk River labs and other sites.

But questions have been raised by Canada's nuclear regulators about some of the proposals involved.

Kurt Kehler, vice-president for decommissioning and waste management for CNL, told members of the Canadian Nuclear Safety Commission (CNSC) recently that decommissioning is part of CNL's "new mandate" associated with the move to a government-owned, contractor-operated (GoCo) management model.

CNL is currently doing environmental assessments on two major projects in this area - the "Near Surface Disposal Facility" (NSDF) at Chalk River and the "NPD Closure Project" at Rolphton.

The NSDF would be a massive low-level waste site that would "facilitate" the demolition and decommissioning of more than 120 aging buildings and smaller structures on the site of the Chalk River labs.

The NPD Closure Project would see the Nuclear Power Demonstration (NPD) reactor finally decommissioned and much of the property returned to public use.

The proposal is to "grout" the remaining reactor components in place with cement below ground level.

The entombed reactor would then be capped and covered over with a protective mound and monitored for the next 100-plus years.

CNL recently held a second series of public open houses on both projects.

The company is hoping for approvals for the projects by 2018-2020.

However, following Kehler's presentation, members of the safety commission raised questions about both projects.

CNSC member Rumina Velshi said planning to have the NSDF at Chalk River in service by 2020 is an "extremely aggressive timeline."

"Just seeing the experience we have had with some of our other projects, how confident are you in that date?" he asked.

Kehler said it is "recognizably an aggressive schedule, we realize that."

"It allows no hiccups in the process to get there whatsoever and there is no contingency built into that date at this point in time, but we are targeting it as strong as we can as a top priority of really the entire organization because it is so critical to coming up with a final disposal path to support the schedule."

But Velshi noted that, along with low-level radioactive wastes, CNL is proposing the NSDF take "some intermediate-level waste, I think you said with a short half-life."

"So how short a half-life?"

Cobalt-60

Kehler said he was not prepared to list off specific waste types at the presentation, but that Cobalt-60 produced at Chalk River would be an example.

When Cobalt-60 "comes to disposal, it still has a fairly high dose field associated with it," Kehler said.

Cobalt-60's half-life is five years, he added, "so when we look at putting things in near surface disposal we expect - we are not done with the design and the performance assessment and waste acceptance criteria, but we expect to be able to take items like that."

Kehler said that rather than package Cobalt-60 and put it in storage for 20 or 30 years and then move it a second time to a disposal facility, it makes sense to handle it only once.

"Why can we not build an argument that says, with proper shielding now for the handling of the people, for the safety of the people handling it, putting it into a near surface disposal, because even before you are done with completing the Near Surface Disposal (Facility)... its half-life will be gone."

Kehler said CNL is still working on an integrated waste strategy to deal with intermediate-level waste.

"We are taking every type of waste we can identify, going through the radionuclides, the other chemical constituents, and then (coming) up with a treatment and disposal path potentially for all of them which will lead to what is a potential repository, which could deal with those.

"So before the end of our (GoCo) contract, I would expect to have that suggestion and started to work on what that disposal path is, but we will not be there by the end of this contract," he said.

CNSC president Michael Binder said clearly identifying where different wastes fit and how they will be handled - "characterization of waste management" - is a critical issue.

"Lack of clarity in the public will not cut it," he said.

"We use the language of low, intermediate and high (level waste). You have to be absolutely clear what this repository is going to handle."

Just identifying waste from buildings rather than their activities is not enough, he said.

"A lot of people out there are pretty smart and they will demand to know exactly what is being proposed for burial here."

Kehler agreed.

"We believe there is work that can be done there and we are working with (CNSC) staff at this point to make it more readily apparent to the public what our purpose is with the Near Surface Disposal Facility."

IAEA standards

Meanwhile, questions were also raised around the NPD closure and the proposed decommissioning of the WR-1 reactor at Whiteshell in Manitoba.

"In-situ" decommissioning or "entombment" is proposed for both projects, but CNSC member Sandy McEwan noted that in CNL's own presentation, the company acknowledged that the in-situ approach "is not supported by the IAEA" (International Atomic Energy Agency).

"Can you explain that to me and give me a rationale?"

Dan Coyne, head of the Whiteshell closure project for CNL, said there is an IAEA document that says in-situ decommissioning or entombment "is not a preferred approach except in certain conditions."

But Coyne said the document also talks about "places where entombment could be utilized" and "areas where you have a low amount of long-lived radionuclides or no disposal site in the state."

"So it does offer options for utilizing," he said.

"If you read just one part of that technical document, it does say entombment is not a preferred approach.

"But if you read on, there is additional documentation that they call out in that guidance document in regards to entombment."

Karine Glenn, director of wastes and decommissioning for the CNSC, agreed.

Glenn said the document in question is IAEA GSR 6, "and indeed, it does state that entombment is not recognized as a decommissioning strategy."

"Internationally, typically when entombment is referred to, they are referring to a situation such as Chernobyl where a sarcophagus is poured over an accident-type scenario. It doesn't really speak to engineered remediation or decommissioning in a planned fashion of a facility," she said.

Glenn said the type of decommissioning that CNL is proposing "is not truly what the intent of the IAEA document is with."

"The IAEA is working currently on a document to provide guidance with respect to their position on entombment in-situ decommissioning. Unfortunately, they are not able to provide us with a date of when that document will be published."

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CNL waste projects

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McEwan said that leads to the "obvious question that is related to this."

"So you have an underground facility. You are entombing it... What are the long-term risks or medium to long-term risks of that kind of concrete infill?

"Is the concrete stable over many years? Do the long-lived radionuclides - are they there in quantities enough that can cause degradation and is there a risk to groundwater?"

Patrick Daly, head of the NPD closure project for CNL, said the cement-based mixture used to "grout" the remains of the reactor in place is specially formulated in each case.

"When you pump it into a facility, it fills all the voids and spaces with the underground facility. So it's essentially to provide structural integrity that you end up with a monolith," he said.

Daly said the process CNL is going through for the environmental assessment "is to model that for post-closure performance and to provide assurance to the CNSC staff as well as yourselves that this is a viable alternative for disposal, that it will contain the radionuclides for a long period of time."

"If you consider thousands of years, the way our model will work, it's very conservative," he said.

Daly said the grout will degrade over time and the longer-lived elements will "migrate" over hundreds of thousands of years, "but it will not have an impact to the public."

"It will not exceed the exposure limits to the public. And that 'w what the model is intended to show and that's the process we are going through right now. And these are accepted - we are working to accepted standards and not only within Canada but internationally."

Mike Rinker, director of environmental and radiation protection and assessment for the CNSC, said that as part of the environmental assessment, "there is a requirement to assess the alternate means to manage these projects."

"So in-situ entombment, I think we are hearing is the preferred option, but we are going to be assessing whether that is the appropriate option or not."

Rinker said one of the criteria used will be whether "the environmental protection achieved by in-situ management (is) balanced off well by appropriate protection of workers who would otherwise have to be involved in digging and blasting out the materials and moving it."

"So that's something that will be assessed during the course of the environmental assessment."

Rinker said that in the long term, if entombment "were to fail, I think probably the groundwater monitoring of that facility now... is a pretty good understanding of what is the mobility of the radionuclides in that facility."

"And the groundwater really is not a major issue from the monitoring we have seen over the last decade or two."

LETTERS TO THE EDITOR

The devil will be in the details

Re: "CNL moving forward on decommissioning projects," NRT November 2.

I was intrigued by Terry Myers' summary in last week's NRT on the recent presentation by Canadian Nuclear Laboratories (CNL) to the Canadian Nuclear Safety Commission (CNSC).

The presentation covered CNL's aggressive schedule of decommissioning at the sites owned by the federal government through Atomic Energy of Canada Limited (AECL).

I consider that the work is being conducted on my behalf (as a resident near the Chalk River Laboratories - CRL), in my name (as a Canadian citizen), and at my expense (as a federal taxpayer).

I heartily agree with the goals of modernizing the infrastructure at the Chalk River Laboratories (CRL), establishing long-term waste management solutions, and reducing costs and risks to the Canadian taxpayer.

However, I do not think that the three proposed projects described in the presentation will contribute to these goals.

The three projects are the construction of a Near Surface Disposal Facility (NSDF) at CRL, the entombment of the Nuclear Power Demonstration Reactor (NPD) near Rolphton, and the entombment of the WR-1 reactor at the Whiteshell Laboratories (WL) near Pinawa, Manitoba.

All three projects will create near-surface repositories for low-level and intermediate-level radioactive wastes.

The NSDF is a massive and improved version of a modern municipal landfill.

The revised project description that CNL submitted to the CNSC notes that about 10,000 cubic meters (one per cent of the one million cubic meters total capacity) of the waste to be put in it will be intermediate-level waste.

Intermediate-level waste can contain significant quantities of both short-lived and long-lived radioactive nuclides.

The Waste Acceptance Criteria (WAC) for the NSDF have not yet been set. How thoroughly wastes will be checked to confirm they meet the WAC has not been specified.

I trust the WAC will strictly limit the content of long-lived nuclides and robust waste characterization will be in place.

Many of the 100-odd buildings at CRL to be demolished in the next 10 years contain much long-lived waste.

These buildings include hot cells, the contaminated NRX reactor basement, a cold-war-era above-ground plutonium extraction vault, and fuel storage and handling bays.

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Letter: details

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What will be done with all the long-lived wastes that will be generated in demolishing them?

I trust those wastes are covered in CNL's Integrated Waste Strategy.

Both the NPD and WR-1 reactors underwent planned permanent shutdowns after exemplary decades of accident-free operation.

Entombment (sometimes called in-situ decommissioning) of the NPD reactor will leave the reactor and its internals in place - near the surface and encased in grout.

The WR-1 project will leave that reactor in a similar state.

Part 6 of the IAEA General Safety Requirements, Decommissioning of Facilities (GSR Part 6, July 2014) states on page 3:

"Entombment, in which all or part of the facility is encased in a structurally long lived material, is not considered a decommissioning strategy and is not an option in the case of planned permanent shutdown. It may be considered a solution only under exceptional circumstances (eg. following a severe accident)."

That is the collective opinion of the world's nuclear community.

IAEA GSR documents are not simply the opinion of a few consultants. The documents are thoroughly reviewed and vetted by the regulatory authorities of the IAEA's member states.

All three near-surface disposal facilities will not withstand the massive ice loads that will cover much of Canada in succeeding ice ages.

Eventually the waste will be exposed on the surface and free to re-enter the environment and be accessed by humans.

The better approach - that was approved and being pursued before the transition of AECL to GoCo management - involved the construction of a bedrock repository to receive the long-lived intermediate-level wastes from all AECL sites.

This type of repository can reliably contain the wastes and shield them from climatic extremes and human intrusion.

I spent a decade of my career in teams assessing the long-term safety of both bedrock and near-surface repositories for different classes of radioactive waste.

I am very glad I do not have the difficult task of trying to make convincing safety cases for any of the three projects.

The projects will be quick and relatively cheap to execute, but seem contrary to international best practices.

They may well not isolate and contain the wastes in them for the very long periods of time that must elapse before the risk to humans and the environment from the wastes is sufficiently diminished to no longer be of concern.

The federal government - not the proponent, CNL - will be left responsible for the high cost of any required corrective retrieval and transfer of waste to a more satisfactory repository.

The projects will therefore also not reduce the federal nuclear legacy liabilities. They may increase them.

Much more can be and has been said about the three proposals. The project descriptions for the three projects are available through the online registry of projects maintained by the Canadian Environmental Assessment Agency (CEAA) (www.ceaa-acee.gc.ca).

The NSDF has project reference number 80122, NPD is 80121, and WR-1 is 80124.

All the comments on the projects the CNSC has received from groups and individuals are also available there.

I look forward to receiving documented responses to the formal comments I made through the CEAA and CNSC.

I also will be very interested to see the detailed documentation still to come. It is impossible to judge the viability of the projects without it. The devil will lie in the details.

Michael Stephens, retired and formerly reasonably-paid garbage man

LETTERS TO THE EDITOR

Where is vision for CNL future?

In April 2016 (seven months ago), AECL (that is, the federal government) announced an $800 million investment in Canadian Nuclear Laboratories (CNL) over the next five years.

This is about $160 million per year over and above their operating budget.

Perhaps now is the time to do a "seven month" review. Where is CNL investing the $800 million on behalf of AECL?

To answer the question, let us do a quick evaluation. Have you checked CNL's website lately? If you have, what did you find? (By the way, the link is www.cnl.ca.)

Just in case you have not visited their site, here is some of what you will see that is related to how this money is being spent.

Under the banner you will see four links, "Performance Reporting," "WL Decommissioning," "NPD Closure Project," and "Near Surface Disposal Facility." The last three are radioactive disposal projects.

Under those four sub-headers are a series of five pictures and summaries through which you can scroll.

In sequence, these are entitled: "The first site in Canada to undertake decommissioning"; "A solution for CNL's legacy obligations"; "NPD Reactor; A milestone facility in Canadian nuclear history"; "Vision 2026: A transformation of the Chalk River campus"; and "Repatriation: A global initiative."

Of these, only one, "Vision 2026," addresses a concept for the future for the Chalk River site. The other four relate to the disposal of radioactive wastes.

So, what is CNL's 2026 vision for the Chalk River site? To quote the website:

"CNL will be completely transformed through the revitalization of essential site infrastructure, the decommissioning of aging infrastructure, and a significant investment in new, world class science facilities.

"CNL is also evolving to become more adaptable and responsive to the needs of our customers in government, academia and the private sector."

I have searched the CNL website to identify the "new, world-class science facilities" that they are planning to develop, and how CNL is "evolving." My search has been in vain. I can find nothing.

Therefore, I conclude that CNL's priority for spending the $800 million is on the three radioactive waste disposal projects.

These are: entombing the Whiteshell reactor, entombing the NPD reactor, and removing over 120 buildings from the Chalk River site then depositing the resultant wastes in their projected Near Surface Disposal Facility.

All three projects will result in some form of a near surface radioactive waste disposal site.

Since CNL has decommissioning licences for both Whiteshell and the NPD sites, then spending part of the $800 million to address decommissioning those two sites could be considered appropriate.

However, as far as I am aware, there are no plans to decommission the Chalk River site as a whole.

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Letter: vision for CNL

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Therefore, under "Vision 2026," I conclude that CRL is the site to be "revitalized."

Is any portion of the money being spent on revitalizing the CRL site? Possibly, but I cannot find any evidence of it.

First, the three waste disposal sites CNL proposes are near surface disposal facilities with the goal of eventual abandonment. (No revitalization there.)

Second, CNL proposes to use these three sites to dispose of radioactive wastes containing levels of radioactivity that both Canadian and international guidance declare are not acceptable for emplacement in this type of facility.

(Ignoring pertinent guidance suggests willful blindness, certainly not a revitalization vision.)

Third, decommissioning and/or disposal projects (even if they are framed as "revitalization") is not looking forward.

They may be required to prepare a site for renewal. But preparation is not "revitalization."

For what is CNL preparing the site? If I could find the answer to that question, then I would know CNL's "revitalization vision."

I regret, the answer eludes me. So far, all the evidence I have been able to find on the CNL website addresses the removal and disposal of over 120 buildings. There is nothing about any new buildings or facilities.

So, besides spending some of the $800 million on entombing two reactors, and removing over 120 buildings from the Chalk River site, CNL must identify undertakings that will actually revitalize the site.

It reminds me of an undertaker's job: make the body look good, then bury it. Undertakers do not revitalize. It appears AECL has hired a very expensive undertaker.

W. Turner (A very concerned citizen of Deep River)

Is there "reason"?

On November 23, my letter, regarding the spending of the $800 million investment in CNL, appeared in the NRT. Subsequently a second letter "The CNL Enigma" by Mike Carver, and an editorial, "Reason to believe" by TM, appeared in the November 30 edition of the NRT.

Well, is there a reason to believe? There could be.

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Letter: "reason"

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It would really help if we had a clear vision of the future in which we could believe. So far what I see is not promising.

In my November letter, I pointed to a problem. From the evidence presented on CNL's website, I could not find a clear idea as to what "Vision 2026" actually is.

Well, I may have found it. If one searches the CNL website under the "Success Stories" tab, one can find something labelled "Making Vision 2026 a reality."

Let's look at what CNL says about that "Success Story." Here are some quotes:

"As announced April 13, CNL has received a commitment for an $800 million investment over the next five years from AECL. This funding is outside of our current operating budget, and provides the dedicated funding we need to enable a complete transformation at our Chalk River site through renewed infrastructure and the construction of new facilities."

And: "We have been given access to the financial resources to physically build a modern site; but, this alone is not sufficient for us to achieve our vision: sustainable, adaptable, world-class."

Further: "We, the team at CNL, will turn this investment into advances in clean energy, in health, in safe and secure borders, in a clean and healthy environment and good environmental stewardship."

These quotes are much more than what would be included in a typical vision statement. Most vision statements are one or two sentences.

However, as with all vision statements, CNL's narrative contains lots of imaginative assertions without much substance.

This is not a critique of visions. Visions are visionary declarations.

Visions are aspirations; therefore, they do not, nor can they, actually address the activities required to achieve those outcomes.

Should CNL even be developing a vision? I suggest the answer is no. That is the responsibility of AECL, the entity charged with overseeing the GoCo.

To me, there are several steps in developing a vision through to achieving that vision. These are:

1. AECL develops the vision.
2. AECL develops a high level strategy that addresses that vision.
3. CNL formulates detailed plans to address the strategy.
4. AECL approves the plans.
5. CNL executes the proposed undertakings.

If all goes well, the vision is achieved.

So, where are we in this process? I am not sure. There is a vision, which by CNL's own narrative, is a success story.

However, there is no evidence that AECL has approved that vision because there is no reference to it on the AECL website.

OK, so let's accept CNL's vision as a given. Therefore, we must be at Step 2, which is, developing the strategic plan to achieve those aspirations.

Can CNL develop the strategic plan required? Not from what I see.

Let's look at the background and experience of the consortium, Canadian National Energy Alliance (CNEA), which is being brought to the table. Who are the entities in the consortium?

According to their website (www.cnea.co), the membership includes the following: CH2M, Fluor, Atkins, SNC-Lavalin, and Rolls-Royce Civil Nuclear Canada Ltd. These are all engineering and project management companies. As such, they respond to their customers' requirements (which I suggest is the overall strategy, Step 2).

They implement engineering solutions. They do not (nor can they) develop the strategic plans. That is not their mandate nor should it be. (See Steps 3 and 5.)

These are entities, which after being provided the strategy (see Step 2), develop their detailed plans (see Step 3).

Once these plans are approved (see Step 4), they then use their vast engineering and project management skills to address the problems and to implement the proposed projects and undertakings (see Step 5).

Having the entity responsible for both developing a strategy and realizing that strategy has the appearance of a conflict of interest.

I suggest CNL's existing plans, to entomb the two reactors (NPD and WR-1) and remove the 120 buildings from the Chalk River site, are excellent examples of this conflict.

The background and experience of the consortium members are all related to addressing these proposed decommissioning activities.

To ensure its success, the consortium will propose only what it can do. Since they have no relevant background or experience in enhancing nuclear science and technology, they have proposed nothing.

So, to quote the success story, they have offered nothing to address "renewed infrastructure and the construction of new facilities," "physically build a modern site," or "advances in clean energy, in health, in safe and secure borders, in a clean and healthy environment and good environmental stewardship."

Maybe the explanation for TM's conclusion that people have little "reason to believe" is that the five steps in developing and achieving a vision have been truncated. I suggest that leaving the development of the vision and the strategy to CNL, with its inherent conflict of interest, is the source of this belief problem.

W. Turner (a troubled resident of Deep River)

Appendix C

Q4

C.1 Technical Discussion Meeting Agenda and Questions January 2017

	Agenda | Questions and Answers	Presenter
10:00 a.m.	**Welcome and safety moment**	Pat Quinn
10:05 – 10:15 a.m.	**Introductions**	John Vincett
10:15 – 10:25	**Overview of the Nuclear Power Demonstration (NPD) Closure Project**	Pat Daly
10:25 – 10:35 a.m.	**NPD Closure Project - Source Terms**	Meggan Vickerd
10:35 – 10:50 a.m.	**Q&A** Q. During the surveillance phase of decommissioning, have there been any contamination issues with groundwater, etc.? When you grout the underground disposal area, will you grout all areas; for instance, will things like pipes be grouted? A. No, during storage with surveillance phase there have been no contamination issues with the groundwater. We are also completing a site characterization campaign which will include groundwater sampling. We are not going to grout pipes. There is one space where we are evaluating two scenarios for grouting to assess if there is a better safety margin. The first is that we are looking at not grouting the reactor vault, to see what that would look like and the second is to grout the reactor vault. Once the two scenarios are evaluated we will do whichever scenario [enables] lower [levels of radioactivity]. Q. Could this site be used for a future reactor? A. There is a small area that would be fenced and restricted for re-use purposes after grouting has been completed, but the remainder of the site would be available for re-use as AECL determines. Q. Common approach right now is retrievability. Will this [in-situ decommissioning] take retrievability away? A. It limits it, but it does not take [retrieving nuclear materials] off the table. It would cost	

	money and significant effort to do this, but it would be possible. Q. But the project does not plan to ever retrieve material? A. Correct, the project does not intend on retrieving the grouted material. Q. Site specific release and clean up criteria for the rest of the site? What is criteria for free release? A. This is the exclusion area and we're completing environmental sampling. With the intent of demonstrating that operation of NPD had limited impact on the rest of the site. Q. What are guidelines for free release? A. Our goal is to demonstrate that that the remainder of the site will meet the CNSC's [Canadian Nuclear Safety Commission (CNSC)] criteria for unrestricted clearance [e.g. not needing a license under the Nuclear Safety Control Act]. For conventional characterization we are following the [Canadian Council of Ministers of the Environment (CCME)] and [Ministry of the Environment (MOE)] guidelines. Q. What is current [environmental performance during] surveillance? A:.[This information is] available online. [http://www.cnl.ca/site/media/Parent/NPD_Environmental_Performance_Eng.pdf] Q. Species at Risk? A. Yes, surveys have been completed for Species at Risk and there is a plan to protect the chimney swift which is within the site study area. Other observed Species at Risk are not in the immediate area where proposed decommissioning activities would take place. Q. [Question about calculations for radioactivity of source terms.] A. Activation products were calculated through mathematical modelling - neutron flux modeling in ORIGEN, [which is a computer code used to model neutron flux,] and then the activation of materials in the neutron flux by [Workplace Hazardous Materials Information System (WHMIS)]. We do an inventory sensitivity analysis for the activation products up to five times to address any uncertainty in the neutron flux calculations. Q. What is the corrosion rate of materials you have? A. I don't recall the exact values off the top of my head - however zirconium is a very slow corrosion and aluminium corrosion happens sooner. The corrosion rates we are using [for modelling] are consistent with what has been used in industry. External sources for corrosion rates came from [Nuclear Waste Management Organization (NWMO) and Ontario Power Generation (OPG)] and we are using internal expertise to review these modeling parameters, as well. Q. Groundwater rates through structure?	

	A. Geology for this site is similar to Chalk River Laboratories so this information is available internally. We are also doing some hydrogeological measurements at NPD to confirm the hydraulic conductivity ranges used within the model are appropriate for the site. Q. Size of source term? A. NPD is a class 1 nuclear facility, but we have less than 10^{15} Bq of activity in the facility. At 10^{13} Bq we also have less than in other facilities that have undergone in-situ decommissioning. Kristan has slide that shows other facilities that have done entombment with larger activity. Q. Grout is not going to be that strong if it is retrievable. So, groundwater will be able to get through it. Is there groundwater in facility right now? A. Because [we do] not heat the facility, the majority of [the water collected in the facility] is from condensation. In an average year there is about eight cubic metres of water collected which is sampled and compared to our limits before being released. By grouting the facility we will be reducing the amount of water that will get in the facility as it will have lower permeability than the surroundings. Q. Is the radiological inventory for fission products and actinides available from measurement or from mathematical models? A. Partially from historic scrap samples and partially from literature in the industry regarding tramp fuel in CANDU® reactors. We consider this conservative as NPD is much smaller than the other CANDU fleet. Q. It should be clear that inventory is from assumptions or measurements. Because NPD had more fuel failures than other reactors, could there potentially be more left behind than estimated or assumed? A. This is why we are doing more characterization – including scrapings or swipes in the primary heat transport system. We have not seen dose rates that would indicate that there are pieces of fuel left in the systems so it is all residual contamination. We are planning to take a swipe in the east reactor vault where a fuel failure incident occurred. Q. What is the uncertainty level that you are heading to with radionuclides? How much do you want to bound them by? Goal? A. We have developed a characterization plan for the facility structure and systems using the [Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)] and Data Quality Objectives process. We have set our target to a level of 80% confidence. Q. Why cobalt? A. Cobalt does have a very short half-life but the quantity of it in the reactor components (even after decay corrections) causes it to screen in for evaluation in the safety	

	assessment. We are starting the safety assessment after 100 years and the cobalt inventory becomes insignificant quickly after that time period. Q. Numbers we plug in right now [are how you are designing the decommissioning plan] but the closer you are to decommissioning these numbers could change? A. Preliminary results indicate projected doses are well below our proposed acceptance criteria, but we will be confirming our assumed source term against current characterization activities to ensure accuracy.	
10:50 – 11:00 a.m.	**NPD Closure Project – Long Term Safety Case**	Meggan Vickerd
11:00 – 11:20 a.m.	**Q&A** Q. Why is flooding not assessed? A. We do assess flooding, it is one disruptive scenario assessed under disruptive scenarios. Q. The public have a hard time believing the science, ie. Whiteshell presentation – cows eat dirt, and dirt isn't taken into account in the model; when glaciation occurs soil will be in Pittsburgh. How can you build confidence in public that you can model something over 100,000 years? What about climate change? Severe drought will impact this area. A. Climate change will change the geosphere and biosphere. The process used to identify the scenarios is systematic to ensure our scenarios bound any examples the public may identify, including disruptive scenarios. Q. One scenario involves removal of calandria, according to the [decommissioning] contract, demolition is part of it, demolishing structures or removal. A. We will talk about this when we talk about alternative means, this is a definition in the contract. Q. Studies indicate there could be more than one glaciation in the next 100,000 years. Each glaciation could move rock. It would seem to me that a couple glaciations could completely expose calandria. Then it is dispersed and diluted. Have you thought of repeated glaciations? Will you include natural analogues? A. We are required to address natural analogues in our safety case. In terms of glaciation, we will use scenarios that are aligned with rest of industry. What we are doing is the same as how the rest of industry is describing what will happen during glaciation(s). Q. What is the difference between post-closure and institutional control?	

	A. No physical difference [it is an] administrative difference. During institutional control the site will still be under a CNSC License and CNL will conduct monitoring and maintenance activities. The post-closure period covers the period of time after institutional-controls [or licence abandonment] and extends out 100,000 years. Q. Kincardine [Ontario Power Generation's Deep Geological Repository (DGR)]; is the DGR discussion relevant to NPD? A. We are looking at relevant aspects of this discussion.	
11:20 – 11:27 a.m.	**Alternative Means**	Kristan Schruder
11:27 a.m. – 11:35 a.m.	**Q&A** Q. For alternative means, has there been any assessment on feasibility for putting tools into vault to dismantle the reactor? A. Everything is below grade, we do have hatches that allow for access. One reason [for in-situ decommissioning is its] lower risks. There are no hatches into reactor vault; therefore, we would need to cut up flooring to reach the calandria. A lot of work for partial or full dismantling would involve cutting. We have not been focused on tooling, but we do have expertise in that area, internal to CNL. Q. Quantitative or qualitative assessment for alternative means? A. Qualitative. Q. Any quantitative? A. Other reports and assessments have been quantitative yes, but not as part of alternative means. Q. Summary of relative risk is health risk, but I am interested in effects on Indigenous people. Column three has light blue up arrow for effects on Indigenous people. I'm thinking reuse of land, the NPD land that is non-impacted by the plant. So I'm thinking there are social benefits of complete dismantling and removal. Non-nuclear modelling factors can end up scuppering a project and delaying it for decades. A. We did look at hunting, fishing, gathering uses. Risks goes down after decommissioning after land is released for reuse. [Property is around] 1000 acres, less than 10 acres will be fenced off. Therefore, the rest of land will be able for whatever use. The alternative means does look at socio-economics for the surrounding area – from a qualitative standpoint.	

	Q. Good answer, logical answer with reference to area of land. But, if material is removed, [it could] go from some impacted land to zero impacted land. From point of view of emotion and intensity of First Nations interest in this area [this technique could be looked on more favourably]. A. Thank you, good point. Q. Who carried out [alternative means assessment]? A. Arcadis. C. Question whether there could be risk of bias in alternative means. Don't think the waste disposal site at NPD can be looked at independently of waste disposal site somewhere down the road. Think there will have to be an assessment that takes this into account. Alternative means needs to look at broader picture of what storage means. Some assumptions are made that waste will go down the road and into storage. Q. Will the [Des Joachims] dam last 100,000 years? A. I believe Meggan talked about this. We do not expect that the dam will last. This has been taken into long term safety case. Q. How much consultation with Indigenous peoples? A. We have engaged with 15 communities. [Degree of engagement with each group] varies of course. With some [groups] we are exchanging large quantities of information. We are engaging per REGDOC 3.2.2 [the CNSC document, which outlines the regulatory requirements of a proponent's Aboriginal engagement]. Duty to consult lies with the regulator, the CNSC. However, we perform engagement activities documented in an engagement report. Q. So, not directly consulting? A. Quite the opposite, we are directly engaging [with] different levels of intensity depending on distance and interest. Q. You would expect long term public health risk, it's not likely to stay as above ground long term storage [because there are other plans for nuclear waste disposal in the works]; [would other parallel disposal plans in Canada] change the favourability of in-situ decommissioning? A. We are looking at availabilities in Canada right now. So it is something we can consider as we go forward, but now, long term storage is the only option available [as there are no disposal sites in Canada].	
11:35 a.m. – 12:00	**Why in-situ decommissioning for NPD?**	Meggan Vickerd

p.m.		
12:00 p.m. – 12:15 p.m.	**Q&A** Q. Steel corrosion can cause concrete to crack. Have you done structural studies? A. We have only done structural studies on the [ventilation] stack, but also plan to complete some assessment for the facility. But it is assumed in the long term safety case that [all structures] will fail. Q. For the birds, how long will [the ventilation stack] be supervised/maintained? A. We have assessed the stack for 50 years. Work we've done with Chimney Swift experts seems to say that the Chimney Swift will have recovered in 50 years and no longer be at risk. Q. What about radioactivity within stack? What will you do with it? A. There are very low levels of radioactivity, with the exception of the base of the stack which will be grouted. We will be doing characterization to confirm. Q. What if inadvertently the stack comes down? A. We have done analysis of stack failure in our safety assessment and the levels are low, [therefore], the hazard is low. Q. Slide 26, when will concrete cap and engineered barrier be put in place? A. Immediately following construction. Q. Start date and cost? A. Early 2018 [is the start date], [we] expect to be complete by spring of 2020. Total cost is estimated to be between $40-60 million. Q. Does that include institutional control costs? A. No. Q. How can you make a fair comparison [with alternative techniques] when you aren't taking institutional control into comparison? A.Monitoring costs are low and we do have an estimate for it.	
12:15 –	**Working Lunch | Roundtable**	John Vincett

1:00 p.m.	Encourage collaboration with other waste disposal sites in order to help you succeed. Excellent expertise. How do we win and get good projects going? I've always been a nerd, loved math, an engineer, waste management scientist… Don't underestimate ability and importance of keeping it in good, understandable terms so we don't get undermined in one person's minutiae. I don't see agreement between all parties involved, about decisions… When it comes to safety case… alternatives, thresholds, etc. NPD [Closure Project] is easier than NSDF. Source term is easier to deal with. I'd rather be working on the NPD project than NSDF. Personally, I think the NPD project should go ahead. The only caveat is where does the source terms lie in terms of the safety case? Marginally, borderline? [It feels] like coming back home with the NPD project. NPD compared to a lot of other sites has a very low, very low inventory. What does that represent when compared to other sites when you look at total inventory? [In-situ decommissioning is] not [a solution] for everybody. There is very seldom 100 per cent agreement on all of these projects. Had some experience with waste disposal. These two projects are much more thorough then we used to do. Other point is to do with regulations. There is a reassessment of some of these regulations. The linear, non-threshold model is not right and has been known to not be right for a long time. Limits you put on based on that, are not very sensible. Because, we know that that procedure is in error. There is evidence that a bit higher levels of radiation would reduce cancer rates. During evolution there was a higher level or radiation. Regulations don't take this into account. [My] experience comes from operations and decommissioning. When I started, I heard it was going to be Whiteshell. I'm in favour of what's being discussed here. Canada needs this. I think the CNSC has to be involved, see what you're doing, see what you're talking about, in order to build that understanding. We need this, not to rush it, but to put it in place. And we need to be cautious, with the levels that we are talking about, be safe. Again, I only live four kilometres downstream. There has been some talk about the [Alternative Means] risk chart, should maybe be looked at as NPD was built to demonstrate the CANDU concept. If we were to do a demonstration on decommissioning of NPD we could get the experience/ practice that will be needed for the other CANDU units. This is experience we will need in the next 50 years. Biggest problem is the non-technical aspects. Sometimes it is the non-rational that brings projects to a halt. Opposition isn't technical, really. [Canada] can't seem to commit to disposing of something. Because we can't do that, my solution for NPD is different than the preferred one. We did have a proposal for a geological disposal, but I don't know what happened to it. If it's not a GWMF [Geological Waste Management Facility], what is it going to be? NWMO have got a process, but maybe we need [a GWMF] for ILW or LLW. Do we need host community encouragement? Disposal is so critical, we have a great deal of trouble with it. Can we try harder somehow?	

	Thanks for an interesting morning and useful discussion. Uncertainty of numbers comments, frame this in context of sensitivity analysis. If you can say it would take an uncertainty of a factor of 1000. Then you can answer this. It shows it doesn't matter in long term. Nothing to add that hasn't been raised at this point. Most of my comments from this morning were summarized. Just from a personal perspective, from my technical background, I think it is a good solution. As a community member I think there is a little ways to go to prove it is an acceptable solution. [There is an] intersection point between science, society and regulation. If society is distrustful of science you won't gain their trust by throwing more science. I don't have a scientific background. However, I was on Halton Regional Council and joined them in trying for a million dollar project for waste. So, I agree with Mike that this is difficult. There are leachate concerns with this project. When I was first introduced politically to the NSDF, my thought was, "Thank goodness they're not burying it." A near surface facility is always a reminder that there is an obligation to monitor and care for it… As a community member there are elevated concerns. What we are hearing is not about legacy waste, but when we start looking at contracts that exist or that could be added on. Are these contracts going to limit or expand? How much [waste will come] from away? Be prepared to answer these kinds of things. I think the research does have a component. People need to know that there is continued monitoring and that the research will continue as to what kind of waste and what ways we can manage it. Future visioning – research that could change the way we deal with waste. There is also a social obligation to the municipality.	
1:00 – 1:15 p.m.	**Summary of Questions** • Importance of the project as it will build practice and experience • Consensus that the source term and safety case for NPD Closure Project may be easier than for NSDF project • A need for consistent definitions and wording (institutional control/post-closure vs. after construction and how inventory is characterized) Make criteria explicit, define qualitative and quantitative, sensitivity analysis • Certainty of numbers: degrees of confidence should be more explicit • Context order or magnitude • Explicit about modelling numbers and actual measurement and how they are combined • A number of points about above ground storage and relative vulnerability • Some see more value in total removal option than was expressed in presentation • Everyday language is important • Public knowledge is poor and that is a real issue because opposition does not understand nuclear science well • Social responsibility to municipality	John Vincett

	• More science will not deal with the problem of public concerns or distrust of science • Monitoring and research needs to continue • Species impact should be made clearer • Seismic events/ glaciation/ natural disasters, flooding, implications for above ground and near surface, glaciation are all important issues to address • Long term use of site • Local views important • Aboriginal perspectives and engagement are vital • Collaboration at high level between the range of disposal sites under consideration • Need to pool knowledge • Share consistency in approaches among CNL projects • Enhance public confidence	
1:15 – 1:40 p.m.	**Overview of the Near Surface Disposal Facility (NSDF)** *No questions were raised for the general description and overview.*	Jim Buckley
1:40 – 2:00 p.m.	**Integrated Waste Strategy (IWS)** Q. Processing is required, processing has been done already on some of these waste. I am concerned that this [diagram in presentation] is not concerned with processing. Where are the liquid wastes? A. This slide is a very condensed version of an example waste management lifecycle, there are recognized processing needs [for some wastes and not for other wastes] as part of CNL's IWS. The CNL Integrated Waste Strategy is more detailed and recognizes all wastes, however that was not the intent of this slide. Q. It looks like there is processing before storage and after storage; what are these diagrams telling me? A. We are looking at both in terms of options [at different times for different wastes]. . Q. Construction will generate waste. What about waste from construction that will be non-NSDF [not meet the waste criteria for the NSDF]? When are you going to talk about the portion of waste that won't be suitable for disposal in the NSDF? A. We don't have all the solutions at this time. For example, we don't currently have characterization data on all of the buildings and content. We will be developing that over time and that will inform the appropriate treatment/ storage/ future disposal routes. IWS is a road map or framework about understanding where these gaps are – and narrowing these gaps and the waste disposition paths.	Jerome Besner

	Q. You implied NSDF would only take waste until 2070? It is not within the scope of the NSDF to take all the waste, right? A. Yes. There was a statement in the project description that this would support site closure, and a public comment interpreted closure of the Chalk River Laboratories site. This is not the case, though, as we don't know for sure when the Chalk River site will be closed. The NSDF will accept waste between 2020 and 2070, as long as there is capacity. A. In the latter phase wastes would include primarily waste from environmental remediation and future structures.	
2:00 – 2:38 p.m.	**Waste Inventory & Nuclide Inventory Basis** Q. How do you build conservatism into data? A. First step for analysis, the way we ensure we are in the safety envelope, is by actually characterizing waste as it comes in – during operations. That is the real measure for ensuring the actual safety envelope… Q. The nuclides are the usual suspects, but, I notice Strontium 90 isn't there. A. Agreed. Strontium 90 is more mobile and it is not listed on this slide and is present. By the time long term issues become significant [Strontium 90 will have] largely decayed. Q. I have a question about Slide 18. I wonder about three examples of proven technology because they are different from examples given in the project description. Why are examples changing? Are you suggesting the examples given in the contract or the Project Description are not good examples? A. The examples in this slide refer to those disposing of similar wastes. Each presentation may have a different purpose and the examples cited are relevant to this context [or the radionuclide inventory]. Q. In June, there were three examples in the discussion, only one of these is in the Project Description, one was Fernald. Now you are changing it again. [This] makes it seem like the "proven" technology is shifting. A. I take your point. It is a reasonable criticism, I take that. But, as we have discussed before, there is a different context of discussion here, than was used in the Project Description. Q. I am wondering why you don't have cavern disposal? If you can do it with NPD, why can't you do it here? A. Good point. There is no really good reason. It ultimately depends on volume. Whether the disposal facility can accept a smaller or larger volume of waste, there is an	Mark Gerchikov/Jim Buckley

	uncertainty with cost. So it was hard to make [a cavern disposal] reasonable, [due to uncertainty of volume of waste]. Q. Why are you considering challenging streams, when you know you will have to build another facility at Chalk River? A. Perhaps the term challenging waste stream is not a great term. Somewhere we have to draw the line [that] we will accept wastes below a certain level. Q. [There are] a lot of challenging wastes at Chalk River. The only safe waste stream for this facility is decommissioning waste. Virtually every waste stream at Chalk River is challenging waste. Why not just have NSDF for low level waste from decommissioning buildings, and keep storing the more "challenging waste"? A. I accept your point. We are building a safety case for the waste streams that can be safely included in this facility. We are creating a broad envelope.	
2:38 – 3:22 p.m.	**Concentration Limits | Waste Acceptance Criteria (WAC)** Q. [With respect to] slide 29, based on what characterization data, do we find that 99 per cent of material in [Shielded Modular Above Ground Storage (SMAGS] is okay for the NSDF? A. We based it on the assessment of records where characterization data was adequate – [Waste Identification Program (WIDP)]. Q. [With respect to] slide 25, [Canadian Standards Association (CSA)] guidelines are average 400 Bq/g. You've raised it by a factor of 10. A. [Canadian Standards Association (CSA)] guidelines allows for up to 4,000 Bq/g for individual packages. Q. Say hypothetically, it is mixed alpha gamma. You've got a whole mix of radionuclides that are going to bugger up your sum of fractions. You can't pick a nuclide for sum of fractions. A. What this is meant to do, is to help us classify waste. Emphasize performance assessment as a boundary, then the sum of fractions helps us. Q. Are these real packages? A. No, hypothetical. Q. Amount? A. Scenarios drive understandings of waste… That's where detail is coming in and something that is still being developed.	Marty Kline

	A. [It is] more binary and relative in how you challenge performance assessment. Q. Are you using [Environmental Protection Agency (EPA)] guidance for [Data Quality Objectives (DQO)]? A. It's not unique to the [Environmental Protection Agency (EPA)], the industry uses it broadly. [Environmental Protection Agency (EPA)] created the term but it is used when industry wants to solve a problem. Q. What is problem being assessed? A. In waste characterization there are many. In this context, it describes what you need to collect, how you collect it… Q. What needs to be characterized? What are the alternatives that the [Data Quality Objectives (DQO)] process used? Q. It hasn't been fully characterized in past, that's why we are going to do it? A. [Imagine the process of] taking a building down. [There are] contaminated surfaces, filters, ventilation equipment – it's not construction debris, so a building might have four or five different waste streams. It's a classification process. Q. [Waste Identification Program (WIDP)] waste blocks. Over time we shut down one reactor, some chemical facilities, WIDP keeps same classification even though it has changed. A. That's correct, [Waste Identification Program (WIDP)] is being replaced by Waste Profiling. Q. What did you do with data? A. This is historical information. Q. You can't build a profile on bales because they change over time. A. [This is getting] hung up in details. Q. No, it's not. A. We are going to sample. Q. How are we going to sample? This is power plant talk. A. Sample construction debris.	

	Q. Where is this characterization going to occur? A. Where physically? On the site. Q. Where is analysis going to happen? A. [At the location of the] waste generator. Q. How is waste generator going to get these sampling done? A. Depends what capabilities are on site. Right now we have capabilities in the analytical lab…. C. In [the 19]90's when we did external decommissioning, we used external facilities. C. Yes, but if you're going to send it offsite, it is incidental to the project and there is a hazard and environmental risk and it should be in the project scope. Q. It only says the waste generator will do the characterization. This whole thing fails if characterization is not addressed. A. What I can tell you is that it will be addressed.	
3:22 – 3:35 p.m.	**Hazardous Substances and Mixed Wastes Overview** C. When ash was being incinerated… Is there some kind of indication how much lead will be in all the waste? Because of ash. Hydro had same problem. Turned into hazardous waste. A. Good, thank you. Q. You can't sample exchange resin, so you don't know what to do with it. I suggest you put it into a hot cell to store, build it into decommissioning facilities. A. Thank you, these are being recorded. Q. [It is] complicated wastes. [CNL] should consider developing radiological lab to characterize wastes on site. Some onus would still be on the waste generator. This should be part of process. C. In recent years there have been increased capabilities to characterize nuclear materials. C. We are moving towards a more centralized, organized approach.	Martin Klukas

3:35 – 3:45 p.m.	**Roundtable Q&A| Summary of questions** At the end of day, we'd like to see [the Chalk River site] move forward with the disposal facility. So, I would like to be helpful. We did not talk about waste from elsewhere and that is a discussion that needs to occur. We need to look at the Environmental Assessment path from the [deep geological repository (DGR)]. How will you confirm what you say is going on. Need to show what you say is going in there, is going in there. Have to put that definitive logic forward. That will be what it comes down to. You may find it may not be worth the bother to put all [wastes currently categorized as acceptable for disposal] in NSDF. The [Integrated Waste Strategy (IWS)] is an important angle because they will ask what you will do with other stuff. Thank you. It has been interesting and valuable for the projects I am working on. We're asking too much of the NSDF. We do not have the national capacity to dispose of [these kinds of wastes]. Disposal site is essential. So many times we have been shut down. Any input today is useful; don't consider it criticism. Collectively, we have the technology to do it in Canada and get this thing on the road. I had fun today. [There are two steps necessary to achieve this project.] First, we have the decommissioning waste [from construction]. Second, we will characterize one by one. Don't plan for it. Say once we get the characterization down… Then we'll consider disposing of other waste. When Bill said we need characterization facility, I wanted to hug him. Very concerned with respect to characterization. Very concerned with scope. With respect to Slide 16's proven technology. Low level waste in UK is different because UK waste is pre-treated. Look seriously at volume reduction. Thanks to all speakers. Job well done. When I was in DWM… "Know thy wastes" was a saying from Hanford. [Whole characterization is vital for waste disposal facilities].	John Vincett

List of Participants

Facilitator John Vincett, Public Dialogue Alternatives

Observers Paul McClelland, Atomic Energy of Canada Limited (AECL)
Jim McCafferty, AECL

A.M. Participants

Guests

1. Bill Kuperschmidt
2. Robert (Bob) Zelmer
3. Bill Turner
4. Greg Csullog
5. Bruce Bigham
6. Wayde Gutzman
7. Justin Gray
8. Michael Stephens
9. Jamie Noel
10. Giles Whitaker
11. Jim Ungrin
12. Joan Miller
13. Fernand Paré

CNL

1. Pat Quinn, CNL, Director, Corporate Communications
2. Pat Daly, CNL, Head of the NPD Closure Project
3. Margot Thompson, CNL, Corporate Communications
4. Nicole LeBlanc, CNL, Corporate Communications
5. Kristan Schruder, CNL, NPD Closure Project
6. Meggan Vickerd, CNL, NPD Closure Project

P.M. Participants

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13. Fernand Paré
14. Joan Lougheed

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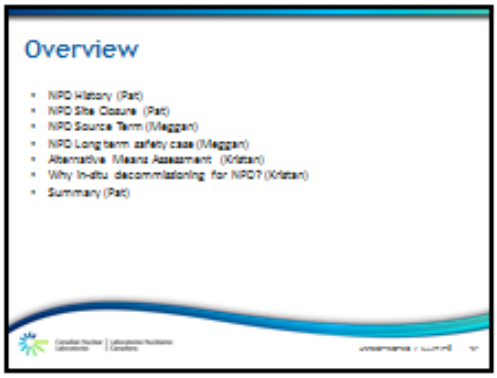
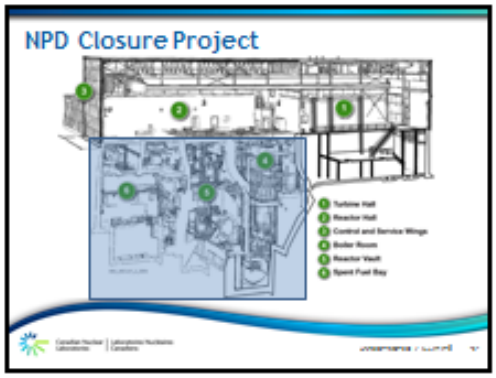
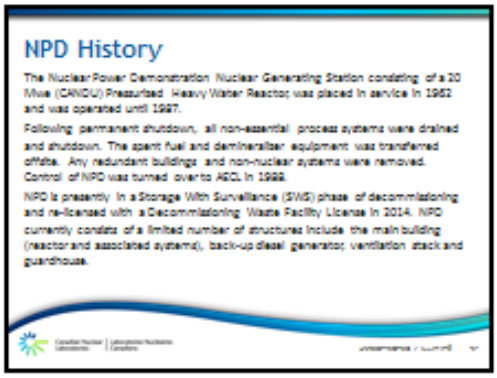
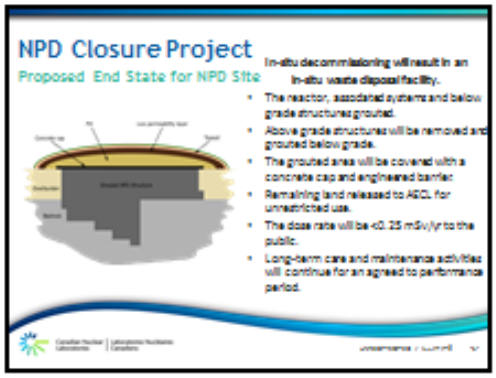
3. Nicole LeBlanc, CNL, Corporate Communications
4. Kristan Schruder, CNL, NPD Closure Project
5. Meggan Vickerd, CNL, NPD Closure Project
6. Jim Buckley, CNL, NSDF
7. Christine Fahey, CNL, NSDF
8. Jessica McQuestion, CNL, NSDF
9. Marty Kline, CNL, NSDF
10. Martin Klukas, CNL, Environmental Protection
11. Jerome Besner, CNL, NSDF
12. Mark Gerchikov, CNL, NSDF

C.1.1 Presentation – Technical Discussion – 2017 January 19









Questions

NPD Source Term

Estimated Activity (Bq) of Activation Products in NPD Components at 2018

Total Activity
4.51E+13 Bq

Radionuclide (Bq)	Aluminum	Concrete	Carbon Steel	Stainless Steel	Zircaloy	Primary Circuit Contam.
H-3	1.52E+08	5.35E+03	-	5.79E+08	1.93E+04	-
C-14	5.26E+11	1.58E+08	1.52E+04	6.51E+09	1.13E+12	7.93E+07
Cl-36	1.43E+10	2.35E+04	4.96E+05	7.12E+08	2.53E+10	3.56E+05
Ca-41	-	2.24E+07	-	-	-	-
Fe-55	6.03E+10	7.20E+07	2.69E+09	1.72E+11	3.67E+10	-
Co-60	2.98E+12	7.09E+07	2.01E+10	1.45E+12	6.79E+12	-
Ni-59	6.56E+09	-	-	2.03E+10	1.71E+11	-
Ni-63	1.00E+12	-	-	3.18E+12	2.93E+11	-
Zr-93	-	-	-	-	3.90E+11	-
Nb-93m	-	-	-	-	1.66E+11	-
Nb-94	-	-	7.47E+06	2.53E+08	-	-
Ag-108m	-	-	2.17E+09	1.43E+11	3.24E+08	-
Sn-121m	-	-	-	-	3.66E+11	-
Te-125m	-	-	-	-	1.67E+10	-
Eu-152	-	-	1.46E+08	6.76E+07	-	-
Tm-171	-	-	-	-	1.46E+08	-

NPD Source Term

Radiological Inventory

1. Radionuclides embedded within metals and other materials, present due to the interaction of neutrons from the reactor operation with the structures.
2. Contamination on surfaces, mainly resulting from the handling of fuel elements which had suffered failure of their protective cladding, enabling the release of some radionuclides.

NPD Source Term

Estimated Inventory of Fission Products and Actinides in Primary Circuit Contamination (Bq) at 2018

Total Activity
1.44E+10 Bq

Radionuclide	Activity (Bq)	Radionuclide	Activity (Bq)	Radionuclide	Activity (Bq)
Se-79	4.20E+04	Cs-134	1.65E+04	U-236	6.13E+04
Sr-90	5.14E+09	Cs-135	1.12E+05	Np-237	1.37E+04
Zr-93	3.06E+05	Cs-137	6.79E+09	Pu-238	1.26E+07
Nb-93m	3.44E+04	Pm-147	1.32E+08	Pu-239	6.20E+07
Nb-94	1.98E+01	Sm-151	3.43E+07	Pu-240	9.64E+07
Tc-99	2.31E+08	Eu-152	3.74E+05	Pu-241	2.03E+09
Ru-106	2.27E+01	Eu-154	2.57E+07	Pu-242	1.22E+05
Pd-107	1.23E+04	Eu-155	1.53E+08	Am-241	1.53E+08
Cd-113m	5.11E+05	Ho-166m	1.14E+01	Am-242m	1.98E+06
Sn-121m	1.67E+04	U-232	6.85E+01	Am-243	2.19E+05
Sn-126	1.66E+04	U-234	6.25E+04	Cm-243	1.34E+05
Sb-125	6.76E+04	U-235	1.66E+03	Cm-244	1.17E+06
I-129	4.54E+03	U-238	4.54E+04		

NPD Source Term

Reactor Vault Materials

Activated reactor components account for 99.97% of the radiological inventory:

- Concrete (containing naturally occurring radionuclides such as K-40, released on contact with groundwater due to the porous nature of the concrete);
- Stainless steel (containing naturally occurring radionuclides such as Co-60, Ni-59 and Ni-63, released gradually as corrosion occurs);
- Carbon steel (with a similar activation product profile to stainless steel but missing some key isotopes such as Ni-59 and Ni-63, also released by corrosion);
- Aluminum (with specific activation products, likely to corrode rapidly depending on water chemistry);
- Zircaloy (with specific activation products such as C-14, released very slowly by corrosion).

Fission products and actinides present in 0.03% of the inventory are present as surface contamination in nuclear systems which are released into the water by corrosion.

NPD Source Term

Radionuclides of Interest

- Radioactive inventory data is available for a total of 57 radionuclides.
- Many have relatively short half-lives which mean they will decay within 100 years and will not pose a hazard in the post-closure period.
- Other radionuclides are present with very low activity in the wastes so constitute a trivial hazard.
- A total of 21 radionuclides remain for consideration in the long term safety case:

C-14, Cl-36, Ca-41, Co-60, Ni-59, Ni-63, Sr-90, Zr-93, Nb-93m, Nb-94, Tc-99, Ag-108m, Sn-121m, Cs-137, Sm-151, Eu-152, U-234, U-235, U-236, U-238, Np-237, Pu-238, Pu-239, Pu-240, Pu-241, Pu-242, Am-241, Am-242m, Am-243, Cm-243, Cm-244

- Additional radionuclides have been included in the safety case as they are radioactive progeny of one or more of the included radionuclides (e.g. Pb-210, Ra-226, Th-229).

NPD Source Term

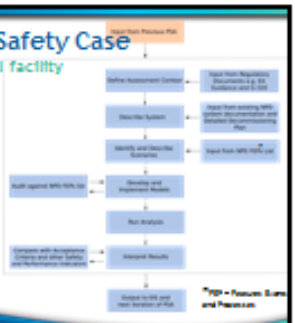
Hazardous Substances Inventory

- There is lead paint throughout facility as well as a significant quantity of lead associated with shielding.
- Small quantities of mercury are possible in the facility, associated with thermometers and switches.
- PCBs are present in light ballasts and potentially paint and caulking. The remaining transformers present on site have been found to be PCB free.
- Asbestos is present in the form of pipe insulation, floor tiles and building cladding.
- All systems were drained of oil during the first phase of decommissioning and previous remediation work was completed outside of the facility.

NPD Long Term Safety Case

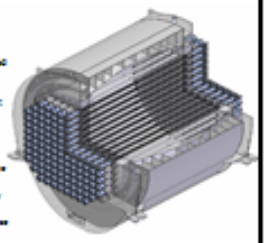
Methodology for disposal facility

- The post closure safety assessment will demonstrate understanding of the entombed reactor interacting with the environment through long-term evolution of the site.
- International best practices are being used to prepare the post closure safety assessment (i.e. IAEA's Improving Safety Assessment Methodologies).



NPD Source Term

Verification of Inventory



NPD Long Term Safety Case

Scope

Timeframe assessed:

- Institutional control phase
- Post closure phase

Receptors assessed:

- Public receptors
- ELS environmental components (pathways)

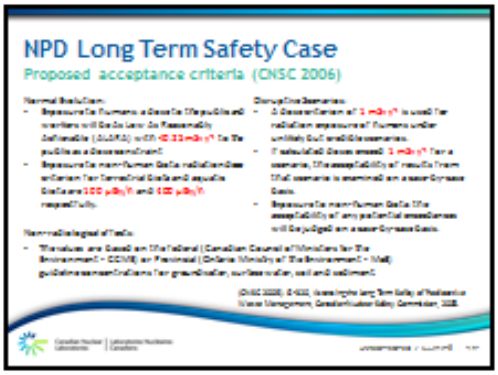
Effects assessed:

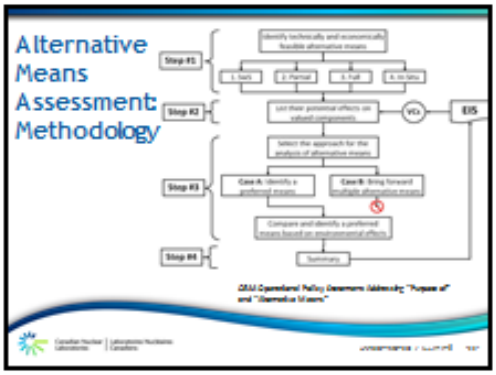
- Exposure to radiological stressors
- Exposure to chemical stressors (lead, mercury, asbestos, PCBs)

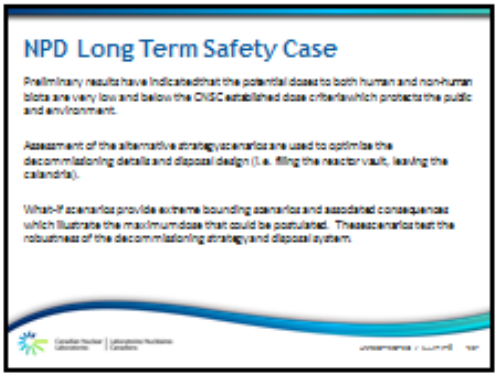
Questions

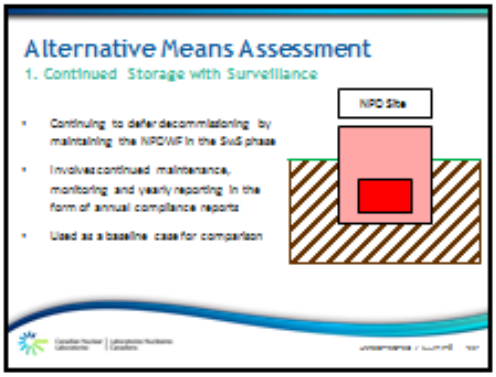
NPD Long Term Safety Case

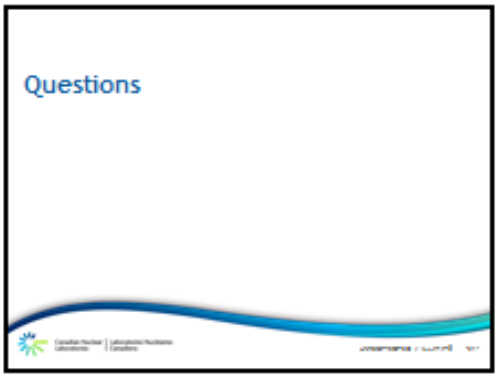
Scenarios assessed

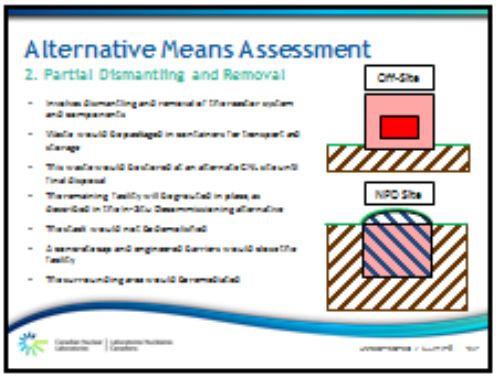

NPD Long Term Safety Case
Proposed acceptance criteria (CNSC 2006)


Alternative Means Assessment: Methodology
EIS


NPD Long Term Safety Case
Preliminary results have indicated that the potential doses to both human and non-human biota are very low and below the CNSC established dose criteria which protects the public and environment.
Assessment of the alternative strategy scenarios are used to optimise the decommissioning details and disposal design (i.e. filling the reactor vault, leaving the calandria).
What-if scenarios provide extreme bounding scenarios and associated consequences which illustrate the maximum dose that could be postulated. These scenarios test the robustness of the decommissioning strategy and disposal system.


Alternative Means Assessment
1. Continued Storage with Surveillance
Continuing to defer decommissioning by maintaining the NPDWF in the SwS phase
Involves continued maintenance, monitoring and yearly reporting in the form of annual compliance reports
Used as a baseline case for comparison
NPD Site

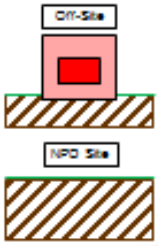

Questions


Alternative Means Assessment
2. Partial Dismantling and Removal
Off-Site
NPD Site

Alternative Means Assessment

3. Full Dismantling and Removal

- Involves removing all radioactive material from the site
- This would include the removal of the reactor and the associated systems
- Waste would be packaged in containers for transport and storage
- This waste would be stored at an alternate CNL site until final disposal
- The structures on site would be demolished and removed from the site
- The site would be remediated following the removal of all structures

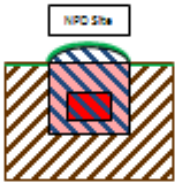


Why In-Situ Decommissioning for NPD?

- Relative risk of environmental effects for ISD is the lowest of all alternative means – for all timeframes.
- Discriminating factors for ISD in comparison to other alternative means:
  - Decommissioning Execution: significantly lower safety risk for workers and the public.
  - Institutional Control: the final end state of ISD ensures lowest potential release during malfunctions and accidents (i.e. severe weather or large earthquakes)
  - Post Closure: most pronounced benefit of ISD is that the waste is encapsulated below ground thereby limiting the risks especially during long term processes and disruptive events.
- ISD is the preferred alternative means for closing the NPD site as it can provide safe final disposal in the near term, thus it reduces the Canadian nuclear legacy liability in a timely manner.

Alternative Means Assessment

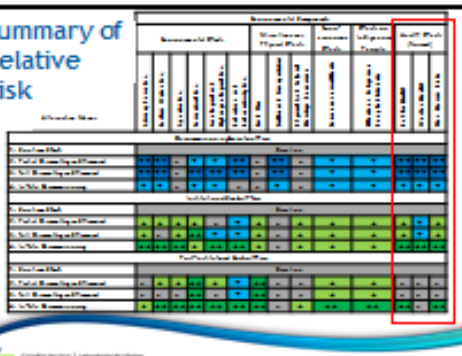
4. In Situ Decommissioning



- Involves grouting the entire facility in place
- The above ground structures will be demolished and grouted within the below grade structures
- The stack would not be demolished
- A concrete cap and engineered barrier system would be placed over the facility to close it
- The surrounding area would be remediated

Questions

Summary of Relative Risk



In-Situ Decommissioning

IAEA and In-Situ Decommissioning

- The IAEA (2014) GSR Indicates that in principle, Immediate dismantling and deferred dismantling is a decommissioning strategy that can be applied for all facilities and that entombment is not considered a decommissioning strategy.
- Entombment or ISD is not suitable for all facilities and is not solely a decommissioning strategy but also a disposal strategy.
- IAEA (2007) does indicate that entombment can be considered if a disposal site does not exist within a member state.
- The NPD decommissioning approach will meet the requirements of CNSC G-219 and CSA N294 as well as CNSC G-320 Assessing the Long Term Safety of Radioactive Waste Management.

In-Situ Decommissioning

When is ISD Suitable?

- Not all contaminated structures are suitable for ISD and there are key criteria that should be met.
- Selection criteria used by the DOE include:
  - Facility hazard category
  - Physical size and suitability for permanent entombment (robust concrete structures)
  - Contamination types and levels
  - Estimated cost savings
  - Non-urban location

In-Situ Decommissioning

Why is it safe?

- Fundamental objective of in-situ decommissioning is to contain and isolate the residual contaminants to ensure that post closure doses and environmental concentrations are acceptable.
- ISD reduces radiation exposure and industrial hazards to workers more so than for larger scale cleanout and demolition.
- ISD is an effective disposal strategy offering a safe and environmentally favorable alternative to completely demolishing a facility and disposing of its debris elsewhere.

North American Precedence for ISD Projects

What are NPD's safety barriers?

1. The majority of the radioactivity is present within the reactor vessel steels and Zircaloy, which will corrode very slowly in expected chemical environment
2. The reactor is deep within the backfilled NPD protected by the thick concrete vault walls as well as the facility structure walls.
3. The backfilled grouted vault will constrain the rates of groundwater flow and maintain an alkaline environment.
4. The isolation of radionuclides will be further achieved by filling much of NPD with grout.
5. A concrete cap will be constructed over the grouted facility to protect against inadvertent human intrusion.
6. An engineered cover will be placed over the concrete cap to divert surface water from the facility.

In-Situ Decommissioning

Why is NPD Suitable?

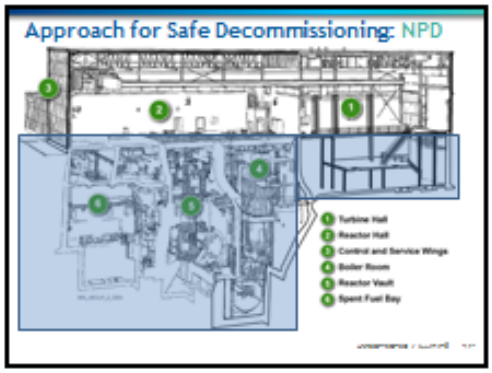
- NPD is a reinforced concrete structure which is anchored into granitic bedrock.
- The reactor which is the bulk of the radiological inventory, is already located in a very thick concrete vault below grade.
- The radiological inventory remaining at NPD is well characterised with activation products being the primary long-lived radionuclides.

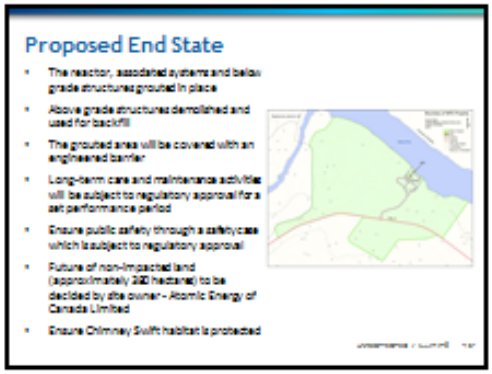
Summary

Why ISD of NPD is safe?

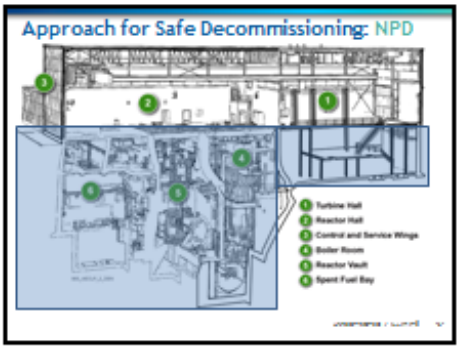
- CNL is committed to ensuring the safety of workers, the public and the environment. With the planned safety barriers in place the overall potential environmental releases to the groundwater, soils and sediment in the Ottawa River are expected to be very low and below the CNSC established dose criteria which protects the public and environment.
- Canadian regulatory guidance is being followed for both decommissioning and waste disposal, and in order to ensure that the long term safety analysis developed is relevant, well-grounded and auditable, best practice guidance developed by the International Atomic Energy Agency (IAEA) is being used.
- The ISD approach is CNL's preferred strategy and it must be vetted through an appropriate and rigorous safety and environmental assessment before consideration of approval by the CNSC.

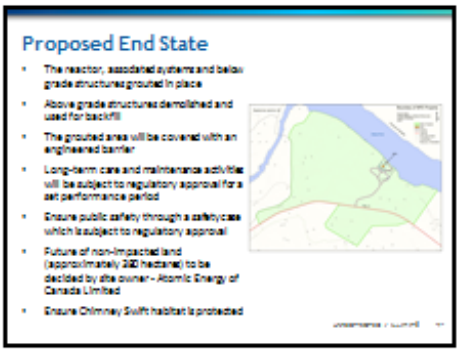
C.2 Presentation to Renfrew County Council January 2017





C.3 Presentation to Deep River Town Council





Why In-situ Decommissioning?

In-situ decommissioning offers the safest approach:

- Reduces worker risk, radiological risk, and industrial accident risk
- Reduces the risk of public / environment exposure during transportation
- Eliminates multiple handling of waste packages
- Effective reduction of theftability (e.g. eliminates interim waste storage at Chalk River Laboratories)

Alternative means considered:

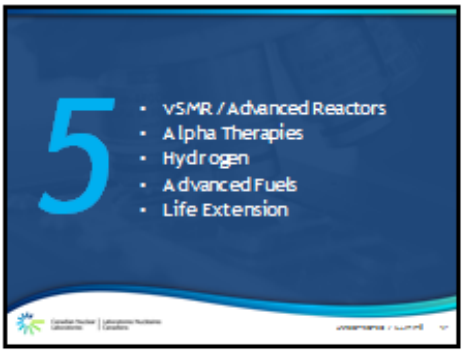
- Removal of some or all source term for shipment to Chalk River for storage and in-situ decommissioning (ISD)

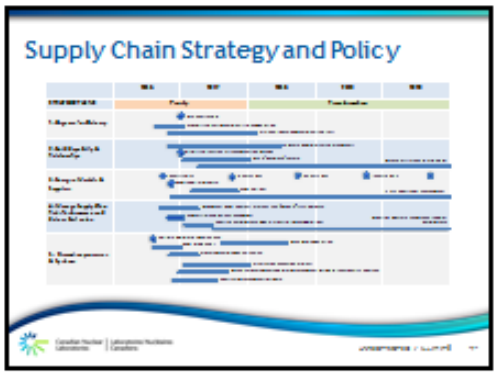
Conclusion to be supported through the Environmental Impact Statement

Safe by Design: Post Closure Safety Assessment

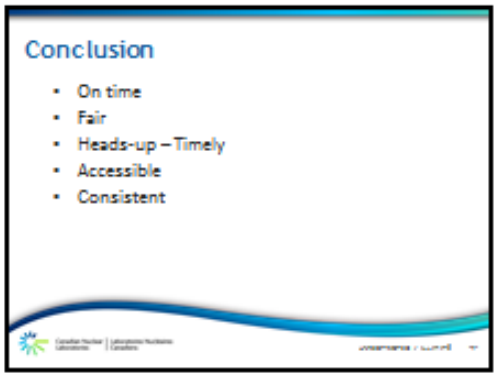
- The post closure safety assessment – the long term viability / safety of the project
- Disruptive scenarios being assessed:
  - Early degradation of grout,
  - seismic activity,
  - early glaciation,
  - groundwater discharge to shore, and
  - human intrusion through well or site investigation

C.4 Presentation to the Upper Ottawa Valley Chamber of Commerce January 2017




Supply Chain Strategy and Policy


Supply Chain Engagement
cnl.ca Vendor Portal
to be developed by
March 2017


Conclusion
On time
Fair
Heads-up – Timely
Accessible
Consistent

C.5 Presentation to the Eastern Ontario Wardens' Caucus – January 2017

Canadian Nuclear Laboratories - One Year In

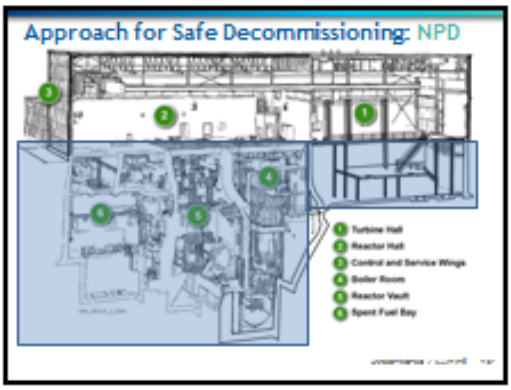
Update to the Eastern Ontario Wardens' Caucus

2017 January 31| Mark Lesinski, President and CEO

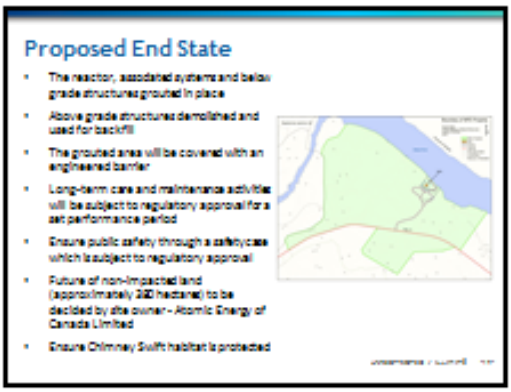
Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

UNRESTRICTED / ILLIMITÉ -1-

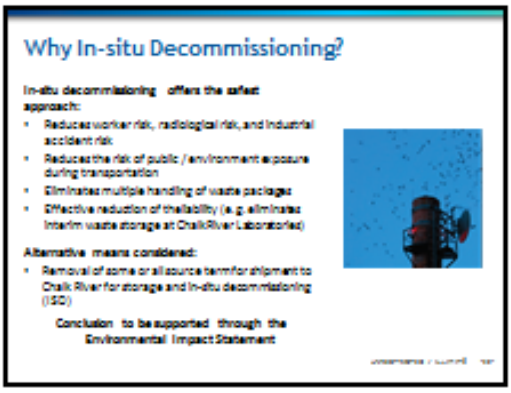

NPD Closure Project


Approach for Safe Decommissioning: NPD
1 Turbine Hall
2 Reactor Hall
3 Control and Service Wings
4 Boiler Room
5 Reactor Vault
6 Spent Fuel Bay


Timeline: 2016 - 2020
Activity
2016
2017*
2018
2019
2020
Decommissioning Planning
EA and Licensing
Decommissioning Execution
*2017 September EIS and licence submission
2020 May – To Be Determined
• Nuclear Power Demonstration (NPD) site closure followed by institutional control subject to regulatory approval


Proposed End State
• The reactor, associated systems and below grade structures grouted in place
• Above grade structures demolished and used for backfill
• The grouted area will be covered with an engineered barrier
• Long-term care and maintenance activities will be subject to regulatory approval for a set performance period
• Ensure public safety through a safety case which is subject to regulatory approval
• Future of non-impacted land (approximately 220 hectare) to be decided by site owner - Atomic Energy of Canada Limited
• Ensure Chimney Swift habitat is protected


NPD
Overview: Project Objectives
• Protect public safety
• Protect the environment (including species at risk habitat)
• Ensure employee and contractor safety (target no lost time incidents)
• Accelerate NPD decommissioning using available technologies with target completion May 2020
• Reduce Canadian legacy long-term liabilities and the burden on the Canadian taxpayer


Why In-situ Decommissioning?
In-situ decommissioning offers the safest approach:
• Reduces worker risk, radiological risk, and industrial accident risk
• Reduces the risk of public / environment exposure during transportation
• Eliminates multiple handling of waste packages
• Effective reduction of theliability (e.g. eliminates interim waste storage at Chalk River Laboratories)
Alternative means considered:
• Removal of some or all source term for shipment to Chalk River for storage and in-situ decommissioning (ISD)
Conclusion to be supported through the Environmental Impact Statement

C.6 Presentation to the United Counties of Prescott Russell – February 2017

Canadian Nuclear Laboratories - One Year In

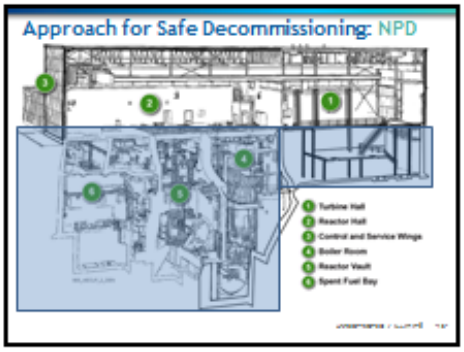
Update to the United Counties of Prescott and Russell

2017 February 08 | Mark Lesinski, President and CEO

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

UNRESTRICTED / ILLIMITÉ -1-


NPD Closure Project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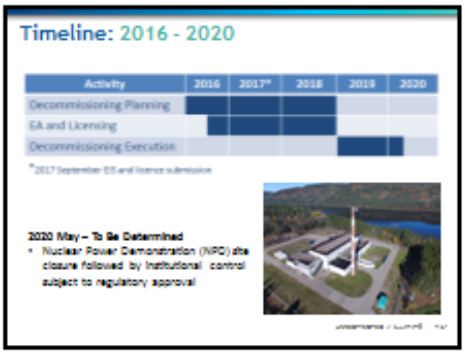
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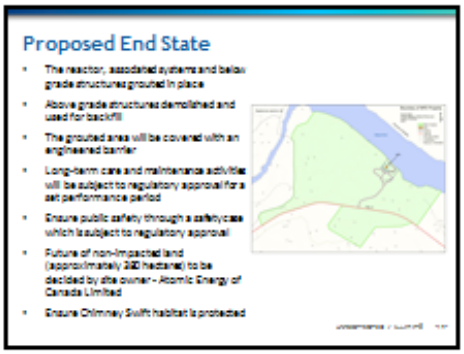
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• Above grade structures demolished and used for backfill
• The grouted area will be covered with an engineered barrier
• Long-term care and maintenance activities will be subject to regulatory approval for a set performance period
• Ensure public safety through a safety case which is subject to regulatory approval
• Future of non-impacted land (approximately 320 hectares) to be decided by the owner - Atomic Energy of Canada Limited
• Ensure Chimney Swift habitat is protected


NPD
Overview: Project Objectives
• Protect public safety
• Protect the environment (including species at risk habitat)
• Ensure employee and contractor safety (target no lost time incidents)
• Accelerate NPD decommissioning using available technologies with target completion May 2020
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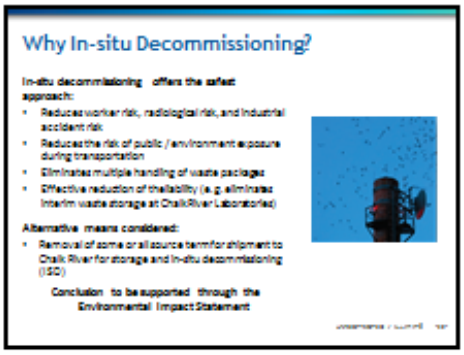
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Alternative means considered:
• Removal of some or all source term for shipment to Chalk River for storage and in-situ decommissioning (ISD)
Conclusion to be supported through the Environmental Impact Statement

C.7 Presentation to (MRC) Pontiac Regional County Municipality – February 2017

Canadian Nuclear Laboratories - One Year In

Update to the MRC Pontiac

2017 February 14 | Mark Lesinski, President and CEO

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

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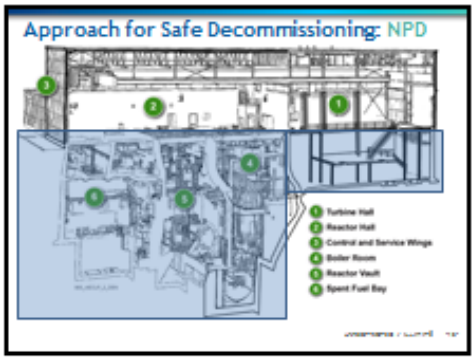
NPD Closure Project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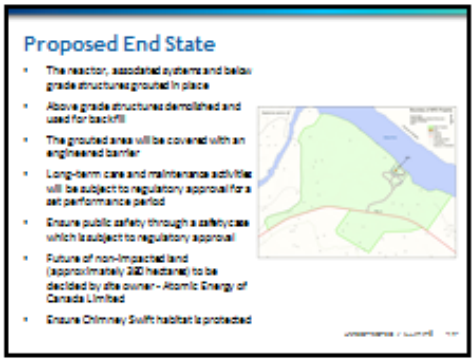
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• Long-term care and maintenance activities will be subject to regulatory approval for a set performance period
• Ensure public safety through a safety case which is subject to regulatory approval
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• Ensure Chimney Swift habitat is protected


Overview: Project Objectives
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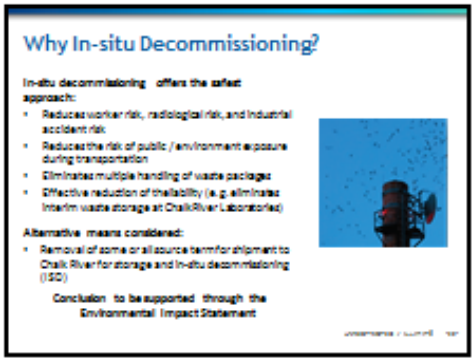
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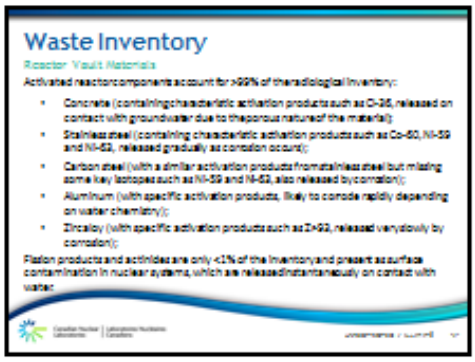
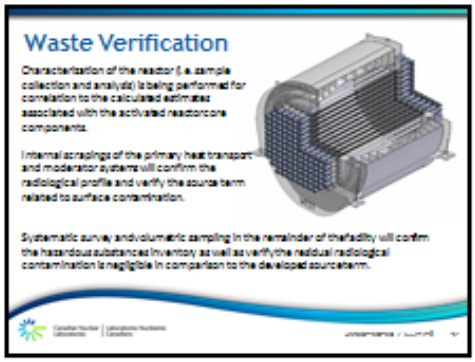
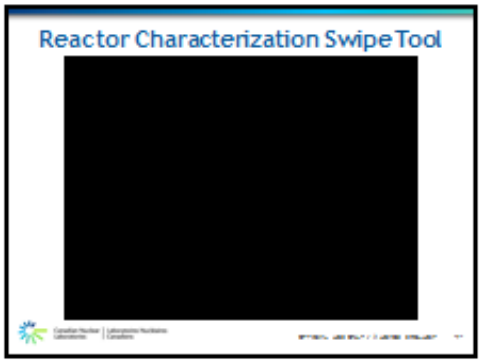
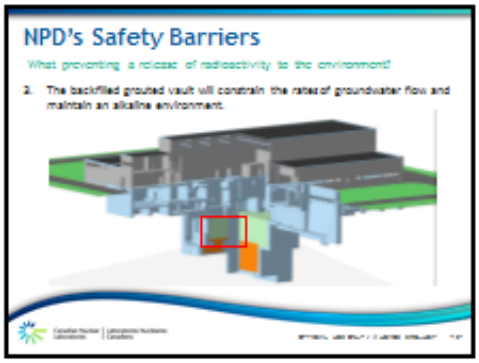
Conclusion to be supported through the Environmental Impact Statement

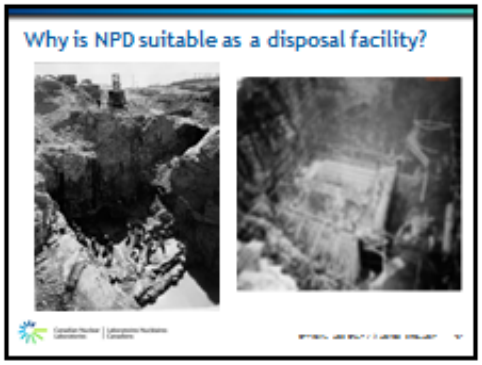
C.8 ESC Meeting – March 2017



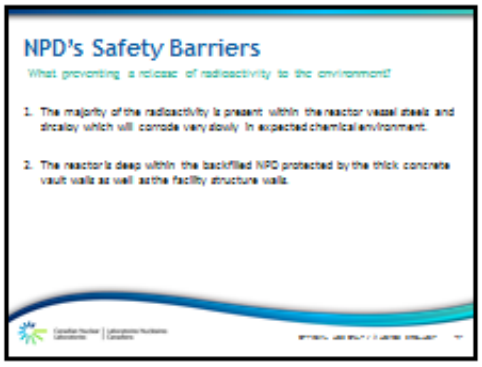


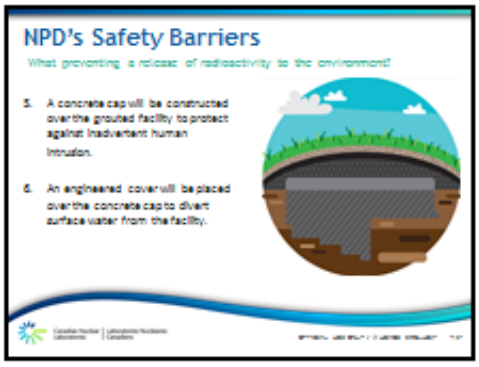

Reactor Characterization Swipe Tool

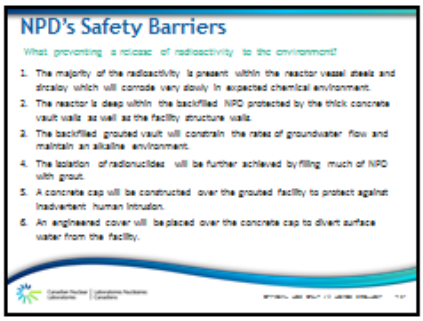

NPD's Safety Barriers
What preventing a release of radioactivity to the environment?
2. The backfilled grouted vault will constrain the rates of groundwater flow and maintain an alkaline environment.


Why is NPD suitable as a disposal facility?


NPD's Safety Barriers
What preventing a release of radioactivity to the environment?
4. The isolation of radionuclides will be further achieved by filling much of NPD with grout.


NPD's Safety Barriers
What preventing a release of radioactivity to the environment?
1. The majority of the radioactivity is present within the reactor vessel steels and zircaloy which will corrode very slowly in expected chemical environment.
2. The reactor is deep within the backfilled NPD protected by the thick concrete vault walls as well as the facility structure walls.


NPD's Safety Barriers
What preventing a release of radioactivity to the environment?
5. A concrete cap will be constructed over the grouted facility to protect against inadvertent human intrusion.
6. An engineered cover will be placed over the concrete cap to divert surface water from the facility.


NPD's Safety Barriers
What preventing a release of radioactivity to the environment?
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3. The backfilled grouted vault will constrain the rates of groundwater flow and maintain an alkaline environment.
4. The isolation of radionuclides will be further achieved by filling much of NPD with grout.
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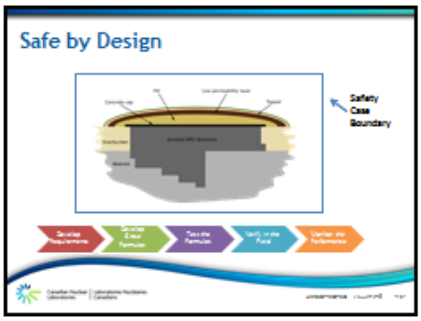
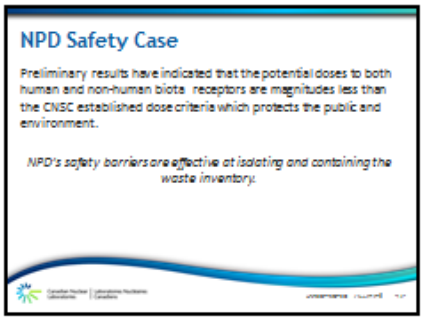
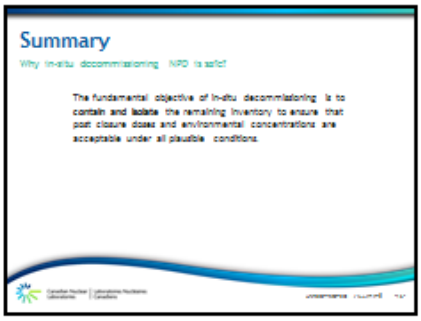

Safe by Design
Safety Case Boundary


NPD Safety Case
Preliminary results have indicated that the potential doses to both human and non-human biota receptors are magnitudes less than the CNSC established dose criteria which protects the public and environment.
NPD's safety barriers are effective at isolating and containing the waste inventory.


Summary
Why in-situ decommissioning NPD is safe?
The fundamental objective of in-situ decommissioning is to contain and isolate the remaining inventory to ensure that post closure doses and environmental concentrations are acceptable under all plausible conditions.