Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

Report, General

ENVIRONMENTAL ASSESSMENT STAKEHOLDER ACTIVITIES REPORT - NSDF AND NPD CLOSURE PROJECTS

COMPANY WIDE

CW-513400-REPT-001

Revision 0

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APPENDICES

1. INTRODUCTION

This report summarizes and assesses stakeholder communications activities completed in support of the Environmental Impact Statements (EIS) for the Near Surface Disposal Facility (NSDF) Project and the Nuclear Power Demonstration (NPD) Closure Project for the period of 2016 August to 2016 December.[1]

These proposed initiatives are key projects identified by Canadian Nuclear Laboratories (CNL) as part of the overall integrated Decommissioning and Waste Management (DWM) approach to safely manage and reduce Canada's legacy liabilities.

For greater comprehensibility, the Analysis and Conclusions, and Recommendations are located at the front of this report. The remainder of the document provides detailed information on tactics, communication products and feedback.

[1] Per REGDOC 2.9.1 Environmental Protection – Environmental Policy, Assessments and Protection Measures, 2016

1.1 Acronyms and Abbreviations

AECL	Atomic Energy of Canada Limited
CEAA	Canadian Environmental Assessment Act
CNA	Canadian Nuclear Association
CNL	Canadian Nuclear Laboratories
CNS	Canadian Nuclear Society
CNSC	Canadian Nuclear Safety Commission
CRL	Chalk River Laboratories
DWM	Decommissioning and Waste Management
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMR	East Mattawa Road
ESC	Environmental Stewardship Council
FAQ	Frequently Asked Questions
NGO	Non-Governmental Organization
NPD	Nuclear Power Demonstration
NPDWF	Nuclear Power Demonstration Waste Facility
NSDF	Near Surface Disposal Facility
NWMD&ER	Nuclear Waste Management, Decommissioning and Environmental Remediation
OCI	Organization of Canadian Nuclear Industries
OFWCA	Old For William Cottagers' Association
OPG	Ontario Power Generation
OVED	Ottawa Valley Economic Development
PIP	Public Information Program
PIS	Public Information Sessions
SAR	Species at Risk
SWS	Storage with Surveillance
WiN	Women in Nuclear

2. COMMUNICATIONS OBJECTIVES AND STRATEGY ALIGNMENT

In support of the EIS, NSDF and NPD Closure Project information is made available to CNL host communities and stakeholder groups through a variety of mechanisms to ensure accessibility of fact-based information throughout the duration of both the NSDF project and the NPD Closure Project.[2]

Beyond the timeframe of either project, CNL also has an overarching and enduring responsibility to uphold particular regulatory requirements of informing the public outlined by the Canadian Nuclear Safety Commission (CNSC) Regulatory Document RD/GD-99.3: Public Information and Disclosure. CNL meets this requirement primarily through its Public Information Program.[3] Communication activities are conducted to support the EIS for each project and the broader regulatory requirements, including REGDOC 3.2.2 Aboriginal Engagement.

By conducting communications activities, CNL is aiming to meet specific objectives. These specific communication objectives include:

1. Maintain and initiate two-way communication channels between CNL, host communities, Indigenous peoples (First Nations and Métis) and other stakeholder groups, determining the best methods for communicating project information and facilitating input at appropriate junctures in the project schedule.
2. Develop meaningful, user-friendly information and communication products geared for host communities and stakeholders, ensuring accessible and current information on project activities.
3. Demonstrate CNL's long-term commitment and approach to safely and cost-effectively reducing Canada's nuclear legacy liabilities.
4. Inform and educate host communities and stakeholders about nuclear decommissioning, environmental remediation and radioactive waste management.
5. Meet all regulatory based communication and engagement requirements.

A variety of tactics are employed to achieve stated objectives. The following table outlines strategy alignment linking objectives to planned tactics.

[2] Per Generic Guidelines for the Preparation of an Environmental Impact Statement, 2016

[3] CW-513430-REPT-001

Objective précis	Strategy	Tactics	Stakeholders
1. Maintain and initiate two-way communication 2. Develop meaningful communication products 3. Demonstrate commitment and approach to safely and cost-effectively reduce Canada's nuclear legacy liabilities 4. Inform and educate on nuclear decommissioning, environmental remediation and radioactive waste management 5. Meet all regulatory based communication and engagement requirements	• Present information in an easy to understand format through a variety of communications channels using targeted key messaging. • Use technical experts to communicate information through a variety of channels. • Ensure that all required activities are accomplished in a timely and prescribed manner. • Ensure all regulatory requirements relating to communications are met. • Ensure availability of information for use by stakeholders/ interest groups.	• Presentations • Web page content • Social media • Site visits • Advertising • Factsheets • Poster boards • Public information sessions • Employee information sessions • Educational outreach • Community events	• Host communities • Indigenous peoples[4][5] • Elected officials • Environmental organizations • Non-governmental organizations (NGOs) • CNL staff (internal stakeholder) • Nuclear industry

[4] Details on CNL's Aboriginal engagement activities with respect to the NSDF can be found in the Aboriginal Engagement Report 232-513130-REPT-001, 2016

[5] Details on CNL's Aboriginal engagement activities with respect to the NPD Closure Project can be found in the Aboriginal Engagement Report 64-513130-REPT-001, 2016

3. ANALYSIS AND CONCLUSIONS

This section provides an exploration of the outcomes of project specific communication activities, including the following:

- 11 presentations to varying stakeholders (members of the public, industry and elected officials and employees)
- Updated webpage content for both projects, providing further depth and quantity of information to the public in French and English (www.cnl.ca/nsdf and www.cnl.ca/npd)
- Increased use of social media, including uploading project specific videos to YouTube
- Three visits to project sites
- Advertising campaign in support of public information sessions (online, intranet, newspapers, flyer insert, radio public service announcement, social media, paid Facebook advertising)
- Distribution of factsheets and comment cards to local municipal offices in Ontario and Quebec, to function as an information repository and support public input
- Production of 15 new project specific poster boards
- Conduct of seven project specific public information sessions
- Conduct of two project specific employee information sessions
- Exhibit booth at Petawawa Showcase
- Educational outreach

3.1 Analysis

Communication activities undertaken during the reporting timeframe have continued to maintain, expand and initiate communication channels and generate opportunity for stakeholders to provide feedback on the NSDF and the NPD Closure Project. Doing so indicates progress at obtaining the previously mentioned objectives. These objectives are informed by the Generic Guidelines for the Preparation of an Environmental Impact Statement.[6]

There continues to be some commonalities in the feedback for both projects. Formal and recorded commentary on both projects seems to indicate that these areas of interest within the community for the NSDF and the NPD Closure Project are consistent with previous feedback.

[6] CNSC, 2016.

The following sections further explore the feedback specific to each project. Feedback is categorized by stakeholder – public and industry – to reduce a bias from the industry feedback and to better understand where industry and public concerns divide or converge.

Public feedback is considered to be the formal and recorded comments, as well as the data generated from website analytics and social media data. (See Appendix A, B and C)

Industry feedback is considered to be the formal feedback received after the site tour and presentation at the NPD site and at Chalk River Laboratories for a group from the Canadian Nuclear Society Conference on Nuclear Waste Management, Decommissioning and Environmental Restoration Conference, hosted on 2016 September 14. (See Appendix D)

3.1.1 NSDF Overview

The quantity of formal comments is not greatly different than indicated in the earlier Stakeholder Activities Report.[7] However, there are a greater variety of themes emerging, possibly indicating a deeper level of familiarity with the NSDF. As described in the previous report, between 2016 April and 2016 July, there were 24 formal comments and/or questions regarding the NSDF. Between 2016 August and 2016 December, there were 26 questions, comments or requests for information regarding the NSDF.

The Ottawa River, the future impact of potential natural disasters and climate change on the proposed projects, and how the NSDF and the NPD Closure Project are addressing these issues, continue to be areas of stakeholder interest. Emerging areas of interest for the NSDF project include security concerns and the source of the waste to be disposed.

Feedback for both projects shows a high degree of satisfaction with information provided, but also indicates a desire for more information. There is some explicit approval of the plan for both projects. Notably, the feedback demonstrating support for the NSDF has increased.

Website analytics continue to show that the project specific web page has fewer visitors than other CNL pages (www.CNL.ca/NSDF does not rank in the top ten of the webpages on the CNL website).

However, user behaviour during sessions at the project web pages indicate higher than average interaction in comparison to activities while visiting CNL.ca in general. Webpage traffic to the project page continues to be mostly organically driven, meaning visitors are finding the project via search engines. This remains consistent with the website traffic from earlier this year at just under 60 per cent of visitors finding the web page via an organic search (57.01 per cent found the NSDF project page through a search engine).

User location is another area of interest. More than 70 per cent (631 individuals) of users to the NSDF web page were located within Canada. Of these 631, the combined number of individual users located in one of the three closest communities to the project (Deep River, Pembroke or Petawawa) was 101.

[7] Stakeholder Activities Report -NSDF and NPD Closure Projects CW-513400-041-0000 R0, 2016

All of this information seems to indicate that while there is not a large number of visitors to the project web page (in comparison to other CNL.ca website traffic), most visitors who do visit the project page are already familiar with the NSDF project and are interested in staying informed and knowledgeable about the project by using the web page as an online resource.

3.1.2 NPD Closure Project Overview

The quantity of formal comments on the NPD Closure Project was relatively similar during this period of time, than described in the earlier Stakeholder Activities Report, which captures feedback from earlier in the year. There is a greater variety of themes emerging, possibly indicating a deeper level of familiarity with both projects. Between 2016 April and 2016 July CNL received 30 formal comments and/or questions regarding the NPD Closure Project. Between 2016 August and 2016 December CNL received 28 questions, comments or requests for information regarding the NPD Closure Project.

These numbers show an increase in feedback on the NPD Closure Project by 25 per cent. However, this may be due to the fact that this report covers a longer time period than the previous Stakeholder Activities Report.

Areas of ongoing stakeholder interest include the Ottawa River, the future impact of potential natural disasters and climate change on the proposed project, and how the NPD Closure Project is addressing these issues. A growing area of interest, which is clear from stakeholder feedback, is the post-closure use of the NPD site.

Feedback for the NPD Closure Project shows a high degree of satisfaction with information provided, but also indicates a desire for more information. Of particular interest was the video content shown at the public information sessions.

Website analytics continue to show that the NPD Closure Project's web page has fewer visitors than other CNL pages (it does not rank in the top ten of the webpages on the CNL website).

Interestingly though, user behaviour during sessions at the NPD Closure Project web page indicates higher than average interaction in comparison to user activities while visiting CNL.ca.

Web page traffic to the project page continues to be mostly organically driven, meaning visitors are finding the project via search engines. This remains consistent with the website traffic from earlier this year at just under 60 per cent of visitors finding the web page via an organic search (58.94 per cent of traffic to the NPD Closure Project's page between 2016 August and 2016 December was organically driven).

User location is another area of interest. More than 80 per cent (667 individuals) of users to the NSDF web page were located within Canada. Of these 667, the combined number of individual users located in one of the three closest communities to the project (Deep River, Pembroke or Petawawa) was 84.

All of this information seems to indicate that while there is not a large number of visitors to the project web page (in comparison to other CNL.ca website traffic), most visitors who do visit www.CNL.ca/NPD are already familiar with the project and are interested in staying informed and knowledgeable about the project by using the webpage as an online resource.

3.2 Analysis of Website Analytics

3.2.1 Web Page Content

Web content for both projects has been updated and the project specific URLs have been maintained. Ease of access to the project pages is encouraged through project sliders and quick links, which are located on CNL's homepage. (See Appendix E for updated web page content.)

Near Surface Disposal Facility Project: www.cnl.ca/nsdf
NPD Closure Project: www.cnl.ca/npd

Since 2016 August, the following information has been added to each project web page (in English and French) to reflect recent updates, provide further information in areas of demonstrated stakeholder interest, and ensure availability of information for stakeholders:

NSDF

- Revised project description[8]
- Revised project factsheet[9]
- Downloadable copies of the informational posters created for the October public information sessions[10]
- Hyperlink to revised formal feedback mechanism, a new online comment form[11]

NPD Closure Project

- New web page on Species at Risk protection at the NPD site[12]
- Downloadable copies of the informational posters created for the October public information sessions[13]

[8] http://www.cnl.ca/site/media/Parent/232-509200-ENA-001.pdf
[9] http://www.cnl.ca/site/media/Parent/NSDF_Eng2.pdf
[10] http://www.cnl.ca/site/media/Parent/PSA-NSDF-Eng.pdf
[11] http://www.cnl.ca/en/home/environmental-stewardship/feedback.aspx
[12] http://www.cnl.ca/en/home/environmental-stewardship/npd-closure-project/chimney-swift-population.aspx
[13] http://www.cnl.ca/site/media/Parent/PSA-NPD-Eng.pdf

- Hyperlink to recent downloadable Environmental Performance information[14]
- Hyperlink to revised formal feedback mechanism, a new online comment form[15]

3.2.2 Web Page Analytics

To understand reach, interest and suitability of content, web page activity is tracked and analyzed. Analysis is focused on understanding user behaviour and acquisition. User behaviour is categorized by project and tracked through time spent, pages viewed, bounce rate and download activity. Understanding acquisition is important as it provides insights on accessibility of project information. This analysis covers 2016 August 1 to 2016 December 14. (For Google reports, see Appendix B.)

3.2.2.1 User Behaviour

User behaviour while at the project web pages indicates higher than average interaction in comparison to activities while visiting cnl.ca in general. Analysis of behaviour results focuses on time spent at project web pages, the number of web pages viewed, and downloads.

There has been a significant increase in guests to both project web pages, however, the more recent timeframe assessed, is also a longer time frame, giving more opportunities for users to visit. It is also be expected that greater number of people have become aware of the project web pages were first created earlier this year.

Bounce rates, the percentage of visits in which a user left the site from the entrance page without interacting with the page, continue to demonstrate that users are engaged with the information made available. A pattern of low percentages indicates that upon accessing project pages visitors remained and interacted with the available material. It should be noted, however, that the bounce rate has slightly increased for both project web pages, but still remains at less than half the rate of general users, perhaps indicating that some users are repeat users that know their way around the website.

Recent behaviour details are summarized against past user behaviour in the following table:

	CNL.ca		**CNL.ca/NSDF**		**CNL.ca/NPD**	
2016	**April-July**	**Aug-Dec**	**April-July**	**Aug-Dec**	**April-July**	**Aug-Dec**
Users	41,782	56,214	411	691	305	696

[14] http://www.cnl.ca/site/media/Parent/NPD_Environmental_Performance_Eng.pdf

[15] http://www.cnl.ca/en/home/environmental-stewardship/feedback.aspx

Session Duration	3:30	2:06	7:17	7:51	7:18	8.27
Web Pages Viewed	2.05	2.59	5.89	6.43	6.28	6.79
Bounce Rate	56.89%	47.93%	16.06%	22.26%	16.39%	21.26%
Downloads	N/A	N/A	131	215	73	144

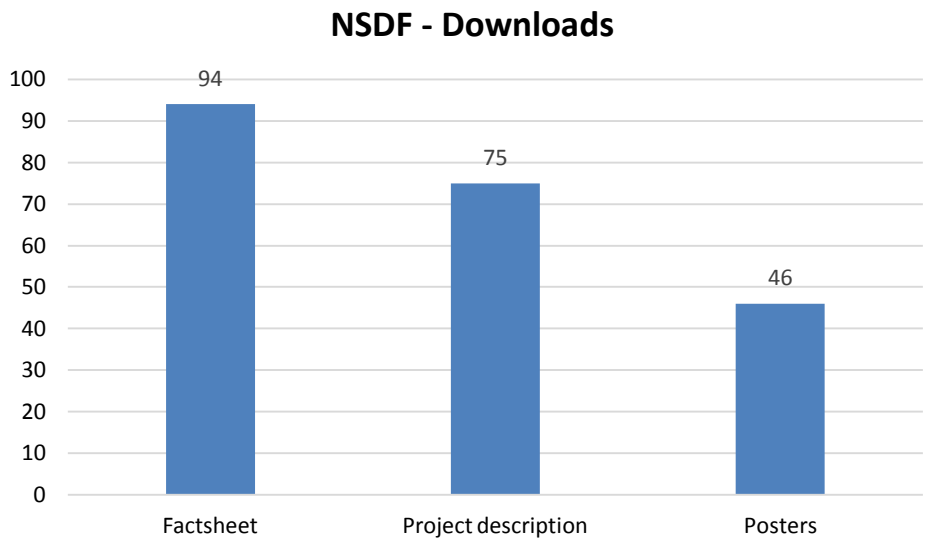
3.2.2.2 NSDF

Between 2016 August and 2016 December, 691 users visited the NSDF project web page for 849 sessions. The average number of pages viewed per session for users that visited the NSDF project web page was 6.43. The average session duration was seven minutes and 51 seconds, much longer than the average session duration of general users of CNL.ca, which is two minutes and six seconds. This indicates that visits are thorough, with users accessing available information.

Pages viewed statistics also indicate detailed review of available information. At more than twice the average for the general web site, data indicates that while users are spending longer on project pages they are also reviewing multiple pages.

The bounce rate was also much different than it is for most visitors to CNL.ca. For the NSDF webpage the bounce rate was 22.26 per cent, whereas the bounce rate for all users of CNL.ca is 47.93 per cent.

Downloadable information available for the NSDF, via the project webpage, includes a factsheet, a project description and two sets of informational posters from the spring and fall public information sessions. Over the set period of time this information was downloaded 215 times. The following chart details the downloaded information for the NSDF:


NSDF - Downloads
100
90
80
70
60
50
40
30
20
10
0
94
75
46
Factsheet
Project description
Posters

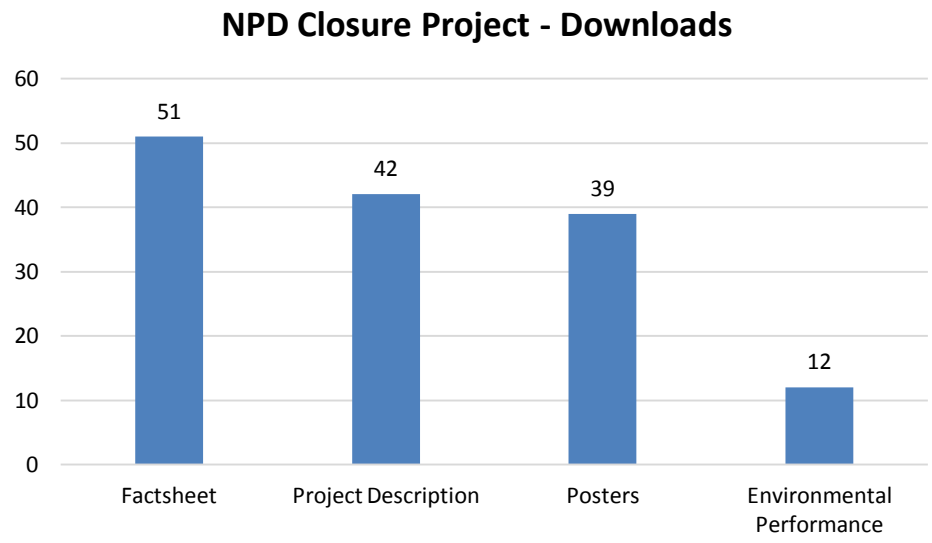
3.2.2.3 NPD Closure Project

Over this set period, 696 users accessed the NPD web page for 828 sessions (a series of page requests), viewing on average 6.79 pages per session. The average duration of a session for a visitor to the NPD Closure Project page was eight minutes and 27 seconds – slightly longer than the average session for the NSDF webpage and much longer than the average session of just over two minutes CNL.ca users spend. Again, this indicates that the average user is taking an in depth look at the project information.

Statistics on number of web pages reviewed during a session seem to indicate that users who are visiting the NPD Closure Project webpage are absorbed by the project information; they are spending longer on the page than the average CNL.ca user and they are reviewing more than double the number of web pages than the average user, as well.

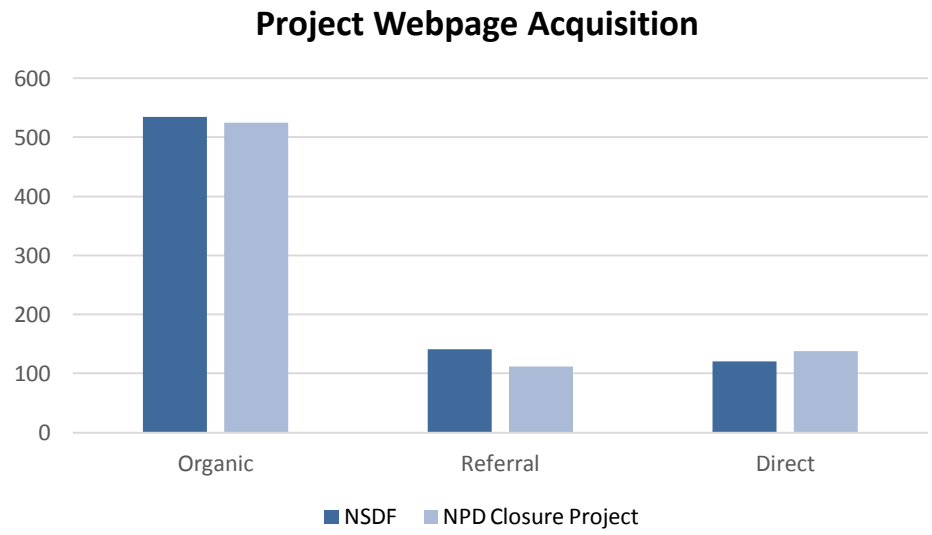
Similar to the NSDF webpage, the NPD Closure Project webpage has the much lower bounce rate of 21.26 per cent than the bounce rate of all users of CNL's website, which is 47.93 per cent.

Downloadable information available for the NPD Closure Project, via the project webpage, includes a factsheet, a project description, two sets of informational posters from the spring and fall public information sessions, and Environmental Performance information – the Summary of Effluent and Environmental Monitoring at the Nuclear Power Demonstration Waste Facility. Over the set period of time this information was downloaded 144 times. A breakdown of the information downloaded is illustrated in the following chart:



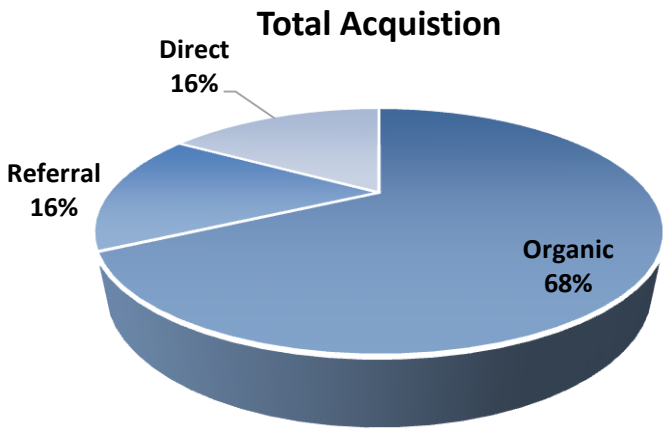
3.2.2.4 Acquisition

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



Means of acquisition to project web pages:

- Referral – link provided by a third party website, e-mail, etc.
- Organic – key word search via search engine
- Direct – input of specific URL



Referrals

Referrals, using a project specific link to access the web pages, account for 16 per cent of visits to the project pages. Referral links include those found at third party web sites (i.e. Canadian Nuclear Safety Commission, Environment Canada, and Atomic Energy of Canada Limited) and social media, such as Facebook and Twitter. Organic searches through search engines account for 68 per cent of visits to project pages.

Direct access

Direct access, input of specific URL(s), accounts for the remaining 16 per cent of users visiting project pages. URLs were advertised in a variety of media: online at the cnl.ca website, fact sheets, print advertising, correspondence, etc.

Webpage acquisition indicates that users were specifically looking for project information/ pages, which becomes evident in their means of access – referrals, key word searches, and use of specific URLs.

In summary, acquisition statistics indicate users are aware of the projects, attributable to the high percentage of access though referral links and direct access. Roughly one third of users are accessing the web pages either directly or through referral links. Efforts to share links and advertising of URL information continue to prove effective.

Evolution of page content is an enduring priority. As project progress is made, the addition of specific information of interest to users is necessary to sustain this positive trend.

(See Section 4: Recommendations.)

3.3 Analysis of Public Feedback

Public feedback continues to give valuable insight into what issues are important to stakeholders, enabling each project to respond to and incorporate the issues of the local community and the broader public into the planning stages of each project. As mentioned, the feedback from 2016 August through to 2016 December is similar to the preceding formal feedback, in both quantity and the kinds of feedback received. Although, there is a broadening of feedback themes, similar topics of questions and comments continue to dominate for both the NSDF and the NPD Closure Project. For complete record of written public feedback received see Appendix A.

3.3.1 Feedback Mechanisms

As of 2016 December 14, 34 individuals had provided formal comments on the NSDF and the NPD Closure Project. [16] Formal comments are defined as any written feedback (including request for future updates) received from the public, through the following varying mechanisms: directly at the information sessions, through online submission, mail or email. (See Appendix F for an example of a received feedback form.)

Stakeholders had opportunities to provide formal feedback to CNL on either project via the seven Public Information Sessions held in October and have ongoing opportunities to provide formal feedback online (See Section 3.2.1), by mail or through email.

Most formal comments so far have been from the feedback forms that were available at public information sessions. A hard copy of the same form has been distributed to local municipal offices (with self-addressed and stamped envelopes) and available as an HTML form hyperlinked to both of the project web pages. Both project web pages also have a “mailto” hyperlink to provide an accessible mechanism of emailing CNL.

[16] Two couples recorded feedback on one form (per couple) and as such are counted as four individuals.

3.3.2 NSDF

Twenty-seven individuals put forth formal comments that were either specific to the NSDF, or pertained to both projects. For comparison, during the time period covered by the preceding Stakeholder Activities Report, 24 questions and/or comments were focused on the NSDF.

The kinds of issues or areas of interest that have been put forward about the NSDF are similar to previously received feedback. The topics of comments and questions covered in this report are consistent with themes, which emerged from earlier stakeholder feedback, which has been received since the projects launched and engagement activities began.

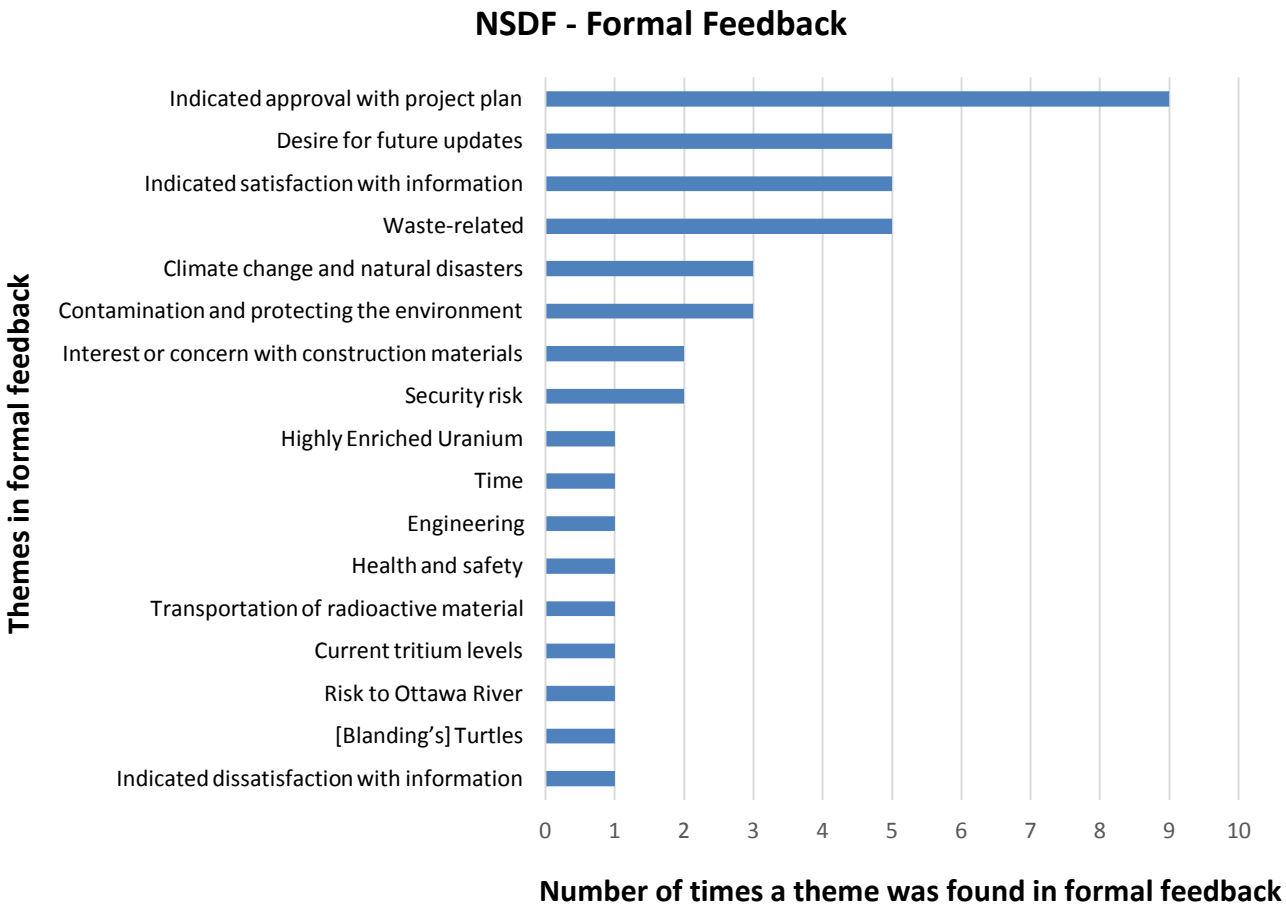
There is still a clear interest in the waste: “What are the expected concentrations of radioactive isotopes in the waste?” Five individuals had feedback with respect to the classification, quantity and source of the waste. Issues of potential contamination and how the facility will be monitored were also raised again; three individuals had feedback in this area.

Whether the facility will be prepared for an earthquake or other natural disaster, climate change or a security incident, was also a recurring theme at this round. Three pieces of written feedback discussed climate change or natural disaster and two pieces of written feedback mentioned security risks.

Other feedback indicated approval or was interested with when and how the information was being presented. Nine comments indicated positive sentiment towards to the planned project, including explicit approval of the project plan, “Everything looks good and well thought out for years to come.”

Six comments/questions indicated a desire for more information. Five expressed satisfaction with information and the way CNL employees had given explanations and answered questions. One individual’s comment expressed negativity about the current presentation of information.

Formal feedback levels and themes around the NSDF are illustrated by the following chart:



3.3.3 NPD Closure Project

From 2016 August to 2016 December 14, there have been 28 formal comments that were either specific to the NPD Closure Project, or pertained to both projects. Prior to 2016 August, 21 questions and/or comments had focused on the NPD Closure Project.

Previously identified areas of interest surrounding the NPD Closure Project continue to be prevalent. For instance, the Chimney Swifts at the NPD 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 in-situ decommissioning of NPD 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 theme identified last time was an interest in the cost. Three individuals in the feedback from the October information sessions mentioned the project's cost and/or funding: "Who funds all this?"

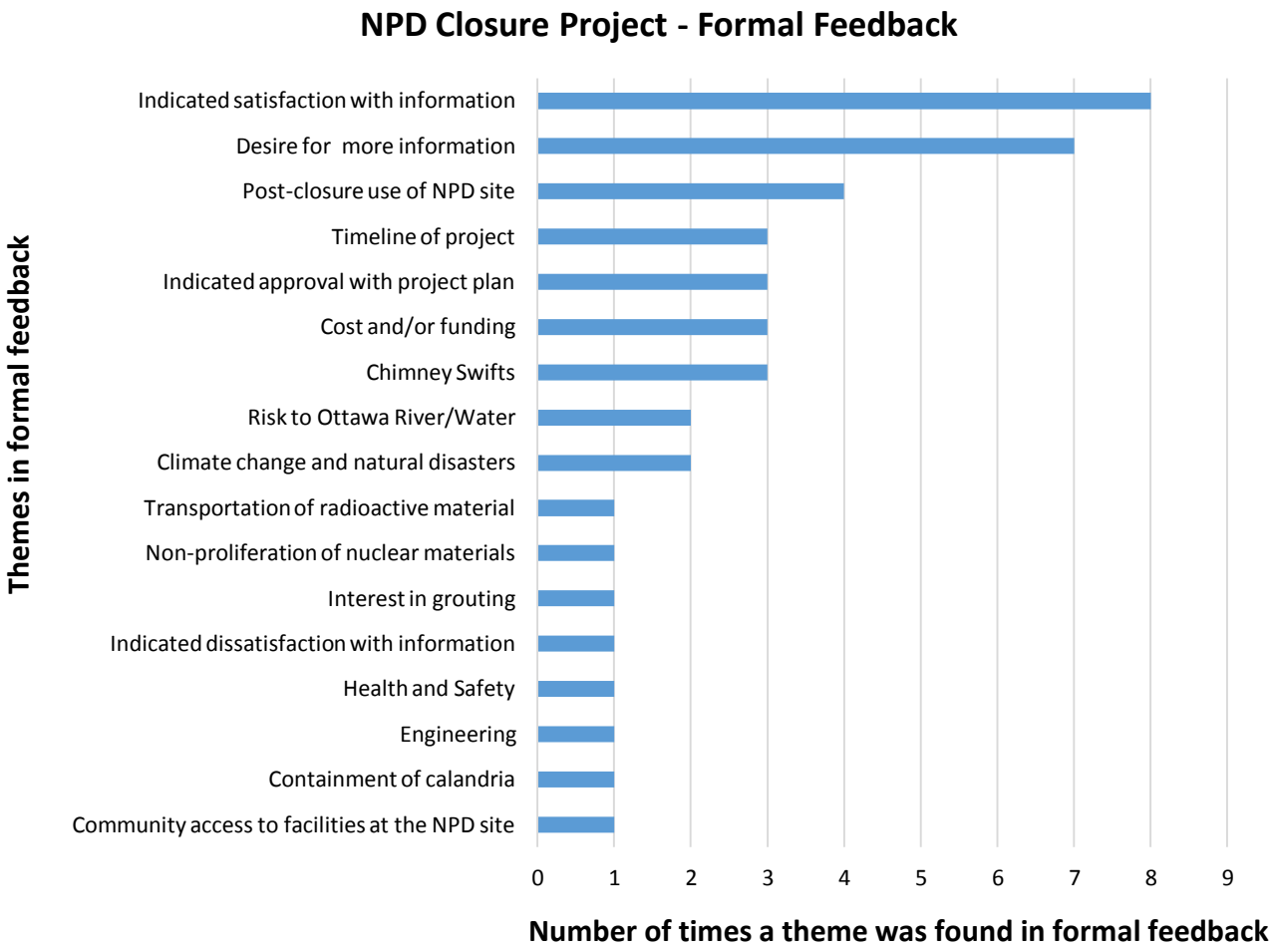
Four questions were concerning what will happen to the NPD site post-closure (in particular, after the release of the unaffected lands at the project site) and one individual indicated concern for protection of the Ottawa River, which are both areas of questioning that have arisen before, as well.

A theme which emerged more concretely at this round of information sessions was an interest in the timeline of the project. Three comments mentioned the timeline of the project.

Other feedback indicated approval or was interested with 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." One individual expressed negativity about the current presentation of information.

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

Formal feedback levels and themes around the NPD Closure Project are illustrated by the following chart:



3.3.4 Valued Components

Valued Components (VCs) are elements within an ecosystem that are important, not only to the ecosystem, but are also designated as valuable to people. A VC may have been identified because it has scientific, social, cultural, economic, historical, archaeological or aesthetic importance.[17]

VC selection is based on the potential project-environment interactions in various environmental components. For instance, terrestrial biodiversity is considered an environmental component. Within that environmental component, Chimney Swifts, a species at risk, are considered a valued component for the NPD Closure Project because of the potential impact the project work could have on the Chimney Swift population.

The feedback from this round of public information sessions shows that there are certain areas of interest from the public that correspond to what the project has determined to be VCs so far. Feedback on Valued Components was obtained organically by filtering the formal feedback for mention of VCs. Surveys on valued components were made available at some of the public information sessions, however, no surveys were completed. Specifically, there have been comments and questions, which unambiguously express value in the Ottawa River and Land Use and Planning (indicated by concern for future land use at the NPD site) as VCs.

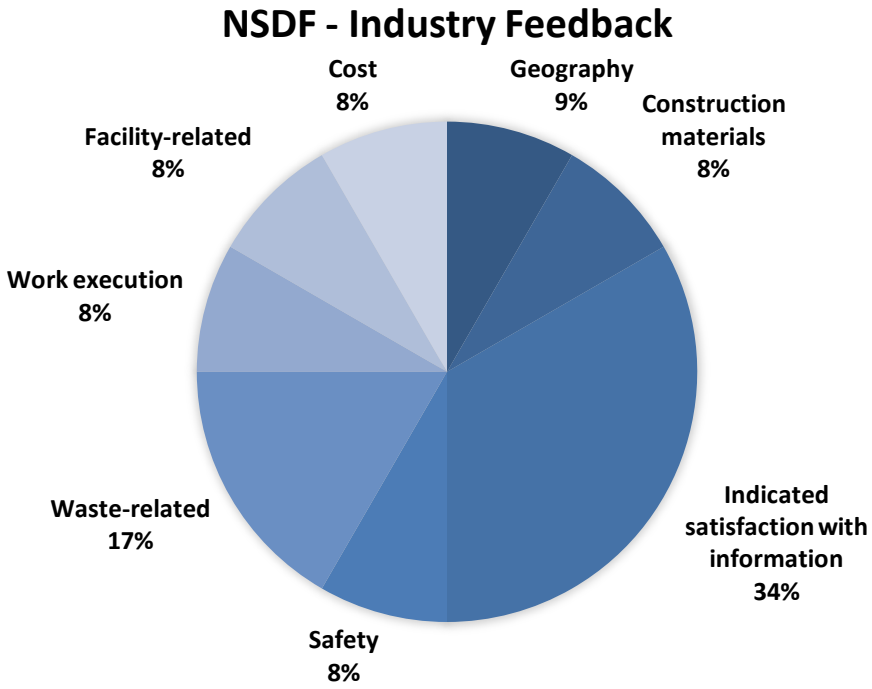
[17] Generic Guidelines for the Preparation of an Environmental Impact Statement, 2016

3.4 Analysis of Industry Feedback

The CNL visit for a group from the Canadian Nuclear Society's Conference on Nuclear Waste Management, Decommissioning and Environmental Restoration (NWMD&ER) provided an opportunity to illicit feedback from a cross-section of the nuclear industry. The site visit included a tour of the East Mattawa Road proposed site for the NSDF and the NPD site, near Rolphton. The visit to CNL was held on 2016 September 15, with 19 visitors in attendance. For complete record of industry feedback see Appendix D.

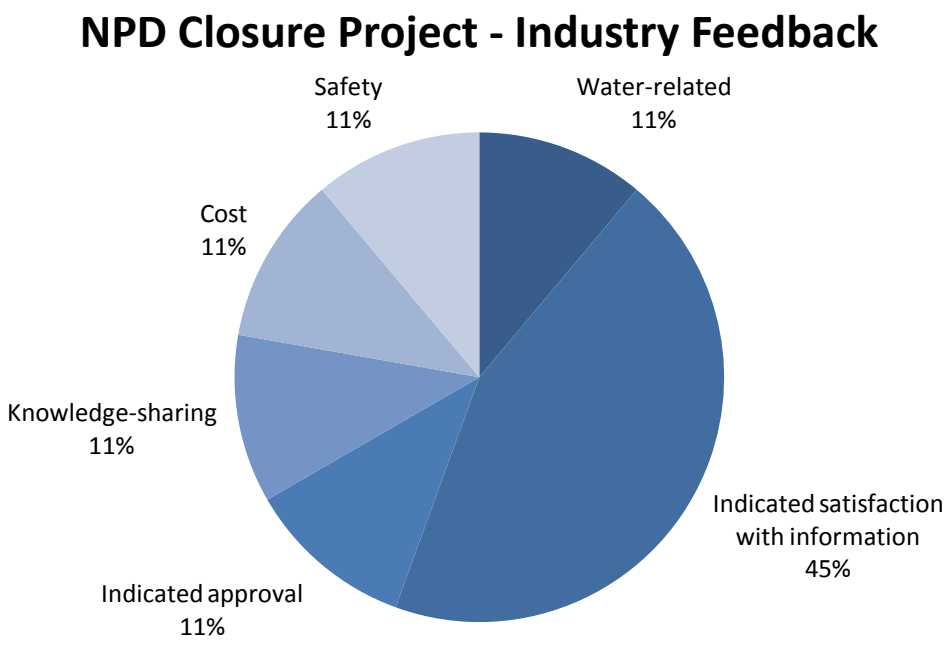
3.4.1 NSDF

The comments received on the proposed NSDF from the NWMD&ER Conference guests on the CNL tour indicated an appreciation and satisfaction with the information provided by the subject matter experts at CNL. Another area of interest, which is consistent with public feedback, related to waste. Themes from the industry feedback surrounding the NSDF are distributed in the following chart:



3.4.2 NPD Closure Project

The comments received on the NPD Closure Project from the NWMD&ER Conference guests on the CNL tour also indicated a high level of appreciation and satisfaction with the information provided by the CNL's subject matter experts. Another area of interest (consistent with public feedback) related to water. Industry feedback on the NPD Closure Project is categorized in the following chart:



3.5 Conclusions

Informed by website analytics, and public and industry feedback received to date, at this current stage of the Environmental Assessment and project development the NSDF project and the NPD Closure project are receiving an expected level of stakeholder support.

While the prevalent sentiment of the various stakeholder engagements has been neutral to positive, outstanding questions remain with both projects. Continuing to provide information as it becomes available will encourage transparency, and further feedback, which can assist the projects in understanding and incorporating stakeholder perspectives into project planning, future communications and the Environmental Impact Statements (EIS).[18]

Tactics employed to date have helped to inform, educate and discuss the projects with stakeholders, and have enabled the public to provide valuable feedback on both projects. The projects will need to continue efforts to reach more stakeholders, in order to inform, educate and discuss the projects.

Stakeholder engagement will be ongoing to support growth in awareness and understanding of both the NSDF and the NPD Closure Project.

[18] Per REGDOC 2.9.1 Environmental Protection – Environmental Policy, Assessments and Protection Measures, 2015

4. RECOMMENDATIONS

The purpose of this section is to identify recommendations to address specific information gaps; acknowledging these concerns will to help to further inform stakeholders.

The recommendation is that the NSDF project and NPD Closure Project continue to work towards resolving the following questions:

NSDF

- What will be disposed in the NSDF? Continue to provide greater clarity on the waste. In particular, consistent messaging on where the waste will originate and how it will be stored within the NSDF is necessary.
- How will CNL monitor the NSDF site? Illustrate existing and planned facility specific monitoring.
- Has this project examined the potential effects of an earthquake or climate change or other natural disasters on the NSDF? Validate analysis of facility specifications as more information becomes available.

NPD Closure Project

- How will the unaffected land be released after the project is finished? Continuous messaging on CNL's relationship with Atomic Energy of Canada Limited (AECL) and clarity on AECL's role in property ownership is required, as the future use of land is of ongoing interest.
- How long will the NPD site be monitored post-decommissioning? Provide greater detail on planned facility specific monitoring during the period of institutional control as the safety case is furthered.
- Has this project examined the potential effects of an earthquake or climate change or other natural disasters on the NSDF? Validate analysis of facility specifications as more information becomes available.

4.1 Ongoing Tactics

4.1.1 Technical Meeting

Verbal and written feedback from engaged community members with knowledge of the nuclear industry, and in particular DWM, indicates that a meeting with subject matter experts from each project would be beneficial at providing a deeper level of information on the projects. Many citizens of the host communities have a strong knowledge of the issues from experience in the nuclear industry and a greater understanding with the scientific and technical aspects of the both projects. For these stakeholders, this meeting, with both project teams, would provide an opportunity to voice questions and concerns and learn more about particular subjects in great detail. A Technical Meeting, which will be advertised to stakeholders, and in particular engaged AECL alumni, is planned for January 19, 2017.

4.1.2 Third Round of Public Information Sessions

In the spring a third round of Public Information Sessions will be held to provide open and accurate information on the NSDF project post-EIS submission. At this point in time, more information will be available to share on the NPD Closure Project, as well.

4.1.3 Further Website Content Updates

- Quick facts for the NSDF and NPD Closure Project
- NSDF Ground water monitoring profile

4.1.4 Educational Outreach

Through existing relationships with local schools, there are opportunities to provide educational opportunities related to each project. This could be achieved by incorporating NSDF and NPD Closure Project information and site tours into the existing school visit program managed through the Communications Department. As well, subject matter experts from project teams could visit classrooms to educate on specific aspects of their respective projects, such as how CNL protects species at risk.

5. TACTICS AND ACTIVITIES – 2016 AUGUST TO DECEMBER

The Stakeholder Activities Report documents the results of the tactics and activities and informs the EIS for each project. Section five details the tactics through which communication objectives were achieved; each tactic or activity was applied to inform, educate and discuss both the NSDF and the NPD Closure Project with specific stakeholders. As well, these tactics and activities facilitated valuable feedback for the project to incorporate. Activities are aligned with examples provided by CSA guidelines.[19]

Where appropriate, products were prepared in French and English.

5.1 Presentations/Site Tours

CNL has used presentations to help inform and educate stakeholders on both projects. Presentations have triggered discussion that helps to inform each project as through the regulatory process.

As part of the Public Information Program CNL periodically hosts site visits.[20] These visits provide an opportunity for open dialogue between the various projects and stakeholders. For the NSDF and NPD Closure Projects, visits are, and will continue to be, used as one of several avenues to ensure dialogue and information sharing with stakeholders.

5.1.1 OCI Suppliers' Day – 2016 September

On 2016 September 8, the Organization of Canadian Nuclear Industries (OCI) Suppliers Day was held at CNL's Chalk River Laboratories. 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 throughout the Canadian nuclear supply chain. A presentation on DWM initiatives at CNL informed the participants, individuals with knowledge and expertise of the nuclear industry, about the plan for the NSDF and the NPD Closure Project. (See Appendix G.)

Stakeholder(s): Industry, employees

5.1.2 NWMD&RE Conference Talk – 2016 September

At this industry conference, hosted by the Canadian Nuclear Society and held in Ottawa, ON between 2016 September 11 and 2016 September 14, Patrick Daly, Head of the NPD Closure Project, gave a talk on the project. It was an opportunity to inform and educate the nuclear industry, and in particular those with expertise in D&WM activities of the plan to decommission NPD in-situ. (See Appendix H.)

Stakeholder(s): Industry

[19] CSA N294-09, 2009

[20] CW-513430-REPT-001

5.1.3 CNL Site Tour – NWMD&RE Conference – 2016 September

CNL also hosted a tour for a group from the NWMD&ER Conference. The tour included a presentation on the NSDF project given by Jim Buckley, Director, Low Level Waste Facilities. Nineteen individuals attended the tour on 2016 September 15. (See Appendix I.)
Stakeholder(s): Industry

5.1.4 OPG Tour of NPD Site – 2016 September

On 2016 September 26, OPG employees, mostly from the Des Joachims Generating Station, located around 15 km north west of the NPD site, visited CNL's NPD site to learn about the NPD Closure Project. The visit included a presentation and tour. The goal of this meeting was to share information and identify anything that could affect project planning. (See Appendix J.)

Stakeholder(s): Industry

5.1.5 CNS-WiN Seminar – 2016 September

The CNS and WiN 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 2016 September 27. 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 and industry to learn more about the project and voice their queries. One outcome of this presentation was a request for a similar presentation at the Ottawa branch of the CNS.

(See Appendix K.)

Stakeholder(s): Host communities, employees, industry, media

5.1.6 ESC Meeting – 2016 October

Established in 2006, the Environmental Stewardship Council (ESC) meets three times annually. The objective of the ESC is to build working relationships and create opportunities for open conversation between various stakeholder groups and CNL. These conversations provide CNL with a wide range of viewpoints.

The ESC has received regular project updates on the NSDF and NPD Closure Project since share transfer. On 2016 October 13, the ESC was briefed on updates to the NSDF Project and the NPD Closure Projects. Following these updates members had the opportunity to seek clarification and raise any concerns they had with the two projects. (See Appendix L.)

Stakeholder(s): Host communities, local elected officials, First Nations communities, NGOs

5.1.7 Municipality of Laurentian Hills NPD Site Visit – 2016 November

Councillors and municipal staff were invited to the NPD site to learn more about the NPD Closure Project. The visit included a presentation and a tour of the site and structures. It was an opportunity for individuals to learn more about the project, especially important, given that residents of their municipality may have questions about the project. Subject matter experts were also able to provide further information to questions for member of the group. One outcome of this site visit was coordination of fact sheets and comment cards beings supplied to the municipalities in the host communities. (See Appendix M.)

Stakeholder(s): Local elected officials

5.1.8 NSDF Industry Day – 2016 November

CNL hosted a NSDF Industry Day in Ottawa, attracting more than 47 construction contractors and material supply companies from Canada and the U.S. The purpose of Industry Day was to introduce the NSDF project to prospective suppliers of construction services, explain proposed procurement process and timelines and to seek industry input and feedback. (See Appendix N.)

Stakeholder(s): Industry

5.1.9 Renfrew County Council Meeting – 2016 December

On December 12, CNL hosted the Renfrew County Council. The meeting included an overview presentation of CNL, as well as a specific presentation on each project. It provided an opportunity to provide updated information to local elected officials and answer questions. (See Appendix O.)

Stakeholder(s): Local elected officials

5.1.10 OVED Meeting – 2016 December

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 CNL hosted the meeting, which included a presentation on each project from the project leads. (See Appendix P.)
Stakeholder(s): Local business community

5.1.11 Meeting and Project Briefing with Pontiac MP – 2016 December

At the request of the Pontiac MP, Will Amos, CNL attended the MP's constituency office in Campbell's Bay, Quebec on December 21. The meeting briefed the MP on both projects and enabled the MP to discuss the projects with the project leads and other subject matter experts. A follow-up meeting was scheduled for 2017. (See Appendix Q.)
Stakeholder(s): Local elected officials

5.2 Web Page Content

Since August, updated information has been added to both project web pages and webpage activity continues to be tracked and analyzed using Google Analytics.

These web page analytics give insight into public interaction with the projects, as it excludes visitors from within the CNL network. Data is included in Section 3.2 Website analytics.

On each project's web page there are mechanisms for the visitor to share feedback on the projects through an online submission form and a "mailto" hyperlink. There have been no feedback submitted via the online submission form to date. (See Appendix E.)

Stakeholder(s): All

5.3 Factsheets

Project factsheets continue to be utilized in combination with a number of other tactics. They are easily accessed via CNL.ca and continue to be downloaded from both project web pages. The NSDF factsheet has also been updated to reflect the updated project description.

Factsheets for the NSDF project and the NPD Closure Project have been sent to seven local municipal offices to function as an information repository, as recommended by the CSA, and to support[21] greater awareness in local host communities. (See Appendix R.)

Stakeholder(s): All

[21] CSA N294-09 Decommissioning of facilities containing nuclear substances, 2009

5.4 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 (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 the seven public information sessions.[22] (See Appendix S.)

The following chart details advertising and shows the increase in advertising efforts that were initiated with the October Public Information Sessions:

Advertising item	Date
Insert ~ 30,0000 households	2016 Oct 13
Deep River North Renfrew Times 1/4 page ad	2016 Oct 5 & 12
Pembroke Observer & News 1/4 page ad	2016 Oct 8 & 15
Pontiac Journal 1/4 page ad FR/EN	2016 Oct 5
Facebook Ads (geo located) 14 days	2016 Oct 3 – 15
Public Service Announcement Star 96.7	2016 Oct 2 – 15

5.4.1 Online

The Public Open Houses were advertised online in the following ways:

- Dates were posted on the www.CNL.ca landing page and the project specific web pages.
- Paid Facebook advertising via a "Boosted Post".

Stakeholder(s): All

[22] Boosted Post – A boosted post is a post from your business page that, for a fee, can appear higher up on your audience's news feeds. The fee depends on how many people you want the post to reach.

5.4.2 Newspapers

Advertising in newspapers, the dates and reach are as follows:

Newspaper	Date	Circulation
North Renfrew Times	2016 Oct 5 & 12	4000
Pontiac Journal	2016 Oct 5	9400
Daily Observer	2016 Oct 8 & 15	3000
Flyer Insert	2016 Oct 13	30,000

Stakeholder(s): Host communities

5.4.3 Radio

CNL ran radio advertisements from 2016 October 2 - 15. 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.

Stakeholder(s): Host communities

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.

Stakeholder(s): Host communities

5.4.4 Intranet

The Internal Open House and Public Open House events were advertised to CNL employees via the corporate intranet (myCNL).

Stakeholder(s): Employees

5.5 Social Media

CNL extensively promoted the Public Information Sessions via Facebook. Social media has also been used in recent months to inform and educate more generally on the projects. Three videos have been uploaded to YouTube and promoted via Facebook. Twitter has been used, but not as often, as Tweets have been found to receive very little traction, probably because CNL has a larger Facebook following. Therefore, this report has focussed on evaluating Facebook as the main social media tactic. (See Appendix C.)

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 on both projects.

CNL's corporate social media platforms that have been used to inform and educate on the two projects are detailed below:

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

Twenty Facebook posts made since August referenced the two projects, while 18 were generic to both projects, one was specific to the NPD Closure Project and one was specific to the NSDF.

Stakeholder(s): All

5.5.1 2016 August – December Social Media Data (Facebook)

The following summarizes the user engagement with CNL's Facebook posts regarding both projects (promotion of the information sessions and formal feedback mechanism) and provides a breakdown of the posts from the perspective of each project.

5.5.1.1 Overall

Total number of posts: 20
Total Reach: 37,989
Total Clicks (Engagement): 2,420
Total Shares, Comments and Reactions (Engagement): 522

5.5.1.2 NSDF

Total number of posts: 19
Total Reach: 37,060
Total Clicks (Engagement): 2,343
Total Shares, Comments and Reactions (Engagement): 508

5.5.1.3 NPD Closure Project

Total number of posts: 19
Total Reach: 37,574
Total Clicks (Engagement): 2,362
Total Shares, Comments and Reactions (Engagement): 508

Definitions:

Reach – Post reach is the number of people who have seen your post
Clicks – The number of clicks on a link within a post on a given social network
Shares, Comments & Reactions – To comment, like and/or share a post

5.6 Informational Poster Boards

Sixteen new informational poster boards were created to educate and prompt discussion about the NSDF and NPD Closure Projects. Two of the previously created poster boards on the NPD Closure were built into the narrative for a total of 18 poster boards. Specifically the posters contained updated information to share with the host communities at the second round of Public Information Sessions in October. The posters were arranged to describe the narrative of why CNL is planning these projects and how CNL is proposing to perform these projects. 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 Petawawa Showcase. (See Appendix T.)

CNL posts	NSDF posts	NPD Closure Project posts
Protecting the Environment (information on how CNL's Environmental Protection branch operates, and on how a environmental monitoring program is designed)	Site Revitalization (how CNL intends to build new laboratories and reinvigorate the organization)	Legacy Liability (history of NPD and its transfer to AECL and how CNL has the responsibility to decommission the reactor)
Regulatory Oversight (information on the CNSC and the requirements of the licensing and the Environmental Assessment process)	Proposed Waste Solution (overview of the NSDF project)	Decommissioning Solution (information on in-situ decommissioning)
	Site Selection (information about why the EMR site was chosen as the preferred site)	Timeline*
	What will the facility look like? (images of the 30 per cent design of the NSDF)	Site Map*

CNL posts	NSDF posts	NPD Closure Project posts
	Safe by Design (information about how the safety analyses are taking natural disasters and normal site evolution into account and incorporating these risks into the design)	Safe by Design (information on the post closure safety assessment – how the project is planning for disruptive scenarios as well normal evolution of the site)
	Waste Streams (responds to past lines of public questioning concerning what the NSDF will hold)	Alternative Means
	Cultural Resource Management (information on the results of the ongoing archeological work at the EMR site)	Chimney Swifts (updated information on habitat retention decision)
	What you told us (information on stakeholder feedback to date and how it has informed the project and how stakeholders can provide CNL with further questions and comments)	What do you think? (information on the valued components and how to share feedback with CNL)

*Originally created for the June and July Information Sessions, information was still relevant.

Stakeholder(s): All

5.7 Public Information Sessions

A second series of Public Information Sessions were conducted to help CNL inform, educate and discuss the projects and environmental assessment process with members of the host communities surrounding the CRL and NPD sites. This second series also provided CNL the opportunity to address specific areas of questioning that had arisen through feedback from the initial information sessions in June and July, such as the cost of the NPD Closure Project and the kind of waste that CNL plans to dispose of in the NSDF.

Subject matter experts were again made 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 projects fit into CNL's overarching goals, and feedback indicated that this effort was successful. (See Appendix A.)

Seven public open houses were scheduled, advertised and held. The locations were chosen based on proximity to proposed project sites and population size. While advertising was more extensive for the October sessions, the number of individuals who attended was the exact same as the number who attended the June and July sessions.

Dates and locations are summarized in the following table, which compares attendance and feedback with the first round of information sessions, held in June and July.

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

Stakeholder(s): Host communities, local elected officials

5.7.1 Communications Materials at Information Sessions

- Informational poster boards (Appendix T)
- Project factsheets (Appendix R)
- Project descriptions [23,24]
- Feedback form (See Appendix F)

5.8 Employee Information Sessions

To reach internal stakeholders, employee information sessions were held for both projects. 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 NSDF and the NPD Closure Project.

Location	Date	Attendance	Comments Received
Deep River Campus	2016 November 16	35	0
Chalk River Site	2016 November 17	10	0

Stakeholder(s): Employees

5.9 Educational Programs

CNL's Nuclear Education Outreach Program, a part of CNL's Public Information Program[25] (which supports regulatory requirements[26]), gives high students opportunity to see Canada's largest nuclear science and technology laboratory. Outreach is done through site tours, classroom visits and presentations, consistent with guidance on communications activities.[27]

Stakeholder(s): Host communities

5.9.1 Stewardship Rangers – 2016 August

On August 24, the Ministry of Natural Resources and Forestry Stewardship Youth Rangers visited CNL as part of the Cultural Resource Management Program. The Rangers program is an eight-week summer program targeted at students interested in pursuing a career related to natural resources. Teams, which consist of four youth and one team lead, are working across Ontario on resource projects that offer an educational component to their work. The visit to

[23] http://www.cnl.ca/site/media/Parent/232-509200-ENA-001.pdf

[24] http://www.cnl.ca/site/media/Parent/64-509200-ENA-003.pdf

[25] Public Information Program for Canadian Nuclear Laboratories (CNL) CW-513430-REPT-001, 2016

[26] REGDOC Public Information and Disclosure, 2012

[27] CSA N294-09 Decommissioning of facilities containing nuclear substances, 2009

CNL focused on archaeological work at the NSDF EMR site. (See Appendix U.)

5.9.2 Take Your Kids to Work Day – 2016 November

Take Your Kids to Work Day (November 3) provided a chance to showcase the NSDF project, particularly through our cultural resource management program to a group of approximately 50 grade nine students. (See Appendix V.)

5.10 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 NSDF and NPD project sites. The following section describes CNL attendance at one such event.
Stakeholder(s): Host communities

5.10.1 Petawawa Showcase – 2016 September

CNL attended Petawawa Showcase (September 23 – 25), the Ottawa Valley's largest 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, CNL secured a 20x20 foot exhibitor space. Informational posters on the projects were displayed and subject matter experts described project activities, facilitated discussion about the each project and responded to public inquiries. The Showcase provided a way to have one on one, face to face interaction with community members. (See Appendix W.)

5.11 Letters

CNL has sent letters to individual households and community groups to share updates, encourage direct line of communication, promote public information sessions and respond to requests for information.

5.11.1 Letter to NPD Neighbours – 2016 October

Letters were sent to the residents within 1.5 km of the NPD Site to inform the site's neighbours of CNL's increased activity at the site and to invite these local community members to learn more at CNL's information sessions. The letter shared contact information and welcomed individuals to get in touch with the NPD Closure Project. A list of household was obtained through the Municipality of Laurentian Hills. (See Appendix X.)

Stakeholder(s): Host communities

5.11.2 Email to Stakeholder List – 2016 October

CNL gathered contact information from interested community members at the public information sessions in the summer. Through this, CNL has created a Stakeholder List, which is continually updated as new individuals indicate they would like to receive project updates, as

recommended by the CSA.[28]CNL sent an email to advise the members of the Stakeholder List that CNL would be in communities sharing project updates at public information sessions in October. (See Appendix Y.)

Stakeholder(s): Host communities

5.11.3 Letter to OFWCA – 2016 December

In response to a letter provided as feedback at public information session held in Sheenboro, CNL prepared extensive answers to a number of questions a community group of seasonal residents, the Old Fort William Cottagers' Association, had asked about the NSDF project. (See Appendix Z.)

Stakeholder(s): Host communities, NGOs

[28] CSA N294-09 Decommissioning of facilities containing nuclear substances, 2009

6. MEDIA COVERAGE

Between 2016 August and 2016 December 14, the local media included mention of the two projects, the NSDF and NPD Closure Project, a total of nine times. For comparison, between 2016 April and July the media covered the projects six times. (See Appendix AA.)

Media mentions can be categorized as follows:

Kind of coverage	Quantity
Article	4
Letter to the editor	4
Community information	1

Local media coverage of both the NSDF and the NPD Closure Project contained facts informed by CNL's communication products and subject matter experts. Both publications were print and based in two local communities, Deep River (North Renfrew Times) and Pembroke (The Daily Observer). Public information sessions were also held in these communities.

It should be noted that the letters to the editors, are not in support of either projects. Two of the letters are written by the same author, who attended the Public Information Sessions. Another one of the authors also attended the Public Information Sessions. CNL has been engaging with both of these authors and scheduled a Technical Meeting (see Section 4.1 Ongoing Tactics) for 2017 January to provide these individuals and other interested parties with more in-depth information and a more substantial opportunity to question subject matter experts on both the NSDF and the NPD Closure Project.

6.1 Media Coverage Chart

Date	Coverage	Title	Publication
2016/09/21	Community information	[Canadian Nuclear Society bulletin describing CNS-WiN seminar, "In-Situ Decommissioning of the Nuclear Power Demonstration (NPD) Reactor]	North Renfrew Times
2016/10/12	Article	County aims for 3 %	North Renfrew Times
2016/10/12	Article	CNL to hold new information sessions	North Renfrew Times
2016/10/14	Letter to the Editor	Public consultation needed[29]	The Pembroke Daily Observer
2016/11/02	Article	CNL moving forward on decommissioning projects	North Renfrew Times
2016/11/09	Article	Questions raised over CNL waste projects	North Renfrew Times
2016/11/10	Letter to the Editor	The devil will be in the details	North Renfrew Times
2016/11/23	Letter to the Editor	Where is vision for CNL future?	North Renfrew Times
2016/12/07	Letter to the Editor	Is there "reason"?	North Renfrew Times

[29] CNL wrote a response to the letter entitled, "Public consultation needed", which was not published.

Appendix A – Formal Comments

NSDF

Name	Comment from Stakeholder
1. Rose-Marie Doyon	Time, health and safety, engineering.
2. Phil and Louise Cook	I believe that there is a need for an onsite disposal site and hopefully all will work out with the plans. Keeping the waste onsite, I believe is the best option.
3. N. Garisto	It is interesting to understand the advantages of potentially contaminating a contaminated lake (Perch) compared to potentially contaminating a clean lake.
4. Michel Legault	Aussi tres interessant et bien explique. Merci a Annie.
5. David Raman	No new questions now but would like updates.
6. Jed Reinwald	Looks like a very viable approach to removal of low level building materials.
7. Al Bancroft	[Wanted more information]
8. Alan Carmichael	Answered
9. Sharon Picard	Sounds safe; very good presentation.
10. Johanna Echlin (OFWCA)	[See attached letter]
11. David Bertrand	This facility is long overdue, great to see the biggest public concerns have been considered and responded to with clear/detailed plans. Clear the EMR Site is best suited for the NSDF.
12. David Wybau	What percentage of waste destined for the site may come from offsite sources?
13. Darrin Krushenski	[Wanted more information]
14. Randy Fletcher	Very comprehensive plan.

Name	Comment from Stakeholder
15. Paul McClelland	Much more information than round one. Renderings and life size examples of base layer and cover are particularly effective; latest poster boards for both projects look great!
16. Tim Weber	[Wanted more information; especially link to videos]
17. Ernie Bowers	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.
18. Simon Bertrand	Christine was very helpful and informative. She covered every one of my questions and touched on topics that I found very important to be known. I am very impressed with the progression of the project and am greatly satisfied with the direction it is heading. I really enjoyed the display cards and models; they were visually pleasing and very easy and fun to read.
19. Larry and Helen Schruder	It is reassuring to see a plan finally in place to address the last 50 years of legacy waste. Science and engineering looks very sound, even down to the turtles. That much effort for the turtles (and the Chimney Swifts) is very reassuring as it speaks to the level of concern for human impact.
20. Jonathan Fitzpatrick	1. What are the expected concentrations of radioactive isotopes in the waste? Total Bq/m3
21. Charles Kitmer	Question re: HDPE Geomembrane - doesn't appear to be a means to detect deterioration/damage of the membrane (other than, "we have a whole lot of water balance through from somewhere"). How can you locate the leak/damage area in order to perform a repair?

Name	Comment from Stakeholder
22. Michael Stephens	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.
23. John Kohls	Interesting
24. Robert Hanson	[Wanted more information]
25. Jim Gibson	Everything looks good and well thought out for years to come. Questions. What will you do if the USA decides not to accept highly radioactive material since you do not have any facilities capable of storing it?
26. William Turner	[Request for information on Industry Day]
27. Doris Ranger	Chalk River should not be a waste disposal for other nuclear plants ie. Whiteshell. Given the land mass of Canada two nuclear waste disposals would not be out of the question. The west could benefit with the same disposal as Chalk River. Good to know about sustained jobs Pontiac/Renfrew counties. Feeling confident about project. Our community is highly dependent on CNL to encourage young families to locate in our region given that our population is about 80 % senior.

Questions on the NSDF received in a letter from OFWCA

Question[30]
1. How is this new method NSDF going to protect the river and the thousands of people living on the river from leaks? *We learned on Oct. 19, 2016 from the CNSC that CNL's NSDF proposal has been amended to include intermediate waste.* *For years we have been told that leaks into the Ottawa River are sufficiently diluted by the river and do not pose a threat to people living downstream from Chalk River. This is hard to believe.* *Any environmental assessment must examine anticipated leaks.*
2. What materials specifically other than radioactive waste will be buried on this NSDF site? • PCBs? • Mercury? • Arsenic? *(Apparently, arsenic was shipped to Chalk River in the 1970s.)*
3. Is the NSDF site suitable to retain such toxic materials long term? a. What studies have been done? b. What about liquids? How would they be retained so they do not run off into the river?
4. What studies have been done to show that the materials (both natural and synthetic) that will be used in the NSDF liner system are capable of retaining radioactive waste and other toxic/hazardous material? a. What are their conclusions or what studies are presently being done?
5. Can the NSDF sustain a major earthquake? a. Chalk River is situated on a major fracture zone and could experience earthquakes of 6 on the Richter scale. And if an earthquake did create a leak in the liner system – what would CNL do?
6. What about sabotage – terrorist activity – what could happen and what is being done to prevent attack?
7. What about a flood? (if a bomb blew up a damn or the damn collapsed for some other reason and there was a major flood – what would happen to this site if covered by river water?)

[30] All questions and italicized text found in the "Question" column is taken verbatim from OFWCA sub-committee letter dated 2016 10 20.

Question[30]
8. What can you tell us about tritium and tritium levels in the water and how it is affecting the water, the air, vegetation, wildlife, and livestock in the communities down river? *The Canadian Government seems to have very lax standards regarding tritium levels. (Acceptable tritium levels in Canada: 7000 Bq/Litre vs. 100 in Europe and 14.7 in California.) It is difficult to be put at ease by statements from the CNSC that no harm is being done to the environment and to people.*
1. What are the plans?
2. Is it correct that the site could host up to 1 million cubic meters of waste on 15 hectares of land?
3. Is CNL contemplating bringing waste from other areas in the country or other countries to this site? *Besides the current waste on Chalk River site and waste that is currently being produced. This huge area being contemplated must have plans for more and more waste next to our beautiful river.*
4. From where? (Rolphton, Whiteshell, Kincardine, Port Hope? And/or other sites?
5. If there are plans to bring radioactive waste from other areas how will this waste be transported?
6. What safeguards would be in place for these transports against accident or sabotage?
7. What is happening to the waste from HEU? (highly enriched uranium that has been used to produce isotopes) – this is not low or medium level radioactive waste. Currently 23,000 litres of a liquid solution that is highly radioactive and contains HEU waste is being stored in a tank at Chalk River. They hope to transport this to the USA but there is opposition to this. What are the plans for this liquid which is a disaster waiting to happen and threaten leaking into our river (image this).
8. What other projects will be going on at Chalk River besides NSDF? We understand new facilities will be built. a. Will radioactive waste material be sold to commercial enterprises? *Commercial projects using radioactive waste from Chalk River – example SRB Technologies (a sign company in Pembroke) has been releasing huge quantities of tritium into the environment contaminating drinking water, gardens, animals and humans. Tritium levels have gone as high as 30,000 Bq/Litres near this company in Pembroke.*

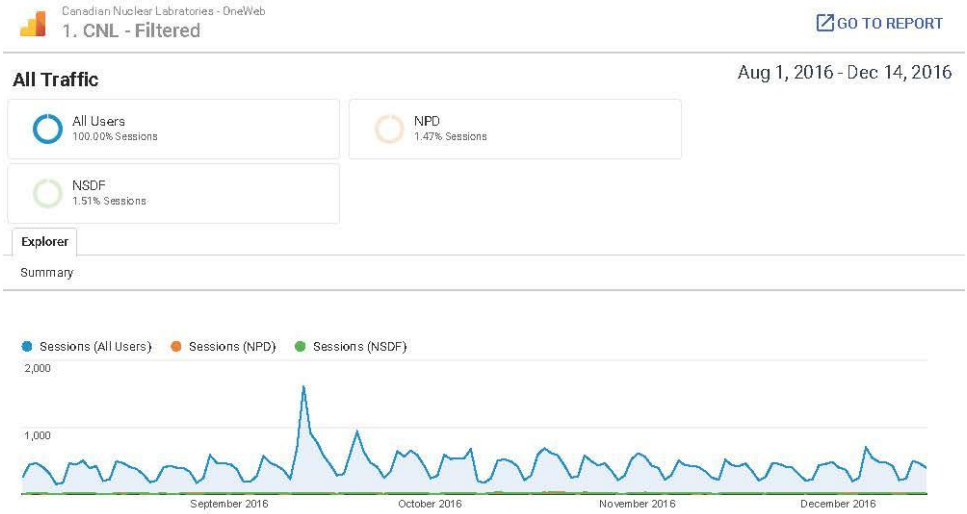
NPD Closure Project

Name	Comment from Stakeholder
1. Rose-Marie Doyon	1. 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. 2. Time, health and safety, engineering.
2. Phil and Louise Cook	1. Seismic event - can't easily relate to 1 in 100,000 year event; how big is this on Richter scale or by reference to past events? 2. I think the in-situ option is the best option and I like the idea of keeping the stack for the Swifts.
3. N. Garisto	The time line for the project is very ambitious, especially taking into account external factors like regulatory feedback timeline and aboriginal engagement.
4. Ryan Kovacs	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.
5. Michel Legault	Bonne explication des Projets tres interresant aussi. Meilleur connaissance.
6. David Raman	[Add to contact list for updates]
7. Jed Reinwald	Containment of the calandria may be a concern to the public. Please ensure this is well explained.
8. Al Bancroft	[Add to contact list for updates]
9. Bill Proulx	Good information, well informed. Was impressed with display.
10. Alan Carmichael	Answered.
11. Sharon Picard	Is there any nuclear waste that will be entered into the Ottawa River? Who funds all this?
12. David Wybau	Great displays and explantations
13. Darrin Krushenski	[Add to contact list for updates]
14. Randy Fletcher	Excellent presentation by presenter, interested to see the future plans for the site.

Name	Comment from Stakeholder
15. Paul McClelland	Depth of presentation material significantly enhanced since first round of open houses; presents very well; looks great
16. Tim Weber	[Would like videos; add to contact list for updates]
17. Ernie Bowers	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.
18. Simon Bertrand	Very happy about the decision to keep the original stack for the benefit of the Chimney Swifts.
19. Larry and Helen Schruder	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!
20. Jonathan Fitzpatrick	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?
21. John Fleurie	[Would like videos]
22. Frank Mousseau	[Would like videos]

Name	Comment from Stakeholder
23. Michael Stephens	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.
24. John Kohls	I would love to observe the grouting of the main building when this is done.
25. Robert Hanson	[Add to contact list for updates]
26. Doris Ranger	Concerns: Keeping our water and air clean and safer.
27. Marilyne Mirault	[Information on Chimney Swifts]
28. Jim Gibson	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.

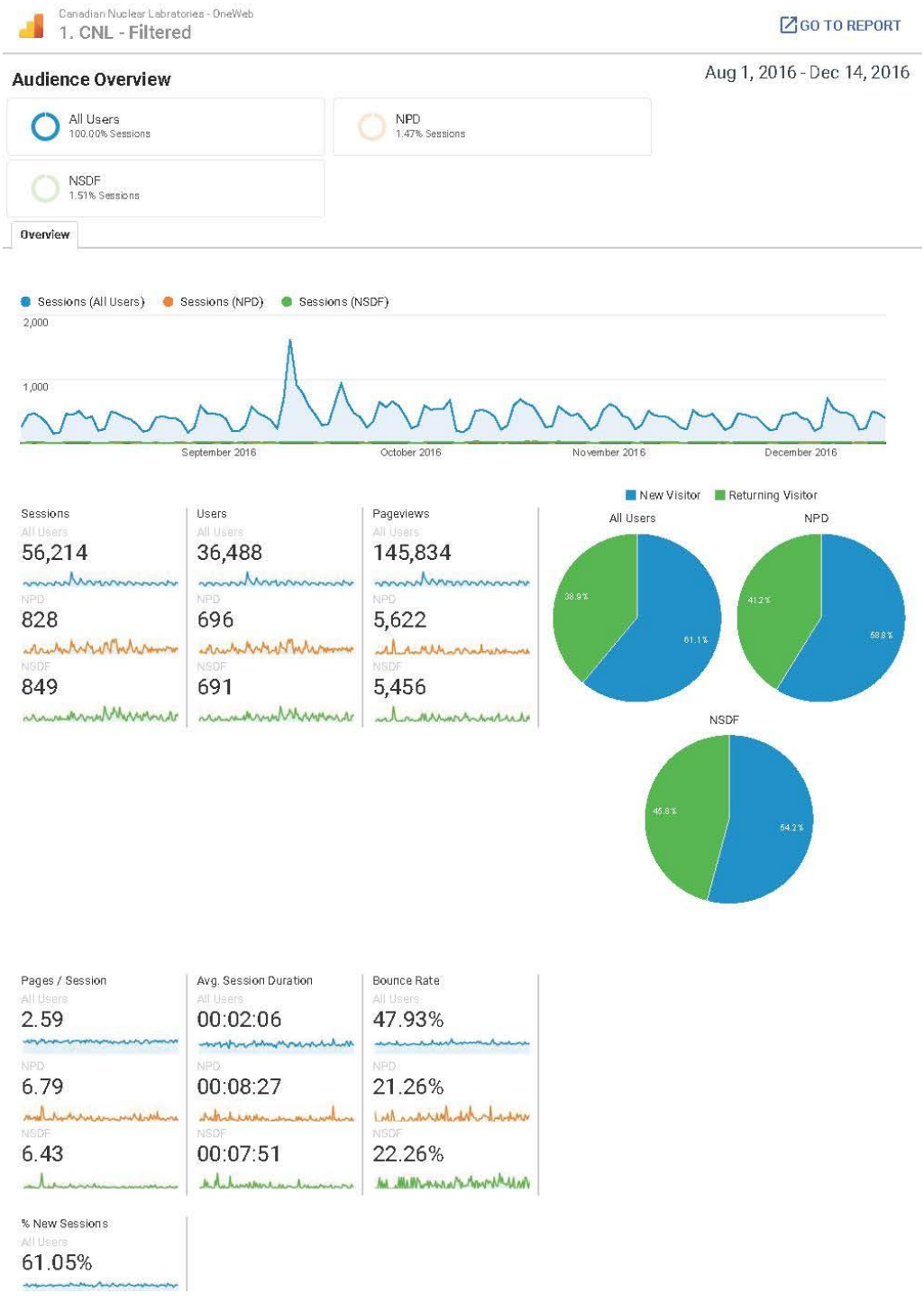
Appendix B – Website Analytics



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	00:16:18	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 Laboratories - 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
00:07:51
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%
	NPD	0	0.00%
	NSDF	1	0.12%

Canadian Nuclear Laboratories - OneWeb
1. CNL - Filtered

GO TO REPORT

Location

Aug 1, 2016 - Dec 14, 2016

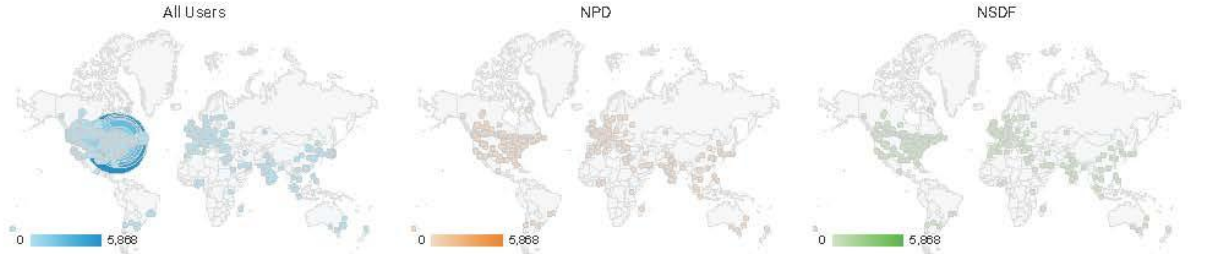
All Users
100.00% Sessions

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

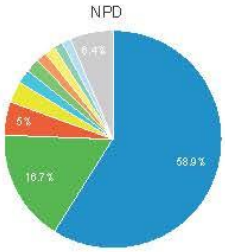
NPD
1.47% Sessions

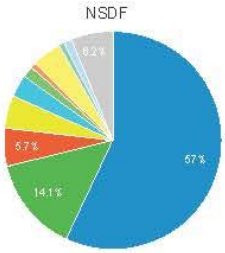
NSDF
1.51% Sessions

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

Appendix C – 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

	Date	Facebook post	Subject	Reach	Clicks	Comments, Shares, Reactions
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
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

	Date	Facebook post	Subject	Reach	Clicks	Comments, Shares, Reactions
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
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

	Date	Facebook post	Subject	Reach	Clicks	Comments, Shares, Reactions
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
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

	Date	Facebook post	Subject	Reach	Clicks	Comments, Shares, Reactions
19	07/11/2016	Our Near Surface Disposal Facility Industry Day is underway at the Brookstreet Hotel in Ottawa. Lots of informative presentations with great discussion! www.cnl.ca/NSDF	NSDF	415	58	14
20	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				
			Total	37989	2420	522
			Total NPD	37574	2362	508
			Total NSDF	37060	2343	508

Appendix D - Industry Feedback

Themes	
NSDF	
Geography	1
Construction materials	1
Indicated satisfaction with information	4
Safety	1
Waste-related	2
Work execution	1
Facility-related	1
Cost	1
NPD	
Water-related	1
Indicated satisfaction with information	4
Indicated approval	1
Knowledge-sharing	1
Cost	1
Safety	1

Written Comments and Questions

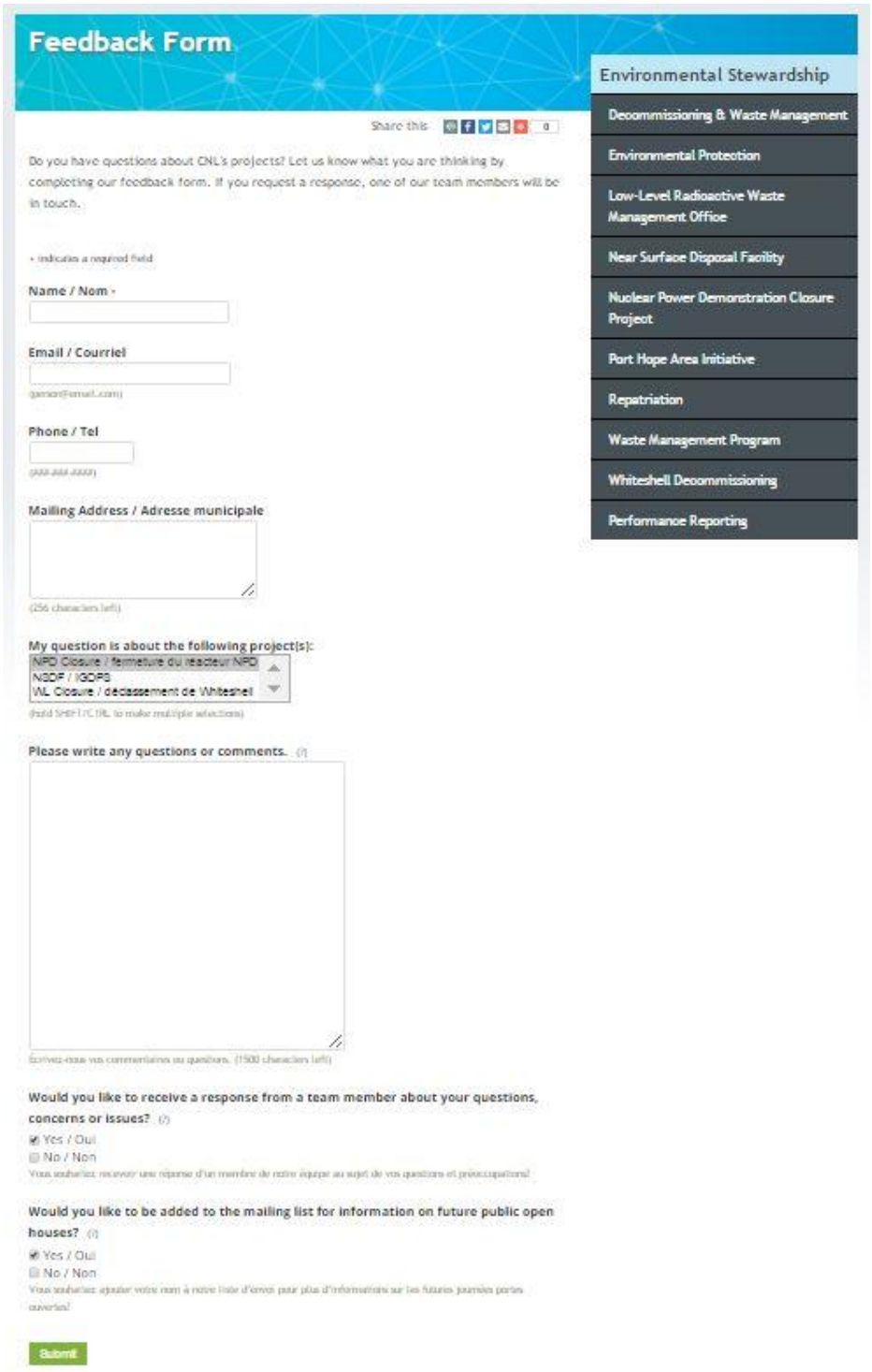
Event	Do you want to be contacted with a response?	Project	Comment/Questions
CNS-DWM Tour	No	NPD	Do you expect the final monolith to become water-saturated?
CNS-DWM Tour	No	NSDF	How will you accommodate the hummocky and sloping existing topography? Will this affect the performance of the bottom liner?
CNS-DWM Tour	No	NPD	Excellent. Very good cost-effective approach.
CNS-DWM Tour	No	NSDF	I enjoyed the presentation, I will be interested to see this project progress.

Written Comments and Questions			
Event	**Do you want to be contacted with a response?**	**Project**	**Comment/Questions**
CNS-DWM Tour	Yes	NPD	Great tour guide.
CNS-DWM Tour	No	NPD	All questions answered by knowledgeable tour staff
CNS-DWM Tour	No	NSDF	All questions answered by knowledgeable tour staff
CNS-DWM Tour	Yes	NSDF	It was mentioned that waste from Whiteshell will go to the NSDF. With their planned closure date of 2024, are scheduling conflicts likely with the NSDF construction?
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	NSDF	It was good to learn about CNL plans for NSDF. And, it was good to see and drive through the area but the fact is there no much to see except some excavation and clearing going on. However, it was good to get an idea of the overall CNL site. The question I have is: how much is its projected cost to build the site and then ultimately operate it to 2070?
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?

Written Comments and Questions			
Event	**Do you want to be contacted with a response?**	**Project**	**Comment/Questions**
CNS-DWM Tour	No* but yes to response on questions	NSDF	What is the scale (mxmxm) of the repository? Can we consider all radioactive wastes (except used nuclear fuel) stored/will be generated in CRL will be disposed of? What is the meaning /definition of "near"? I guess non-shallow but non-subsurface… Is there any unique point in the safety assessment of NSDF, compared with that of LLW disposal in US, UK, Japan, France
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.
CNS-DWM Tour	No	NSDF	Again presentation and staff to answer questions were very knowledgeable and well aware of the project… Thanks for your hospitality

Appendix E –Web Page Content

Online Formal Feedback Mechanism



New web page on Species at Risk protection at the NPD site

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Français Contact Additional Resources

Enter keyword Search

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

Home > Environmental Stewardship > Nuclear Power Demonstration Closure Project > Chimney Swift population at NPD

Environmental Stewardship

- Decommissioning & Waste Management
- Environmental Protection
- Low-Level Radioactive Waste Management Office
- Near Surface Disposal Facility
- Nuclear Power Demonstration Closure Project
  - In-situ Decommissioning
- Port Hope Area Initiative
- Repatriation
- Waste Management Program
- Whiteshell Decommissioning
- Performance Reporting

Maintaining a habitat for NPD's Chimney Swift population

Share this

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 COSEWIC 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.

Unpaired birds and juveniles roost communally in larger structures with the number of individuals growing during the course of the season as fledglings and parents join the group. A single stack can provide a home 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.

What attracts the Chimney Swifts to NPD?

Ontario Hydro operated the NPD reactor, mostly as a training facility for generations of CANDU® reactor engineers and operators, for a quarter of a century – from 1962 until 1987. After reactor shutdown, the ventilation stack became home to a large number of Chimney Swifts who nest annually in the chimney-like structure. The NPD ventilation stack is now an important stop-over during the spring migration and the number of Chimney Swifts can reach more than 2000 birds.

In 2010, biologists from CNL's Environmental Protection Program began an evening roost counts program annually to track the trend in the numbers of Chimney Swifts inhabiting NPD's ventilation stack. Every year, as a part of maintaining protected species, CNL counts the roosting Swifts as they enter the ventilation stack at sunset. In a way, the Chimney Swifts have chosen an ideal host to investigate their behaviour. Research into this bird species is an important step to understanding the best conservation methods.

Habitat is also an important part of conservation. 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, the Shawville Point Initiative, Bird Studies Canada Ontario SwiftWatch, the Canadian Nuclear Safety Commission, Trent University, the Ontario Ministry of Natural Resources and Forestry, and Brock University.

Retaining the ventilation stack as a habitat will ensure minimal disruption for the Chimney Swift population that migrate to this stack. By 2020, the anticipated year for completion of NPD's decommissioning, the Chimney Swifts will be the sole inhabitants of the NPD site.

- What makes a species, a "Species at Risk"?
- Why is keeping the ventilation stack a better option than building a new habitat at the NPD site?
- Where can I learn about the results of CNL's study in the Chimney Swift populations?

CNL is Canada's premier nuclear science and technology laboratory managed by Canadian National Energy Alliance

Appendix F – Sample 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

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Appendix G – OCI Suppliers' Day

Long Term Waste Management & Disposal

Milestones

- NSDF Licensing Hearing Success
- NSDF handover to Operations for Active commissioning
- Present Business Case to AECL for Development of Waste Processing Facility
- Develop Options and Approach for ILW disposal

Key Scope Elements & Strategies

Engineered Containment Mound (ECM)	Waste Water Treatment Plant (WWTP)	Support Facilities	NSDF Site Infrastructure
• Multi-layer base liner and cover systems • Leachate collection and leak detection systems • Surface water management system	• Holding pond or tanks • Building foundation and envelope • Process treatment and controls • Discharge system	• Truck wheel wash • Weigh scale / kiosk • Security control kiosk • Truck drive-thru monitoring station • Vehicle repair • Office / change room • Lay-down Areas	• Fencing • Roads and parking • Utilities

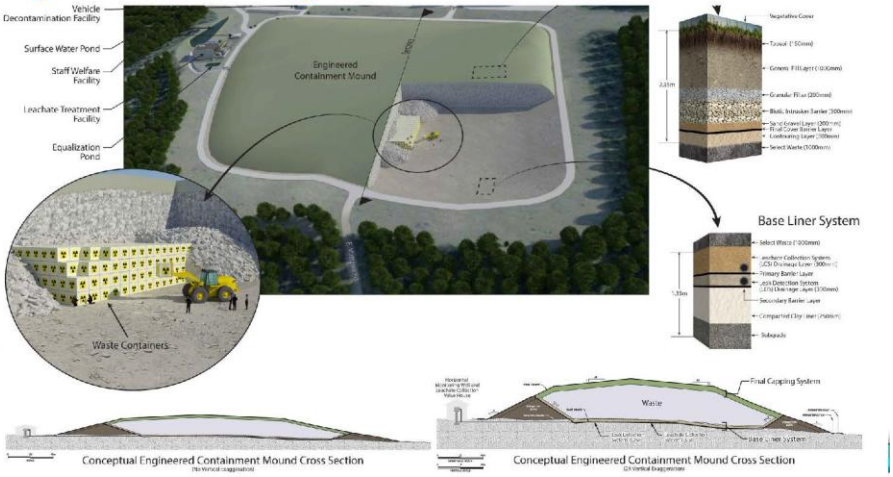
Contracting Strategy

- Design-Bid-Build
  - One design contract
  - One construction contract

Regulatory Strategy

- Amendment to CRL Licence and Waste Management Areas FA
- Integrated EA & Licensing Process per CNSC Draft REGDOC-2.9.1

Near Surface Disposal Facility 15% Conceptual Layout - enabling site revitalization



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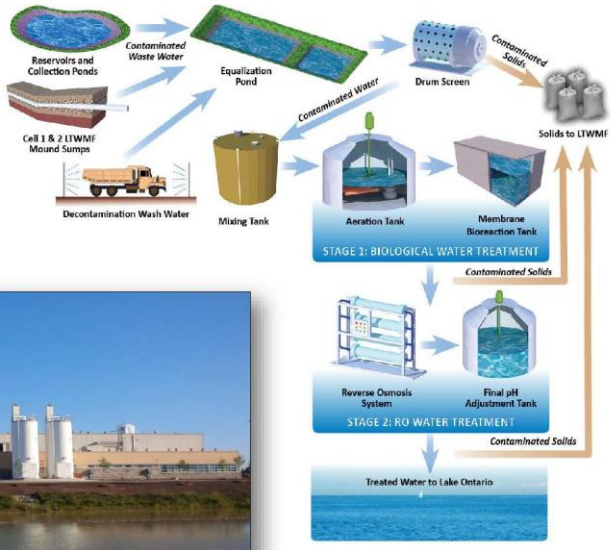
UNRESTRICTED / ILLIMITÉ -14-

WWTP: Primary and Secondary Treatment

- Leachate and other aqueous waste to be treated to meet discharge criteria
- Similarities to Port Granby Project



Reactor Sites – Douglas Point & G1

Milestones

- Gentilly-1 resin, cover water and resin/sand/gravel waste recovered and packaged in containers for storage at CRL
- Douglas Point resin and cover water recovered and packaged in containers for storage at CRL

HEU Used Fuel Management

Milestones

- NRX/NRU Fuel and TRM repatriated
- CMW solution identified
- CMW solution designed and ready for construction
- Used fuel storage solution identified
- CRL ready to accept used fuel for storage

Container Unloading Station (CUS) and Grapple

Waste Programs and Services

Milestones

- Develop and implement a Waste Data Tracking system to support all CNL sites
- Carry out optioneering to support D&WM mission regarding waste management
- Develop and implement more effective Waste Generator Services capability
- Develop D&WM transportation strategy

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.

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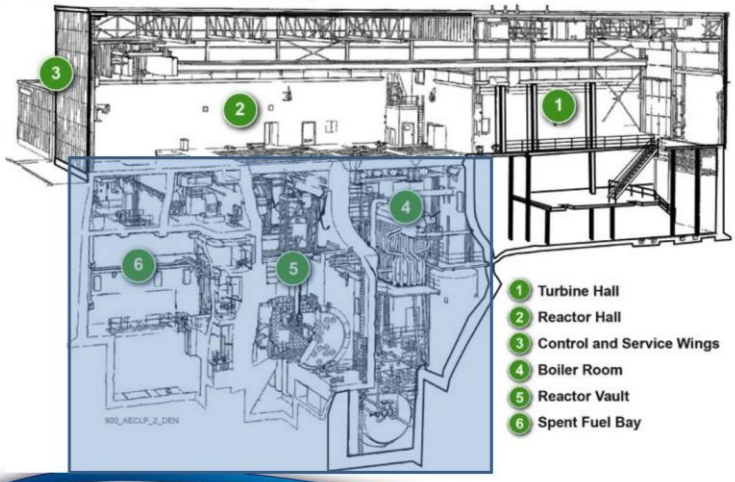
UNRESTRICTED / ILLIMITÉ -20-

NPD Closure Sequence



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UNRESTRICTED / ILLIMITÉ -21-

Appendix H – NWMD&RE Conference Talk

NPD Closure Project

Canadian Nuclear Society
WM&D Conference
2016 September 11- 14

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

UNRESTRICTED / ILLIMITÉ -1-

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

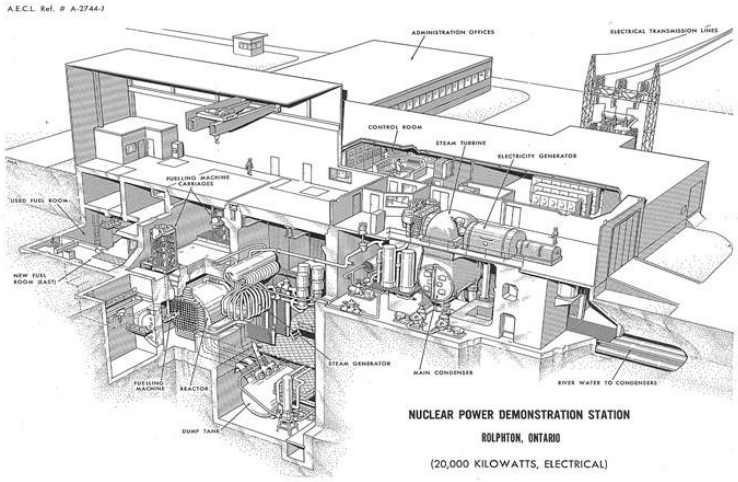
NPD History

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

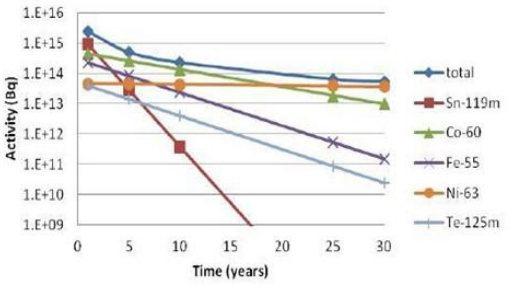
1962 and 2016

Turbine Hall

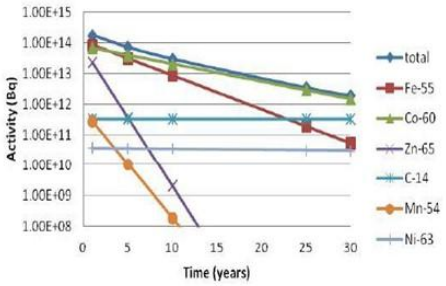
Control Room

Pressure Tubes

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;

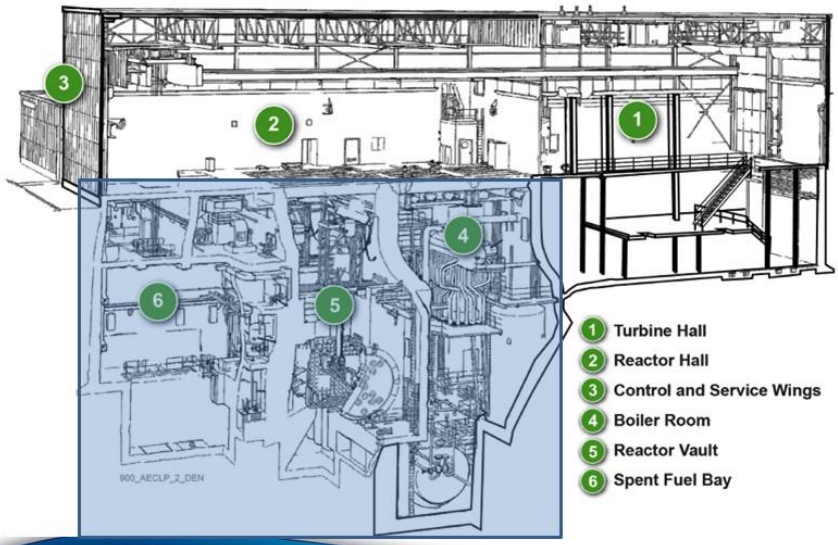
- Completing In-situ Decommissioning by 2020 May.
- Provide alternate habitat for endangered species.

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, thermal shield, 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	•Revise SWS Plan (*as required*).
	Procurement and Mobilization	
	Characterization	
	Hazard Abatement	
	Facility Preparation	
Execution	Batch Plant	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*).
	Grouting of below grade structure	
	Removal of above grade structures and backfill	
	Install concrete cap and engineered barrier	
Closeout	Final site restoration	Submittal 2 – Commencement of long-term institutional controls (2020 April): •Interim End State Report. •Long-term Care and Maintenance Plan.
	Long-term care and maintenance activities	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.

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UNRESTRICTED / ILLIMITÉ -18-

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.

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UNRESTRICTED / ILLIMITÉ -19-

Appendix I – 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.

Appendix J – OPG Tour of NPD Site

OPG (Des Joachims)
2016 September 26th

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UNRESTRICTED / ILLIMITÉ -1-

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

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UNRESTRICTED / ILLIMITÉ -2-

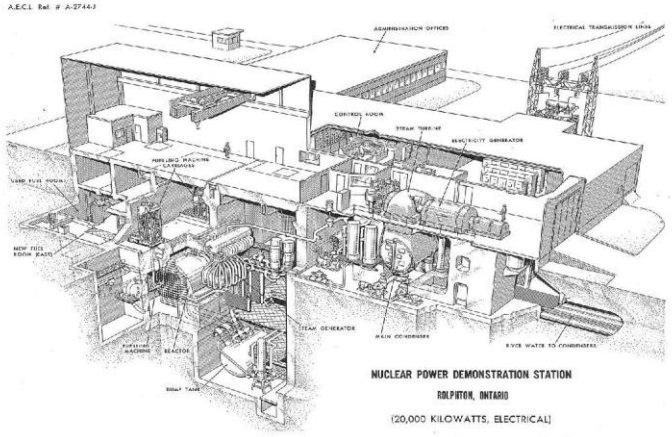
NPD History

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.

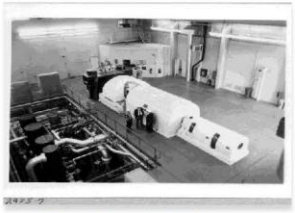
NPD is presently in a Storage With Surveillance (SWS) phase of decommissioning and re-licensed with a Decommissioning Waste Facility License in 2014. NPD currently consists of a limited number of structures include the main building (reactor and associated systems), back-up diesel generator, ventilation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

NPD Layout - Nuclear Below Grade

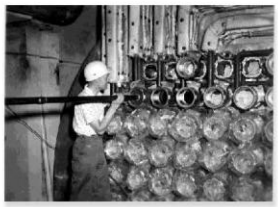


NPD Then and Now

1962 and 2016



Turbine Hall



Pressure Tubes

Control Room

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UNRESTRICTED / ILLIMITÉ -5-

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.

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UNRESTRICTED / ILLIMITÉ -6-

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.

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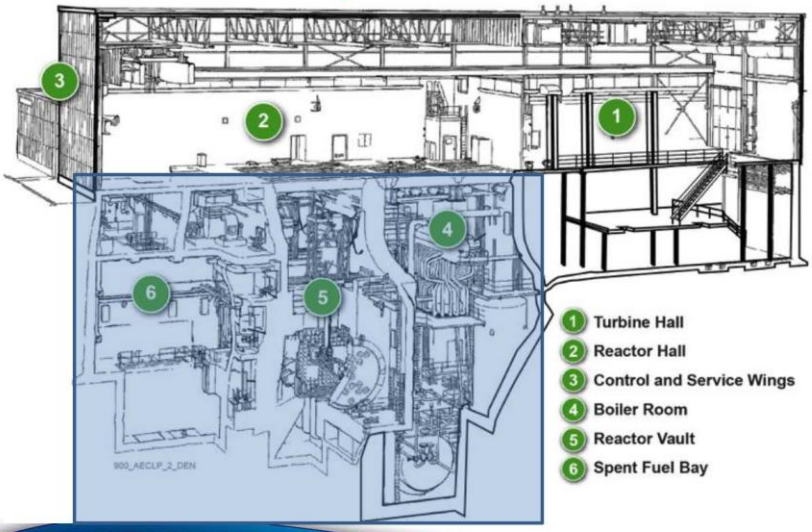
UNRESTRICTED / ILLIMITÉ -7-

NPD Closure Sequence



1. Turbine Hall
2. Reactor Hall
3. Control and Service Wings
4. Boiler Room
5. Reactor Vault
6. Spent Fuel Bay

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UNRESTRICTED / ILLIMITÉ -8-

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

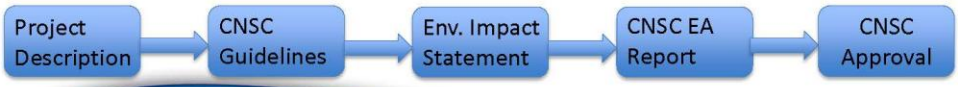
The current waste facility licence (WFDL-W4-332.00/2034) outlines process for the licensee to decommission NPD.

"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)



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.
- 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.

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

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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.

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UNRESTRICTED / ILLIMITÉ -18-

Appendix K - CNS-WiN Seminar

In-situ Decommissioning of the Nuclear Power Demonstration Reactor

Canadian Nuclear Society and Women in Nuclear

2016 September 27

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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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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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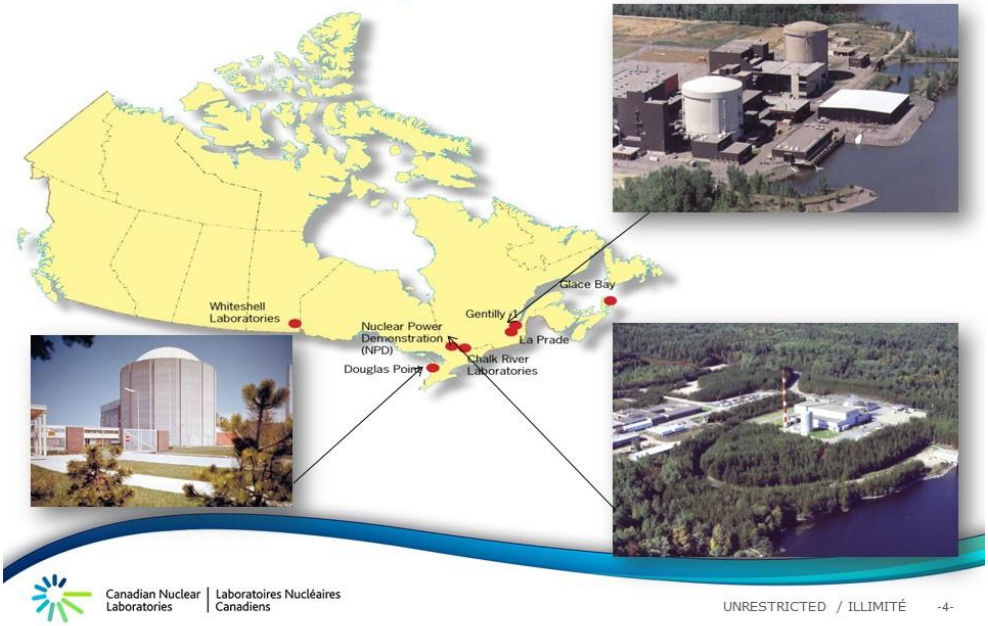
UNRESTRICTED / ILLIMITÉ -3-

Canada's Prototype Reactor Sites



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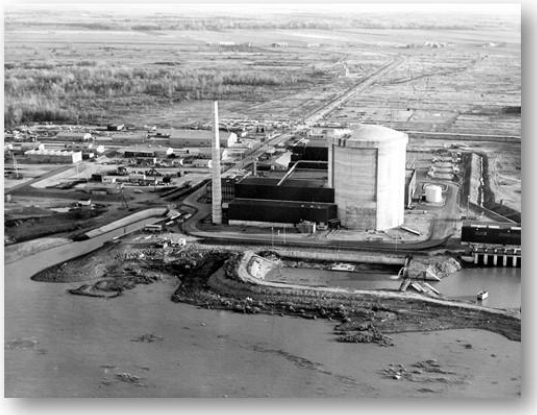
UNRESTRICTED / ILLIMITÉ -4-

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.

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.

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

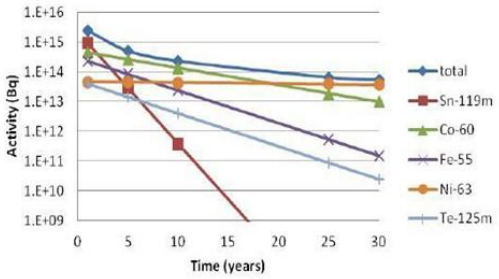
1962 and 2016

Turbine Hall

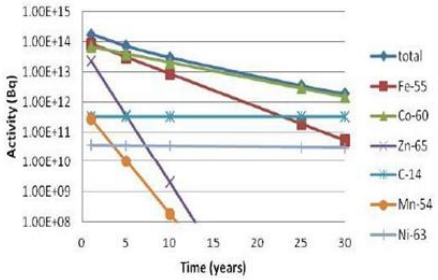
Pressure Tubes

Control Room

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.

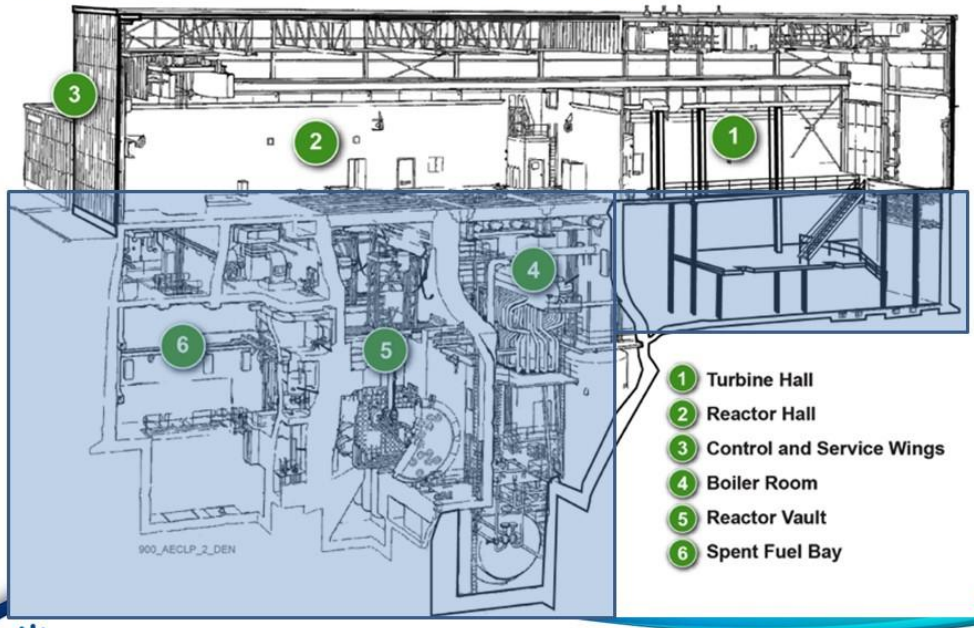
NPD Project Objectives

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



1. Turbine Hall
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6. Spent Fuel Bay

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UNRESTRICTED / ILLIMITÉ -11-

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.

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UNRESTRICTED / ILLIMITÉ -12-

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

Activity	2016	2017	2018	2019	2020
Preparation					
EA and Licensing					
Decommissioning execution					

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?

Appendix L – 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

Appendix M - 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

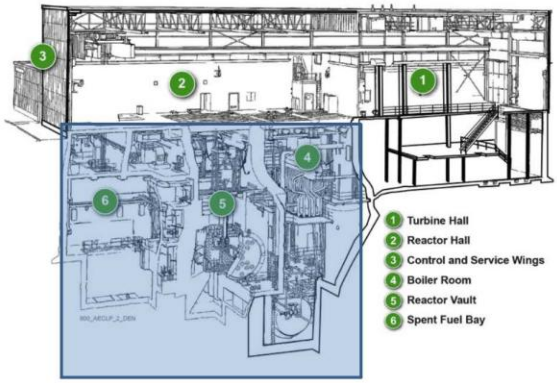
NPD Target Timeline

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

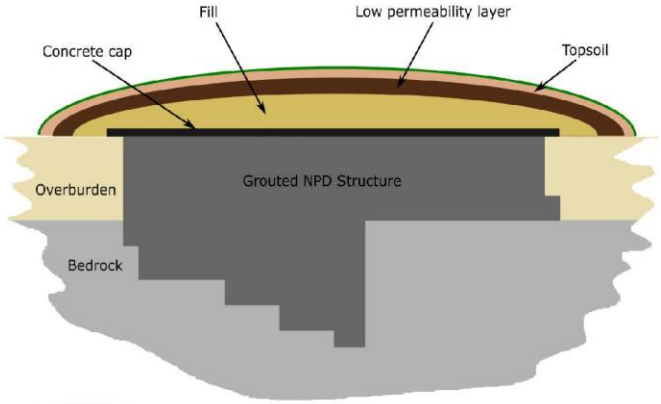
May 2020 – TBD: NPD site closure followed by institutional control subject to regulatory approval.

NPD Closure Sequence

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



NPD End State



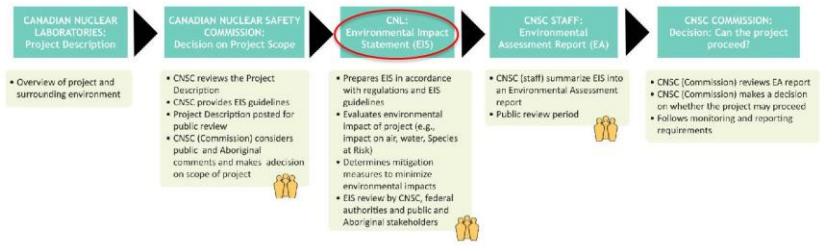
Why In-situ Decommissioning?

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?

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UNRESTRICTED / ILLIMITÉ -9-

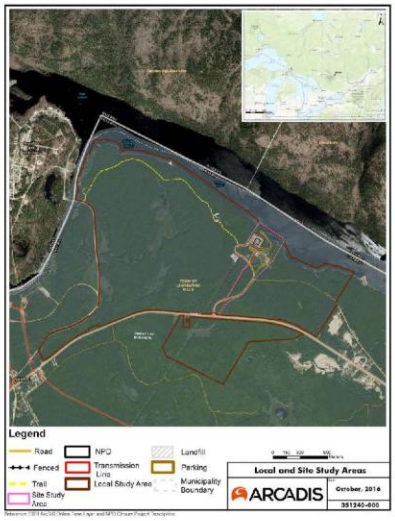
NPD Closure Project Boundaries

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



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Valued Components - What do you value?

Terrestrial Biodiversity
- Bats
- Chimney Swift
- Vegetation community
- Bald eagle
- Shrew
- Soil invertebrates
- Muskrat
- Mallard

Land Use
- Land use and planning
- Landscape and visual setting
- Highway 17 traffic

Aquatic
- Fish
- Zooplankton
- Ottawa River
- Benthic invertebrates

Valued Components Identified for the NPD

Human Health
- Worker health
- Public health

Socio-economic
- Fishing
- Residents in proximity of NPD use and enjoyment of the property
- Deer
- Ruffled grouse
- Black bear

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

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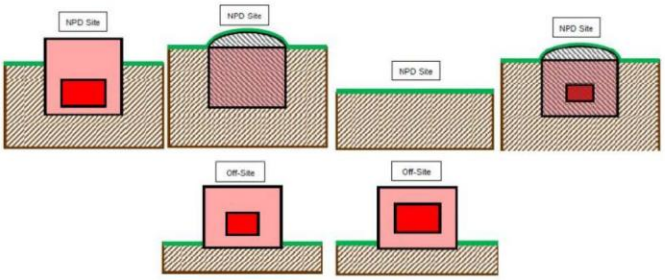
Alternative Means Assessment

1. Continued Storage with Surveillance
$4.5 million per year
The "do nothing approach". Eventually the structures and reactor will need to be fully decommissioned. This option is not a permanent solution.

2. Partial Dismantling and Removal
$70 - 90 million*
Reactor removed and transported to CRL for interim waste storage.

3. Full Dismantling and Removal
$125 - 150 million*
All systems and structures removed and transported to site for storage.

4. In-situ Decommissioning
$40 - 60 million
All systems, including the reactor, are grouted in place as the final disposal.



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

Low Level Radioactive Material
Grouted Low Level Radioactive Material
Intermediate Level Radioactive Material
Grouted Intermediate Level Radioactive Material
Ground
Grass
Clean Concrete

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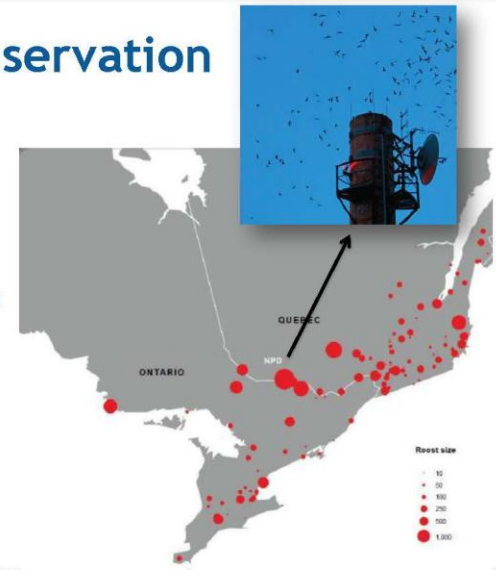
Chimney Swift Conservation

- 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.



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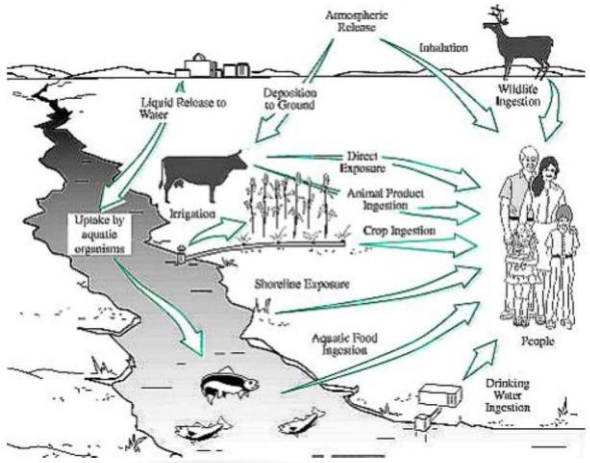
UNRESTRICTED / ILLIMITÉ -13-

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

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UNRESTRICTED / ILLIMITÉ -14-

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.

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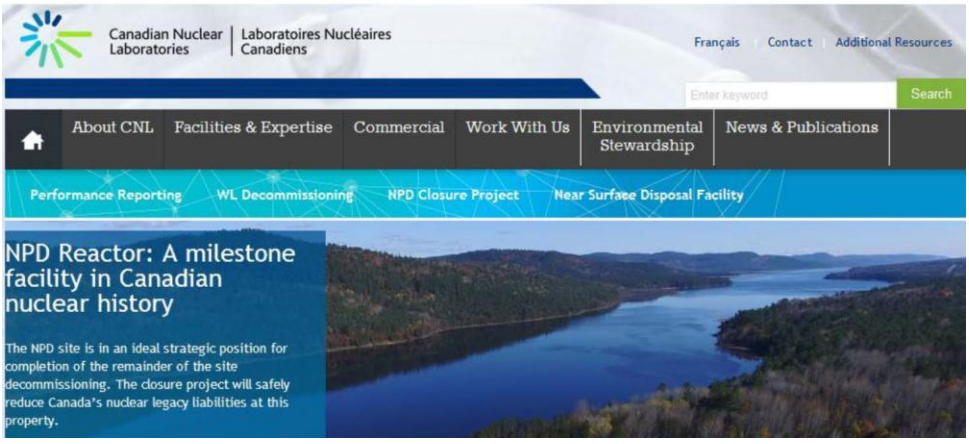
UNRESTRICTED / ILLIMITÉ -15-

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.



Appendix N – NSDF Industry Day

Near Surface Disposal Facility
Industry Day Agenda – Nov. 7th, 2016

#	Agenda Topic	Lead Responsibility	Time Slot
0	Registration	J. Meldrum / J. Hussick	07:30 - 08:30 a.m.
1	Welcome & Introduction	C. Charbonneau	08:30 - 08:45 a.m.
	Questions from Participants		08:45 - 08:50 a.m.
2	Renfrew County Capabilities	A. Baird	08:50 - 08:55 a.m.
	Questions from Participants		08:55 - 09:00 a.m.
3	Strategic Importance of Project	J. Buckley	09:00 - 09:10 a.m.
	Questions from Participants		09:10 - 09:15 a.m.
4	NSDF Project Overview	C. Fahey	09:15 - 09:40 a.m.
	Questions from Participants		09:40 - 09:50 a.m.
5	NSDF Design Requirements & Features	M. Luckett, AECOM	09:50 - 10:20 a.m.
	Questions from Participants		10:20 - 10:30 a.m.
	Break		10:30 - 10:45 a.m.
6	Contracting Strategy, Approaches	P. Colwill	10:45 - 11:10 a.m.
	Questions from Participants		11:10 - 11:20 a.m.
7	Procurement Overview	B. Whitelaw	11:20 - 11:45 a.m.
	Questions from Participants		11:45 – 11:55 a.m.
	Conclusions, Next Steps		11:55 - 12:15 p.m.

8	Collaborative Breakout Sessions for Invited Companies ONLY	Invitees Only	1:30 – 3:30 pm

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www.cnl.ca

Barry Labadie, Senior Contract Officer, NSDF
barry.labadie@cnl.ca
613-584-3311 xt 42489
613-584-8059

Appendix O – Renfrew County Council Meeting and Presentation

Near Surface Disposal Facility (NSDF)

- Why?
- Schedule
- Project Plan
- Design, Engineering and Construction
- Waste: What will the NSDF hold?
- Environmental

UNRESTRICTED / ILLIMITÉ -1-

Why? Site Revitalisation

Schedule: 2016 - 2018

Activities	2015	2016	2017	2018	2019	2020
Project Management & Administration						
Design and Engineering						
EA and Licensing for Construction Approval						
Procurement of Construction Services						
Site Prep, Construction, Inactive Commissioning						
Licensing for Operation Approval						
Active Commissioning and Operation						

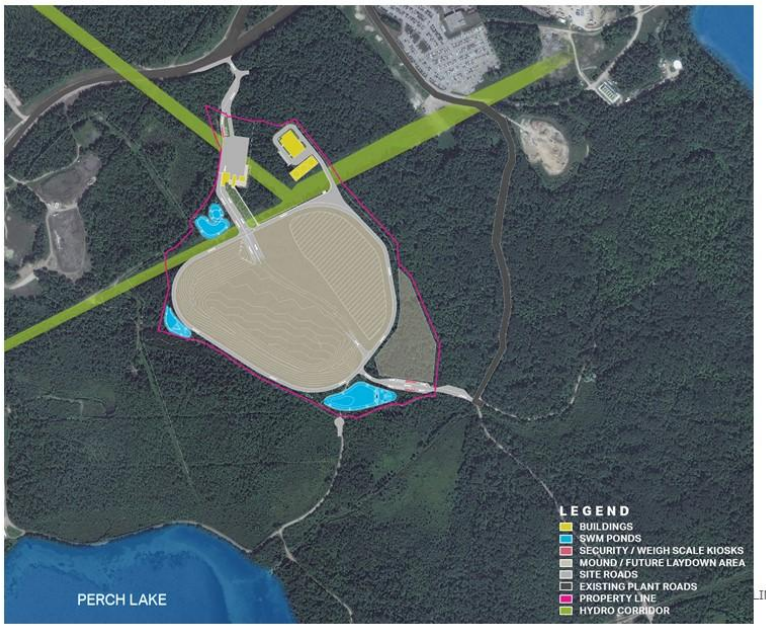
Progress through 2017 March
- Detailed Design
- Environmental Assessment Application
- Licensing Application
- Construction Procurement Planning

Upcoming Activities for 2016/17
- Pre-qualification of suppliers

Next Fiscal Year 2017/18
- Construction RFP/Contract Award
- CNSC Public Hearings: EA and Licensing Decisions

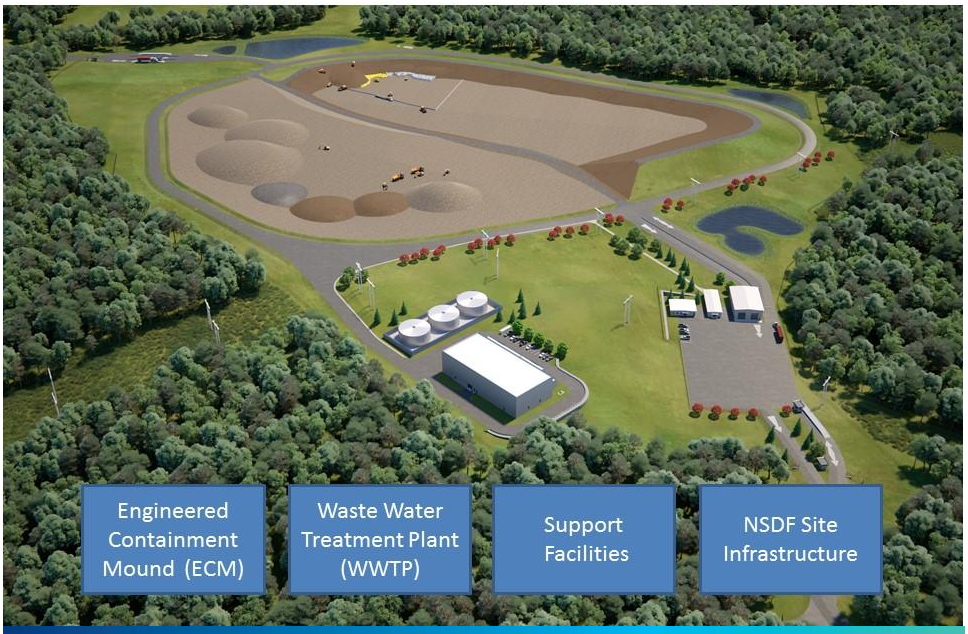
UNRESTRICTED / ILLIMITÉ -3-

Project Plan Overview



LIMITÉ -4-

Design: Components of the NSDF



Construction: Procurement Planning

- November 7 - Industry Day
  - More than 50 companies, general and subcontractors, material suppliers (local and non-local)
- Pre-qualification of suppliers commences 2016 December
- Feedback from supply chain will help shape Request for Proposal for construction services
- Request For Proposal expected to be issued in late Spring

UNRESTRICTED / ILLIMITÉ -6-

Waste: What will the NSDF hold?

- The Waste Acceptance Criteria (WAC) will have physical, chemical and radiological parameters
- Waste Acceptance Protocol and Placement Plan (WAPPP)
  - Planned acceptance protocols & placement practices by waste type
- Design consultant will progress WAC and WAPPP as design deliverables
  - Linked to Performance Assessment and Safety Case
- WAC will be available 2017 March

UNRESTRICTED / ILLIMITÉ -7-

Waste: What will the NSDF hold?

1	**Soil and Soil-like Waste** contaminated soils and other waste materials with characteristics similar to soil that can easily be placed within the mound with little to no handling	4	**Decommissioning and Demolition Waste** materials used in construction such as concrete, asphalt, brick, lumber, structural steel, process equipment, piping
2	**Comingled Debris with Soil or Soil-like Waste** wastes that are anticipated to be at least 50% soil or soil-like in nature, but will also contain varying amounts of radioactive wastes that require additional handling procedures	5	**Packaged Waste** a variety of containerized wastes such as wastes contained in large shipping containers, B-25 containers, drums, buckets, and pails. These wastes typically require special handling procedures and protocols
3	**Non-soil-like Waste** materials that can be excavated and handled as a bulk material, but do not have the physical characteristics of soil and soil-like materials; e.g. vegetation, trees	6	**Miscellaneous Waste** waste that does not fall within the definition of Waste Types 1 through 5 but otherwise meet the WAC

Bulk Decommissioning Debris

Bulk Mixed Waste

Containerized

UNRESTRICTED / ILLIMITÉ -8-

Environmental

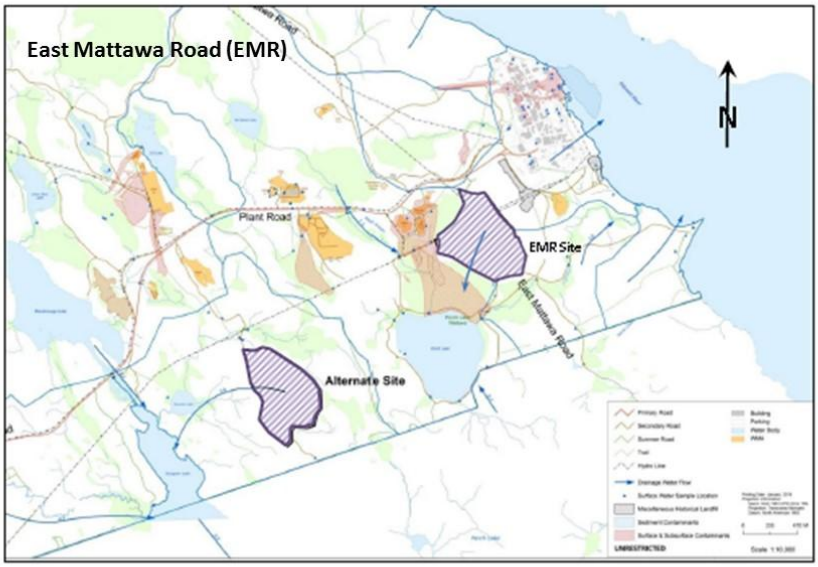
- Progress on the Environmental Assessment (EA)
- Site Selection
- Alternative Means
- Groundwater Modelling
- Waste Water Treatment Plant – Management of Treated Effluent

Environmental: Progress on EA

Submittals for Environmental Assessment process are advancing:

- Project Description, Rev. 1 and EIS Group 1 sections resubmitted to CNSC in response to CNSC
- EIS Group 2 sections submitted to CNSC Staff for review (Oct. 31)
  - Submitted Public & Aboriginal Engagement, Atmosphere, Socio-Economic, Effects of Environment on the Project & Baseline data for Groundwater, Surfacewater & Ambient Radioactivity
  - Effects on Groundwater, Surfacewater, Ambient Radioactivity to be included in Group 3 Submission
- CNSC and ECCC meetings and tours of EMR Site

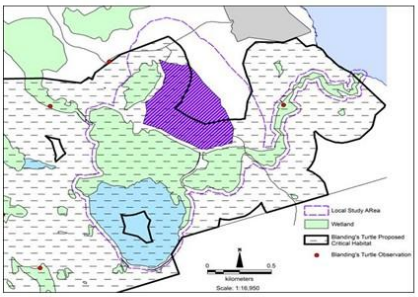
Environmental: Site Selection



Environmental: Site Selection

NSDF site selection process has concluded

- Archaeological assessment
  - Diffuse lithic scatter in 3.7% of 9000 test pits; artifacts not of high significance
  - No graves or burial sites
- Biodiversity studies
  - Some Species at Risk (SAR) or critical habitat for SAR found on or near EMR site;
  - Mitigation measures identified:
    - Wetland setbacks, bat box installation, sub-surface fencing to keep turtles out
- EMR preferable to Alternate Site for NSDF development
- Site Development Notice issued for EMR by CRL Site Master Planner



Proposed Critical Habitat for Blanding's Turtles

Samples of graphite and cobble/pebble scatter

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

UNRESTRICTED / ILLIMITÉ -13-

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

UNRESTRICTED / ILLIMITÉ -14-

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

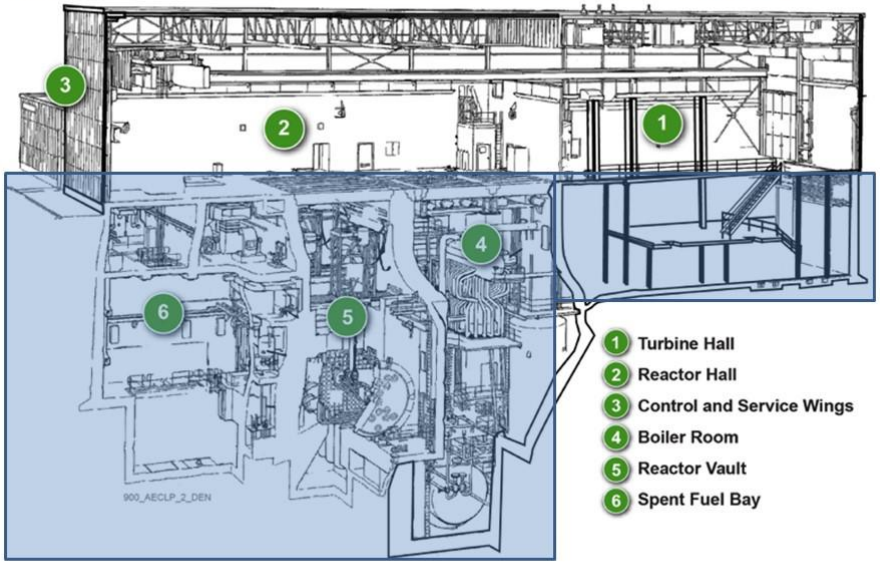
UNRESTRICTED / ILLIMITÉ -15-

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

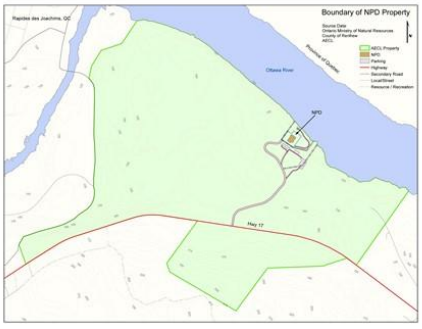
Approach for Safe Decommissioning: NPD



UNRESTRICTED / ILLIMITÉ -17-

Proposed End State

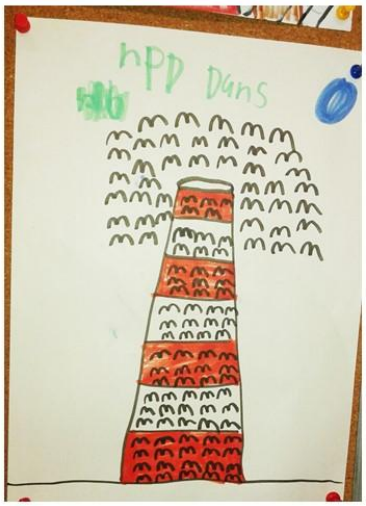
- The reactor, associated systems and below grade structures grouted in place
- Above grade structures demolished and used for backfill
- The grouted area will be covered with an engineered barrier
- Long-term care and maintenance activities will subject to regulatory approval for a set performance period
- 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



UNRESTRICTED / ILLIMITÉ -18-

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.



UNRESTRICTED / ILLIMITÉ -19-

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)

UNRESTRICTED / ILLIMITÉ -20-

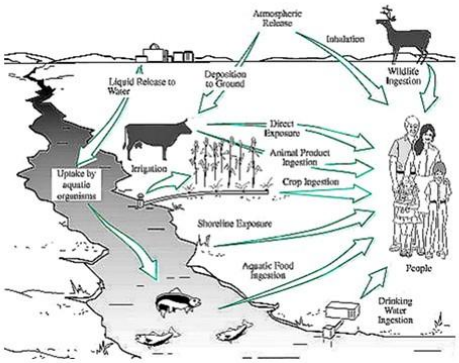
Why ISD? North American Experience

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.

UNRESTRICTED / ILLIMITÉ -21-

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



UNRESTRICTED / ILLIMITÉ -22-

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


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

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

① What are the plans for the site post closure?
② There are facilities at this site that would be of benefit to the local community - the fire hydrant/fire pipe, and the boat launch. Has the Township of Laurentian Hills been contacted regarding possible ownership or at least access to these features?

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

① What are the expected concentrations of radioactive isotopes in the waste? Total # By Pu?

Would you like to receive a call from a team member about your questions, concerns or issues?
YES (NO) <- email reply please

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

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

Appendix P – Ottawa Valley Economic Development Meeting

Canadian Nuclear Laboratories

Ottawa Valley Economic Development Committee

2016 December 15

Near Surface Disposal Facility (NSDF) Project

Jim Buckley, Director, Low Level Radioactive Waste Facilities

NSDF Project: Strategic Importance

Priorities:

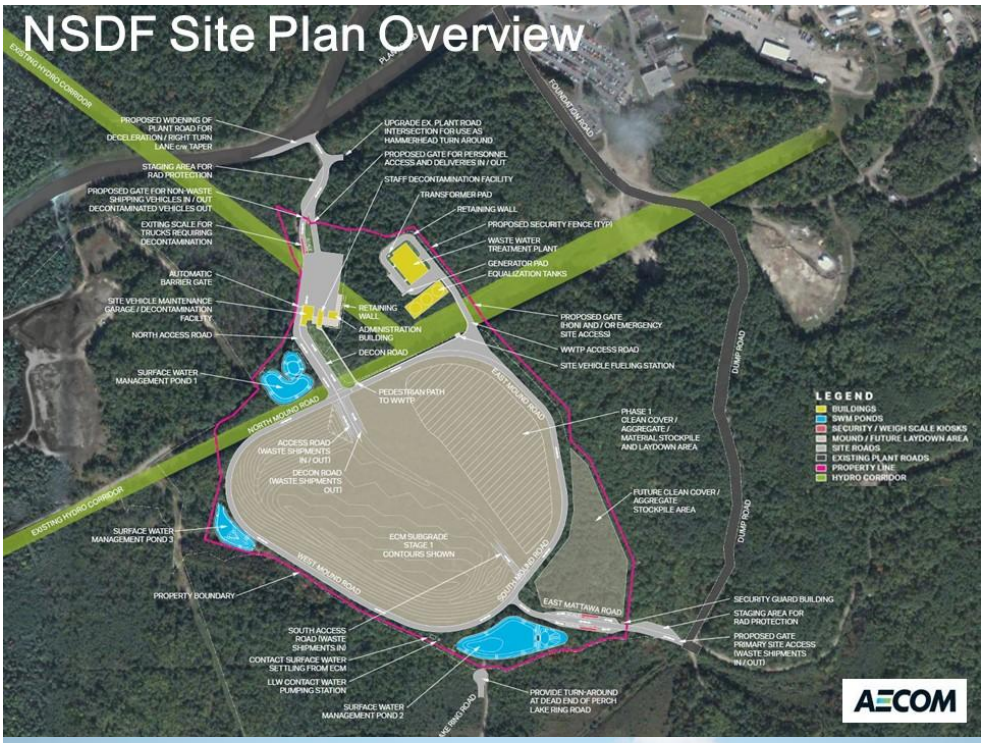
- Reduce waste liabilities
- Reduce risks to workers, the public, and environment
- Revitalize the Chalk River Laboratories site

CNL's Decommissioning & Waste Management Plans:

- Accelerate decommissioning of 100+ redundant buildings and structures
- Remediate contaminated lands and waste management areas; close sites
- Build a near surface mound for disposal of 1,000,000 m^3 of radioactive waste (low-level waste and other suitable waste streams from past, present and future operations)
- Implement an improved Integrated Waste Strategy

NSDF: Project Goal

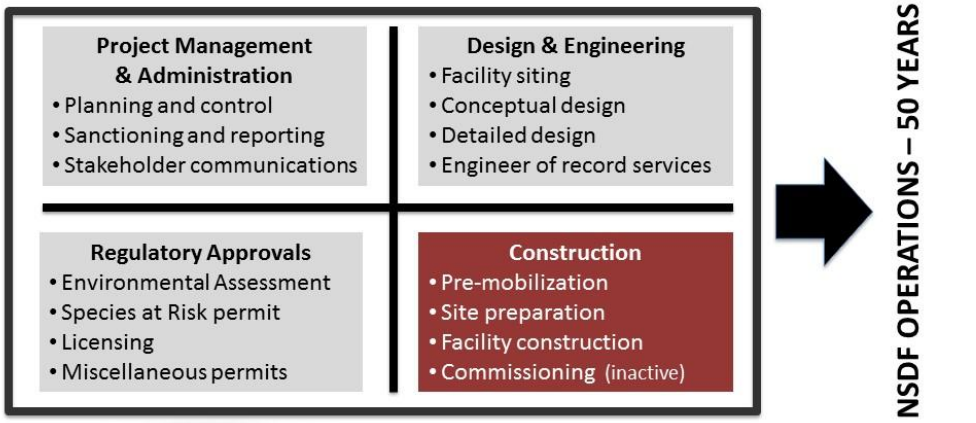
Design, licence and construct Near Surface Disposal Facility and turnover to Waste Operations by 2020 March 31


NSDF Site Plan Overview
EXISTING HYDRO CORRIDOR
PROPOSED WIDENING OF PLANT ROAD FOR DECELERATION / RIGHT TURN LANE c/w TAPER
STAGING AREA FOR RAD PROTECTION
PROPOSED GATE FOR NON-WASTE SHIPPING VEHICLES IN / OUT DECONTAMINATED VEHICLES OUT
EXITING SCALE FOR TRUCKS REQUIRING DECONTAMINATION
AUTOMATIC BARRIER GATE
SITE VEHICLE MAINTENANCE GARAGE / DECONTAMINATION FACILITY
NORTH ACCESS ROAD
SURFACE WATER MANAGEMENT POND 1
UPGRADE EX. PLANT ROAD INTERSECTION FOR USE AS HAMMERHEAD TURN AROUND
PROPOSED GATE FOR PERSONNEL ACCESS AND DELIVERIES IN / OUT
STAFF DECONTAMINATION FACILITY
TRANSFORMER PAD
RETAINING WALL
PROPOSED SECURITY FENCE (TYP)
WASTE WATER TREATMENT PLANT
GENERATOR PAD
EQUALIZATION TANKS
RETAINING WALL
ADMINISTRATION BUILDING
DECON ROAD
PROPOSED GATE (PHONE AND / OR EMERGENCY SITE ACCESS)
WWTP ACCESS ROAD
SITE VEHICLE FUELING STATION
PEDESTRIAN PATH TO WWTP
NORTH MOUND ROAD
ACCESS ROAD (WASTE SHIPMENTS IN / OUT)
DECON ROAD (WASTE SHIPMENTS OUT)
EAST MOUND ROAD
PHASE 1 CLEAN COVER / AGGREGATE / MATERIAL STOCKPILE AND LAYDOWN AREA
FUTURE CLEAN COVER / AGGREGATE STOCKPILE AREA
DUMP ROAD
TOWNSITE ROAD
LEGEND
BUILDINGS
SWM PONDS
SECURITY / WEIGH SCALE KIOSKS
MOUND / FUTURE LAYDOWN AREA
SITE ROADS
EXISTING PLANT ROADS
PROPERTY LINE
HYDRO CORRIDOR
SURFACE WATER MANAGEMENT POND 3
ECM SUBGRADE STAGE 1 CONTOURS SHOWN
WEST MOUND ROAD
SOUTH MOUND ROAD
PROPERTY BOUNDARY
EAST MATTAWA ROAD
SECURITY GUARD BUILDING
STAGING AREA FOR RAD PROTECTION
PROPOSED GATE PRIMARY SITE ACCESS (WASTE SHIPMENTS IN / OUT)
SOUTH ACCESS ROAD (WASTE SHIPMENTS IN)
CONTACT SURFACE WATER SETTLING FROM ECM
LLW CONTACT WATER PUMPING STATION
SURFACE WATER MANAGEMENT POND 2
PROVIDE TURN-AROUND AT DEAD END OF PERCH LAKE RING ROAD
AECOM

NDSF: Key Information (30% Design)

Key Feature		Dimensions, Materials
ECM Size	Volume	1,400,000 m^3 air space
	Gross Dimensions	500 m x 400 m
	Material Volume	Earth cut: 70,000 m^3
		Rock cut/blast: 120,000 m^3
		Total Fill: 500,000 m^3
ECM Materials of Construction		Engineered structural fill – crushed rock with fines
ECM Main Components		Liner: clay, geosynthetic clay x 2, 80 mil HDPE liners x 2, crushed rock layer
		Contact Water & Leak Detection System: 2 internal drainage systems, 5 pump stations, protected pipeline to WWTP
WWTP	Exterior Equalization Tanks	1,890 m^3 x 3
WWTP	Treatment Throughput	~ 10 m^3 per hour Chemical precipitation /Filtration, Ion Exchange

Project Scope: Primary Work Packages



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NSDF: Project Schedule Overview

Work In Progress through 2017 March:

- Detailed design
- Environmental Assessment application
- Licensing application
- Construction procurement planning

Upcoming Activities for 2016/17:

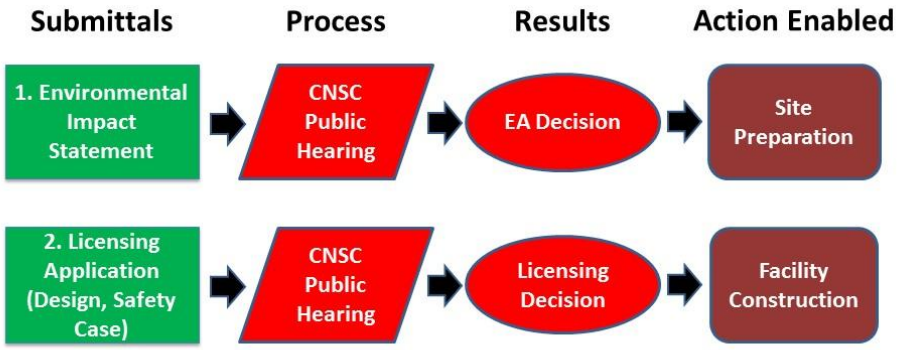
- Pre-qualification of suppliers – 2016 December 7 – MERX announcement

Next Fiscal Year 2017/18:

- Construction RFP/contract award
- CNSC public hearings: EA and licensing decisions

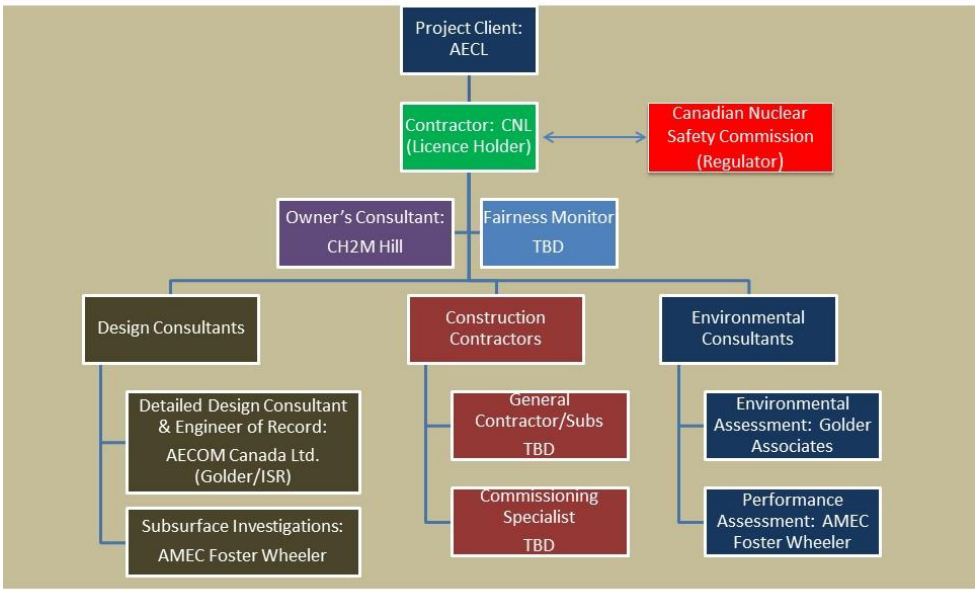
NSDF: Regulatory Approvals

NSDF will be a Class 1B Nuclear Facility under Nuclear Safety & Control Act

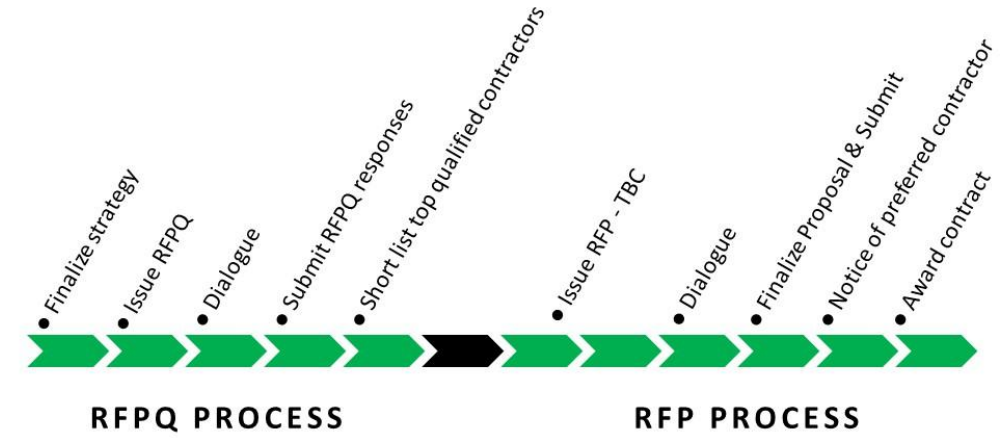


Operation of the NSDF will also be subject to a CNSC decision of approval

NSDF: Project Participants



NSDF: Procurement Process



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Nuclear Power Demonstration (NPD) Closure Project

Patrick Daly, Head, NPD Closure Project

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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

NPD - April 3, 1957

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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

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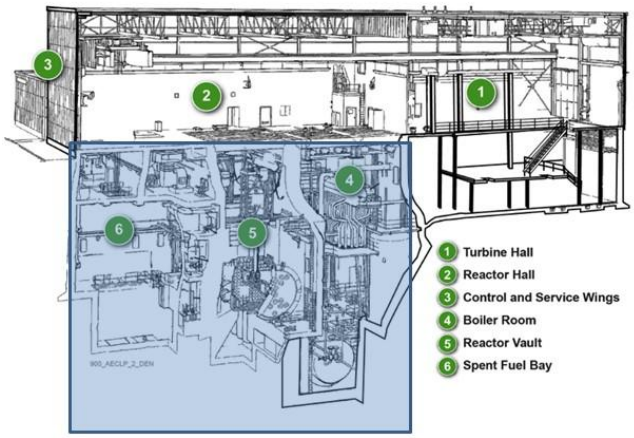
NPD Closure Project: Closure Sequence

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



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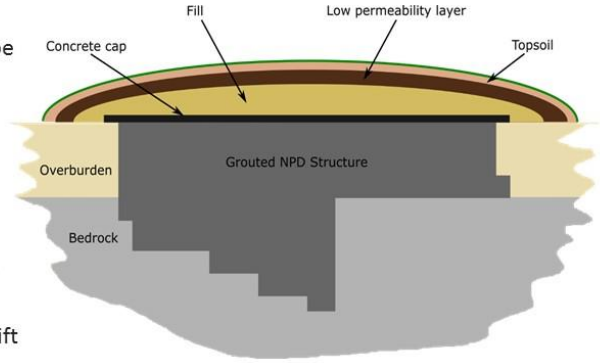
NPD Site: Proposed End State

- 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)



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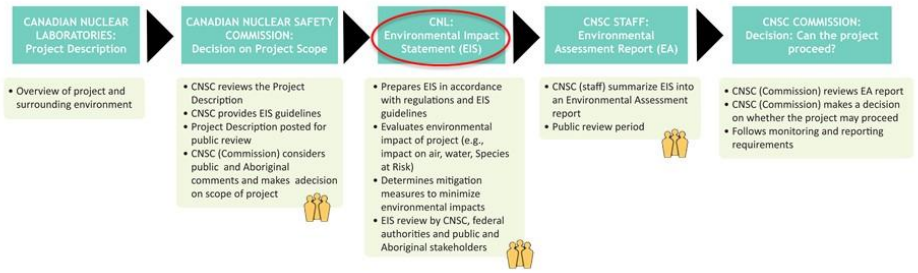
NPD Closure Project: Environmental Assessment



- 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

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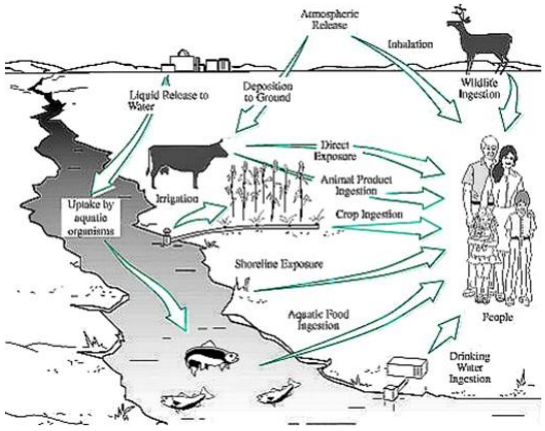
NPD Closure Project: Post Closure Safety Assessment



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

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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

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Appendix Q - Meeting and Project Briefing with Pontiac MP

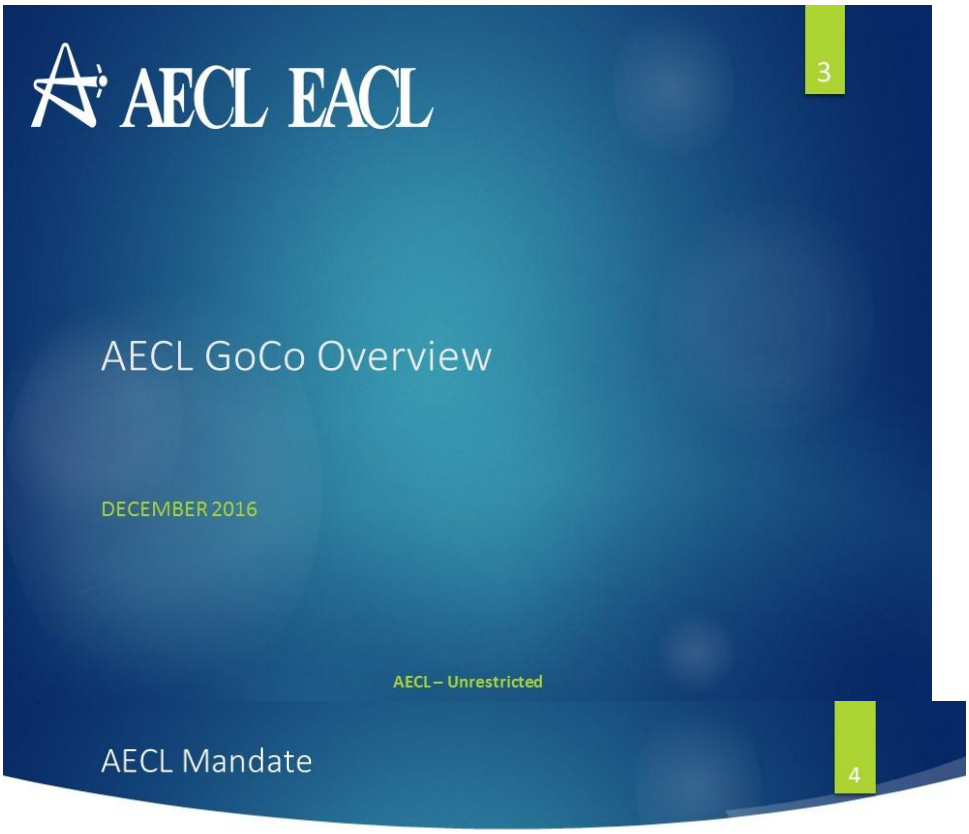
CNL Update to MP William Amos

Pontiac - Campbell's Bay, Quebec

2016 December 21

Update outline

1. Atomic Energy of Canada Limited (AECL)
2. Canadian Nuclear Laboratories (CNL) – overview and emergency preparedness
3. NPD Closure Project
4. Near Surface Disposal Facility (NSDF) Project
5. Engagement Activities



KEY FACTS

1. $7B of radioactive waste and decommissioning liabilities
2. Largest science and technology complex in Canada
3. Infrastructure renewal - $800 million over 5 years

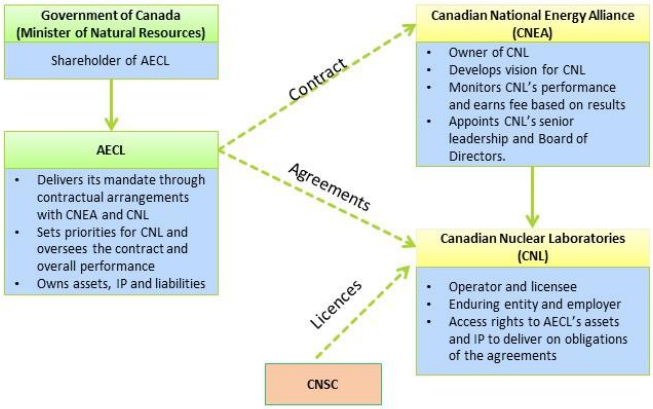
ROLE

- Through the Government–owned Contractor-operated (GoCo) model:
  - Sets priorities for CNL
  - Oversees the contract
  - Assesses CNL's overall performance

AECL EACL

The GoCo Model Explained

5



AECL – Unrestricted

AECL EACL

Priorities & Key Points – the AECL Perspective

6

1. **Transform the management and operation of Canadian Nuclear Laboratories**
   - The new GoCo model brings significant opportunity to increase efficiencies and leverage international best practice

2. **Advance the decommissioning and waste management program to reduce Canada's liabilities**
   - The waste and decommissioning mission at CNL is accelerating and is helping to: make room for the renewal of the site, address high-priority health and safety risks, and clean up Canada's legacy liabilities in an efficient and effective way
   - Specific focus on closing the Whiteshell Laboratories and the Nuclear Power Demonstration reactor sites

3. **Revitalize the Chalk River Laboratories and implement a long-term vision for nuclear science and technology**
   - Chalk River Laboratories is Canada's largest science facility, and an important piece in Canada's science ecosystem
   - We are actively working to revitalize the site – advancing S&T, DWM and capital in a strategic, integrated manner which brings value to Canada

AECL EACL AECL – Unrestricted

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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 ~$350 and $400 M

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Missions

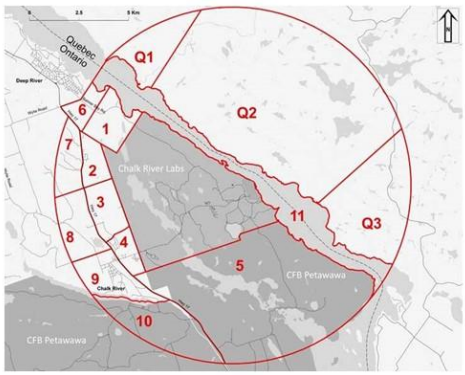
A unique, three-pronged mandate

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.

Emergency Preparedness



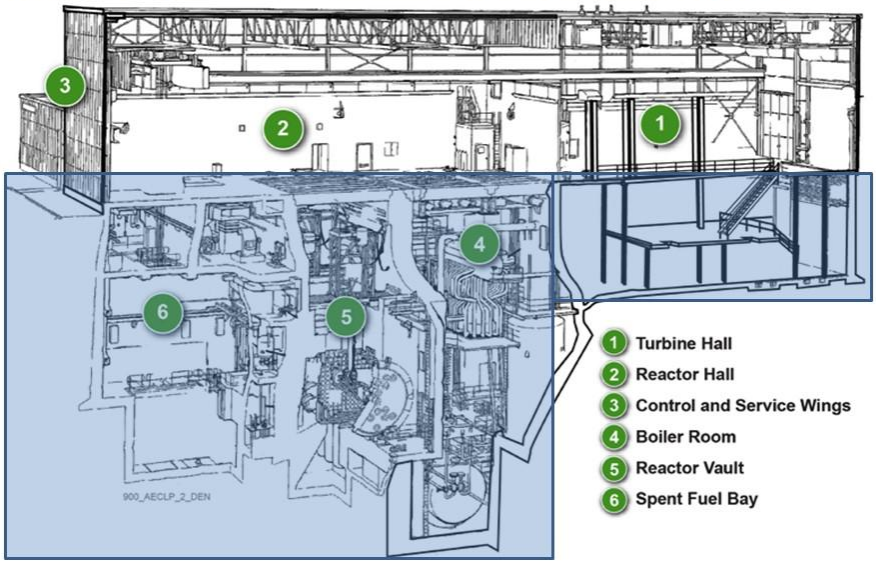
- Jurisdiction
- Potassium Iodide Distribution (Ki)
- Risk
- Public Alerting

Overview: Project Objectives

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

Safely decommission the NPD site

Approach for Safe Decommissioning: NPD



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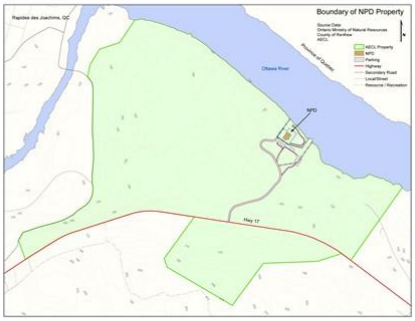
Proposed End State

- 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



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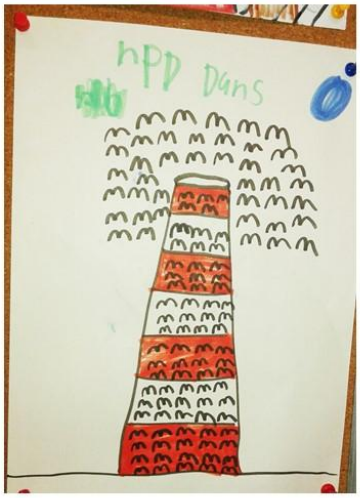
Species at Risk: Chimney Swifts

- 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.



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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)

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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.

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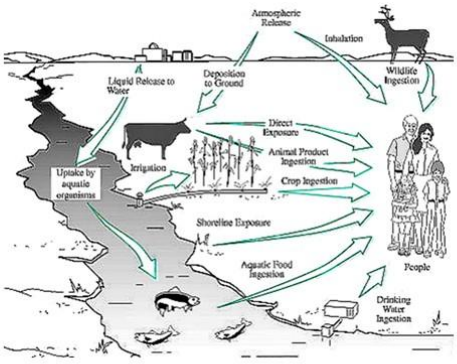
Safe by Design: Post Closure Safety Assessment

- 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



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Near Surface Disposal Facility (NSDF)

- Why?
- Schedule
- Project Plan
- Design, Engineering and Construction
- Waste: What will the NSDF hold?
- Environmental

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Why? Site Revitalisation

Schedule: 2016 - 2018

Activities	2015	2016	2017	2018	2019	2020
Project Management & Administration						
Design and Engineering						
EA and Licensing for Construction Approval						
Procurement of Construction Services						
Site Prep, Construction, Inactive Commissioning						
Licensing for Operation Approval						
Active Commissioning and Operation						

Progress through 2017 March
- Detailed Design
- Environmental Assessment Application
- Licensing Application
- Construction Procurement Planning

Upcoming Activities for 2016/17
- Pre-qualification of suppliers

Next Fiscal Year 2017/18
- Construction RFP/Contract Award
- CNSC Public Hearings: Anticipated EA and Licensing Decisions

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Schedule: Progress Highlights & Outlook

Design and Engineering

- 60% design submittal completed
- 100% design on track (2017 March)
- Site selection confirmed

Waste and Waste Acceptance Criteria (WAC)

- Waste sources confirmed and volume forecast
- Waste handling types defined
- Purpose of WAC documented
- WAC maturing as part of the design contract

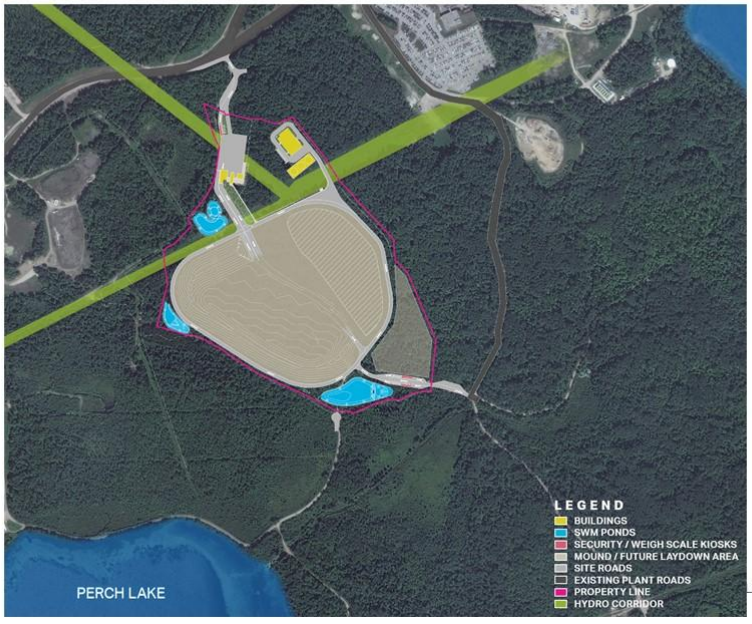
Construction

- Procurement planning well underway
- Industry Day – November 2016
- Prequalification of suppliers

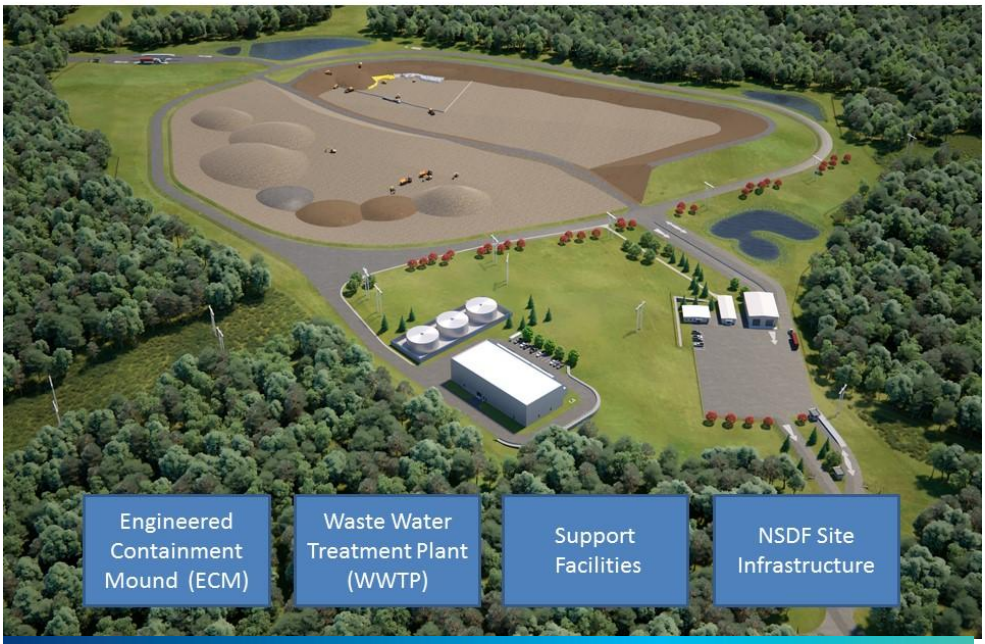
Regulatory Approvals

- Environmental Impact Statement (EIS) on track
- Response to CNSC - Intermediate Level Waste
  - Project Description, Rev. 1 submitted to CNSC
  - EIS Group 1 sections re-submitted to CNSC
- CNL submitted Group 2 and 3 sections
- Meetings and tours hosted with CNSC/ECCC representatives in September and November
- Ongoing indigenous engagement
- Ongoing community engagement
- Working Group meetings continuing
- Active oversight

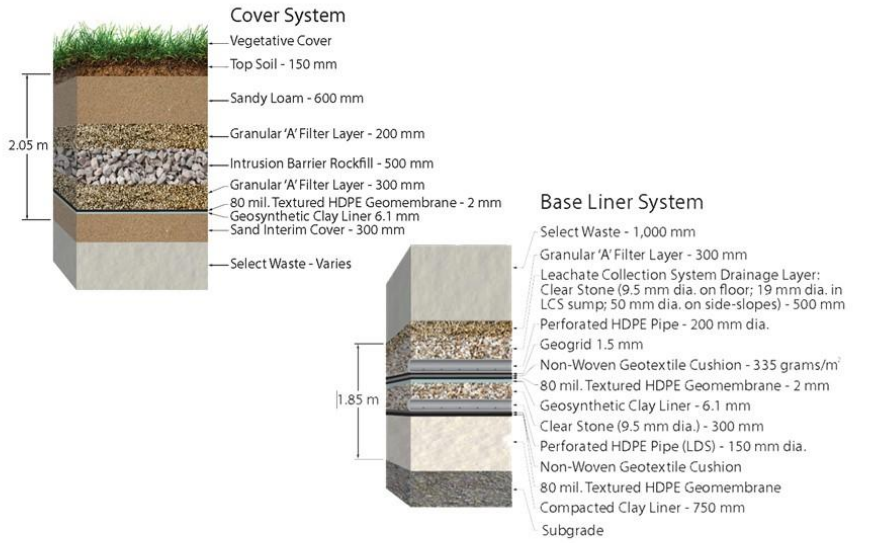
Project Plan Overview



Design: Components of the NSDF



Design: ECM Base Liner and Cover Systems



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Design: Waste Water Treatment Plant

- WWTP will treat leachate, contact water, operational waste water
- Equalization tanks will mix and pH-adjust feed to WWTP process
- Lab-scale testing for WWTP process completed in September
- Pilot-scale testing for WWTP process is in progress
- Three stage process is being tested:
  1. Precipitation with membrane filtration
  2. Ion exchange
  3. Polishing

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Construction: Procurement Planning

- November 7 - Industry Day
  - More than 50 companies, general and subcontractors, material suppliers (local and non-local)
- Pre-qualification of suppliers commences 2016 December
- Feedback from supply chain will help shape Request for Proposal for construction services
- Request For Proposal expected to be issued in late Spring

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Waste: What will the NSDF hold?

- The Waste Acceptance Criteria (WAC) will have physical, chemical and radiological parameters
- Waste Acceptance Protocol and Placement Plan (WAPPP)
  - Planned acceptance protocols & placement practices by waste type
- Design consultant will progress WAC and WAPPP as design deliverables
  - Linked to Performance Assessment and Safety Case
- WAC will be available 2017 March

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Waste: What will the NSDF hold?

Four Main Purposes of the Waste Acceptance Criteria

1. Sets limits on the physical, radiological and chemical properties of the waste to protect workers, the public and the environment.
2. Ensures that the types and amounts of waste meet the requirements set out in the long-term safety case that is developed in conjunction with the design of the facility.
3. Specifies the waste acceptance requirements (and prohibited items, such as waste with free liquids) for waste generators in order that they may properly characterize and, if necessary, pre-treat waste before shipment to the NSDF.
4. Supports safe and efficient facility operation, in that the NSDF waste types will influence waste placement on a day to day basis, as well as considerations of impacts to closure and post-closure

Waste: What will the NSDF hold?

Waste Inventories and Development of Characterization Plans

- Utilization of existing container radiological and chemical inventory data to inform WAC and Performance Assessment
- Inventory screening inputs for Performance Assessment
- "Best Estimates" for bulk wastes and leachate contribution
- Compilation of summary characterization data by waste sources
- NSDF Waste Forecast Analysis revision
- Data gathering underway to determine gaps and needs
- Waste characterization underway by facility decommissioning and environmental remediation projects
- Aligned to support Integrated Waste Strategy initiatives
- Guidance for characterization for chemical and radiological
- Waste Programs developing an MCP for CNL for planning and executing characterization (MARSSIM, MARSAME, DQOs)

Waste: What will the NSDF hold?

1	**Soil and Soil-like Waste** contaminated soils and other waste materials with characteristics similar to soil that can easily be placed within the mound with little to no handling	4	**Decommissioning and Demolition Waste** materials used in construction such as concrete, asphalt, brick, lumber, structural steel, process equipment, piping
2	**Comingled Debris with Soil or Soil-like Waste** wastes that are anticipated to be at least 50% soil or soil-like in nature, but will also contain varying amounts of radioactive wastes that require additional handling procedures	5	**Packaged Waste** a variety of containerized wastes such as wastes contained in large shipping containers, B-25 containers, drums, buckets, and pails. These wastes typically require special handling procedures and protocols
3	**Non-soil-like Waste** materials that can be excavated and handled as a bulk material, but do not have the physical characteristics of soil and soil-like materials; e.g. vegetation, trees	6	**Miscellaneous Waste** waste that does not fall within the definition of Waste Types 1 through 5 but otherwise meet the WAC

Bulk Decommissioning Debris

Bulk Mixed Waste

Containerized

Environmental

- Progress on the Environmental Assessment (EA)
- Site Selection
- Alternative Means
- Groundwater Modelling
- Waste Water Treatment Plant – Management of Treated Effluent

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Environmental: Progress on EA

Submittals for Environmental Assessment process are advancing:

- Project Description, Rev. 1 and EIS Group 1 sections resubmitted to CNSC in response to CNSC
- EIS Group 2 and 3 sections submitted to CNSC Staff for review
  - Submitted Public & Aboriginal Engagement, Atmosphere, Socio-Economic, Effects of Environment on the Project & Baseline data for Groundwater, Surfacewater & Ambient Radioactivity
  - Effects on Groundwater, Surface water, Ambient Radioactivity to be included in Group 3 Submission
- CNSC and ECCC meetings and tours of EMR Site

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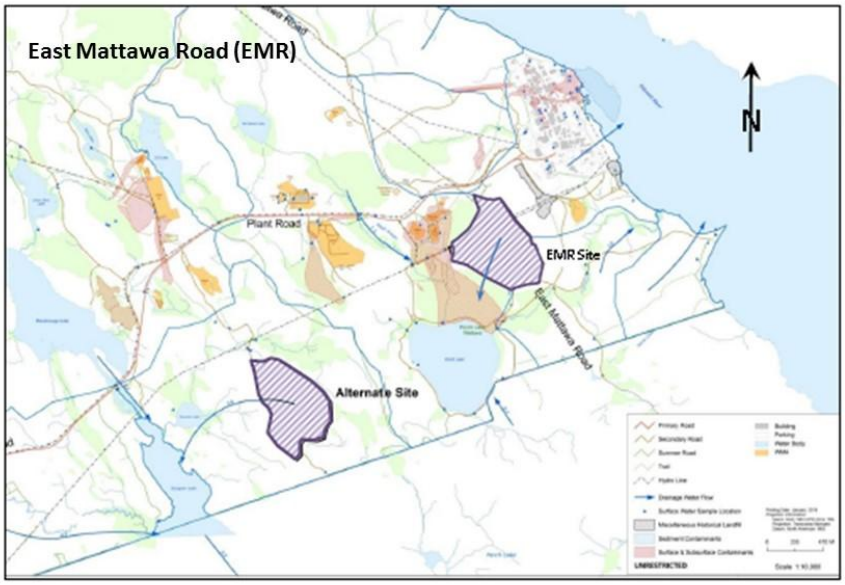
UNRESTRICTED / ILLIMITÉ -32-

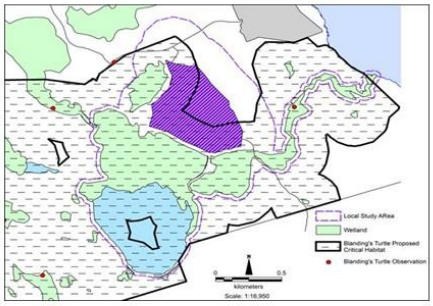
Environmental: Site Selection



Environmental: Site Selection

NSDF site selection process has concluded

- Archaeological assessment
  - Diffuse lithic scatter in 3.7% of 9000 test pits; artifacts not of high significance
  - No graves or burial sites
- Biodiversity studies
  - Some Species at Risk (SAR) or critical habitat for SAR found on or near EMR site;
  - Mitigation measures identified:
    - Wetland setbacks, bat box installation, sub-surface fencing to keep turtles out
- EMR preferable to Alternate Site for NSDF development
- Site Development Notice issued for EMR by CRL Site Master Planner



Proposed Critical Habitat for Blanding's Turtles

Samples of graphite and cobble/pebble scatter

Environmental: Alternative Means

Above Ground Concrete Vaults versus Engineered Containment Mound

- Above Ground Concrete Vaults are a type of near surface disposal facility employing engineered multi-barrier concrete structures set partially into the ground.
- El Cabril Facility Spain – example of above ground vaults for LLW and ILW waste
- All wastes packaged and grouted in place
- Large fraction of CNL waste is building rubble & contaminated soil
- Disposal in Above Ground Vaults would require additional handling and packaging of these wastes – increased risk to workers

UNRESTRICTED / ILLIMITÉ -35-

Environmental: Technical Options

Above Ground Concrete Vaults versus Engineered Containment Mound

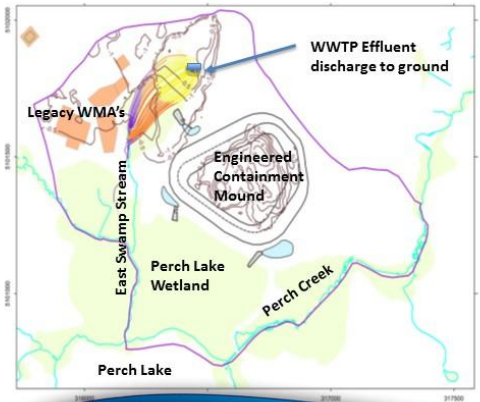
Criteria	ECM	Above Ground Vault
Technical Feasibility	●	●
Schedule	●	●
Construction Cost	●	●
Operation Cost	●	●
Air Quality and GHG	●	●
Geology/Hydrogeology	●	●
Hydrology/Surface Water	●	●
Aquatic Biota	●	●
Terrestrial Biota	●	●
Worker Health	●	●
Public Health	●	●

UNRESTRICTED / ILLIMITÉ -36-

Environmental: Groundwater Modelling

- Developed 3D numerical groundwater (GW) flow model for Lower Perch Lake Basin including NSDF Site
- Assess impact of NSDF on Groundwater flow regime for various operations and post-closure scenarios
  - Impact on groundwater flow regime
  - Groundwater transit time estimates
- Operations – leachate collection and discharge to infiltration area
- Post Closure
  - Engineered cover intact
  - Failure of engineered cover

Environmental: Groundwater Flow Modelling

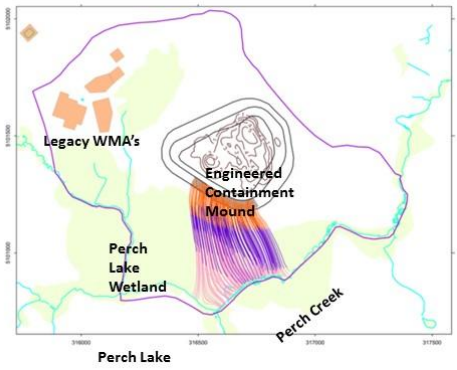


Preliminary Results – Normal Operations

Predicted groundwater flow path from Waste Water Treatment Effluent discharge to East Swamp Stream

Transit time from discharge area to East Swamp Stream ranges from one to five years.

Environmental: Groundwater Flow Modelling



Preliminary Results – Failure scenario modelling of engineered cover post-institutional control (~550 years)

Model simulates if infiltration through cover and waste to base liner were to occur:

- Modelled results indicate occurrence of bathtub effect, with spill over into aquifer
- Ground water transit time from mound to Perch Creek is estimated at ~10 years
- Transit time is used in the performance assessment modelling

Environmental: Waste Water Treatment Plant

Management of Treated Effluent

- CRL Licence Handbook prohibits controlled releases of radionuclide substances to ground (Criterion 10.2(3))
- Effluent Discharge Location
  - Infiltration area adjacent to East Swamp
- Effluent Quality (Gross Alpha, Gross Beta, non-radiological)
  - Meet requirements for discharge to ground - CNL Procedure Acceptability Criteria for Routine and Non-Routine Discharge of Liquids on the CRL Site
- Effluent Quality (Tritium)
  - Most waste water treatment processes are not effective at tritium removal
  - Tritium in leachate will be managed through the WAC, e.g. packaging of high content tritium waste in sealed containers
  - Tritium concentrations in Perch Creek will be kept below levels that are set out in the Drinking Water Standard (7000 Bq/L).

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

UNRESTRICTED / ILLIMITÉ -41-

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

UNRESTRICTED / ILLIMITÉ -42-

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

Regulatory Affairs

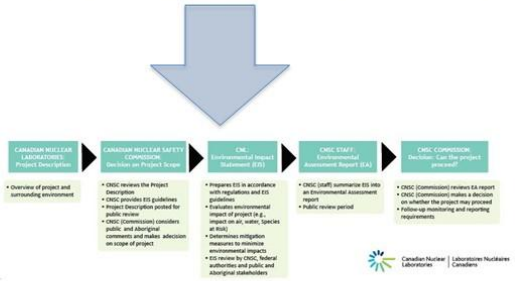
Regulatory Affairs: NSDF

Milestone Deliverable/activity	Lead	Target or Submission Date
Disposition Meeting EIS Submission Group 1 Federal review of information requests (IRs)	CNSC/CNL	2016, November 15
Working Group Meeting – Performance Assessment	CNSC/CNL	2016, November 15
EIS Submission Group 2 Federal review of information requests (IRs) Submittal of Federal Comments to CNL	CNSC	2016,December, 28
Project Update Meeting & Presentation of EIS Group 3	CNL	2016, December XX
Draft Environmental Impact Statement (EIS) (Group 3 Sections) – submitted to CNSC	CNL	2106, December 15
Disposition Meeting EIS Submission Group 2 Federal review of information requests (IRs)	CNSC/CNL	2017, January, 12
Working Group Meeting – Waste Acceptance Criteria	CNSC/CNL	2017, February XX
Project Update & Submission Presentation	CNSC/CNL	2017, March XX
Safety Analysis	CNSC/CNL	2017, March XX

Regulatory Affairs: NPD Closure Project

Requirements

- Canadian Environmental Assessment Act (CEAA) 2012: Environmental Assessment
- Nuclear Safety Control Act (NSCA):
  - Request for licence amendment to perform decommissioning
  - Detailed Decommissioning Plan
  - Safety Analysis (Decommissioning and Post-Closure)



Communications

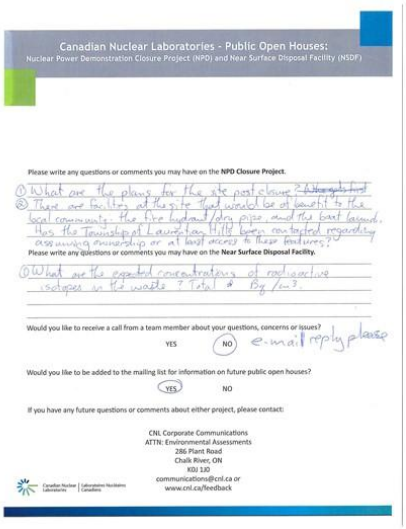
Engagement

- 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
- NSDF:
  - A lot of interest in what will be disposed of in the NSDF
  - 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


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

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

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?

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

① What are the expected concentrations of radioactive isotopes in the waste? Total # Bq/m³.

Would you like to receive a call from a team member about your questions, concerns or issues?
YES (NO) e-mail reply please

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

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 (ESC) – 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

Appendix R – Factsheets

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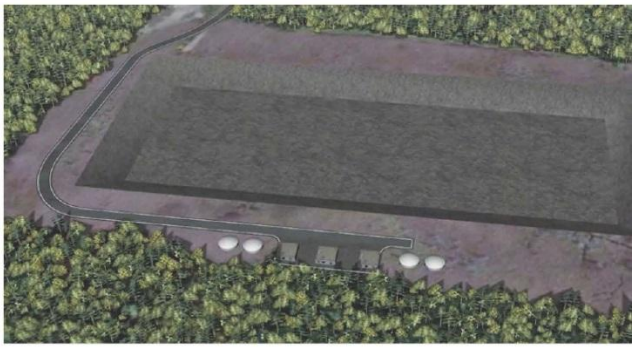
Near Surface Disposal Facility Project

Project Background

CNL has made application and initiated the regulatory approvals process, including a federal environmental assessment, for a proposed Near Surface Disposal Facility (NSDF) to be located at the Chalk River site and used for the management of CNL's low-level radioactive waste and other suitable waste streams. The facility will safely dispose of waste that is either now in interim storage or that will be generated from decommissioning activities. A site selection process assessed two candidate locations at Chalk River and identified a recommended site for the new facility. The NSDF will have a disposal capacity of approximately 1 million m^3.

Proven, environmentally sound, safe solution, addressing legacy obligations.



Rationale

With no disposal facility available at the Chalk River site, the proposed NSDF once approved and constructed will provide a permanent disposal solution for a variety of waste materials. Waste material originating from historical operations and generated as CNL revitalizes Chalk River Laboratories (CRL) and closes the Whiteshell Laboratories and Nuclear Power Demonstration sites will be emplaced in the facility.

The Near Surface Disposal Facility will enable and accelerate a significant reduction in liabilities on CNL sites, reduce the footprint of the built up area on the Chalk River site and create the appropriate conditions for a clean and revitalized science and technology campus.

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

PROJECT GOAL

To provide a proven, environmentally sound, safe solution, designed to address CNL's nuclear legacy liabilities.

THE PLAN

CNL plans to develop the NSDF over a five-year period. In 2016 CNL initiated an Environmental Impact report, following a thorough Environmental Assessment process. CNL will await a final decision in 2017/2018.

CNL will seek approvals from the Canadian Nuclear Safety Commission to build the NSDF.

Subject to receipt of approvals, CNL hopes to begin construction of the NSDF in 2018. CNL anticipates placing the NSDF into operation in 2020.

The proposed facility will use design and engineering parameters that ensures stringent operation, and closure requirements. Design features such as a double composite base liner system and leachate collection and detection systems are just two examples of the facility's protection aspects.

ACTIVITIES

CNL will discuss the project with stakeholders through a variety of activities. We welcome your participation. Please stay tuned for more information on our public information activities.

Date of Issue: 2016 October

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

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.

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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

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

Appendix S – Advertising

Example of Advertising from the Pontiac Journal

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 con « Le réseau EOTA bien planifié dès le d et il avait l'appui partenaires », a-t-il ajo

Location du corridor

L'Association Motoneigistes de P (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

Appendix T – Informational Poster Boards

Canadian Nuclear Laboratories is changing

Big changes are happening at Canadian Nuclear Laboratories (CNL). We are taking down more than 100 buildings and structures and cleaning up to revitalize our laboratories with new, renovated or repurposed facilities. With modern infrastructure and facilities, our people will be better equipped to innovate and collaborate with industry and government – supporting CNL's commitments to Canada, and generating leading research nationally and internationally.

Already, the site has begun to transform. A visible example at Chalk River Laboratories is the new laboratory complex (the building seen above) which provides modern and flexible research and offices space.

The vision for transformation

Thanks to an $800 million federal government investment (funding that is in addition to our current operating budget) the transformation of Chalk River Laboratories, will be significant over the next 10 years. Complementing the renewal plan is an integrated strategy for managing waste materials as they are generated. This two-pronged approach will enable us to realize the vision for the Chalk River Laboratories. In strengthening our organization, we are generating new opportunities for CNL and for the Canadian nuclear industry.

The team at CNL will leverage these opportunities to make advances in clean energy, in health, in safe and secure borders and in a clean and healthy environment with strong stewardship. We are building the capabilities to go beyond our traditional market segments, and when we do, the world will be waiting!

For our local communities in the Upper Ottawa Valley, this vision for transformation means we remain a stable, long-term partner and employer. CNL continues to rely on our skilled local workforce and the support of our neighbours in the community and region. The opportunities for our local supply chain will grow as CNL grows.

Integrated Waste Strategy

CNL is implementing a new Integrated Waste Strategy (IWS) to enable new development and to responsibly deal with legacy waste, generated from operations over the past 65 years that is currently managed in interim storage facilities. Under this strategy, wastes will be characterized and dispositioned in keeping with our goals to reduce risk to workers, reduce costs, reduce waste liabilities – all while protecting the environment.

One of the top IWS priorities is to establish a pathway for the permanent disposal of the largest fraction of CNL wastes – those that are lightly contaminated. These wastes represent an estimated 95 per cent of CNL's total waste volume - past, present and future - and include materials such as demolition debris, soil and vegetation, laboratory waste and personal protective equipment and clothing, like disposable gloves and shoe covers.

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How will the NSDF operate?

Routine waste treatment steps

1. A scheduled waste transport vehicle arrives at the facility entrance with a pre-approved waste package (e.g. bulk soil or drummed container).
2. The driver of the waste transport vehicle approaches the "inbound" weigh scale where the load is measured and the waste is visually inspected by a Waste Technician to confirm match with shipping documentation.
3. The vehicle proceeds to one of the ECM ramps for offloading (for example, soil and bulk debris to dipping station or drum containers in an unloading platform). Prior to offloading, final inspection of shipment is performed to confirm waste acceptance criteria are met.
4. The waste is unloaded:
   A. The bulk waste is emptied from the vehicle (e.g. dump truck) into the working cell and dedicated heavy equipment within the ECM will reposition the waste to the "working face" of the mound. There it is compacted and recorded.
   B. The containerized waste is offloaded from the shipping vehicle, inspected and checked for close rate to match waste transfer document, then moved to the designated placement location within the working cell using the ECM dedicated all-terrain forklift, and recorded.
5. The emptied vehicle is inspected and surveyed within the ECM. In the unlikely event that contamination is measured, the vehicle is directed to the NSDF vehicle decontamination facility.
6. The emptied (and decontaminated) vehicle proceeds to the facility exit where the outbound weight is measured. The waste placement location is also recorded in the waste tracking software and final checks are completed.
7. The waste transport vehicle and driver are released from site. Roadways in and out of the NSDF and within the site are routinely monitored to ensure they are free from contamination.

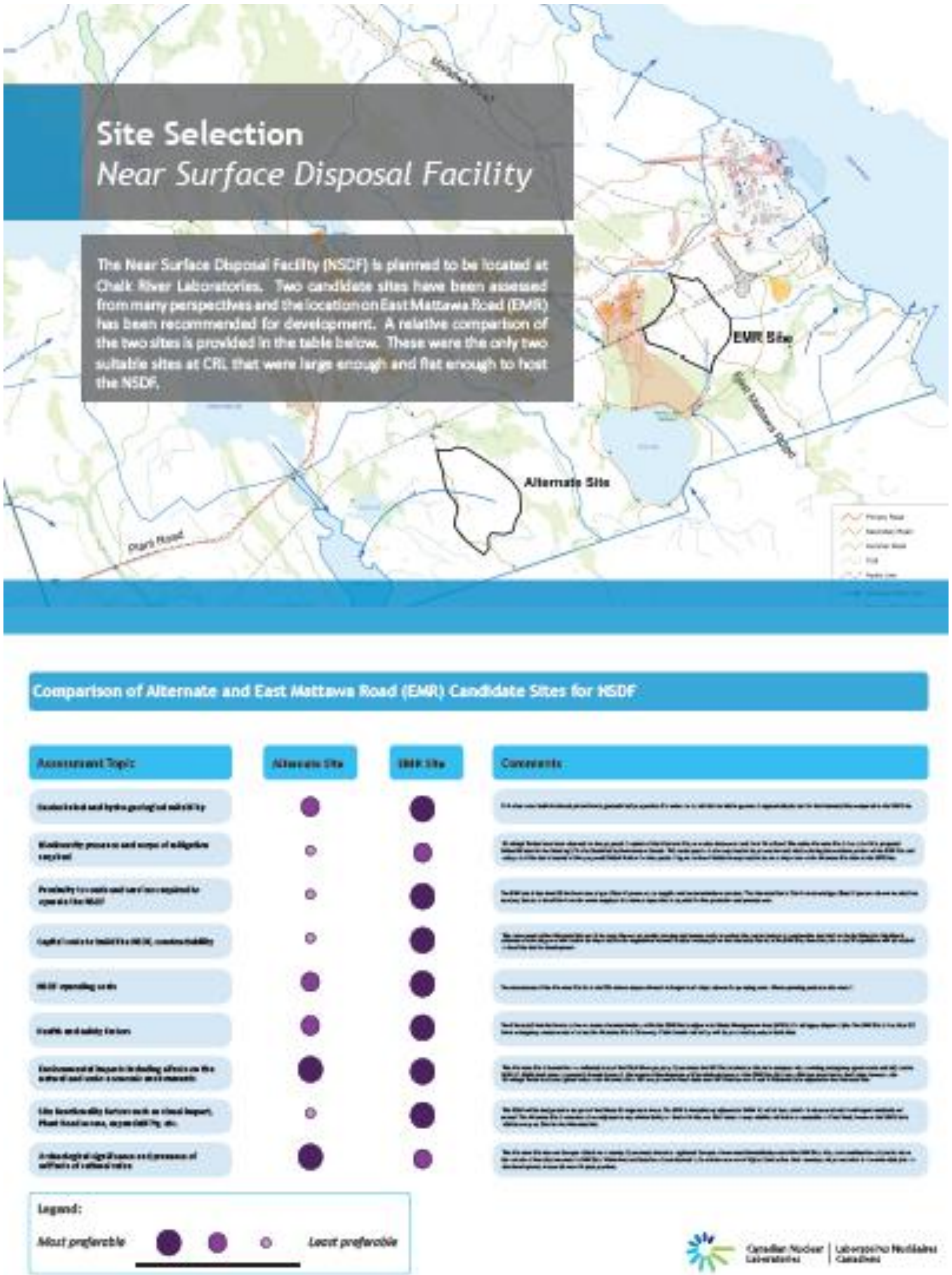
Managing the water

The ECM will contain systems to collect and pump contact water and leachate from the ECM to the NSDF's Waste Water Treatment Plant (WWTP). At the WWTP, these streams will be mixed and treated through conventional processes to remove radiological and chemical contaminants, and to release verified clean effluent to the environment. Only effluent that satisfies the discharge criteria will be released. Consistent with CNL practices and regulatory requirements, all discharges will be monitored and reported.

Leachate includes water that has percolated through the emplaced waste and been collected within the network of piping embedded with the ECM's primary and secondary base liner systems. Leachate sources may include natural moisture in soil, additives used to control dust and achieve water compaction density, and precipitation that seeps through the waste.

Contact water (precipitation (e.g. rain, snow) that has fallen on the surface within an active ECM cell and not infiltrated the waste. It also includes waste water from the vehicle decontamination facility and personnel showers.

The ECM will also importantly include a surface water management (SWM) system to keep precipitation away from the ECM and into SWM ponds. This system will greatly reduce the volumes of contact water and leachate that will require treatment. Solids will have time to settle out in the SWM ponds before they are discharged to the environment. SWM ponds are closely monitored to ensure discharge criteria are met.


Site Selection
Near Surface Disposal Facility
The Near Surface Disposal Facility (NSDF) is planned to be located at Chalk River Laboratories. Two candidate sites have been assessed from many perspectives and the location on East Mattawa Road (EMR) has been recommended for development. A relative comparison of the two sites is provided in the table below. These were the only two suitable sites at CRL that were large enough and flat enough to host the NSDF.
EMR Site
Alternate Site
Plant Road
Comparison of Alternate and East Mattawa Road (EMR) Candidate Sites for NSDF
Assessment Topic
Alternate Site
EMR Site
Comments
Legend:
Most preferable
Least preferable
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What will the facility look like?
Near Surface Disposal Facility
The architectural renderings below reflect the NSDF design concept at 30 per cent complete. They give us insight as to how the NSDF is expected to look following construction and the start of waste placement operations. It is important to keep in mind that the design of the NSDF will evolve through to its completion to address technical, safety, environmental and other requirements, and feedback from reviewers.
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An engineered solution

The design life of the NSDF is 550 years. The design is developed through an iterative approach that considers:

1. Waste Inventory - the properties of the waste that pose hazards that must be managed by the design.
2. Regulations, Engineering Codes and Standards – the technical and safety requirements to be met by the design.
3. Safety Analysis – the assessment of the protection for workers, the public and the environment that is afforded by the facility design under plausible operational events, natural disasters, and human-related events.
4. Performance Assessment – the evaluation of the impact to humans and biota under normal and abnormal conditions that are plausible during the NSDF operational period (through 2070) and following closure of the mound throughout its design life and beyond. The conditions include climate change impacts, severe erosion due to glaciation and human intrusion scenarios.

Environmental data, such as groundwater movement, is a critical input to all parts of the Performance Assessment.

Defence in depth

There will be multiple engineered barriers to enhance the safety and reliability of the NSDF. Among the barriers are:

- The engineered containment mound with a double composite base liner system. The primary and secondary liners are comprised of natural and synthetic materials that will fully encapsulate the waste and restrict the movement of water, precluding the release of contaminants to the environment.
- Overcapacity in systems - specified/sized to provide redundancy on all critical systems and components; e.g., piping, pumps, tanks.
- Performance monitoring systems to inspect/confirm the integrity of the liners and effectiveness of the waste water treatment process and to enable repairs.
- Environmental monitoring systems (ground, surface, water, air) to verify compliance for at least 100 years following the end of operations.

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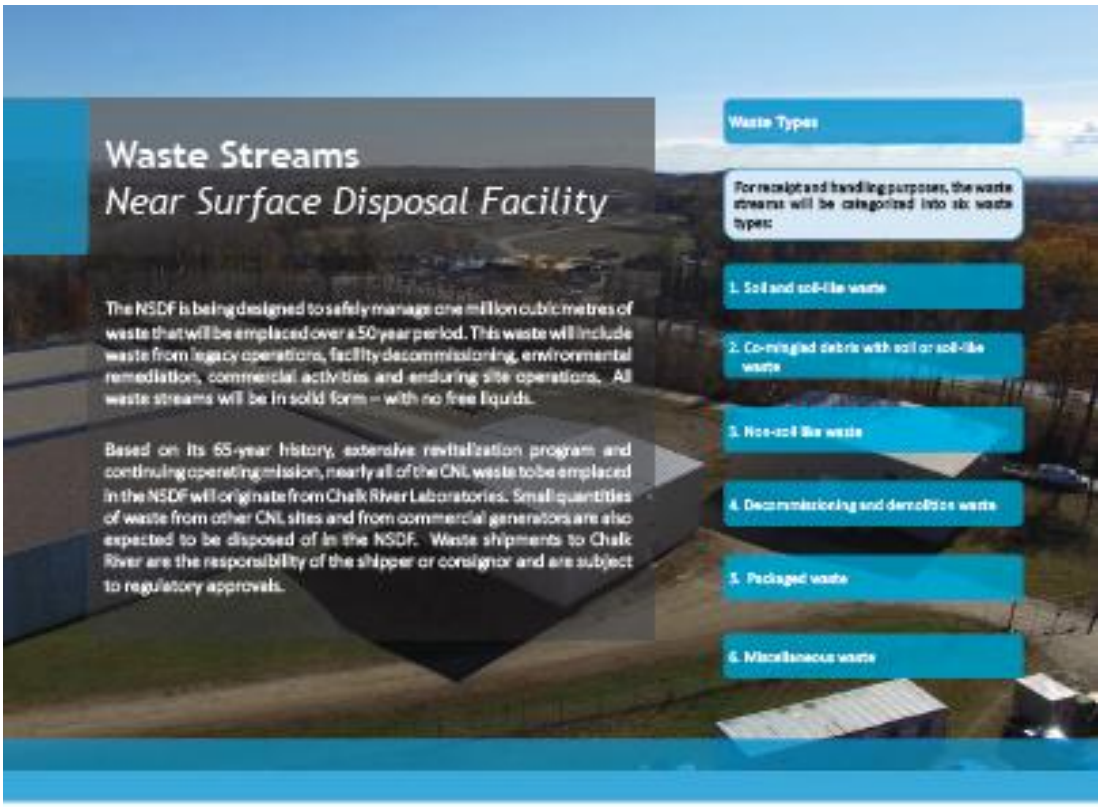

What are the sources of the waste streams?

NSDF will accept wastes that have or will arise from:

- Building decommissioning and demolition – this will be the largest source of waste
- Remediation of impacted soils and related structures
- Operational waste and legacy waste currently in interim storage
- Commercial sourced inventories, such as the healthcare field and universities
- Waste from the enduring laboratory operations and clean up missions

Essentially, most waste to be emplaced in the NSDF will be classified as low-level waste. That is, material with radionuclide content above established clearance levels and exemption, but generally with limited amounts of long-lived activity. The NSDF Project may also accept a very small amount of intermediate-level waste (ILW) and mixed wastes.

ILW are wastes with higher levels of radioactivity that may require shielding for worker protection during handling, and may contain higher concentrations of longer-lived radionuclides. The estimated amount of ILW to be disposed of in the NSDF is approximately one per cent by volume.

Mixed waste is radioactive waste that also contains hazardous substances (e.g., asbestos, polychlorinated biphenyls, mercury, lead).

All waste to be disposed at the NSDF will be required to meet the Waste Acceptance Criteria (WAC).

What are the Waste Acceptance Criteria?

The WAC are the means by which waste shipments are screened for acceptance at the NSDF. The WAC defines the parameters that must be satisfied before a shipment can be considered for disposal in the engineered containment mound. The WAC ensures that each waste shipment is characterized and well understood. Operational protocols will prescribe the processes to be followed to verify that the WAC have been met.

The WAC is developed for four purposes:

1. Sets limits on the physical, radiological and chemical properties of the waste to protect workers, the public and the environment.
2. Ensures that the types and amounts of waste meet the requirements set out in the long-term safety case that is developed in conjunction with the design of the facility.
3. Specifies the waste acceptance requirements (and prohibited items, such as waste with free liquids) for waste generators in order that they may properly characterize and, if necessary, pre-treat waste before shipment to the NSDF.
4. Supports safe and efficient facility operation, in that the NSDF waste types will influence waste placement on a day to day basis, as well as considerations of impacts to closure and post-closure.

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2016: Archeological Assessment

As part of the process to select the NSDF site, archaeological significance must be assessed. In 2016, following the desk top review (Stage 1) of archaeological significance by an expert consultant, a field program involving approximately 2,000 test pits (Stage 2) was carried out on the East Mattawa Road site. This site is traversed by three relic shorelines, formed over thousands of years as the glaciers melted.

Based on the Stage 2 results, a recommendation was made to CNL to avoid an area immediately adjacent to a registered archaeological site on the western edge of the site, the Blinks Homestead, a farm property occupied until the 1940s. CNL accepted this recommendation and a more granular test pit program (Stage 3) on the remainder of the site. Through late September, some 9,000 test pits had been dug on the site with 3.7 per cent of these yielding artifacts - mostly lithic tools such as hammer stones and scrapers. These excavations are ongoing and it is expected that the test excavations will identify some areas of cultural significance, where further Stage 4 removal excavations will be necessary. That is to say, where artifacts appear together in significant quantities, or are in particularly good condition, they are recommended for recovery and preservation. Stage 4 recovery of some of the artifacts will be carried out in 2017.

As a whole, the artifacts retrieved can be classified as "diffuse lithic scatter", which is a term derived from a simple expedient tool technology using local stone material, and based on cores and flakes. The archeological sites are consistent with the Gulf of Maine Archaic Tradition and probably date to the time the relic shorelines were active, approximately 8,500 to 10,500 radiocarbon years ago. As expected, no human remains or gravesites have been found on the East Mattawa Road site.

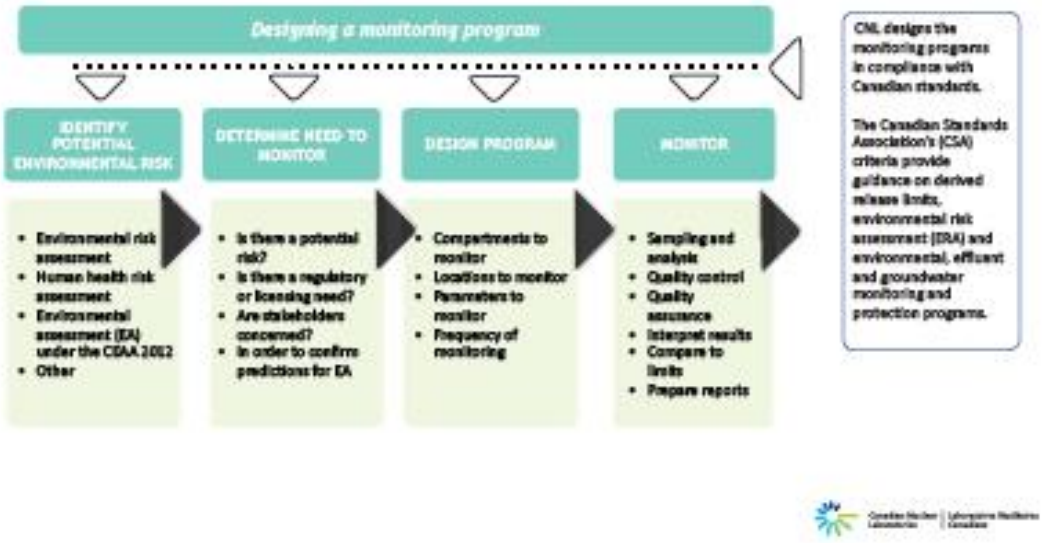




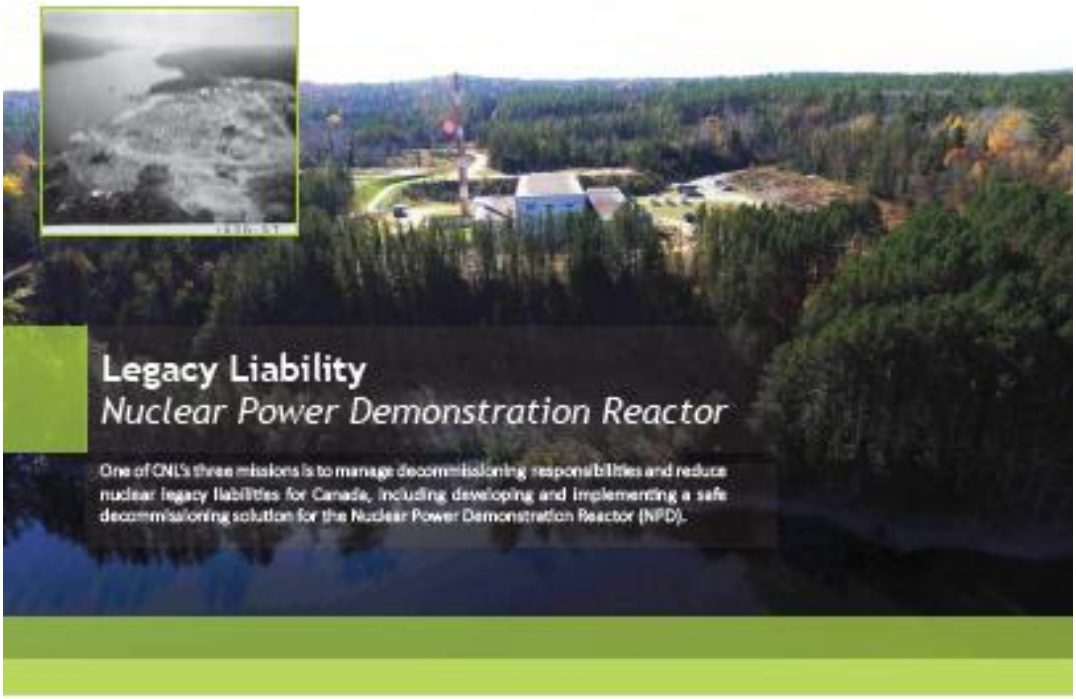
What you told us
Near Surface Disposal Facility
At public information sessions and community events, on the telephone and by email, you provided your thoughts and opinions on the NSDF project. Several comments have also been registered with the CNSC and the Canadian Environmental Assessment Agency (CEAA) website.
Knowing what you value helps us assess how to protect or mitigate any potential impacts the project could have on the environment.
This is how you inform the environmental assessment and our planning and design for the NSDF.
What is a Valued Component?
Valued Components (VCs) are defined as being any part of the environment that is considered important by the proponent, the public, scientists and government.
Contact us!
For more information or to share your thoughts on the Valued Components, related to this project, contact us:
Email: communications@cnl.ca
Telephone: 1-800-364-6989
www.cnl.ca/NSDF
Twitter: @CNL_UNC
Facebook: @CanadianNuclearLaboratories
Identifying Valued Components
VC identification followed a systematic approach to identify values in five categories. These categories represent a cross section of environmental values:
1. Federal legal requirements
2. Proposed federal legal requirements
3. Provincial requirements
4. Regionally significant values
5. Values proposed by the public
What is important to you?
Let us know


Land and Resources Use
Valued Components
Land and Resources Use for Traditional Purposes
Aquatic
Sediment Quality
Socioeconomics
Terrestrial Biodiversity
Greenhouse Gas Emissions
Air Quality
Surface Water Quality and Quantity
Groundwater Quality and Quantity


Protecting the Environment
Canadian Nuclear Laboratories
CNL has more than 60 years experience monitoring large game, drinking water, ambient air, fish and clams, dairy milk, farm animals, garden produce, beaches, waterborne effluent, groundwater and airborne effluents.
We are committed to providing information on environmental performance. Reports with data from the Chalk River Laboratories site and the Nuclear Power Demonstration (NPD) site, near Rolphton, can be found on cnl.ca:
http://www.cnl.ca/performance-reporting
> 400 locations monitored
> 25,000 analyses performed annually


Designing a monitoring program
IDENTIFY POTENTIAL ENVIRONMENTAL RISK
DETERMINE NEED TO MONITOR
DESIGN PROGRAM
MONITOR
Environmental risk assessment
Human health risk assessment
Environmental assessment (EA) under the CEAA 2012
Other
Is there a potential risk?
Is there a regulatory or licensing need?
Are stakeholders concerned?
In order to confirm predictions for EA
Compartments to monitor
Locations to monitor
Parameters to monitor
Frequency of monitoring
Sampling and analysis
Quality control
Quality assurance
Interpret results
Compare to limits
Prepare reports
CNL designs the monitoring programs in compliance with Canadian standards.
The Canadian Standards Association's (CSA) criteria provide guidance on derived release limits, environmental risk assessment (ERA) and environmental, effluent and groundwater monitoring and protection programs.


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
NPD Closure Project
• Environmental Assessment (includes, Environmental Impact Statement, Stakeholder and Aboriginal Engagement)
• Performance Assessment
• Environmental Assessment (includes, Environmental Impact Statement, Stakeholder Engagement and Aboriginal Engagement)
• Modification to the Waste Management Areas Facility Authorization (WMA FA) under Site Licence
• Safety Analysis
• 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.

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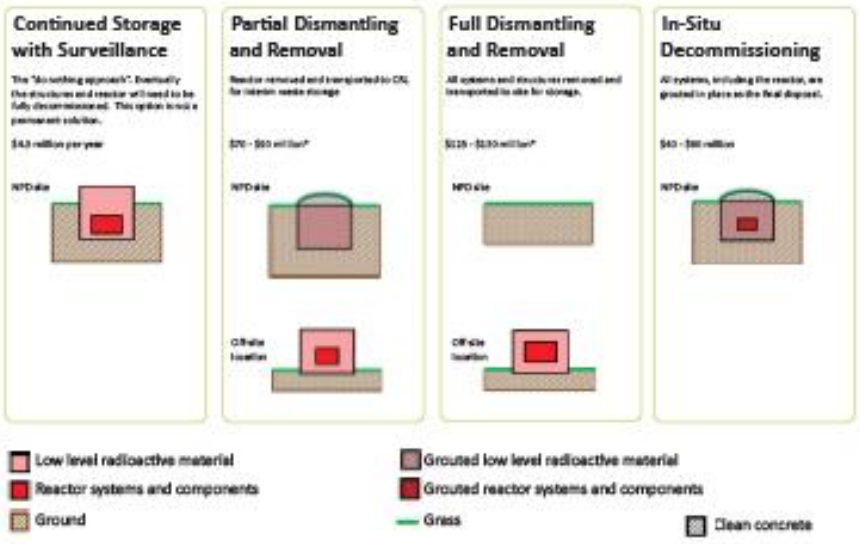
Why in-situ decommissioning?

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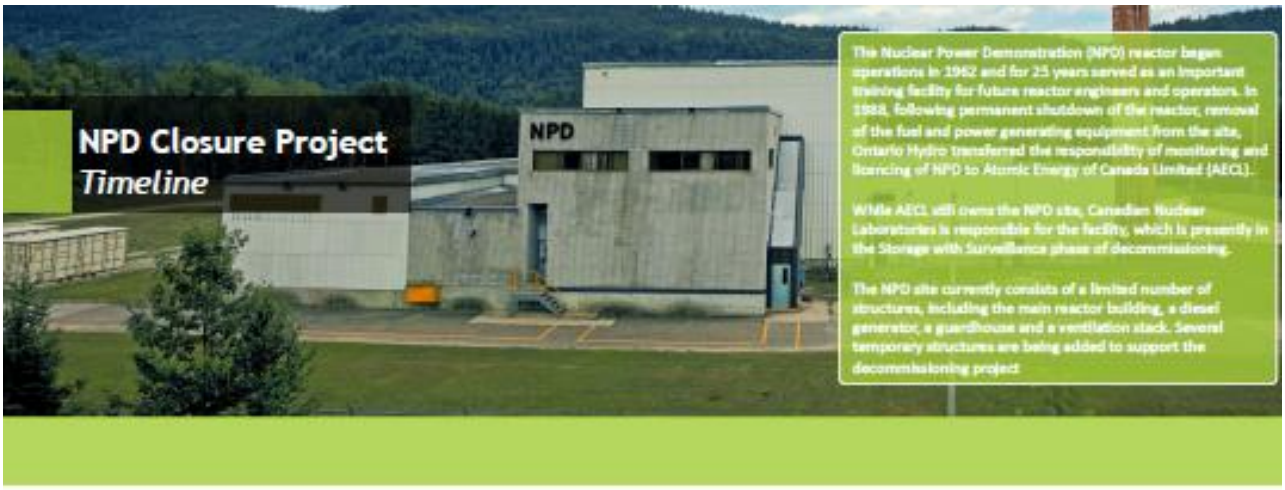
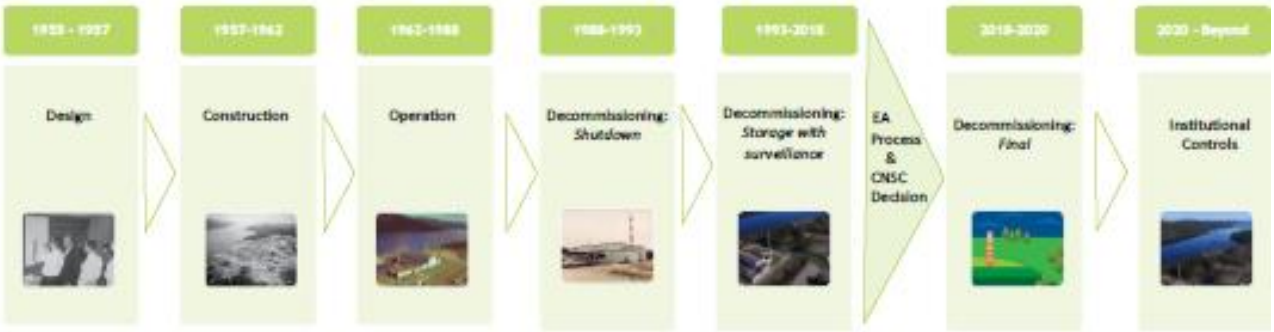
Boundary of NPD Property
Source Data
Ontario Ministry of Natural Resources
County of Renfrew
AECL
AECL Property
NPD
Parking
Highway
Secondary Road
Rapides des Joachims, QC
Ottawa River
Province of Quebec
NPD
Hwy 17
NPD Area Map
Environmental Footprint
<1% of total area
Canadian Nuclear Laboratories
Laboratoires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


1953 - 1957
1957-1962
1962-1988
1988-1993
1993-2018
2018-2020
2020 - Beyond
Design
Construction
Operation
Decommissioning: Shutdown
Decommissioning: Storage with surveillance
EA Process & CNSC Decision
Decommissioning: Final
Institutional Controls

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:

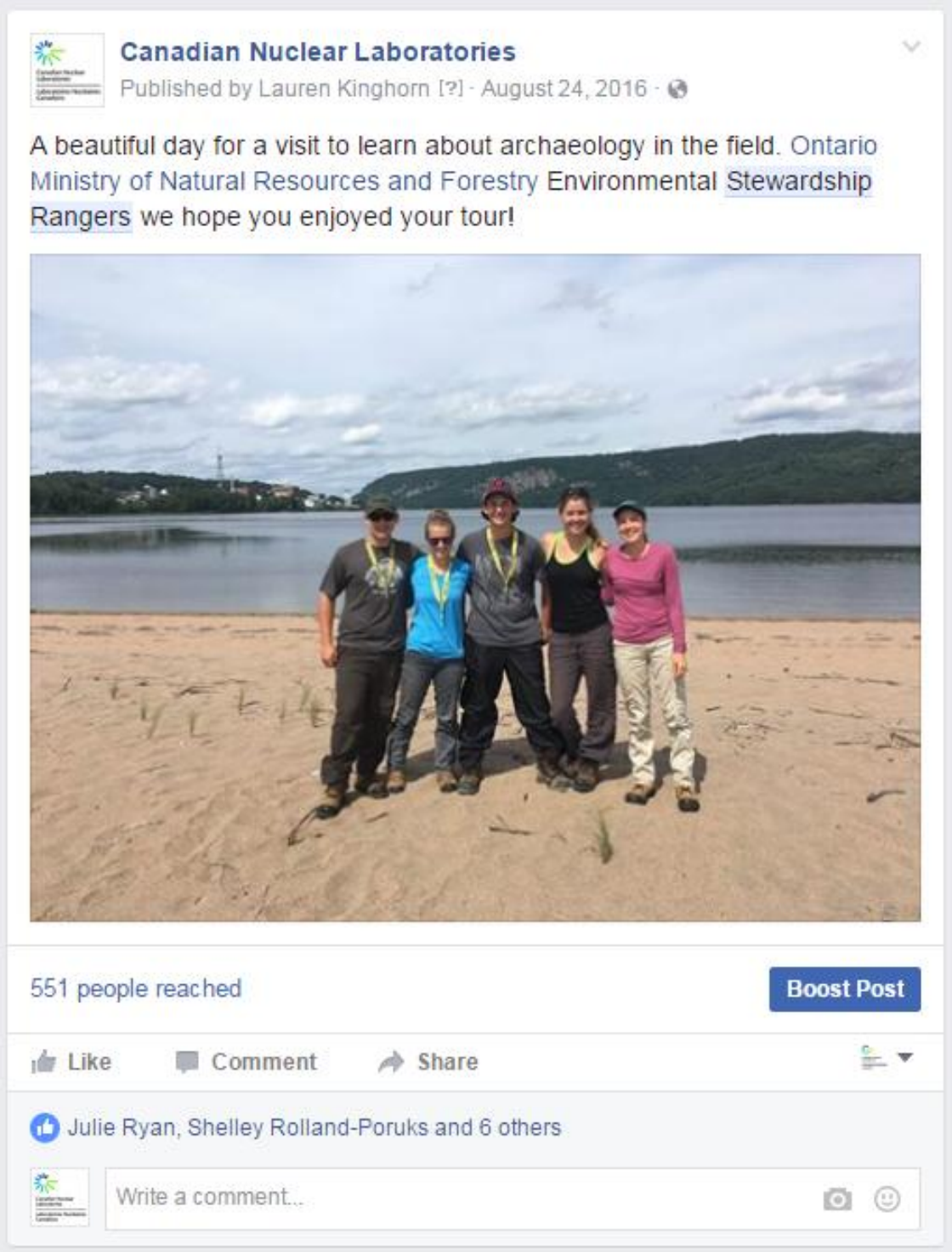
http://birdscanada.org/volunteer/ai/chsw/

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.

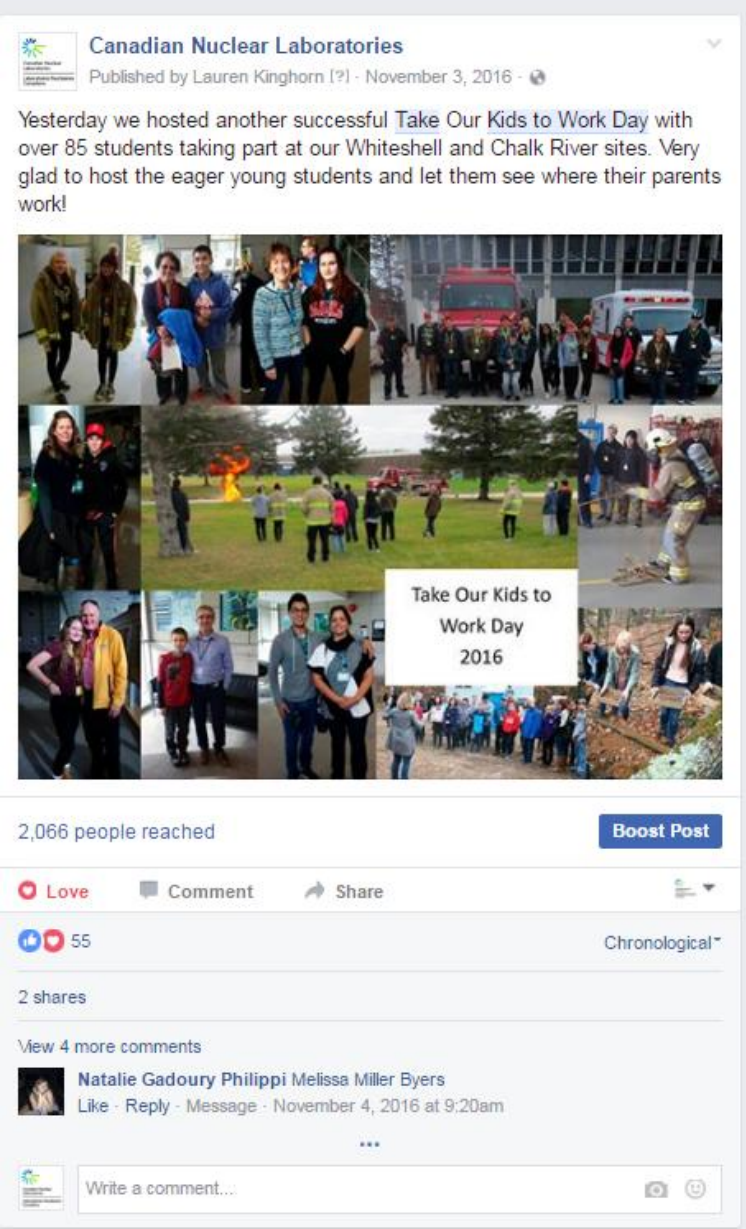

What do you think?
NPD Closure Project
Valued components (VCs) are environmental features that may be affected by a project and that have been identified to be of concern by:
• the proponent
• government agencies
• Indigenous peoples
• the public
The value of a component not only relates to its role in the ecosystem, but also to the value people place on it. For example, it may have been identified as having scientific, social, cultural, economic, historical, archaeological or aesthetic importance.
VC selection is based on the potential project-environment interactions in various environmental components.
Contact us!
For more information or to share your thoughts on the Valued Components related to this project, contact us:
Email: communications@cnl.ca
Telephone: 1-800-364-6989
www.cnl.ca/NPD
Twitter: @CNL_LNC
Facebook: @CanadianNuclearLaboratories
Valued Components Identified for the NPD Closure Project
Land Use
• Land use and planning
• Landscape and visual setting
• Highway 17 traffic
Terrestrial Biodiversity
• Bats
• Chimney Swift
• Vegetation community
• Bald eagle
• Shrew
• Soil invertebrates
• Muskrat
• Mallard
• Meadow Vole
Socio-economic
• Fishing
• Residents in proximity of NPD use and enjoyment of the property
• Deer
• Ruffed grouse
• Black bear
Aquatic
• Fish
• Zooplankton
• Ottawa River
• Benthic invertebrates
Human Health
• Worker health
• Public health
What do you value?
Let us know


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 watersheds to 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 Controls: 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 Controls: This period of time follows the expected cessation of institutional controls. This timeframe includes all long-term impacts of the facility.

Appendix U –Stewardship Rangers



Appendix V – Take Your Kids to Work Day



TAKE OUR KIDS TO WORK DAY – 2015 Nov 2 (Wed)

Time	Details	Notes
700 – 830	Arrive at Chalk River Laboratories Gate	Registration will be at B700 Rm 201. Head directly upstairs
900-945	B432 Auditorium: CNL Overview / Young Worker Safety	Parents are welcome to attend.

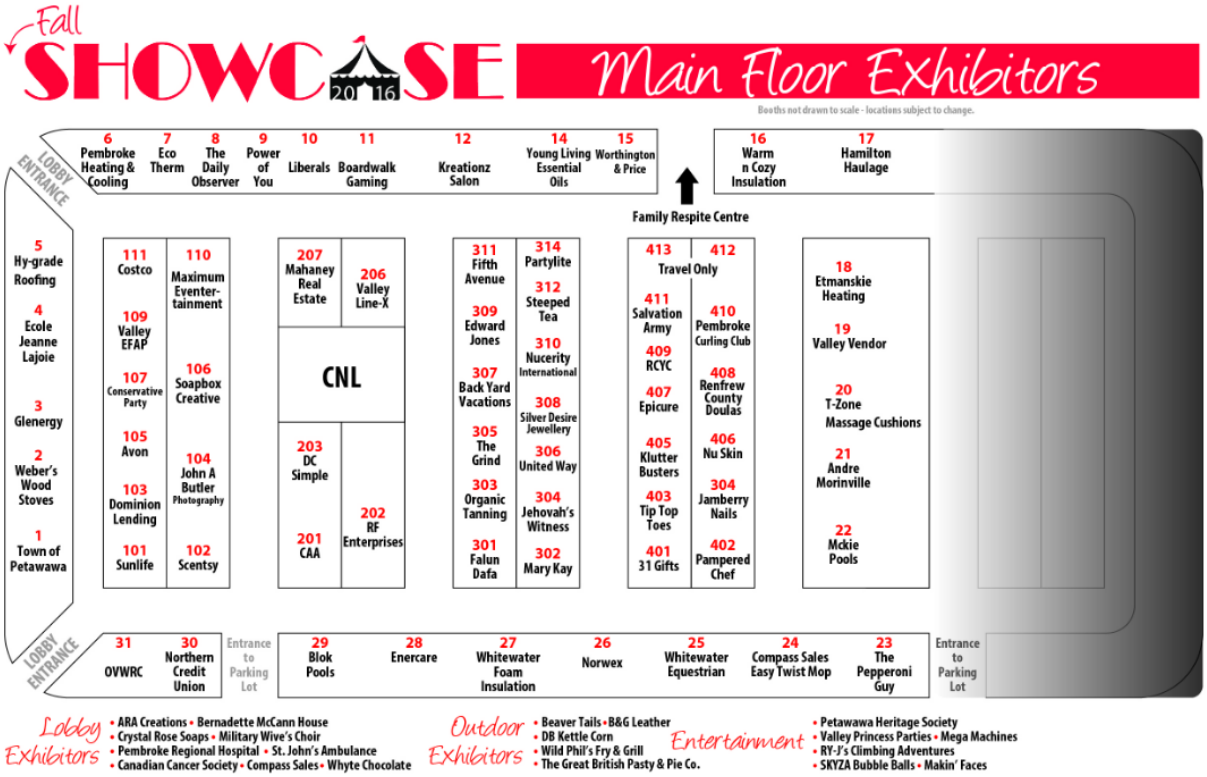
Unless otherwise indicated, please meet the hosts at the building main entrances.

Time	A	B	C	D
1000-1045	Fire & Emergency Services B700 Bays - Gary Pardy	CA-2 Tour Depart Meet at B701 from CA1 Side Jen Gardner	Hydrogen B137 Side Entrance	Glass Blowing B137 – Side Door Peter Moss
1100-1145	Glass Blowing B137 – Side Door Peter Moss	Fire & Emergency Services B700 Bays - Gary Pardy	CA-2 Tour Depart Meet at B701 from CA1 Side Jen Gardner	Hydrogen B137 Side Entrance
LUNCH – B500 Cafeteria. *Lunch will be provided for one parental escort /student.*				
1300-1345	Reactor Safety B137 Side Door Nithy	Glass Blowing B137 – Side Door Peter Moss	Fire & Emergency Services B700 Bays - Gary Pardy	CA-2 Tour Depart Meet at B701 from CA1 Side M. Thompson
1400-1445	CA-2 Tour Depart Meet at B701 from CA1 Side M. Thompson	Reactor Safety B137 Side Door Nithy	Glass Blowing B137 – Side Door Peter Moss	Fire & Emergency Services B700 Bays - Gary Pardy
1515	Heritage Program – **Tour departs from B700 Rm 201.** Parents are encouraged to drive personal vehicles, but a bus will also be provided if needed.			
1630	B700 Foyer / B700 Rm 201 – Gathering place to meet students and depart site.			
Depart Site				

Time	E	F	G	H
1000-1045	Manufacturing Services B412 Jerome Afelskie	Emergency Preparedness B114 Main Entrance Matt Pardy	Environmental Technologies Dan Festarini B513 Main Entrance (Lab 13)	Applied Physics B600 Rm 141 Martin Thompson
1100-1145	Applied Physics B600 Rm 141 Martin Thompson	Manufacturing Services B412 Jerome Afelskie	Emergency Preparedness B114 Main Entrance Matt Pardy	Environmental Technologies Dan Festarini B513 Main Entrance (Lab 13)
LUNCH – B500 Cafeteria. *Lunch will be provided for one parental escort /student.*				
1300-1345	Mech. Equipment Dvlp B456 C Entrance	Applied Physics B600 Rm 141 Martin Thompson	Manufacturing Services B412 Jerome Afelskie	Emergency Preparedness B114 Main Entrance Matt Pardy

1400-1445	Emergency Preparedness B114 Main Entrance Matt Pardy	Mech. Equipment Dvlp B456 C Entrance	Applied Physics B600 Rm 141 Martin Thompson	Manufacturing Services B412 Jerome Afelskie
1515	Heritage Program – **Tour departs from B700 Rm 201.** Parents are encouraged to drive personal vehicles, but a bus will also be provided if needed.			
1630	B700 Foyer / B700 Rm 201 – Gathering place to meet students and depart site.			
Depart Site.				

Appendix W - Petawawa Showcase



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

Appendix X – Letter to NPD Neighbours

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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

Appendix Y – 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

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Appendix Z – Letter to the OFWCA

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

UNRESTRICTED/ILLIMITÉE

2016 December 16

File: *140-00170-021-000*

Ms. Johanna Echlin
By E-mail j.echlin@sympatico.ca

Dear Ms Echlin

I have attached a document to this letter that contains answers to the written questions as submitted to CNL at the most recent Public Information Session held in Sheenboro.

We have provided responses that are as complete as possible at this stage in the project. As the project team makes progress, these responses could be updated, or contain further details.

As we send these responses to you, we also plan to post a similar set of questions and answers on our Near Surface Disposal Facility (NSDF) web page at http://www.cnl.ca/en/home/environmental-stewardship/nsdf/default. I want to thank you for sharing your questions on the project and engaging with us, as this helps us understand stakeholders' information needs.

I would also like to extend an invitation to meet with you in person so that we may discuss this material and provide you opportunity to seek clarification or ask additional questions. I recognize that some of our answers contain technical detail, and we would be happy to provide further explanation as needed. Such a meeting could be held at a location and time convenient to the OFWCA working group.

I look forward to hearing from you.

Thank you for your patience,

Patrick Quinn
Director, Corporate Communications

cc

Craig Robinson - OFWCA	William Amos, Member of Parliament, Pontiac	Mark Lesinski, President and CEO, CNL
Susan Donlan - OFWCA	Mayor Doris Ranger, Sheenboro	Jim Buckley, NSDF Project Lead
Joanne McCann - OFWCA	Mayor Jim Gibson, Rapides des Joachims	

Page **1** of **16**

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Question	Response
1. How is this new method NSDF going to protect the river and the thousands of people living on the river from leaks?	CNL is committed to making sure our operations have a low impact on the environment, and we are continually researching ways to reduce the impact as much as possible. This is proven technology. Near surface disposal solutions have been successfully built and safely operated around the world for applications that are similar to that proposed by CNL. The NSDF design will include an Engineered Containment Mound which will isolate the waste from the environment. Should water (in the form of rain, snow or other precipitation) contact the waste, it will be collected and treated at the Waste Water Treatment Plant that will be built adjacent to the Engineered Containment Mound. Storm water management ponds will also be used to divert precipitation away from the waste to reduce the volume of water that requires treatment. Within the Waste Water Treatment Plant, radiological and non-radiological contaminants will be removed from the collected water using proven technologies, such as filtration and ion exchange. Following treatment, water will be checked to confirm that it meets the regulatory requirements for discharge. There will be holding tank provisions to sample and test the water so that there is confidence in the quality of the discharge before it is made. Any water that doesn't meet the standards will be re-routed for further processing. Extensive monitoring will be conducted to assure and demonstrate the new systems perform as expected, these include: • CNL's Environmental Protection Program maintains a comprehensive effluent and environmental monitoring program of more than 400 sampling locations with approximately 30,000 analyses performed each year at our Chalk River Laboratories. • CNL's Groundwater Monitoring Program will be expanded to cover the NSDF site. Groundwater monitoring will provide further assurance the leachate collection system is functioning and that there are no leaks to groundwater from the Engineered Containment Mound.

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UNRESTRICTED/ILLIMITÉE

Question	Response
2. We learned on Oct. 19, 2016 from the CNSC that CNL's NSDF proposal has been amended to include intermediate waste.	That is correct. In response to questions from the Canadian Nuclear Safety Commission, CNL determined that small but important revisions to the Project Description were warranted as clarification. While most of the waste destined for the NSDF is low level radioactive waste, CNL's proposal calls for approximately 1% of the waste to be intermediate level waste. An example of intermediate level waste would be waste with a concentration of short-lived radionuclideswhich at present require shielding for safe handling and placement making it classified as intermediate level waste in 100 years is decayed to low-level waste and will continue to decay to even lower activity levels. The proposal also calls for a further estimated 1% to be mixed waste. That is, hazardous waste that is contaminated with radioactivity. Examples include some soils contaminated with arsenic and/or mercury and polychlorinated biphenyl (PCB) materials in light ballasts). All waste will meet the Waste Acceptance Criteria for the NSDF and be demonstrated to be safe. Waste Acceptance Criteria are currently being developed.
3. For years, we have been told that leaks into the Ottawa River are sufficiently diluted by the river and do not pose a threat to people living down stream from Chalk River. This is hard to believe.	There have been no exceedances of effluent from Chalk River Laboratories' operations. The Laboratories' effluents do not pose a threat and have negligible impact to the public or to the environment. CNL is committed to both studying and continuously reducing the impact of our operations on the environment. The Environmental Protection Program maintains a comprehensive effluent and environmental monitoring program of more than 400 sampling locations with approximately 30,000 analyses performed each year at Chalk River Laboratories. Monitoring involves all releases to the Ottawa River including those from groundwater plumes or from our various outfalls. In addition, water is monitored at the nearest water treatment system, in Petawawa, and most contaminants are below detection at that location. The presence of tritium over the last few years has been well below acceptable limits: the average concentrations in the river water are <4 Bq/l compared to the drinking water limit of 7000 Bq/l. Monitoring is regularly conducted on various media, including groundwater, ambient air, surface water, vegetation, soil and sediments, and game animals, at various locations on and off the site. Regular updates on CNL's Environmental Performance reporting can be found at: http://www.cnl.ca/site/media/Parent/CRL_Performance_Eng.pdf

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Question	Response
4. Any environmental assessment must examine anticipated leaks.	The project will only be permitted to proceed if it satisfies the strict requirements set out by Canada's nuclear regulator, the Canadian Nuclear Safety Commission. These requirements include Environmental Assessment and licensing approvals. In support of the Environmental Assessment approval, CNL is preparing an Environmental Impact Statement that assesses actual and potential impacts of the project on the natural and socio-economic environments. Should adverse effects be identified, CNL must demonstrate how these can be mitigated satisfactorily. The Environmental Impact Statement also analyses severe abnormal situations (e.g. glaciation, a seismic event much larger than the very conservative design basis earthquake) that could give rise to the failure of NSDF, and demonstrates that under these circumstances, people and the environment will be protected.
5. What materials specifically other than radioactive waste will be buried on this NSDF site? • PCBs? • Mercury? • Arsenic? (Apparently, arsenic was shipped to Chalk River in the 1970s.)	The Near Surface Disposal Facility (NSDF) proposal is to accept waste that arises from: a. Building decommissioning and demolition – this will be the largest source of waste b. Remediation of impacted soils and related structures c. Operational waste and legacy waste currently in interim storage d. Commercial sourced inventories, such as the healthcare field and universities e. Waste from the enduring laboratory operations and clean up missions Within the 1,000,000-cubic metre total volume of the Engineered Containment Mound, approximately 1% of the waste is expected to be mixed waste; that is, hazardous waste that is contaminated with radioactivity. Examples include some soils contaminated with arsenic and/or mercury and polychlorinated biphenyl (PCB) materials in light ballasts. The Waste Acceptance Criteria will determine the quantities of the materials that are placed in the NSDF. As noted in the response to question 1 above, the Engineered Containment Mound will isolate the waste from the environment. Should water (in the form of rain, snow or other precipitation) contact the waste, it will be collected and treated at the Waste Water Treatment Plant.

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Question	Response
6. Is the NSDF site suitable to retain such toxic materials long term? a. What studies have been done? b. What about liquids? How would they be retained so they do not run off into the river?	Yes the NSDF site is suitable to retain materials long term, the design life of the NSDF is 550 years. This is proven technology. Near surface disposal solutions have been successfully built and safely operated around the world for applications that are similar to that proposed by CNL. **a. Studies** In terms of studies, the design is developed through an iterative approach that considers: 1. Waste Inventory – studies of the volume and properties of the hazardous waste that must be managed by the design. 2. Regulations, Engineering Codes and Standards – robust analyses of the technical and safety requirements to be met by the design. 3. Safety Analysis – assessment of the protection for workers, the public and the environment that is afforded by the facility design under plausible operational events, natural disasters, and human-related events. The Safety Analysis Report will be submitted to Canadian Nuclear Safety Commission in support of CNL's application for licensing approval. 4. Performance Assessment – evaluation of the impact to humans and biota under normal and abnormal conditions that are plausible during the NSDF operational period (through 2070) and following closure of the mound throughout its design life and beyond (for thousands of years). The conditions include climate change impacts, severe erosion due to glaciation, beyond design-basis seismic events and human intrusion scenarios. The Performance Assessment will be incorporated into the Environmental Impact Statement to be submitted to the Canadian Nuclear Safety Commission in support of CNL's application for environmental assessment approval. **b. Liquids** The waste to be put into the NSDF will contain no free liquids. Water (e.g. precipitation) that makes contact with the waste or that is generated through operational activities, such as personnel showers and the truck wash facility, will be contained, collected and treated in the Waste Water Treatment Plant.

Question	Response
7. What studies have been done to show that the materials (both natural and synthetic) that will be used in the NSDF liner system are capable of retaining radioactive waste and other toxic/hazardous material? a. What are their conclusions or what studies are presently being done?	The NSDF design will be developed based on the codes and standards set by the International Atomic Energy Agency, federal regulators and provincial authorities. It will build on the large base of experience for similar facilities that exists in the US, Europe and Canada. Codes and standards are themselves underpinned by technical studies, including those that pertain to the base liner system of the Engineered Containment Mound. The Engineered Containment Mound will feature a double, composite base liner system and a cover system, both of which are comprised multiple engineered barriers that work together as a system to encapsulate the waste and isolate it from the environment. Both natural and synthetic (man-made) materials will be employed in the construction of the base liner and cover systems. The design of the Engineered Containment Mound will be underpinned by several analyses that are underway, including: • Geomembrane liner analysis (including tension caused by thermal conductivity/expansion, puncture resistance, potential stress cracking, leachate compatibility, radiation resistance and mechanical degradation). • Drainage layer analyses (of geotextile fabric, gravel, etc.) • Base liner and cover system freeze-thaw analysis • Bearing capacity and settlement analysis • Slope stability analysis • Seismic analysis The detailed design for the NSDF is on track to be completed by the end of March 2017. CNL has engaged a highly-experienced engineering consulting firm to prepare the design. This firm includes experts who specialize in liner systems. CNL will independently engage third parties to review the designs produced by the consulting firm to ensure that all the analysis underpinning the design are robust and in compliance with codes and standards. In the spring 2017 timeframe, the Canadian Nuclear Safety Commission will independently review the NSDF design to ensure all regulatory requirements are met.

Question	Response
8. Can the NSDF sustain a major earthquake? b. Chalk River is situated on a major fracture zone and could experience earthquakes of 6 on the Richter scale. And if an earthquake did create a leak in the liner system – what would CNL do?	The NSDF will be designed to meet all applicable international, national and provincial codes and standards. All projects undertaken by CNL must consider a wide variety of site characteristics, and the surrounding environment that may influence the design and operation of the facilities located at Chalk River Laboratories. This includes consideration of a seismic event or earthquake. The NSDF at Chalk River Laboratories is being designed to resist an earthquake with a magnitude of 6.0 on the Richter scale. This will ensure the facility remains intact and that hazards to workers, the public and the environment are contained. The NSDF is located in a very stable and an inactive seismic zone where the 6.0 or greater earthquake has not occurred for 10,000 years. Earthquakes of a magnitude of 6.0 on the Richter scale are at the low-end US Geological Survey Strong category of earthquakes. Earthquakes in the Strong category can cause damage to a moderate number of well-built structures in populated areas. Earthquake-resistant structures survive with slight to moderate damage. A comprehensive assessment of the subsurface conditions has been undertaken and is being used to inform the design of the NSDF. Samples of soil, bedrock, and groundwater have been taken and several geotechnical and hydrogeological tests conducted to confirm that the area is suitable for the NSDF.
9. What about sabotage – terrorist activity – what could happen and what is being done to prevent attack?	The General Nuclear Safety and Control Regulations and Nuclear Security Regulations prescribe specific security requirements at CRL. These security requirements are made mandatory under the CNL Physical Security Program and specified in the CRL Site Licence issued by the Canadian Nuclear Safety Commission. As a licensee, CNL must ensure that required security measures are in place to prevent act such acts. Prevention measures include and are not limited to security risk assessment, facility fencing, area intrusion detection, facility surveillance, security response presence and forces.

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Question	Response
10. What about a flood? (if a bomb blew up a dam or the damn collapsed for some other reason and there was a major flood – what would happen to this site if covered by river water?)	As mentioned above in question 8, all projects of this nature undertaken by Canadian Nuclear Laboratories must consider a wide variety of site characteristics, and the surrounding environment that may influence the design and operation of its facilities. This includes consideration of flooding due to the combination of extreme precipitation with dam failure. Using Official Emergency Planning data, it has been estimated that should the two upstream dams fail due to precipitation or other complex events (e.g. seismic), it would require buildings to be at least 130.1 metres above sea level to avoid damage. This means that facilities located at a higher elevation will not be subject to flooding caused by rising river water levels in the event of large scale precipitation or dam failures. Given that the base of the proposed NSDF is located at approximately 160 metres above sea level, it is unlikely that flooding from the scenario involving the failure of two dams will compromise the facility.

Question	Response
11. What can you tell us about tritium and tritium levels in the water and how it is affecting the water, the air, vegetation, wildlife, and livestock in the communities down river?	Monitoring is conducted through the routine collection and analysis of environmental samples from numerous locations at the Chalk River site and in surrounding communities in order to measure the concentrations of contaminants. Monitoring includes ambient air, food (e.g. milk, fish, garden produce, large game, and farm animals), groundwater, Ottawa River water, and other surface waters both on and off site. During the 2015 calendar year, nearly ten thousand measurements of radioactive and non-radioactive contaminants were completed on samples collected from several hundred locations at and around Chalk River Laboratories. The data gathered confirm that doses to the public from CNL operations are well below regulatory limits and protective of human health. Monitoring in 2015 confirmed stability in tritium concentrations in the Ottawa River near Chalk River Laboratories with levels near or below the detection limit of ~3 Bq/L in Petawawa and Pembroke. Tritium concentrations found in river water at all monitoring locations were well below the Canadian drinking water guideline of 7,000 Bq/L. Tritium concentration levels in air on the CRL site are elevated above natural background levels due to NRU Reactor emissions with maximum annual average concentration of approximately 16 Bq/cubic metre. Concentrations drop with distance from the NRU stack to near background levels at CRL site boundaries. Tritium concentrations in air at off-site locations are indistinguishable from background levels in Ontario which range from 0.09 to 0.26 Bq/cubic metre. Tritium concentrations in garden produce are highest at Balmer's Bay along the Chalk River Laboratories' northern site boundary with a concentration of approximately 15.8 Bq/kg in 2015. Tritium concentration in produce decrease with distance from CRL. Tritium concentration in garden produce at Sheenboro in 2015 was ~3 Bq/kg, nearing background levels. Given this, operations at Chalk River Laboratories have little to no impact on garden produce in the Sheenboro area. Tritium concentrations in livestock and wildlife harvested in areas greater than 50 km from the CRL site have ranged from 1 to 11 Bq/kg over the past 5 years. Tritium concentrations in flesh from locally raised livestock near Sheenboro were 7 Bq/kg in 2015, within the range of background concentrations. Detailed information can be found in CNL's Annual Safety Report available CNL's website under the Performance Reporting Section. This annual report is issued for the calendar year; the online version is for the year 2015. (http://www.cnl.ca/site/media/Parent/CRL-509243-ASR-2015_Eng.pdf)

Question	Response
12. What are the plans?	The NSDF is being designed to safely manage one million cubic metres (1,000,000 m^3) of waste that will be emplaced in the Engineered Containment Mound over a 50-year period. All waste streams will be in solid form (i.e. no free liquids).This will include CNL wastes from legacy operations, facility decommissioning, environmental remediation and site operations. CNL will also use the facility to accommodate small amounts of waste from Canadian hospitals, universities, research entities and industry clients; this activity is aligned with existing commercial arrangements that have been in effect for decades. CNL intends to develop the NSDF in two main phases. In Phase 1, the following work will be done: • Preparation of the site, • Construction of the Engineered Containment Mound to create initial waste capacity of 525,000 cubic metres. • Construction of the Waste Water Treatment Plant, Support Facilities (e.g. office, change room, weigh scales, truck wash facility) and Infrastructure (e.g. fences, roads, services, surface water management ponds and lay-down areas). • Operation and maintenance of the NSDF for 20-25 years, with a focus on receiving and emplacing waste in the Engineered Containment Mound in cells. Cells are established within the Engineered Containment Mound, one at a time, and when filled they will be covered with a temporary cap, and then a final cover system. In Phase 2, the capacity of the Engineered Containment Mound will be expanded to 1,000,000 cubic metres. To sustain the waste disposal operation without interruption, the Phase 2 expansion will be initiated within approximately 2-5 years of when it is determined the Phase 1 Engineered Containment Mound is at design capacity. It is projected that following Phase 2 development the NSDF will remain in operation through 2070. As cells are filled, they will be temporarily capped to limit infiltration of precipitation. A final cover system will be put in place when all the cells are filled. In the 30 years following the end of operations of the NSDF (i.e. 2071-2100) the facility will be under active institutional control. This work includes monitoring and inspection of Engineered Containment Mound performance and maintenance as required. The leachate collection system will continue to collect and route leachate to the Waste Water Treatment Plant until the Engineered Containment Mound has drained itself of moisture. Following this, the Waste Water Treatment Plant will be decommissioned. Obsolete support facilities such as the truck wash station will also be removed after closure of the Engineered Containment Mound. Inactive or passive institutional control will continue following the end of active institutional control, from the period 2100 – 2400.

Question	Response
13. Is it correct that the site could host up to 1 million cubic meters of waste on 15 hectares of land?	The NSDF engineered containment mound is being designed to accommodate one million cubic metres of waste. The NSDF building site measures slightly more than 33 hectares. Based on the current footprint, the engineered containment mound (ECM) will measure approximately 16 ha, including the waste disposal area and the surrounding berm that provides structural stability. The part of the ECM that holds and encapsulates the waste will measure ~10.7 hectares. The total air space within the ECM will be approximately 1,400,000 cubic metres. The mound will vary in height from 20 to 25 metres, including the base liner and cover systems, each of which measures approximately 2 metres. All the above measurements are based on the current design proposal.
14. Is CNL contemplating bringing waste from other areas in the country or other countries to this site? From where? (Rolphton, Whiteshell, Kincardine, Port Hope? And/or other sites?	The current proposal is for the NSDF to accept suitable wastes from CNL operations, past, present and future, the vast majority of which is located at the Chalk River Laboratories. Wastes to be disposed in the NSDF include waste to be generated from the decommissioning of CNL buildings and structures, and the remediation of contaminated lands. This proposal also notes that the NSDF may accept waste that is generated from other CNL decommissioning projects: the Nuclear Power Demonstration and Whiteshell Laboratories Closure Projects. The Nuclear Power Demonstration Project is approximately 30 km northwest of CRL while the Whiteshell Project is situated in eastern Manitoba. Both projects are included in CNL's decommissioning and waste management obligations and could generate 50,000 cubic metres of waste for the NSDF, which would represent a small fraction of the total volume. CNL has and will continue to accept waste on a commercial basis from small producers, for example health and research institutions, as it has been doing for decades. The NSDF is being designed for Canadian waste only. As noted above, waste from the NPD and Whiteshell Laboratories Closure Projects are under consideration, the NSDF could potentially accept waste from future decommissioning activities undertaken by CNL to address other liabilities owned by Atomic Energy of Canada Limited, for example Port Hope after its long-term waste management facilities are closed, Gentilly 1, or Douglas Point. We would expect overall volumes to be low and represent a small fraction of the total volume of the NSDF. At this time, projects are in the proposal stage, so there is no final decision on this issue.

Question	Response
15. If there are plans to bring radioactive waste from other areas how will this waste be transported?	All transportation will be subject to Canadian Nuclear Safety Commission and Transport Canada regulations. Material from Whiteshell will be transported to Chalk River by road, railway, or a combination of both. As part of the planning process, the packaging and routes will be considered based on regulatory requirements. The shipments are expected to begin in late 2019 and continue for up to 6 years. This schedule coincides with the decommissioning schedule of the Whiteshell Laboratories.
16. What safeguards would be in place for these transports against accident or sabotage?	As part of the approval process for obtaining a license to transport nuclear materials, the Canadian Nuclear Safety Commission requires a written Transportation Security Plan. The primary purpose of the transportation security plan is to assure that the nuclear material to be transported will receive adequate physical protection against any threats that may arise during its transport.

Question	Response
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Question	Response
17. What is happening to the waste from HEU?	Under the Global Threat Reduction Initiative, the United States agreed to accept our materials in liquid form to allow that country to reprocess them and reuse the resulting materials to fuel power reactors in the United States. Canada does not have the technology nor the facilities to undertake this reprocessing. Shipping Target Residue Material (i.e. liquid) HEU provides a safe, secure, permanent and timely solution for Canada's HEU inventory. Removing this material and any associated proliferation risks from this country eliminates the burden of long-term management for Canada and Canadian taxpayers. Another option, solidification/down blending, would result in the requirement for long-term management of the produced radioactive material in Canada, whereas repatriation of the highly-enriched uranium materials contributes to the global efforts to consolidate highly-enriched uranium inventories in fewer locations around the world. Transportation of nuclear material can only be carried out under stringent oversight by regulatory agencies in both Canada and the US to be granted the appropriate certifications and licenses. The material will be transported in specifically designed packages (casks) and certified by both the Canadian Nuclear Safety Commission and in this circumstance its counterpart, the U.S. Nuclear Regulatory Commission and the U.S. Department of Transportation in accordance with international safety requirements established by the International Atomic Energy Agency. The Canadian Nuclear Safety Commission provides oversight to ensure that the entire project will be completed safely, without posing increased risks to the health, safety or security of Canadians or the environment. Radioactive material has been transported safely nationally and internationally for over 50 years by road, rail, water and air without a single radiological incident. Transportation is a highly-regulated activity that must meet the stringent requirements of both Transport Canada and Canadian Nuclear Safety Commission before being approved.

Question	Response
18. What other projects will be going on at Chalk River besides NSDF? We understand new facilities will be built.	The Government of Canada has committed to invest $800 million for new infrastructure facilities at the Chalk River Laboratories over the next five years. This funding will enable a complete transformation of the Chalk River site through renewed infrastructure and the construction of new science facilities and supporting infrastructure. This investment will lead to the continued revitalization of the Chalk River Site. Priorities for 2016/17 include the completion of the new Harriet Brooks Laboratory Complex, work to progress B215 Tritium Lab and the installation of domestic water, natural gas and sanitary sewage treatments systems at the Chalk River site. Other facilities under consideration for future development include: • Office Facility (Occupancy 400 plus) • Maintenance Facility • Logistics Building (Warehouse – Shipping and Receiving) • Advance Nuclear Materials Research Centre CNL will keep communities up to date on project and revitalization activities through updates to CNL.ca, social media, and announcements.
a. Will radioactive waste material be sold to commercial enterprises?	**a.** With respect to the question on commercial activities, no, CNL does not sell waste material to anyone. However, for decades we have been selling storage services for radioactive waste to clients such as hospitals, universities, research entities and industry clients.
19. Will these new facilities be generating more nuclear waste?	Not all facilities to be built at the Chalk River site will produce waste that is nuclear in nature. In fact, in 2015, over 83% or 8,518 cubic metres of the waste produced on the site was "clean" (i.e. not radioactive) waste, and approximately 45% of that was recycled. So most of the waste produced through the operation of CNL laboratories can be managed through the everyday waste streams, i.e. Disposal in public landfills and recycling. It is too early to determine exact amounts of material that may arise from future operations of new facilities, however, any contribution has been factored into the planning for the NSDF. The NSDF proposal will provide the permanent disposal solution for the vast majority of the waste that CNL manages on behalf of Atomic Energy of Canada Limited, the vast majority of which originates at the Chalk River Laboratories as a result of past, current and future scientific activities.

Question	Response
20. Is it true that CNL is still considering a DGR (deep geological repository) at Chalk River?	There is no plan for a Geologic Waste Management Facility or DGR at Chalk River Laboratories at this time. Members of the OFWCA may recall an update provided to Craig Robinson in 2014 on the subject of a Geologic Waste Management Facility. At that time, CNL (then AECL) was completing a technical study to assess the feasibility of using the Chalk River site for a geological repository to safely manage Intermediate Level Waste. The feasibility studies were concluded and no further activities in this regard are being pursued. Intermediate Level Waste, that will not meet the Waste Acceptance Criteria for the NSDF, will be stored at Chalk River Laboratories until such time that a disposal method is developed.
21. What can you tell us about a natural gas pipeline (Enbridge) to be built to service CNL at Chalk River? What will happen to our river if this pipeline leaks into the Ottawa.	This initiative is now well underway, and will allow the Chalk River site to transition from oil to natural gas, thereby significantly reducing green house gas emissions and associated needs for the transport of oil to site. (The estimated GHG reduction at completion of project is 11000 tonnes.) The pipeline serving CNL's Chalk River site originates at the Enbridge Chalk River Gate Station located at 30855 Highway 17 and terminates at the Chalk River Laboratories. Prior to installation of the pipeline, Enbridge and its contractor Stantec conducted an Environmental Assessment, and conducted information sessions for local residents. Installation of the distribution line is complete and connection to various facilities will take place over the coming months. The natural gas pipeline does distribute liquid natural gas; it is transported in a gaseous state and in the unlikely event of damage to the pipe contents will vent to the atmosphere.

Question	Response
22. What plans are in place for an emergency?	Being prepared in the event of an emergency is an essential part of being a responsible nuclear license holder. CNL has a comprehensive emergency preparedness program in place, and works with the nuclear regulator, the Canadian Nuclear Safety Commission, municipal, provincial and federal government agencies, first responders and international organizations to always be ready. In the extremely unlikely event of an emergency, the Canadian Nuclear Safety Commission would monitor and evaluate the actions of any nuclear operators involved, provide technical advice and regulatory directives when required, and inform the government and the public on its assessment of the situation. Provincial and municipal agencies will be informed and engaged as appropriate as well. As part of CNL's emergency preparation, it conducts over 50 drills and exercises annually for a variety of natural, technological and human caused hazards. These drills and exercises target all three levels of CNL response: 1. Incident Area – Internal emergency responders such as Fire, Security and Radiation Protection, as well as external first responders such as Fire, Police and EMS. 2. Emergency Operations Centre (EOC)– Coordinating the overall emergency response on-site, providing support and resources to the incident area(s) while also coordinating with various levels of Municipal, Provincial and Federal Government. 3. Crisis Management Team – Providing support to the EOC, coordinating the provision of information to the public, media, government and other internal/external stakeholders, and overseeing the recovery from an event.
23. What fund do you have in place for an eventual emergency?	In the unlikely event of a nuclear incident which causes damage to any third parties, effective Jan 1st 2017 with the enactment of the new Nuclear Liability and Compensation Act (NLCA), CNL will have $1 billion available, through a combination of purchased insurance and indemnification from the Government of Canada, to compensate damaged parties. More information on the Nuclear Liability and Compensation Act can be found on the CNSC's web site by following this link: http://nuclearsafety.gc.ca/eng/acts-and-regulations/acts/nuclear-liability-and-compensation-act.cfm

Appendix A – Media Coverage

member one Early Bird member will be drawn to win a free membership for the following year.

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.

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e grows
on Arm-
an open
Week.

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.

Public consultation needed

The Daily Observer (Pembroke, ON)
Final Opinion, Friday, October 14, 2016, p. A5

Susan Parks

Killaloe - It seems that Renfrew County is once again facing the possibility of storing nuclear waste - a "Near Surface Disposal Facility" is being planned for the Chalk River location.

The nuclear industry creates waste of "low-level", "intermediate-level" and "high-level" classification. Intermediate and high-level wastes stay radioactive and toxic for hundreds of thousands of years. There are theories if how to deal with those wastes but they are only theories. How can we be sure we can safely handle these wastes for a million years?

The facility being planned for Chalk River will take low-level radioactive waste from the Chalk River facilities and other sites including commercial radioactive waste. The planned volume will be 500,000 to 1,000,000 cubic meters.

Also planned is a proposal for a 'Deep Geological Repository" (DGR) for intermediate-level radioactive waste. Other sites in the province as well as uranium mining and processing sites have nuclear waste to be dealt with. It is unclear whether Ontario Power Generation intends to comply with the federal government's request for a detailed study on: 1) actual alternate locations, 2) functionally different alternatives to the DGR, 3) the DGR's environments effects, etc.

The Ottawa River has recently been designated as a Heritage River - celebrating its past in opening up this area by providing a westward route for explorers. It also provides a watershed for this area down though Ottawa to the St.

Lawrence River. On its route are two nuclear facilities - Rolphton and the Canadian Nuclear Laboratories at Chalk River.

A proposal for Rolphton is to encase it in grout and cement and leave it in that state forever. The project description states that radionuclides will be released to the Ottawa River, the quantity still being determined....

Do the residents of Renfrew County want these disposal sites in our area? Do we want nuclear waste from other areas to be transported through and stored in our area? What kind of legacy are we going to leave for future generations to come?

These issues are too important to be implemented without full, informed public consolation.

Susan Parks

Killaloe

Unpublished response to Susan Parks' opinion piece in the Daily Pembroke Observer

In response to Ms. Susan Parks' letter, published October 14, 2016, "Public consultation needed", Canadian Nuclear Laboratories (CNL) wants to advise readers that we are actively involved in engaging the public and encourage your feedback.

CNL is a responsible steward of the environment. Protection of the public and the environment is CNL's top priority in developing these projects.CNL is proposing two projects: the Nuclear Power Demonstration (NPD) Closure Project, near Rolphton, Ontario, and construction of a Near Surface Disposal Facility (NSDF) at Chalk River Laboratories.

Since its shut down in 1988, the NPD reactor, its fuel, heavy water and power generating equipment, were removed from the site. The decision to choose in-situ decommissioning as the preferred approach for the NPD reactor was made after careful consideration of potential environmental effects of all technically and economically feasible options.

The Near Surface Disposal Facility or NSDF will consolidate waste from CNL's historical activities, as well as ongoing and future laboratory operations. It is important to note that by far, most of the waste destined for the NSDF is already on the Chalk River Laboratories site; only a very small fraction of material will come from other CNL facilities and existing commercial activities.

We will only proceed with these projects after approval from Canada's nuclear regulator, the Canadian Nuclear Safety Commission.

As mentioned, CNL has already been actively discussing these projects and seeking feedback from the public. We held well-advertised public information sessions in June and July. And another round of sessions are underway until October 27 (see table below). At these new sessions we will provide updates on our plans and explain new developments for both projects. Engineers and technical specialists involved in the projects, as well as staff from CNL's Environmental Protection Branch, will be available to answer questions.

We encourage the public to come out and join us. We value your questions and comments, and will, as we have in the past, use your feedback to help us plan our projects. Here are the dates, times and locations of this current round of Public Information Session:

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.	**Thursday, October 20** 6:00 p.m. – 8:00 p.m.

Township Hall Stonecliffe	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	

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

In closing, we hope to see you, and hear your comments.

Sincerely,

Patrick Quinn, Director, Corporate Communications, Canadian Nuclear Laboratories

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?"

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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 in ot 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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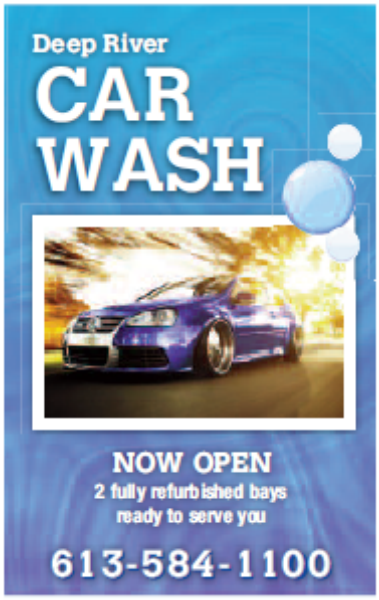

CNL waste projects

CONTINUED FROM PAGE 4

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."

along Banting Drive last Thursday. Barred Owls are also known as "hoot owls" due to their distinctive call.
Photo: Tony McLaughlin

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

CONTINUED FROM PAGE 6

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

CONTINUED FROM PAGE 6

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)

CHRISTMAS

Our annual
Dance will be l
day, Novembe
Chalk River Lic
Music will be
Cryers.
Admission is
lunch will be p

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.ca), 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)