Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

Environmental Assessment Stakeholder Engagement Report – WR-1 In Situ Decommissioning

WLDP-26000-REPT-010

Revision 4

Approved by: Kerry Rod

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K. Rod
WL General Manager

Date

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1. Introduction

This document is Canadian Nuclear Laboratories (CNL) Stakeholder Engagement Report in support of the Environmental Impact Statement (EIS) for the Whiteshell Reactor# 1 (WR-1) Decommissioning Project for the period of July 2017 to September 20, 2022.

The In Situ Disposal (ISD) of WR-1 is a key project identified by CNL as part of the overall integrated Environmental Remediation Management (ERM) approach to safely manage and reduce Atomic Energy of Canada Limited (AECL) and Canada's legacy liabilities.

Stakeholder engagement is a key element of the Environmental Assessment (EA) process and the purpose of this report is to describe past, ongoing and proposed public and stakeholder engagement activities and events in accordance with the Generic Guidelines for the Preparation of an Environmental Impact Statement [1], which states:

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

In addition, the Canadian Nuclear Safety Commission (CNSC) and Canadian Environmental Assessment Agency (CEAA) guidance documents require that the following topics are included as part of public engagement activities:

- Current project information (Guidelines Section 2.3)
- Alternative Means (Reference: https://www.canada.ca/content/dam/iaac-acei/documents/policy-guidance/addressing-purpose-of-alternative-means/addressing-purpose-of-alternative-means-eng.pdf)
- Valued Components (CNSC 2016a Section 5.2.1)
- Spatial and Temporal Boundaries (CNSC 2016a Section 5.2.2)
- Follow-up monitoring program (CNSC 2016a Section 12)

This document summarizes the public engagements activities undertaken for the WR-1 Decommissioning Project from April 2017 to October 2021, which fulfill the requirements above. Future planned engagements as the project proceeds through the Environmental Assessment process are identified at a high level and will be captured in future Stakeholder Engagement Reports.

1.1 Acronyms

AECL	Atomic Energy of Canada Limited
CEAA	Canadian Environmental Assessment Act
CNEA	Canadian National Energy Alliance
CNL	Canadian Nuclear Laboratories
CNSC	Canadian Nuclear Safety Commission
CSR	Comprehensive Study Report
DSAR	Decommissioning Safety Assessment Report
EA	Environmental Assessment
EIS	Environmental Impact Statement
ERA	Environmental Risk Assessment
ERM	Environmental Remediation Management
IAEA	International Atomic Energy Agency
ISD	In situ Disposal
LGD	Local Government District
MLA	Member of the Legislative Assembly
MMF	Manitoba Métis Federation
NGO	Non-government organization
NPD	Nuclear Power Demonstration
PFP	Participant Funding Program
PLC	Public Liaison Committee
RM	Rural Municipality
SME	Subject Matter Expert

SMR	Small Modular Reactor
VC	Valued Component
WL	Whiteshell Laboratories
WLCP	Whiteshell Laboratories Closure Project
WR-1	Whiteshell Reactor #1
WRDF	Whiteshell Reactor Disposal Facility

2. Engagement Objectives

CNL is committed to developing and maintaining solid, long-term relationships with all stakeholders. These include the local communities where we live and work, the companies we do business with, as well as the public at large. We are committed to communicating in a timely manner and exchanging information and we recognize the importance of listening to stakeholders and working with them to resolve their concerns. Communication activities are conducted in support of a clean environment and healthy society. CNL's specific communication objectives include:

- Initiating and maintaining two-way communication channels between CNL and local and regional communities and stakeholders, determining the best methods for sharing project information, and facilitating input at timely junctures in the project schedule, so that feedback can be integrated into project planning and design, as appropriate.
- Developing meaningful, user-friendly information and communication products for host communities and stakeholders, ensuring accessible and current information on project activities.
- Demonstrating CNL's long-term commitment and approach to safely and responsibly managing radioactive waste and decommissioning activities for the benefit of future generations.
- Sharing information, building awareness and facilitating learning opportunities with host communities and stakeholders regarding nuclear decommissioning, environmental remediation, and radioactive waste management.
- Meeting all regulatory-based communication and engagement requirements.

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

In March 2020, the COVID-19 pandemic impacted in-person engagement activities. CNL has adapted in accordance with all public health requirements and guidelines providing virtual platforms for meetings, workshops, webinars, project updates, and open houses. CNL remained

committed to ensure engagement activities are ongoing and in alignment with current pandemic restrictions.

2.1 WR-1 Engagement Self-Assessment

CNL is committed to conducting all our operations in a safe and responsible manner in compliance with and under a well-established Quality program [2]. Through the program we are committed to actively seeking the public feedback to improve public engagement and to find innovative and sustainable solutions. In order to demonstrate that the WR-1 communications objectives have been met, CNL conducted a self-assessment in 2021, guided by the quality program.

The engagement activities described in this report were assessed based on the level of participant satisfaction, audience representation, level of engagement with Subject Matter Experts (SME), level of understanding of the WR-1 Project, and level of increased project understanding of community and stakeholder issues. Below is a summary of the observations from the self-assessment. These observations, along with public feedback, guided the planning for future engagement activities, including some activities reporting within the timeframe of this report. The assessment of the objectives is summarized below.

2.1.1 Objective 1: Initiating and maintaining two-way communication channels between CNL and host communities and stakeholder groups, determining the best methods for communicating project information and facilitating input at appropriate junctures in the project schedule

CNL has initiated and maintained a progressive number of communication channels between CNL host communities and stakeholder groups.

Since CNL first initiated dialogue on the WR-1 In Situ Disposal at a Public Liaison Committee (PLC) meeting on December 9, 2015. CNL has adapted and evolved techniques for communicating project information and facilitating input.

Two early techniques included providing regular updates at PLC meetings and hosting public open houses in local communities.

Over the past six years, updates to the PLC have been consistently maintained at each of the two annual PLC meetings.

Over the course of multiple open houses and engagements, CNL received considerable feedback on what the public was interested in and what the public needed to improve understanding about the Project. CNL sought to refine its messages based on this feedback. CNL used the PLC to confirm that public engagement was meeting regional expectations. This approach has helped CNL improve key messages and presentation material.

During the early engagement on the project CNL created public events in the community. CNL made an effort to make these events easy to attend, by holding them in the evening or on the weekend, and adjacent to other well attended community events such as the local farmers market. Out of the various public events, a mailing list was developed, relationships were built

and dialogue was opened up. For the post submittal phase, the approach was to change access to the Project by CNL participating in already established events to increase Project exposure and provide an opportunity for new people to engage with the Project. CNL attended events like the Lac du Bonnet trade fair, Manitoba Métis Annual General Assembly trade show and the Brokenhead Double B agricultural festival. CNL also went online and hosted two webinars that attracted people from across the province and country. These events added to CNL's mailing list and introduced the Project to new people and interested groups.

CNL recognized through the first three rounds of engagement that in order to continue to engage with the public, new ways of talking about the Project would need to be offered. Adapting to different stakeholder groups was an important step in keeping the public engaged; for instance, retirees and alumni from the WL site were considerably advanced in the level of engagement compared to the general public. CNL decided to take a more technical approach and host a full-day retiree and alumni workshop on the Project. Another important evolution in engaging the public was tours. CNL hosted several tours with regional representatives and individuals from the mailing list generated from the three rounds of public engagement. CNL developed a site benchmarking trip where regional representatives were invited to tour and interact with an existing in situ decommissioned reactor site in the United States. Once again through these activities CNL was able to further refine key themes.

CNL continues to receive, track and assess feedback for future planning.

2.1.2 Objective 2: Developing meaningful, user-friendly information and communication products geared for host communities and stakeholders, ensuring accessible and current information on project activities

CNL has developed a variety of simple, user-friendly communications products that are accessible and meaningful to a broad audience in both official languages.

One example of this is the WR-1 timeline graphics. The original timeline graphic was posted in 2018 and has since been regularly updated to reflect the ongoing regulatory process. This was developed to address public interest in the progress and steps in the Environmental Assessment.

The use of video was also essential to create user-friendly and accessible communications. Online webinars were posted to YouTube. Additionally, CNL created a video explaining in situ decommissioning. This video has garnered over 2,600 views since its publication in 2017.

Other innovations in CNL's communication techniques for the WR-1 Project included open houses at the facility where visitors could tour particular certain parts of the site. In 2020 March, due to public health restrictions, CNL modified its approach for engagement to virtual online events.

To address accessibility concerns, document repositories have been functionally created by providing the EIS at local libraries and municipal offices.

Online content has also been updated and continually refreshed and reorganized, while simultaneously maintaining old content to ensure transparency with stakeholders. CNL has also

consistently been responsive to feedback on online content. A notable comment from early in the process suggested that posters CNL used at public information sessions be available online. This suggestion was immediately implemented.

To ensure ease of understanding and user-friendliness and provision of meaningful information, CNL also adheres to internal and external standards on communications. Communication products like presentations align with CNL Corporate Branding Guidelines. Communication activities are audited annually through CNL's environmental protection program's ISO: 14001 certification.

2.1.3 Objective 3: Demonstrating CNL's long-term commitment and approach to safely and cost-effectively reducing Canada's nuclear legacy liabilities

To demonstrate CNL's long-term commitment and approach to safely and cost-effectively reducing Canada's nuclear legacy liabilities in relation to the WR-1 Project, CNL has focused on refining its messaging.

To this end, CNL has attempted to share the story of why decommissioning the Whiteshell facility is part of the solution to safely reduce Canada's nuclear legacies. The message that in-situ disposal is a permanent, safe and proven solution to address the legacy liability of the WR-1 reactor facility is now a primary message of all communications on the WR-1 Project.

Tours related to the WR-1 Project – which have been given to members of the public, elected officials and media – visit current waste management areas at Whiteshell Laboratories (WL) and the WR-1 facility. These tours have effectively given insight into CNL's waste management practices, why CNL uses different waste storage solutions and has different plans for disposing of different waste streams.

For media outreach, 'detect and correct' media responses have been another technique CNL has used to effectively share CNL's side of the story and disseminate the facts on CNL's management and disposal plans for nuclear waste.

Information on alternatives and cost associated with the WR-1 Project and alternative options has also been shared publicly in webinars and online poster content, as well as in the EIS itself.

2.1.4 Objective 4: Informing and educating host communities and stakeholders about nuclear decommissioning, environmental remediation and radioactive waste management

At both a plain language level and a technical level, CNL has informed and educated host communities and stakeholders about environmental remediation and radioactive waste management.

In particular, presentations prepared for stakeholder groups have included providing clarity on CNL's relationship with AECL, long term monitoring of the site, the in-situ disposal technique by referencing examples in other countries and in Canada (for mines). CNL has also shared information on the basics of radiation and on CNL's current waste management practices and

future plans for all CNL waste streams via presentations, meetings and the sharing of documents.

CNL has also shared information poster boards on environmental protection, the WR-1 Project and Whiteshell Laboratories Decommissioning. Sixteen poster boards have been created with the intent to educate and prompt discussion. The poster boards are used at community open houses and for internal employee engagement.

CNL recognizes that some of the comments received are in opposition to the proposed project, asking for the full removal of the WR-1 and negative criticism of nuclear in general. While people's negative views towards nuclear should not be understated, CNL has been mindful of sharing facts to help the public understand the actual level of risk related to nuclear, in particular reinforcing that the risk associated with an impact on people or the environment from the Whiteshell Reactor Disposal Facility (WRDF) is very low. CNL continues to develop relationships and programs, as part of the Public Information Program to ensure that the general public, Indigenous peoples, news media and other stakeholders are informed about Project and the perceived vs actual risk.

At annual public events in the community, CNL representatives regularly share updates on the WR-1 Project and use communication products, such as videos and models, to engage local stakeholders.

2.1.5 Objective 5: Meeting all regulatory-based communication and engagement requirements

CNL has aligned its stakeholder engagement strategy with regulatory requirements and communication.

CNL began stakeholder engagement in support of the WR-1 Project in December 2017 when CNL leadership introduced the project at a PLC meeting for that year. By early 2017, the first phase engagement activities were fully underway. For more than four years, CNL has modelled its engagement on the regulatory requirements found in REGDOC 3.2.1 Public Information and Disclosure [3] and other regulatory guidance, such as the Generic Guidelines for the Preparation of an Environmental Impact Statement. The goals of CNL's stakeholder engagement program, outlined in the WR-1 Project Stakeholder Engagement Report WLDP-26000-REPT-010 (this document), are aligned with both the REGDOC 3.2.1 and CNL's Public Information and Disclosure Program [4], which itself is aligned with REGDOC 3.2.1.

3. Engagement Methods and Activities

CNL shares information about the Project with the public through a number of products and activities including community newsletters, website updates, social media posts, webinars and more.

The following subsections outline specific engagement methods and activities undertaken for the Project, at the time of preparation of this Section (i.e., up to September 20, 2022). Engagement activities will continue as part of the EA process.

3.1 Public Liaison Committee Meetings

Established in 2003, the PLC meets twice annually. The objective of the PLC is to build working relationships and create opportunities for open dialogue between various stakeholders, local communities, and CNL. Members include local elected officials and industry members.

During regularly scheduled meetings, PLC members are presented with an update on the WR-1 Project, information about the Whiteshell Laboratories Closure Project (WLCP), environmental practices, and are given the opportunity to ask questions, seek clarification, raise concerns, and discuss the information presented. PLC members are also asked to take meeting information back to their respective constituents. Meeting notes are taken at each meeting, recording all questions and actions that occurred during a PLC meeting. Guided site tours were provided following many of the meetings.

A WR-1 EA update was an agenda item at all meetings during the period of 2016 to 2022. Other Project related topics at PLC meetings during this period included:

- A Status update on the draft EIS submission
- A Report on a benchmarking trip to an existing ISD reactor in Hallam, Nebraska
- Updates on decommissioning, specifically of the WR-1
- Community interests and concerns
- Public and Indigenous engagement
- Public feedback received to date
- Waste management and transportation

In lieu of a meeting in the spring of 2020, the Public Liaison Committee was provided a written update from CNL in May on CNL's activities during and leading up to COVID. The update provided details on CNL's response to the COVID pandemic, decommissioning updates over the winter and details on the March 2020 submission of the WR-1 draft EIS. Table 1 provides a summary of issues and concerns raised through PLC meetings.

Table 1: Summary of Discussion Topics for the Public Liaison Committee

Topic	Issue/Concern Raised
Waste Disposal	Participants were interested in the used fuel transportation packaging. The Project will invite the PLC members back to see the packaging when it arrives. Participants were interested in what material the soft-sided packaging (soil shipping bags) were made of. A sample of the material was provided.
Economic Development	Participants discussed economic development activities related to the WL site, which included activities related to using the WL site as a staging area for small modular reactors.
Benchmarking Trip	During the 2017 October meeting, there was interest in learning more about the purpose and plan for the trip to Hallam, Nebraska where participants would benchmark an existing ISD reactor. A report was presented at the May PLC meeting outlining the results of the April 2018 trip.
River Safety	Communities, particularly downstream, emphasized the importance of maintaining the safety of the river.
End State	How would the communities like to see the land used post closure?

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

See Appendix A for a PLC meeting Agenda, Meeting Notes and Presentation.

3.2 Whiteshell Community Regeneration Partnership Meetings

The Whiteshell Community Regeneration Partnership (the Partnership) was formed in 2015 by the Local Government District (LGD) of Pinawa and neighboring municipalities. The Partnership addresses the economic concerns of the local municipalities that have historically had residents working at the WL site, and driven by a desire by both the Whiteshell region and CNL to encourage post-closure economic development. According to the Terms of Reference from October 21, 2015: “The proposed mandate of the Community Regeneration Partnership will be to develop a socio economic plan for the vicinity of the region affected by the WL decommissioning activities, to subsequently implement the plan and to review, update and report on the plan annually” [5]. Overall, the goal of the Partnership is job creation, replacing the employment that has been and will continue to be lost as decommissioning is completed. The partnership consists of six municipalities, three economic development organizations, Sagkeeng First Nation, CNL, and AECL.

CNL's involvement in the Partnership includes:

- Listening to members. CNL actively engages with members with the goal of hearing and understanding their priorities and concerns in regard to the WL site.
- Data Integration. CNL will provide requested data to the partnership to provide the region and the social economic plan with details such as annual and 5–year rolling forecasts of employment levels and external contracting needs.
- Regional Educational and Outreach Programs. Provide CNL employees and the regional workforce an opportunity to improve their employment skills with educational assistance and access to internal CNL training and outside training and reskilling programs, including programs related to (e.g., decommissioning and waste management), and unrelated to the WL decommissioning objectives (e.g., new business incubation).
- Regional Purchasing Programs. Develop multiple programs to support the regional supply chain so they can benefit from the extensive work scope to be accomplished at the site and to establish a supply chain that will be sustainable after the WL site has been decommissioned.
- Community Support. Sponsor specific regional community activities and not-for-profit organizations and individual employees available to support these regional activities and organizations [5].

As a result of the Partnership a regional business incubator program funded by the Canadian National Energy Alliance (CNEA) has been set up in the LGD of Pinawa. CNL regularly meets and participates in the business incubator activities which have included on-site events, presentations and tours related to the Project. In addition, and to date, CNL has introduced representatives from Sagkeeng First Nation, Black River First Nation, Brokenhead Ojibway Nation, Hollow Water First Nation, and the Manitoba Métis Federation (MMF) to the Partnership.

The Partnership provides another venue for communication to the public on WR-1 and to receive feedback as well. During meetings, Partnership members are presented with information about the WLCP, the WR-1 Project, CNL's environmental practices, and are given the opportunity to ask questions and discuss the information presented. Several guided site tours have been provided to the Partnership members since its inception.

Stakeholder(s): Local elected officials, economic development organizations and Indigenous communities.

3.3 Municipal Engagement

CNL reached out to all regional municipalities to gauge interest on engagement with elected officials and municipal staff. CNL met with both the Town and the Rural Municipality (RM) of Lac du Bonnet, and the LGD of Pinawa. CNL also engaged with the Town of Powerview – Pine Falls and the RM of Alexander on site, which included a tour of the reactor facility. For more information about presentations and tours see Section 3.4, presentation and tours given to

officials is summarized in Table 2. Municipal representatives also joined CNL on the Hallam benchmarking trip (see Appendix W). Following the October 2018 municipal elections, CNL provided briefings to new councillors, mayors and reeves as requested. This included a presentation to mayor and council of the LGD of Pinawa in July 2019. Other municipal leaders have been briefed at the PLC and the WL Community Regeneration Partnership.

Generally, feedback from the municipalities was similar to other stakeholder feedback. Concerns were raised around the protection of the Winnipeg River; clarification was sought on decommissioning and licensing timelines, and some asked about participation in the licensing process. Questions were asked about risk to the public, how the grouting will last against the timeline for radioactivity and what monitoring and contingencies would be in place. Concern was expressed around future use of the WL site and economic development, particularly the effect of having an in situ reactor on site. CNL's stakeholder engagement activities were generally thought of as positive. Some suggestions were given on engaging the local media more and the timing of open houses. It was also suggested that CNL develop an easy to understand brochure.

Table 2: Municipal Engagement Tours and Presentations

Date	Group
May 18, 2017	Provincial Working Group
June 30, 2017	Manitoba Department of Sustainable Development Minister
July 17, 2017	Manitoba Department of Sustainable Development Deputy Minister
August 10, 2017	Powerview Pine Falls Town Council
May 9, 2018	Reginal Municipality of Alexander council
October 9, 2018	Update with the Local Government District of Pinawa
November 26, 2018	Meeting at MB Legislature regarding Small Modular Reactor development on Whiteshell site
July 16, 2019	WR-1 update/meeting with the Local Government District of Pinawa
September 24, 2020	Assistant Deputy Minister Conservation and Climate, Director of Environmental Compliance and Enforcement Branch, Industry

	Workforce Development, Economic Development and Training, Lac du Bonnet MLA

3.4 Presentations and Tours

CNL uses presentations to help share information, build awareness and facilitate learning about the proposed WR-1 Project, and also hosts tours of the WR-1 site for government representatives, stakeholders and interested members of the public.

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

Updates during 2020 through 2022 were also provided through the PLC, the LGD of Pinawa, and the Whiteshell Community Regeneration Partnership.

The Project team documents and maintains all records of meeting agendas and presentations, which can be accessed upon request.

Table 3: Presentations

Date	Stakeholder
August 10, 2017	Presentation to Powerview Pine Falls Town Council
November 16, 2017	Presentation to Lac du Bonnet Joint Council
May 9, 2018	Presentation to RM of Alexander Council
September 20, 2018	Presentation to Lac du Bonnet Chamber of Commerce
October 9, 2018	Update with the Local Government District of Pinawa
July 16, 2019	Update with the Local Government District of Pinawa
March 2, 2021	Presentation and meeting with Local Government District of Pinawa Council and Mayor

Table 4: Site Tours

Date	Public Tours
May 12, 2017	Industry Day Site Visit
May 15, 2017	Canadian Nuclear Safety Commission tour
May 18, 2017	Manitoba Infrastructure and Transportation, Manitoba Infrastructure Emergency Measures Organization; Commercial Vehicle Safety and Permits, Motor Carrier Division, Manitoba Infrastructure and Transportation; Manitoba Infrastructure and Services Policy Division; Manitoba Sustainable Development; The Executive Council (Manitoba); Manitoba Growth, Enterprise and Trade tour
June 18, 2017	Manitoba Sustainable Development tour
June 30, 2017	CanAsia Manitoba Trade and Investment tour
July 17, 2017	Manitoba Sustainable Development, Green Manitoba tour
November 2, 2017	General Public Tour
November 15, 2017	Alumni, Retiree WR-1 technical tour
May 9, 2018	Site tour and presentation Rural Municipality of Alexander, Reeve and Council
May 17, 2018	Public Liaison Committee Member Tour
August 7, 2018	General Public Tour
April 11, 2019	Site tour and meeting with Red River College
May 31, 2019	Sunrise School Division School Board tour and meeting
June 8, 2019	Open House and general public tours

Date	Public Tours
June 18, 2019	General Public tour
August 6, 2019	General Public tour
September 16, 2019	General Public tour
February 17, 2020	University of Manitoba Physics Professor
September 24, 2020	Manitoba Environnemental Industries Association (MEIA)
October 5, 2020	Tour of the Whiteshell site to the Mayor of Pinawa and two representatives from StarCore Nuclear
Community Regeneration Partnership Tours	
May 30, 2017	Interested party
October 11, 2017	Small Modular Reactor Roundtable Participants
December 18, 2017	Interested party
February 5, 2018	Interested party

Stakeholders: Local Government Officials, Interested organizations.

See Appendices B and C for examples of a meeting agenda and a public presentation.

3.5 Public Open Houses

CNL has had four rounds of public open houses leading up to and following submission of the WR-1 Draft EIS as summarized below. Open houses have been held in regional towns within the vicinity of the Whiteshell Laboratories site. The open houses featured a combination of booths, including storyboards and fact sheets regarding various aspects of the project and the Whiteshell Laboratories in general, and comment forms to solicit feedback from participants. CNL staff were available at open hoses to address questions and hear feedback from the public.

The key issues and concerns shared during the public open houses were:

- The rationale for choosing ISD as the decommissioning method as opposed to the method described in the earlier Comprehensive Study Report (CSR) [6], with requests for additional information on the other decommissioning methods considered, including associated costs;
- The availability of the WL site for future economic activities;
- Understanding where used fuel would be stored;
- Understanding more about the Project Description, including the grout, ISD in general, where would the radioactive material be stored and how long it would take to decay, as well as why ISD was chosen (with several participants expressing a preference for complete dismantlement);
- Requests for materials, including the CSR;
- Interest in potential future uses of the WL site and how that would be determined. This was expressed by multiple parties, including municipalities, First Nations and the Manitoba Métis Nation, and landowners who had their land expropriated when the site was founded;
- Concerns about the water quality in various water bodies with a request for more information on monitoring activities during institutional control and how CNL would respond if there was a release of hazardous/radioactive material;
- Learning more about water quality monitoring for groundwater and the Winnipeg River, as well as monitoring plans after decommissioning is complete;
- Questions regarding historical releases of contaminants on the WL site and how they were handled;
- Questions regarding the radioactive material currently stored on the site and the amount of material that would be transported to the Chalk River Laboratories site;
- Questions about comparable projects, the approval process, and what happens if ISD is not approved; and
- Suggestions were made to make engagement more accessible, including helping interested parties interpret technical reports, and holding open houses in different locations and at different times to improve attendance.

Stakeholder: Local community.

A list of public open houses and details of issues, concerns and responses are provided in Appendix D and Appendix E respectively.

3.6 Poster Boards

The 15 poster boards listed in Table 5 below, according to subject, were developed with the intent to raise awareness and prompt discussion about the WR-1 ISD project and within the context of the entire WLCP. Poster boards are used in community engagement such as community open houses. The poster boards are also used to keep CNL staff informed on the project. They are posted throughout the WL buildings and offices.

Table 5: Poster Boards

Environmental Protection	WR-1 In Situ Disposal Project	Whiteshell Laboratories Decommissioning
Winnipeg River – Risk Assessment – WR-1 Decommissioning	Hydrology – WR-1 Decommissioning	Closure Project Overview
WR-1 Environmental Assessment Valued Components	Understanding Long-term Performance	Waste Management Overview
Protecting the Environment – Canadian Nuclear Laboratories	WR-1 Closure Project – Alternative Means	Regulatory Oversight
Safe by Design – WR-1 Decommissioning Project	Public Engagement - WR-1 Closure Project	WR-1 – Area Map
	Decommissioning Solution – WR-1 Decommissioning Project	
	WR-1 Reactor In situ disposal (2 boards)	

See Appendix F for images of sample poster boards.

3.7 Webinars

A webinar is an online, interactive forum that enables information sharing and two-way dialogue between CNL and the public. Webinars have the advantage of allowing people to participate from anywhere. The cost and time associated with travel to an alternative engagement activity is eliminated. Anonymous participation is possible if desired by participants.

In 2022, WR-1 and the Nuclear Power Demonstration (NPD) Closure Project began hosting combined bi-monthly webinars, which has increased visibility of the WR-1 Project. All webinars are advertised in local papers and on CNL's social media channels. All webinars are available in both official languages and posted on CNL's YouTube page.

Table 6: WR-1 Webinars

Date	Topic	Peak Concurrent Viewers	Total Number of Views (to September 2022)
January 20, 2017	Whiteshell Laboratories WR 1 Reactor: In Situ Decommissioning	NA	3,000
October 24, 2018	WL Closure Project: Project update	22	NA
July 7, 2020	Webinar: An Overview of the post-closure safety assessment of the WR-1 Disposal Facility	NA	134
August 25, 2020	WR-1 Decommissioning Project webinar	NA	186
April 20, 2021	WL Closure Project: Environmental Protection	27	173
May 18, 2021	WR-1 Reactor Decommissioning Fact or Fiction Webinar	17	88
September 21, 2021	WL Closure Project: Project update	39	24
November 16, 2021	Webinar- Overview of Environmental Protection at Whiteshell Laboratories- 2021 November	51	81
January 18, 2022	Regulatory Process for the NPD and WR-1 In Situ Disposal Projects	87	50
March 22, 2022	NPD & WR-1: The Design of the WR-1 and NPD Reactors and In-Situ Disposal	44	86
May 10, 2022	WR-1/NPD: Overview of the Environmental Impact Statements	87	42

See Appendix G for a WR-1 Webinar Presentation.

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

3.8 Breakfast Sessions

A series of technical Breakfast Sessions was held late 2019 and 2020 in person, changing to a webinar later in 2020 as a result of COVID-19 restrictions. These sessions provided an opportunity to share the technical details of the Project with interested participants, as well as respond to questions and receive feedback. Please see Table 7 for a list of Breakfast Sessions dates and topics.

Table 7: WR-1 Breakfast Sessions

Date	Topic
November 12, 2019	Reactor Characterization
February 4, 2020	Alternatives Analysis
June 23, 2020	An overview of the post closure safety assessment of the WR-1 Disposal Facility
August 25, 2020	Defence in Depth - An overview of the WR-1 Facility containment and isolation barriers
September 29, 2020	Development and test results of the WR-1 Disposal Facility grout

See Appendix H for a Breakfast Session presentation.

3.9 Community Engagement Activities and Conferences

CNL had extended invitations to local and regional stakeholders to participate in engagement sessions. CNL also sent out a corresponding email to all interested parties that registered their email address for updates through many engagements with the public. The engagement activities in tables Table 8 below list all community engagement activities and site tours since engagement on the project began.

One approach to sharing information, building awareness and facilitating learning opportunities was to have two to three CNL representatives attend community events local to the WR-1 site. CNL representatives were available t to answer questions, collect feedback and provide information about the project at events. Attendance at each event is described in the following sections.

Project specific products available at community engagement activities include:

- WR-1 Project – Feedback form
- WR-1 – Fact sheet
- WR-1 – Project description document (Handout)

- WR-1 and WLCP – Poster boards
- Copies of presentations
- Hallam trip report
- WR-1 model
- Indigenous Engagement reports
- Current job posting

See Appendix B for a sample tour agenda.

Table 8: Community Engagement Activities

Date	Activity
September 20, 2017	Presentation to American Concrete Association
November 15, 2017	Alumni, Retiree WR-1 workshop technical tour
April 3 – 5, 2018	Community benchmarking tour, Hallam, Nebraska
May 26, 2018	Information booth at the Lac du Bonnet Trade
September 8, 2018	Information booth at the Brokenhead Double B agricultural festival
May 24, 2019	Lac du Bonnet and District Trade Fair
May 31, 2019	Sunrise School Division School Board tour and meeting
November 6, 2019	Take Your Kids to Work Day including tour of WR-1
August 20, 2020	CNL booth at the Lac du Bonnet Night Market
September 5, 2020	CNL booth at the Lac du Bonnet Home and Cottage Expo
May 26, 2021	In situ disposal approach to decommissioning legacy reactors meeting (Sweden)
June 8, 2021	Decommissioning Technology and Experience Workshop (United Kingdom)
June 14- 18, 2021	IAEA International Project on the Completion of Decommissioning (COMDEC)
August 6, 2022	WL Booth at CNL Open House at Chalk River Laboratories
September 8-10, 2022	CNL WL Booth at FireCon in Thunder Bay, ON

Stakeholder(s): General public, local elected officials, local non-government organizations (NGOs).

See Appendix I for examples from Community Events.

3.10 Employee-Focused Engagement

To reach internal stakeholders (employees), different methods were employed including myCNL TV broadcasts (which are live broadcasts similar to the webinars sent out via CNL's intranet), employee information sessions, "lunch and learns", and content distributed via internal newsletters and intranet content. In the summer of 2022, WL began holding weekly all-staff meetings each Thursday to keep staff informed. WL also launched an internal WL-focused employee newsletter in October 2022.

All new employees take part in New Employee Orientation during which they are introduced to the proposed WR-1 Project and have the opportunity to ask questions and learn about the project. Bi-monthly webinars are also shared with all staff at WL.

Stakeholder(s): Employees.

See Appendix J for a myCNL article example.

Table 9: Employee-focused Events

Date	Event
March 29, 2018	myCNL TV: Corporate Update
October 22, 2019	myCNL article: CNL community breakfast briefing: November 12 (WL)
October 30, 2019	myCNL TV: ERM All Staff
November 1, 2019	myCNL article: WR-1 Lunch and Learn: The Characterization Plan and Results for the WR-1 Reactor
February 12, 2020	myCNL article: President Velshi visits CNL's Whiteshell Labs
March 30, 2020	myCNL article: Significant WL milestone achieved with the submission of the WR-1 EIS
June 18, 2020	Video: 3D Video on the Proposed WR-1 In Situ Decommissioning
June 18, 2020	Video: WL Decommissioning
June 23, 2020	myCNL TV: Breakfast Brief
June 23, 2020	myCNL article: Online Breakfast Briefing on the Whiteshell Reactor #1 (WR-1)
September 30, 2020	Whiteshell All Staff
December 15, 2020	myCNL TV: WL All Staff
January 7, 2021	myCNL article: Organizational Changes - WR-1 In Situ Disposal Project
March 3, 2021	myCNL TV: WL All Staff
March 23, 2021	myCNL TV: All Staff Update
April 20, 2021	myCNL TV: All Staff Update
April 21, 2021	myCNL article: WR-1 Webinar - Protecting the Environment
April 22, 2021	SRG Conference (WL Booth)
May 18, 2021	myCNL TV: WL All Staff
June 1, 2021	myCNL article: CNL builds relationship with Black River and Hollow Water First Nations

Date	Event
June 10, 2021	myCNL TV: WL All Staff
June 10, 2021	myCNL TV: WL All Staff
August 6, 2021	myCNL article: Whiteshell Laboratories launches new video series
September 21, 2021	myCNL article: Webinar: update on CNL's Whiteshell Laboratories
October 13, 2021	myCNL TV: WL All Staff
October 14, 2021	myCNL TV: S&T All Staff
January 7, 2021	myCNL article: Organizational Changes- WR-1 In Situ Disposal Project
July 4, 2022	myCNL article: WL milestone achieved with submission of EIS
July 21, 2022	myCNL article: CNL staff participate in enlightening trauma-informed engagement training
August 24, 2022	myCNL article: Whiteshell Closure Project: Rising up while standing down
August 31, 2022	myCNL article: Work restarts at Whiteshell Laboratories
July 14, 2022 – September 20, 2022	Weekly All Staff meetings - nine weekly meetings were held in this time period

3.11 Alumni Technical Workshop

Following the first round of open houses it was recognized that the vicinity of the WL site region has expertise that could independently review certain aspects of the Project. An Alumni Technical Workshop was held November 15, 2017, with 11 invited retirees and regional experts in attendance. The workshop started with a tour of the WR-1 facility and then moved into a focused technical discussion centered on some of the key aspects of the EIS. The workshop was a very productive event with questions asked and feedback/advice provided.

See Appendix K for a technical workshop invitation.

3.12 Web Page Content

CNL has established a project-specific webpage: www.cnl.ca/wr-1. In addition, quick links have been added to the landing page, raising project visibility and easing access to the appropriate pages. Since April 2017, updated information has been added to the project webpage, and webpage activity continues to be tracked and analyzed using Google Analytics.

The webpage has been updated with new content as it becomes available. Public information session posters, a hyperlink to revised formal feedback mechanism, the project timeline, factsheets, and project infographics have all been added to the WR-1 Project webpage.

In an effort to improve EIS supporting document access and transparency, CNL continues to post the titles of key EIS technical support documents, and any revisions and updates to these documents. These documents are available upon request.

Stakeholder(s): All stakeholders.

See Appendix L for an example of a webpage update.

3.12.1 Audience Analytics

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

Table 11 shows the web page audience analytics for the WR-1 pages in comparison to CNL.ca web pages. The analytics indicate that those interested in the project spent on average a minute longer on the project pages and looked at one more webpage associated with the CNL site than the average CNL visitor. This demonstrates that the dedicated project pages are an effective avenue for interested parties to find project information as they, on average, stayed on the pages longer and visited more of the informational pages.

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

Stakeholder(s): All stakeholders.

3.12.2 User Behaviour

In general, user behaviour on the Project web pages indicates higher than average interaction when compared to activities on cnl.ca. 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 of the Whiteshell project web pages. It is therefore expected that a greater number of people have become aware of the Project since the web pages were first created in 2016.

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 slightly lower percentages at the beginning of 2021 (in comparison to the bounce rates of cnl.ca) indicates that upon accessing project pages visitors remained and interacted with the available material. The bounce rates decreased over the year and indicate that more people are interacting with the content. This is reflected in the increased number of downloads from the page.

Behaviour related to the time for this report is summarized in Table 10. Table 11 shows the aggregated data from September 2017 through December 2020. Historical data is captured in Table 12 to Table 15 to show the changes over times.

Table 10: User Behaviour and Acquisition October 18, 2021 to September 20, 2022

User Analytics	October 18, 2021 through to September 20, 2022	
	CNL.ca	/wr1
Users	137,847	1,090
Engagement Time per session*	0.54	1.13
Web Pages Viewed/Session	0.92	2.72
Engagement Rate**	52.87%	53.33%
Downloads	25,311	1,547

*Replacing Session Duration
**Replacing Bounce Rate

Table 11: Aggregated Data from September 2017 through September 20, 2022

User Analytics	September 2017 through to September 20, 2022	
	CNL.ca	/wr1
Users	601,466	8,899
Average Session Duration	0.86	1.65
Average Web Pages Viewed/Session	1.57	2.76
Bounce Rate	56.44%	56.35%
Downloads	n/a	2, 813

Table 12: User Behaviour and Acquisition September 2017 – December 2018

	September-December 2017*		January – March 2018		April – June 2018		July – September 2018		October – December 2018	
	CNL.ca	/wr1	CNL.ca	/wr1	CNL.ca	/wr1	CNL.ca	/wr1	CNL.ca	/wr1
Users	10,225	162	35,513	299	30,628	216	26,447	216	25,852	198
Average Session Duration	2:19	5:35	2:00	7:54	1:56	8:56	2:02	8:50	2:01	10:11
Web Pages Viewed/ Session	2.49	4.04	2.15	5.19	2.18	7.37	2.23	9.43	2.19	12.59
Bounce Rate	48.05 %	45.56 %	58.67 %	22.75 %	58.52 %	15.70 %	56.18 %	20.56 %	56.39 %	19.03 %
Downloads	n/a	76	n/a	61	n/a	39	n/a	47	n/a	37

Table 13: User Behaviour and Acquisition January 2019 – December 2019

	January – March 2019		April – June 2019		July – September 2019		October – December 2019	
	CNL.ca	/wr1	CNL.ca	/wr1	CNL.ca	/wr1	CNL.ca	/wr1
Users	35,566	355	30,780	221	32,320	213	35,601	323
Average Session Duration	3:04	7:26	2:57	2:09	2:41	9:12	2:25	5:44
Web Pages Viewed/Session	2.03	5.35	2.04	6.11	2.03	5.4	1.98	4.89
Bounce Rate	60.24%	22.54%	62.07%	17.82%	61.17%	20.87%	63.63%	36.36%
Downloads	n/a	78	n/a	100	n/a	66	n/a	119

Table 14: User Behaviour and Acquisition January 2020 – December 2020

	January – March 2020		April – June 2020		July – September 2020		October – December 2020	
	CNL.ca	/wr1	CNL.ca	/wr1	CNL.ca	/wr1	CNL.ca	/wr1
Users	43,633	314	36,113	344	44,429	368	33,538	238
Average Session Duration	2:09	7:19	1:47	6:51	1:35	5:55	1:33	7:15
Web Pages Viewed/Session	1.99	4.80	1.90	9.89	1.78	3.74	1.79	4.26
Bounce Rate	60.27%	27.82%	64.99%	36.30%	60.25%	37.01%	66.32%	29.48%
Downloads	n/a	97	n/a	69	n/a	199	n/a	106

Table 15: User Behaviour and Acquisition January 1, 2021 – October 18, 2021

	January – March 2021		April – June 2021		July – September 2021		October 2021	
	CNL.ca	/wr1	CNL.ca	/wr1	CNL.ca	/wr1	CNL.ca	/wr1
Users	137,439	3,788	2,184	321	30,246	188	9,667	45
Average Session Duration	1:52	1:52	0.59	0.53	1.03	1.11	0.53	0.48
Web Pages Viewed/Session	1.88	3.23	1.77	1.80	3.13	1.54	2.56	1.38
Bounce Rate	62.52%	52.85%	58.87%	75.92%	60.61%	69.54%	55.91%	68.94%
Downloads	n/a	0	n/a	53	n/a	71	n/a	48

From September 2017 to September 20, 2022, 8,899 users accessed the WR-1 web page viewing around three pages per session. The average session lasted over one and a half minutes. In comparison, the average user of cnl.ca viewed around two pages per session and each session lasted just under one minute. This makes the average length of time spent on a WR-1 web page more than three times the length of time spent on the average CNL web page.

This may indicate that the users of the Whiteshell project pages are taking an in depth look at the Project information.

Analytics on the number of web pages reviewed during a session seem to indicate that users who are visiting the WR-1 project webpage are absorbed by the Project information; they are spending slightly longer on the page than the average CNL.ca user and they are reviewing over triple the number of web pages than the average user, as well.

The WR-1 project webpage has also consistently had a lower bounce rate of 56.35 per cent than the bounce rate of all users of CNL's website, which is 56.44 per cent.

3.12.3 Acquisition Analytics

Analysis seems to indicate that it is not difficult for interested stakeholders to find information on the Project as over half 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.
- Social – arrived via social media website.
- Email – link provided by an email.

Figure 1 below shows how the mode of accessing WR-1's web page and/or its associated webpages (meaning those web pages that are about WR-1 and are accessible through the main www.cnl.ca/wr1 web page) tends to be split relatively evenly between social, direct and organic. This indicates that CNL is effectively driving traffic to the WR-1 webpages through a variety of ways. Social media has proven to be a successful way of sharing information about the project by driving webpage traffic and CNL has successfully shared the webpage URL with stakeholders.

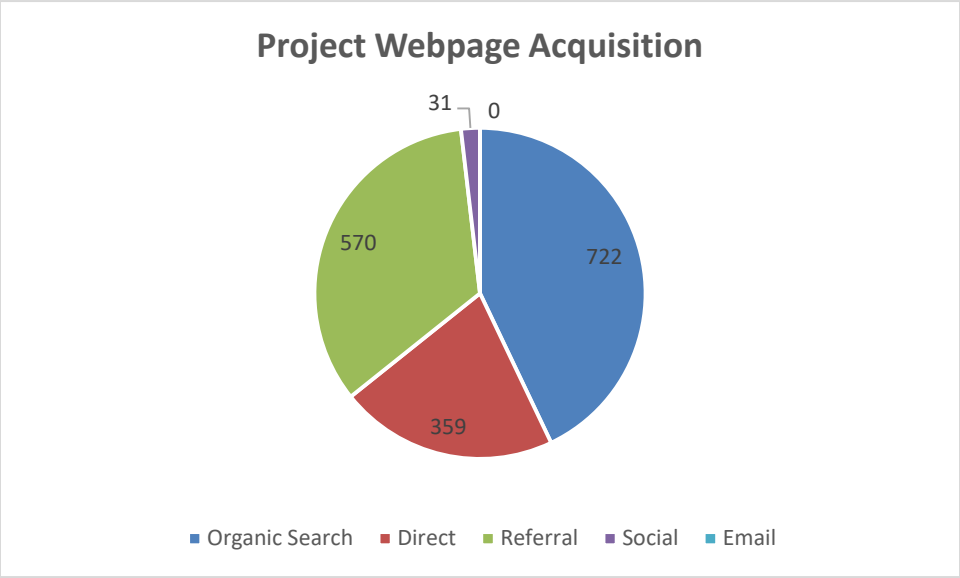

Figure 1: Means of Acquisition for WR-1 Project Page

3.12.4 Downloads

Since the WR-1 Project was proposed, the web content has continuously been updated for visitors to download as it has become available. Downloadable information available for the WR-1 Project, via the project webpage, includes:

- Infographics and fact sheets
- Timelines
- EIS documents
    1. Draft EIS
    2. EIS Executive Summary
- Project Description
- Five sets of posters from Public Information Sessions:
    1. November 2016
    2. April 2017
    3. July 2017
- Six issues of CNL's CONTACT newsletter featuring information about the WR-1 Project:
    1. Spring 2020
    2. Winter 2019
    3. Spring 2019
    4. Winter 2018
    5. Fall 2017

6. Summer 2016

Over the period of time between April 2017 and September 2022, this information was downloaded 2,813. Note that this includes the English and French versions of documents, as well as different revisions of documents.

3.12.5 Infographic/Posters

One infographic is available online (and hard copies are used at information sessions and community events) to better convey information in a succinct digestible format for members of the public. Two sets of posters (2016 and 2017) are also available on the website, however the factsheet was replaced with the more updated content in the infographic as the project progressed.

The infographic is a general overview of the project and in situ decommissioning. It includes a timeline with key project milestones. The 2016 factsheets share WR-1 Decommissioning project information on monitoring, protection of the environment, regulatory oversight, in situ decommissioning and public engagement. The 2017 update posters reflect topics of interest to the public including; long-term safety, risk and environmental assessments and hydrogeology.

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

Stakeholder(s): All stakeholders.

See Appendix M for a WR-1 Factsheet.

3.12.6 Project Webpage Feedback Mechanisms

On the project web page, there are mechanisms for the user to share feedback on the project through an online submission form. There is also a “mailto” hyperlink on every project page that sends an email into the CNL Corporate Communications general mail box.

3.13 External Newsletter – Whiteshell CONTACT

The Whiteshell CONTACT newsletter is published and mailed to approximately 8,100 homes in the vicinity of the WL site and is available on https://www.cnl.ca/news-publications/newsletters/. This publication informs the reader on activities undertaken at the WL site and profiles CNL’s community activities.

During this period, eight issues of the newsletter were released focusing on CNL’s major projects, related Environmental Assessment activities, as well as CNL’s Environmental Stewardship. Each issue included an update on the WL Closure Project, including the WR-1 Project, or a separate article on WR-1 in addition to the main WL Project update.

In the spring of 2019, CNL also published an Environmental Issue, which included articles on environmental stewardship, energy efficiencies, wildlife protection, and waste minimization.

The following issues had an update or feature on the WR-1 Closure Project included:

1. Winter 2021
2. Spring 2021
3. Spring 2020
4. Winter 2019
5. Spring 2019
6. Winter 2018
7. Fall 2017
8. Summer 2016

Stakeholder(s): Local and host communities.

See Appendix N for an example of a CONTACT newsletter.

3.14 Email

Emails have been used to connect with internal and external stakeholders, as well as with NGOs. In particular, emails were sent out to promote different events, to advise of the public comment period on the draft EIS and to provide responses to questions submitted electronically. Stakeholders are encouraged to be added to an email distribution list to receive notices of upcoming events related to the project (webinars, breakfast briefings, etc.). The current list has over 387 stakeholders.

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

See Appendix O for an example of a stakeholder email.

3.15 Advertising

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

3.15.1 Advertising Methods

The goal of advertising all Public Open Houses was to announce and increase awareness of the events. For the 2017 Open Houses, advertising began August 08, 2016, on the cnl.ca website and newspaper advertisements began in June 2017, running for the three weeks leading up to the Public Open Houses. On June 29, 2017, a one-page flyer was distributed to approximately 7900 Canada Post mail boxes.

For the 2019 Open House print advertising was done for two weeks in the Lac du Bonnet Clipper and the Winnipeg River Advocate.

Breakfast sessions and webinars were advertised in the local newspaper for one to two weeks leading up to the each session.

Table 16 provides a summary of print and online advertising used for public events. Invitations for Open Houses, the Breakfast Sessions and the webinars were also sent out to local mailing lists.

Advertising methods used include:

- Advertisements posted on CNL.ca landing page and the project-specific webpage: https://www.cnl.ca/environmental-stewardship/wr-1-reactor-decommissioning/
- Advertisements have been included in online version of CNL's Whiteshell CONTACT newsletter when applicable.
- Newspaper advertisements (see Table 16 for circulation numbers of main newspapers utilized).
- Paid Facebook advertising via "Boosted Posts".

Stakeholder: Host and local communities and CNL staff.

See Appendix P for sample advertising content.

Table 16: Newspaper Advertising – Print and Online

Newspaper	Release date	Circulation
Beausejour Clipper	June 29, 2017	6,500
Lac du Bonnet Clipper	June 29, 2017	6,500
Winnipeg River Advocate	June 30, 2017	8,000
Beausejour Clipper	July 5, 2017	6,500
Lac du Bonnet Clipper	July 5, 2017	6,500
Lac du Bonnet Clipper	May 16, 2019	6,500
Winnipeg River Advocate	May 17, 2019	8,000
Lac du Bonnet Clipper	May 30, 2019	6,500
Winnipeg River Advocate	May 31, 2019	8,000
Lac du Bonnet Clipper	October 24, 2019	6,500
Lac du Bonnet Clipper	October 31, 2019	6,500
Lac du Bonnet Clipper	January 23, 2020	6,500
Lac du Bonnet Clipper	January 30, 2020	6,500
Lac du Bonnet Clipper	June 11, 2020	6,500
Lac du Bonnet Clipper	June 18, 2020	6,500
Lac du Bonnet Clipper	August 13, 2020	6,500
Lac du Bonnet Clipper	August 20, 2020	6,500
Lac du Bonnet Clipper	September 17, 2020	6,500
Lac du Bonnet Clipper	September 24, 2020	6,500
Lac du Bonnet Clipper	November 11, 2020	13,000
Lac du Bonnet Clipper	April 9, 2021	13,000
Lac du Bonnet Clipper	May 6, 2021	13,000

Newspaper	Release date	Circulation
Lac du Bonnet Clipper	September 9, 2021	13,000
Lac du Bonnet Clipper	January 6, 2022	13,000
Lac du Bonnet Clipper	March 14, 2022	13,000
Lac du Bonnet Clipper	May 3, 2022	13,000

3.16 Intranet – myCNL

The internal website has been used to communicate with internal stakeholders with updates on the project and publicizing events related to the project. Posts on the WR-1 Project were shared on myCNL to educate, inform and provide updates on the project to employees.

Stakeholder(s): CNL Employees.

See Appendix J for an example of a myCNL article.

3.17 Internal Newsletter – Voyageur

CNL's internal newsletter, Voyageur, is published each month to update current and former CNL employees (former employees can sign up as "CNL Alumni" to receive updates and the Voyageur newsletter from CNL, there are around 600 individuals on this distribution list). Over the set time period the following six articles on the WR-1 Closure Project were published in the newsletter:

1. May 2017 – The Year Ahead in WL
2. August 2017 – CNL & UOIT Partner on Hydrogen Generation
3. February 2019 – Technology Developers Advance in SMR Process
4. June 2019 – Whiteshell Open House a Success!
5. December 2019 – #Coolthings We Did in 2019
6. September 2021 – CNEA Donates $240,000 to North Forge East
7. March 2021 – CNEA Donates $80,000 to North Forge East
8. September 2021 – Indigenous Advisory Committee Kicks Off
9. December 2021 – Whiteshell Employee Transition Plan

Stakeholder(s): CNL employees, industry.

See Appendix Q for a Voyageur article.

3.18 CNL Social Media

Social media is used to share information and increase awareness about CNL activities, including the WR-1 Decommissioning Project events and to receive feedback on the project.

Facebook is the largest with the strongest engagement through "comments, shares and likes" of posts. When CNL wished to raise the profile of project events or information, "boosted" posts were used to target by location and demographics. "Boosted" posts are paid posts through Facebook. Twitter has not been used as broadly as Tweets have been found to receive

very little traction, and comparatively CNL has a much larger Facebook following. While numbers are significantly larger on LinkedIn, the demographics are far more industry based, rather than general public. Therefore, CNL utilizes LinkedIn, but in a much lower capacity than Facebook to ensure engagement is a balanced approach with general public in comparison to those actively part of the nuclear industry. YouTube has also been used successfully to engage with stakeholders. Webinars have been posted on YouTube for easy access by the public.

To support the WL projects and site, CNL has used social media to promote events, share and receive information, and generally engage with the public. Social media has been an effective tool to reach and engage stakeholders. CNL's post on April 16, 2020, sharing the support the WL team was giving to the COVID-19 response had a high level of engagement with 363 individuals interacting with the content.

Another example of how social media has supported CNL's transparency around the WL projects and site is the Facebook post from October 11, 2019, that showed progress on the physical changes at the site. This post was clicked on 1,922 times.

While Twitter is still used to promote events and engage with different stakeholders, it has not proved as effective a tool for CNL's audiences. Given the bigger following of CNL's Facebook account, it is currently the social media of choice for reaching stakeholders.

Stakeholder(s): All stakeholders.

Table 17: CNL Social Media Accounts

Social	Link	Followers*
Facebook	www.facebook.com/CanadianNuclearLaboratories	5,301
Twitter	www.twitter.com/CNL_LNC	1,778
ERM Twitter	www.twitter.com/cnlremediation	24
YouTube	www.youtube.com/channel/UC2GCEfZQgsURh4t_QZ-JwCw	697
Instagram	www.instagram.com/canadiannuclearlaboratories/	849
LinkedIn	www.linkedin.com/company/canadian-nuclear-laboratories/	23,986

*As of September 20, 2022

Definitions:

- **Engagements:** Measures how much and how often others interact with you and your content in social media.
- **Shares or retweets:** Measures how often the message was shared or forwarded on the twitter website.

3.18.1 Facebook

Facebook is the platform with the strongest engagement through engagement or "comments, shares and likes" on posts. When CNL wants to raise the profile of project events or

information, paid Facebook advertising (through "boosted" posts) was used to target by location and demographics.

See Appendix R for an example of a WR-1-specific Facebook post.

See Appendix S for an example of a WR-1-specific boosted Facebook post.

Table 18: Facebook Metrics September 2017 – September 20, 2022

Date of Post	Engagement	Shares
September 22, 2017	4	1
September 23, 2017	9	1
September 24, 2017	6	0
October 11, 2017	17	3
October 13, 2017	224	71
March 22, 2018	22	4
April 5, 2018	28	4
April 19, 2018	43	2
May 25, 2018	3	0
September 7, 2018	15	3
September 8, 2018	16	1
February 8, 2018	65	9
March 7, 2019	71	18
May 10, 2019	77	294
August 1, 2019	23	0
September 23, 2019	21	2
October 11, 2019	249	35
October 23, 2019	40	11
January 22, 2020	26	10

Date of Post	Engagement	Shares
April 3, 2020	154	54
April 16, 2020	38	12
June 11, 2020	1	0
June 21, 2020	47	0
July 20, 2020	58	3
August 14, 2020	3	6
August 17, 2020	12	5
October 27, 2020	21	2
October 29, 2020	6	2
February 16, 2021	3	0
March 29, 2021	3	1
April 14, 2021	20	11
May 5, 2021	34	19
September 14, 2021	38	4

3.18.2 Twitter

Twitter has not been used as broadly as Tweets have been found to receive very little traction, and comparatively CNL has a much larger Facebook following. Table 19 shows that on average impressions and engagement has remained consistent over the years.

See Appendix T for a sample of a WR-1-specific tweet.

Table 19: Twitter Metrics September 2017 – September 20, 2022

Date of Post	Engagement	Retweets	Clicks
October 17, 2017	47	2	19
September 8, 2018	34	0	4
March 7, 2019	17	1	10
February 8, 2019	22	1	3
May 10, 2019	23	2	2
May 16, 2019	11	1	2
October 23, 2019	4	0	0
June 11, 2020	10	0	0
October 29, 2020	39	3	6
April 14, 2021	1	0	0
January 14, 2022	1	0	0

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

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

3.18.3 YouTube

Eight videos, including English and French versions of Project update webinars have been uploaded to YouTube. The videos have been added in an effort to make information and technical information more accessible. Table 20 details, by date, video topics and number of views.

Table 20: YouTube Views

Date	Video	Views*
January 20, 2017	WR-1 FR	118
January 20, 2017	Whiteshell Laboratories WR 1 Reactor: In Situ Decommissioning	3,000
July 7, 2020	An Overview of the post-closure safety assessment of the WR-1 Disposal Facility	134
August 25, 2020	WR-1 Decommissioning Project Webinar	151
April 21, 2021	Webinar: WL Closure Project (April 2021)	173
April 21,2021	Webinar: Déclassement des Laboratoires de Whiteshell (2021 avril)	13
May 20, 2021	Déclassement du réacteur WR-1 Webinaire "Mythe ou Réalité" – 2021 mai	27
May 20, 2021	WR-1 Reactor Decommissioning Fact or Fiction Webinar – 2021 May	61
July 12, 2021	CNL Live Event: CNL's major projects and opportunities for supply chain engagement	277
October 1, 2021	Whiteshell Closure Project Webinar – 2021 September	94
October 1, 2021	Déclassement des Laboratoires de Whiteshell Webinaire - 2021 septembre	16
November 16, 2021	Webinar - Overview of Environmental Protection at Whiteshell Laboratories - 2021 November	44
November 16, 2021	Webinaire - Un aperçu de la protection de l'environnement à les Laboratoires de Whiteshell - 2021 nov	37
January 18, 2022	Webinar - Regulatory Process for the NPD and WR-1 In Situ Disposal Projects - 2022 January	46
January 18, 2022	Webinaire-Le processus de réglementation des projets l'élimination in situ de NPD et du réacteur WR1	10
March 22, 2022	NPD & WR-1 Webinaire - La conception des réacteurs WR-1 et NPD et le stockage définitif in situ	21
March 22, 2022	NPD & WR-1 Webinar - The design of the WR-1 and NPD reactors and In-Situ Disposal	70
May 10, 2022	NPD/WR-1 Webinar: Overview of the Environmental Impact Statements	46
May 10, 2022	NPD/WR-1 Webinaire: Aperçu des énoncés des incidences environnementales	11

*As of September 2022

3.18.4 LinkedIn

While numbers are significantly larger on LinkedIn, the demographics are far more industry based, rather than general public. Therefore, CNL utilizes LinkedIn, but in a much lower capacity than Facebook to ensure the focus of engagement is balanced between social media outreach to the general public and social media outreach to those actively involved in the nuclear industry. Since CNL posts less than five posts specific to WR-1 decommissioning on LinkedIn per year, the analytics have not been included.

3.19 Media Coverage

CNL engaged in outreach with media organizations as part of this Environmental Assessment. Five media outlets were invited to tour the WL site: The Clipper, CBC Radio, CBC Radio-Canada, the Winnipeg Free Press and the Winnipeg River Advocate. Two organizations participated. Radio Canada toured the full site. The Clipper toured the WR-1 Building and watched a video on the reactor and a presentation by CNL staff. A total of 46 articles and 16 opinion pieces were written from June 2016 to December 3, 2020, about the WR-1 ISD project or referencing the project.

Media coverage gradually grew over 2016 and 2017 as CNL hosted the WR-1 open houses, peaking in 2018 with the trip to Hallam, Nebraska, and then levelling off again in 2019 and continued through 2021. The majority of the articles were submitted by CNL or written by the paper with the tone of the coverage, neutral or supportive in nature. CNL began actively utilizing a “detect and correct” method in sending in responses to articles that help correct misinformation. This method proved effective in getting more factual information out and overall has led to more balanced coverage. CNL has also had supportive articles published by former AECL and CNL retirees. These positive articles have proved beneficial and present facts related to the WR-1 Project.

During the preliminary round of open house sessions (from June 2016 to September 2016), there were five media pieces. Two were articles-based interviews with CNL to introduce the proposed Project to the general public. One was an interview with the Mayor of Pinawa providing his personal endorsement of the Project as safe. There was one opinion piece written by a freelance writer and published in the Winnipeg Free Press that depicted the end-state of the Project negatively. CNL provided a response letter to the opinion piece correcting several factual errors.

During Round 1, as expected with increased engagement with the community and the introduction of the WR-1 ISD Project, media attention started to increase with nine articles/radio sessions and 1 opinion piece during this time frame. Several articles were initiated by or contributed to by CNL in order to continue to educate and inform with the balance not supportive of ISD.

During Round 2, media attention levelled off with only seven articles and no opinion pieces. Five of the articles positively informed and educated the public.

A total of 29 articles and 13 opinion pieces were written following submission of the draft EIS in September 2017. Articles were written encouraging public feedback on the draft EIS, focused on economic development opportunities, or updating and encouraging participation in engagement activities. Several articles and opinion pieces have been written critical of Canada's nuclear legacy. A few instances saw organized opposition generate some coverage; CNL was able to make itself available, respond and bring reporters on site.

CNL's stakeholder benchmarking trip to an in situ site in Hallam, Nebraska, saw considerable coverage with five articles written on the trip.

Table 21: Media Coverage January 31, 2020 – September 20, 2022

Date	Article	Publication
July 30, 2020	Nuclear Waste Disposal Plan Fuels Frustration	*Winnipeg Free Press*
January 20, 2021	O'Regan all in on unnatural resources	*Winnipeg Free Press*
January 2021	Canada's Radioactive Waste Policy Review	Pinawa Community Newsletter
March 18, 2021	CNL contributes to Pinawa daycare upgrades	*The Clipper*
April 2021	Canada's Radioactive Waste Policy Review	Pinawa Community Newsletter
July 20, 2022	CNL moves forward on Whiteshell decommissioning	*North Renfrew Times*
Date	**Opinion**	**Publication**
February 3, 2020	Reliable energy	*Winnipeg Free Press*
March 24, 2021	Who decides where nuclear waste goes	*Winnipeg Free Press*
March 26, 2021	Nuclear waste solution	*Winnipeg Free Press*
April 12, 2021	Reforms needed at Canadian Nuclear Safety Commission, say activists	*Hill Times*
Date	**Other**	**Publication**
July 26, 2022	WR-1 Bulletin	CNSC Project Bulletin

A summary of previous media coverage as well as an example of media coverage are included in Appendix U and Appendix V.

3.20 Responding to Information Requests

When requests for information were received (e.g., via email, letters, formal comment cards submitted at an open house), they were electronically logged and assigned to appropriate subject matter experts. Once the response was received from the subject matter experts, it was

then issued for final internal review. The response was electronically recorded and returned to the originator via the same stream it was received. If the request received was for copies of the EIS supporting documentation, the files were deposited in a Secure File Transfer Protocol site and the login information forwarded to the originator. CNL also delivered hard copies of the EIS if requested.

3.21 Document Repository – November 2017 – September 2022

CNL made four hard copies of the draft EIS publicly available, functionally creating a document repository for the draft EIS volumes. One hard copy of the draft EIS was available at both the Pinawa and Lac du Bonnet Public Libraries.

3.22 Release of Documents – November 2017 – September 2022

To support interested members of the public's review of WR-1 Project materials, CNL has responded to requests to provide documents related to the WR-1 Project. CNL notifies interested members of the public of documents as they become available by email.

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

3.23 Participant Funding

The Canadian Nuclear Safety Commission (CNSC) offered funding through its Participant Funding Program (PFP) to assist members of the public, First Nations and the Manitoba Métis Nation, and other stakeholders in participating in the environmental assessment, licence application review, and Commission hearing processes for CNL's WR-1 Decommissioning Project. Recipients provide value-added and relevant information that contributes to a better understanding of the anticipated effects of a project. Recipients also participate in the CNSC's proceedings for this project. The CNSC's decision on who has received funding to participate is available in the CNSC Participant Funding Program Decision: Canadian Nuclear Laboratories' Whiteshell Reactor No. 1 (WR-1) Decommissioning Project.

Please find information on participant funding for the WR-1 Decommissioning Project at this link: http://nuclearsafety.gc.ca/eng/the-commission/participant-funding-program/opportunities/2019pfp-in-situ-decommissioning-whiteshell-reactor1-project.cfm

CNL considers those that have applied and received funding from the PFP as stakeholders that have self-selected as especially interested in the project. As such, CNL has made particular efforts to reach out to recipients of participant funding with offers to provide information and meet with these individuals and/or organizations.

4. Analysis of Public Feedback

4.1 Public Feedback

Public feedback continues to give valuable insight into what issues are important to stakeholders, enabling the Project team to respond to and incorporate the issues of the local community and the broader public into the planning and the EIS. For example, the future use of

the WL site and employment that offsets the loss of jobs at CNL following site closure was identified as important for local municipalities and rural municipalities. As such, the importance of continued economic development was considered under the context of Community Well-being, and was included as a Valued Component (VC) for the assessment. A summary of the concerns and questions raised during public engagement and how CNL has responded to them is described in Table 22. VCs are described near the beginning of each subsection of Section 6.0 Environmental Effects (Sections 6.2 Atmospheric Environment through 6.9 Socio-economic Environment). Section 2.0 Purpose of the Project and Alternative Means, also includes information on how public feedback was considered in the alternatives assessment.

In addition to the informal feedback that the public engagement outreach activities offer, the environmental assessment process provides an opportunity for formal feedback from the public. As of October 18, 2021, 64 individuals provided formal comments, raised questions or requested information on the WR-1 Project. Formal comments are defined as any written feedback CNL received from the public or CNL staff through responses to the draft EIS, feedback forms that were available at public engagement sessions, online submission, mail, telephone or email. An HTML form hyperlinked to the Project web page is available however was not used during Round 3 of engagement activities. The Project web page also has a “mailto” hyperlink to provide an accessible mechanism of emailing CNL. CNL prepared responses to the formal comments which will be submitted to the CNSC and posted on the CEAA Registry under project #80121.

Previously identified areas of interest surrounding the WR-1 Project continue to be prevalent in the 104 formal comments that the WR-1 project have received over the period September 2017 to December 3, 2020, including many comments and questions arising from the Alumni Technical Workshop held November 15, 2017, feedback from the April 3 – 5, 2018, benchmarking trip to Hallam, Nebraska, and the Open House on June 8, 2019. For instance, economic regeneration, future land use, assessment of the decommissioning alternatives, and contingency plans continued to draw interest from the region.

Throughout the engagement period, CNL continued to review and update communication channels ensuring CNL was open and reachable by the public. CNL provided user-friendly information and communications products to facilitate sharing information and updates about the Project, and addressing concerns and interests expressed, including those identified in Figure 2. CNL actively sought feedback through provision of feedback forms at engagement sessions and online, as well as encouraging direct contact with CNL, using this feedback to inform the EIS development.

The graph below for the areas of interest from the public.

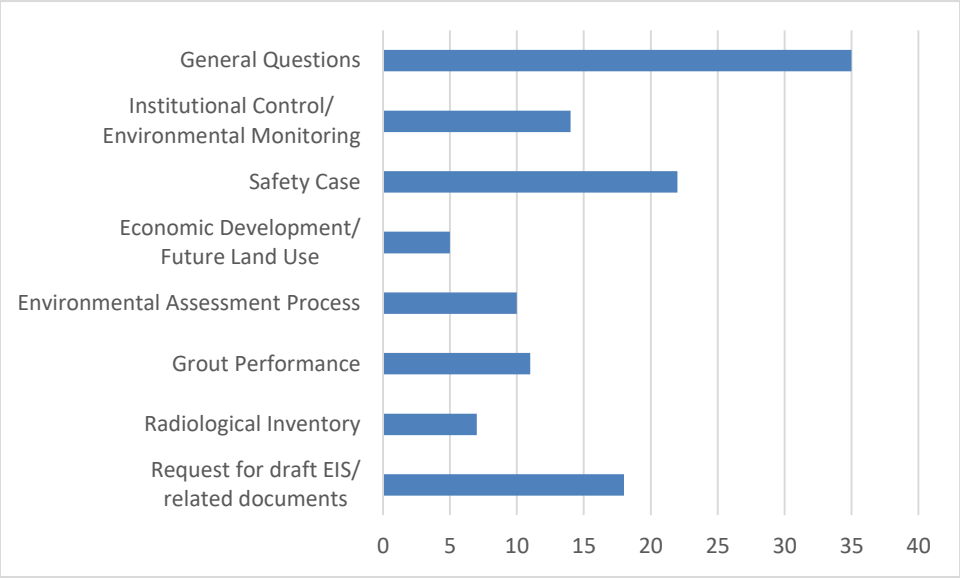

Figure 2: Summary of the Areas of Interest from the Public

Table 22 summarizes feedback received by CNL from stakeholders/general public and the steps CNL took to incorporate it into ongoing engagement on the EIS, or into the Project design. Topics and key interests and concerns have been gathered from multiple events.

Table 22: Public Feedback

Topic	Key Interests and Concerns	Response
Future Land Use	Requested more information on the plans for the WR-1 site after ISD is completed.	When decommissioning work is complete, the grouted reactor will be covered with a concrete cap and engineered cover designed to shed water and deter human intrusion. This area will be fenced and monitored by CNL. CNL will be putting institutional controls in place for a period of at least 100 years to confirm that the decommissioned facility is behaving as intended. Institutional controls include active measures such as restricting access through security protocols, site maintenance and environmental performance monitoring, as well as passive measures such as restricting land use (through coordination with government) and signage.

Topic	Key Interests and Concerns	Response
		CNL is working in collaboration with AECL and will be engaging First Nations, the Manitoba Métis Nation and local communities to discuss and consider options for the future use of the Whiteshell Laboratories site. CNL's approach will incorporate and be guided by feedback received to date, as well as input and recommendations provided through ongoing Indigenous and public engagement activities. Changes to land use restrictions associated with the WL site end state as a result of the Project are described in Section 6.8.2. The commitment by CNL to determine the future use of the WL site, including collaboration with local stakeholders has been added to Section 6.8.6.2.2.
Regulatory Process	Requested more information on updated timing for the review process, submittal, and commission hearing.	CNL is currently working with the CNSC to establish a revised schedule for final regulatory submittals, including the submission date for the final EIS. CNL regularly updates interested members of the public about the Environmental Assessment process and the WR-1 Project through the engagement methods discussed in Section 5.2. CNL has received 26 submissions from members of the public and regulatory bodies on the draft EIS. Presently CNL is responding to those submissions and, subject to their acceptance by the CNSC, CNL will update and finalize the EIS. The adjustment to the schedule is being made in order to allow CNL to appropriately address these comments and for the CNSC staff to subsequently conduct a fulsome assessment of CNL's

Topic	Key Interests and Concerns	Response
		proposal.
Environmental Monitoring	Information was sought on how the in situ design incorporates ongoing environmental monitoring. Interest was expressed in the depth of monitoring wells.	Both the design and ongoing monitoring specific to WR-1 ISD Project has and will continue to incorporate existing Whiteshell Closure Project monitoring. Depths and location of monitoring wells was explained and talked about in public presentations. Proposed future monitoring activities are presented in Section 11.0 of the EIS, which was updated to include CNL commitments to integrate the WR-1 ISD project monitoring into the existing Environmental Assessment Follow-Up Program for the WL site. Table 11.1-1 summarizes the conceptual monitoring programs to be included in the overall Environmental Assessment Follow-Up Program for the Project. Section 11.2 was updated with CNL's commitment to engage with the local municipal governments, regulators, the CNSC, and the First Nations and the Manitoba Métis Nation on the monitoring program and incorporate their feedback on the monitoring program, where appropriate.
Valued Components	Confirming environmental VCs that were identified by the Project, reflect public feedback. This feedback on VCs was collected through comment cards received during open house sessions.	CNL surveyed attendees at public open house events to get their input into the VCs selected for the Project. The public was given the opportunity to identify new VCs. CNL reviewed all public feedback against the assessed VCs and either added additional VCs or determined that the feedback was effectively covered by existing VCs.

Topic	Key Interests and Concerns	Response
		Due to the high interest in VCs, CNL provided information handouts at public open houses, and posters were displayed that addressed environmental concerns such as Risk Assessment, Hydrogeology – Foundation and Groundwater Flow, and Risk to Ecological and Human Health. For more information on the feedback received related to VCs, see Section 5.3.3.
Contingency Planning	Information on how the Project design accounts for the risk that in situ does not operate as planned. What is the contingency plan and who is responsible?	The Whiteshell Reactor Disposal Facility will include multiple barriers, including the waste form, a specialized grout formulation, the existing WR-1 Facility walls, a concrete cap and engineered cover, and the surrounding geosphere. In the very unlikely case that degradation of these barriers occurs earlier than predicted, the surface and ground water monitoring system will detect contamination migration. A remediation effort would be initiated to provide for continued safety of workers, the public, and the environment. Section 11.2 of the EIS includes CNL commitment to developing environmental mitigation actions under the Environmental Protection Program on a case-by-case basis in case of unexpected monitoring results. CNL, as an on-going entity beyond site closure, will retain responsibility for monitoring and facility performance.
Incorporating lessons learned	Ensuring that the Project was properly quantifying and incorporating available lessons learned from other similar work already conducted and work done at the WL site.	CNL has gathered data and lessons learned where available on other in situ projects (see Section 2.5.1 of the EIS). CNL has participated in several learning workshops with technical experts that have performed ISD, and has used

Topic	Key Interests and Concerns	Response
		services and advisement from organizations that have performed the in situ method. Development of the grout formulation incorporated lessons learned from the Savannah River National Laboratory's reactors in situ grouting, as described in Section 3.4.6.2. Lessons learned were reviewed as part of assessing the potential accidents and malfunctions identified in Section 7.0. Gathering and incorporating Lessons Learned will be an important part of the detailed work planning activities prior to starting the work. CNL recognizes the incredible depth of research on waste storage that was carried out at the WL site and has been incorporating that research into the Groundwater Flow and Solute Transport Modelling [7] and the Geosynthesis [8] reports supporting the EIS.
Grout and Concrete	Effectiveness of the Grout	Since CNL has identified in situ disposal as the preferred option for decommissioning the WR-1 facility, the use of grout to fill the building below-grade has prompted many questions. CNL has developed specially-formulated grout based on the requirements of the WR-1 facility. The grout formulation has been designed and evaluated through a testing program to provide the required properties, and is described in Section 3.4.6.2 of the EIS. Properties of the grout and existing concrete materials have been discussed in Section 3.4.9.1. Effectiveness of the grout and concrete materials used for the in situ disposal system have been evaluated through

Topic	Key Interests and Concerns	Response
		the Disruptive Scenarios evaluated and presented in Section 6.7.1.7.2 of the Decommissioning Safety Assessment Report (DSAR) [9].
Impact on the Winnipeg River	The continued protection of the Winnipeg River is a key focus of the EIS. Understandably, the proximity of the WR-1 facility to the Winnipeg River prompted many questions about how the final, grouted project would affect the waterway.	CNL indicated that although the assessments indicated that there will be no negative effects on the Winnipeg River or its sediment and aquatic organisms as confirmed in EIS Sections 6.4.1, 6.4.2 and 6.5, CNL is planning to include the WRDF in the existing environmental monitoring program. The list of monitoring activities proposed to verify the effects predictions from WR-1 project has been provided in Section 11.0 of the EIS. The current environmental assessment follow up program has been amended with a work package to incorporate various environmental monitoring activities relevant to the closure and institutional control phases for the WRDF into the existing environmental monitoring program. The monitoring activities proposed for the WRDF are comprehensive and designed to identify triggers and initiate responses, which could involve mitigation measures and remedial actions.
Radiological Inventory	Understanding current	CNL received several requests for details on the current radiological

Topic	Key Interests and Concerns	Response
	inventory Confirmation on how the radiological inventory will reduce over time	content of the WR-1 facility and how the levels of radioactivity will reduce over time. It should be noted that the reactor fuel – the most radioactive part of the facility – was removed in 1985. In response to questions, CNL has conducted further testing of the facility and included the results in the updated EIS. Radiological inventory information is provided in Section 3.3.3.1 of the EIS. Detailed breakdown of the inventory is provided in the Environmental Risk Assessment (ERA) [10]. To provide more confidence in the modelling, CNL used conservative estimates for the total inventory, as well as modelled the release of radionuclides using conservative parameter as discussed in Section 3.4.9.1.1 of the EIS.
Effects of the Environment on the Project (Extreme Weather Events, Forest Fires, Seismic Events, etc.)	Has the Project examined the potential effects of an earthquake or climate change or other natural disasters on WR-1?	The effects of the environment on the Project (e.g., earthquakes, tornados, climate change) are assessed in Section 10.0 Effects of the Environment on the Project, of the EIS and in supporting technical documents. CNL explained that analysis was done on the seismic activity of the region and concluded that an earthquake would not cause damage to the Whiteshell Reactor Disposal Facility. To provide further confidence, CNL modelled a scenario with significant damage to the WRDF and confirmed that public health would not be endangered (Section 6.7.1 of the EIS). Additional natural disasters have been evaluated in Section 7.0 of the EIS and in the DSAR [9]. Results have indicated that the potential radiological doses to both human and non-human biota receptors are magnitudes less than the CNSC

Topic	Key Interests and Concerns	Response
		established dose criteria, which protects the public and environment under all plausible conditions. Climate change has been included as part of the normal evolution assessment and influenced both the environmental parameters (precipitation) as well as disruptive events (glaciation). Climate change is addressed in Section 10.4 of the EIS.
Economics	What is the cost of this option in comparison to alternative methods?	The alternative means technical support document presents a high-level cost analysis of the ISD option compared to other alternatives considered. The ISD option provides excellent value to the Canadian taxpayer and is protective of workers, the public, and the environment. This is documented in Section 2.0 of the EIS. Funding for the Project is provided by AECL, a federal Crown corporation and owner of the Whiteshell Laboratories site. In response to earlier public feedback, CNL included information on the approximate costs of alternative methods at subsequent open houses. Costs range from approximately $43 million to $265 million. The alternative means that was conducted for the project did not use cost as an evaluation criteria because all options were considered economically feasible.
Alternative Means/ Options	How was ISD chosen as the preferred option?	CNL was asked to provide further detail on how it chose the in situ disposal method for the WR-1 Project. In accordance with guidance from the Canadian Environmental Assessment Agency, the original EIS included qualitative assessments of the options considered. In response to requests,

Topic	Key Interests and Concerns	Response
		CNL revised the assessment of alternatives for clarity, and to incorporate feedback from the public and from First Nations and the Manitoba Métis Nation. This is provided in Section 2.0 of the EIS. The updated assessment clarifies the differences between the alternatives and explains the risks relative to each alternative. Based on this assessment, in situ disposal is CNL's preferred option and is low risk to the public and the environment when compared to the limits established by Canada's nuclear regulator, the Canadian Nuclear Safety Commission. Complete removal of the Whiteshell Reactor 1 (WR-1) was the decommissioning method described in the Comprehensive Study Report approved by the CNSC in 2002. Since then, CNL has continued to re-evaluate that plan in light of international best practice to reduce deferment periods. The Canadian regulations have adopted specific conditions for when in situ disposal of a legacy facility would be acceptable. WR-1 meets those conditions, as it is a legacy facility of the dawn of the nuclear age in Canada, and was not designed with decommissioning of the facility in mind. The in situ disposal method has been used successfully for over six decades in other parts of the world, is protective of the environment and the public, and reduces occupational health and safety risks to employees as well as the cost and timeframe to decommission a reactor such as WR-1. CNL's plans for WR-1 in situ disposal are

Topic	Key Interests and Concerns	Response
		going through a rigorous licensing approval process by Canada's independent nuclear regulator, the CNSC. If approved, in situ disposal will be undertaken under strict CNSC regulations.
IAEA guidance for In Situ Disposal	Participants wanted to ensure that international guidance on in situ design was being properly considered.	CNL received questions about the International Atomic Energy Agency's (IAEA) safety standard for decommissioning, which states that in-situ disposal is not a suitable option for all nuclear facilities and should be considered only under certain conditions. CNL agrees with this assessment, and CNL determined that WR-1 has features that make it suitable for long-term disposal such as: its location below grade, it does not contain significant quantities of long-lived isotopes, and that it can be monitored post-closure during the institutional control period. CNL is following IAEA safety standards for the decommissioning of the facility and more importantly is also following the IAEA safety standards for waste disposal, since the facility – in its end state – would be classified as a disposal site. The Canadian Environmental Assessment Agency and the CNSC require CNL to demonstrate that the proposed Project does not pose an unacceptable level of risk to human health or the environment. The Project is subject to approval by the CNSC, who has established regulations for the management of radioactive materials. They draw input to their regulations from the IAEA, but are an independent regulator with responsibility to verify

Topic	Key Interests and Concerns	Response
		the information CNL has presented as part of the EIS. The regulatory framework for this project is provided in Section 1.6 of the EIS, and AECL's and CNL's commitment to international best practices, including IAEA is provided in Section 1.1.
Design and engineering details	What would eventual design look like?	Many questions touched on the design of the WR-1 project. When CNL submitted the draft EIS, it had completed a preliminary conceptual design. Since then, the design process has continued to progress, and more refined designs have been prepared for the re-submission of the updated EIS. The final detailed design will equal or surpass the performance of the conceptual design that was assessed in the EIS. The current design of the disposal system is described in Section 3.4.9.1 of the EIS. Design of the monitoring program will include input from the regulators, the Indigenous communities and local municipalities (Section 11.0 of the EIS).

VC = valued component; CNSC = Canadian Nuclear Safety Commission; AECL = Atomic Energy of Canada Limited.

4.2 Formal Public Comments

In addition to the informal feedback that the public engagement outreach activities offer, the environmental assessment process provides an opportunity for formal feedback from the public. This process began with the formal public and Indigenous comment period on the WR-1 Project Description in May 2016. Followed, by a formal public and Indigenous comment period on the draft EIS for the proposed WR-1 Project from May 2017 until August 2017. Comments from members of the public, First Nations and the Manitoba Métis, and NGOs on the draft EIS were consolidated by the CNSC (as the responsible authority) and received by CNL. CNL prepared responses to the formal comments which will be submitted to the CNSC and posted on the CEAA Registry under project #80142.

Previously identified areas of interest surrounding the WR-1 Project continue to be prevalent in the 104 formal comments that the WR-1 project have received over the period September 2017 to December 3, 2020, including many comments and questions arising from the Alumni Technical Workshop held November 15, 2017, feedback from the April 3-5, 2018, benchmarking trip to Hallam, Nebraska, and the open house on June 8, 2019. For instance, economic regeneration, future land use, assessment of the decommissioning alternatives, and contingency plans continued to draw interest from the vicinity of the WL site.

4.3 Feedback on Valued Components

Section 6.1 Environmental Assessment Approach of the EIS outlines the process that was followed to develop the list of VCs. The list of VCs was presented on poster boards during all open houses, as well as on CNL's external website. The poster boards also included CNL contact information for feedback on VCs. At the November 2016 and June 2019 open houses, a questionnaire to identify the VCs of interest was offered to visitors. Public feedback has included comments and questions about the Winnipeg River (water quality) and Land Use and End State (future land use at the WL site).

The Winnipeg River was a key concern for the members of the public, and is represented in the EIS through representative VCs, including aquatic biota, fishing, and residents' use and enjoyment of land, and as a separate VC in Section 6.8 Land and Resource Use of the EIS. Land Use and Planning are also included as VCs in Section 6.8 if the EIS. These topics were also captured in the EIS as Issues and Concerns raised during engagement activities.

5. Planned and Upcoming Engagement Activities

This section details how CNL will continue to engage the public, including local elected officials, industry and NGOs, through a variety of mechanisms – demonstrating transparency and access to information. CNL will continue to promote all milestones and significant events through public information sessions, site tours, meetings of the PLC and engagement with Indigenous Nations. CNL will continue to use social media to engage the public featuring key milestones and Project information.

Planned future engagements may include but are not limited to the following:

- In-person and virtual open houses
- Information sessions (in person and virtual)
- Participation in regular public events such as trade shows and street markets
- Regular website review and content update with new information added as it becomes available
- Semi-annual PLC meetings
- Bi-monthly webinars
- WR-1 project update letter/invitation to intervenors
- Public polling

- Semi-annual CONTACT newsletters

Note that throughout this section, dates and other details are provided where possible. For engagements planned for the near-term, details and dates are present, but subject to change. For engagements planned to occur farther into the future, specific dates and details of the activity are generally unavailable, to allow for flexibility in accommodation of the EA process.

CNL has planned engagements for 2022/2023, described by quarter, and looking ahead into the project execution phase.

Fiscal Year 2022/2023 – Third Quarter (Q3) (October 1, 2022 – December 31, 2022)

CNL anticipates that media and public interest will increase in the next 12 months following the submission of the Final EIS to the CNSC. After the submission, CNL receives feedback from the CNSC following the federal/provincial/Indigenous technical review, leading up to a two-part Commission Hearing. To address this interest and to fulfil regulatory requirements, CNL remains committed to ongoing engagement with the public.

CNL expects continued interest in the revised EIS from those who made comments and/or have been following the progress of the environmental assessment for the project. CNL will continue to meet with stakeholders and First Nations and Métis. The focus will be on discussing how feedback has been incorporated into the EIS and how comments have been dispositioned. CNL will maintain regular communications through correspondence (including email blasts), meetings, information sessions, webpage content, newsletters, and webinars to ensure stakeholders and First Nations and Métis communities are kept apprised of the environmental assessment progress.

Engagement in Q3 includes:

1. Bi-monthly webinar (September)
2. Public Liaison Committee (PLC) Meeting (November)
3. Bi-monthly webinar (November)
4. CONTACT Fall Newsletter (November)
5. Survey of local residents, by phone and online

Fiscal Year 2022/2023 –Fourth Quarter (Q4) (January 1, 2023 – March 31, 2023)

The New Year brings regular engagement activities such as webinars which will continue to focus on issues of interest as expressed by the public. Key information updates will be shared with stakeholders through new web content, social media and emails to stakeholders.

Communication and engagement activities in Q4 include:

1. CONTACT winter edition (March)
2. Meeting with local elected officials
3. Bi-Monthly webinar (February)
4. Virtual Visitor’s Centre (February)

Fiscal Year 2023/2024- First Quarter (Q1) (April 1, 2023 – June 30, 2023)

1. Public Liaison Committee (PLC) Meeting (May)
2. Bi-monthly webinars

Fiscal Year 2023/2024 – Second Quarter (Q2) (July 1, 2023 – September 30, 2023)

Regular engagement activities such as public webinars and ad-hoc site visits will continue.

Key information updates will be shared with stakeholders through web content updates, social media and emails to stakeholders. CNL will also continue to share information in more interactive ways, such as video and infographics.

Engagements in Q2 include:

1. CONTACT Newsletter
2. Bi-monthly webinars
3. CNA Conference

Fiscal Year 2023/2024 – Hearing Preparation

In preparation of the two-part CNSC Commission Hearing that is anticipated to take place sometime in 2024, CNL will continue to engage the public through a variety of mechanisms demonstrating transparency in the process and access to information. CNL will continue to be proactive with the media and engaged stakeholders to communicate the benefits of the project and to correct errors. CNL will engage with stakeholders through public information sessions, site tours, advertising meetings of the Public Liaison Committee, and engagement with Indigenous Nations. CNL will continue to use social media to promote key project milestones and project information. Information shared leading up to the two-part Hearing will focus on how individuals and groups can participate and how they can learn more about the project.

Engagement activities leading up to the hearing will highlight particular aspects of importance and include:

1. PLC Meetings. At these meetings the WR-1 Project will provide an update
2. Breakfast briefings and Information Sessions in local communities for interested members of the public
3. Open Houses
4. Facility Tours
5. Public Webinars
6. CONTACT Newsletter
7. Municipal Council meetings – project updates
8. Stakeholder updates via email, newsletters and advertising
9. Updated online content

Project Execution Phase

Pending regulatory approval, the WR-1 Project's execution phase could be underway in 2025. During this period, CNL and the project will continue to update stakeholders and encourage

continued feedback, for instance on noise or other nuisance impacts that may occur, so as to enable mitigation while the project progresses. CNL and the project will also continue to involve stakeholders in monitoring plans and regularly update the community on project developments.

The regular engagements that support the stakeholder relationships that CNL has worked to build with respect to the WR-1 Project will continue. For instance, updates to the PLC, meetings with interest groups and local elected officials, as well as stakeholder emails and communicating on social media will be a key aspect to ongoing engagement.

5.1 Implications of the COVID-19 Pandemic

Since March 2020, the COVID-19 pandemic has directly impacted CNL's public engagement program resulting in the transition of all activities previously conducted in-person (e.g., personal meetings, open houses, site tours) into virtual engagements. The WR-1 Project has been successful in its response to this transition and will continue to implement virtual engagement activities moving forward. CNL has responded by increasing its use of virtual platforms during the pandemic in order to maintain a connection virtually with stakeholders.

Webinars continue to be one of the most effective activities used to share project updates and information. The project-specific webpage is a key method used to share information. This general increase in participation, views, etc., shows that the WR-1 Projects' efforts to engage virtually have been effective and that continued effort needs to be made in the future to engage virtually, even after a return to in-person engagement is available.

The virtual-based activities in 2020 through 2022 summarized in this section present several implications for future engagements:

- Improved accessibility for stakeholders who prefer to engage remotely (from their own offices, without requiring travel) and those who prefer to access online publications and CNL material on their schedule). Virtual engagement activities such as the virtual open house may therefore be popular to these stakeholders.
- Increased capacity to reach a broader audience, demographically and geographically. The continued availability of different virtual mediums (social media, news articles, CNL webpage) enable CNL to cater to a more diverse audience.
- The majority of in-person engagement activities remain on hold or have been replaced with virtual alternatives. Even after federal and provincial public health restrictions lift, many stakeholders (especially those who do not live locally), may choose to continue engaging remotely and since CNL's virtual activities have been successful in engaging the public, some future engagements will continue to be hosted virtually.
- Much, if not all, publicly generated conversations about new WR-1 Project updates will continue to occur virtually through social media outlets since these will be the first avenues which will gain public attention. For example, people who use devices such as smartphones receive instant notifications or news feeds whenever an outlet they follow

gets updated. This may continue even after physical distancing restrictions caused by the pandemic have been lifted.

- The importance of remaining flexible and responding to the feedback related to engagement activities as a priority.

Overall, despite the lack of in-person activities, it is reasonable to anticipate that future project engagement activities will be comparably successful with the use of digital and virtual platforms and media. Additionally, CNL's stakeholder engagement strategies are resilient to the challenges presented by the pandemic.

6. Conclusions

Methods employed to date have helped to share information and build awareness about the WR-1 Project with stakeholders and have enabled the public to provide valuable feedback into the Project. CNL will continue engagement efforts to support growth in awareness and understanding of the WR-1 Project.

The progression of the WR-1 Project through the EA process, is reflected in the evolution of stakeholder engagement strategies and in particular CNL's response to evolving engagement activities due to the COVID-19 pandemic. This report demonstrates that CNL was able to achieve its engagement objectives from 2020 through 2022 despite the challenges presented by the COVID-19 pandemic. Through direct conversations with stakeholders and members of the public during the timeframe of this report, CNL strived to address issues and concerns that the public had about the WR-1 Project. In-person meetings, print media, and public information sessions facilitated organic conversations between WR-1 Project staff and the public. These traditional forms of engagement are recognized by CNL to more tangibly facilitate active relationship-building with its stakeholders. However, in order to maintain active engagement with the public during the pandemic, CNL had to evolve its engagement strategies to accommodate a virtual environment. As a result, CNL developed virtual platforms that continued to enable direct conversation (e.g., webinars, virtual open house). The open concept and broad reach of these virtual chat "rooms" (anyone with an internet connection can participate) enabled CNL to engage with a wider audience than before. The evidence of increased participation (attendance and submission of feedback) from the public signify the popularity and success of these virtual engagement activities. CNL will therefore, continue to use virtual platforms to provide a variety of flexible means of interacting and conversing with key stakeholders in future engagement activities.

CNL has proactively addressed the key issues raised by stakeholders, in many cases resolving those concerns. However there remains persistent issues including the perception of a potential negative effect of the WRDF on the Winnipeg River and other off-site effects. CNL will continue to share information with the public through CNL's Public Information Program [4], including follow-up monitoring being used to verify predictions made in the final EIS.

Continuing to provide information as it becomes available will reinforce transparency and encourage further feedback which can assist CNL in understanding and incorporating

stakeholder perspectives into Project planning, future communications and the environmental assessment process.

In order to reduce the stigma surrounding legacy nuclear waste and remediation, CNL will continue to proactively share information with public stakeholders about its waste management practices and projects.

CNL will measure its effectiveness by continuing to self-evaluate against its communication objectives. This is an ongoing process and validation continues regularly through analysis of multiple forms of feedback.

Continued success means that CNL will endeavour to assess to what extent stakeholders participate in and trust CNL's communication and engagement. This is essential to verify and create the path for CNL's stakeholder engagement strategy in support of the WR-1 Project into the future.

7. References

[1] Canadian Nuclear Safety Commission, "Generic Guidelines for the Preparation of an Environmental Impact Statement", ISBN: 978-0-660-05139-0, May 2016. Available at http://nuclearsafety.gc.ca/eng/pdfs/Environmental-Assessments/CEAA-2012-Generic-EIS-Guidelines-eng.pdf

[2] *Quality Policy,* 900-514200-POL-001, 49890989.

[3] Canadian Nuclear Safety Commission, "REGDOC-3.2.1, Public Information and Disclosure". ISBN 978-0-660-25806-5, May 2018. Available at http://www.nuclearsafety.gc.ca/pubs_catalogue/uploads/REGDOC-3-2-1-Public-Information-and-Disclosure-eng.pdf

[4] *Public Information Program for Canadian Nuclear Laboratories (CNL)*, CW-513430-REPT-001, 47992894.

[5] *Terms of Reference Regional Scio Economic Development Support*, WLD-503000-041-000, 57325358.

[6] *Whiteshell Laboratories Decommissioning Project Comprehensive Study Report,* WLDP-03702-041-000, 12007915.

[7] *In Situ Decommissioning of WR-1 at the Whiteshell Laboratories Site – WR-1 Groundwater Flow and Solute Transport Modelling,* WLDP-26000-REPT-005, 51818576.

[8] *Geosynthesis for WR-1 Environmental Impact Statement,* WLDP-26400-041-000, 56295944.

[9] *In Situ Decommissioning of Whiteshell Reactor 1 Project – Decommissioning Safety Assessment Report,* WLDP-26000-SAR-001, 51506633.

[10] *WR-1 at the Whiteshell Laboratories Site Environmental Risk Assessment,* WLDP-26000-REPT-006, 50895012.

[11] *Whiteshell Laboratories: WR-1 Reactor Decommissioning Indigenous Engagement Report*, WLDP-26000-REPT-002, 51512443.

Appendix A Public Liaison Committee

Member Organization
Town of Lac du Bonnet
RM of Lac du Bonnet
LGD of Pinawa
Town of Beausejour
RM of Alexander
RM of Brokenhead
RM of Whitemouth
Tenant companies at the WL site
Manitoba Sustainable Development
Town of Powerview Pine Falls

Public Liaison Committee Meeting
PLC – Agenda 2022 May 12

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Notice of Meeting
Avis de reunion
CW-511300-FM-467 Rev. 2

UNRESTRICTED/ILLIMITÉ
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Ref. Procedure CW-511300-PRO-647

To / À		
CORE MEMBERS & DESIGNATES	Internal:	K. Ross, CNSC
External:	J. Gilbert, CNL	L. Lowman, Env & Climate Change
J. Barnard, Acsion Industries Inc.	K. Rod, CNL	D. Henderson, Sagkeeng First Nation
L. Schinkel, RM of Lac du Bonnet	M. MacKay, CNL	M. Kuly, Blueprint, Facilitator
C. Holigroski, Town of Beausejour		J. McBrearty, CNL
T. Mathers, Town of Lac du Bonnet	INVITED GUESTS:	Z. Smith, CNL
W. Amerongen, RM of Whitemouth	C. Michaluk, AECL	P. Quinn, CNL
B. Saluk, RM of Brokenhead	M. Page, AECL	B. Wilcox, CNL
B. Skinner, LGD of Pinawa	W. Ewasko, MLA	R. Swartz, CNL
D. MacLellan, Powerview/Pine Falls	J. Bezan, MP Selkirk	
M. Kinghorn, RM of Alexander	T. Falk, MP Provencher	
L. Markwart, MB Conservation & Climate	S. Watt, CNSC	
S. Davies, MB Conservation & Climate		

Meeting Details / Coordonnées de la réunion		
Day, Date, and Time / Jour, date et heure	Duration / Durée	Location / Lieu
Thursday, May 12, 2022 at 09:30	1.5 hour	Audio/Video- ZOOM
Purpose / Objet		
Whiteshell Closure Project - Public Liaison Committee Meeting		

Agenda / Ordre du jour	By / Par	Time / Temps
Proposed Agenda:		
1. Session Opening		20 minutes
a. Virtual Meeting Guidelines	Facilitator	
b. Welcome	John Gilbert	
c. PLC Overview	Facilitator	
d. Introductions & Member Updates	All	
2. Whiteshell Closure Project- Overview & Status Update	John Gilbert	30 minutes
3. WR-1 Environmental Assessment – Overview & Update	Brian Wilcox	10 minutes
4. Whiteshell Laboratories Employee Transition Plan	Sabrina Savard	10 minutes

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Avis de reunion
CW-511300-FM-467 Rev. 2

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Agenda / Ordre du jour	By / Par	Time / Temps
5. Waste Management and Transportation	Adriana Luke	10 minutes
6. Public Liaison Committee Business a. Acceptance of 2021 November meeting notes and review action items b. Actions from previous meeting	Facilitator	5 minutes
7. Other Business a. Update from Community Regeneration Partnership	Blair Skinner	5 minutes
8. Next Meeting	Facilitator	

W

☐ Attachments / Pièces	☐ Coffee / Café	☐ Lunch / Déjeuner

Arranged by / Réunion organisée par		
Name / Nom Sandi Matheson	Date / Date 2022 May 4	Charge Number / N° d'imputation
Branch / Direction ou service Whiteshell Closure Project		Local / Poste 204-753-2311 ext. 62006

Follow-up / Suivi		
Actions / Interventions	Deadline / Échéance	Responsibility / Responsable

☐ Minutes to Follow / Compte rendu ou procès-verbal à suivre	Reference no. / N° de référence

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Appendix B Sample Agenda

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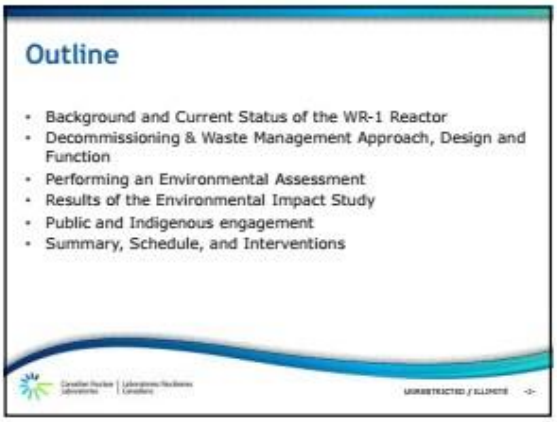
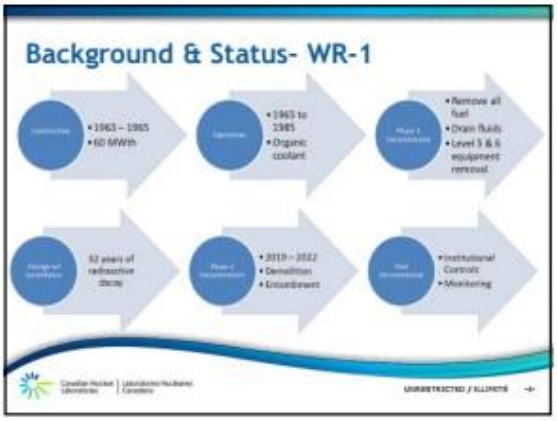
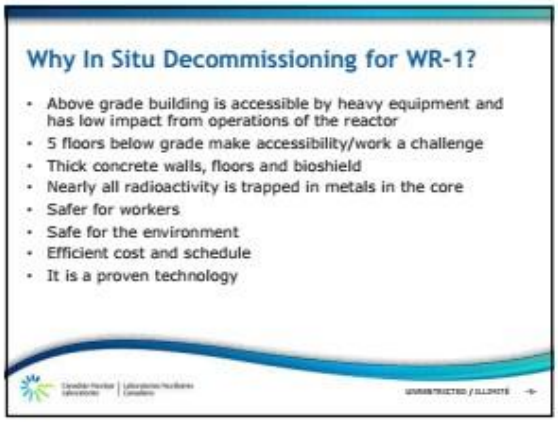
AGENDA
Powerview-Pine Falls Town Council
Site Visit
August 10, 2017

1:00pm	Arrive at Whiteshell Laboratories – B401 Front Desk	• Badging and Dosimetry
1:15-2:00	B401 Main Conference Room 2-13	• Welcome • Safety Brief • CNL Overview Presentation – Dan Coyne
2:00-2:45	B100 - WR-1	• Walking Tour Jeff Miller WR-1
2:45-3:45	North Side: B300 Stages 4&7/ B411/200, Fuel Tank, Demonstration Canisters	• Driving Tour Dan Coyne, Mitch MacKay, (Meet transportation B100 back entrance truck bay area)
	WMA - Canisters, Standpipes, Bunkers, SMAGS, SSF etc.	• Driving Tour Continues
	South Side: B402/902/408/415/505 HC Remediation Site	• Driving Tour ends at B401 west entrance
4:00	Depart Site	• Return Badges and Dosimeters to Front Desk

Appendix C Public Presentation







The Environmental Impact Statement (EIS)

- An EIS is a report, prepared by CNL (Proponent) that presents the technical studies and findings of an EA
- Submitted to the CNSC in September 2017
- Includes:
  - Public and Aboriginal Engagement
  - Deep understanding of the environment – geology, hydrogeology, valued components, species at risk, etc
  - Studies effects during decommissioning and post closure, including safety assessments
  - Presents expected impacts on humans and the environment

Perform Environmental Risk Assessment

- Both human and ecological health risks are assessed
- Assess radiological and non-rad contaminants of potential concern
- Done for both closure phase and post-closure
- Considers human and biota receptors
- Evaluates various pathways
- Calculates dose assessment

Human Receptors

Exposure Pathways

Receptor	Exposure Pathway	Environmental Media
Farm A	Inhalation	Air
	Ingestion	Water (Winnipeg River) Soil/Sediment (incidental) Terrestrial plants (homegrown) Aquatic animals (fish) Terrestrial animals (beef, pork, poultry, eggs, milk, game)
	External	Air Water (Winnipeg River) Soil/Sediment
Harvester	Inhalation	Air
	Ingestion	Aquatic animals (fish) Terrestrial animals (waterfowl, deer)
	External	Air Soil

Human Health Risk Assessment Results

	Dose (mSv/a)	
Age Group	Farm A	Harvester
Adult	0.000000913	0.000101
Child	0.00000103	0.0000735
Infant (nursing)	0.00000146	0.0001
Infant (formula)	0.000000371	N/A
3 month old (nursing)	0.0000105	N/A
3 month old (formula)	0.0000000112	N/A

Public Dose Limit for this Project is 1mSv per year
Results are 1/10,000 to 1/1,000,000 times lower

Comparing the Results

- Highest dose from project – 1/10,000 of the dose limit
- Dose to Workers during closure – 1/1,000 of the limit
- Single Dental X-ray – 1/10 of the limit
- Smoking 1 pack of cigarettes per day for a year – 1/3 of limit
- Natural Background Radiation (Canada average)- 1.8 times higher
- Natural Background Radiation (Winnipeg) – 4 times higher
- CT Scan – 10 times higher

Summarizing the Project

- The approach is successfully proven at many nuclear sites around the world
- The reactor systems are isolated underground from people, and includes robust, engineered safety barriers
- Institutional controls are in place to restrict access and confirm environmental performance for 300 years
- Lowest risk to workers, the public and the environment
- Waste is disposed of now, ensuring future generations will not have to manage the waste

Public Engagement

- 15 regional public information sessions
- Participation in community events (Lac du Bonnet trade fair)
- Site tours and engagement with local municipalities, province, public and media
- Regional economic regeneration funding and support
- CNL/AECL retiree and alumni technical workshop
- Annual newsletter mailed out across the region
- Public Liaison Committee

First Nation & Métis Engagement

- Engaged with six First Nation and Metis communities
- Site tours, meetings and project community visits / open houses
- Aboriginal Industry Day held at nearest First Nation community
- Participation in community events (Manitoba Metis Federation Annual General Assembly)
- First Nation community specific newsletters

Upcoming:

- Visit to Hallam, Nebraska April 2018 to benchmark entombed reactor
- Aboriginal environmental protection workshop

Next Steps

The Canadian Nuclear Safety Commission and various Federal and Provincial Agencies are reviewing the draft EIS

Public comment period is October 5 to December 20

Commission Hearing – October 2018

Decision by December 2018

Get involved! - http://www.nuclearsafety.gc.ca/eng/the-commission/hearings/index.cfm

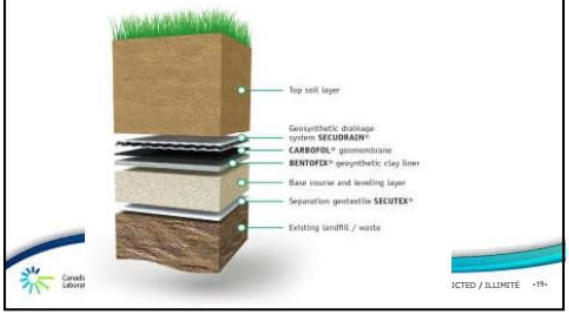
Thank you!

Questions?

North American Precedence for ISD Projects

- Hallam Nuclear Facility, Nebraska – 1967
- Piqua Nuclear Facility, Ohio – 1967
- Boiling Nuclear Superheater (Bonus), Puerto Rico – 1970
- SM-1A US Army Reactor, Alaska - 1973
- Super Kukla Reactor, Nevada – 2006
- CPP-601 Fuel Processing Facility, Idaho - 2009
- Savannah River P Reactor, S. Carolina – 2009
- Savannah River R Reactor, S. Carolina – 2009
- Hanford U Canyon, Washington, 2011
- Experimental Breeder Reactor II, Idaho – 2013

Typical final cap



Disruptive Scenarios

In addition to the Normal Evolution Scenario a number of disruptive scenarios were also considered, including:

- Unsealed borehole
- **Human habitation (unexpected population characteristics)**
- Localized failure of ISD
- **Substantial failure of ISD**
- **Human intrusion**

Of these scenarios, three were identified to bound the consequences of other events

Inadvertent Human Intrusion

- Assumes an exploration borehole drilled through engineered cover, concrete, grout and WR-1; occurs at time of maximum concentration in waste
- Waste material brought to surface, handled by driller, dumped on the ground
- After driller leaves, trespassers visit the borehole location; adult, child, infant; 1 hr/day in snow-free period
- Exposed by direct contact with waste material, incidental ingestion, groundshine and inhalation of dust

Scenario Results - Inadvertent Human Intrusion

Doses are higher than the public dose constraint, but well below the IAEA SSR-5 risk constraint design criteria of 20 mSv/a to those living around the site for unlikely events that could result in higher radiological doses to the public (specifically, human intrusion event)

Age Group	Dose (mSv/a)
Dose to Driller	0.0391
Dose to Trespasser	
Adult	1.21
10-year old Child	1.22
12-month old Infant	1.74
3-month old Infant	1.65

Reduced Containment (Failure of ISD)

- Assumes an open fracture in the foundation of the WR-1 complex, with increased rate of contaminant release to river
- Receptors and exposure assumptions as for Normal Evolution
- On-site farm receptors take water from the river; used for drinking and watering; consume fish from the river
- Harvester receptors take river water, fish and game near the WR-1 site, downstream and upstream

Scenario Results - Reduced Containment and Isolation (Failure of ISD)

This scenario considers an open fracture modelled in the foundation of the WR-1 Building

Age Group	Dose (mSv/a)		
	On-site Farm	Farm A	Harvester
Adult	4.78E-05	8.99E-07	9.95E-05
10-year old child	5.40E-05	1.02E-06	7.24E-05
1-year old Infant Nursing	7.64E-05	1.44E-06	9.87E-05
1-year old infant Formula fed	1.94E-05	3.66E-07	N/A
3-month old infant Nursing	5.49E-04	1.03E-05	N/A
3-month old infant Formula fed	6.06E-07	1.14E-08	N/A

Manitoba High-Level Radioactive Waste Act

(d) provide storage for high-level radioactive waste or spent nuclear fuel underground or in an above-surface environment that is not subject to

(e) provide facilities for the disposal of high-level radioactive wastes in Manitoba.

facility, and that does not provide reasonable human access to the containers in which the waste or nuclear fuel is contained; or

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How long does concrete last?

- Roman concrete has lasted for over 2000 years.
  - Roman Pantheon 128 AD
- Modern concrete often damaged due to expansion of rebar from corrosion
- Wikipedia: Many concrete structures are built with an expected lifetime of approximately 100 years,[80] but researchers have suggested that adding silica fume could extend the useful life of bridges and other concrete uses to as long as 16,000 years.[81]

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Public Engagement/Community Support

- Lac du Bonnet Trade Fair Booth (May)
- Industry Day (May)
- 3 Public Information Sessions held in 5 communities (August/November/July)
- Hosted site tours with Minister and Deputy Minister (June/July)
- Public Liaison Committee (May/October)
- Hosted site public tour (November)
- Alumni Technical Workshop (November)

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First Nation & Métis Engagement

- Engagements with Black River, Brokenhead, Hollow Water, Wabaseemoong, Sagkeeng First Nations (WL tours and at each FN community)
- Engagement with Manitoba Métis Federation (meeting/tour at WL and meeting at MMF Head Office, Winnipeg)
- Trade Show booth at the Manitoba Métis Federation Annual General Assembly
- First Nation Industry Day, Sagkeeng Community Centre

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Decommissioning Approach

- WR-1 is a unique challenge on the WL site for decommissioning, due to the below grade construction and unique facility characteristics
- CNL is proposing in situ decommissioning for WR-1
- Combination of demolition and permanent disposal
- The above grade structure will be dismantled/demolished
- The below grade reactor facility is proposed to be permanently disposed in situ
- Disposal system contains/isolates remaining waste inventory to protect public and the environment

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Example of Species Considered in ERA

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Appendix D Open Houses

Public Open House Summary for Preliminary Engagement

Location	Date	Times	Signed in Attendance	Estimated Attendance	Comment Cards Received
Pinawa	August 29, 2016	6:00 p.m. to 8:00 p.m.	38	55	5
Whitemouth	August 30, 2016	6:00 p.m. to 8:00 p.m.	10	12	0
Beausejour	August 31, 2016	6:00 p.m. to 8:00 p.m.	12	15	3
Powerview – Pine Falls	September 1, 2016	6:00 p.m. to 8:00 p.m.	14	20	4
Lac du Bonnet	September 2, 2016	6:00 p.m. to 8:00 p.m.	26	35	5

Public Open House Summary for Round 1

Location	Date	Times	Signed in Attendance	Estimated Attendance	Comment Cards Received
Pinawa	November 29, 2016	6:00 p.m. to 8:00 p.m.	43	45	8
Whitemouth	November 28, 2016	6:00 p.m. to 8:00 p.m.	8	10	4
Beausejour	January 4, 2017	6:00 p.m. to 8:00 p.m.	8	8	1
Powerview – Pine Falls	December 8, 2016	6:00 p.m. to 8:00 p.m.	3	3	0
Lac du Bonnet	December 1, 2016	6:00 p.m. to 8:00 p.m.	19	25	7

Public Open House Summary for Round 2

Location	Date	Times	Signed in Attendance	Estimated Attendance	Comments Received
Whitemouth	July 10, 2017	6:00 p.m. to 8:00 p.m.	5	5	0
Pinawa	July 12, 2017	6:00 p.m. to 8:00 p.m.	14	19	0
Lac du Bonnet	July 15, 2017	10:00 a.m. to 1:00 p.m.	24	28	10
Beausejour	July 18, 2017	6:00 p.m. to 8:00 p.m.	3	3	0
Powerview – Pine Falls	July 20, 2017	6:00 p.m. to 8:00 p.m.	8	8	0

Summary of Round 1 Engagement Outreach to Stakeholder Groups

Stakeholder Group	Location
Acsion Industries	Pinawa
Association for Community Living	Beausejour
Auglen Park and District Community Association	Lac du Bonnet
Beausejour and District Chamber of Commerce	Beausejour
Beausejour Brokenhead Development Corporation	Beausejour
Beausejour Co-op	Beausejour
Beausejour Lions Club	Beausejour
Black Bear Co-op Ltd	Lac du Bonnet
Blue Water Chamber of Commerce	St. Georges
Coldspring Granite	Lac du Bonnet
Community Futures Winnipeg River	Lac du Bonnet
Community of Bissett	Bissett
Eastman Tourism Association	Whitemouth
Falcon and West Hawk Chamber of Commerce	Falcon Beach
Grand Beach and Area Development Corporation	Grand Marais
Lac du Bonnet and District Chamber of Commerce	Lac du Bonnet
Lac du Bonnet Lions Club	Lac du Bonnet
LGD of Pinawa	Pinawa
Manitoba Hydro	Winnipeg
Manitoba Model Forest	Powerview – Pine Falls
Milner Ridge Correctional Centre	Beausejour
Pinawa Chamber of Commerce	Pinawa
Pinawa Community Development Corporation	Pinawa
Royal Canadian Legion	Lac du Bonnet
Royal Canadian Legion	Beausejour
RM of Brokenhead	Beausejour
RM of Lac du Bonnet	Lac du Bonnet
RM of Reynolds	Hadashville
RM of Springfield	Oakbank
RM of St. Clements	East Selkirk
RM of Victoria Beach	Winnipeg
RM of Whitemouth	Whitemouth
South Beach Casino	Scanterbury
Sun Gro Horticulture Canada Ltd.	Elma
Sunrise School Division	Beausejour
Tantalum Mining Corporation of Canada Ltd.	Lac du Bonnet
Town of Beausejour	Beausejour
Town of Lac du Bonnet	Lac du Bonnet

Stakeholder Group	Location
Town of Powerview – Pine Falls	Powerview
Whiteshell Cottagers Association	Winnipeg
Whiteshell Community Regeneration Partnership	Pinawa
Whiteshell School District	Pinawa
Winnipeg River Arts Council	Lac du Bonnet
Winnipeg River Learning Centre	Powerview – Pine Falls

LGD = Local Government District; RM = Rural Municipality; CNSC = Canadian Nuclear Safety Commission.

Summary of Outreach to Stakeholder Groups in Round 2

Stakeholder Group	Location
Acsion Industries	Pinawa
Association for Community Living	Beausejour
Auglen Park and District Community Association	Lac du Bonnet
Beausejour and District Chamber of Commerce	Beausejour
Beausejour Brokenhead Development Corporation	Beausejour
Beausejour Co-op	Beausejour
Beausejour Lions Club	Beausejour
Black Bear Co-op Ltd	Lac du Bonnet
Blue Water Chamber of Commerce	St. Georges
Coldspring Granite	Lac du Bonnet
Community Futures Winnipeg River	Lac du Bonnet
Community of Bissett	Bissett
Eastman Tourism Association	Whitemouth
Falcon and West Hawk Chamber of Commerce	Falcon Beach
Grand Beach and Area Development Corporation	Grand Marais
Lac du Bonnet and District Chamber of Commerce	Lac du Bonnet
Lac du Bonnet Lions Club	Lac du Bonnet
LGD of Pinawa	Pinawa
Manitoba Hydro	Winnipeg
Manitoba Model Forest	Powerview – Pine Falls
Milner Ridge Correctional Centre	Beausejour
Pinawa Chamber of Commerce	Pinawa
Pinawa Community Development Corporation	Pinawa
Royal Canadian Legion	Lac du Bonnet
Royal Canadian Legion	Beausejour
RM of Brokenhead	Beausejour
RM of Lac du Bonnet	Lac du Bonnet
RM of Reynolds	Hadashville
RM of Springfield	Oakbank

Stakeholder Group	Location
RM of St. Clements	East Selkirk
RM of Victoria Beach	Winnipeg
RM of Whitemouth	Whitemouth
South Beach Casino	Scanterbury
Sun Gro Horticulture Canada Ltd.	Elma
Sunrise School Division	Beausejour
Tantalum Mining Corporation of Canada Ltd.	Lac du Bonnet
Town of Beausejour	Beausejour
Town of Lac du Bonnet	Lac du Bonnet
Town of Powerview – Pine Falls	Powerview
Whiteshell Cottagers Association	Winnipeg
Whiteshell Community Regeneration Partnership	Pinawa
Whiteshell School District	Pinawa
Winnipeg River Arts Council	Lac du Bonnet
Winnipeg River Learning Centre	Powerview – Pine Falls
Manitoba Aboriginal and Northern Affairs	Winnipeg
Manitoba Jobs and the Economy	Selkirk
Manitoba Sustainable Development	Lac du Bonnet
Northwatch (received CNSC participant funding)	Ontario
Concerned citizen	Winnipeg (cottage property north of the WL site)

LGD = Local Government District; RM = Rural Municipality; CNSC = Canadian Nuclear Safety Commission.

Summary of Round 2 Engagement Outreach to Additional Stakeholder Groups

Stakeholder Group	Location
Manitoba Aboriginal and Northern Affairs	Winnipeg
Manitoba Cottagers Association	Winnipeg
Manitoba Jobs and the Economy	Selkirk
Manitoba Sustainable Development	Lac du Bonnet
Northwatch (received CNSC participant funding)	Ontario
Concerned citizen	Winnipeg (cottage property north of the WL site)

CNSC = Canadian Nuclear Safety Commission

Appendix E Summary of Feedback from Open Houses

Summary of Issues from Preliminary Engagement

Topic	Issue/Concern Raised	Response
Overall Decommissioning	• Participants were interested in the rationale for choosing ISD as the decommissioning method as opposed to the method described in the earlier CSR (AECL 2001). • Participants requested additional information on the other decommissioning methods considered, including associated costs.	• The CSR did not assess technical alternatives, but it describes the potential to apply new approaches/technologies. • Nuclear decommissioning in Canada was in infancy at the time of preparation of the CSR. • The CSR only looked at alternative timelines of 20, 60 and 100 years. • The focus was on the availability of a national repository for waste. • Due to the lifetime of the Project (then 60 years), the CSR stated it could not speculate on what new processes or technologies would be available at the time of decommissioning. • The proposed ISD of WR-1 reduces the occupational health and safety risks, reduces transportation risks and reduces the cost and timeframe of decommissioning WR-1. • Additional details on alternatives were provided along with a summary of the estimated costs for alternatives (EIS Section 2 Table 2.6.2-1).
Monitoring Plans	• Interest was expressed in knowing more about water quality monitoring for groundwater and the Winnipeg River. • Interest was expressed in knowing more about monitoring plans after decommissioning is complete.	• River sediment samples are collected each year and reported on in our annual Environmental Monitoring Report. Copies of this report have been made available at all of our open houses. Mailed out when requested. • Environmental protection staff were available at all open houses and on site engagements. Staff spent several hours with particularly interested stakeholders explaining results. • A river sediment sampling campaign was conducted as part of the CSR and EAFP. These results are summarized in the CSR and the follow-up for that testing is reported on annually in the EAFP Progress report. Copies of this report have been made available at all of our open houses. Copies of this report were mailed out to interested individuals. • Post-closure monitoring plans will be developed by CNL following the Environmental Assessment and will become part of the EAFP. • The plan will include monitoring of groundwater in wells located between the grouted facility and the Winnipeg River. • Testing will determine if any radiological or non-radiological contaminants are released from the grouted facility and within the range predicted in the environmental

Topic	Issue/Concern Raised	Response
		assessment (which are concentrations well below established benchmarks for the protection of humans and the environment). • CNL (and previously Atomic Energy of Canada Limited [AECL]) has a long history of performing environmental monitoring. For more than 60 years CNL has been developing and implementing monitoring programs that protect our natural surroundings and meet the strict standards put in place by the Province and the Federal government.
Future Land Use and Tenure	• Participants were interested in knowing if the WL site would be available for future economic activities.	• CNL has helped to facilitate the development of the WL Community Regeneration Partnership. This group is assessing site re-use options. Together with AECL (the owner of the facilities), CNL has been evaluating and assisting viable third party economic regeneration proposals for the WL site. These proposals could include the re-use of an existing facility on the WL site or use of land. Such plans would have to be developed in collaboration with several stakeholders, including local communities, AECL and the province of Manitoba.
Waste Management	• Questions around where used fuel would be stored were asked.	• The spent fuel is currently inventoried, stored and monitored in the WL Waste Management Area. The current strategic plan for WL is that the fuel stored at WL will be relocated to Chalk River for ongoing interim storage.

Summary of Issues from Round 1 Open Houses

Community	Topic	Key Interests and Concerns	Response
Multiple Communities	Project Description	• Participants were interested in knowing more about the grout being used for encapsulating WR-1. More information was requested about its composition, longevity and plans for monitoring the grout in the future. • Participants requested more detail about ISD. Concerns included general ones about where radioactive material would be	• While the grout formulation is important, it forms only one of many barriers that are designed into the ISD system. We make conservative assumptions regarding grout properties such as hydraulic conductivity (how conductive it is to water movement) and incorporate that into our design models. We are working now to prepare tests using grout formulations manufactured with raw materials from Manitoba (sand and stone). We will confirm the performance properties of the grout through laboratory testing. • The ageing of the system barriers is compared to the decay rates of the radionuclides present in the reactor to understand if there is an environmental effect.

Community	Topic	Key Interests and Concerns	Response
		located on the WL site and more specific concerns about how long it would take for the radioactive material to decay. • Participants wanted to understand the rationale for choosing ISD as opposed to alternative decommissioning methods. • Several participants expressed a preference for dismantling WR-1 completely. • Requests for material were made, including copies of the previous CSR.	• Alternatives that were both technically and economically feasible were presented at all the public engagements. Posters and graphics can be viewed online: http://www.cnl.ca/site/media/Parent/WL_posters_Nov_2016.pdf. It was explained that these options were assessed for their environmental effect, socio-economic effect and human health effects. • The ISD option is a safe decommissioning option for the reactor with respect to the environment, workers and the public. This option reduces risks to the environment and people by providing a robust seal that will allow safe, continued radioactive decay. • ISD limits risks to workers and the environment that would be presented through alternative approaches involving the dismantling, removal and transportation of reactor systems. • ISD has been in successful use for over six decades in the United States and was implemented at five nuclear power sites in the United States and one in Puerto Rico.
Multiple Communities	Future Land Use and Land Tenure	• Participants were interested in potential future uses of the WL site and how future land tenure for the WL site would be determined. Multiple parties have noted potential interest in future use of the WL site, including municipalities, rural municipalities, Indigenous peoples, landowners who had their land expropriated in the 1960s when the WL site was founded, and industry. There was also discussion about using the WL site for developing small modular reactors.	• Once the Project is complete, a relatively small portion of the land will remain under institutional control and licensing under the *Nuclear Safety Control Act*. CNL, as the licence holder, will continue to be responsible for long-term care, maintenance activities and environmental monitoring to ensure that the decommissioning approach performs to expectations and corrective measures are taken if necessary. • AECL acquired the land in question from the province of Manitoba and private landowners circa 1960. AECL, as the owner of the lands, is currently looking at options with respect to the future of the land once the WL site is decommissioned and closed.

Community	Topic	Key Interests and Concerns	Response
Multiple Communities	Water Quality	• Participants raised concerns about the water quality in various waterbodies, including the Winnipeg River, the Lee River and Lac du Bonnet, as a result of ISD.	• The EIS includes a comprehensive analysis of surface water and groundwater. CNL shares your concern for protection of waterways and groundwater, and this is a major focus in our ongoing operations as demonstrated by our Environmental Protection Program and ongoing operations.
Multiple Communities	Future Monitoring	• Participants requested more information about monitoring activities during institutional control and what would occur if there were a release of hazardous/ radioactive material.	• Post-closure monitoring plans will be developed by CNL following the environmental assessment and will become part of the EAFP. This plan will include monitoring of groundwater in wells located between the grouted facility and the Winnipeg River. Testing will determine if any radiological or non-radiological contaminants are released from the grouted facility and confirm if the concentrations of released contaminants are within the range predicted in the environmental assessment (which are concentrations well below established benchmarks for the protection of humans and the environment).
Multiple Communities	Waste Management	• Participants were interested in what would happen with radioactive material currently stored on the WL site and the amount of material that would be transported to the Chalk River site.	• Radioactive waste from the WL site will remain on site temporarily. • New facilities have recently been built at the WL site to temporarily accommodate radioactive waste generated from decommissioning activities. • A final long-term management solution for all radioactive waste stored and generated at the WL site has yet to be determined. The Project is considering options, one of which is to transfer the majority of the radioactive waste to CNL's Chalk River site.
Pinawa	Local Economy	• Participants expressed concern about the future of the grant-in-lieu of taxes Atomic Energy of Canada Limited currently pays to the LGD of Pinawa and economic regeneration activities being undertaken.	• CNL has helped to facilitate the development of the WL Community Regeneration Partnership. This group is assessing site re-use options. Together with AECL (the owner of the facilities), CNL will evaluate and assist viable third-party economic regeneration proposals for the WL site. These proposals could include the re-use of an existing facility on the WL site or use of land. Such plans would have to be developed in collaboration with several stakeholders, including local communities, AECL and the province of Manitoba.

Community	Topic	Key Interests and Concerns	Response
Pinawa	Regulatory Process	• The question was raised as to what would happen to the Project and the WL site if the regulator did not approve the Project.	• The proposed WR-1 ISD can only proceed if it receives regulatory approvals to demonstrate safety to the environment and people. An environmental assessment is being conducted under the *Canadian Environmental Assessment Act* and led by the CNSC. The environmental assessment will evaluate Project activities and the mitigation strategy for any possible environmental effects throughout the life of the Project.
Whitemouth	Project Description	• More information about comparable projects in Canada and the US was requested.	• ISD has been in successful use for over six decades in the United States and was implemented at five nuclear power plants in the United States and one in Puerto Rico. The environmental assessment follows the requirements of Canadian Environmental Assessment Agency. It is a fact-based assessment.
Beausejour	Regulatory Process	• Who will be assessing the Project and will the documents be available for public review?	• The environmental assessment process requires CNL to generate a thorough analysis of effects on the environment from the Project. This includes an EIS, a decommissioning safety assessment and a post-closure safety assessment. The information is submitted to the CNSC, which conducts a review of the data and a meaningful public and Indigenous engagement process. All information will be available to the public. These early engagements with the public help us understand their concerns so we can incorporate that into our work. We will submit all documentation to the CNSC in September 2017.
Beausejour	Local Economy	• What is the nature of the workforce once the Project is completed?	• This Project in the near term will provide a wide opportunity for employment in the area. In the longer term it must be recognized that the WL site is closing (as was announced in the mid-90s) and this Project intends to leave the site in the best condition possible to enhance the future opportunities and use of the area. • Worker skill sets will be centred on waste management and decommissioning along with all the support staff to run the WL site.
Beausejour	Water Quality	• Participants requested more detail about site hydrology and the aquifer.	• The EIS includes a comprehensive analysis of surface water and groundwater. CNL shares your concern for protection of waterways and groundwater, and this is a major focus in our study of protectiveness of the environment.

Community	Topic	Key Interests and Concerns	Response
Beausejour	Accidents and Malfunctions	• Questions were raised about earlier releases of contaminants on the WL site and how they were handled.	• As part of our application to the CNSC for a decommissioning licence, CNL conducted a Comprehensive Environmental Assessment. • This included an investigation of Winnipeg River sediments to look for any radioactive contamination that may have occurred over the history of the WL site. River sediments were surveyed for radioactivity at hundreds of locations. • The assessment concluded that "using the most conservative dose estimation methods, doses to humans and non-human biota are below accepted guidelines." • The analysis methods and results were peer-reviewed, presented in public meetings and are available in the open publication of the CSR. • CNL continues to monitor the river sediment near the WL site and downstream.
Powerview – Pine Falls	Project Description	• Participants requested updated timelines for the Project.	• Updated timelines were provided and included on information session poster boards.
Lac du Bonnet	Future Engagement	• Suggestions were made to make engagement more accessible, including helping interested parties interpret technical reports and holding open houses in different locations, including in Winnipeg, and at different times to improve attendance.	• All Manitobans have been and are welcome to attend any of our information sessions. This includes CNL's local communities, and Indigenous peoples. CNL has held a total of 15 open houses in the surrounding region and at several Indigenous communities and organizations. • CNL has received feedback and requests for information from people across Manitoba and Canada. All Canadians are welcome to participate in the environmental assessment process. • CNL has hosted dozens of one-on-one engagements and tours of the facility with various stakeholders, Indigenous peoples and those who expressed interest at the CNL information sessions. • CNL adjusted the location and time of information sessions, including hosting one on a weekend adjacent to a very popular event. • CNL also went to several popular community events with information on the Project, as well as bringing subject matter experts. • CNL has also presented the Project and engaged with organizations and interested parties across the region and in Winnipeg. • To provide increased accessibility and engagement, CNL has hosted two webinars;

Community	Topic	Key Interests and Concerns	Response
			these sessions were advertised across the province of Manitoba and Canada. • CNL has been open and transparent with both local and provincial media and has received coverage on the Project across the province of Manitoba (this has included CBC). CNL has invited interested media to visit the WL site. • CNL took community and Indigenous leaders on a benchmarking trip to see an in situ reactor in the United States. • The CNSC has held its own open houses in Pinawa, Lac du Bonnet and Winnipeg.
Lac du Bonnet	Environmental Assessment	• Participants requested more information on the experts working on the decommissioning process, including the selection process and company names.	• Canadian National Energy Alliance, which won the contract to manage and operate CNL, has brought important experience through its parent companies (parent company information was provided) and affiliates. Furthermore, decommissioning and waste management has been prioritized in both the United States and United Kingdom, leading to important experiences and lessons learned in terms of best practices. • The procurement process to select Canadian National Energy Alliance, the consortium that was selected to take over the ownership of CNL, was led by Natural Resources Canada and Public Works and Government Services Canada. Bidders were assessed based on mandatory technical, financial, integrity and national security considerations and based on their experience and management approach specific to the work at hand. • Furthermore, the process followed accepted practices and procedures from Public Works and Government Services Canada intended to ensure fairness and transparency in the process. The procurement also followed best practices through the use of third party legal, financial and nuclear advisors. They also engaged the services of a Fairness Monitor who monitored the entire process and provided a positive report.
Lac du Bonnet	Accidents and Malfunctions	• Questions were raised about earlier releases of contaminants on the WL site and how they were handled.	• As part of our application to the CNSC for a decommissioning licence, CNL conducted a Comprehensive Environmental Assessment. • This included an investigation of Winnipeg River sediments to look for any radioactive contamination that may have occurred over the history of the WL site. River sediments were

Community	Topic	Key Interests and Concerns	Response
			surveyed for radioactivity at hundreds of locations. • The assessment concluded that "using the most conservative dose estimation methods, doses to humans and non-human biota are below accepted guidelines." • The analysis methods and results were peer-reviewed, presented in public meetings and are available in the open publication of the CSR. • CNL continues to monitor and report on the river sediment near the WL site and downstream. Results continue to confirm safety of the environment and public. • Further to this, CNL pointed to CNSC's recent independent Environmental Monitoring Program that was recently conducted around the WL site. The independent results also confirmed CNL's protection of the environment and public.

Summary of Issues from Round 2 Open Houses

Community	Topic	Key Interests and Concerns	Response
Multiple Communities	Project Description	• Participants wanted to understand the rationale for choosing ISD as the preferred decommissioning method, especially since many of them felt that CNL had chosen a method other than what was originally proposed (i.e., dismantling). While participants appreciated that CNL had found examples of projects in the United States that had used ISD, they were concerned that the environments were not completely analogous to the WL site. • Participants had questions about the composition of the grout, including its longevity.	• The options selected were assessed for their environmental effect, socio-economic effect and human health effects. • The in situ option is CNL's preferred option as a safe decommissioning approach for the reactor with respect to the environment, workers and the public. This approach reduces the potential risks to the environment and people by providing a robust seal that will allow for safe, continued radioactive decay. ISD limits risks to workers and the environment that would be presented through alternative approaches involving the dismantling, removal and transportation of reactor systems. • ISD has been in successful use for over six decades in the

Community	Topic	Key Interests and Concerns	Response
		• Participants were interested in the process for filling the below-grade structure with grout to ensure structural integrity and ensure that there are no voids. • Multiple participants expressed a desire that CNL dismantle WR-1 and remove all waste from the WL site.	United States and was implemented at five nuclear sites in the United States and one in Puerto Rico. • The complete or partial removal of the facility would require the off-site disposal of wastes. However, as no approved disposal facility currently exists in Canada, the wastes would need to be stored in a temporary facility and re-handled for final disposal at an unspecified future date and location, resulting in additional transportation and handling. The Project's post-closure safety assessment considers extreme events and addresses health and environmental effects.
Multiple Communities	Regulatory Process	• Participants requested more information on the timing for the review process, including the length of the public review period. • Some participants were curious about the authority of provincial regulators and the applicability of provincial regulations. Participants wanted to know if *The High-level Radioactive Waste Act* (C.C.S.M. c. R10) was applicable to the WL site. • Who is the responsible authority in the future?	• Information was provided on timing and length of public comment period. • The proposed ISD of the reactor would be in full compliance with Manitoba legislation. • The reactor has been shut down since 1985 and was drained and de-fuelled. Characterization of the building and the reactor systems confirm that there is no high level waste in the facility. • All high level waste at the WL site is currently safely stored in the Waste Management Area and is proposed to be transported to Chalk River Laboratories in Ontario for interim storage. • AECL is the owner of the WL site and liabilities. • The WL site is operated under a nuclear decommissioning licence regulated by the CNSC. The CNSC will continue to

Community	Topic	Key Interests and Concerns	Response
			regulate the WL site as long as there are nuclear materials on it.
Multiple Communities	Modelling	• Participants requested details regarding the modelling, including what scenarios were considered and what variables were used. • Concerns were expressed about exposure to radiation.	• It is important to note that the reactor is relatively small and, even when it was operating, contained significantly less radioactive material than large power reactors. Following its shutdown in 1985, most of the easily mobilized radioactivity (fuel, fluids) was removed from the facility. • Natural decay reduces the total radioactivity of what is left in the reactor to just 15% at 50 years after shutdown (2035), 10% at 100 years (2085) and only 0.25% at 1,000 years (2985). The fundamental objective of the proposed ISD strategy is to contain and isolate solid materials in the WR-1 facility for a sufficiently long time to ensure that radioactivity levels and concentrations are safe for people and the environment. CNL's models indicate that the long-lived radionuclides will enter the environment at levels far below safety and regulatory requirements. In fact, they will enter the environment far below existing natural background radiation in the region.
Pinawa	Waste Management	• A request was made for more details regarding radioactive waste, including the top 10 radionuclide contributors to final dose at different points in time, peak release rates and the timing of the peak releasers. • What are the non-radioactive contaminants of interest?	• The Source Term Study summarizes data from a combination of direct measurements, calculations of activation and decay products, and conservative estimations of fission product contamination due to fuel failures during operation. The inventory is dominated in the short term by short-lived nuclides such as tritium, iron-55, cobalt-60 and nickel-63, and in the long term

Community	Topic	Key Interests and Concerns	Response
		• What is going to happen to the waste management areas?	by long-lived nuclides such as plutonium-239 and plutonium-240. Other nuclides of importance are also expected and include chlorine-36, iodine-129, carbon-14 and technetium-99. Both short- and long-lived alpha and beta emitters are expected and will be considered in the in situ design. An expert third party is reviewing the Source Term Study document and will identify any possible gaps and make recommendations on characterization techniques. The long-term safety case to support the assessment will include a more comprehensive list of nuclides. This list will be based on all available data, including that gathered through radiological characterization of the facility. A graphic was designed for the poster boards that showed peak dose in comparison to commonly known sources of radiation. • It is proposed that the vast majority of materials in the WL Waste Management Area will be remediated and shipped to Chalk River. This was available on a poster board at the open houses. Some low level trenches were identified in the CSR as suitable for ISD. CNL is working on characterization and safety analysis to support this.
Pinawa	Regulatory Process	• Concern was expressed that the current timelines for review and approval of the Project were unrealistic in light of how long the licensing process for Ontario Power Generation's Deep	• The environmental assessment process requires CNL to generate a thorough analysis of effects on the environment from the Project. This includes an EIS, a decommissioning safety assessment and a post-closure safety assessment.

Community	Topic	Key Interests and Concerns	Response
		Geologic Repository has taken.	The information is submitted to the CNSC, which conducts a review of the data and a meaningful public and Indigenous engagement process. All information will be available to the public. These early engagements with the public help us understand their concerns so we can incorporate that into our work. We will submit all draft documentation to the CNSC in September 2017 and the final submission will occur about one year later.
Beausejour	Waste Management	• Participants were curious about how many truck trips would be required to haul the waste.	• It is anticipated that approximately 2,000 shipments would be required.
Beausejour	Future Land Use and Tenure	• Participants requested more information about what will happen to the remainder of the WL site.	• Over the last year CNL has helped to facilitate the development of the WL Community Regeneration Partnership. This group is assessing site re-use options. Together with AECL (the owner of the facilities), CNL will evaluate and assist viable third party economic regeneration proposals for the WL site. These proposals could include the re-use of an existing facility on the WL site or use of land. Such plans would have to be developed in collaboration with several stakeholders, including local communities, AECL and the province of Manitoba. • The long-term safety assessment of the ISD of WR-1 will include an evaluation of land use. The footprint is expected to be 30 m by 30 m (900 m^2). • A potential residual effect identified is long-term restriction on land use. The amount of land associated with these affected areas is small relative to the WL site. The

Community	Topic	Key Interests and Concerns	Response
			institutional control monitoring requirements will be determined during the environmental assessment. Modelling of the environmental effects and risk will be used to define the length of the monitoring period.
Lac du Bonnet	Regulatory Process	• What happens if the regulator does not approve the Project?	• The WL site continues work under the current licence (CSR 2001), which guides the current approved approach to decommissioning the WL site.
Lac du Bonnet	Future Land Use and Tenure	• Participants wanted a better understanding of the future prospects of the WL site and if it will be possible to use it for another purpose to help replace the 300 jobs that will be lost when the overall decommissioning process is completed.	• Over the last year CNL has helped to facilitate the development of the WL Community Regeneration Partnership. This group is assessing site re-use options. Together with AECL (the owner of the facilities), CNL will evaluate and assist viable third-party economic regeneration proposals for the WL site. These proposals could include the re-use of an existing facility on the WL site or use of land. Such plans would have to be developed in collaboration with several stakeholders, including local communities, AECL and the province of Manitoba.
Lac du Bonnet	Emergency Response	• Participants requested more information about the emergency response plan that CNL is developing.	• The ISD system will include multiple barriers, including specialized grout formulations. In the very unlikely case that degradation of these barriers occurs earlier than radioactive decay, the surface and groundwater monitoring system will detect contamination migration. A remediation effort would be initiated to ensure continued safety of workers, the public and the environment.

Community	Topic	Key Interests and Concerns	Response
Powerview – Pine Falls	Regulatory Process	• What happens if the regulator does not approve the Project?	• The WL site continues work under the current licence (CSR 2001) which approved the current approach to decommissioning the WL site.

Summary of Issues from Round 3 Open Houses

Event	Topic	Key Interests and Concerns	Response
Multiple Events	Regulatory Process	• Requested more information on updated timing for the review process, submittal and commission hearing.	• CNL is currently working with the CNSC to establish a revised schedule for final regulatory submittals, including the submission date for the final EIS. • CNL has received 26 submissions from members of the public and regulatory bodies on the draft EIS. Presently CNL is responding to those submissions and, subject to their acceptance by the CNSC, CNL will update and finalize the EIS. • The adjustment to the schedule is being made in order to allow CNL to appropriately address these comments and for the CNSC staff to subsequently conduct a fulsome assessment of CNL's proposal.
Multiple Events	Environmental Monitoring	• Information was sought on how the in situ design incorporates ongoing environmental monitoring. • Interest was expressed in the depth of monitoring wells.	• Both the design and ongoing monitoring has and will incorporate existing monitoring. • Depths and location of monitoring wells was explained and talked about in public presentations.
Multiple Events	Contingency Planning	• Information on how the Project design incorporates for the risk that in situ does not operate as planned. • What is the contingency plan and who is responsible?	• The Whiteshell Reactor Disposal Facility will include multiple barriers, including specialized grout formulations. In the very unlikely case that degradation of these barriers occurs earlier than radioactive decay, the surface and ground water monitoring system will detect contamination migration. A remediation effort would be initiated to provide for continued safety of workers, the public and the environment. • CNL, as an on-going entity beyond site closure, will retain responsibility for monitoring and facility performance.
Multiple Events	Incorporating lessons learned	• Ensuring that the Project was properly quantifying and incorporating available lessons learned from other similar work already conducted and work done at the WL site.	• CNL has gathered data and lessons learned where available on other in situ projects. CNL has participated in several learning workshops with technical experts that have performed ISD and has used services and advisement from organizations that have performed the in situ method. • CNL recognizes the incredible depth of research on waste storage that was carried out at the WL site and has been incorporating that where applicable.

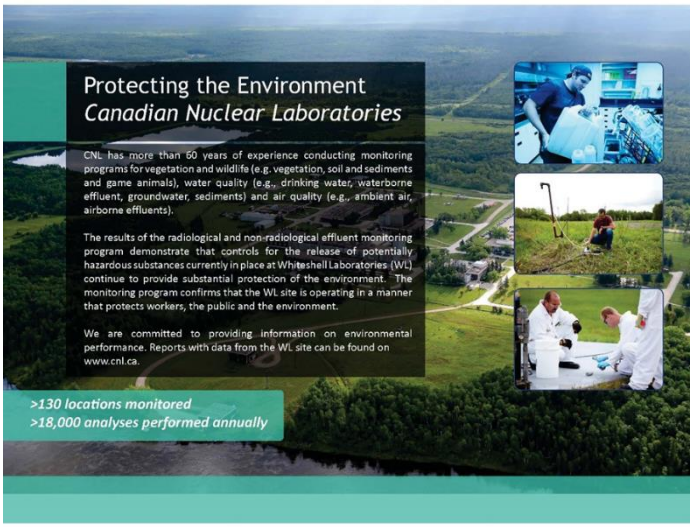
Event	Topic	Key Interests and Concerns	Response
Multiple Events	Grout and Concrete	• Effectiveness of the Grout	• Since CNL has identified in situ disposal as the preferred option for decommissioning the WR-1 facility, the use of grout to encapsulate the building below-grade has prompted many questions. CNL is developing specially-formulated grout based on the unique requirements of the WR-1 facility. Testing is underway using the locally-sourced materials that will be used in the actual decommissioning. The tests include both fresh and cured properties of the material. • CNL has prepared a report which synthesizes the latest research studies into how concrete and grout degrade over time in order to ensure a thorough understanding of how the material will interact with the WR-1 facility components and the local environment. This knowledge is being incorporated into the design of the facility and will be included in the updated Environmental Impact Statement.
Multiple Events	Impact on the Winnipeg River	• The continued protection of the Winnipeg River is a key focus of the Environmental Impact Statement. Understandably, the proximity of the Winnipeg River to the WR-1 reactor facility prompted many questions about how the final, grouted project would affect the waterway.	• In response, the project team has developed draft monitoring plans, written in accordance with Canadian standards, to explain how the groundwater, surface water and effluent will be monitored over all phases of the Whiteshell Closure project, including the decommissioning execution phase and the institutional control period. Although it is not expected that there will be negative effects on the Winnipeg River or its sediment and aquatic organisms, the monitoring plans are comprehensive and identify triggers to initiate responses which could involve mitigation measures and remedial actions.
Multiple Events	Radiologic Inventory	• Understanding current inventory. • Confirmation on how radiologic inventory will reduce over time.	• CNL received several requests for details on the current radiological content of the WR-1 facility and how the levels of radioactivity will reduce over time. It should be noted that the reactor fuel – the most radioactive part of the facility – was removed in 1985. In response to questions, CNL has conducted further testing of the facility and included the results in the updated Environmental Impact Statement. For a detailed breakdown of the inventory, consult the Environmental Risk Assessment (ERA).

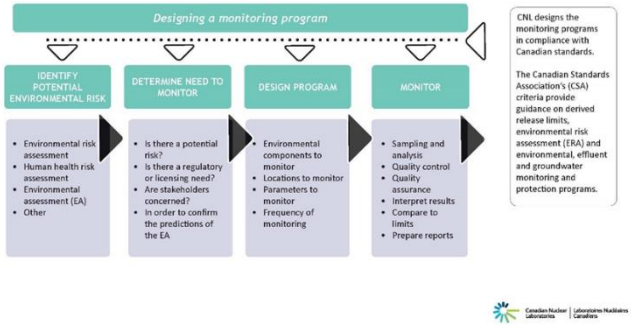
Event	Topic	Key Interests and Concerns	Response
Multiple Events	Alternative Means/Options	• How was ISD chosen as the preferred option?	• CNL was asked to provide further detail on how it chose the in situ decommissioning method for the WR-1 Project. In accordance with guidance from the Canadian Environmental Assessment Agency, the original Environment Impact Statement included qualitative assessments of the options considered. In response to requests, CNL revised the assessment of alternatives for clarity, and to incorporate feedback from the public and from Indigenous groups. • The updated assessment clarifies the differences between the alternatives and explains the risks relative to each alternative. This clarification will show that in situ decommissioning is a good overall option and is, in fact, low risk to the public and the environment when compared to the limits established by Canada's nuclear regulator, the Canadian Nuclear Safety Commission.
Multiple Events	IAEA guidance for In Situ Decommissioning	• Interpretation of IAEA guidance.	• CNL received questions about the IAEA's safety standard for decommissioning which states that in situ decommissioning is not a suitable option for all nuclear facilities and should be considered only under certain conditions. CNL agrees with this assessment, and CNL does considers that this option has features which make it suitable for long-term disposal such as: its location below grade, that it doesn't contain significant quantities of long-lived isotopes, and that it can be monitored post-closure during the institutional control period. • CNL is following IAEA safety standards for the decommissioning of the facility and more importantly is also following the IAEA safety standards for waste disposal, since the facility – in its end state – would be classified as a disposal site. • It is important to note that CNL is also following Canadian standards and regulatory guidance for decommissioning the WR-1 facility and Canadian regulations for the creation of a disposal facility.

Event	Topic	Key Interests and Concerns	Response
Multiple Events	Design and engineering details	• What would eventual design look like?	• Many questions touched on the design of the WR-1 project. When CNL submitted the draft Environmental Impact Statement, it had completed a preliminary conceptual design. Since then, the design process has continued to progress, and a more detailed design will be prepared after re-submission of the updated Environmental Impact Statement. The final detail design will equal or surpass the performance of the conceptual design that was assessed in the Environmental Impact Statement.
Alumni/Retiree Workshop	Project Design	• Participants expressed that the risk of in situ needed to be better contextualized against all alternatives.	• The assessment of alternatives is given in Section 2 of the EIS. It has been revised for clarity and based on feedback from the Public and Indigenous groups. It is important to understand that the 'As Low as Reasonably Achievable' (ALARA) principle must also consider socio-economic factors as well. The assessment will clarify the differences in the approaches and the relative risks not only to each other, but to what is considered 'acceptable' risk. The purpose being to show that while ISD may in some ways have a higher risk than complete removal, there are several ways that ISD is less risky than overall removal and that the risks of both are small compared to the limits established by the CNSC based on an extensive body of evidence.
Alumni/Retiree Workshop	International guidance	• Participants wanted to ensure that context around international guidance on in situ design was being properly considered.	• The International Atomic Energy Agency (IAEA) provides guidance on generally accepted best practices, but does not preclude independent nations from making their own risk-based decisions for each unique situation. The Canadian Environmental Assessment Agency and the CNSC require CNL to demonstrate that the proposed Project does not pose an unacceptable level of risk to human health or the environment. The Project is subject to approval by the CNSC, who has established regulations for the management of radioactive materials. They draw input to their regulations from the IAEA, but are an independent regulator with responsibility to verify the information CNL has presented as part of the EIS.

EIS = Environmental Impact Statement; CNSC = Canadian Nuclear Safety Commission.

Appendix F WR-1 Poster Boards






Regulatory Oversight
Canadian Nuclear Laboratories
In order for the projects to go forward, regulatory approvals are necessary
Regulatory Approvals
For the project to go forward, two main regulatory approvals are required:
1) An Environmental Impact Statement (EIS) will be submitted under the Canadian Environmental Assessment Act (CEAA) 2012. The EIS will assess the potential environmental effects of the project and will include stakeholder engagement and Aboriginal engagement.
2) A licence amendment (in conjunction with licence renewal) under the Nuclear Safety Control Act (NSCA) is required. The amendment application will include the following component:
• Request for a licence amendment for the change to the decommissioning plan for WR-1 Reactor Building
A decision of approval under CEAA 2012 is required before a decision can be made under the NSCA
WR-1 In Situ Decommissioning
CEAA 2012 Requirements*
• Environmental Assessment (includes, Environmental Impact Statement, Stakeholder Engagement and Aboriginal Engagement)
• WR-1 in situ decommissioning safety assessment report
NSCA Requirements*
• Request for licence amendment to perform in situ decommissioning of WR-1
• Revised Whiteshell Overview Detailed Decommissioning Plan
* There are also other requirements beyond those listed.
Environmental Assessment Process
CANADIAN NUCLEAR LABORATORIES: Project Description
• Overview of project and surrounding environment
CANADIAN NUCLEAR SAFETY COMMISSION: Decision on Project Scope
• CNSC reviews the Project Description
• CNSC provides EIS guidelines
• Project Description posted for public review
• CNSC (Commission) considers public and Aboriginal comments and makes a decision on scope of EA
CNL: Environmental Impact Statement (EIS) September 2017
• Prepares EIS in accordance with regulations
• Evaluates environmental impact of project
• Determines mitigation measures to minimize environmental impacts
• EIS review by CNSC, federal authorities and public and Aboriginal stakeholders
• Informs the public, First Nation and Métis groups and collects their feedback
CNSC STAFF: Environmental Assessment Report (EA)
• CNSC (staff) summarize EIS into an Environmental Assessment report
• First Nation and Métis groups review
• Public review period
CNSC COMMISSION: Decision: Can the project proceed? Fall 2018
• CNSC (Commission) reviews EA report
• CNSC (Commission) makes a decision on whether the project may proceed
• Follow-up monitoring and reporting requirements
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What is a Post-Closure Safety Assessment?

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

A Post-Closure Safety Assessment will provide a quantitative assessment of the post closure radiological and non-radiological safety of the in situ decommissioning of WR-1.

It will also identify the uncertainties or potential events that have the greatest potential impact on the long-term performance of the in situ decommissioning.

Normal evolution

Normal evolution is the expected long-term evolution of the WR-1 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
- Early glaciation
- Digging a well
- Human intrusion
- Site investigation

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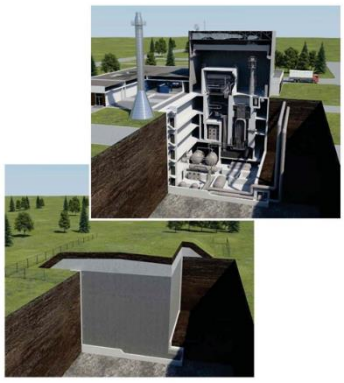
Why in situ decommissioning?

In situ decommissioning has been selected as the proposed 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 WR-1 property
- Reduced cost to Canadian tax payers

In situ decommissioning requires additional long-term monitoring of the impacted area.



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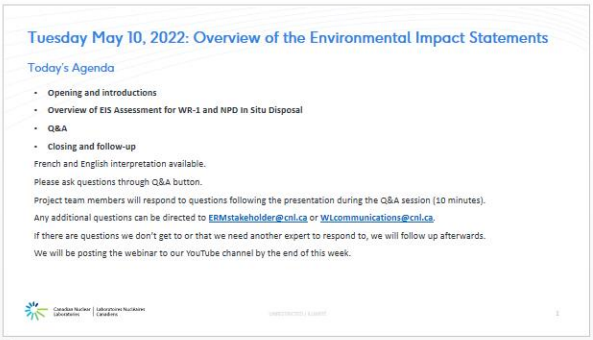
Appendix G Webinar Presentation



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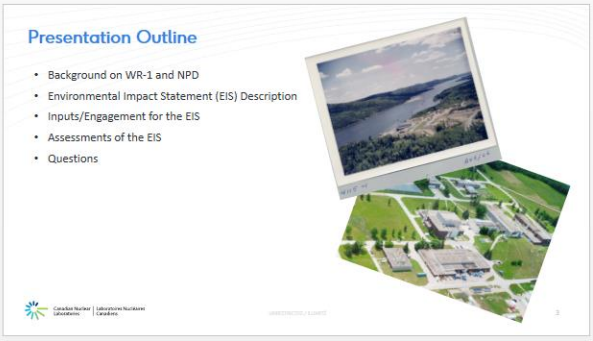

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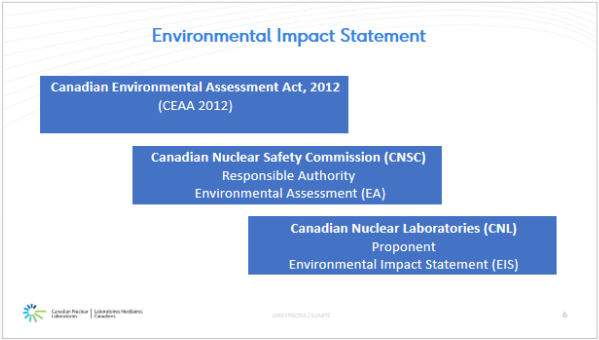

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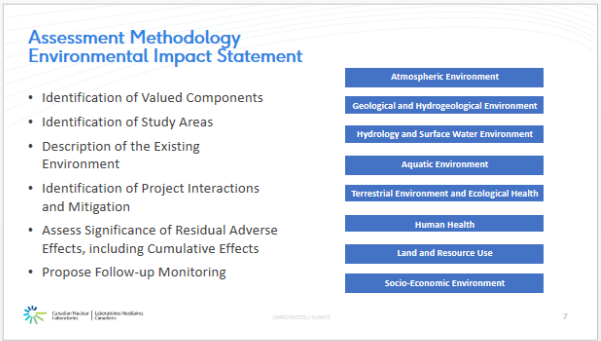

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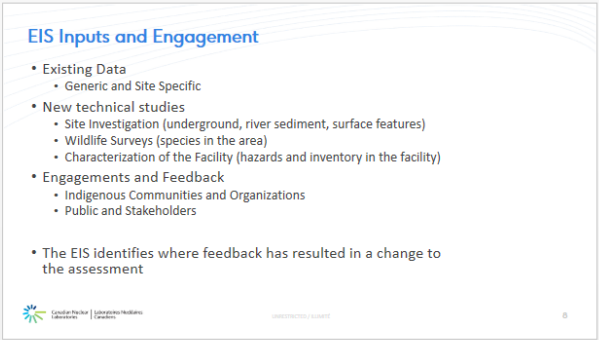

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Indigenous Engagement

- Establishment of formal relationship and contribution agreements with First Nations and Métis
- Incorporation of Indigenous interests from new and existing Traditional Knowledge and Land Use Studies
- Nation specific engagement activities
  - Community meetings
  - Working groups
  - Liaison/Advisory committees
  - Direct meetings with Chief and council.
  - Capacity funding

9

Public and Stakeholder Engagement

- Presentations, information sessions, site visits
- Participation in public events and media relations
- Use of social media to share information – Facebook, YouTube, LinkedIn, Twitter
- Virtual Open Houses
- Regular project updates via technical briefings and webinars
- Meetings with stakeholders

Revised EIS outlines how feedback from the public has been incorporated in the EIS.

- Through public engagement activities
- Through formal EIS comments

10

Impact to the Environment

No Change to the Environment, No Residual Effect

Minor Change to the Environment, No Adverse Residual Effect

Change to the Environment, Residual Effect on Environment

11

Components of EIS

- **Atmospheric Environment**
- **Geological and Hydrogeological Environment**
- **Hydrology and Surface Water Environment**
- **Aquatic Environment**
- **Terrestrial Environment and Ecological Health**
- **Human Health**
- **Land and Resource Use**
- **Socio-Economic Environment**

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Atmospheric Environment

- Valued Components (VCs): Air Quality, Climate Change:
  - Changes to ambient concentrations in air (SPM, PM_{10}, $PM_{2.5}$, NO_2, SO_2 and CO, CO_2, CH_4 and N_2O, volatile contaminants, hazardous materials).
- Mitigations:
  - Dust suppression techniques (wetting, covers, etc.)
  - Proper maintenance of equipment and emissions standards for vehicles
  - Temporary local ventilation with HEPA filtration (as required)
- Changes based on feedback:
  - N/A
- Results:
  - Changes are minor, no adverse residual effect

SPM = suspended particulate matter; PM_{10} = particles nominally smaller than 10 µm in diameter; $PM_{2.5}$ = particles nominally smaller than 2.5 µm in diameter; NO_2 = nitrogen dioxide; SO_2 = sulphur dioxide; CO = carbon monoxide.

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Geological and Hydrogeological Environment

- Valued Components (VCs): Geology, Hydrogeology (groundwater quality and quantity)
  - Changes to groundwater quality and quantity, soil quality, soil quantity, groundwater flow patterns and discharge rates and groundwater table elevations
- Mitigations:
  - In-design mitigation measures (the project)
  - Erosion and sediment control practices
  - Return lands disturbed by site activities to a condition that is physically stable, safe and in keeping with the post closure land use classification
- Changes based on feedback:
  - NPD – this component originally considered only as a pathway, EIS updated to consider groundwater quality and flow as specific VCs
- Results:
  - Changes are minor, no adverse residual effect

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Hydrology and Surface Water Quality

- Valued Components (VCs): Hydrology, Surface Water Quality:
  - Changes to runoff rates and volumes, drainage patterns and changes to ambient levels of surface water contaminants (turbidity, radionuclides, metals)
- Mitigations:
  - Erosion and sediment control practices
  - Spill prevention and clean-up procedures
  - No un-assessed liquid effluent releases: collection and testing of wastewater from decommissioning activities, and based on the results, use of appropriate disposition route
  - Ensure drainage system for the reclaimed site will have physical characteristics similar to natural drainage systems
- Changes based on feedback:
  - Updated mitigations
- Results:
  - Changes are minor, no adverse residual effect

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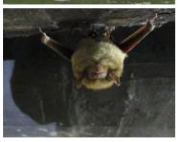
Aquatic Environment

- Valued Components (VCs): Aquatic vegetation, Aquatic invertebrates, Fish, Fish Habitat
  - Changes to quality and/or quantity of fish habitat, benthic macroinvertebrate community and fish community structure (diversity, abundance) and fish flesh radiochemistry
- Mitigations:
  - Existing surface water management systems will remain in place to manage site runoff
  - In-design mitigation measures (the project)
  - No un-assessed liquid effluent releases: collection and testing of wastewater from decommissioning activities, and based on the results, use of appropriate disposition route
- Changes based on feedback:
  - Updated mitigations
- Results:
  - Changes are minor, no adverse residual effect

16

Terrestrial Environment and Ecological Health

- Valued Components (VCs): Invertebrates, Vegetation, Birds, Mammals, Reptiles and Amphibians, Species at Risk,
  - Changes to habitat availability, habitat distribution, survival and reproduction, air quality, surface water quality, groundwater quality, soil quality, vegetation quality, sediment quality
- Mitigations:
  - Implementation of CNL's Environmental Protection and Management and Monitoring of Emissions
  - Enforcement of speed limits on access roads
  - Fencing and signage at locations of frequent crossings
- Changes based on feedback:
  - Added VCs: Moose, mink, river otter, red fox, monarch butterfly, berries, fungi and weekay
  - Updated mitigations
- Results:
  - WR-1 no adverse residual effect, NPD minor residual effect to SAR bats



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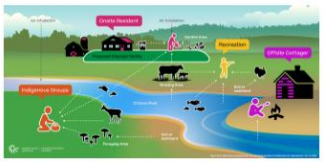
Human Health

- Valued Components (VCs): Public Health, Worker Health,
  - Changes to air quality, surface water quality, groundwater quality, soil quality, vegetation quality and sediment quality
- Mitigations:
  - See the mitigations in place for the previous environmental components
  - Implementation of CNL's OSH and Radiation Protection Program requirements, hazard identification and detailed work planning
  - In-design mitigation measures (the project)
  - Institutional Control of the site
- Changes based on feedback:
  - WR-1: Weekay and Moose were added to the diet of a Harvester in the Human Health Assessment
  - NPD: self-sufficient indigenous receptor group is considered,
- Results:
  - Changes are minor, no adverse residual effect



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Land and Resource Use

- Valued Components (VCs): Cultural and Archaeological Sites, Traditional Land and Resource Use by Indigenous People, Future Land Use
  - Changes to cultural sites, and changes to the environment that may impact opportunities for traditional land use, including harvesting
  - Suitability of area for commercial development, outdoor recreation, tourism and other future uses.
- Mitigations:
  - Indigenous involvement in Environmental Monitoring
  - Support for Traditional land uses and ceremony at the site to encourage reconnection and healing
- Changes based on feedback:
  - Incorporation of Traditional Knowledge into the assessment of historical uses
  - Include a summary of indigenous community's conclusions about the potential effects of the Project.
- Results:
  - Changes are minor, no adverse residual effect

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Socio-Economic Environment

- Valued Components (VCs): Employment and Income, Business Opportunities, Government Finances, Community Infrastructure and Services, Community Well-being
- Mitigations:
  - CNL will hire local qualified staff and utilize local contractors where appropriate
  - CNL will develop an Indigenous procurement strategy to improve opportunities for Indigenous economic participation and benefit
  - Continued contribution to community regeneration initiatives and development of Indigenous relationship agreements.
- Changes based on feedback:
  - Included Indigenous Communities perspectives related to effects on the socio-economic environment
- Results:
  - Changes are minor, no adverse residual effect

20

Follow Up Environmental Monitoring

- Verifies the assessment predictions
- Determines the effectives of mitigation measures
- Augmented by existing programs
- Adaptable to incorporate Indigenous participation and knowledge.
- Will employ adaptive management and will continue for a minimum of 100 years

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Summary

The NPD and WR-1 EIS demonstrate that in situ disposal provides containment and isolation of the reactor inventories and that environmental concentrations meet the assessment criteria established to be protective of human health and the environment.

22

Questions

23

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ERMstakeholder@cnl.ca

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Appendix H Breakfast Session Presentation

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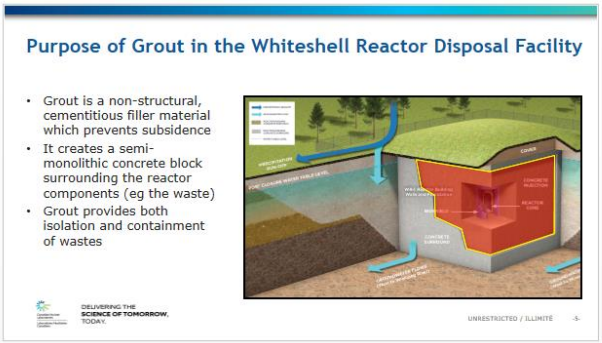

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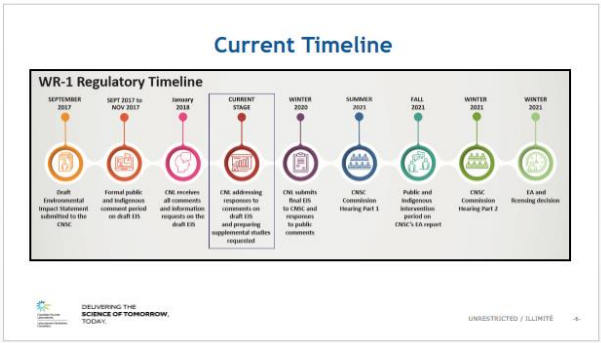

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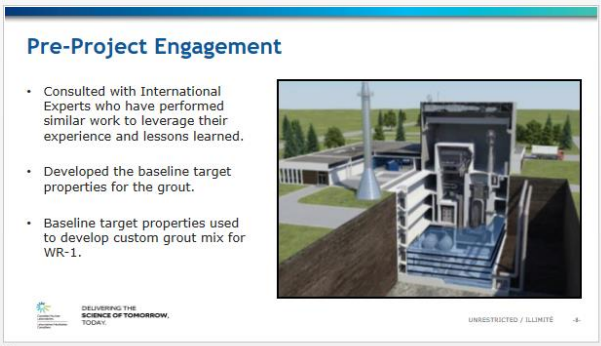

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Determining the Target Criteria

The final grout recipe needs to meet the following two sets of criteria:

- Fresh properties including bleed water, slump flow, pH, etc.
- Cured properties including strength, hydraulic conductivity, etc.

Fresh Properties	Target
pH (Initial and 1 Hr)	<13.5
24 Hour Bleed Water (ASTM and 24 Hr Test)	0%
Slump Flow	660mm +/- 50
Set Time (Final)	2 – 12 hours

9

Determining the Target Criteria

The final grout recipe needs to meet the following two sets of criteria:

- Fresh properties including bleed water, slump flow, pH, etc.
- Cured properties including strength, hydraulic conductivity, etc.

Cured Properties	Target
UCS MPa (7 days)	>0.34 MPa
Effective Porosity	≤ 0.4 vol %
Dry Bulk Density	2100 kg/m³
Hydraulic Conductivity	< 0.03 meters/yr

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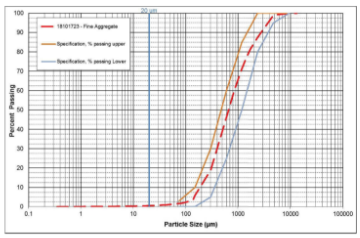
Stage 1 - Material Characterization

Test Methodology

Determined the material characteristics of the primary raw materials to be used in the grout formulation such as:

- Particle size distribution, specific gravity, mineralogy and chemistry of the coarse and fine aggregates
- Chemistry of the water to be used for recipe production
- pH of all raw materials



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Stage 2 - Formula Screening

Determining the Grout Formula

Materials	Mix 1 – GU	Mix 2 – GU/Fly Ash	Mix 3 – GU/BFS	Mix 4 – GU/BFS – Sand Only
Portland Cement Type I/II (kg/m³)	386	89	-	-
Type 90/10 Cement (90% BFS / 10% OPC) (kg/m³)	-	-	386	386
Fly Ash Class F (kg/m³)	-	297	-	-
Sand (quartz) (kg/m³)	1165	1074	1142	1609
Gravel (granite) No. 8 (kg/m³)	475	475	475	-
Water (kg/m³)	247	247	247	247
Polycarboxylate polymer HRWR max. (L/m³)	3.1	3.1	3.1	3.1
Diutan Gum based VMA (g/m³)	262	262	262	262

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Stage 2 - Formula Screening

Test Results

Test		Criteria	Mix 1 – GU	Mix 2 – GU/Fly Ash	Mix 3 – GU/BFS	Mix 4 – GU/BFS – Sand Only
pH	Initial	<13.5	12.5	11.9	12.0	11.9
	1 Hr		12.5	11.9	11.7	11.9
24 Hour Water Bleed	ASTM	0%	0%	0%	0%	0%
	24 Hr Test		0%	0%	0%	0%
Slump			11"	11"	11"	11"
Slump Flow		660mm +/- 50	685mm	730mm	735mm	630mm
Set Time		2 – 12 hours	6.5 hrs	12 hrs	7.5 hrs	9.15 hrs
UCS	7 day	>0.34 MPa	28.1 MPa	4.4 MPa	13.0 MPa	13.4 MPa

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Stage 3 - Preferred Formula Testing

Determining the Formula

Materials	Grout Mix (GU) (water to binder ratio of 0.60)	Grout Mix (HS) (water to binder ratio of 0.60)
Type GU Cement (kg/m³)	89	-
Type HS Cement (kg/m³)	-	89
Fly Ash Class F (kg/m³)	297	297
Sand (quartz) (kg/m³)	1570	1570
Water (kg/m³)	232	232
SIKA Visco Crete 2100 (kg/m³)	1.77	1.49
Diutan Gum based VMA (kg/m³)	0.26	0.26

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Stage 3 - Preferred Formula Testing

Fresh Property Testing

Test		Criteria	Grout Mix (GU/Fly Ash)	Grout Mix (HS/Fly Ash)
pH	Initial	<13.5	12.4	12.0
	1 hr		12.4	12.3
	1 hr - mixed		12.6	12.5
24 Hour Bleed Water (ASTM and 24 Hr Test)		0% (vol)	0%	0%
Slump		N/A	273 mm	286 mm
Slump Flow		660 +/- 51 mm	625 mm	650 mm
Initial Set Time		2 – 12 hrs	9.5 hrs	14.5 hrs
Air Content		<8% vol	3.6%	4.0%
Static Work Time	0 min	>30 min	302 mm	247 mm
	30 min		271 mm	223 mm
	45 min		263 mm	213 mm
Dynamic Work Time	0 min	>60 min	302 mm	285 mm
	30 min		280 mm	265 mm
	60 min		283 mm	265 mm

15

Stage 3 - Preferred Formula Testing

Test Results

Test (Cured Properties)		Criteria Target	Grout Mix (GU/Fly Ash)	Grout Mix (HS/Fly Ash)
UCS	7 day	> 0.34 MPa	3.3 MPa	2.9 MPa
	14 day	N/A	6.8 MPa	5.3 MPa
	28 day	> 3.4 MPa	15.7 MPa	9.5 MPa
	90 day	> 4.8 MPa	23.7 MPa	20.5 MPa
	180 day	N/A	23.9 MPa	TBD
	365 day	N/A	23.6 MPa	TBD
Test		**Criteria Target**	**Grout Mix (GU/ Fly Ash)**	**Grout Mix (GU/ Fly Ash)**
Effective Porosity		≤ 0.4 vol %	0.248 vol %	0.248 vol %
Dry Bulk Density		2100 kg/m³	2007 kg/m³	2007 kg/m³
Hydraulic Conductivity		< 0.03 meters/yr	0.0004 meters/yr	0.0002 meters/yr

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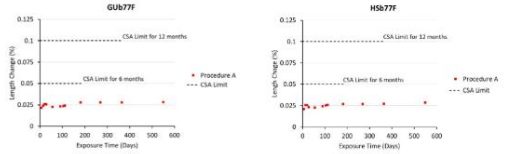
Sulphate Resistance

Test Results



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UNRESTRICTED / ILLIMITÉ -17-

17

Advantages of Final Grout Mix Recipe

- The successful testing of grout recipes containing only sand aggregate will provide cost savings for the grout mix through the elimination of the aggregate supply.
- The recipe will simplify the delivery, storage and mixing process since less raw materials are needed for the grout mix preparation process.
- The use of Class F fly ash instead of only Ordinary Portland Cement provides cost savings, sulphate resistance, and lower heat of hydration.

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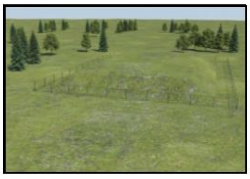
18

Conclusion

- An effective Grout mix was developed using locally available raw materials.
- Formula was achieved using international best practice for the Fresh and Cured property targets set forth in the Savannah River National Laboratory guidelines.
- Grout mix also provided sufficient sulphate resistance.



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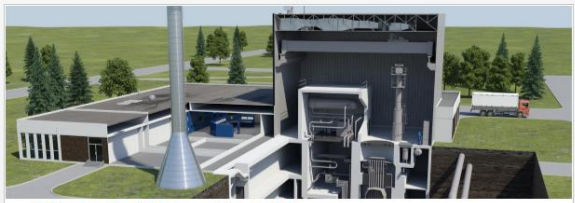

Thank You. Merci.

Questions?

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Appendix I Event Sample

Whiteshell Site Open House June 8, 2019

Advertisement

Appendix J myCNL Article

WL milestone achieved with submission of EIS

Unfollow Environmental Remediation Management

Home › Environmental Remediation Management › WL milestone achieved with submission of EIS

Posted by Michael Giardini on July 4, 2022

CNL's WR-1 team successfully submitted the WR-1 Environmental Impact Statement (EIS) package to the Canadian Nuclear Safety Commission (CNSC). This marks a very important milestone for the Whiteshell Laboratories Closure Project and CNL.

The process of submitting an EIS is intense with several people from across the organization, Golder, and AECL coming together over the past two years to resubmit a package that includes over 1.7 million words, more than 4500 pages, plus hundreds of references and other supporting documents. On the engagement side, the project took this time to continue to expand engagements with both the public and Indigenous communities – sometimes tricky during a global pandemic.

"Another excellent milestone achievement," commented Director of WR-1 & NPD Reactor Decommissioning, Brian Wilcox. "The team's commitment to deliver technical and engagement work has been world class. The collaboration across many CNL departments and with our partners at AECL is admirable."

A proposed date for the WR-1 hearing will be set by the Commission Secretariat once staff have deemed that the application from CNL has met the regulatory requirements for both the Environmental Assessment and licensing.

"I'm very proud of the team for persevering through the challenges," said Acting Regulatory Approval Manager, Jeff Miller. "As we move forward, I have the utmost faith in their strength to rise to the challenges ahead."

Monday, July 4, 2022
UNLIKE 17 LIKES 3 COMMENTS

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October 31, 2022

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Appendix K Technical Workshop

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UNRESTRICTED/ILLIMITÉE

CNL would like to invite you a technical workshop on the Whiteshell Reactor 1 draft Environmental Impact Statement (EIS).

Through our 15 regional public information sessions, the message was clear from our former colleagues and staff of the Whiteshell site, (although the public sessions were useful in understanding the project from a high level), there was desire for more details and a more thorough discussion. We hope this technical workshop is a step in the right direction.

CNL would like to provide the opportunity for a more technical focused discussion run by a third party facilitator, centered on some of the key aspects of the EIS. CNL values the insights from the expertise that exists in the region and hope that you might be able to participate.

What: WR-1 Draft EIS Technical Workshop
When: 2017 November 15, 10:00am—4:15pm CST
Where: Whiteshell Laboratories Site

Draft Agenda:

Time	Agenda item
10:00—10:15	Arrive on site, badging, security and safety brief
10:30—11:30	Technical tour of WR-1
11:45—12:15	Workshop opening: overview and lunch
12:15—3:15	Workshop 1. Introductions, participant objectives & icebreaker 2. Principles, criteria for EIS 3. Focused topical discussions 4. Draft summary of key themes/group statement on EIS
3:15—4:15	Workshop closing: round table on aspirations, ideas for end state

If you are interested please respond by completing the attached security form and return to our office using the self-addressed envelope, no later than 2017 November 10.

CNL will also be providing lunch so please indicate any food allergies in your reply.

The first part of the morning will consist of a technical tour of the WR-1 facility. This tour will consist of a lot of walking, stair climbing and manoeuvering in tight places. Please indicate if there are any mobility issues and we will try to accommodate where we can. This tour also requires safety shoes, if you do not have safety shoes, contact us and we will see what we can do to accommodate.

Participants are also welcome to join us later in the morning after the tour for just the workshop portion.

The draft EIS can be accessed here: www.cnl.ca/wr-1-eis

Canadian Nuclear Laboratories
Whiteshell Laboratories
1 Ara Mooradian Way
Pinawa, Manitoba
Canada R0E 1L0
Telephone: 204-753-2311

Laboratoires Nucléaires Canadiens
Laboratoires de Whiteshell
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Appendix L WR-1 Web Content

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

About CNL | Clean Energy | Health Sciences | Environmental Stewardship | Safety & Security | News, Publications & Events

WR-1 Reactor Decommissioning

The responsible solution

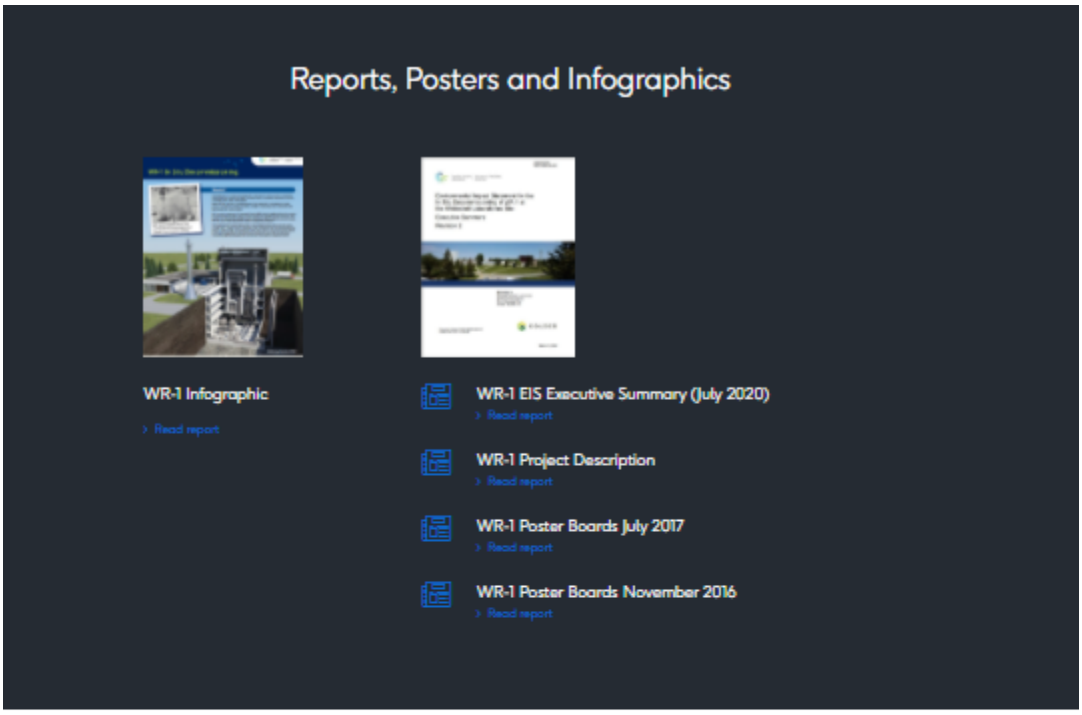
The WR-1 reactor at Whiteshell played a key role in the nuclear history of Canada. It was built by General Electric and first achieved criticality in 1965, serving for twenty years as a research reactor, which among other missions became a testing site for the CANDU fleet. It was safely shut down in 1985, and since then, has been maintained in a state of "storage with surveillance".

CNL is proposing to decommission and leave the reactor in place at the Whiteshell site. All fuel and liquids have been removed, and what remains are the structural components of the reactor, such as the vessel and piping.

CNL's proposed approach – in-situ decommissioning – will provide a safe, secure and effective disposal solution for the existing contaminated below-grade building. This approach minimizes the risks to the health, safety and security of the public, workers and the environment. It avoids the necessity of transporting contaminated components and finding another location and facility for disposal.


WR-1 Decommissioning Timeline
1977
Development of Dry Storage concept which is used at all major nuclear facilities in Canada as well as around the world. AECL developed many technologies that have become the nuclear industry standard, including the dry storage concept for spent fuel using concrete canisters. This concept is now used across Canada as well as around the world.
1978
The Underground Research Laboratory (URL) was constructed to develop and defend the concept of deep geological disposal of Canada's nuclear fuel waste. Work conducted at the URL contributed greatly to the Canadian Nuclear Fuel Waste Management Program and Canada's Nuclear Fuel Waste Act, as well as to waste management programs for several other countries including Japan, France and Sweden who accessed this world class facility.
September 2017
Draft Environmental Impact Statement submitted to the CNSC
September – November 2017
Formal public and Indigenous comment period on draft EIS concludes


Environmental Impact Statement update - 2020 July
CNL has submitted the next revision of the WR-1 Project's Environmental Impact Statement to the Canadian Nuclear Safety Commission for regulatory review. In the past two years, the project team has done further work to address the comments on the draft Environmental Impact Statement, incorporating feedback from Indigenous Peoples, the public and federal and provincial regulators.
Click to learn more



Stay in touch!

Do you have questions about CNL's environmental projects? Let us know what you are thinking by completing our feedback form. If you request a response, one of our team members will be in touch.

First Name *

Last Name *

Email *

Home address

Phone Number

In-situ Decommissioning

Proven technology

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

- Savannah River National Laboratory – Savannah River Site R and P Reactors
- U.S. Department of Energy – In-Situ Decommissioning of Large Nuclear Facilities
- Nebraska Energy – Hallam
- U.S. Department of Energy – Hallam Fact Sheet
- Idaho National Laboratory – ERB-1

Environmentally sound

CNL will ensure that in-situ decommissioning is safe for the environment. These reactor projects are subject to an environmental assessment. The Environmental Assessment process is a robust process led by the Canadian Nuclear Safety Commission and conducted under the *Canadian Environmental Assessment Act, 2012*. The Environmental Assessment will evaluate project activities and the mitigation strategy for any possible environmental effects throughout the life of the project.

The Environmental Assessment process will determine CNL's actions during the implementation of this project, leading to continued responsible environmental stewardship.

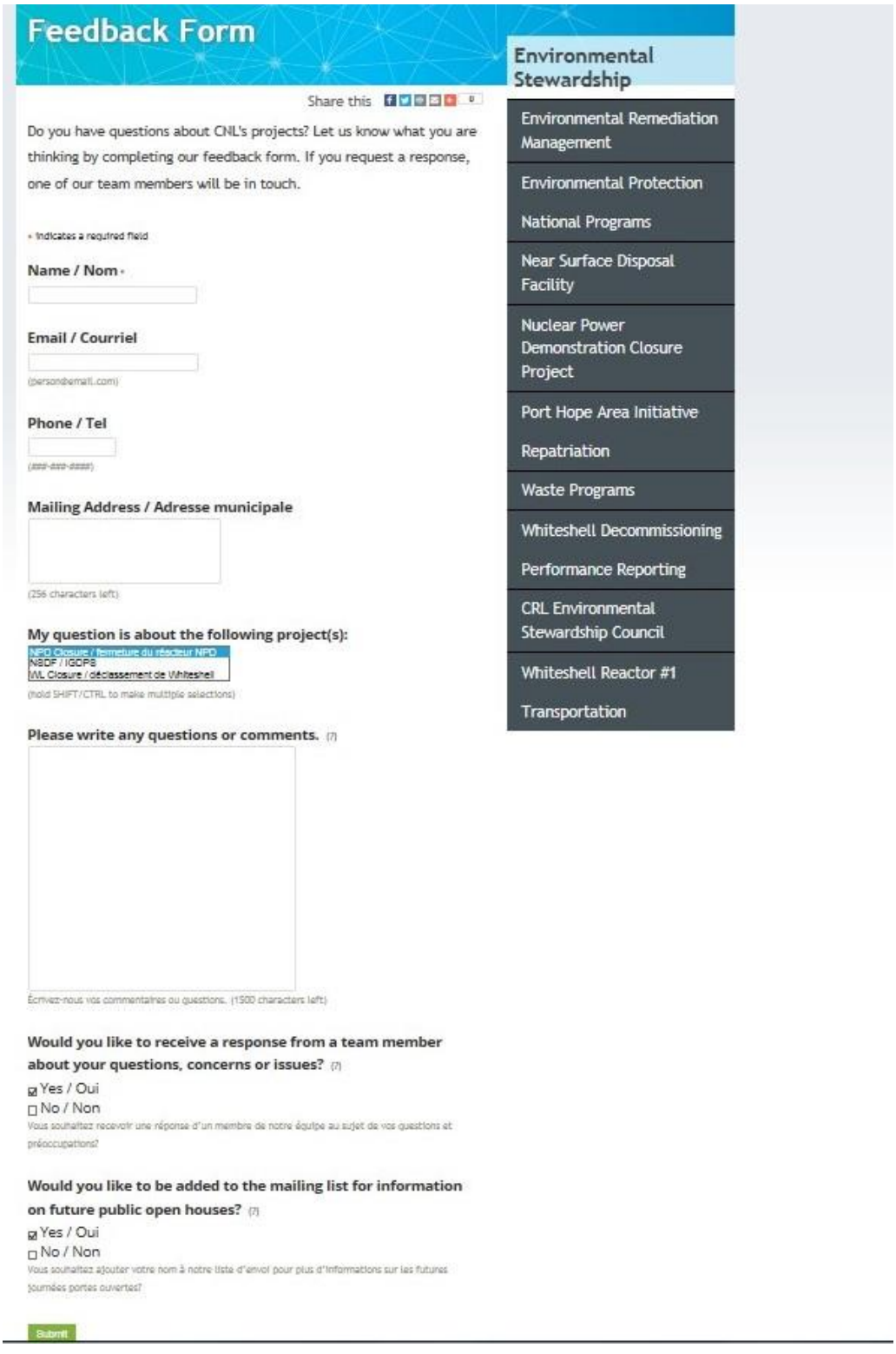
CNL has a solid record of accomplishment on environmental protection. CNL's environmental policy, and Environmental Management System monitor and inform reporting on CNL's environmental performance.

- ISO 14001 certification
- Environmental Performance Reporting
- Regulatory Review – CNSC Staff Report on the Performance of CNL's Nuclear Sites and Projects: Environmental focus – samples taken 2012, 2013, 2014

Safe

The proposed strategy of in-situ decommissioning provides the best decommissioning option for workers, the public and the environment. The chosen decommissioning technique minimizes safety risks; for example it will reduce the chance of dose to workers, and also limits worker exposure to the risk of industrial accident. It reduces materials handling, packaging, temporary storage and unnecessary movement of materials; all factors which help minimize the risk to the environment.

Feedback Form



Feedback Form

Share this

Do you have questions about CNL's projects? Let us know what you are thinking by completing our feedback form. If you request a response, one of our team members will be in touch.

* Indicates a required field

Name / Nom *

Email / Courriel

(person@email.com)

Phone / Tel

(###-###-####)

Mailing Address / Adresse municipale

(256 characters left)

My question is about the following project(s):

NPD Closure / fermeture du réacteur NPD
NSDF / IGDPS
WL Closure / déclassement de Whiteshell

(hold SHIFT/CTRL to make multiple selections)

Please write any questions or comments. (?)

Écrivez-nous vos commentaires ou questions. (1500 characters left)

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

☑ Yes / Oui
☐ No / Non

Vous souhaitez recevoir une réponse d'un membre de notre équipe au sujet de vos questions et préoccupations?

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

☑ Yes / Oui
☐ No / Non

Vous souhaitez ajouter votre nom à notre liste d'envoi pour plus d'informations sur les futures journées portes ouvertes?

Submit

Environmental Stewardship

- Environmental Remediation Management
- Environmental Protection
- National Programs
- Near Surface Disposal Facility
- Nuclear Power Demonstration Closure Project
- Port Hope Area Initiative
- Repatriation
- Waste Programs
- Whiteshell Decommissioning
- Performance Reporting
- CRL Environmental Stewardship Council
- Whiteshell Reactor #1
- Transportation

Appendix M WR-1 Fact Sheet


Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens
WR-1 In Situ Decommissioning:
Why?
• The WR-1 facility has not operated since 1985, is no longer in use and is considered a nuclear legacy liability.
• The Government of Canada is committed to the responsible management of Canada's nuclear legacy liabilities. Decommissioning WR-1 will help towards achieving this commitment.
• The facility has already been partially decommissioned and put into "storage with surveillance." Now, the time is right to complete its decommissioning.
Understanding In Situ Decommissioning:
In situ decommissioning:
Encapsulates the waste in concrete below ground.
Is a sustainable solution to isolate and contain the reactor vessel, systems and components from the environment.
Is effective because it has robust engineered safety features providing multiple defenses to inhibit, reduce and delay the migration of contaminants ensuring any releases to the environment are below regulatory limits.
Ensures minimal risk to the public and the environment, including the prevention of unintentional human contact in the future.
Disposes of the waste now, ensuring future generations will not have to manage the waste.
This approach has been successfully implemented at many nuclear facilities world wide.
Grouted and Capped
End Stage
What are the benefits of this technique?
• It's timely and responsible. It closes the facility now, ensuring future generations will not have to manage the liability. Monitoring and institutional controls will continue.
• It's science-based. In situ technology is based on sound scientific and engineering principles.
• It's been done before. This method has been demonstrated as successful at other sites – at least a dozen nuclear facilities worldwide have implemented this technology.
• It significantly reduces injury risk to workers performing the work as less intrusive cutting and handling is needed.
What is the timeline?
EA launched for the WR-1 decommissioning project.
CNL submits the draft EIS for WR-1 to the CNSC
Responding to public, Indigenous and regulator feedback. Additional studies and further technical evaluations conducted
*Anticipated timing for CNSC's EA public hearing
MAY 2016
JUNE 2016
FALL 2017
OCT 2017
DEC 2017
JAN 2018
OCT 2019
SPRING 2020
2021
the public comment period on the Project Description ended
October 6, 2017 – December 20, 2017 – public comment period.
*Anticipated submission of EIS for WR-1
Continued public and Indigenous engagement
Solicit information and feedback/How do I get involved?
CNL engages with local communities and Indigenous groups to provide opportunities to participate in the Environmental Assessment process.
How to participate in the EA process:
@CanadianNuclearLaboratories
@CNL_LNC
Email: wlcommunications@cnl.ca
Website: www.cnl.ca/wr-1
1-800-364-6089

In Situ Decommissioning Fact Sheet

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

In-Situ Decommissioning of the WR-1 Reactor

PROJECT BACKGROUND

The WR-1 reactor was a research reactor that played an important role in building Canada's scientific and industrial capacity. When operating more than 31 years ago, WR-1 reached a maximum of 60 megawatt thermal (MWt), which is significantly less than power reactors, which operate at values greater than 1,500 MWt. The safe shutdown of WR-1 was done in a planned and controlled manner. Shutdown in 1985 and de-fuelled thereafter, WR-1 has been safely maintained in a state of "storage with surveillance."

As part of its work to manage Canada's decommissioning and waste-management responsibilities on behalf of Atomic Energy of Canada Limited, CNL is proposing to decommission and leave in-situ the research reactor (WR-1) at the Whiteshell Laboratories site. The proposed approach will provide a safe, secure and effective disposal solution for the existing contaminated below-grade building. This approach minimizes the risks to the health, safety and security of the public, workers and the environment.

STATUS OF WR-1 DECOMMISSIONING

At the time of the WR-1 shutdown in 1985, deferred decommissioning was the preferred strategy for management of the main reactor building. The deferment period has allowed a significant reduction of radiation fields within the facility and the associated systems. This reduction has helped to reduce the risks to staff preparing to complete the decommissioning project.

PROJECT GOAL

To safely decommission the WR-1 reactor thereby reducing long-term nuclear liabilities.

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

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

THE PLAN

The technique CNL is proposing involves pouring a specially-engineered grout into the reactor to lock contaminants in place, essentially making a giant, underground, block of concrete.

A protective cover will then be added on the surface which will also serve to channel water away from the site and protect it from the elements.

Long-term care, maintenance activities and decommissioning site environmental monitoring will continue to ensure that the site remains safe and the decommissioning approach performs to expectation.

The proposed end state leaves approximately 10,800 acres of land unaffected, and only a small portion, approximately 0.5 per cent of the former laboratories site, would be maintained under institutional control.

DECOMMISSIONING ACTIVITIES

- Environmental Assessment process
- Regulator decision on proposed technique
- Grouting of below grade structures
- Removal of above grade structures
- Installation of concrete cap and engineered barrier over the grouted area
- Final site restoration and preparation for long-term care and maintenance activities

Date of Issue: June 2016

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

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

Appendix N CONTACT Newsletter – Winter 2021

John Gilbert
Site Head of the Whiteshell Closure Project

WHITESHELL TRANSITION TO 2027

Now that we are learning to live with the challenges posed by COVID-19, CNL is able to place greater focus on our goal to safely and compliantly complete the closure of the Whiteshell Laboratories by 2027. This is an environmental remediation project that is a key element of the Government of Canada's commitment to clean up former nuclear research sites around the country. It's also an important part of CNL's mission to restore and protect the environmental by reducing Canada's nuclear liabilities, including waste, contaminated buildings, and other infrastructure.

A unique project, with innovative solutions
The Whiteshell Laboratories Decommisioning Project is a first in Canada: CNL is undertaking the safe and permanent closure of a nuclear research site and a research reactor, while returning the vast majority of the site to its original state. This requires a lot of creative thinking, and employees have overcome individual challenges through sheer ingenuity. One example: the invention of the Standpipe and Bunker Waste Retrieval System is employing first-of-a-kind equipment – a solution that will help CNL safely and efficiently handle radioactive waste. More on this innovation on Page 6 of CONTACT.

Taking care of our people
CNL's most valuable asset is its people. They are highly skilled employees, who are gaining valuable experience working on a unique decommissioning project that is providing skill-building opportunities. Our people have given us a lot, so we want to assist them as they consider their future. To do that we have developed the Whiteshell Laboratories Employees Transition Plan to lay out the steps CNL will take to deliver the closure project with minimal impact on our employees. We are confident that many of these workers will quickly find employment in the nuclear or engineering fields, or in other sectors requiring highly skilled workers. CNL is offering some workers incentives for early retirement and providing training for those who want to find jobs in other fields. We are prepared to support employees with career counselling, job search assistance, retraining, enhanced benefits and retirement planning.

CNL is here to inform, to listen and to support
As we head towards 2027, CNL is also thinking of the impact on the surrounding communities. So, while Whiteshell Laboratories is first and foremost a closure project, CNL and its parent company Canadian National Energy Alliance (CNEA) support local community efforts to identify and bring future economic development to the site through the Whiteshell Laboratories Regeneration Partnership. CNL has also been working with local business incubator North Forge East to find ways to keep jobs in the area once the Whiteshell Laboratories Closure Project is complete.

We continue to engage extensively with the public, local municipalities, First Nations and the Métis Nation to raise awareness about the project and to address concerns. You can read more about our Indigenous engagement on Page 4 of CONTACT.

In other news: welcoming a new face
I am very happy to welcome into the CNL family, Zack Smith, Vice-President, Environmental Remediation Management. Zack has extensive field experience leading large clean-up projects like Whiteshell's and has more than 30 years of experience in engineering and field management. While his main office is at Chalk River Laboratories in Ontario, he will be here at the Whiteshell site often, and considers our work to be one of the highest priorities in the CNL portfolio.

WR-1 DECOMMISSIONING PROJECT UPDATE

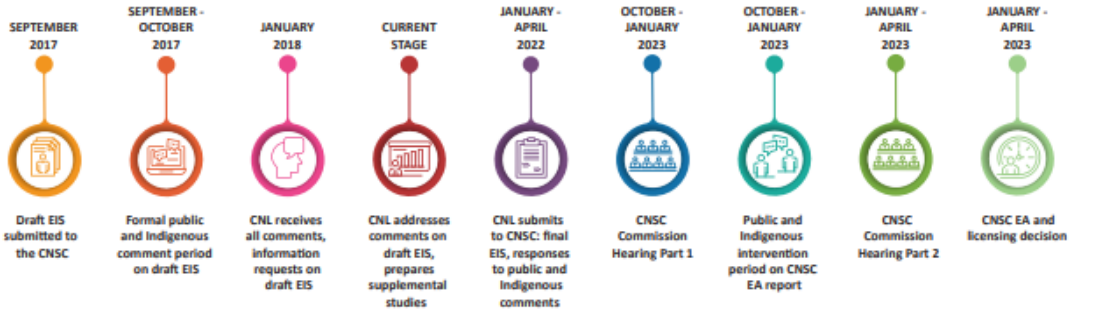
CNL team is hard at work updating the Environmental Impact Statement

CNL is proposing to decommission the reactor (WR-1) at the Whiteshell Laboratories site using a technique called in-situ decommissioning. This method uses a multi-barrier approach to safety isolate the waste, including an alkaline grout formula that would fill the reactor and establish a salty, dry and stable environment, ensuring the protection of the surrounding and downstream environments and people.

The team preparing the project is hard at work updating the Environmental Impact Statement (EIS) for resubmission to the Canadian Nuclear Safety Commission – Canada's nuclear regulator. The EIS is a massive technical document, of more than 1,000 pages, which provides an analysis of environmental effects of the project and details on how the proposed in-situ decommissioning ensures the protection of the environment and people. It includes everything from CNL's engagement activities with communities, First Nations and the Manitoba Métis Nation to health and environmental assessments.

The WR-1 team has taken time to carefully prepare the updated draft document in order to conduct additional engagements with First Nations and the Manitoba Métis Federation (MMF). CNL wanted to confirm that it had successfully captured each Nation's interests, concerns and list of valued components (elements in the environment that have scientific, economic, social, traditional, or cultural significance) related to the WR-1 project. Once this information was verified, CNL sent sections of the revised draft EIS to the Nations for an additional diligence check. The WR-1 team has also used this time to address comments and questions received from the federal and provincial reviewers, the MMF, First Nations, and the public. Whiteshell's Indigenous Engagement Officer Kristie Duncan says extra care is being taken to ensure that the Nations' views are fully reflected in the document.

"We have taken the additional time needed to make sure we have fairly and accurately characterized and then verified each Nation's position, interests, and concerns on the WR-1 project, " Duncan said. "Once that step was completed, our team went through the entire document, not just the section on Indigenous engagement, to make sure it reflected those valued components and interests."



WR-1 ENVIRONMENTAL ASSESSMENT TIMELINE

CNL expects to resubmit the revised EIS to the regulator in early 2022.

Indigenous engagement is a vital component of the environmental assessment process and over the last year CNL has continued to increase its efforts to support meaningful engagement with Indigenous communities on the WR-1 project, taking time to build relationships with each community and collaboratively identify key initiatives to address concerns about the project.

When the updated document has been submitted, the Canadian Nuclear Safety Commission will review it and - when satisfied the information is complete - begin the public hearing process.

GROUNDWATER MONITORING WITH MANITOBA MÉTIS FEDERATION

BUILDING TRUST AND STRONG RELATIONSHIPS

CNL continues to engage with Indigenous communities on Whiteshell Project

The Whiteshell Laboratories Closure Project is a critical component of CNL's mission to restore and protect Canada's environment by reducing and effectively managing nuclear liabilities. CNL recognizes that Indigenous communities hold a unique connection to the land and water, and that forging a strong relationship with each nation is essential as we share the common commitment to environmental stewardship.

CNL is currently engaging with First Nations and the Métis Nation, in collaboration with Atomic Energy of Canada Limited, on the Whiteshell Closure Project. We take the time and make the effort to ensure that each community has the support and information it needs to fully participate in meaningful discussions about our decommissioning plans. Building these relationships – building trust – creates the space for meaningful participation in the closure of the Whiteshell Laboratories site. We're making progress on several fronts.

INDIGENOUS ADVISORY COMMITTEE

CNL is taking steps to set up an Indigenous Advisory Committee (IAC), where members can discuss matters of mutual interest with CNL and Atomic Energy of Canada Limited, the owner of the Whiteshell Laboratories site. The most recent planning meeting for the formation of the IAC took place on Sept. 28, 2021. The members of the committee reviewed a list of proposed Terms of Reference for the Committee and put forward a proposed mission for the IAC: "To guide the decommissioning of the Whiteshell site in all its aspects, including nuclear waste management, site clean-up and remediation, and long term monitoring."

The discussions noted that advisory committees, like the proposed IAC, are rapidly becoming best practices in nuclear decommissioning efforts around the world and in other sectors and industries. A suggestion was put forward to be more explicit in describing CNL's work, for example, using the term "nuclear waste" rather than "nuclear liabilities".

The participants will take the results of this meeting back to their leadership for further discussion, and from there will make a final decision on whether they wish to become members of the IAC. It is expected that the first official meeting of the Whiteshell Indigenous Advisory Committee will be held in January 2022.

CULTURAL AWARENESS TRAINING

To learn more about First Nations, Métis Nation and Inuit history and culture, CNL staff took part in three cultural awareness training sessions in June 2021. The sessions were hosted by First Peoples Group, an Indigenous-owned and operated consulting company based in Ottawa. The three presenters provided an overview of their own culture, belief systems, ceremony, and teachings, weaving in personal stories and teachings throughout.

They also provided an overview of Indigenous history on Turtle Island – the name many Indigenous communities give to North America. The presentations were followed by a discussion about reconciliation which highlighted the contemporary concerns and priorities of Indigenous people.

TRAUMA-INFORMED ENGAGEMENT

To further support meaningful engagement at the Whiteshell site, CNL hosted a two-day trauma-informed engagement training workshop with participants from both Whiteshell Laboratories and Chalk River, representatives from Atomic Energy of Canada Limited, the Canadian Nuclear Safety Commission and Sagkeeng First Nation's Liaison Officer.

Trauma is a term used to describe the psychological and emotional consequences of experiencing a distressing event. Approximately 76 percent of people living in Canada have experienced a traumatic event at least once in their lifetime. Being trauma-informed is essential for developing a strong and sustainable organizational foundation promoting strength, connection, and healing. The workshop explored what it means to be trauma-informed in all aspects of professional conduct. Participants of this training gained a deeper understanding of the meaning of the word "trauma" and its impact on Indigenous Nations and communities and other marginalized groups in Canada, and practiced developing a trauma-informed engagement plan.

Participants came away from the session with a greater understanding and awareness of triggers, the types of trauma, and how past trauma can influence how people engage and experience new spaces. They gained new tools and knowledge for developing an engagement plan that ensures all parties feel safe and comfortable during the engagement process. The training laid the foundation for the development of a trauma-informed action plan with Sagkeeng First Nation.

ENVIRONMENTAL MONITORING

CNL has continued to collaborate with First Nations and Métis Nation communities through the environmental monitoring of the Whiteshell site.

June 14 – To inaugurate environmental monitoring season, CNL and representatives from the Manitoba Métis Federation participated in groundwater monitoring, a turtle search along the plant road, and a songbird survey. MMF staff suggested setting up trail cameras along the plant road to better assess whether turtles were in the area. There are two types of turtles on the Whiteshell site.

The snapping turtle (Chelydra serpentina) is listed as a "species of special concern" in Canada under the *Species at Risk Act* but has not been legally designated as a species at risk in Manitoba. The Western painted turtle – Prairie/Western Boreal – Canadian Shield Population (Chrysemys picta bellii) is not listed under federal or provincial legislation as a species at risk. Both types of turtles are important contributors in the ecosystem.

LIAISON WITH BLACK RIVER AND HOLLOW WATER FIRST NATION

June-July – Four bat exit surveys were conducted over several weeks outside Building 100, where the WR-1 Reactor is located, to determine whether bats might be roosting in Building 100. The monitors included staff from CNL, participants from the Sagkeeng First Nation, Manitoba Métis Federation, Black River First Nation and Hollow Water First Nations. In past surveys of the main campus, two "at risk" bat species, the little brown myotis and the northern myotis, were found on the site, but not roosting in buildings. Stationary and handheld acoustic monitors were used as well as visual field observations. Preliminary data from the exit survey of Building 100 suggests that the structure is not currently being used as a roosting habitat due to the timing and frequency of bat calls during the study and lack of visual confirmation of bats exiting the facility. In addition to the exit survey, an internal search of Building 100 was conducted by CNL staff for bats and signs of bats activity inside the building over the course of four days in July. Both visual and acoustic search methods were used. No evidence of bat roosting was found. CNL wants to ensure that work carried out in and around Whiteshell infrastructure does not put additional stress on the species.

August 16 – CNL was joined by representatives of the Manitoba Métis Federation, Black River First Nation and Hollow Water First Nation to conduct river sediment, soil and vegetation sampling and collection. Initial screening indicates no contaminants, and samples are being sent to a laboratory for further analysis.

September 9 – Staff from the Manitoba Métis Federation joined CNL to sample mushrooms on the Whiteshell site. The mushrooms collected will be analyzed for radioactive uptake and the results will be included in CNL's Environmental Monitoring Reports for 2021 that will be published in June 2022.

'A GAMECHANGER FOR THE NUCLEAR INDUSTRY'

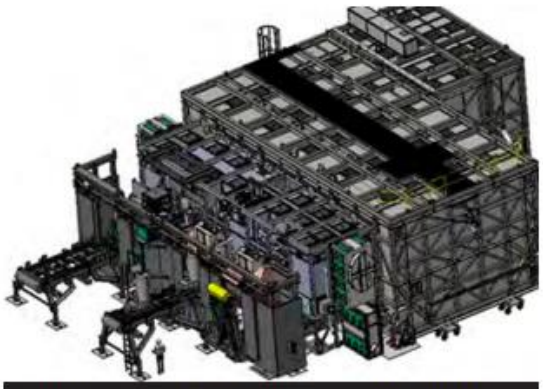
Brainchild of CNL employees - safest, most efficient way to clean up waste

It weighs 1.4 million pounds – or 635,000 kilograms – and will take more than 150 trucks to ship to the Whiteshell site. When it arrives and is assembled, this gargantuan equipment will be the safest and most efficient way to clean up radioactive and other hazardous waste now in temporary storage.

It is called the Standpipes and Bunker Waste Retrieval System. David Gilson, CNL's Whiteshell site Senior Manager for Waste Management Area Demolition and Decommissioning, considers it a ground-breaking invention.

"This is going to be a gamechanger not just for Canada, but for other countries with nuclear programs," Gilson said. "For us to show you can do this type of work remotely will be significant for the industry."

The system is the brainchild of CNL employees who were trying to figure out the best method to remediate intermediate-level radioactive waste while protecting employees.



BUNKER WASTE RETRIEVAL SYSTEM ILLUSTRATION

CNL's specific challenge was to develop a plan to remediate 171 in-ground concrete standpipes (vertical in-ground waste storage structures) and seven in-ground concrete bunkers – while making sure the people doing the work were as safe as possible. That means breaking open the concrete standpipes and bunkers, retrieving the material inside, then identifying, cataloguing, sorting, packaging and preparing it for transport to CNL's Chalk River site for continued safe management.

As a result of the radioactive hazards and other contaminants, the solution was to use remotely operated equipment as part of a first of a kind system using commercially available parts and components and some specifically designed parts assembled in a unique configuration.

Part of this solution, the Bunker Waste Retrieval System, will sit over one bunker at a time and using remotely operated excavator arms, will remove the roof, extract materials, and deliver them for processing. Once the bunker is cleared of materials and decontaminated, the Bunker Waste Retrieval System will then be moved to the next bunker using a series of self-propelled modular transporters situated underneath the building.

The second part, the Standpipe Waste Retrieval System, will sit over two standpipes at the same time, pulverize the concrete caps into rubble, extract the materials and then deliver the waste for processing. A crane will then lift and move it along to the next two standpipes. The heart of the sys-

NUCLEAR WASTE AT CNL

The Standpipes and Bunkers Waste Retrieval System will segregate waste into three different categories. At CNL, we categorize nuclear waste as either low-level waste, intermediate-level waste or high-level waste:

Low-level waste (LLW) contains material with limited amounts of long-lived activity. Low-level waste requires isolation and containment for up to a few hundred years. An example of LLW is soil contaminated by historical activities.

Intermediate–level waste (ILW) typically exhibits levels of penetrating radiation and contains significant quantities of long-lived radionuclides. An example of Intermediate-level Radioactive Waste is waste generated in hot cells from isotope production processes.

High-level waste (HLW) includes used nuclear fuel and other wastes (e.g., fuel reprocessing wastes) that have been declared as radioactive waste that generate significant heat via radioactive decay. Used nuclear fuel is associated with penetrating radiation and contains significant quantities of long-lived radionuclides.

tem is the Sorting and Conditioning Unit which will receive the packaged waste materials from both the bunkers and standpipes. It contains two pairs of remotely operated manipulator arms that will open, segregate, analyze, sort, and package the waste into shielded canisters for safe transport.

Everything is directed from a control room that is an entire football field away. David Gilson says keeping workers at a safe distance is key to this unique system.

"You don't have to put someone right on top of the bunker or the standpipe to retrieve the waste," Gilson said. "You can do this remotely and remove any danger to people and the environment that this process could present."

The components of the system are now under construction in the Greater Toronto Area and Cambridge, Ontario. They are due to be transported to Whiteshell in late 2022 and reassembled. It is estimated it will take six months to empty and process each of the seven bunkers and a week for each of the 171 standpipes, putting the total time to clear both at forty-two months.

The Standpipes and Bunker Waste Retrieval System showcases the ingenuity of CNL engineers and technicians, who have successfully invented a new way to keep workers safe and to efficiently handle a complex and enormous remediation project.

And there is an added bonus: the people who are now being recruited to work with the system will have unique experience in waste management, decommissioning and remediation.

PROTECTING YOUR HANDS AT ALL TIMES!

CNL encourages employees to practice hand safety, both at work and at home

At Whiteshell Laboratories we put a premium on safety – and especially on the safety of our hands. To date this fiscal year, 44.5 percent of injuries on the Whiteshell site involved our hands and fingers

Two years ago in Whiteshell CONTACT, we told you about a glove campaign to remind workers to put on a pair of protective gloves when doing work that calls for protection. The initiative was designed to get our employees to build in the habit of taking care of their hands while at work and home. WL Occupational Health and Safety provided everyone with a pair of leather work gloves to take home.

CNL has stepped up that campaign. We want to remind people to think about and practice hand safety at home too. This summer, after CNL's President and Chief Executive Officer, Joe McBrearty, issued a requirement for everyone to have handy, at all times when out and about, a pair of cut resistant gloves, Whiteshell Occupational Health and Safety provided staff with a pair to take home as well.

Lorreta Magnusson, CNL's Manager of Health and Safety Services, explains the initiative this way, "Safety doesn't end when you leave the site, safety continues in your whole life. If you get injured at home, how can you work? We want everybody to be safe whether it's at work or at home".

CNL has posted an online video on hand safety that is a must-see for all employees. WL has also made a mandatory requirement for everyone to take hand safety training.

LORETTA MAGNUSSON AND TIM ROCHE SHOW OFF CUT RESISTANT GLOVES

The safety directive contained another requirement to cover arms to the wrist and ankles when outside or in an area or performing a task where there is a hazard to injury. No leg or ankle skin is to be visible. These changes will help CNL align with industry standards on construction or demolition sites.

CNL DONATES $3,940 TO REGIONAL HEALTH AUTHORITY

As many of the buildings and building materials used to create Whiteshell contained asbestos, workers on site need to ensure their safety as they conduct asbestos abatement work. For years, when Whiteshell employees needed lung function tests, they had to travel several hours to a larger centre. CNL's $3,940 donation to the Interlake-Eastman Regional Health Authority will soon make those tests available much closer to home at the Lac du Bonnet Health Centre.

Whiteshell Closure Project general manager John Gilbert presented the Interlake-Eastman Regional Health Authority with donated spirometry equipment which tests how much air you can breathe in and out of your lungs, and how easily you can do it. These tests can diagnose many conditions such as asthma, chronic obstructive pulmonary disease, chronic bronchitis, emphysema, and pulmonary fibrosis.

"Given the challenge our employees encountered receiving these tests within the local region, we thought if we could help find a way to obtain spirometry tests more locally, it would provide benefits for the regional area as a whole, not just for CNL employees" Gilbert said.

JOHN GILBERT PRESENTS JAMIE McLEAN WITH CNL DONATION FOR SPIROMETRY EQUIPMENT

The $3,940 donation covers purchasing the equipment as well as the start-up costs for setting up the equipment.

EMPLOYEES DONATE COMPANY BONUS TO LOCAL CAUSES

When CNL employees were awarded a bonus from their parent company, Canadian National Energy Alliance (CNEA) for their outstanding performance in 2020-2021, they decided to do something different with the allocation this year. The money, which is provided by CNEA's consortium members – SNC Lavalin, Jacobs, and Fluor – is typically used for team events or company apparel, but this year CNL ran a campaign to see how the money could be better spent through investments in local communities or charitable causes.

Following a weeklong submission stage which generated over 90 ideas, a review team then shortlisted and whittled the proposals down to 53 that were judged feasible. These were then moved forward to an 'investment stage.' Each CNL staff member was provided $250 to invest in the ideas of their choosing – essentially, voting for the proposal they thought was best. In only four days, employees fully funded 29 ideas that will now receive financial support through the program. In total, approximately $180,000 is being donated to a number of causes in communities around CNL locations which include investments in schools, parks and outdoor trails, in mental health treatment and preventing homelessness, in the protection of animals, and financial aid for the less fortunate.

Among the winners were two for the Whiteshell area: the Seven Sisters Falls Community Club, and upgrades to the Lac du Bonnet & District Arena. CNL's President and CEO says he was moved by the caring and philanthropic ideas put forward by the CNL team. And Joe McBrearty noted that "the majority of ideas submitted and funded are for improvements in the quality of life in local communities. These are wonderful applications for these funds, and I know they will be put to good use."

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www.cnl.ca

CONTACT is a publication of CNL's Whiteshell Laboratories Communications team.

Out in the community
Throughout the summer and fall, CNL ramped up its engagement schedule once again to share information about its work and to listen to comments on decommissioning that is underway and planned. This included virtual public meetings to respond to questions on:

- The Post-Closure Safety Assessment for in situ disposal of the WR-1 reactor
- Protective barriers for the WR-1 Disposal Facility
- Design and testing of the grout formula that will encase the WR-1 reactor in the proposed WR-1 Disposal Facility

CNL also participated in other engagements, including:

- Hosted CNL booths at the Lac du Bonnet Night Market and Home and Cottage Expo
- Sponsored the Rod Demoline Memorial Golf Tournament and sent a team to represent CNL
- Guided the Manitoba Environmental Industries Association, MLA Wayne Ewasko and other government officials on a tour of the Whiteshell facility
- Provided an update at the Whiteshell Economic Regeneration Partnership meeting, followed by a tour for the Mayor of Pinawa and StarCore Nuclear representatives
- Facilitated participation by Indigenous communities in observing CNL's Environmental Monitoring activities
- Hosted a Public Liaison Committee virtual meeting for local municipal governments
- Held workshops with Black River First Nation and Hollow Water First Nation, the Manitoba Metis Federation, and Sagkeeng First Nation to review their comments on the draft WR-1 Environmental Impact Statements
- Met with Sagkeeng First Nation to review additional studies conducted by their community

GIVING BACK TO OUR COMMUNITIES

CNL continues work to support its communities during the COVID-19 pandemic

The United Way
CNL employees haven't let COVID-19 interfere with the annual drive to raise money for the United Way, helping to contribute to building strong and healthy communities, helping kids be all that they can be, and moving people from poverty to possibility.

While we had to move our fundraising activities on-line, we nevertheless achieved great success with $17,383 raised for the United Way. We still intend to conduct several of the typically planned activities at a later date including bingo, a raffle, and a 50/50 draw, as well as a bake sale (run according to Manitoba's strict Health Guidelines) and a cake auction on site once staff are back at work.

Sponsorships
CNL proudly steps up to help fund activities by community organizations, and in the last few months has provided help to the following organizations:

- The Rod Demoline Memorial Golf Tournament fundraiser for the Lac du Bonnet Community Centre
- The Pinawa Christmas Committee's fundraiser for a Christmas light show
- The Lac du Bonnet Lions' Event Guide

Inventory Donations
Due to COVID-19, CNL temporarily suspended Whiteshell's Surplus Inventory Donation Program during the summer and fall. Under this program, CNL donates equipment and material that is no longer needed to local charitable and non-profit groups, municipalities, and Indigenous communities.

During this time, CNL has, however, reached out to these groups to gauge their interest for building materials that remain after emptying and demolishing some of the structures on the site. We're excited to see these assets go to new homes and will keep Contact readers updated on our efforts to re-use and re-cycle as much as possible.

AM I RADIOACTIVE?

Believe it or not, yes, humans (and most any other creature) are radioactive. Well, sort of. It isn't that we are radioactive, but because we eat, drink, and breathe radioactive substances that are naturally part of the environment, we have radioactivity inside us. Yes, many of the things we eat are radioactive. Bananas and potatoes for example contain potassium-40, a radioactive isotope of potassium.

Yet, despite what you may have seen in the movies, we don't glow 'green' and we don't have any special powers. The only way that you can detect the radioactivity that we emit from our bodies is with a special detector.

In order to check that staff at CNL are safe, we use very sensitive instrumentation to confirm that none of our staff have breathed in, absorbed or swallowed any radioactive material during their work. One of the ways we do this is by asking staff to stand in front of a very large detector, looking for radioactive emissions. This detector is so sensitive that the building which surrounds the detector was specially built to shield the detector from the background radiation (which is everywhere around us).

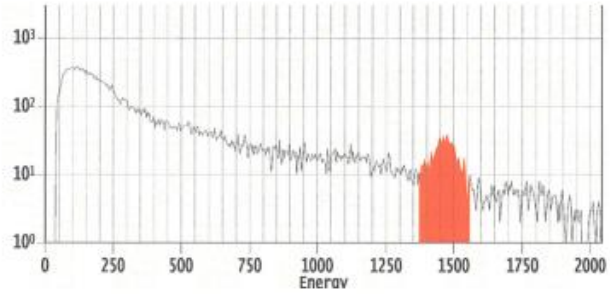
At Chalk River Laboratories alone, we perform over 3,000 of these tests per year. When a person stands in front of the detector, we are able to determine how much radiation is coming out of them, and, based on the energy, we can determine what the radioactive material is.

In the graph below, it shows the results from my "whole body count", and you can see the normal background radiation (the grey squiggly line) and the red area which shows a spike of radioactivity. Since the instrument is so sensitive, we see some naturally-occurring radioactive material that we aren't looking for. In this case, it is in fact potassium-40.

An average adult has about 100 grams of potassium in their body at any given time, which includes some potassium-40. In fact, we use potassium detection as a way of checking that that detector is working properly.

This story was featured in a recent issue of CNL's newsletter for kids, called ***KIDS CONTACT.***

To download the entire issue to share with your own kids, visit our website at www.cnl.ca.



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CONTACT is a publication of CNL's Whiteshell Laboratories Communications team.

Appendix O Email to Stakeholders

Good afternoon,

We would like to invite you to join Canadian Nuclear Laboratories (CNL) for the first in our series of a breakfast briefings on the Whiteshell Reactor #1 (WR-1) decommissioning project. As someone with an interest in the decommissioning plan for the Whiteshell Laboratories, we encourage you to join us at this presentation.

Tuesday, November 12, 2019
Pinawa Club Restaurant, Pinawa, Manitoba
9:00 a.m. – 10:30 a.m.

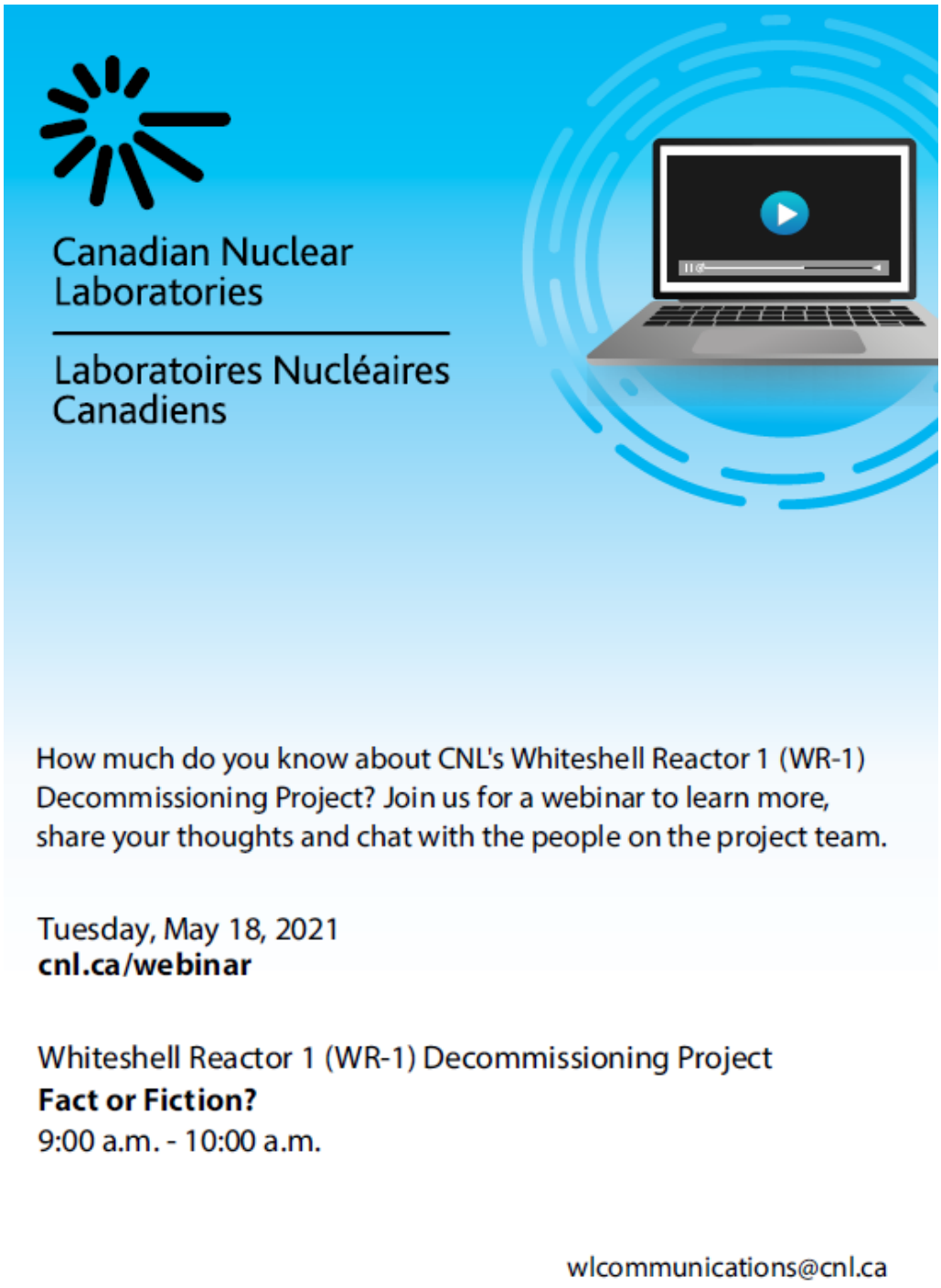
Topic: The Characterization Plan and Results for the WR-1 Reactor – Brian Wilcox and Jeff Miller, CNL

Breakfast refreshments will be served. Seating is limited and to ensure we have enough refreshments, we would ask that you RSVP by November 5 to Shannon Worona.

Alanna Wilcox, *B.Comm.*
Acting Manager, WL Stakeholder Relations
WL Closure Project
Canadian Nuclear Laboratories
alanna.wilcox@cnl.ca
Ph: (204)753-2311 ext. 63033
Cell: (204)340-6344

Canadian Nuclear Laboratories | Laboratoires Nucléaires Canadiens

Appendix P Sample News Outlet Advertisement



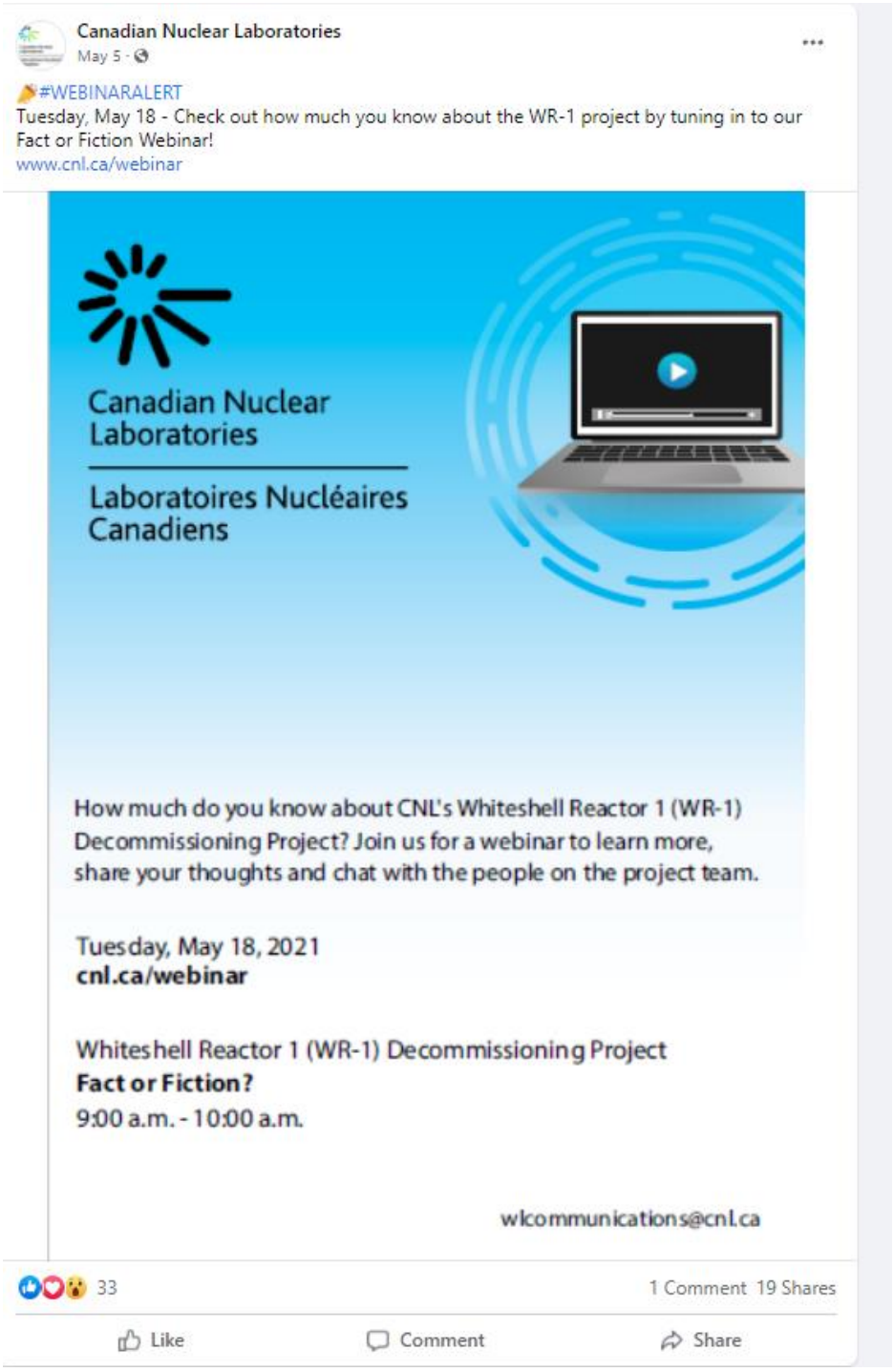
Appendix Q Voyageur article

WHITESHELL OPEN HOUSE A SUCCESS!

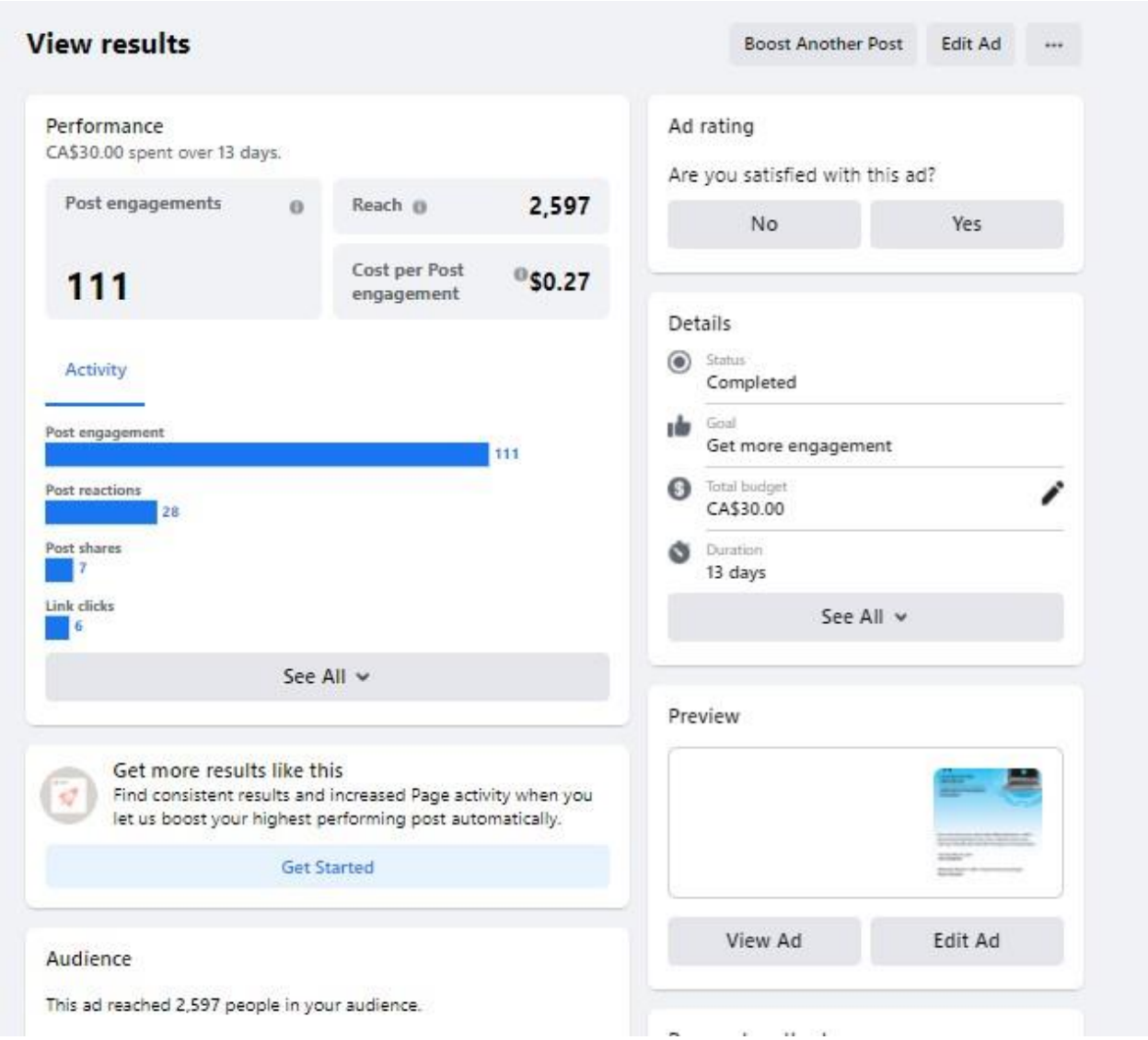
Over 300 people visit the Whiteshell Laboratories for a closer look at the decommissioning site

Staff at Whiteshell volunteered their time to host a public Open House earlier this month. Over 300 people from around Manitoba and Saskatchewan attended the event which included guided bus tours of the site. Staff were on hand in the parking lot under the big top with displays of equipment, programs and information on the many activities underway to safely close the site. The Canadian Nuclear Safety Commission and our client AECL were also on hand to engage with the public. Congratulations Whiteshell!

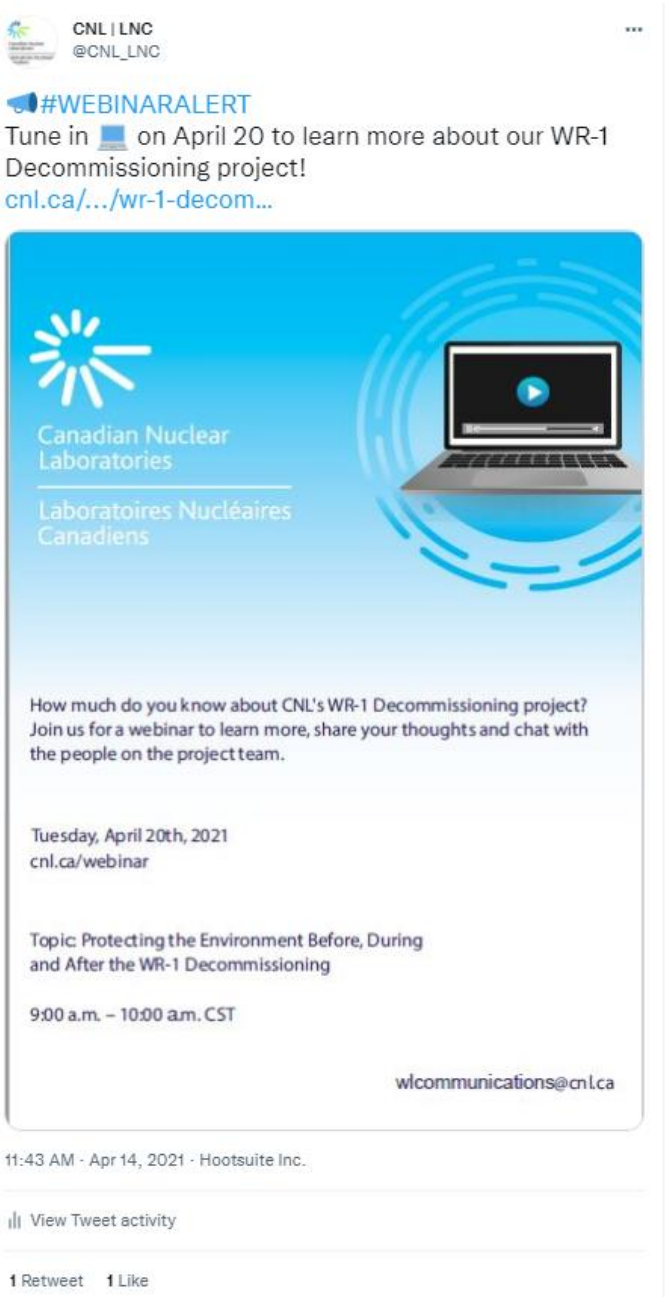
Appendix R Sample Facebook Post



Appendix S Sample Ad Set for Facebook



Appendix T Twitter Advertising Post



Appendix U Summary of Media

Summary of Media Coverage for Preliminary Engagement

Date	Article	Publication
June 30, 2016	CNL Proposes Entombing Reactor	*The Clipper*
July 5, 2016	À quand le démantèlement complet du Laboratoire nucléaire de Pinawa?	CBC Radio-Canada
September 1, 2016	CNL Decommissioning Plans on Display	*The Clipper*
Date	**Opinion Piece**	**Publication**
June 11, 2016	Letter to Editor: Generations Saddled with Pinawa Nuclear Burial	*Winnipeg Free Press*
June 22, 2016	Shut Down Safe (re: Generations Saddled with Pinawa Nuclear Burial)	*Winnipeg Free Press*

Summary of Media Coverage during Round 1

Date	Article	Publication
November 10, 2016	CNL continues to review public feedback	*The Clipper*
December 8, 2016	CNL consultations continue	*The Clipper*
December 12, 2016	Dead and maybe buried	*Winnipeg Free Press*
December 12, 2016	Pinawa prepares for big job loss after nuclear reactor decommission	*Winnipeg Free Press*
December 12, 2016	Deep Discussion	*Winnipeg Free Press*
December 13, 2016	Interview with Dan Coyne	Radio Noon (CBW-AM)
December 14, 2016	Whiteshell reactor must be sealed below bedrock: expert	*Winnipeg Free Press*
January 27, 2017	CNL Promises to Answer Questions	*Winnipeg River Advocate*
February 10, 2017	Q & A With Canadian Nuclear Laboratories' Mitch McKay	*Winnipeg River Advocate*
Date	**Opinion Piece**	**Publication**
December 15, 2016	Cheap Nuclear Clean-up Dangerous	*Winnipeg Free Press*

Summary of Media Coverage during Round 2

Date	Article	Publication
May 5, 2017	CNL Whiteshell Laboratories to Host Industry Day	*Winnipeg River Advocate*
May 16, 2017	Plan to entomb Manitoba's nuclear waste worries environmentalists	*CBC News*
May 25, 2017	Nuclear Regulators Visit North Eastman	*The Clipper*
June 8, 2017	Lac du Bonnet Trade Fair Well Attended	*The Clipper*
July 13, 2017	Plan to Bury Whiteshell Reactor Faces questions	*Winnipeg Free Press*
July 28, 2017	Another CNL public info session	*Winnipeg River Advocate*
August 2, 2017	Questions raised over burying WR-1	*The Clipper*

Summary of Media Coverage during Round 3

Date	Article	Publication
November 2, 2017	Nuclear regulators seek public feedback	*The Clipper*
November 15, 2017	CNL decommissioning feedback continues	*The Clipper*
December 14, 2017	Municipalities support small modular reactor	*The Clipper*
January 8, 2018	Decommissioning progress for unique Canadian reactor	*World Nuclear News*
February 22, 2018	CNL site tour raises demolition questions	*The Clipper*
March 22, 2018	CNL delegation to tour US site	*The Clipper*
March 29, 2018	Local delegates head to Nebraska to get a snapshot of what decommissioning a reactor looks like in situ	*The Winnipeg River Advocate*
April 12, 2018	CNL delegation tours US site	*The Clipper*
April 24, 2018	Canadian Delegation Attends Annual Site Inspection of the Hallam Site	*EIN News*
April 27, 2018	WL completes stakeholder trip to in situ site	*Winnipeg River Advocate*
April 28, 2018	From the Council Chambers by Mayor Blair Skinner	*LGD of Pinawa Municipal Quarterly Newsletter*
May 16, 2018	La qualité du béton utilisé pour recouvrir le site nucléaire de Pinawa inquiète	*ICI Radio-Canada*
May 16, 2018	Residents fight gov't's plan for defunct nuclear reactor	*Winnipeg Sun*
May 16, 2018	Plan to entomb nuclear reactor breaks promise to Manitobans, watchdog group says	*CBC News*
June 14, 2018	Chamber Trade Fair continues to grow	*The Clipper*
August 2, 2018	Nuclear energy may return to Pinawa	*The Clipper*
August 22, 2018	Activists concerned by Pinawa plan	*Winnipeg Free Press*
May 21, 2019	The Whiteshell's Atomic Wonder	*Discover Magazine*

Date	Article	Publication
August 22, 2019	CNL to renew decommissioning licence	*The Clipper*
August 23, 2019	CNL Applies to Renew Whiteshell Laboratories Decommissioning Licence	*Winnipeg River Advocate*
September 26, 2019	Ceremony for CNL decommissioning	*The Clipper*
October 4, 2019	Indigenous knowledge keepers host ceremony at Pinawa nuclear site	*Winnipeg River Advocate*
October 9, 2019	National Commission holds hearing for CNL renewal	*The Clipper*
November 7, 2019	CNL Breakfast Session to discuss decommissioning	*The Clipper*
January 9, 2020	CNL Licence Renewed for Decommissioning	*The Clipper*
January 23, 2020	North Forge receives CNEA Fund Support	*The Clipper*
January 2020	From the Council Chambers of Mayor Blair Skinner	*LGD of Pinawa Municipal Quarterly Newsletter*
June 2020	Radiation: Harnessing a Natural Phenomenon	*Discover Magazine*
July 30, 2020	Nuclear Waste Disposal Plan Fuels Frustration	*Winnipeg Free Press*
January 2021	From the Council Chambers of Mayor Blair Skinner	*LGD of Pinawa Municipal Quarterly Newsletter*
Date	**Opinion Piece**	**Publication**
September 6, 2017	Manitobans won't fall for nuclear energy snake oil	*Winnipeg Free Press*
September 23, 2017	Calculate the global fallout from nuclear weapons	*Winnipeg Free Press*
December 1, 2017	Nuclear power not a “clean” energy solution	*Winnipeg Free Press*
January 23, 2018	Should residents trust nuclear burial plans?	*Winnipeg Free Press*
April 5, 2018	Letter to the Editor – Over Their Head	*The Clipper*
April 25, 2018	Nuclear energy isn't “clean”	*Winnipeg Free Press*
November 22, 2018	Letter to the Editor –Respectfully Disagree	*The Clipper*
March 14, 2019	D Taylor Opinion SNC–Lavalin Controversy reaches into Manitoba	*Winnipeg Free Press*
November 9, 2019	D Taylor Opinion on “Pinawa’s toxic predicament”	*Winnipeg Free Press*
November 19, 2019	Response to D Taylor’s opinion – Nuclear Power vs Fossil Fuels	*Winnipeg Free Press*
December 20, 2019	Small Nuclear Reactors no solution to Climate Change	*Winnipeg Free Press*
December 20, 2019	On Site Disposal of Nuclear Reactors is not acceptable	*Sierra Club Foundation*
January 20, 2020	O’Regan All in on Unnatural Resources	*Winnipeg Free Press*
January 27, 2020	Letter to the PM, Parliament re: Canada’s federally owned radioactive waste	*Hill Times*

Date	Article	Publication
January 29, 2020	Nuclear energy must be part of the climate-crisis solution	*Winnipeg Free Press*

Appendix V Sample Media Coverage

CNL moves forward on Whiteshell decommissioning

Canadian Nuclear Laboratories says it has taken an "important step" towards the final decommissioning of the Whiteshell Reactor 1 (WR-1) at Pinawa, Manitoba.

CNL announced recently that it has submitted a revised draft Environmental Impact Statement (EIS) to the Canadian Nuclear Safety Commission (CNSC). The draft EIS was first submitted in 2017.

Since then, the company said, the project team has been working on responding to information requests from the CNSC, engaging with First Nations and the Manitoba Métis Federation, and updating the revised draft EIS to ensure a complete resubmission.

"Over the course of Environmental Assessment (EA), CNL has learned the key areas of interest and concern from the public, Indigenous peoples and federal and provincial agencies.

"CNL has addressed comments from stakeholders and Indigenous communities and incorporated this feedback into the revised draft EIS."

The CNSC will now review the revised draft EIS for "completeness" and then begin a 90-day technical review.

"There are likely to be a number of further information requests and comments from the CNSC that come out of this review, but this submission marks an important step in progressing towards the final EIS," the company said.

CNL plans to use a similar method to decommission the WR-1 as it has proposed for the NPD reactor at Rolphton. Components will be collapsed into the reactor space and then "entombed" in concrete grouting.

Appendix W Stakeholders Benchmarking Trip – Hallam, Nebraska

Agenda

Agenda (2018 April 3-5)

Day 1 - 2018 April 3 (Travel)

Time	Activity	Lead
06:30 Delta 2829	Flight – Winnipeg to Lincoln Connecting flight in Minneapolis	CNL
10:21 Delta 4697	Arrive in Lincoln, NE	
10:30 am	Check-in The Lincoln Marriott Cornhusker Hotel 33 S 13th St, Lincoln	CNL
1:00 pm	Lunch, introductions and overview of site visit @ Yankee hill 2 conference room Marriott Cornhusker Hotel	CNL
6:30 pm	Dinner Miller Time Pub & Grill, Marriott Cornhusker Hotel	CNL

Day 2 – 2018 April 4

Time	Activity	Lead
6:00 am	Breakfast	CNL
7:00 am	Board bus Travel to Hallam via bus	CNL
7:30 am	Begin check in with NPPD security staff	NPPD
8:00 am	Welcome from Chris Cerveny; Sheldon Station, plant manager; safety orientation; hard hats and safety glasses required (supplied) ; introductions	NPPD
8:15 am – 9 am	Alan Dostal, NPPD Director of Research, origination of the Hallam Nuclear Plant Bob Wilbur, Engineer (semi-retired), D & D of the Hallam Nuclear Plant	NPPD
9:00 am – 9:30 am	Michelle Miller and DOE, State inspection staff message and what will be done on the tour	NPPD
9:30 – 11:30 am	Inspection Tour	NPPD
11:30 – 12 noon	Close out and questions	NPPD
12 noon-1:30 pm	Lunch at the Hallam Steakhouse; joined by Gary Vocasek, Hallam Village Chairman; additional questions and discussion	NPPD

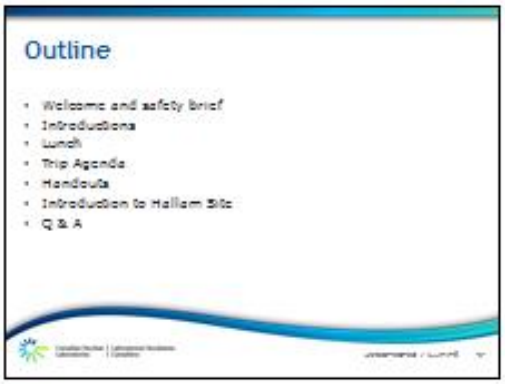
1:30 – 2:00 pm	Board bus return to hotel	CNL
2:15 – 4:00 pm	Site visit debrief, discussion and survey @ Yankee hill 2 conference room Marriott Cornhusker Hotel	CNL
6:00 – 8:00 pm	Dinner Rodizio Grill, 737 P Street Lincoln, NE – Hotel shuttle	CNL

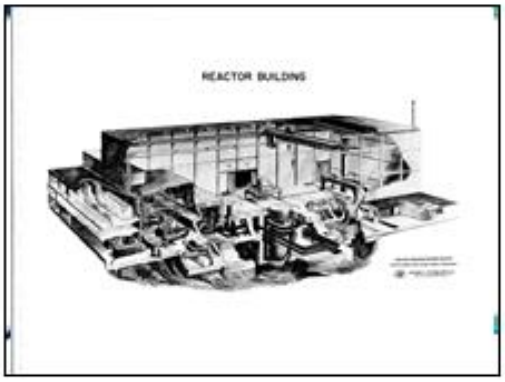
Day 3 – 2018 April 5

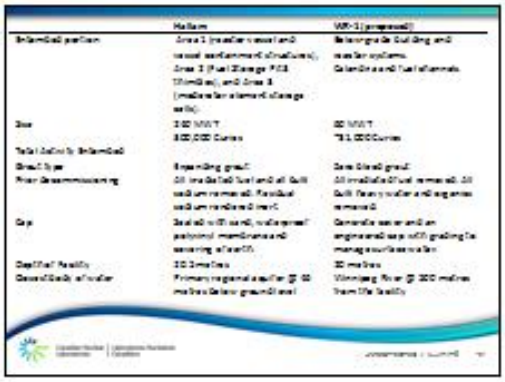
Time	Activity	Lead
9:00 am	Hotel check out, hotel shuttle to depart for airport	CNL
10:49 am Delta 4697	Flight – Lincoln to Winnipeg Connecting flight in Minneapolis	CNL
16:52 am Delta 4801	Arrive in Winnipeg	CNL

*Attire for the trip is casual, when visiting the Hallam site please where jeans or work pants along with running shoes.

CNL Presentation







Nebraska Public Power District Presentation

Our Nuclear Journey

Canadian Nuclear Laboratory Visit

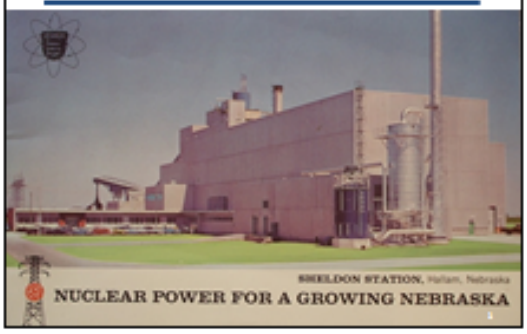
Sheldon Station
April 4, 2018

Nebraska Public Power District

At the Beginning

- It Began with a Sodium-Graphite Reactor
  - Construction of a conventional steam plant began early in 1958 at the Hallam, NE site
  - Consumers' Public Power District signed a contract with the U.S. Atomic Energy Commission for a new demonstration reactor on that same site
    - General Atomics designed plant
    - Construction was planned to start in June 1959
    - The world's first sodium-graphite commercial nuclear reactor plant was connected to the grid on May 29, 1963

Part of President Eisenhower's "Atoms for Peace" Initiative



Commercial Operation

- Full power was achieved in July 1963
  - 75 Megawatts was the maximum operating capacity
- After 14 months of operation, the facility was shutdown due to technical difficulties
  - Sodium coolant had been leaking into the stainless steel cans that contained the graphite moderator
  - After two years of study, a decision was made to not restart the demonstration reactor in May of 1966
  - Decommissioning of the plant followed . . . . . .

Other Nuclear Energy Developments

- Other designs for light water reactors were quickly moving forward
  - Boiling water reactors (BWRs) from General Electric and Pressurized Water Reactors (PWRs) quickly outpaced the General Atomics design
  - The Westinghouse PWR design was more similar to the design of the Navy's submarine nuclear propulsion systems
- NPPD ultimately decided to build a 800 Megawatt BWR plant that went on line in 1974
  - That plant is still in service today and is licensed to operate until January 18, 2034 (60 years)

Cooper Nuclear Station

Sample Media Coverage Pre-trip

The Clipper March 22, 2018 9

CNL delegation to tour U.S. site

By Arlene Davidson

A delegation of 13 stakeholders with the Whiteshell Closure Project will be touring a site in Nebraska on April 3 to get a first hand look at a nuclear reactor that has been contained in the same manner proposed for the Whiteshell reactor at Pinawa.

The tour has been arranged by Mitch MacKay of Canadian Nuclear Labs (CNL), who is also the manager of the Whiteshell Closure Project Stakeholder Relations Committee.

"CNL will be taking a group of First Nation, Métis and community representatives to Hallam, Nebraska, home to one of the first decommissioned nuclear reactors using the in situ method," said MacKay.

Decommissioning of the Whiteshell site in Pinawa commenced in 2003 when Atomic Energy of Canada Ltd. (AECL) received Canadian Nuclear Safety Commission (CNSC) approval and licensing to dismantle the Whiteshell Research Reactor (WR-1), which has since been contracted to CNL for completion.

The original CNSC license was issued for the purpose of dismantling the reactor and placing it indefinitely at the nuclear research facility at Chalk River, Ont.

CNL's application for license renewal has since been amended to include the proposed process of 'in situ' decommissioning of WR-1 – disassembly of the reactor from ground level upward, and encasing what is left of the underground components in a specially designed grout and sealed with a reinforced concrete cap.

Although all the fuel used in the WR-1 research site has been removed, there is residual radiation remaining in the more than 80 different active components to be encased in the grout.

MacKay explained the trip was arranged in an effort to look for new and innovative ways to explain the decommissioning method.

"CNL thought what better way than to go and see one that has been working successfully. Sometimes the best way to understand something is to just see it," he added. "This is a unique opportunity because we will be at the site when they are conducting their annual inspection so the group will be able to see and ask questions about the performance of the site."

Chief Jim Bear of the Brokenhead Ojibway Nation will be a member of the touring delegation.

"The opportunity arose to participate in a tour for greater clarity of how a nuclear plant can look after decommissioning," said Bear.

Bear noted the tour is important from the aspect that one will receive a first hand account through personal dialogue and observation of a decommissioned site. While there, he hopes to be able to converse with the Native Americans who have been impacted and discuss whether or not they have had their concerns resolved.

"Unfortunately we were never consulted when the plant was first built, but now through reconciliation, we have the opportunity to participate in decommissioning," said Bear. "As First Nations, we have the responsibility as stewards of our lands and territories to build a relationship with these types of industries and their facilities to ensure the integrity of our environment is not compromised. It is not only for the benefit of First Nations, but for everyone and everything."

Some of the questions Bear hopes will be answered during the tour are whether the nuclear site has been decommissioned in a way that prevents any future threats arising from it. He is specifically interested in learning how long it took for the land surrounding the site to be safe for animals and the environment, what procedures are in place to prevent contaminant leakage into grounds and water, and whether the technique has proved successful.

Bear is also interested to learn how the site is being monitored, and how often.

During the tour, representatives from Hallam will be on hand to provide a perspective on what it is like to have an in situ facility in their community.

Following the tour, MacKay hopes that the local delegates will share their experiences through presentations and community dialogue.

File photo

Chief Jim Bear of the Brokenhead Ojibway Nation will be a member of the touring delegation.

Sled Raffle Winner

Photo submitted

Congratulations to Garry Siemens (centre) of Winnipeg for being the winner of the Brokenhead Trail Blazers Power Toboggan Club Snowmobile Raffle and a Polaris Indy 600 SP ES from Sobetski Enterprises in Beausejour. Siemens had his ticket drawn March 10. Pictured let to right: Jeff Sobetski, Roy Kryschuk (who drew the ticket), Siemens, Lori Sobetski and Jodie Voth (club president).

Twitter Post During Trip

Hallam, Nebraska Trip Report

Community Benchmarking Trip Seeks Input for Proposed Plans

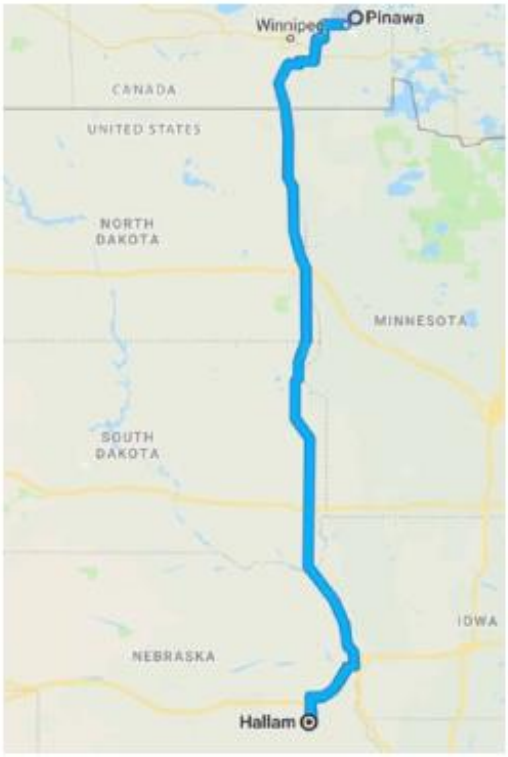
Canadian Nuclear Laboratories (CNL) is proposing a new approach to decommission the WR-1 reactor at the Whiteshell site. This new approach is subject to a federal environmental assessment. As part of this CNL is engaging with Indigenous communities and public stakeholders. In this regard CNL approached several stakeholder and Indigenous communities to join them on a benchmarking tour to Hallam, Nebraska where a reactor underwent "in situ decommissioning", similar to what is proposed for WR-1. The group was to learn what a decommissioned in situ reactor looked like, how it was performing and the effect on the surrounding communities.

The group was led by members of CNL's leadership team. It had representatives from the Manitoba Metis Federation, Sagkeeng First Nation, Black River First Nation, Brokenhead First Nation, Wabaseemoong First Nation, the Whiteshell Closure project Public Liaison Committee, the Whiteshell Laboratories Economic Regeneration Partnership, the Canadian Nuclear Safety Commission (CNSC), Atomic Energy Canada Limited (AECL), and Golder Associates.

The group met several key representatives of the United States Department of Energy (US DOE), the State of Nebraska, Nebraska Public Power District and the local host community.

The group learned several important lessons during the visit, key among them that the entombment is working as designed and has had zero significant detectable effects to the surrounding community.

CNL believes that the trip was valuable and will help to strengthen the knowledge and relationships necessary to help understand the proposed in situ method and demonstrate CNL's transparency in developing a plan that the region has the capacity to understand and provide meaningful input into.



Location of sites

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Trip Report

Canadian Nuclear Laboratories – WR-1 In Situ Decommissioning Project

Background to visit

CNL is proposing a decommissioning approach for WR-1 that is a change from the previously approved 2002 decommissioning plan. Nuclear in situ decommissioning is new to Canada but has been used numerous times in the United States and Europe.

Throughout the environmental assessment process CNL has considered the feedback communities have provided and has tried to enhance the way information is shared and respond where possible and reasonable. Feedback from some communities has been related to a greater understanding of what the in situ method looks like, how it is monitored, will it perform, and anxiety about having it in the community. CNL sought to respond to this feedback and concerns by coordinating a benchmarking trip to a facility that went through a similar process. The visit was timed around an annual inspection to see how that works and to interact with key stakeholders.

It was therefore suggested that CNL look at potential sites where this benchmarking might occur. Hallam, Nebraska was considered a good case because of several factors, including geographical location, one of the oldest in situ examples, similar hazards present, size of the reactor, and ease of access to the site. See chart below for a cross comparison.

	HALLAM	WR-1 (PROPOSED)
Entombed portion	Area 1 (reactor vessel and vessel containment structures), Area 2 (Fuel Storage Pit 3 thimbles), and Area 3 (moderator element storage cells).	Below-grade building and reactor systems. Calandria and fuel channels.
Size	240MWT	60MWT
Purpose	Power generation	Prototype and research
Total Activitv Entombed	300,000 Curies	~31,000 Curies
Grout type	Expanding grout	Zero bleed, low shrinkage grout
Prior decommissioning	All irradiated fuel and all bulk sodium removed. Residual sodium rendered inert.	All irradiated fuel removed. All bulk heavy water and organics removed.
Cap	Sealed with sand, waterproof polyvinyl membrane and covering of earth.	Concrete cover and an engineered cap with grading to manage surface water.
Depth of Facility	20.5 metres	20 metres
Closest body of water	Large regional aquifer @ 46 metres below ground level	Winnipeg River@ 500 metres from the facility

CNL is proposing a decommissioning approach for WR-1 that is a change from the previously approved 2002 decommissioning plan. Nuclear in situ decommissioning is new to Canada but has been used numerous times.

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Objectives

- To learn and appreciate the performance of the in situ method.
- To learn and appreciate the site inspection and environmental monitoring process associated with an in situ facility.
- To provide opportunities to interact, engage and connect with those who have a stake or whose communities are effected by the in situ structure at the Hallam site.
- To better inform communities on the in situ approach and allow them to comment and provide feedback with a deeper understanding and using an existing example.
- To understand what the final entombment looks like.
- To observe the effects on the surrounding environment and communities.

Findings and Observations–Day One

The first day consisted of an opening meeting where introductions were made and a discussion was facilitated on what participants' expectations were for the benchmarking trip and what they wanted to get out of the trip. All expressed a desire to see the Hallam site and the opportunity to bring information back to their communities. Other themes included safety and economic impacts as a result of the Hallam entombed reactor, expectations of the regulator on the site, and understanding lessons learned. Individuals were also interested in the health effects of the site, whether the land will be lost forever, when the monitoring of the site will stop and who is responsible for cleanup if something doesn't go as planned.

An introductory presentation was made on the Hallam site and a comparision with the Whiteshell site along with the comparison of the WR-1 reactor and the Hallam reactor. A representative from Nebraska Public Power District was on hand to answer questions about the site and give an overview of the next day's proceedings. The representative also talked about new economic development at the site, including a partnership with Monolith Materials. The company is setting up near the Sheldon Station site to make carbon black. The Sheldon Station plant will use the by-product – hydrogen as a fuel for generating electricity. The Hallam reactor entombment is not a concern for the company.

Participants discuss the similarities and differences between the Hallam in situ reactor and the proposed WR-1 plan during day one of the benchmarking trip.

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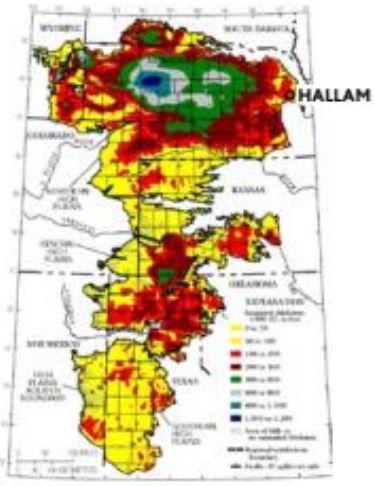
Canadian Nuclear Laboratories – WR-1 In Situ Decommissioning Project

Findings and Observations–Day Two

- All participants boarded a bus and made their way to the Hallam site, it is approximately a 40 kilometre drive from Lincoln, Nebraska to the Sheldon Power Station home of the Hallam reactor in situ site.
- The group heard opening remarks from the Sheldon station general manager, including a safety brief. The participants were introduced and given opportunity to provide some background on why they were there. First Nation communities pointed out that there was a lack of consultation when the WL site was built and that one of the reasons they were on this trip was to now become informed and have input into the future of the WL site.
- Alan, Director of Research (NPPD) and Bob, Electrical Engineer for NPPD provided comments, including a presentation. Alan gave the history and Bob provided perspective on the reactor and in situ decommissioning technique from someone who was there.
- Construction of the reactor started in 1959. It was the world's first sodium-graphite commercial nuclear power plant. Connected to the grid in 1963 and provided 75 MWe. After 14 months of operation, it was decided to shut down the plant. Sodium was leaking into the graphite moderator cans. There was a technology race going on in the United States at the time with different reactor technologies. Light water reactors won the race, setting the standard for future power reactors. NPPD decided to build one other light water plant in Nebraska, Cooper Station. This is an 800 MWe Boiling Water Reactor plant built in 1974 and currently licensed until 2034.
- Used Fuel from the Hallam reactor was sent to Hanford.
- Bob pointed out that not all space in the below grade facility was filled with concrete. The annulus space around the reactor core was not filled with concrete. A concrete cover was installed, then covered with sand, a water proof membrane, soil and grass. The cover is approximately 7 feet high.
- A lot of discussion occurred about the Ogallala aquifer which the reactor sits above by approximately 100 feet. The Sheldon Station coal plant draws cooling water from it from a 300 foot well. The site also draws drinking water at 200 feet. The Ogallala aquifer is approximately 450,000 km², spans eight states and is an important source of drinking and irrigation water for the State of Nebraska and other states.



Ogallala aquifier

- Gordon Bluesky asked what the surrounding lands are used for and what was there before the site was built. The answer by NPPD was that the site is surrounded by agricultural land, primarily corn. They speculated the lands were probably prairie grassland prior to construction.

Michelle Miller (US DOE) explains the inspection process of a ground water monitoring station.

Day two participants received presentations on the Hallam site and the monitoring and follow-up program before departing on a tour.

- Someone asked how environmental monitoring is done. NPPD said ground water is a very important resource in Nebraska. Wells are located around the facility to provide monitoring.
- Comments were made that earthquakes occur occasionally. Mostly small and no damage has been noted. In 2004 the second largest tornado in US record (peaking at 4 KM wide) destroyed the community of Hallam. The in situ reactor suffered no damage or environmental effects.
- Michelle Miller a contractor to the United States Department of Energy (US DOE) from Navarro began a presentation. She was supported by a representative from the US DOE and a representative of the Nebraska State Environmental branch.
- Michelle inspects and monitors a number of entombed reactor facilities including BONUS in Puerto Rico and Piqua in Ohio. She notes BONUS has been directly hit by two hurricanes in the last few years. The last caused major island damage, but no effects to the reactor.
- The Hallam site has been monitored since 1970. Most data is available on the DOE legacy management website (www.doe.lm.gov). Monitoring has found "nothing". One single detection of Ni-63, but no other detections ever. Michelle said there is no impact to the perched ground water which sits between 4 and 20 feet.
- The US DOE has switched recently to a 5 year ground water monitoring cycle. They do visual inspections annually. The next ground water collection is 2021.
- There is a proposed exit strategy for the monitoring. In 2071 there will no longer be any radioisotopes of concern and the monitoring is planned to cease.
- The US DOE does not monitor for any non-radioactive materials (for example lead). They determined leaching would not be a concern. DOE only monitors ground water to a depth of 20'. They are primarily concerned with the perched water. They have no concerns about anything leaching out to a deeper level.
- The total footprint of the entombed site is 1.4 acres.
- A question was asked about engagement with local First Nations. The DOE and NPPD said they have not been asked for any engagement. They are willing to do so, but no requests.
- As an example at another site in Nebraska, an NPPD representative mentioned that during the relicensing of the Cooper Nuclear Plant, NPPD reached out to local Tribal Councils but there was no response back.
- Michelle discussed the details of the inspection today. It is not a ground water monitoring year, so no samples would be collected. There are 19 wells on the site. They spend about $20,000 USD/ year on monitoring.

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Survey Results

Immediately following the tour the group congregated at the hotel conference room for debrief and survey to gauge immediate thoughts, questions, comments and sentiments. Below is a summary of each answer.

What did you like about the trip to Hallam?

- It was a great opportunity to meet others, hear other concerns, helpful to get a firsthand view of a similar site.
- The group was a great cross section of people.
- The trip was well organized making it a very valuable and focused experience.
- The inspection was very interesting and it was good to see the final product.
- It was very useful to bring different perspectives, the trip reinforced that this is not a new technology.
- Hosts presentations were very informative.

What would have made the trip to Hallam better?

- More time with the local mayor and the mayor should have addressed the whole delegation.
- A bit more rigour from the local regulator, at times they seemed very relaxed.
- It was too bad not all communities were able to attend the trip, to give an even better cross section.
- Visuals of the geology and cap system at the site would have been helpful.
- Needed additional information of the design basis of the Hallam site.
- Needed more on interest from community and Indigenous groups.
- Availability of more technical experts during the Hallam site engagement.

Was this useful in helping you understand what in situ decommissioning (entombment) is and how it applies to Whiteshell? If not, please identify the reasons why you don't think it relevant.

- It brought to life what CNL is proposing.
- The facts are very important to understand, not every site will be the same and the Whiteshell site can build on this learning to be better.
- There needs to be a discussion on legacy management and what monitoring post project will look like.
- The Hallam employees were not familiar with design concepts.
- Better understanding, but where do we go from here, how do First Nations benefit.
- The monitoring well depth was a disappointment.

Was there anything that you viewed or heard on the trip that concerned you? Would this concern also be applicable at Whiteshell? (Please be as explicit and detailed as possible so we might be able to better answer your questions and address your concerns).

- Better signage on the site.
- Timing of monitoring ceasing seems to be too soon.
- There needs to be an agreed to fact sheet of the trip for everyone to share.
- The WR-1 in situ is expected to be better, communities will insist.
- Further understanding of the aquifer.
- Lack of public comment on Hallam.
- Management expectation is very long, multigenerational care of the site.
- Visible wear on aspects of the site that were above grade.
- Future land use of the site, new opportunities.
- Not a walk away site, absence of monitoring below 20 feet was a real concern.
- A monitoring plan needs to be developed with First Nations.
- The calculated measure of radionuclides is concerning especially if monitoring is to end in 2071.

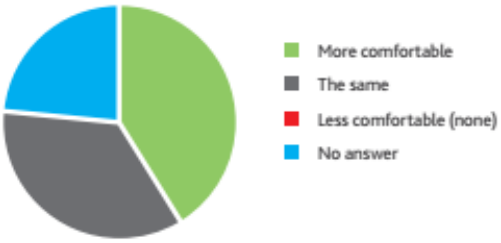
Is there any follow-up information we can provide you with on Hallam or its applicability to the decommissioning of WR-1 at Whiteshell Laboratories?

- Geology of the site from the US DOE.
- NPPD slide deck with names and emails.
- The Hallam decommissioning process and how public concerns were taken in.
- The Hallam safety case and the monitoring plan and schedule.
- The grout specifications.
- Are US allowable levels comparable to that in Canada?
- Lessons learned from Hallam and other projects should be explicitly considered.
- Need a benchmarking trip to CNL's Chalk River Laboratories now.
- Explain how the facility prevents flux of groundwater through the decommissioned reactor building.

After having visited Hallam, what questions would you or your community pose to Canadian Nuclear Laboratories with respect to the decommissioning of WR-1 at Whiteshell Laboratories? (Please list as many as you wish)

- Ensure record retention and involve communities in monitoring.
- Show examples of tools and technologies used to monitor.
- What can be done for adaptive management?
- Will you follow the Hallam site as a template for CNL?
- Procurement with First Nations and involvement in long term monitoring, when do those discussions take place?
- Are there any lessons CNL could learn from Hallam?
- What has changed in the technology since 1969?
- Hallam benefits from ongoing operations, WL needs to involve stakeholders in long term management.
- Phased monitoring was a good way of explaining the process.
- The NPPD is publically owned and the board is voted on, not appointed.
- WL should follow Hallam, handled the right way.
- The time capsule was a good idea.
- CNL should conduct a rigorous lessons learned and apply.
- Not a good example of Indigenous engagement.

Considering in situ decommissioning as an approach for WR-1 do you feel more comfortable, the same or less comfortable following this visit? (Please circle your answer)



Do you have any other comments or questions about the trip to Hallam?

- This was a positive trip in building bridges.
- Important to note that CNSC, AECL and MLA Ewasko covered their own costs for the trip.
- Indigenous angle was not there.
- There is no measurable release from the site.
- Interested in visiting another site.
- Contracting opportunities for locals during decommissioning.
- Community presentation about this trip to the community.
- A more recent example of an in situ reactor would be more helpful.

Conclusion

All attendees are now better informed on what CNL's proposal for WR-1 represents and are in a position to better inform their communities and the process moving forward. The visit was well organized and professional. Conditions at the Hallam site are not exact to that of the WR-1 site and this contributes to the relevancy of some aspects of the trip. For instance a more technical perspective was not available on the trip that included a more thorough discussion around the design basis and environmental performance of the Hallam facility. CNL has clearly heard that communities want to be involved and a part of the long term monitoring of the site, they want monitoring wells that reach depths lower than the facility and they want the monitoring to be looking for more than just radionuclides. Feedback also indicates that CNL should be incorporating all lessons learned from the Hallam in situ site and that that ongoing operations at the site (similar to Hallam) would go a long way to alleviate management fears.

Next steps

CNL has asked for feedback on this report from all participants and has incorporated. CNL has formalized this report and provided, digital and printed copies for ease of sharing with communities and interested stakeholders. CNL has also offered to come to each community to co-present and engage on the trip and the WR-1 project. Finally several supporting documents including presentations and requested materials have been provided in addition to this report.

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Engagement Report

Trip Report

Canadian Nuclear Laboratories – WR-1 In Situ Decommissioning Project

Attendees

Organization	Names
Black River First Nation	Patricia Mitchell (community coordinator) Oral Johnston (councillor)
Brokenhead First Nation	Gordon Bluesky Buddy Prince (councillor)
Sagkeeng First Nation	Tony Brown (consultant)
Wabaseemoong First Nation	Marvin Lee McDonald Georgina McDonald
Manitoba Metis Federation	Stephen Howatt Jade Dewar
Mayor of Pinawa, Manitoba (host community to the site)	Blair Skinner (PLC)
WL Economic Regeneration Partnership	Denis Sabourin
Local Member of the Legislative Assembly of Manitoba	Wayne Ewasko
Golder (consultants on the project)	Alyson Beal
	Marci Mehl
Canadian Nuclear Safety Commission (CNL's Federal Regulator)	Siobhan Arnott John Thelen Candida Cianci
Atomic Energy Canada Limited (Federal corporation that owns the site)	Maude Page Janet Stefaniuk
Canadian Nuclear Laboratories (operators of the site)	Dan Coyne Mitch MacKay Brian Wilcox Lou Riccoboni
Nebraska Public Power District	Mark Becker (Communications) Chris Cerveny (Plant Manager) Todd Chinn (Environmental) Bob Wilbur (Engineer) Alan Dostal (Research)
United States Department of Energy, Legacy Management	Michelle Miller (Navarro) Andrew Keim, Senior Environmental Protection Manager, DOE office of Legacy Management
State of Nebraska	Bryan Miller, Health Physicist Department of Health and Human Services, Radiological Health Division
Mayor of Hallam	Gary Vocasek

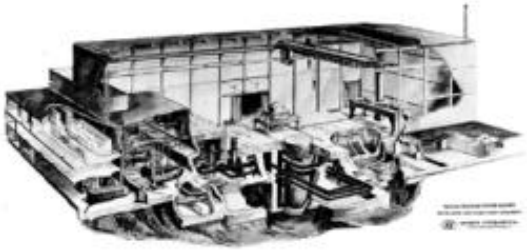
WR-1 Reactor projected decommissioning

Cutaway of facility

Capped mound of WR-1 facility

Hallam Facility

Cutaway of facility



Capped mound of Hallam facility

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Trip Report

Canadian Nuclear Laboratories – WR-1 In Situ Decommissioning Project

Trip Agenda

Agenda (2018 April 3-5)

Day 1 - 2018 April 3 (Travel)

Time	Activity	Lead
06:30 Delta 2829	Flight – Winnipeg to Lincoln Connecting flight in Minneapolis	CNL
10:21 Delta 4697	Arrive in Lincoln, NE	
10:30 am	Check-in The Lincoln Marriott Cornhusker Hotel 33 S 13th St, Lincoln	CNL
1:00 pm	Lunch, introductions and overview of site visit @ Yankee hill 2 conference room Marriott Cornhusker Hotel	CNL
6:30 pm	Dinner Miller Time Pub & Grill, Marriott Cornhusker Hotel	CNL

Day 2 - 2018 April 4

Time	Activity	Lead
6:00 am	Breakfast	CNL
7:00 am	Board bus Travel to Hallam via bus	CNL
7:30 am	Begin check in with NPPD security staff	NPPD
8:00 am	Welcome from Chris Cerveny; Sheldon Station, plant manager; safety orientation; hard hats and safety glasses required (supplied) ; introductions	NPPD
8:15 am – 9 am	Alan Dostal, NPPD Director of Research, origination of the Hallam Nuclear Plant Bob Wilbur, Engineer (semi-retired), D & D of the Hallam Nuclear Plant	NPPD
9:00 am – 9:30 am	Michelle Miller and DOE, State inspection staff message and what will be done on the tour	NPPD
9:30 – 11:30 am	Inspection Tour	NPPD
11:30 – 12 noon	Close out and questions	NPPD
12 noon-1:30 pm	Lunch at the Hallam Steakhouse; joined by Gary Vocasek, Hallam Village Chairman; additional questions and discussion	NPPD
1:30 – 2:00 pm	Board bus return to hotel	CNL
2:15 – 4:00 pm	Site visit debrief, discussion and survey @ Yankee hill 2 conference room Marriott Cornhusker Hotel	CNL
6:00 – 8:00 pm	Dinner Rodizio Grill, 737 P Street Lincoln, NE – Hotel shuttle	CNL

Day 3 - 2018 April 5 (Travel)

Time	Activity	Lead
9:00 am	Hotel check out, hotel shuttle to depart for airport	CNL
10:49 am Delta 4697	Flight – Lincoln to Winnipeg Connecting flight in Minneapolis	CNL
16:52 am Delta 4801	Arrive in Winnipeg	CNL

The benchmarking group stands on the Hallam permanently encased reactor. The Sheldon Station coal power generating plant is located in the background.

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WR-1 In Situ Decommissioning Project

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