Speaking Notes
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Slide 1 - Introduction and Environmental Assessment Process

- Hearing notice for two part public hearing issued on October28, 2021 by the Canadian Nuclear Safety Commission
- Part 1 was announced for February 2022 and Part 2 to commence May 31, 2022.
- CNSC staff determined in May 2016 that the proposed NSDF was subject to the Canadian Environmental Assessment Act under CEAA 2012.
- **Prior to making a licensing decision, the Commission must make an EA decision** to determine whether the proposed activities are likely to cause significant adverse environmental effects.
- Notice of EA commencement was issued in May 2016,and public comments were invited on a 31page project description and on a revised project description in October 2016.
- There was a public comment period on the draft environmental impact statement (EIS) was held in 2017; a final EIS and an environmental assessment report was expected in January 2018; in late 2019 CNSC staff determined announce that the revised EIS continued to be deficient, and in 2020 CNSC staff reviewed a further revised EIS; these revisions were not subject to public comment
- In May 2021 a document was posted titled “Final Environmental Impact Statement for the Near Surface Disposal Facility Project” in the review registry
- Throughout the period between 2017 and 2022 Canadian Nuclear Laboratories’ released various iterations of a number of technical documents related to or supporting the Environmental Impact Statement or the license application

Slide 2 - Northwatch's Interest

- Northwatch is a public interest organization concerned with environmental protection and social development in northeastern Ontario
- The NSDF project is outside Northwatch's geographic area, which is comprised of the six federal districts of northeastern Ontario, albeit in an immediately neighbouring county; Northwatch's direct interest is in the potential for decisions related to the NSDF project to be precedent-setting
- CNSC decisions on many of the issues associated with Canadian Nuclear Laboratories proposed Near Surface Disposal Facility have potential implications for northern Ontario in the event that practices, policies and / or regulatory decision-making with respect to the management of radioactive wastes become precedent-setting or normative in Canada.
- In particular, the waste management approach of "surface disposal" may be similar to that being proposed by Cameco for northeastern Ontario, and CNL's stated intention to open the facility proposed for Chalk River to commercialization and traffic and disposal of radioactive wastes from undisclosed sources could be of consequence in other projects or regions in which Northwatch has a direct interest.

Slide 3 - Focus of Northwatch Review

- During review of the project description and the draft Environmental Impact Statement Northwatch focused our review primarily in two key areas: CNL's presentation and technical evidence with respect to their proposed Waste Acceptance Criteria, and CNL's selection and presentation of international examples in support of their proposed engineered mound.
- Northwatch has continued with these same areas of focus during this review period for the final Environmental Impact Statement and the CNSC commission member documents, as outlined below.

SLIDE 4 - Comparative Sites

- CNL has promoted an argument that the acceptability of the waste mound as currently proposed is demonstrated by performance of a number of other facilities, all of which CNL refers to as a "near surface disposal" facilities and identified 10 sites from the U.K. and U.S.
- In a section of the final EIS titled "Technical Feasibility", CNL promotes their proposed Near Surface Disposal facility as being consistent with both the IAEA definition of a near surface disposal facility IAEA guidelines and requirements.
- The Final EIS also claims that the effectiveness of near surface disposal facilities has been demonstrated at Port Hope and Port Granby, and four nuclear weapons complex sites in the U.S: the Oakridge National Laboratories Environmental Management Waste Management Facility, the Hanford Environmental Restoration Disposal Facility, the Portsmouth On-site Waste Disposal Facility, and the Fernald On-site Disposal Facility.
- Northwatch retained Radioactive Waste Management Associated to undertake a review of the comparatives sites as presented by Canadian Nuclear Laboratories and is providing this report to the Commission under separate cover.

- Northwatch's conclusion, based on the RMWMA review, is that rather than providing examples of success, the observations from the Oakridge National Laboratories Environmental Management Waste Management Facility, Hanford Environmental Restoration Disposal Facility and Fernald On-site Disposal Facility operating experience provide caution warnings.

Slide 5 - Waste Acceptance Criteria

- The draft Environmental Impact Statement persistently coupled the Waste Acceptance Criteria (WAC) with operational performance and safety
- Northwath's assessment is that CNL has failed to provide sufficient information about the Waste Acceptance Criteria and its application to assess its adequacy.
- CNL received its draft Waste Acceptance Criteria in March 2017 and the same month made its draft Environmental Impact Statement available for public comment which did not include the content or even reference the document, titled "*Waste Acceptance Criteria 232-508600-WAC-002"*; given its exclusion from the draft EIS, Northwatch provided no comment on *Waste Acceptance Criteria document 232-508600-WAC-002*.
- The final EIS opens with an assurance that "the NSDF WAC ensures CNL meets its responsibility as the licensee; that all waste received for disposal is in compliance with the design and licensing basis for the facility (CNL 2020c)" and references various documents were specific safety criteria are provided (in addition to the EIS, it references *Design Description* (AECOM 2019), the *Post-Closure Safety Assessment* (Arcadis and Quintessa [does it reference *Waste Acceptance Criteria document 232-508600-WAC-002?]*
- Northwatch retained Hutchinson Environmental Sciences Ltd (HESL) to undertake a review of the Waste Acceptance Criteria as presented by Canadian Nuclear Laboratories and is outlined in the presentation by Emily Hahn, Junior Scientist with HESL

SLIDE 6 - Additional Environmental Assessment Matters

- Despite the expressed confidence of CNSC staff and CNL, there are many aspects of the project which remain uncertain, ill-defined, or over which there appear to be conflicting statements.
- Northwatch notes the following examples:
    - Groundwater Table
    - Monitoring
    - Site Selection
    - Alternative Design
    - Record Keeping

SLIDE 7 - Groundwater Table

- Contact between the radiological contaminants in the radioactive wastes CNL proposes to emplace in the "mound" and ground or surface water is a central concern with the NDSF project.
- CNL's various statements about the groundwater table indicate that this – for them – is an area of uncertainty
- For example, in the executive summary of the EIS states that groundwater table depth varies "significantly throughout the NSDF Project site and changes with the seasons. The average groundwater depths range from approximately 0.06 m in the vicinity of the wetlands to 15.95 m in the northern section of the study area, which corresponds to the thickest overburden" [1]
- A later section of the EIS describes "an advantage of this mound-type repository design is that the waste is placed above the groundwater table and the waste stays dry as long as the protective barriers are intact"[2]
- later yet the EIS sets out that the "base of the ECM (i.e., top of the primary liner) shall be designed to maintain a minimum of 1.5 m above the seasonal high groundwater table." [3]
- CNSC staff CMD indicates that not only is the description of groundwater table depth widely variable, but the water table depths will <u>be manipulated</u> in the course of project implementation, as "rock blasting (depth ranges from 1 to 8 m) will be needed to drain groundwater within the rock mass and lower groundwater elevations beneath the ECM footprint". [4] Perhaps on a related note, in a discussion of why the shallow caverns concept was eliminated from further consideration, the water table was described as "high", which "increases the likelihood and risk of flooding".[5]
- These are significant variations, both the natural variations between the wetlands and "the northern edge", but also it is significant that the water table is described as "high" and is going to be purposely lowered as part of the mound construction.
- Given these variations and this seeming complexity, it is surprising that when President Velshi asked about the groundwater table compared to the planned/proposed NSDF the full response was simply that "the average groundwater table is about 4.5 metres below the surface". [6]

[1] EIS ES-9
[2] EIS 2-26
[3] EIS 2-74
[4] CNSC CMD 22-H7 Pg 8
[5] 22-H7 p 27
[6] Feb 22 Transcript page 119

SLIDE 8 - Monitoring

- The substantive discussion of monitoring is in a stand-alone report referenced in the CMD and in the EA Report, titled "Draft Environmental Assessment Follow-Up Monitoring Program for the Near Surface Disposal Facility 232-509220-PLA-001" and dated February 2021.
- Generally, the monitoring program is described largely in terms of standard monitoring for a nuclear or other industrial operation, i.e. compliance and effluent monitoring. The approach is largely standard to all operations:
    - CNSC staff would monitor CNL's performance during the operation period through routine compliance oversight activities, including inspections and reviews of documentation, and event reporting. (22-H7 p 29)
    - CNL developed a monitoring and surveillance plan for the NSDF with the program objective of providing assurance that the NSDF is performing at the required level of safety during the pre-operational, operational, closure, institutional control and post closure phases (22-H7 p 46)

- For the NSDF an area of priority interest is monitoring to evaluate the performance of the NSDF, including the components of the Engineered Containment Mound, the effluent collection and the waste water treatment.
- There are several indications that the monitoring program is not yet fully developed

- In Northwatch's view the key elements of the monitoring program relate to facility performance, and it must meet adhere to the guidance which requires that it:
  ▪ Verify that the disposal facility is performing as expected
  ▪ Verify that the key assumptions made and models used to assess safety continue to be consistent with actual conditions
  ▪ Maintain records of the disposal facility, the site and the environment
  ▪ Ensure the protection and preservation of passive safety features

- The CMD indicates that "Should the Commission issue a positive EA decision, CNL will <u>then</u> be required to further design and implement an EA Follow-Up Monitoring Program", again indicating that this is at best a work in program or possible a work to come.
- Having a detailed and comprehensive plan for monitoring system performance is essential, as is the need for a contingency plan.
- The monitoring program must include a solid plan to measure the performance of each of the NSDF design areas, have some clearly delineated thresholds which trigger action, and have contingency plans in place which can be operationalized on a timely basis.
- An EA approval or licensing application cannot be fully considered and certainly cannot be approved if no monitoring plan and no contingency plan is provided as part of the application is forms part of the review process

SLIDE 9 - Site Selection

- In Northwatch's view, CNL did not employ a sufficiently robust process for site selection, and were particularly weak in terms of how the considered alterative means of meeting the project purpose and considering alternative sites.
- An interesting observation from the U.S. program – and a review of the sites CNL identified as comparable - is the strong preference dry and arid sites.
- CNL chose a site with extremely varied topography, extremely close to both Perch Lake and the Ottawa River, with no compelling feature other than that it was available.
- Northwatch strongly supports managing radioactive wastes as close to the source as possible, applying the "proximity principle" in order to avoid risks and impacts (carbon and other) of transportation, and as much as possible limiting the nuclear footprint.
- However, in Northwatch's view the site study process should not have been limited to the central area of the CNRL site, particularly given the proximity of a large adjacent land-holding which is also owned by the federal government.
- Northwatch's impression both from the documentation and from a site visit with CNL several years ago, largely to discuss the site selection process, is that CNL took an attitude of two extremes: the options were either very very close, or very very far.
- Taking the "middle path" of exploring adjacent locations may well have yielded better results.
- Northwatch strongly recommends that CNL conduct a second assessment of alternative sites within a 10 km range of the proposed NSDF site using a criteria that is driven by considerations of groundwater and surface water exposures, as well as topography, geology, soil types and past, current and adjacent uses

Slide 10 Alternative Design

- CNL reports having evaluated three design concepts of near surface facilities to "dispose" of low-level radioactive waste, namely above ground concrete vaults, shallow caverns and an engineered containment mound. CNL assessed the three conceptual alternatives based on technical and economic feasibility.

- The shallow caverns concept was eliminated from further consideration due to the CRL site characteristics (high water table which increases the likelihood and risk of flooding) and due to the large volume of waste inventory (1 million m3) which would require the design of multiple caverns.

- Reportedly, the above ground concrete vault and the ECM options are both comparable and technically feasible. These two options were evaluated and compared based on technical and economic feasibility, environmental effects and societal considerations. CNL assessed that both alternatives can be constructed on the CRL site to meet the purpose of the NSDF Project, can accommodate the waste inventory and are technically feasible with proper engineering.[7]

- Northwatch's primary criteria for comparing one waste management / waste containment system relative to another is to apply four very basic but essential questions: Does the system facilitate monitoring? Does the system support enable measuring the performance of system components and the system as a whole? Does the design support waste retrieval, should there system performance not meet expectations? Does the system accommodate replacement or re-encapsulation of waste and / or waste containers?
- We suspect that the option of concrete vaults would rank higher than a massive landfill when those criteria are applied.

[7] 22-H7 p 26

Slide 11 - Record Keeping

- The staff CMD identifies issues around markers, memory retention and long term record-keeping as if the topic had just come upon them.
- Interestingly, staff have worked out some specifics – such as directing CNL to install at least 4 permanent and durable markers on the final cover or at a specific/appropriate location – while keeping the larger issues at bay, simply saying that "planning and details of the facility closure plan may evolve during the lifecycle of the facility as CNSC guidance becomes available" and that "CNL and CNSC staff will revisit this matter to align with the most up-to-date information on international research with respect to archives and markers/monuments to provide passive warnings to future generations".
- CNSC's thinking appears to be very preliminary on this important matter, whereas their international counterparts are moving ahead with concrete plans being put in place as clean-up work progresses.[8]

[8] 22-H7 P 29

Slide 12 - EA Decision

- CNSC staff state that they have determined that "the proposed NSDF Project is not likely to cause significant adverse environmental effects, taking into account the implementation of all identified EA regulatory commitments"[9]

- This conclusion was reached by staff without the benefit of public reviews of the last two iterations of the Environmental Impact Statement, and in advance of the public hearing which will be the first opportunity for members of the public to bring forward their critique of the project as it now stands (as compared to five years ago, which as the last opportunity to comment on the Environmental Impact Statement), and the first opportunity to question the evidence being put forward by the proponent.

- A key purpose of the Canadian Environmental Assessment Act is public participation: *(e) to ensure that opportunities are provided for meaningful public participation during an environmental assessment*[10]

- Northwatch is strongly of the view that CNSC staff should withdraw their recommendation, adopt the attitude of regulatory support staff rather than proponent's advocate, and focus on supporting the Commission in considering the Project, the evidence, and the concerns, interests and expertise of the intervenors prior to coming to an EA decisions.

[9] 22-H7 p 19
[10] CEAA 2012, Section 4 (1) e

Slide 13 - The Licensing Decision

CNSC staff, in advance of the hearing and in the absence of any independent technical expertise of public scrutiny, have come to the conclusions based on their interactions with the proponent that the proponent's project should be approved:

> *Based on the licensing regulatory review and technical assessments, CNSC staff have determined that the proposed NSDF project is protective of people and the environment, taking into account the implementation of all identified EA regulatory commitments and licensing regulatory actions (for further details, please refer to section 1.2.3 and part two of this CMD). CNSC staff conclude that CNL's licence application to construct the NSDF at the CRL site complies with all applicable regulatory requirements.*[11]

[11] 22-H7 p 19

Slide 14 – Conclusions

Northwatch will share their views with the Commission on EA approval for the project in the course of the hearing and in final comment, after having had the benefit of hearing from both the proponent and others with expertise and insights into the project. However, we do not believe at this point that there is sufficient evidence that the project can be carried out in a safe and predictable manner, and the uncertainties provide ample basis for rejecting the project.

Should an EA approval and a licence to construct be issued, a next license application would be expected within approximately three years:

> *The operation of the NSDF would be subject to a separate Commission approval. These activities would be governed by the CRL Operating Licence, the associated LCH licensing basis, the facility authorization (FA) (which sets the key requirements, conditions and limits for the safe operation of a given CRL facility), the CNL management system and quality program and the conduct of operation program. As has been mentioned earlier, international guidance and practices recommend that operational and post-closure safety assessments are sufficiently detailed and reviewed by the regulator to provide for the basis to proceed with construction.* [12]

Should the project move to that stage, the Commission must ensure that the application for a licence to operate the Near Surface Disposal Facility is subject to a full public licensing process including a public hearing, and that all information related to the next stage application is made readily available in a timely manner and that the participation of the Canadian public and of Indigenous peoples is supported and encouraged.

[12] 22-H7 p 28