



Record of Decision

DEC 22-H7

In the Matter of

Applicant Canadian Nuclear Laboratories

Subject Application to amend the Nuclear
Research and Test Establishment
Operating Licence for the Chalk River
Laboratories site to authorize the
construction of a Near Surface Disposal
Facility

Public Hearing February 22, 2022
Dates May 30 – June 3, 2022
August 10, 2023

Record of January 8, 2024
Decision Date

NOTICE :

This document was modified on January 11, 2024 to update reference links to CNSC documents and web pages that were moved as a result of an upgrade to the CNSC's web site.

RECORD OF DECISION – DEC 22-H7

Applicant: Canadian Nuclear Laboratories

Address/Location: 286 Plant Road, Chalk River, Ontario K0J 1J0

Purpose: Application to amend the Nuclear Research and Test Establishment Operating Licence for the Chalk River Laboratories site to authorize the construction of a Near Surface Disposal Facility

Application received: March 31, 2017

Dates of public hearing: February 22, 2022 (Part 1)
May 30- June 3, 2022 (Part 2)
August 10, 2023 (Final Oral Submissions)

Location: Part 1: Virtual (via Zoom)

Part 2: Best Western Pembroke Inn & Conference Centre, 1 International Drive, Pembroke, Ontario, K8A 6W5

Final Oral Submissions: Virtual (via Zoom)

Members present: R. Velshi, President
M. Lacroix
I. Maharaj

Registrar: D. Saumure
Recording Secretary : M. McMillan
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<p style="text-align: center;">Decision under Section 5 of CEAA 2012:</p> <p style="text-align: center;">Not Likely to Cause Significant Adverse Environmental Effects</p> <p style="text-align: center;">Licence: Amended</p>
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1.0 INTRODUCTION

1. Canadian Nuclear Laboratories (CNL or Proponent) has applied to the Canadian Nuclear Safety Commission¹ for the amendment of the Nuclear Research and Test Establishment Operating Licence (NRTEOL) for its Chalk River Laboratories (CRL). The current operating licence, NRTEOL-01.00/2028, expires on March 31, 2028. This licence authorizes CNL to operate the CRL site, which is located in Deep River, Ontario, on the traditional unceded territory of the Algonquin Anishinabeg peoples. CNL applied for an amendment to its licence to authorize the construction of a Near Surface Disposal Facility (NSDF or NSDF Project) at CRL. The proposed NSDF is considered a new Class IB Nuclear Facility, per paragraph 19(a) of the [General Nuclear Safety and Control Regulations](#)² (GNSCR), and its construction is not authorized under the current CRL licence.
2. The CRL site covers approximately 3870 hectares (ha) and includes Class I and Class II nuclear facilities, waste management areas, radioisotope laboratories, support facilities and offices. The proposed NSDF has a footprint of approximately 37 ha and includes an engineered containment mound designed to permanently contain and isolate up to 1,000,000 cubic metres (m³) of solid low-level radioactive waste, a wastewater treatment plant, and other support facilities. The proposed location for the NSDF Project is entirely within the licensed site boundary of the CRL site. The proposed NSDF Project would be located 1.1 km from the Ottawa River on a bedrock ridge which slopes away from the river.

Issues

3. In accordance with the requirements of the [Canadian Environmental Assessment Act, 2012](#)³ (CEAA 2012), the Commission must decide if, taking into account the implementation of any mitigation measures that it considers appropriate, the designated project is likely to cause significant adverse environmental effects as described in subsections 5(1) and (2) of CEAA 2012. The CNSC is the responsible authority for environmental assessment (EA) of the NSDF Project under CEAA 2012.
4. If the Commission determines that the NSDF Project is not likely to cause significant adverse environmental effects, then it may turn to considering the application to authorize the licence amendment pursuant to the [Nuclear Safety and Control Act](#)⁴ (NSCA).

¹ The *Canadian Nuclear Safety Commission* is referred to as the “CNSC” when referring to the organization and its staff in general, and as the “Commission” when referring to the tribunal component.

² SOR/2000-202.

³ S.C. 2012, c. 19, s. 52.

⁴ S.C. 1997, c. 9.

5. Pursuant to paragraphs 24(4)(a) and (b) of the NSCA, in order to amend the licence as applied for, the Commission must be satisfied that:
 - a) CNL is qualified to carry on the activity that the amended licence would authorize; and
 - b) in carrying on that activity, CNL would make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.
6. Although the EA under CEAA 2012 encompasses the entire lifecycle of the proposed NSDF Project, the Commission's decision pertaining to this licence amendment applies solely to the construction of the NSDF Project and does not concern future authorization to operate the NSDF. Operation of the NSDF would be subject to a future Commission licensing decision, should CNL come forward with a licence application for authorization to operate the NSDF.
7. As an agent of the Crown, the Commission recognizes its role in fulfilling the Crown's constitutional obligations, along with advancing reconciliation with Canada's Indigenous peoples. The Commission's responsibilities include the duty to consult and, where appropriate, accommodate Indigenous interests where the Crown contemplates conduct which may adversely impact potential or established Aboriginal⁵ or treaty rights.⁶ As such, the Commission must determine what engagement and consultation steps and accommodation measures are called for, respecting Indigenous interests and whether what has been done satisfies the obligation of consultation and, where appropriate, accommodation of implicated Aboriginal or treaty rights. The Commission's duty in this regard applies to both the EA and licensing decisions.

Public Hearing

8. On October 28, 2021, the Commission published a [Notice of Public Hearing](#)⁷ for this matter, which invited requests to intervene by April 11, 2022. The Commission subsequently published two revised notices. The first, on [February 16, 2022](#)⁸ provided procedural guidance for intervenors. The second, on, [May 11, 2022](#),⁹ provided additional procedural guidance on written final submissions and revised the first day of Part 2 of the hearing from May 31, 2022 to May 30, 2022.

⁵ "Aboriginal" is the term used in this document when referring to the Crown's duty to consult as that is the term used in s. 35 of the Constitution Act, 1982 and in CEAA 2012. In all other cases, "Indigenous" is the preferred terminology and used accordingly.

⁶ *Haida Nation v. British Columbia (Minister of Forests)*, 2004 SCC 73; *Taku River Tlingit First Nation v. British Columbia (Project Assessment Director)*, 2004 SCC 74.

⁷ *Notice of Public Hearing*, CNSC, October 28, 2021.

⁸ *Revised Notice of Public Hearing including Procedural Guidance for Intervenors*, CNSC, February 16, 2022.

⁹ *Revised Notice of Public Hearing including Procedural Guidance for Questions and Written Final Submissions*, CNSC, May 11, 2022.

9. Pursuant to section 22 of the NSCA, the President of the Commission established a Panel of the Commission over which she would preside, including Commission Members Dr. Marcel Lacroix and Indra Maharaj.¹⁰ The Commission, in making its decisions, considered information presented for a two-part public hearing¹¹ held virtually on February 22, 2022 (Part 1) and from May 30 to June 3, 2022 (Part 2) in Pembroke, Ontario. The public hearing was conducted in accordance with the [*Canadian Nuclear Safety Commission Rules of Procedure*](#)¹² (the Rules). During the public hearing, the Commission considered written submissions and heard oral presentations from CNL ([CMD 22-H7.1](#), [CMD 22-H7.1A](#), [CMD 22-H7.1B](#), [CMD 22-H7.1C](#), [CMD 22-H7.1D](#)) and CNSC staff ([CMD 22-H7](#), [CMD 22-H7.A](#), [CMD 22-H7.B](#), [CMD 22-H7.C](#)). The Commission also considered oral and written submissions from 165 intervenors (see Appendix A for a list of interventions). The hearing was webcast live via the CNSC website, and [video archives](#) are available on the CNSC's website.
10. Prior to Part 1 of the hearing, on January 31, 2022, Kebaowek First Nation (KFN) [requested](#)¹³ that the hearing process be adjourned in accordance with section 14 of the Rules. KFN requested the adjournment to allow additional time for consultation and for KFN to formalize a consultation framework agreement with CNSC staff. The Commission [determined](#)¹⁴ that it would be premature to adjourn the hearing, noting that the hearing process would provide the opportunity for the Commission to consider all evidence regarding consultation, in a fair and transparent manner.
11. Prior to Part 2 of the hearing, on March 14, 2022, the Concerned Citizens of Renfrew County and Area filed a [request for adjournment](#),¹⁵ per section 14 of the Rules. The Concerned Citizens of Renfrew County and Area raised concerns regarding the waste acceptance criteria and compliance of the NSDF with international standards. The Commission determined not to adjourn the hearing.

¹⁰ Indra Maharaj was present for Part 1 and Part 2 of the hearing but resigned from her position as a Commission Member following her appointment to the Alberta Provincial Court Bench in February 2023. Pursuant to subsection 23(3) of the NSCA, the remaining members of the Panel have completed the disposition of this matter.

¹¹ During Part 1 of a two-part public hearing, the applicant and CNSC staff present written and oral submissions to the Commission and respond to questions from the Commission. During Part 2, registered intervenors have an opportunity to make their views known to the Commission and to respond to any related questions from the Commission.

¹² Statutory Orders and Regulations (SOR)/2000-211.

¹³ *CNSC Kebaowek First Nation (KFN) Request for Stop of NSDF Hearing Schedule*, Chief L. Haymond to R. Velshi, January 31, 2022.

¹⁴ *Request for Adjournment of the NSDF Public Hearing*, D. Saumure to Chief L. Haymond, February 18, 2022.

¹⁵ *Request for adjournment of NSDF hearing*, O. Hendrickson to R. Velshi, March 14, 2022.

12. In accordance with section 20 of the Rules, the Mitchikanibikok Inik (Algonquins of Barriere Lake; ABL) filed a [request for ruling](#)¹⁶ on April 1, 2022. ABL requested that the Commission adjourn Part 2 of the public hearing for a period of 12 months, voicing their support for KFN’s previous request and highlighting the need for additional consultation. On April 7, 2022 the Commission issued its [decision](#)¹⁷ to not adjourn the hearing. Similar to its response to KFN, the Commission found that it would be premature to adjourn the hearing as the public hearing forum would provide the opportunity to review and assess, in a fair and transparent manner, all of the evidence respecting the consultation and engagement activities undertaken to date respecting the NSDF Project.
13. On April 4, 2022, the Kitigan Zibi Anishinabeg (KZA) also submitted a [letter](#)¹⁸ requesting that the hearing be adjourned for a 12-month period, citing inadequate consultation and stating that additional time was needed before it would be able to meaningfully participate in the hearing. The Commission maintained its decision to not adjourn the hearing.
14. Following Part 2 of the hearing, the Commission issued a [Procedural Direction](#)¹⁹ announcing that the record would be kept open to allow more time to receive additional evidence and information regarding engagement and consultation efforts in respect of KFN and KZA. Accordingly, the Commission invited additional information from KFN, KZA, Atomic Energy of Canada Limited (AECL), CNL, and CNSC staff, to be filed by January 31, 2023. The Commission’s rationale for this was as follows:

“The Commission is leaving the record open in order to accommodate the information that Kebaowek First Nation and the Kitigan Zibi Anishinabeg were not adequately consulted, at least in part because of confusion about the role of the Algonquin Anishinabeg Nation Tribal Council. This additional time is to allow for the Commission to receive further evidence and/or for more engagement and consultation to take place in respect of Kebaowek First Nation and the Kitigan Zibi Anishinabeg.

The Commission heard good will and a clear intention on the part of Kebaowek First Nation and the Kitigan Zibi Anishinabeg to cooperate in good faith in the engagement and consultation opportunities offered by

¹⁶ *Algonquins of Barriere Lake Request for Adjournment of Part 2 of the NSDF Public Hearing*, Chief T. Wawatie to D. Saumure, April 1, 2022.

¹⁷ *Record of Decision in the Matter of the Request for Ruling Filed by the Mitchikanibikok Inik (Algonquins of Barriere Lake) in the Matter of the Application from the CNL to amend its Chalk River Laboratories site licence to authorize the construction of a near surface disposal facility*, CNSC, April 7, 2022.

¹⁸ *Kitigan Zibi Anishinabeg request for an adjournment of the NSDF CNSC hearing*, Chief D. Whiteduck to D. Saumure, April 4, 2022.

¹⁹ *Procedural Direction in the matter of Canadian Nuclear Laboratories’ Application to amend the Nuclear Research and Test Establishment Operating Licence for the Chalk River Laboratories site to authorize the construction of a Near Surface Disposal Facility*, CNSC, July 5 2022.

this regulatory process. The Commission heard a commitment from AECL and intention of CNL to engage and consult meaningfully, and heard the same from the CNSC staff, who have consistently offered to engage and to develop consultation agreements to build a collaborative relationship and trust. The Commission wishes to enable this expressed intention by the participants.

The Commission anticipates that there will be follow-up evidence and submissions from Kebaowek First Nation, the Kitigan Zibi Anishinabeg, AECL, CNL and CNSC staff in respect of further consultative efforts respecting the NSDF project.

The Commission finds that a reasonable time to leave the record open for this purpose would not extend beyond the 12-month period that was sought for the same purpose by Kebaowek First Nation and the Kitigan Zibi Anishinabeg, which would have been May 2023. The Commission finds January 31, 2023 to be a reasonable deadline for the filing of any additional evidence, submissions and information. The Commission Registrar will, in accordance with this procedural direction, schedule the steps for filing in due course.”

15. On December 22, 2022, after considering requests from [KFN](#)²⁰ and [KZA](#),²¹ which were supported by [CNL and AECL](#),²² to extend the deadline to submit the additional information, the President of the Commission, as a Panel of the Commission on procedural matters, [decided to extend the deadline](#) from January 31, 2023, to May 1, 2023. Upon [further request](#), the Panel of the Commission granted an additional one-week extension to KZA, until May 8, 2023.
16. On May 17, 2023, the Commission [announced](#)²³ that it had reviewed the additional submissions from KFN ([CMD 22-H7.111C](#)), KZA ([CMD 22-H7.113B](#)), AECL ([CMD 22-H7.99B](#)), CNL ([CMD 22-H7.1E](#)), and CNSC staff ([CMD 22-H7.D](#)) and that it was satisfied with the information it had received. The Commission determined that it was ready to receive final submissions.
17. Intervenors who made oral submissions during Part 2 of the public hearing had the opportunity to make written final submissions to summarize their views based on all of the evidence on the record. In the spirit of reconciliation and in recognition of the Indigenous oral tradition for sharing knowledge, Indigenous Nations and communities that made oral interventions during Part 2 of the

²⁰ *Request for an extension of time to submit documents*, Chief L. Haymond to the Commission, December 5, 2022.

²¹ *Algonquins of Barriere Lake Request for Adjournment of Part 2 of the NSDF Public Hearing*, N. André to R. Velshi, December 20, 2022.

²² *Kebaowek First Nation's (KFN's) Request to Extend Submission Date for Procedural Directive Re: CNL's Application to Construct a Near Surface Disposal Facility*, J. McBrearty and F. Dermarker to R. Velshi, December 15, 2022.

²³ *Revised Notice of Public Hearing and Procedural Guidance for Final Submissions*, CNSC, May 17, 2023.

public hearing were given the option to make their final submissions orally. The Commission published notices on [January 31, 2023](#),²⁴ [March 23, 2023](#),²⁵ and [May 17, 2023](#)²⁶ providing procedural guidance for final submissions and information on the oral hearing of final submissions.

18. On May 29, 2023, the Commission received a [letter](#)²⁷ from KZA requesting to adjourn the oral hearing for a period of 6 weeks. The Commission considered the request, along with a [submission](#)²⁸ from CNL, and decided to adjourn the oral hearing from June 27, 2023 until August 10, 2023. The Commission concluded that on balance, fairness to the participants favoured adjournment. The Commission issued a [Notice of Adjournment](#)²⁹ on June 9, 2023 to communicate the change in date of the oral hearing.

19. The Commission held a virtual oral hearing on August 10, 2023 in order to hear final submissions from Indigenous Nations and communities, as well as the Proponent. While there were requests for this final hearing of submissions to be in-person, the Commission, like many other courts and statutory tribunals, considers the virtual format to be a proven and effective approach, which facilitates participation by members of Indigenous Nations and communities. The Commission heard oral final submissions from KZA, KFN, ABL, and CNL.

Participant Funding Program

20. Pursuant to paragraph 21(1)(b.1) of the NSCA, the Commission has established a [Participant Funding Program](#) (PFP) to facilitate the participation of Indigenous Nations and communities, members of the public and interested parties in Commission proceedings. Section 24 of CEAA 2012 requires that the public be provided with an opportunity to participate in the EA, and under section 58 of CEAA 2012, a responsible authority must establish a participant funding program. Under paragraph 21(1)(b) of the NSCA, the CNSC has the authority to provide participant funding through its own participant funding program. Since 2016, a total of \$1,117,436 of participant funding has been awarded in respect of the NSDF Project, \$973,926 of which was awarded to Indigenous Nations and communities.

²⁴ *Notice of Public Hearing and Procedural Guidance for Final Submissions*, CNSC, January 31, 2023.

²⁵ *Revised Notice of Public Hearing and Procedural Guidance for Final Submissions*, CNSC, March 23, 2023.

²⁶ *Revised Notice of Public Hearing and Procedural Guidance for Final Submissions*, CNSC, May 17, 2023.

²⁷ *Kitigan Zibi Anishinabeg (KZA) participation in the June 27 oral hearing for the Near Surface Disposal Facility (NSDF) Project*, D. Odjick to R. Velshi, May 29, 2023.

²⁸ *Canadian Nuclear Laboratories Response to the Registrar – Kitigan Zibi Anishinabeg Request for Adjournment*, S. Faught to D. Saumure, June 6, 2023.

²⁹ *Notice of Adjournment of Public Hearing*, CNSC, June 9, 2023.

21. Participant funding was initially awarded in two phases. A Funding Review Committee (FRC), independent of the CNSC, reviewed the funding applications received and made recommendations on the allocation of funds for each of the following two phases:
- In May 2016, funding was made available through the CNSC's PFP to facilitate Indigenous Nations and communities, members of the public and interested parties in the review of CNL's Environmental Impact Statement. Based on the recommendations from the FRC, the [CNSC awarded](#) a total of \$124,824.79 to 9 applicants.
 - In March 2019, funding was made available through the CNSC's PFP to facilitate the review of CNSC staff's EA Report and associated documents, and to provide the Commission with value-added information through topic-specific interventions. Based on the recommendations from the FRC, the [CNSC awarded](#) a total of up to \$192,328.92 to 11 applicants.
22. An additional \$596,444.44 in participant funding was awarded to the following Indigenous Nations, communities, and organizations:
- [KZA](#), [ABL](#), and [KFN](#), for their participation in the EA of the NSDF Project.
 - The [Métis Nation of Ontario](#) (MNO) and the [Algonquins of Ontario](#) (AOO), to complete traditional knowledge and land use studies in relation to the NSDF Project and Nuclear Power Demonstration Closure project.³⁰
 - [Algonquins of Pikwakanagan First Nation](#) (AOPFN) and the [AOO](#), to conduct rights impact assessments in relation to the NSDF and Nuclear Power Demonstration Closure projects.
 - [AOPFN](#), [Curve Lake First Nation \(CLFN\)](#), [Hiawatha First Nation](#), [Alderville First Nation](#), [Chippewas of Rama](#), [Beausoleil First Nation](#), and [Chippewas of Georgina Island](#), to facilitate meetings with CNSC staff that included discussions of the NSDF Project.
 - [KFN](#), to negotiate a project Terms of Reference in relation to the NSDF Project, Nuclear Power Demonstration Closure project, and Micro Modular Reactor project.³¹
23. Following the issuance of the *Procedural Direction*, the CNSC offered additional participant funding to KFN and KZA to assist their participation in meetings and activities in relation to the *Procedural Direction*. A FRC reviewed each application and, based on the recommendations of each FRC, the CNSC awarded the following funding:

³⁰ The Nuclear Power Demonstration Closure project is independent of the NSDF Project. Information on the EA and licensing processes for the Nuclear Power Demonstration Closure project is available on the [CNSC website](#).

³¹ The Micro Modular Reactor project is independent of the NSDF Project. Information on the EA and licensing processes for the Micro Modular Reactor project is available on the [CNSC website](#).

- [Up to \\$86,000](#) to KFN
 - [Up to \\$57,838](#) to KZA
24. The CNSC offered further participant funding to assist Indigenous Nations and communities in respect of final submissions to the Commission in relation to the NSDF Project. Up to \$15,000 each was awarded to [KFN](#), [KZA](#), [AOPFN](#), and [ABL](#).

2.0 DECISIONS

25. The Commission, as an agent of the Crown, is satisfied that it has upheld the honour of the Crown and has fulfilled its common law obligations to consult and, where appropriate, accommodate Indigenous interests, pursuant to section 35 of the [Constitution Act, 1982](#)³² relative to both the Commission's EA and licensing decisions in this matter.
26. The Commission recognizes that all Indigenous Nations and communities participating in this matter have shared valuable time, energy, and knowledge with the Commission. In coming to its decisions, the Commission has carefully weighed the information gathered, both in determining whether and how the concerns raised have been addressed through the proposed mitigation measures, and in how to assess what is adequate in order for it to discharge its duty within the parameters of the law. The Commission sincerely appreciates the participation of all Indigenous Nations and communities.
27. Based on its consideration of the matter, as described in more detail in the following sections of this *Record of Decision*, the Commission concludes the following:
- the factors described in paragraphs 19(1)(a) to 19(1)(h) of CEAA 2012, as determined in the Commission's March 2017 decision on the scope of the EA, were considered for the NSDF Project
 - the NSDF Project is not likely to cause significant adverse environmental effects to fish and fish habitat as defined in subsection 2(1) of the [Fisheries Act](#)³³ (CEAA 2012, subparagraph 5(1)(a)(i))
 - the NSDF Project is not likely to cause significant adverse environmental effects to aquatic species as defined in subsection 2(1) of the [Species at Risk Act](#)³⁴ (CEAA 2012, subparagraph 5(1)(a)(ii))
 - the NSDF Project is not likely to cause significant adverse environmental effects to migratory birds as defined in subsection 2(1) of

³² *Constitution Act, 1982*, Schedule B to the *Canada Act 1982* (UK), 1982, c 11.

³³ R.S.C., 1985, c. F-14.

³⁴ S.C. 2002, c. 29.

the [*Migratory Birds Convention Act, 1994*](#)³⁵ (CEAA 2012, subparagraph 5(1)(a)(iii))

- the NSDF Project is not likely to cause significant adverse effects on federal lands, in a province other than the one in which the Project is being carried out or outside of Canada (CEAA 2012, paragraph 5(1)(b))
- the NSDF Project is not likely to cause significant adverse effects with respect to Aboriginal peoples (CEAA 2012, paragraphs 5(1)(c) and 5(2)(b)).
- the NSDF Project is not likely to cause significant adverse environmental impacts as a result of changes other than those referred to in CEAA 2012 paragraphs 5(1)(a) and (b), that may be caused to the environment that are directly linked or necessarily incidental to any federal decisions pursuant to other legislation (CEAA 2012, paragraph 5(2)(a))

Therefore,

the Commission, pursuant to section 5 of the *Canadian Environmental Assessment Act, 2012*, finds that Canadian Nuclear Laboratories' Near Surface Disposal Facility Project is not likely to cause significant adverse environmental effects, provided that all proposed mitigation measures are implemented.

28. Regarding its licensing decision under the NSCA, the Commission concludes the following:

- CNL is qualified to carry on the activities that the licence will authorize; and
- CNL, in carrying on these activities, will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

Therefore,

the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, amends the Nuclear Research and Test Establishment Operating Licence issued to Canadian Nuclear Laboratories for its Chalk River Laboratories to authorize the construction of the NSDF Project. The amended licence, NRTEOL-01.01/2028, remains valid until March 31, 2028.

³⁵ S.C. 1994, c. 22.

29. The Commission includes in the amended licence the following NSDF Project-specific conditions, as recommended by CNSC staff in CMD 22-H7, modified as follows (changes in bold):

Licence Condition G.7: The licensee shall implement the **Near Surface Disposal Facility Project** licensing regulatory actions prescribed by the Commission. Review and closure of the licensing actions is administered by the Commission or a person authorized by the Commission.

Licence Condition G.8: The licensee shall implement the **Near Surface Disposal Facility Project** Environmental Assessment (EA) regulatory commitments prescribed by the Commission. Review and closure of the EA regulatory commitments is administered by the Commission or a person authorized by the Commission.

The licensing regulatory actions are documented in *NSDF Licensing Regulatory Actions* and the EA regulatory commitments are documented in the *NSDF Project Consolidated Commitment Lists*. Both documents are compliance verification criteria under the amended licence, as described in the draft licence conditions handbook (LCH).

30. The Commission delegates authority for the purposes of licence conditions G.7 and G.8, to the following CNSC staff:

- Director, Canadian Nuclear Laboratories Regulatory Program Division
- Director General, Directorate of Nuclear Cycles and Facilities Regulation
- Executive Vice-President and Chief Regulatory Operations Officer, Regulatory Operations Branch

31. The Commission directs CNSC staff to track and implement its commitments to enhance transparency and foster confidence and trust in the regulator, in keeping with section 1.4 of CMD 22-H7 by:

- engaging with members of the public, Indigenous Nations and communities, and local authorities and seeking early feedback on future Independent Environmental Monitoring Program (IEMP) sampling campaigns related to the NSDF and the CRL site
- developing long-term relationships with each of the identified Indigenous Nations and communities and involving them in the ongoing monitoring and oversight of the implementation of mitigation measures and follow-up monitoring program measures, should the NSDF Project proceed
- conducting engagement activities with Indigenous Nations and communities at a reasonable frequency to be agreed upon with each of the Indigenous Nations and communities

- conducting regular outreach activities related to the NSDF Project and the CRL site with local communities
32. The Commission directs CNSC staff to add an explicit commitment to the *NSDF Licensing Regulatory Actions* for submission of CNL's sustainable forest management plan to the CNSC for review. CNSC staff shall ensure that the sustainable forest management plan is adequate to increase the quality and biodiversity of the remaining forest on the CRL site to offset the loss of forested habitat in the NSDF footprint.
33. The Commission acknowledges that the NSDF Project is expected to have many phases, beyond this application for a licence amendment to authorize its construction. The Commission expects both CNSC staff and CNL to continue their respective consultation and engagement activities over the lifecycle of this Project and any subsequent applications to the Commission with all implicated Indigenous rights-holders and their representatives.
34. With this decision, the Commission authorizes the construction of the NSDF Project only. The Commission does not authorize the future operation of the NSDF. The Commission will consider the operation of the NSDF in a future licensing process, including a public hearing, should CNL come forward with a licence application for authorization to operate the NSDF.
35. With this decision, the Commission directs CNSC staff to report on the status of the NSDF Project as part of the periodic *Regulatory Oversight Report for Canadian Nuclear Laboratories Sites* (ROR). The Commission directs CNSC staff to inform the Commission, as part of the ROR, of any changes made to the LCH respecting the NSDF Project. CNSC staff may bring any matter to the Commission's attention, as required.

3.0 ISSUES AND COMMISSION FINDINGS

36. The Commission's analyses for its decisions on this matter are set out within the following sections of this *Record of Decision*:
- Section 3.3 Environmental Assessment Under CEAA 2012
 - Section 3.4 Indigenous Engagement and Consultation
 - Section 3.5 Licence Amendment under the NSCA

In section 3.1, the Commission considers the NSDF Project description, including the design of the facility and post-closure safety. Section 3.2 includes a summary of views of the participants in the public hearing for the NSDF Project.

3.1 The Proposed Project

3.1.1 Project Description

37. The NSDF Project is a proposed waste disposal facility designed to contain up to 1 million cubic metres (m³) of low-level radioactive waste (LLW). The NSDF design includes an engineered containment mound (ECM), a waste-water treatment plant (WWTP), support facilities, and site infrastructure. The ECM has a design life of 550 years, which is appropriate to allow for the radioactive decay of the waste inventory.³⁶
38. The proposed location for the NSDF Project is the CRL site in Deep River, Ontario. The NSDF has a footprint of approximately 37 hectares, which is less than 1% of the total CRL site area. The proposed location for the NSDF Project is located 1.1 km from the Ottawa River, within the Perch Creek and Perch Lake Watershed, and is situated on a bedrock ridge which slopes away from the Ottawa River.
39. The NSDF will contain only LLW. The majority of the waste to be emplaced in the NSDF is currently in storage at the CRL site or will be generated from future environmental remediation, decommissioning, and operational activities at the CRL site. Approximately 10% of the waste volume will come from other AECL-owned sites or from commercial sources such as Canadian hospitals and universities.

3.1.2 Project Phases

40. Development of the NSDF Project is planned to occur in several phases. These phases can be split into two distinct periods, a pre-closure period and a post-closure period. The pre-closure period includes a construction phase of approximately 3 years, a 50-year operation phase during which the LLW would be placed into the ECM, followed by a 30-year closure phase. The post-closure period includes an institutional control period of 300 years and a post-institutional control period starting at approximately the year 2400.³⁷
41. Given the current licensing process and regulatory requirements, CNL will be required to seek authorization from the Commission prior to commencing each of the construction, operation, decommissioning of redundant site infrastructure and support facilities, closure (including commencement of the institutional control period), and post-institutional control project phases.

³⁶ CMD 22-H7.1 section 1.3.

³⁷ CMD 22-H7.1 section 1.4 and CMD 22-H7 section 1.2.4.

42. The Commission asked for more information on how the 300-year institutional control period was chosen. A CNL representative explained that the 300-year period corresponds to 10 half-lives for short-lived radionuclides,³⁸ which are the primary constituents of LLW. CNSC staff noted that, after 10 half-lives, a radionuclide's activity has decayed to an inconsequential level.³⁹ The CNL representative explained that a 300-year institutional control period is also consistent with the institutional control periods selected for many other complex nuclear sites.⁴⁰
43. Asked for additional information regarding the transition of the NSDF Project to the institutional control period, a CNL representative explained that the transition would require authorization from the Commission. The CNL representative acknowledged that, as part of the application process to transition to institutional control, CNL would be required to update its safety assessments for the NSDF and provide environmental monitoring data to demonstrate that the site is stable and performing as expected. CNL would also be required to define the proposed physical and administrative control measures to be implemented during the institutional control period.⁴¹
44. Multiple intervenors including C. Cavan ([CMD 22-H7.58](#)), W. Turner ([CMD 22-H7.64](#)), and the Provincial Council of Women of Ontario ([CMD 22-H7.141](#)) raised concern that the waste emplaced in the NSDF would effectively be abandoned during the post-closure period. In section 1.4.4 of CMD 22-H7.1, CNL reported that the post-closure phase of the NSDF Project is not synonymous with "abandonment" of the facility. CNL submitted that the post-closure phase includes implementation of institutional controls for at least 300 years; however, institutional control will continue as long as determined necessary by regulatory agencies. In section 1.2 of CMD 22-H7, CNSC staff explained that, at the end of the institutional control period, CNL would have to seek authorization from the Commission for the removal of the NSDF from CNSC regulatory control. CNSC staff further explained that, as the enduring federal entity and owner of the assets and liabilities of CNL managed sites, AECL is responsible for controlling and restricting the land use of the NSDF footprint for as long as necessary.
45. The Commission is satisfied that CNL has provided adequate information on the future phases of the NSDF Project for the Commission to adequately consider the Project lifecycle for the purposes of the EA. The Commission notes that its licence amendment decision applies solely to the construction phase of the NSDF Project.

³⁸ Short-lived radionuclides are radionuclides with a half-life equal to or less than 30 years.

³⁹ *Transcript of the June 1 2022 Public Hearing*, page 79.

⁴⁰ *Transcript of the February 22 2022 Public Hearing*, page 104.

⁴¹ *Transcript of the June 1 2022 Public Hearing*, pages 21-23.

3.1.3 Engineered Containment

46. The main containment features of the ECM include multi-layer base liner and final cover systems, as well as a perimeter berm. Waste will be emplaced between the base liner and final cover systems in 10 separate waste disposal cells that are each designed for progressive construction, filling, and closure. The base liner system is designed to isolate waste from the environment, collect leachate, and detect any leaks in the primary liner during the operations phase of the NSDF Project. The final cover system is designed to provide radiation shielding, prevent intrusion, and keep out precipitation. The perimeter berm provides structural stability.⁴²
47. The base liner and final cover systems would be composed of a combination of natural materials (e.g., a compact clay liner) and synthetic materials (e.g., high-density polyethylene [HDPE] geomembrane). In section 4.2 of CMD 22-H7.1, CNL reported that the base liner system materials were selected based on their compatibility with the predicted leachate characteristics as well as the required design life of the facility. CNL also reported that the clay liner would serve as both a water infiltration barrier and a repairing mechanism for the HDPE geomembrane. CNL explained that, if the geomembrane were to be damaged to the point where water could pass through it, the water would contact the geosynthetic clay liner; the clay would then expand upon contact with the water and effectively “seal” the damage to the geomembrane.
48. Regarding the lifespan of the liner system, CNL submitted in section 4.2 of CMD 22-H7.1 that long-term performance testing conducted by Queen’s University demonstrated that the HDPE geomembrane would meet, and likely exceed, the required 550-year design life. In section 3.6 of CMD 22-H7, CNSC staff reported that it reviewed the HDPE geomembrane performance reports and found that sufficient evidence had been provided to support that the HDPE geomembrane would meet the 550 years design life.
49. The Commission asked CNL for more explanation of how it determined the appropriate design life for the NSDF. A CNL representative explained that LLW requires management for a few hundred years to ensure that the radiological inventory can decay to a point where it does not pose a risk to the environment or the public. The CNL representative stated that the 550-year design life ensures that the engineered barriers of the ECM can isolate the waste inventory for its hazardous lifetime.⁴³
50. The Commission asked Dr. Rowe, an intervenor ([CMD 22-H7.60](#)), professor at Queen’s University and a reviewer of the geomembrane studies conducted at the university, for more information regarding the integrity of the HDPE geomembrane. Dr. Rowe stated that the HDPE geomembrane can handle the

⁴² CMD 22-H7.1 section 4.2.

⁴³ *Transcript of the February 22 2022 Public Hearing*, pages 102-103.

weight of the waste placed on top of it and explained that CNL has designed the NSDF to minimize tensile stresses on the membrane. Regarding the potential for the geomembrane to be damaged, Dr. Rowe explained that damage is most likely to occur during the construction period and that damage which occurs during construction can be identified and repaired before any waste is emplaced. Dr. Rowe explained that multiple layers, including a sand layer, would be placed on top of the geomembrane as part of the base liner system, and that these layers would protect the membrane from damage during waste emplacement. Dr. Rowe further stated that the effects of freezing and thawing are not a concern to the integrity of the HDPE geomembrane.⁴⁴ The Commission appreciated Dr. Rowe's submissions and expertise on this subject.

51. Regarding structural stability, CNL reported in section 4.2 of CMD 22-H7.1 that the perimeter berm would be constructed from natural materials and was expected to provide structural integrity to the ECM for thousands of years. Proper waste placement and compaction would also ensure structural stability of the mound. In section 4.5 of CMD 22-H7, CNSC staff reported that it reviewed CNL's seismic and structural design documentation for the ECM and found that it adequately demonstrated the stability and containment capability of the ECM.
52. The ECM would be constructed as a relatively solid structure with soil and soil-like wastes used to fill in the gaps between packaged wastes, large rubble, and building debris.⁴⁵ In section 3.2.1.11 of the [NSDF Safety Case](#),^{46,47} CNL detailed that waste packages placed in the ECM would have a maximum of 10% void space within the package to prevent collapse. CNL submitted that the maximum void space was selected based on benchmarking of similar near surface disposal facilities. A CNL representative further noted that CNL has a waste placement and compaction plan that describes how waste must be placed within the ECM to ensure that it meets the design basis.⁴⁸
53. Regarding the alignment of the NSDF design with international standards, CNL reported in section 1.6 of CMD 22-H7.1 that it had designed the NSDF in accordance with regulatory and international design principles for radioactive waste disposal. CNL considered the following international standards from the International Atomic Energy Agency (IAEA) in the NSDF design and safety assessments:

- IAEA GSG-1 *Classification of Radioactive Waste*⁴⁹

⁴⁴ *Transcript of the May 31 2022 Public Hearing*, pages 184 and 188-192.

⁴⁵ CMD 22-H7.1 section 4.1.

⁴⁶ *Near Surface Disposal Facility Safety Case*, 232-03610-SAR-001, Revision 2, CNL, January 2021.

⁴⁷ The *NSDF Safety Case* summarizes and integrates the results from both the *NSDF Safety Analysis Report*, which presents the operational safety analysis of the NSDF Project, and the *NSDF Post Closure Safety Assessment*, which presents the long-term safety analysis of the NSDF Project.

⁴⁸ *Transcript of the June 1 2022 Public Hearing*, page 395.

⁴⁹ *GSG-1 Classification of Radioactive Waste*, IAEA, 2009 [IAEA GSG-1].

- IAEA SSR-5 *Disposal of Radioactive Waste*⁵⁰
- IAEA SSG-23 *The Safety Case and Safety Assessment for the Disposal of Radioactive Waste*⁵¹
- IAEA SSG-29 *Near Surface Disposal Facilities for Radioactive Waste*⁵²
- IAEA SSG-31 *Monitoring and Surveillance of Radioactive Waste Disposal Facilities*⁵³
- IAEA SF-1 *Fundamental Safety Principles*⁵⁴
- IAEA *Safety Assessment Methodologies for Near Surface Disposal Facilities*⁵⁵

54. During Part 1 of the hearing, the Commission requested that CNSC staff provide a table demonstrating alignment of the NSDF Project with IAEA standards, in response to the reported concerns raised by members of the public and Indigenous Nations and communities during CNSC staff's outreach and engagement activities.⁵⁶ CNSC staff subsequently provided the requested table in Addendum A of CMD 22-H7.B. CNSC staff also mapped NSDF technical documentation to the requirements of IAEA SSR-5 in Appendix E.2 of CMD 22-H7. The Commission is satisfied with the information provided by CNSC staff regarding alignment of the NSDF Project with IAEA standards.

55. Noting that many intervenors referred to the proposed NSDF as a “dump,” a CNL representative explained that the term “dump” typically refers to a depression where waste is placed without serious consideration of hydrology, waste restriction, or engineered barriers. The CNL representative stated that the proposed NSDF design is not a dump, rather, it is a Class IB nuclear facility with engineered containment that has been designed to isolate waste and treat leachate.⁵⁷

56. The Commission asked CNSC staff to comment on an assertion by several intervenors, including the Old Fort William Cottagers' Association ([CMD 22-H7.36](#)) and the Concerned Citizens of Renfrew County and Area ([CMD 22-H7.74](#)), that CNL's proposed NSDF design does not meet the IAEA definition for a “near surface disposal facility.” In Addendum A of CMD 22-H7.B, CNSC staff submitted that IAEA SSG-29 describes the term “near surface disposal facility” as follows:

⁵⁰ SSR-5 *Disposal of Radioactive Waste*, IAEA, 2011 [IAEA SSR-5].

⁵¹ SSG-23 *The Safety Case and Safety Assessment for the Disposal of Radioactive Waste*, IAEA, 2012 [IAEA SSG-23].

⁵² SSG-29 *Near Surface Disposal Facilities for Radioactive Waste*, IAEA, 2014 [IAEA SSG-29].

⁵³ SSG-31 *Monitoring and Surveillance of Radioactive Waste Disposal Facilities*, IAEA, 2014.

⁵⁴ SF-1 *Fundamental Safety Principles*, IAEA, 2006.

⁵⁵ *Safety Assessment Methodologies for Near Surface Disposal Facilities*, Volume 1: Review and Enhancement of Safety Assessment Approaches and Tools, ISAM, IAEA, 2004.

⁵⁶ *Transcript of the February 22 2022 Public Hearing*, pages 154-157.

⁵⁷ *Transcript of the May 31 2022 Public Hearing*, pages 217-218.

“The term ‘near surface disposal’ is used in this Safety Guide to refer to a range of disposal methods, including the emplacement of solid radioactive waste in earthen trenches, above ground engineered structures, engineered structures just below the ground surface and rock caverns, silos and tunnels excavated at depths of up to a few tens of metres underground. This Safety Guide provides general guidance for the development, operation and closure of facilities of this type that are suitable for the disposal of [very-low-level radioactive waste] VLLW and LLW.”

CNSC staff reported that the use of the term NSDF for this Project proposal is consistent with the IAEA’s description. CNSC staff confirmed to the Commission’s satisfaction that the IAEA definition for an NSDF does not have specific requirements for depth or height of the facility.⁵⁸

57. The Commission asked CNL if the NSDF could be upgraded if new technology became available. A CNL representative explained that the operations phase will be completed in two phases and that only Phase 1 will be operated for the first 20-25 years. If new technologies exist in 20-25 years, there will be an opportunity to incorporate that technology into Phase 2. The CNL representative also noted that CNL is developing a research and development plan for the NSDF to stay informed of new technologies and identify potential opportunities to apply new technologies to the NSDF.⁵⁹
58. The Commission is satisfied that CNL has provided adequate information on the engineered containment features of the NSDF for the Commission to consider the adequacy of the NSDF design for the purposes of the EA. The Commission finds that:
- CNL has provided information to support that the NSDF’s engineered barriers can fulfill the facility’s required design life
 - CNL has provided information to support that the stability of the ECM was considered in the NSDF design
 - CNL’s NSDF Project is a “near surface disposal facility” as defined in IAEA SSG-29
 - The NSDF design aligns with IAEA standards

3.1.4 Water Management

59. The water management approach for the NSDF Project includes design elements and operational features to minimize the generation of wastewater; design elements to manage leachate; the design of the WWTP; and information on effluent discharge.⁶⁰

⁵⁸ *Transcript of the May 31 2022 Public Hearing*, pages 63-64.

⁵⁹ *Transcript of the May 30 2022 Public Hearing*, pages 352-357.

⁶⁰ CMD 22-H7.1 section 4.3.

60. The NSDF WWTP will treat NSDF leachate or wastewater with a treatment process that includes chemical precipitation, filtration, granular activated carbon to remove organics, and polishing steps including ion exchange and pH adjustments. The release of treated effluent to the environment would occur only after the effluent has met the discharge criteria. CNL submitted that pilot testing of the proposed treatment process had demonstrated that the effluent target concentrations can be achieved. Regarding the life of the WWTP, CNL reported that the WWTP has a design life of 50 years and can be refurbished if it is required to operate past its design life.⁶¹
61. The storage capacity and maximum flow rate of the WWTP were based on back-to-back, 100-year, 24-hour storm events. The design of the ECM also includes stormwater features such as drainage, ditches, culverts, and surface water management ponds that have been designed for peak flows.⁶² The impact of extreme precipitation events on the NSDF is discussed further in section 3.3.8.3 of this *Record of Decision*.
62. In section 4.6.2 of CMD 22-H.7, CNSC staff reported that it reviewed CNL's WWTP process design report and found that CNL adequately considered the process design, material selection and chemical treatment of the ECM leachate.
63. Several intervenors including the City of Ottawa ([CMD 22-H7.16](#)), the Concerned Citizens of Renfrew County and Area (CMD 22-H7.74), and J. Graham ([CMD 22-H7.133](#)) raised concerns about precipitation entering the NSDF waste cells prior to closure and increasing leachate production. A CNL representative stated that CNL had committed to developing a weather cover structure to minimize water ingress during the operation phase of the NSDF Project.⁶³ The CNL representative explained that CNL had proposed temporary membranes to cover each cell as it is filled and that the weather cover structure would be an additional overhead structure, similar to the one used at the Centre de l'Aude in France.⁶⁴ In section 6.4.1.5 of CMD 22-H7, CNSC staff reported that CNL is required to submit the weather cover structure design documents for CNSC staff review and acceptance prior to submission of a licence application to operate the NSDF. CNL is also required to install the weather cover structure prior to the submission of a licence application to operate the NSDF.
64. In its intervention, Ottawa Riverkeeper ([CMD 22-H7.125](#)) submitted its view that reverse osmosis should be utilized in the NSDF WWTP to assure that effluent release targets can be met. A representative from AECOM Canada Ltd. (AECOM), an infrastructure consulting firm and the designer of the NSDF, said that reverse osmosis was considered as an alternate treatment technology;

⁶¹ CMD 22-H7.1 section 4.3.2.

⁶² CMD 22-H7.1 section 4.5.

⁶³ *Transcript of the May 30 2022 Public Hearing*, page 65.

⁶⁴ *Transcript of the May 30 2022 Public Hearing*, pages 336-337.

however pilot testing had shown that chemical precipitation, membrane filtration and ion exchange were effective in removing both the radiological and non-radiological constituents of concern. The Commission asked what would happen if the WWTP did not achieve the discharge criteria as expected. The AECOM representative said that the treatment process for the WWTP could be changed based on the characteristics of the leachate and that there will be space in the WWTP to install additional equipment if required.⁶⁵

65. The Commission noted that many intervenors appeared to share the view that the NSDF would leak leachate into the environment over the lifetime of the NSDF. The Commission asked CNL to comment on this perception. A CNL representative clarified that leachate is anticipated during operation of the NSDF, during which time the leachate will be captured and transferred to the WWTP for treatment prior to discharge. The CNL representative added that, once the NSDF is closed, leachate from the ECM is not anticipated as the base liner and cover systems will isolate the waste inventory from the environment during its hazardous lifetime.⁶⁶
66. The Commission is satisfied that CNL has provided sufficient information for the Commission to consider the water management features of the NSDF design, for the purposes of the EA. The Commission finds that:
- The ECM design includes leachate and stormwater management features
 - The storage capacity and maximum flow rate of the NSDF WWTP were based on back-to-back, 100-year, 24-hour storm events
 - The treatment process for the WWTP has been demonstrated to be effective through pilot testing
 - The treatment process for the WWTP could be modified based on the characteristics of the leachate, if required
 - CNL is required to design and install an acceptable weather cover structure for the NSDF Project prior to operating the NSDF
 - CNSC staff have issued a regulatory action to review CNL's weather cover structure design for acceptance prior to CNL submitting a licence application to operate the NSDF

3.1.5 Waste Management

67. Approximately 90% of the 1 million m³ waste volume of the NSDF will be made up of waste currently in storage at the CRL site, waste generated during environmental remediation and decommissioning activities at the CRL site, and expected future waste resulting from ongoing CNL operations.⁶⁷ A CNL representative clarified that, of that 90%, approximately 30% of waste currently

⁶⁵ *Transcript of the May 30 2022 Public Hearing*, pages 101-103.

⁶⁶ *Transcript of the May 31 2022 Public Hearing*, pages 71-74.

⁶⁷ CMD 22-H7.1 section 1.3.

exists in storage and 60% is anticipated to be generated from CRL site clean-up and ongoing operations.⁶⁸ The remaining 10% of the NSDF waste volume would come from other AECL-owned sites or from sources such as Canadian hospitals and universities. All waste emplaced in the NSDF will be LLW from Canadian sources.

68. Regarding the nature of the LLW that is to be emplaced in the NSDF, approximately 85% of the waste volume proposed for the NSDF Project are soils, soil-like debris, and decommissioning or demolition wastes. The remaining 15% will be made up of wastes that are contained in various types of packaging.⁶⁹
69. Multiple intervenors including the AOO ([CMD 22-H7.98](#)), AOPFN ([CMD 22-H7.109](#)) and the Council of Canadians Kitchissippi-Ottawa Valley Chapter ([CMD 22-H7.45](#)) raised concerns regarding the risks associated with transporting off-site waste to CRL for disposal in the NSDF. In section 6.14 of CMD 22-H7.1, CNL reported that the transportation of waste from off-site sources is not within the scope of the NSDF EA. Transportation of off-site waste is not specific to the NSDF and is an activity currently undertaken with respect to CRL in accordance with Transport Canada's [Transportation of Dangerous Goods Regulations](#)⁷⁰, and the [Packaging and Transport of Nuclear Substances Regulations, 2015](#).⁷¹ Although not within the scope of the NSDF EA, CNSC staff confirmed in section 4.14 of CMD 22-H7 that CNL has a packaging and transport program in place that meets regulatory requirements and that CNL (and previously AECL) has transported wastes for over 50 years without any safety significant incident.
70. The Commission asked CNL to comment on a concern raised by I. Theilheimer ([CMD 22-H7.33](#)) stating that the Nuclear Waste Management Organization (NWMO)'s *Integrated Strategy for Radioactive Waste*⁷² found that "over 90 percent of Canada's current low-level waste inventory could be unsuitable for disposal in the engineered containment mound." A CNL representative explained that the scope of the NWMO's project was to complete a review of waste for which no strategy currently exists. The CNL representative explained that CNL has an integrated waste strategy and a proposed disposal solution for the remainder of its LLW and, as such, CNL's LLW was excluded from the NWMO's review.⁷³

⁶⁸ *Transcript of the June 3 2022 Public Hearing*, pages 128-129.

⁶⁹ CMD 22-H7.1 section 4.1.

⁷⁰ SOR/2001-286.

⁷¹ SOR/2015-145.

⁷² *Integrated Strategy for Radioactive Waste Initial Plan Development – Characterization and Options Project Report*, NWMO, August 2021.

⁷³ *Transcript of the June 3 2022 Public Hearing*, pages 103-104.

71. The Commission asked CNL to provide more information on the adequacy of the capacity of the proposed NSDF compared to AECL's current waste inventory. A CNL representative explained that 1.7 million m³ of AECL-owned LLW is already being managed at CNL's sites in Port Hope and Port Granby. The CNL representative stated that CNL had completed conservative forecasting of future waste production and that the NSDF is anticipated to be able to accommodate the remainder of AECL-owned LLW.⁷⁴ That is, CNL's waste forecasts are expected to exceed actual waste production.
72. Asked for more information on how future-generated LLW had been considered, the CNL representative stated that CNL utilizes its existing integrated waste strategy to forecast waste that will be generated at all AECL-owned sites over at least the next 70 years and to ensure that the infrastructure in place to manage it when it is generated. The CNL representative noted that CNL's integrated waste strategy document is publicly available on the CNL website.⁷⁵
73. Asked to explain how Canada's management of LLW compares internationally, CNSC staff said that in 2019 the CNSC underwent an international peer review.⁷⁶ The expert team reviewed the CNSC's regulatory framework, including waste management documents, and found that the framework was comprehensive and in alignment with IAEA safety standards. CNSC staff also noted that Canada is a Contracting Party to, and the CNSC participates in triennial Review Meetings under the [*Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*](#).⁷⁷ CNSC staff noted that at each review cycle Canada has been recognized for meeting all the obligations of the Joint Convention.⁷⁸
74. Several intervenors including Canadian Environmental Law Association (CELA; [CMD 22-H7.104](#)) and Northwatch ([CMD 22-H7.138](#)) raised concerns that CNL did not have a plan in place for the future retrieval of the NSDF's contents. In response to questions on this matter, a CNL representative said that the NSDF was designed as a permanent disposal facility and, as such, retrievability was not explicitly incorporated into the NSDF design. As noted in section 2.3 of the EIS, although the intent is not to retrieve the waste, the design of NSDF does not preclude future generations from retrieving the NSDF's contents. The CNL representative noted that in the unlikely event that waste retrieval becomes necessary or desired, a safety assessment would be performed prior to retrieval. CNL's existing management system provides the processes to

⁷⁴ *Transcript of the May 30 2022 Public Hearing*, pages 248-250.

⁷⁵ *Transcript of the May 30 2022 Public Hearing*, pages 43-44.

⁷⁶ This review was an Integrated Regulatory Review Service (IRRS) mission. More information on the 2019 IRRS mission to Canada can be found on the [CNSC website](#).

⁷⁷ *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*, IAEA, September 1997.

⁷⁸ *Transcript of the May 30 2022 Public Hearing*, pages 307-308.

assess the health and safety, radiological and environmental considerations, as well as control the design and performance of the work.⁷⁹

75. Regarding the potential for waste to be removed if the NSDF is not performing as expected, a CNL representative explained that the NSDF has design features which would help locate the issue and, if required, enable the retrieval of the waste. The CNL representative specified that each waste cell has a separate sump that would enable CNL to determine which cell is impacted, should a leak be detected as part of regular leachate collection system monitoring. The CNL representative further noted that, as mentioned in section 3.2.1 of the *NSDF Safety Case*, CNL will utilize a waste placement mapping plan which will include the use of a three-dimensional waste location recording system for waste placed within the ECM. Thus, a review of waste packages placed in the impacted cell could also be done to facilitate the investigation.⁸⁰

Waste Inventory and Waste Acceptance Criteria

76. In section 5.6 of the *NSDF Safety Case*, CNL provided information on the development of the Reference Inventory and Licensed Inventory for the NSDF. CNL reported that it developed the Reference Inventory through conservative estimates and extrapolations of CNL's current knowledge of its waste inventories. The Reference Inventory overestimates the quantities of radionuclides to be received for disposal to form a conservative waste inventory to be used in the safety analysis. The Licensed Inventory is the maximum radioactivity of significant radionuclides⁸¹ that the NSDF will accept.
77. The NSDF Project waste acceptance criteria (WAC) specify all the requirements that CNL will use to accept or reject LLW for disposal in the NSDF.⁸² The purpose of the WAC is to ensure that all waste received for disposal in the ECM complies with the design and licensing basis for the facility. The WAC document is publicly available on the [CNL website](#).⁸³
78. The NSDF would only accept radiologically contaminated material; however, these materials are made of a variety of metals, organics, and chemical compounds. In section 4.1 of CMD 22-H7.1, CNL reported that the NSDF will follow the guidelines of [Ontario Regulation General – Waste Management](#)⁸⁴ regarding acceptable amounts of non-radiological compounds. In section 3.3.2 of CMD 22-H7.B, CNSC staff reported that the limits and conditions placed on mixed waste by the WAC are aligned with Canadian requirements.

⁷⁹ *Transcript of the June 3 2022 Public Hearing*, pages 8-9.

⁸⁰ *Transcript of the June 3 2022 Public Hearing*, pages 8-9.

⁸¹ Significant radionuclides are the radionuclides that were identified in the Reference Inventory and were included as part of the NSDF PCSA for calculating dose to future receptors. The full list of all radionuclides in CNL's waste inventory database is included the Reference Inventory.

⁸² CMD 22-H7.1 section 4.1.

⁸³ *Near Surface Disposal Facility Waste Acceptance Criteria*, 232-508600-WAC-003, Revision 4, CNL, 2020.

⁸⁴ *General – Waste Management*, R.R.O 1990, Reg 347 [O. Reg. 347].

79. Regarding radionuclide concentration limits in the waste inventory, CNL reported that the WAC imposes a limit of 400 Becquerels/gram (Bq/g) on average for long-lived alpha emitting radionuclides and an average activity concentration of 10,000 Bq/g for long-lived beta and/or gamma emitting radionuclides. CNL noted that these limits are consistent with the categorization of LLW in both Canadian Standards Association (CSA) Group standard N292.0:19 *General principles for the management of radioactive waste and irradiated fuel*⁸⁵ and IAEA GSG-1 guidance. Regarding the amount of waste that the NSDF can accept, CNL submitted that neither the maximum cumulative radioactivity of each radionuclide nor the total waste volume of 1 million m³ may be exceeded. Section 3.3.1.3 of the EIS provides information on the maximum cumulative radioactivity for each significant radionuclide.
80. The WAC includes a total allowable inventory of tritium as well as tritium concentration thresholds when waste must be packaged into leachate-controlled packages. CNL reported that controlling the amount of tritium being placed in the NSDF will ensure that effluent from the WWTP will meet the tritium effluent discharge targets.⁸⁶ Asked how tritium would be present in the NSDF waste inventory, a CNL representative explained that the tritium accounted for in the NSDF Reference Inventory is present as contamination. The CNL representative noted that, while CNL does receive spent tritium light sources for storage, those are not expected to meet the requirements of the WAC for disposal in the NSDF.⁸⁷
81. The LLW to be disposed in the NSDF contains primarily short-lived radionuclides and a limited amount of long-lived radionuclides.⁸⁸ CNL reported that the long-lived radionuclides expected to be emplaced in the NSDF are those that are intrinsically part of the waste and for which it is not practical to separate into different waste streams. CNL clarified that the concentrations of long-lived radionuclides that are proposed to be in the NSDF inventory are limited and consistent with CSA N292.0:19 and IAEA GSG-1.⁸⁹ In section 3.3.2 of CMD 22-H7.B, CNSC staff confirmed that the long-lived radionuclides identified in the WAC would constitute approximately 0.02% of the total radioactive inventory at the time of NSDF closure.
82. In section 3.3.2 of CMD 22-H7.B, CNSC staff reported that it assessed the NSDF WAC and determined that it was conservative and protective of people and the environment. CNSC staff submitted that the WAC complies with all requirements and guidance for the near surface disposal of LLW and would ensure that the waste accepted for disposal in the NSDF is appropriately

⁸⁵ CSA N292.0:19, *General principles for the management of radioactive waste and irradiated fuel*, CSA Group, 2019 [CSA N292.0:19].

⁸⁶ CMD 22-H7.1 section 4.1.

⁸⁷ *Transcript of the June 1 2022 Public Hearing*, pages 251-252.

⁸⁸ Short-lived radionuclides are radionuclides with a half-life equal to or less than 30 years. Long-lived radionuclides have a half-life of over 30 years.

⁸⁹ CMD 22-H7.1 section 4.1.

classified and characterized. The Commission asked CNSC staff how the NSDF WAC compared with international best practices. CNSC staff said that the WAC aligned with both Canadian requirements and international guidance including IAEA GSG-1, CSA N292.0:19, and CNSC regulatory document⁹⁰ [REGDOC-2.11.1, Waste Management, Volume I: Management of Radioactive Waste](#).^{91,92}

83. In its intervention, the Sierra Club Canada Foundation ([CMD 22-H7.41](#)) submitted that the presence of long-lived radionuclides in the NSDF WAC was not consistent with the definition of LLW. A CNL representative said that, by definition, LLW waste may contain some amounts of long-lived radionuclides. As defined in REGDOC-2.11.1, Volume I:

“Low-level radioactive waste contains material with radionuclide content above established unconditional clearance levels and exemption quantities (set out in the *Nuclear Substances and Radiation Devices Regulations*), but generally has limited amounts of long-lived radionuclides.”

The CNL representative noted that the WAC thresholds for long-lived radionuclides are consistent with the categorization of LLW in REGDOC-2.11.1 Volume I, CSA N292.0:19 and IAEA GSG-1.⁹³

84. The Commission asked CNL to comment on the concern raised by the Concerned Citizens of Renfrew County and Area ([CMD 22-H7.74](#)) regarding the mass of long-lived radionuclides that would be present in the ECM. A CNL representative explained that, while the mass of waste that will be emplaced in the NSDF is large, the concentrations of long-lived radionuclides in that waste would not be significant, particularly when considered relative to the concentrations naturally present in the environment. Using the example of uranium, the CNL representative said that the average concentration of uranium naturally present in soil is 0.05 Bq/g. By comparison, the CNL representative stated that the average concentration of uranium in the NSDF would be 0.145 Bq/g, or approximately three times the average naturally present concentration.⁹⁴
85. Many intervenors, including E. Dreessen ([CMD 22-H7.21](#)), Prevent Cancer Now ([CMD 22-H7.75](#)), and KZA ([CMD 22-H7.113](#)), raised concerns regarding the presence of Cobalt-60 in the licensed inventory for the NSDF. A CNL representative explained that Cobalt-60 is an activation product and can be

⁹⁰ [REGDOCs](#) play a key role in the CNSC’s regulatory framework. They explain to licensees and applicants what they must achieve in order to meet the requirements set out in the NSCA and the regulations made under the NSCA. When included in the licensing basis, REGDOC requirements are mandatory.

⁹¹ REGDOC-2.11.1, *Waste Management, Volume I: Management of Radioactive Waste*, CNSC, January 2021 [REGDOC-2.11.1 Volume I].

⁹² *Transcript of the May 30 2022 Public Hearing*, pages 143-144.

⁹³ *Transcript of the May 30 2022 Public Hearing*, page 236.

⁹⁴ *Transcript of the May 31 2022 Public Hearing*, pages 145-146.

present as contamination on protective equipment, on legacy waste from reactor operation or medical isotope research and production at the CRL site, or as a disused source.⁹⁵ In section 8.1.1 of the *NSDF Safety Case*, CNL reported that Cobalt-60 is not a long-term hazard. CNL submitted that Cobalt-60 has a half-life of 5.26 years and will decay to less than 0.1% of initial amounts within about 55 years after placement in the ECM. CNSC staff noted that no credit was taken for shielding when assessing the potential long-term impacts of Cobalt-60 in the NSDF.⁹⁶

86. The Commission asked how heat generated by the waste was accounted for in the design of the NSDF and the development of the WAC. A CNL representative explained that heat generation within the ECM would not be significant due to the nature of LLW.⁹⁷ Regarding heat generated by Cobalt-60 specifically, a CNL representative explained that the WAC limit for Cobalt-60 will ensure that the waste emplaced within the ECM qualifies as LLW and that heat generated will not be significant.⁹⁸
87. Asked about the disposal of disused sources, a CNL representative explained that such sources, including sealed sources, would only be placed in the NSDF if they meet all WAC requirements.⁹⁹ The NSDF WAC require that all disused sources being considered for disposal in the NSDF are evaluated in accordance with IAEA guidelines. The CNL representative stated the [*NSDF Project Consolidated Commitment Lists*](#)^{100,101} includes a commitment that, prior to accepting any disused sources into the NSDF, CNL will update section 5.7 of the WAC to clarify the specific aspects of the IAEA guidelines that will be applied in the acceptance of disused sources in NSDF.¹⁰²
88. The Commission asked CNL for additional information regarding the plutonium inventory in the NSDF. A CNL representative explained that plutonium will be present in the waste inventory as residual, unrecoverable contamination only. The amount of plutonium in the NSDF will be restricted by WAC limits for long-lived alpha emitting radionuclides and nuclear criticality safety requirements.¹⁰³ Section 5.3 of the WAC also specifies that nuclear material that requires management through CNL's Nuclear Materials and Safeguards Management Program shall not be accepted for disposal in NSDF.

⁹⁵ *Transcript of the May 30 2022 Public Hearing*, pages 136-137.

⁹⁶ *Transcript of the June 1 2022 Public Hearing*, pages 75-76.

⁹⁷ *Transcript of the May 30 2022 Public Hearing*, page 151.

⁹⁸ *Transcript of the June 1 2022 Public Hearing*, page 87.

⁹⁹ *Transcript of the May 30 2022 Public Hearing*, page 137.

¹⁰⁰ *NSDF Project Consolidated Commitment Lists*, 232-513440-REPT-001, Revision 0, CNL, May 2021.

¹⁰¹ The NSDF Project Consolidated Commitment Lists captures all the mitigation measures, follow-up program measures and commitments that CNL has committed to in EA documentation.

¹⁰² *Transcript of the June 1 2022 Public Hearing*, pages 86-87.

¹⁰³ *Transcript of the June 1 2022 Public Hearing*, pages 252-254.

89. The Commission asked the Ontario Ministry of Environment, Conservation and Parks (OMECPP) whether it had verified CNL's compliance with O. Reg. 347. A representative from the OMECP said that it is not normal practice for the OMECP to do so. CNSC staff explained that CNL's NSDF WAC document refers to O. Reg. 347 which makes compliance with it a licensing requirement.¹⁰⁴
90. The intervention by W. Turner (CMD 22-H7.64) raised concern that the concentrations of lead and copper in the proposed NSDF waste inventory exceeded the *Canadian Soil Quality Guidelines for the Protection of the Environment and Human Health*.¹⁰⁵ The Commission asked CNL to comment on this issue. A CNL representative said that the *Canadian Soil Quality Guidelines for the Protection of the Environment and Human Health* apply to soils that the public may interact with and do not apply to the NSDF which is a waste facility that will isolate the waste from the public. Regarding the long-term safety implications of non-radiological contaminants, CNSC staff reported in section 3.5 of CMD 22-H7 that peak environmental concentrations of lead in groundwater and uranium in groundwater and swamp soils slightly exceeded their acceptance criteria for some modelled scenarios in the NSDF *Post Closure Safety Assessment* (PCSA).¹⁰⁶ CNSC staff noted that these levels are not likely to pose any risk to human health or the environment as the exceedances are only marginally above background and below the [Canadian Environmental Quality Guidelines](#),¹⁰⁷ and due to the high level of conservatism applied in the models.¹⁰⁸
91. The intervention by Dr. J. R. Walker ([CMD 22-H7.63](#)) asserted that CNL had not included Carbon-14 and Technetium-99 in the NSDF WAC. Asked about this, a CNL representative clarified that Carbon-14 and Technetium-99 were included in the definition of long-lived beta and/or gamma-emitting radionuclides that are listed in Table 4 of the WAC, and that they were also considered in the NSDF PCSA. The CNL representative explained that Carbon-14 and Technetium-99 are present in the NSDF waste stream as contamination. The CNL representative reiterated that long-lived radionuclides can be present in LLW in limited amounts.¹⁰⁹
92. The Commission asked CNL to explain why the Reference Inventory had changed over time. A CNL representative explained that the development of the WAC was an iterative process informed by safety assessments, design capabilities, public feedback, and feedback from regulatory agencies. The CNL

¹⁰⁴ *Transcript of the May 30 2022 Public Hearing*, pages 292-295.

¹⁰⁵ *Canadian Soil Quality Guidelines for the Protection of the Environment and Human Health*, Canadian Council of Ministers of the Environment.

¹⁰⁶ *Near Surface Disposal Facility Post-Closure Safety Assessment, 3rd iteration to the NSDF Project*, 232-509240-ASD-004, Revision 2, CNL, December 2020.

¹⁰⁷ *Canadian Environmental Quality Guidelines*, Canadian Council of Ministers of the Environment, 2018.

¹⁰⁸ *Transcript of the June 3 2022 Public Hearing*, pages 142-145.

¹⁰⁹ *Transcript of the June 1 2022 Public Hearing*, pages 164-167.

representative noted that the WAC had initially included a small amount of intermediate level radioactive waste (ILW), but that CNL had since removed ILW from the WAC based on public and regulatory feedback. Asked if the WAC were still evolving, the CNL representative noted that the WAC were subject to change based on the Commission's licensing decision.¹¹⁰

93. The Commission asked CNL to confirm how the WAC would be implemented on a day-to-day basis. A CNL representative said that CNL would be responsible for implementing the WAC just as it is responsible for enforcing all regulatory requirements that it must comply with. The CNL representative noted that AECL and the CNSC would oversee CNL's implementation of the WAC.¹¹¹
94. The interventions by C. and R. Anderman ([CMD 22-H7.31](#)) and the Concerned Citizens of Renfrew County and Area ([CMD 22-H7.74](#)) raised concerns regarding an error in Figure 18 of [CMD 22-H7.1](#) and slide 23 of [CMD 22-H7.A](#) which both displayed the radioactive decay of the NSDF inventory over time. A CNL representative clarified that the figure included an incorrect reference to an Ontario Geologic Survey Report. CNL provided the correct reference¹¹² in [CMD 22-H7.1D](#) and explained that the data used in the figure was accurate and had come from the correct reference.¹¹³ The correct reference is cited in the *NSDF Safety Case* document which is available to the public on the [CNL website](#).¹¹⁴

Waste Characterization and Segregation

95. CNL reported that all waste anticipated for disposal in the NSDF would undergo waste characterization and segregation to certify compliance with the WAC, in accordance with modern standards and practices. CNL further noted that it had implemented a standardized waste characterization program under its existing waste management program.¹¹⁵
96. CNSC staff submitted that CNL has a waste management program in place that meets regulatory requirements, including requirements for waste characterization. CNSC staff reported that CNL has adequate measures in place to characterize the wastes generated and managed during the different lifecycle phases of the NSDF. In addition, CNSC staff noted that it would continue to monitor and verify CNL's compliance with regulatory requirements through

¹¹⁰ *Transcript of the May 30 2022 Public Hearing*, pages 139-141.

¹¹¹ *Transcript of the May 30 2022 Public Hearing*, page 357.

¹¹² Ontario Geological Survey, *Radioactive Mineral Deposits of the Pembroke-Renfrew Area*, 1981.

¹¹³ *Transcript of the May 31 2022 Public Hearing*, pages 14 and 143-144.

¹¹⁴ *Near Surface Disposal Facility Safety Case*, 232-03610-SAR-001, Revision 2, CNL, 2021.

¹¹⁵ [CMD 22-H7.1](#) section 6.11.

oversight of the NSDF waste management program, with a focus on waste characterization.¹¹⁶

97. Regarding the difference between LLW and ILW, CNSC staff said that LLW and ILW are differentiated based on their requirements for long-term safety and disposal. CNSC staff noted that whether specific waste requires shielding does not necessarily determine if it is classified as LLW or ILW. CNSC staff stated that REGDOC-2.11.1, Volume I, provides definitions for LLW and ILW.¹¹⁷ Regarding the segregation of ILW from LLW, a CNL representative said that it segregates wastes into LLW and ILW as it is generated, based on modern practices. The CNL representative noted that some legacy waste is co-mingled, but that CNL has an existing process in place for legacy waste retrieval, segregation, and characterization to ensure that ILW can be separated from LLW.¹¹⁸
98. Noting that CNL had expressed confidence in the data available for legacy waste produced post-1995, the Commission asked CNL for additional information on its pre-1995 legacy waste. A CNL representative explained that more than half of the LLW currently in storage at the CRL site is contaminated soil; of the other non-soil packaged waste, approximately two thirds are waste produced prior to 1995 and one third is waste produced after 1995. The CNL representative noted that, while the majority of LLW packaged currently in storage was generated pre-1995, CNL considers the process, knowledge, and scoping level characterization available for this inventory to be sufficient to characterize it as LLW and provide a waste volume within a reasonable certainty. The CNL representative reiterated that all waste, including legacy waste, would be characterized according to modern waste characterization practices as it is retrieved to ensure that it meets the WAC and is acceptable for placement into NSDF.¹¹⁹
99. In their intervention, G. Psotka ([CMD 22-H7.80](#)), a CNL waste characterization specialist, provided the Commission with further detail on CNL's waste characterization process. G. Psotka expressed confidence in CNL's approach and informed the Commission that waste characterization can be an iterative process. Asked how legacy waste packages are characterized, G. Psotka said that legacy waste packages are opened, sampled, assessed, and repackaged based on the WAC. The Commission appreciated G. Psotka's insights into CNL's waste characterization process.
100. The Commission asked CNSC staff how it would react if ILW were emplaced in the NSDF. CNSC staff responded that the presence of ILW in the NSDF would be a non-compliance with CNL's licence, and that, under section 29 of

¹¹⁶ CMD 22-H7 section 4.11.

¹¹⁷ *Transcript of the May 30 2022 Public Hearing*, pages 252 and 257.

¹¹⁸ *Transcript of the May 30 2022 Public Hearing*, pages 146-147.

¹¹⁹ *Transcript of the June 3 2022 Public Hearing*, pages 5-7.

the GNSCR, CNL would be required to report the non-compliance and implement corrective actions. CNSC staff also noted that it would enforce the licencing basis, including the requirement that only LLW can be emplaced in the NSDF, through its regular oversight activities.¹²⁰

Documentation of Waste Inventory

101. The Commission asked CNL for more details on how it would document the waste inventory ultimately emplaced in the NSDF. A CNL representative explained that CNL's management system specifies the processes for records management in accordance with CSA N286-12, *Management System Requirements for Nuclear Facilities*.¹²¹ The CNL representative noted that CNL is also subject to requirements for the management of waste records under CSA N292.0:19. The CNL representative explained that CNL's past records management processes have evolved with modern technology and will continue to evolve as technology progresses in the future.¹²² CNSC staff stated that CNL currently manages, records, and reports on its present waste inventory to CNSC staff.¹²³
102. Regarding CNL's reporting of the NSDF radionuclide inventory, in section 5.1 of the WAC, CNL specified the minimum reporting requirements for significant radionuclides and for all other radionuclides with half-lives greater than 5 years.
103. Regarding public transparency of the documented waste inventory, a CNL representative explained that CNL is required to report on the NSDF waste inventory to the CNSC in its annual compliance monitoring report, which is made publicly available.¹²⁴ Noting specific public interest in the disposal of disused sources in the NSDF, a CNL representative said that CNL would include information on the disposal of disused sources in its annual compliance report.¹²⁵
104. The Commission asked for additional information concerning long-term knowledge management and signage for the NSDF site. CNSC staff stated that waste disposal facilities are required to have a framework to support the planning, dissemination, preservation, and transfer of knowledge over the life of the facility. CNSC staff explained that a possible signage method could be concrete markers that would last for several hundred years. CNSC staff noted that it continues to work with the international community to develop innovative long-term signage.¹²⁶

¹²⁰ *Transcript of the June 1 2022 Public Hearing*, page 193.

¹²¹ CSA N286-12, *Management System Requirements for Nuclear Facilities*, CSA Group, 2012 (R2022).

¹²² *Transcript of the May 30 2022 Public Hearing*, pages 216-217.

¹²³ *Transcript of the June 1 2022 Public Hearing*, page 173.

¹²⁴ *Transcript of the May 31 2022 Public Hearing*, page 237 and *Transcript of the June 3 2022 Public Hearing*, page 20.

¹²⁵ *Transcript of the May 30 2022 Public Hearing*, page 155.

¹²⁶ *Transcript of the May 30 2022 Public Hearing*, pages 337-340.

105. Based on the information on the record, the Commission is satisfied that CNL has provided sufficient information for the Commission to assess the NSDF waste management processes and design features, for the purpose of the EA. The Commission finds that:
- CNL provided specific information on the LLW that will be emplaced in the NSDF
 - CNL developed WAC for the NSDF in alignment with IAEA GSG-1, CSA N292.0:19, and REGDOC-2.11.1, Volume I
 - CNL provided information supporting that the NSDF design has adequate capacity for AECL-owned LLW
 - The amounts of long-lived radionuclides acceptable per the NSDF WAC are consistent with the definition of LLW
 - The NSDF WAC require that all disused sources being considered for disposal in the NSDF are evaluated in accordance with IAEA guidelines
 - CNL has a waste management program in place that meets regulatory requirements, including requirements for waste characterization
 - CNSC staff will enforce the requirement that only LLW can be emplaced in the NSDF, through its regulatory oversight activities
 - CNL is subject to requirements for the management of waste records under CSA N292.0:19

3.1.6 *Post-Closure Safety Assessment*

106. The NSDF *Post-Closure Safety Assessment* (PCSA) provides the long-term safety analysis to demonstrate that the NSDF will not pose an unreasonable risk to human health and environment. The PCSA analyzes the normal evolution of the NSDF as well as the impact of potential disruptive event scenarios, worst case “what if” scenarios, and defence-in-depth cases.¹²⁷ The Commission considered whether CNL’s PCSA had provided sufficient information for the Commission to assess, for the purpose of the EA, the long-term safety of the proposed NSDF Project.
107. In section 3.5 of CMD 22-H7, CNSC staff detailed its assessment of the NSDF PCSA. CNSC staff reported that it assessed the NSDF PCSA against the following requirements and guidance:
- [CNSC REGDOC-2.11, Framework for Radioactive Waste Management and Decommissioning in Canada](#)¹²⁸
 - [CNSC REGDOC-2.11.1, Waste Management, Volume III: Assessing the Long Term Safety of Radioactive Waste Management](#)¹²⁹

¹²⁷ CMD 22-H7.1 section 6.11.

¹²⁸ REGDOC-2.11, *Framework for Radioactive Waste Management and Decommissioning in Canada*, CNSC, March 2021, [REGDOC-2.11].

¹²⁹ REGDOC-2.11.1, *Waste Management, Volume III: Safety Case for the Disposal of Radioactive Waste*, Version 2, CNSC, January 2021 [REGDOC-2.11.1, Volume III].

- CSA N292.0:19
- CSA N292.3-14, *Management of low- and intermediate-level radioactive waste*¹³⁰
- CSA N292.6-18, *Long-term management of radioactive waste and irradiated fuel*¹³¹
- IAEA SSR-5
- IAEA SSG-23
- IAEA SSG-29

108. CNSC staff reported that CNL conducted the PCSA for a 10,000-year timeframe and that the timeframe considered the following:

- hazardous lifetime of the contaminants associated with the waste
- design life of engineered barriers
- duration of both active and passive institutional controls
- time to the peak of the impact

CNSC staff assessed each of the above points against their scientific basis and against REGDOC-2.11.1, Volume III. CNSC staff found that CNL's selection of the assessment timeframe was appropriate and aligned with international guidance.

109. In section 4.2 of CMD 22-H7.1, CNL reported that similar structures to the proposed ECM, such as human-made mounds built with earthen materials and limited engineering or construction knowledge, have existed for more than 550 years. Such an example is Monks Mound in Illinois, USA. In section 3.6 of CMD 22-H7, CNSC staff reported that Monks Mound was constructed around 900-955 Common Era (CE) and has comparable dimensions to the proposed ECM. Seismic hazard and annual precipitation at the Monks Mound are also comparable to the proposed NSDF site. The longevity of Monks Mound provides additional confidence in the credibility of the design life of the ECM.

Normal Evolution Scenario

110. The normal evolution scenario describes the expected evolution of the ECM, its surroundings, and its resulting releases over the assessment timeframe. In section 5.5 of CMD 22-H7.1, CNL submitted that it considered the normal evolution scenario for the NSDF in alignment with REGDOC-2.11.1, Volume III. CNL further explained that the normal evolution scenario is based on a reasonable extrapolation of site and facility features, events, and processes. CNL used sensitivity cases to examine the effect of uncertainties on the normal evolution scenario.

¹³⁰ CSA N292.3-14, *Management of low- and intermediate-level radioactive waste*, CSA Group, 2014 [CSA N292.3-14].

¹³¹ CSA N292.6-18, *Long-term management of radioactive waste and irradiated fuel*, CSA Group, 2018 [CSA N292.6-18].

111. In section 3.5 of CMD 22-H7, CNSC staff reported that the normal evolution scenario and associated sensitivity cases provided a reasonable basis for the expected performance of the NSDF during the post-closure period and demonstrated that people and the environment will be protected. CNSC staff noted that the normal evolution scenario used conservative assumptions and considered external events that are expected to occur during the assessment timeframe, such as a design basis earthquake and the effects of climate change.
112. In section 4.1.14 of the *NSDF Safety Case*, CNL reported that the maximum predicted dose during the normal evolution scenario was 0.015 millisieverts per year (mSv/y). In this scenario, the dose would occur 4100 years after closure, to an individual who is conservatively assumed to be living on top of the ECM. This dose is equivalent to 1.5% of the regulatory public dose limit of 1 mSv/y¹³² and less than 1% of the natural background radiation dose in Canada.
113. In section 5.6 of CMD 22-H7.1, CNL submitted information on a sensitivity case which considered the maximum predicted dose to an Indigenous person who is completely reliant on local traditional food sourced from the NSDF Project site and surrounding areas. In section 4.1.8.8 of the *NSDF Safety Case*, CNL reported that the highest estimated radiological dose to this individual would be 0.077 mSv/y, occurring 520 years post-closure. CNL noted that this is over 13 times lower than the regulatory dose limit of 1 mSv/y.
114. In sections 4.1.15.1 of the *NSDF Safety Case*, CNL reported that negligible residual effects are expected from non-radiological contaminants associated with the NSDF Project in the normal evolution scenario. More information on the NSDF's non-radiological inventory is provided in section 3.1.5 of this *Record of Decision*.
115. Several intervenors including the Concerned Citizens of Renfrew County and Area (CMD 22-H7.74) raised concern regarding the future degradation of the ECM and associated releases to the environment. A CNL representative explained that 99% of the ECM's radioactive inventory will have decayed within the facility's design life and that CNL's long-term monitoring has considered the mobility of the remaining 1% of the radioactive inventory once the engineered containment can no longer be credited.¹³³ In section 4.4 of CMD 22-H7.1, CNL submitted that release rates from the facility will be low due to the natural and synthetic barriers coupled with the natural attenuation of the surrounding environment. CNL reported that the low release rate of contaminants will result in negligible environmental concentrations and thus acceptably low radiological consequence to both human health and the environment.

¹³² In accordance with the *Radiation Protection Regulations*, the regulatory dose limit for a person who is not a nuclear energy worker is 1 mSv in one calendar year.

¹³³ *Transcript of the May 31 2022 Public Hearing*, page 73.

116. Regarding the potential for the premature degradation of the HDPE geomembrane, a CNL representative explained that the manufacturers of the geomembrane have identified constituents that need to be restricted to ensure that the geomembrane does not degrade faster than anticipated. The CNL representative noted that those constituents had been included in the NSDF WAC to ensure that the facility and the HDPE geomembrane can meet the required design life.¹³⁴
117. Asked what factor posed the greatest risk to the long-term safety of the NSDF, CNSC staff said that it is internationally recognized that the biggest hazard to an NSDF is long-term erosion. CNSC staff stated that CNL had analyzed erosion as part of its safety case for the NSDF.¹³⁵ In section 4.1.3.2 of the *NSDF Safety Case*, CNL submitted that it considered a balance of processes in the normal evolution scenario, including both erosion and deposition, and found that minimal net erosion was expected to occur at the NSDF. CNL also considered an enhanced erosion case as a disruptive event scenario.

Disruptive Event Scenarios

118. CNL considered disruptive events and worst case “what if” scenarios in the NSDF PCSA. Disruptive event scenarios encompass disruptions of the site, system, or surroundings, including inadvertent human intrusion scenarios. “What if” scenarios utilize a deliberately extreme set of assumptions to show the limitations of the NSDF’s post-closure safety performance. CNL assessed the potential effects of disruptive event scenarios and “what if” scenarios on human health, safety, and the environment.¹³⁶
119. In section 3.5 of CMD 22-H7 and section 3.3.3 of CMD 22-H7.B, CNSC staff provided information on its review of CNL’s disruptive event scenarios for the NSDF Project. CNSC staff found that, following both individual and multiple disruptive events, all acceptance criteria would be met, and both human health and the environment would be protected. CNSC staff also reported that the disruptive events selected by CNL met the regulatory requirements found in REGDOC-2.11.1, Volume III.
120. In section 4.1.14 of the *NSDF Safety Case*, CNL informed the Commission that the maximum predicted dose evaluated for a disruptive event scenario would occur during the enhanced erosion scenario. The enhanced erosion scenario assumes accelerated erosion of the final cover such that wastes are exposed at the ground surface and eroded materials spread downslope. CNL reported that, in this scenario, an on-site resident would receive a maximum dose of 0.14 mSv/y which would occur 7650 years after closure. This dose is below the regulatory public dose limit of 1 mSv/y.

¹³⁴ *Transcript of the May 31 2022 Public Hearing*, pages 112-113.

¹³⁵ *Transcript of the May 31 2022 Public Hearing*, pages 133-134.

¹³⁶ CMD 22-H7.1 section 6.11.1.

121. CNL assessed several worst-case “what if” scenarios in the NSDF PCSA. In section 4.1.14 of the *NSDF Safety Case*, CNL reported that the “what if” scenarios showed that radiological consequences of the NSDF Project remained acceptably low, even under extremely unlikely scenarios. In section 3.5 of CMD 22-H7, CNSC staff submitted that CNL’s use of “what if” scenarios complied with both Canadian and international guidance.
122. In section 3.6 of CMD 22-H7, CNSC staff provided information on CNL’s assessment of “what if” human intrusion scenarios. In a first scenario, the entirety of the NSDF is excavated, mixed and redeposited at 300 years post-closure, and a resident lives, and has a garden, directly on top of the waste, and raises and consumes cattle that graze on the land. In a second scenario, the site resident obtains their water from a shallow well drilled into the contaminant plume downslope of the NSDF. Both scenarios would result in peak dose that remains below the acceptance criterion of 1 mSv/y.
123. The Commission asked for additional information on the ‘permanent bathtub’ “what if” scenario, noting that several intervenors including E. Gigantes ([CMD 22-H7.19](#)) and S. Chatel, Member of Parliament for Pontiac ([CMD 22-H7.127](#)) had raised concerns about the potential impacts of such a scenario. A CNL representative explained that the permanent bathtub scenario assumes that the NSDF cover system degrades faster than the base liner system, creating a situation where water could enter the ECM and eventually saturate the waste and spill over the berm. In this scenario, CNL conservatively assumed that the liner system starts to decay after the NSDF’s 550-year design life. The CNL representative stated that there are no predicted significant adverse effects to the public or the environment as a result of this postulated scenario. The CNL representative noted that the radioactive waste inventory will have substantially decayed by the end of the NSDF’s design life. The CNL representative further explained that, due to the slope of the facility, only 1% of the waste would be saturated in this scenario.
124. Regarding the permanent bathtub scenario, CNL reported that the peak dose from this scenario would be 0.04 mSv/y. This dose would be incurred by an on-site resident approximately 10,000 years after closure of the ECM. This maximum dose is well below the 1 mSv/y regulatory dose limit for a member of the public.¹³⁷
125. In its intervention, the Radiation Safety Institute of Canada ([CMD 22-H7.102](#)) questioned whether a worst-case scenario had been considered in which a significant portion of the NSDF radioactive waste inventory were to be deposited in the Ottawa River. CNSC staff stated that the scenario of waste being deposited into the Ottawa River from the NSDF has zero probability of occurrence due to the topography of the proposed NSDF site and the properties of the waste. CNSC staff said that, even in the improbable event that the NSDF

¹³⁷ *NSDF Safety Case* section 4.1.14.

perimeter berm were to fail, the effects of such an event were encompassed by the “what if” scenario analysis completed by CNL.¹³⁸

Defence in Depth Scenarios

126. Defence-in-depth cases examine the extent to which the ECM depends on key engineered barriers, and what would happen if those barriers were not present. Examples of defence-in-depth cases include the role of the cover and role of the base liner.¹³⁹ In section 4.1.14 of the *NSDF Safety Case*, CNL reported that the defence-in-depth scenarios demonstrated that the dose consequences are less than the 1 mSv/y public dose limit, even if a primary barrier fails.
127. In section 3.5 of CMD 22-H7, CNSC staff submitted that it assessed CNL’s defence-in-depth scenarios and reported that these scenarios show that the safety of the ECM is not reliant on a single barrier to meet the acceptance criteria and ensure long-term safety. CNSC staff verified the relative role of each engineered barrier in ensuring long-term safety as well as the input data used and the conceptual model for each scenario.
128. Based on the information on the record as described above, the Commission notes that CNL has provided sufficient information for the Commission to assess, for the purpose of the EA, the long-term safety of the proposed NSDF Project, including the long-term protection of people and the environment. The Commission finds that:
- CNL completed a post-closure safety assessment for the NSDF Project that meets regulatory requirements and international guidance
 - CNL provided the maximum predicted dose to a member of the public during the normal evolution, disruptive event, and inadvertent human intrusion scenarios
 - CNL considered the radiological consequences of extremely unlikely “what if” scenarios and of defence-in-depth scenarios in which an ECM engineered barrier fails
 - CNL provided information on the long-term effects of non-radiological contaminants within the NSDF waste inventory
 - CNL has provided information to support that the NSDF can fulfill its required design life

3.2 Summary of Views of Hearing Participants

129. The Commission acknowledges the high level of public interest in the NSDF Project and notes the divergence of views expressed in respect of the Project, as summarized below. In order to render the EA and licensing decisions for the NSDF Project, the Commission gave careful consideration to all submissions

¹³⁸ *Transcript of the June 1 2022 Public Hearing*, pages 13-20.

¹³⁹ CMD 22-H7.1 section 6.11.1.

and perspectives received, in accordance with its mandate. The Commission appreciates the efforts and contributions of all hearing participants.

130. Recurring issues in relation to the NSDF Project were on:
- the scope of the EA under CEAA 2012
 - the application of the precautionary principle
 - the adequacy of the NSDF design
 - the NSDF design's compliance with international standards
 - the NSDF waste inventory and waste acceptance criteria
 - the perceived abandonment of waste
 - the transportation of offsite wastes to the CRL site
 - the long-term safety of the NSDF
 - the scope of the site selection process
 - the proximity of the proposed site to the Ottawa River and protection of the Ottawa River
 - the adequacy of proposed mitigation measures
 - the adequacy of engagement with the public and Indigenous Nations and communities
 - the consideration of cumulative effects and of Indigenous Knowledge in the EA
 - the adequacy of the assessment of the NSDF Project on impacts to Aboriginal or treaty rights
 - the completeness of CNL's licence amendment application
 - CNL's qualification to carry out the proposed NSDF Project
131. The issues raised by hearing participants, and their bearing on the deliberations of the Commission, are discussed in the appropriate subject-specific sections of this *Record of Decision*. Issues pertaining to consultation with Indigenous Nations and communities are detailed in section 3.4 of this *Record of Decision*.

3.3 Environmental Assessment Under CEAA 2012

3.3.1 Applicability of the Canadian Environmental Assessment Act, 2012

132. An EA is a planning tool used to ensure that projects are considered in a careful and precautionary manner in order to avoid or mitigate possible environmental effects and to enable decision-makers to take actions that promote sustainable development. An EA is carried out early in the licensing process – before any licence is granted – and considers the entire lifecycle of a project.
133. The CEAA 2012 was the federal EA legislation in force at the time that CNL submitted its licence amendment application. The NSDF Project is subject to

CEAA 2012 as it is considered to be a “designated project” in accordance with paragraph 37(b) of the [Regulations Designating Project Activities](#).¹⁴⁰

“the construction and operation of a new facility for the long-term management or disposal of irradiated fuel or nuclear waste”

The [Impact Assessment Act](#)¹⁴¹ (IAA) came into force on August 28, 2019, repealing CEAA 2012. The IAA contains transitional provisions; under section 182 of the IAA, EAs of designated projects commenced under CEAA 2012 for which the CNSC is the responsible authority and for which no decision statement has been issued are continued under CEAA 2012, as if that legislation had not been repealed. Therefore, the EA for the NSDF Project continued under CEAA 2012.

134. Several intervenors including AOPFN (CMD 22-H7.109) and the Greenspace Alliance of Canada’s Capital ([CMD 22-H7.143](#)) were of the view that an impact assessment under the IAA would have assessed the potential impacts of the NSDF Project more thoroughly than the EA conducted under CEAA 2012. With respect to differences between the IAA and CEAA 2012, CNSC staff explained that the IAA has a wider scope that considers broader socio-economic, positive, and negative effects of a project, whereas CEAA 2012 focuses on the environmental effects of a project. CNSC staff clarified that its assessment of the safety of the NSDF Project with respect to the protection of the public, workers, and the environment in both the short and long term would be the same under either legislation.¹⁴²

3.3.2 *Completeness of the Environmental Assessment*

135. In October 2015, CNL notified CNSC staff of its intention to proceed with an application to construct a radioactive waste disposal facility at the CRL site. In April 2016, CNL followed this notification with an initial regulatory application to initiate the EA process for the NSDF Project. The CNSC issued a [Notice of Commencement of an Environmental Assessment](#)¹⁴³ for the NSDF Project in May 2016. On March 8, 2017, the Commission [decided](#)¹⁴⁴ that the scope of the factors for the EA was to include those mandated in paragraphs 19(1)(a) to (h) of CEAA 2012, with no additional factors requiring consideration. The Commission's decision also required CNL to consider the CNSC [Generic Guidelines for the Preparation of an Environmental Impact Statement – Pursuant to the Canadian Environmental Assessment Act, 2012](#)¹⁴⁵ (the CNSC

¹⁴⁰ SOR/2012-147.

¹⁴¹ S.C. 2019, c. 28, s. 1.

¹⁴² *Transcript of the May 30 2022 Public Hearing*, page 358.

¹⁴³ *Notice of Commencement of an Environmental Assessment*, CNSC, May 5, 2016.

¹⁴⁴ *Decision on the Scope of the Environmental Assessments for three Proposed Projects at Existing Canadian Nuclear Laboratories Facilities*, CNSC, March 8 2017.

¹⁴⁵ *Generic Guidelines for the Preparation of an Environmental Impact Statement – Pursuant to the Canadian Environmental Assessment Act, 2012*, CNSC, May 2016.

Generic Guidelines) when identifying valued components and spatial and temporal boundaries for the EA, as well as to engage Indigenous Nations and communities and the public.

136. CNL submitted its initial Environmental Impact Statement (EIS) in March 2017 and its [final EIS](#)¹⁴⁶ in May 2021. The EIS presents the technical studies and findings related to the EA. CNSC staff submitted its Environmental Assessment Report (EA Report) to the Commission in January 2022. CNSC staff provided its EA Report in Appendix F of CMD 22-H7. A full timeline of the regulatory review process for the NSDF Project, including the EA process, is available on the [CNSC website](#). The EA timeline is also detailed in section 1.2 of CNSC staff's EA Report.
137. In section 1.2 of its EA Report, CNSC staff provided information on its technical review process for CNL's EIS. CNSC staff reported that the EIS was required to satisfy the requirements of CEAA 2012, the CNSC Generic Guidelines, [REGDOC-3.2.2: Indigenous Engagement, Version 1.1](#),¹⁴⁷ and [REGDOC-2.9.1: Environmental Protection: Environmental Principles, Assessments and Protection Measures, Version 1.1](#).¹⁴⁸ CNSC staff submitted that it deemed CNL's final EIS acceptable in [July 2021](#),¹⁴⁹ following CNSC staff review of the EIS and all supporting documents, including CNL's responses to information requests.
138. Regarding the application of a precautionary approach¹⁵⁰ during the EA process, CNL submitted in section 2.1.2.3 of CMD 22-H7.1E that it applied the precautionary principle¹⁵¹ at multiple points throughout the development of the EIS including during project design, development of mitigation measures, assessment of environmental effects, and development of follow-up monitoring program measures. CNL reported that its application of a precautionary approach included:
- thorough identification of potential interactions and changes
 - advancing potential effects for further consideration if unsure
 - assessing multiple scenarios
 - informing identification of follow-up monitoring
 - describing and characterizing uncertainty

¹⁴⁶ *Near Surface Disposal Facility Environmental Impact Statement*, 232-509220-REPT-004, Revision 3, May 2021.

¹⁴⁷ REGDOC-3.2.2: *Indigenous Engagement, Version 1.1*, CNSC, 2019 [REGDOC-3.2.2].

¹⁴⁸ REGDOC-2.9.1: *Environmental Protection: Environmental Principles, Assessments and Protection Measures, Version 1.1*, CNSC, 2017 [REGDOC-2.9.1].

¹⁴⁹ *Outcome of Federal-Provincial Review Team Review of Final Environmental Impact Statement for the Near Surface Disposal Facility Project*, Dr. N. Kwamena to S. Faught, July 2, 2021.

¹⁵⁰ Section 2.5 of the CNSC Generic Guidelines provides that "in documenting the analyses included in the EIS, the proponent will demonstrate that all aspects of the project have been examined and planned in a careful and precautionary manner in order to avoid significant adverse environmental effects."

¹⁵¹ Per the *Canadian Environmental Protection Act, 1999*, the precautionary principle is defined as "the principle that where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

- aiming to overestimate potential effects where uncertainty is present
- applying a conservative approach when information is limited so that effects are typically overestimated

139. The Commission asked CNSC staff to explain how it applied the concept of precaution into its EA assessment. CNSC staff explained that it applied a high level of conservatism during its review of CNL's EIS to ensure that adequate controls were in place to protect both human health and the environment. CNSC staff noted that CNL added further mitigation and follow-up measures to the EIS as the result of CNSC staff's requests for additional information. CNSC staff provided the example that the CNSC's regulatory framework required CNL's safety analysis for the NSDF to include the assessment of "what if" scenarios. These scenarios enabled CNSC staff to apply precaution in its evaluation as they addressed the worst-case failures for the NSDF.¹⁵² "What if" scenarios are discussed further in section 3.1.6 of this *Record of Decision*.
140. Based on its review of CNL's EIS and CNSC staff's EA Report, the Commission determined that the scope of the factors mandated in paragraphs 19(1)(a) to (h) of CEAA 2012 were considered for the NSDF Project. Therefore, the Commission is satisfied that CNL's EIS and CNSC staff's EA Report considered the factors as directed by the Commission in March 2017. The Commission notes that specific information on how each factor was satisfied is provided throughout section 3.3 of this *Record of Decision*.

3.3.3 Other Federal Regulatory Authorizations

141. Pursuant to paragraph 5(2)(a) of CEAA 2012, the EA must take into account changes, other than those referred to in paragraphs 5(1)(a) and (b) of CEAA 2012, that may be caused to the environment and that are directly linked or necessarily incidental to a federal authority's exercise of a power or performance of a duty or function that would permit the carrying out, in whole or in part, of the physical activity, the designated project or the project.
142. The following decisions pursuant to other federal legislation may be required before the NSDF Project can proceed:
- a permit from Environment and Climate Change Canada will be required under section 73 of the *Species at Risk Act*
 - a petroleum storage tank permit(s) may be required under the [Canadian Environment Protection Act 1999](#)¹⁵³
 - a project review by Fisheries and Oceans Canada may be required for the discharge of treated effluent to Perch Lake under section 35 the *Fisheries Act*

¹⁵² *Transcript of the May 30 2022 Public Hearing*, pages 147-151.

¹⁵³ S.C. 1999, c. 33.

- a licence from Natural Resources Canada (NRCan) may be required under section 7 of the [Explosives Act](#)¹⁵⁴

143. The Commission notes that all federal permits, licences and authorizations that may be required for the project to proceed would be issued by the responsible federal authorities only following the Commission's decisions, and therefore the issuance of any of these permits is not central to the Commission's decisions in respect of its mandate.

3.3.4 Purpose of the NSDF Project

144. Per paragraph 19(1)(f) of CEAA 2012, the EA must take into account the purpose of the designated project. In section 1.2 of CMD 22-H7.1, CNL explained that AECL owns CRL and the radioactive waste that is located at the CRL site. As a federal Crown corporation, AECL has a responsibility to manage its radioactive waste to protect the environment and the interests of Canadians in the long-term.

145. In section 1.2 of CMD 22-H7, CNL submitted that the purpose of the NSDF Project is to provide the permanent solution for the disposal of current and future LLW at the CRL site in a manner that is protective of human health and the environment. CNL explained that the practice of continuing to build temporary storage solutions is not consistent with modern waste management principles, and that a permanent disposal solution is required to ensure the continued protection of the environment, including the Ottawa River. CNL also indicated that the proposed NSDF Project would enable the remediation of historically contaminated lands and legacy waste management areas at the CRL site, as well as the decommissioning of outdated infrastructure to facilitate the ongoing CRL site revitalization. In section 4 of CMD 22-H7.1, CNL reported that the NSDF would increase protection of the Ottawa River and the environment.

146. The Commission concludes that the requirements of CEAA 2012 have been satisfied with respect to the purpose of the NSDF Project. The Commission is satisfied that CNL provided sufficient rationale to substantiate the purpose of and need for the NSDF Project. The Commission acknowledges that AECL is responsible for the management of its LLW and that the NSDF Project offers a long-term solution for this waste, while enhancing the protection of the environment by enabling the remediation of historically contaminated lands and legacy waste management areas at the CRL site.

¹⁵⁴ R.S.C., 1985, c E-17.

3.3.5 *Alternative Means of Carrying Out the Project*

147. Per paragraph 19(1)(g) of CEAA 2012, the EA must take into account alternative means of carrying out the designated project that are technically and economically feasible, and the environmental effects of any such alternative means. The CNSC Generic Guidelines and CNSC REGDOC-2.9.1 outline the requirements for, and approach to, conducting an alternative means assessment for a CNSC-led designated project under CEAA 2012.
148. In section 2.5 of the EIS, CNL reported that it considered alternative facility designs and locations as well as alternative effluent discharge locations and treatment options. In section 4.2 of its EA Report, CNSC staff submitted that CNL adequately assessed alternative means of carrying out the NSDF Project in accordance with the CNSC Generic Guidelines and REGDOC-2.9.1 and for the purposes of assessing the environmental effects of the NSDF Project under CEAA 2012.
149. In its intervention, CELA (CMD 22-H7.104) asserted that CNL's consideration of alternative means did not satisfy paragraph 19(1)(g) of CEAA 2012 because it failed to undertake a transparent comparison of all alternatives. In section 4.2 of its EA Report, CNSC staff submitted that CNL, in alignment with CEAA 2012, had clearly outlined its alternative means assessment approach, identified clear technical and economic feasibility criteria, and sufficiently documented the rationale for its preferred alternative means. CNSC staff further noted that CNL's alternative means assessment had considered environmental effects and feedback from the public and Indigenous Nations and communities on the selected alternatives means of carrying out the proposed NSDF Project.

3.3.5.1 Site Selection

150. In section 2.5.4 of the EIS, CNL submitted that its preferred site for its LLW disposal facility was "a technically feasible site on lands currently under AECL ownership and CNL control." CNL considered facility locations onsite at CRL or offsite at either Whiteshell Laboratories in Pinawa, Manitoba or the Nuclear Power Demonstration site in Rolphton, Ontario. CNL determined that the CRL site was the most technically and economically feasible location as there are no current plans for closure of the CRL site and it is the location of 90% of the waste to be managed by the NSDF, reducing risks and costs associated with waste transportation.
151. In section 2.5.5 of the EIS, CNL reported that it assessed 15 potential locations for the proposed NSDF within the CRL site. CNL selected mandatory criteria to be satisfied by the potential locations and exclusion criteria to remove locations constrained by NSDF Project requirements. Based on this process, CNL identified two candidate locations. CNL submitted that it determined the East

Mattawa Road site to be the economically and environmentally favourable location for the NSDF Project due to its proximity to existing waste management areas and its slower groundwater transit time.

152. In section 3.1 of CMD 22-H7, CNSC staff submitted that it assessed CNL's site selection and evaluation process against applicable standards including Appendix I of the IAEA SSG-29. CNSC staff reported that CNL used structured criteria and methodology in alignment with applicable standards when conducting the NSDF site selection assessment. CNSC staff also noted that CNL solicited feedback from the public, stakeholders, and Indigenous Nations and communities to identify considerations relevant to the siting decision.
153. Noting that many intervenors, including the Sierra Club Canada Foundation (CMD 22-H7.41) and the Concerned Citizens of Renfrew County and Area (CMD 22-H7.74), questioned why only AECL-owned properties were considered in the site selection process, the Commission asked for additional information on this approach. A CNL representative stated that CNL only considered sites owned by AECL and operated by CNL under an existing CNSC licence as they are already licensed and the characteristics of the sites are well understood. A CNL representative noted that its approach is consistent with international guidance and the requirements of CEAA 2012.¹⁵⁵ Asked about AECL's influence in the site selection process, an AECL representative said that it did not constrain CNL to consider only AECL-owned property. A CNL representative confirmed to the Commission that CNL would have expanded its approach had a suitable site on AECL-owned property not been identified.¹⁵⁶
154. The Commission asked CNL to respond to the Sierra Club Canada Foundation's concern regarding whether CNL had completed the first two siting stages outlined in Appendix I of IAEA SSG-29. A CNL representative explained that CNL completed both stages mentioned by the intervenor: a conceptual planning stage and an area survey stage, leading to the selection of one or more sites for detailed consideration. The CNL representative explained that it began the conceptual and planning stage in 2015 when the decision to revitalize the CRL site required a process for the disposal of LLW. This step involved planning for the siting of the disposal solution. The CNL representative further explained that CNL then conducted the area survey stage which led to the consideration of 15 locations on the CRL site, two of which were selected for more detailed consideration.¹⁵⁷

¹⁵⁵ *Transcript of the May 30 2022 Public Hearing*, page 80.

¹⁵⁶ *Transcript of the June 3 2022 Public Hearing*, pages 65-66.

¹⁵⁷ *Transcript of the May 30 2022 Public Hearing*, pages 246-248.

155. Many intervenors, including Indigenous Nations and communities, raised concerns regarding the proximity of the proposed NSDF site to the Ottawa River. In section 2.2.5 of the EIS, CNL submitted that the proposed East Mattawa Road location is on a bedrock ridge that slopes and directs water away from the Ottawa River. CNL reported that, though the proposed East Mattawa Road site is 1.1 km from the Ottawa River, groundwater passing below the site discharges to Perch Creek before draining to the Ottawa River, providing a flowpath distance of about 2.6 km. CNL further submitted that the average groundwater transit time to the nearest surface water body is approximately 7 years, compared to approximately 2 years for the alternate site. CNSC staff submitted, in section 4.2 of its EA Report, that it reviewed CNL's site selection assessment and determined that the East Mattawa Road site is an acceptable and safe location for the proposed NSDF.
156. Further on the proximity of the NSDF to the Ottawa River, a CNL representative stated that the distance to surface water is not critical to the safety performance of the NSDF. The CNL representative stated that the NSDF design contains modern engineering features to safely contain and isolate LLW, which means the proposed project will enhance the protection of the Ottawa River.¹⁵⁸
157. The intervention by W. Turner (CMD 22-H7.64) raised concern regarding the weighting factors that CNL applied to its site comparison criteria, specifically regarding health and safety. In section 4.2.2 of the *NSDF Site Selection Report*,¹⁵⁹ CNL submitted that it assigned each comparison criteria category a weighting factor based on its importance or relevance to the siting of the NSDF. The Commission sought clarification from CNL on how it selected the weighing factors. A CNL representative explained that CNL assigned the health and safety category a weighting of 20%, however, health and safety was a consideration in all criteria categories. Another CNL representative explained that CNL verified the validity of its site comparison assessment by varying the weighting factors in a series of sensitivity analyses.¹⁶⁰
158. Multiple intervenors, including the Sierra Club Canada Foundation (CMD 22-H7.41 and D. Noble (CMD 22-H7.119), raised concerns about the proposed NSDF site being located on fractured bedrock. A representative from OMECP stated that, although fractured bedrock may allow releases to enter the subsurface, any releases from the proposed NSDF would be contained within the Perch Lake Watershed and would not pose offsite risks or risks to groundwater resources.¹⁶¹ A CNL representative also explained that highly fractured bedrock is advantageous from a long-term modelling perspective as its

¹⁵⁸ *Transcript of the May 30 2022 Public Hearing*, page 84.

¹⁵⁹ *Near Surface Disposal Facility Site Selection Report*, 232-10300-TN-001, Revision 2, CNL October 2016.

¹⁶⁰ *Transcript of the May 30 2022 Public Hearing*, pages 286-289.

¹⁶¹ *Transcript of the May 30 2022 Public Hearing*, pages 239-241.

behaviour is predictable.¹⁶² In section 6.4.2 of its EA Report, CNSC staff submitted that it expects CNL to verify its predicted bedrock fracture characteristics during the construction phase of the NSDF Project as part of a geoscience verification plan.

159. The Commission asked Environment and Climate Change Canada (ECCC) to provide its views on the siting of the NSDF Project. An ECCC representative said that, based on its review of the EIS and participation in technical meetings with CNSC staff and CNL, ECCC found the proposed siting of the NSDF to be acceptable. The ECCC representative noted that the proposed site would minimize transportation risks and is already well-characterized with years of monitoring data. The ECCC representative acknowledged concerns from intervenors related to the proximity of the proposed site to the Ottawa River but noted that the legacy waste is already located at the CRL site and that the NSDF Project would support the remediation of existing contamination.¹⁶³
160. In its intervention, the Old Fort William Cottagers' Association (CMD 22-H7.36) asserted that landfills in Quebec are not permitted to be located as close to the Ottawa River as the proposed NSDF site. The Commission asked CNSC staff for additional information on landfill siting restrictions in Quebec and Ontario. CNSC staff explained that Quebec provincial regulations require that landfills be sited at least 1 km from any surface water or groundwater collection facility if it is used for the production of bottled water.¹⁶⁴ Regarding Ontario regulations, CNSC staff stated that there are no specific requirements for the distance of a landfill site in Ontario from surface water bodies; however, the Ontario regulations specify that landfilling operations must not have any unacceptable impact outside the landfill site, where 'unacceptable impact' means interference with existing or potential reasonable uses of land, groundwater, or surface water. CNSC staff added that section 6(2)(c)xi of [Ontario Regulations Landfilling sites](#)¹⁶⁵ requires that an assessment of the potential impacts on surface water features that may be caused by the site or operation at the site be provided in a written report.¹⁶⁶ The Commission is satisfied that the proposed NSDF site is in compliance with Ontario and Quebec regulations.

3.3.5.2 Alternative Means

161. In section 2.5 of the EIS, CNL considered alternative facility types, facility designs, leachate management, and effluent discharge options. CNL also considered alternatives for the final grade of the facility. To evaluate alternative means of carrying out the NSDF Project, CNL identified technically and

¹⁶² *Transcript of the May 30 2022 Public Hearing*, page 234.

¹⁶³ *Transcript of the May 30 2022 Public Hearing*, pages 237-239.

¹⁶⁴ *Regulation Respecting the Landfilling and Incineration of Residual Materials*, chapter Q-2, r. 19, clause 13.

¹⁶⁵ *Landfilling Sites*, O. Reg. 232/98.

¹⁶⁶ *Transcript of the May 31 2022 Public Hearing*, pages 297-299.

economically feasible alternatives, identified the impacts of those alternatives on valued components, and completed a comparative evaluation to determine the most favourable alternative. Valued components are discussed further in section 3.3.7 of this *Record of Decision*. CNL determined an NSDF consisting of an ECM and support facilities to be the most favourable facility design. For leachate treatment, CNL determined construction of a new WWTP to be the only technically feasible option. Regarding effluent discharge, CNL found discharge of effluent to the ground via an exfiltration gallery,¹⁶⁷ combined with an additional discharge option to Perch Lake, to be the most favourable option. CNL then selected a lakebed diffuser as the preferred option for discharge to Perch Lake.

162. In section 2.5.2 of the EIS, CNL assessed four different facility types:

- ongoing waste storage
- NSDF
- geologic waste management facility (GWMF)
- VLLW disposal facility

CNL reported that only the NSDF and GWMF options were found to be technically and economically feasible. CNL submitted that the NSDF was identified as the favourable alternative as the nature of LLW does not warrant the need for a GWMF.

163. In section 2.5.3 of the EIS, CNL considered three facility designs for the NSDF:

- ECM
- shallow cavern
- above-ground concrete vault

CNL reported that only the ECM and concrete vault options were found to be technically and economically feasible. CNL submitted that the ECM was identified as the favourable alternative as the concrete vault was expected to be more expensive and more vulnerable to seismic events.

164. In section 2.5.6 of the EIS, CNL assessed three different leachate management options:

- use of the existing waste treatment centre
- building a new dedicated NSDF WWTP
- no discharge option (leachate evaporation ponds)

CNL reported that only building a new WWTP was found to be both technically and economically feasible and was therefore selected as the preferred option.

¹⁶⁷ An exfiltration gallery is a series of underground trenches of clear stones that encourage dispersal of treated effluent into the groundwater, similar to a septic system.

165. In section 2.5.7 of the EIS, CNL assessed seven different effluent discharge options:

- Discharge to the ground
- Discharge to surface water (Perch Creek)
- Discharge to surface water (Perch Lake)
- Discharge to surface water (Ottawa River)
- Co-discharge with the NSDF Project stormwater system and discharge to the ground
- Discharge to the ground and discharge to surface water
- No liquid discharge (i.e., thermal evaporator)

CNL determined that only discharge to Perch Lake, discharge to the Ottawa River, and combined discharge to the ground and to surface water were both technically and economically feasible. CNL submitted that it found the combined discharge to the ground via an exfiltration gallery and to Perch Lake via a pipeline to be the favourable alternative. The combination of discharge methods would provide an additional discharge option when there is insufficient infiltration capacity at the exfiltration gallery. Discharge to ground provides the added benefits of additional retention time for radioactive decay (e.g., tritium) and enabling control of recharging water to the wetlands.

166. In section 2.5.8 of the EIS, CNL assessed five different discharge types for the release of treated effluent to Perch Lake:

- Discharge by surface spray
- Piped outfall (submerged outlet)
- Piped outfall (above-water discharge)
- Submerged diffuser (alignment along lakebed)
- Submerged diffuser (diffuser suspended in water column)

CNL determined that only the piped outfall with a submerged outlet and the submerged lakebed diffuser were both technically and economically feasible. CNL reported that both alternatives would disturb lakebed sediment during construction and operation, which would require mitigation. CNL noted, however, that the submerged diffuser is expected to limit these effects during operation and require less maintenance. As such, CNL submitted that the submerged lakebed diffuser was identified as the favourable alternative.

167. In section 2.5.8 of the EIS, CNL assessed three different facility grades:

- ECM below existing grade
- ECM above existing grade
- Mid-range grade

CNL found that only the mid-range grade was both technically and economically feasible and was therefore selected as the preferred alternative.

CNL reported that the mid-range grade option accommodates all NSDF design requirements including the necessary storage capacity.

168. In section 4.2 of its EA Report, CNSC staff provided its rationale for determining that CNL adequately assessed alternative means of carrying out the NSDF Project in accordance with the CNSC Generic Guidelines, REGDOC-2.9.1, and for the purposes of assessing the environmental effects of the NSDF Project under CEAA 2012. CNSC staff noted that the analysis of alternative facility types is not a required factor to be considered under CEAA 2012 and, as such, CNSC staff did not review CNL’s assessment of alternative facility types.
169. Intervenors including the Sierra Club Canada Foundation (CMD 22-H7.41), K. Eisner ([CMD 22-H7.83](#)), CELA (CMD 22-H7.104), and the Canadian Coalition for Nuclear Responsibility ([CMD 22-H7.144](#)) raised concerns that CNL prioritized cost in its assessment of alternative means. The Commission asked CNL to comment on the cost of its proposed solution. A CNL representative responded that, while the proposed NSDF design was the least expensive feasible alternative, the cost did not impact the safety or appropriateness of the design.¹⁶⁸ CNSC staff also clarified that it does not consider cost when assessing an application, rather, it considers the safety of the project from the perspective of protection of persons and the environment.¹⁶⁹
170. In its intervention, the City of Ottawa (CMD 22-H7.16) raised a concern regarding the risk comparison methodology used in CNL’s assessment of alternative facility types. Asked for further information on the risk ranking of design alternatives, CNSC staff clarified that CEAA 2012 does not require a specific risk ranking methodology for design alternatives. CNSC staff added that it found the evaluation criteria used by CNL in its alternative means assessment to be robust.¹⁷⁰
171. In relation to the intervention by J. Fox Lee ([CMD 22-H7.142](#)), the Commission asked for clarification regarding CNL’s consideration of the “rolling stewardship” alternative. A CNL representative stated that CNL considered rolling stewardship in the EIS under the title of “ongoing waste storage”, which would involve the continued use of interim storage for LLW at the CRL site. CNL determined ongoing waste storage to not be technically feasible as it would be unlikely to satisfy the regulatory requirements for long-term waste management as specified in REGDOC-2.11.1, Volume III.¹⁷¹ CNSC staff stated that the CNSC waste management regulatory framework considers the impact of waste on future generations and that ongoing storage is not a permanent waste management solution.¹⁷²

¹⁶⁸ *Transcript of the May 31 2022 Public Hearing*, page 220.

¹⁶⁹ *Transcript of the May 30 2022 Public Hearing*, page 74.

¹⁷⁰ *Transcript of the May 30 2022 Public Hearing*, pages 72-74.

¹⁷¹ *Transcript of the June 1 2022 Public Hearing*, pages 359-360.

¹⁷² *Transcript of the June 1 2022 Public Hearing*, pages 326-327.

172. The Commission asked CNL for more information on why an ECM design was selected over a concrete vault design. A CNL representative explained that CNL's alternative means assessment found that an above-ground concrete vault design was technically and economically feasible, however, it also had disadvantageous environmental effects when compared to the ECM design. The CNL representative said that an above-ground concrete vault would require up to twice the footprint as an ECM, result in increased greenhouse gas emissions from concrete production, and would be more susceptible to damage from seismic activity. As such, CNL concluded that an ECM was the most favourable design.¹⁷³
173. In section 3.9 of CMD 22-H7.1, CNL reported that the design of the NSDF Project incorporated operating experiences from similar facilities, including international facilities, as well as CNL's Port Hope Long-Term Waste Management Facility and Port Granby Long-Term Waste Management Facility. CNL provided a list of similar near surface facilities in Canada and the United States in Table 4 of CMD 22-H7.1. Asked for specific lessons learned from these similar facilities, a CNL representative provided examples including water management solutions and the need for dust mitigation measures.¹⁷⁴

3.3.5.3 Conclusions on Alternative Means of Carrying Out the Project

174. The Commission is satisfied that CNL conducted a site selection and evaluation process in accordance with applicable standards, including IAEA SSG-29. The Commission is satisfied that the East Mattawa Road site is an acceptable location for the NSDF. The Commission's consideration of the potential environmental effects of the NSDF on the Ottawa River is discussed in sections 3.3.6.2 and 3.3.6.3 of this *Record of Decision*.
175. The Commission concludes that CNL effectively assessed alternative means of carrying out the NSDF Project in accordance with the CNSC Generic Guidelines, REGDOC-2.9.1, and for the purposes of assessing the environmental effects of the NSDF Project under CEAA 2012. The Commission notes that CNL assessed the technical and economic feasibility of each alternative. The Commission is satisfied that an ECM with support facilities is an acceptable design for the NSDF.

3.3.6 Predicted Effects of the NSDF Project on the Environment

176. In accordance with paragraphs 5(1)(b) and 19(1)(a) and (b) of CEAA 2012, the EA must consider the environmental effects of the designated project. In section 5.0 of the EIS, CNL provided information on its environmental effects assessment for the NSDF Project. In section 6.0 of its EA Report, CNSC staff

¹⁷³ Transcript of the May 30 2022 Public Hearing, pages 231-233.

¹⁷⁴ Transcript of the May 31 2022 Public Hearing, pages 246-247.

provided information on its review of CNL's environmental effects assessment in the EIS. CNSC staff reported that predicted changes to the environment caused by the NSDF Project are assessed in terms of effects to the atmospheric environment, surface water environment, geological and hydrogeological environment, and terrestrial environment. These sub-divisions of the environment are referred to as environmental compartments. CNSC staff explained that changes to the environment are generally understood as effects to non-living components that can then lead to effects to identified valued components.¹⁷⁵ Effects to valued components are discussed in section 3.3.7 of this *Record of Decision*.

177. In accordance with paragraph 19(1)(d) of CEEA 2012, the EA must consider mitigation measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the designated project. In the EIS, CNL proposed mitigation measures relevant to each identified environmental compartment and valued component. CNL's commitments to implement these measures are captured in the *NSDF Project Consolidated Commitment Lists*. Relevant mitigation measures are discussed throughout the following subsections of section 3.3 of this *Record of Decision*. In section 12.0 of its EA Report, CNSC staff reported its assessment that the NSDF Project is unlikely to result in significant adverse environmental effects, considering the implementation of mitigation and follow-up monitoring program measures.

3.3.6.1 Atmospheric Environment

178. In section 5.2 of the EIS, CNL submitted that activities during the construction and operations phases of the NSDF Project had the potential to release air emissions that could contribute to changes in air quality and, incrementally, to climate change. CNL reported that it would implement mitigation measures including the following:

- implementing a dust management plan
- using water spraying or misting techniques to control dust
- implementing CNL's existing procedure for management and monitoring of emissions, which includes operational control monitoring and verification monitoring
- limiting idling of vehicles and equipment on site
- maintaining on-site vehicles and equipment engines in good working order

¹⁷⁵ Valued components are features that may be affected by a project and that have been identified to be of concern by CNL, government agencies, Indigenous Nations and communities, or the public.

CNL submitted that, with mitigation measures in place, residual effects¹⁷⁶ from the NSDF Project on air quality and greenhouse gas emissions were not significant. CNL further reported that it would conduct air quality monitoring to verify EA predictions related to the atmospheric environment.

179. In section 6.1 of its EA Report, CNSC staff provided information on its review of CNL's air quality assessment. CNSC staff found that, considering CNL's proposed mitigation and follow-up monitoring measures, the NSDF Project is not predicted to cause significant changes to air quality or the atmospheric environment. CNSC staff reported that CNL currently conducts monitoring of air quality, including airborne radiological particulates, at the CRL site under CNL's effluent verification monitoring program, which is compliant with CSA N288.5-11 *Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills*.¹⁷⁷ CNSC staff submitted that CNL will integrate dust monitoring into its effluent verification monitoring program in order to ensure that the program is sufficient to cover NSDF Project activities.
180. KFN ([CMD 22-H7.111](#), [CMD 22-H7.111A](#)) and ABL ([CMD 22-H7.139](#), [CMD 22-H7.139A](#)) expressed concerns regarding the production of greenhouse gases during the construction and operation of the NSDF Project. In section 5.2.2 of the EIS, CNL submitted that greenhouse gas emissions from the NSDF Project were estimated to increase total provincial greenhouse gas emissions by less than 0.02% and increase total national greenhouse gas emissions by 0.005%. In section 7.5 of its EA Report, CNSC staff reported that it assessed CNL's greenhouse gas assessment in accordance with the CNSC Generic Guidelines and found the assessment to be adequate. Considering the implementation of mitigation measures and follow-up monitoring, CNSC staff reported that greenhouse gas emissions from the NSDF Project are not likely to result in significant adverse environmental effects.
181. Based on the information on the record as described above, the Commission concludes that the NSDF Project will not cause significant adverse effects on the atmospheric environment, provided that the committed mitigation measures are implemented. The Commission finds that:
- CNL has proposed mitigation measures that are sufficient to prevent significant adverse effects on the atmospheric environment, including implementation of a dust management plan
 - CNL reported that it will conduct air quality monitoring to verify EA predictions related to the atmospheric environment

¹⁷⁶ Residual effects are environmental effects predicted to remain after the application of mitigation outlined in an environmental assessment.

¹⁷⁷ CSA N288.5-11, *Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills*, CSA Group, 2011 (R2016).

- CNL has an existing effluent verification monitoring program for the CRL site that is compliant with CSA N288.5-11 and will be updated to integrate dust monitoring
- greenhouse gas emissions from the NSDF Project are not likely to result in significant adverse environmental effects as the NSDF Project would increase total provincial greenhouse gas emissions by less than 0.02% and increase total national greenhouse gas emissions by 0.005%.

3.3.6.2 Surface Water Environment

182. CNL submitted, in sections 5.4.1 and 5.4.2 of the EIS, that NSDF Project activities have the potential to change surface water quality due the discharge of treated effluent to the environment as well as leakage from the ECM during the post-closure phase from liner and final cover degradation. CNL submitted that NSDF Project activities also have the potential to change local hydrology due to the physical alteration of the site's drainage patterns and the discharge of treated effluent.

183. CNL reported that it would minimize impacts to surface water via mitigation measures including the following:

- implementing a surface water management plan for the NSDF Project that includes appropriate management techniques to collect and direct surface drainage, and erosion and sediment control practices
- sampling treated effluent to ensure that it meets discharge targets before release
- constructing the final cover system to mitigate water ingress and minimize leachate generation

With mitigation measures in place, CNL submitted that changes in surface water quality and hydrology are not expected to result in significant adverse effects to valued components such as aquatic biodiversity or human health. CNL further reported that, to verify EA predictions related to surface water, CNL will conduct monitoring activities including stormwater management pond monitoring, surface water quality monitoring, and water-level monitoring of the wetland system.

184. In section 6.2 of its EA Report, CNSC staff recorded its finding that CNL had conducted a comprehensive analysis of potential effects to the surface water environment. CNSC staff reported that, with the implementation of the proposed mitigation and follow-up measures, the identified changes to surface water quality and local hydrology were expected to be negligible.

185. Several intervenors including Indigenous Nations and communities raised concern regarding impacts to the Ottawa River as a drinking water source, particularly due to the proximity of the NSDF site to the Ottawa River. A CNL

representative submitted that drinking water quality downstream of the proposed NSDF site is not at risk and that any water that contacts the waste stored in the NSDF will be treated and sampled to ensure that it meets discharge targets before release.¹⁷⁸ CNL submitted, in section 4.3.3 of CMD 22-H7.1, that the WWTP effluent discharge targets were derived using Health Canada's [*Guidelines for Drinking Water Quality*](#).¹⁷⁹ CNL considered the use of these targets to be conservative as there is no public access to the Perch Creek and Perch Lake Watershed where WWTP effluent discharges will occur. In section 6.2 of its EA Report, CNSC staff reported that it reviewed CNL's analysis and verified that contaminants in effluent from the NSDF would be attenuated to negligible levels and would not have a detectable impact on water quality by the time effluent reached the Ottawa River.

186. The Commission asked for more information on predicted tritium releases from the NSDF and its potential impact to surface water quality. A CNL representative stated that tritium emissions would be controlled by limiting the amount of tritium being placed in the NSDF, and that tritium in NSDF effluent is predicted to be 140,000 Becquerels/litre (Bq/L) at the point of discharge in the Perch Lake basin. The CNL representative explained that tritium concentrations will then dilute to well below the Canada drinking water quality guideline of 7,000 Bq/L at Perch Creek. CNL predicts a negligible impact to tritium concentrations in the Ottawa River near the CRL site, which are currently 2-3 Bq/L.¹⁸⁰
187. The Commission sought more information on the potential human health impacts related to the consumption of animals that drink water from Perch Lake. A CNL representative noted that Perch Lake is not publicly accessible and explained that CNL samples game animals hunted in the vicinity of the CRL site to measure dose impacts to animals. The CNL representative confirmed that CNL has not measured any dose levels that would be of significant concern to the health of the animals. CNSC staff reported that CNL is managing legacy contamination in Perch Lake under its existing environmental protection program for the CRL site, and added that the contribution of NSDF effluent to legacy contamination in Perch Lake and Perch Creek is predicted to be negligible.¹⁸¹
188. Based on the information on the record as described above, the Commission concludes that the NSDF Project will not cause significant adverse effects on the surface water environment, provided that the committed mitigation measures are implemented. The Commission finds that:

¹⁷⁸ *Transcript of the May 30 2022 Public Hearing*, page 84.

¹⁷⁹ *Guidelines for Canadian Drinking Water Quality—Summary Table*, Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, 2019.

¹⁸⁰ *Transcript of the May 30 2022 Public Hearing*, pages 75-77 and 364.

¹⁸¹ *Transcript of the May 30 2022 Public Hearing*, pages 360-361.

- CNL has proposed sufficient mitigation measures to prevent significant adverse effects on the surface water environment, including implementation of a surface water management plan
- the NSDF WWTP effluent discharge targets were derived using Health Canada's *Guidelines for Drinking Water Quality*
- effluent from the NSDF WWTP will be treated and sampled to ensure that it meets discharge targets before release
- effluent from the NSDF WWTP is expected to have negligible impact on tritium concentrations in the Ottawa River near the CRL site, which are currently 2-3 Bq/L
- the contribution of NSDF effluent to legacy contamination in Perch Lake and Perch Creek is predicted to be negligible and to have negligible effect on game animals

3.3.6.3 Geological and Hydrogeological Environment

189. In section 5.3 of the EIS, CNL provided information on its assessment of the potential effects of the NSDF Project on the geological and hydrogeological environment. CNL reported that, without mitigation, NSDF Project activities have the potential to physically alter groundwater quality, levels, and flows. Regarding groundwater quality, CNL submitted that it would implement mitigation measures including the following:

- installing redundant liner systems to isolate the waste from the surrounding environment
- implementing a surface water management plan for the NSDF Project that includes appropriate management techniques to collect and direct surface drainage, and erosion and sediment control practices
- sampling treated effluent to ensure that it meets discharge targets before release

Regarding groundwater levels and flows, CNL submitted that it would implement mitigation measures including the following:

- limiting the blasting of bedrock to the footprint of the ECM to minimize physical changes to the bedrock
- discharging treated effluent primarily to the exfiltration gallery area, to reduce water loss from the hydrogeological system
- discharging treated effluent to Perch Lake via a pipeline, to reduce high water table conditions in the area of the exfiltration gallery

Considering the proposed mitigation measures, CNL reported that changes in geology or groundwater quality and quantity from NSDF Project activities are not expected to result in significant adverse effects to other valued components. CNL further reported that it would conduct groundwater monitoring, groundwater quality sampling, and groundwater elevation measurements to

verify EA predictions related to the geological and hydrogeological environment.

190. In section 6.4 of its EA Report, CNSC staff provided information on its review of CNL's geology and hydrogeology assessment. CNSC staff found CNL's assessment and modelling to be adequate and also found the NSDF design features and mitigation measures proposed by CNL to reduce residual effects on groundwater quantity and quality to be adequate. CNSC staff reported that CNL has an existing groundwater monitoring program at the CRL site that meets the requirements of N288.7-15 *Groundwater Protection Programs at Class I nuclear facilities and uranium mines and mills*.¹⁸² CNSC staff noted that CNL's groundwater monitoring for the NSDF Project will be integrated into the existing program. Considering the implementation of mitigation and follow-up monitoring program measures, CNSC staff reported that changes to the geological and hydrogeological environment are expected to be negligible.
191. The Commission asked CNL how it would mitigate the consequences of a leak of untreated leachate from the NSDF. A CNL representative noted that leakage from the ECM to groundwater is unlikely as the ECM design includes a multi-layer base liner and leachate detection and collection systems. A CNL representative stated that CNL would monitor groundwater in the vicinity of the ECM via a series of monitoring wells as part of EA follow-up monitoring. The CNL representative explained that, though the NSDF site is located 1.1 km from the Ottawa River, the average groundwater transit time to the nearest surface water body from the site is approximately 7 years. As such, CNL would have significant time to identify the issue and determine a solution. The CNL representative noted that CNL has experience managing legacy groundwater contamination plumes at the CRL site and has successfully used measures such as groundwater recirculation and purification systems to mitigate the movement of contaminants in those cases.¹⁸³
192. Several intervenors including the Communauté métropolitaine de Montréal (CMD 22-H7.130) raised concerns regarding cumulative effects of the NSDF Project and existing groundwater contamination at the CRL site. A CNL representative noted that it considered existing contamination within the environment as baseline environmental data in the EIS; CNL then assessed the incremental effects of the NSDF on top of the baseline.¹⁸⁴ In section 5.3 of the EIS, CNL reported that changes in groundwater quality as a result of the NSDF Project are not expected to result in significant adverse effects to other valued components such as the aquatic environment and human health.

¹⁸² CSA N288.7-15, *Groundwater protection programs at Class I nuclear facilities and uranium mines and mills*, CSA Group, 2015.

¹⁸³ *Transcript of the February 22 2022 Public Hearing*, pages 114-117.

¹⁸⁴ *Transcript of the May 30 2022 Public Hearing*, page 175.

193. Several intervenors including the City of Ottawa (CMD 22-H7.16) and the Concerned Citizens of Renfrew County and Area (CMD 22-H7.74) raised concerns that CNL's plan to release treated effluent to the ground via an exfiltration gallery would adversely impact groundwater quality. The Commission asked for further explanation of the rationale for and impacts of this proposed effluent discharge approach. A CNL representative clarified that changes in groundwater quality could be caused by discharge of treated wastewater to the ground; however, these effects are expected to be negligible as treated effluent will be sampled to ensure that it meets discharge targets before being released to the environment.¹⁸⁵ In section 4.3.2 of CMD 22-H7.1, CNL reported that discharge of treated effluent to groundwater is beneficial as it provides additional retention time for further radioactive decay before discharge to Perch Lake and Perch Creek.

194. Based on the information on the record as described above, the Commission concludes that the NSDF Project will not cause significant adverse effects on the geological and hydrogeological environment, provided that the committed mitigation measures are implemented. The Commission finds that:

- CNL has proposed mitigation measures that are sufficient to prevent significant adverse effects on the geological and hydrogeological environment, including installing redundant liner systems to isolate waste from the surrounding environment
- CNL completed an adequate assessment of potential impacts to the geological and hydrogeological environment which considered existing groundwater contamination
- impacts to groundwater quality are reasonably predicted to be negligible, given that CNL will sample treated effluent from the NSDF WWTP to ensure that it meets discharge targets prior to release
- the average groundwater transit time from the NSDF site to the nearest surface water body is approximately 7 years, providing time for CNL to identify and address a potential leak
- CNL has an existing ground water monitoring program for the CRL site that is compliant with CSA N288.7-15, which will be updated to integrate groundwater monitoring for the NSDF Project

3.3.6.4 Terrestrial Environment

195. In section 5.6 of the EIS, CNL submitted that without mitigation, NSDF Project activities have the potential to affect vegetation, wildlife, including species at risk, and both the availability and quality of wildlife habitats. Impacts to specific wildlife species are discussed further in section 3.3.7 of this *Record of Decision*. CNL submitted that it will minimize impacts to the terrestrial environment by implementing mitigation measures including the following:

¹⁸⁵ *Transcript of the May 30 2022 Public Hearing*, page 175.

- implementing a sustainable forest management plan to improve the quality and ecological diversity of the remaining forest
- avoiding activities with significant noise and habitat disturbance during sensitive wildlife life phases, such as breeding and nesting for birds and maternity roosting for bats
- establishing a 5 m tree line buffer along all property lines of the NSDF site to limit disturbances to vegetation and large tree roots at the tree line
- establishing a 30 m buffer along identified wetlands near the NSDF Project; where the buffer cannot be maintained, appropriate mitigation will be established to address any risk of erosion

CNL reported that, with the implementation of mitigation measures, the residual effects of the NSDF Project on the terrestrial environment are not significant. CNL further reported that it would conduct monitoring of species at risk to verify EA predictions related to the terrestrial environment.

196. In section 6.3 of its EA Report, CNSC staff submitted that residual effects to terrestrial biota are primarily caused by vegetation clearing and the potential loss or alteration of habitat; sensory disturbance from NSDF construction and operation activities; and increased vehicle traffic. CNSC staff reported that it reviewed CNL's assessment related to the terrestrial environment and found that the identified residual effects to terrestrial biota, while potentially irreversible and/or long lasting due to the nature of the project, are expected to be negligible and not cause significant changes to the terrestrial environment, considering the implementation of mitigation and follow-up monitoring measures.
197. Several intervenors including AOPFN (CMD 22-H7.109), KFN (CMD 22-H7.111, CMD 22-H7.111A), and ABL (CMD 22-H7.139, CMD 22-H7.139A) raised concern regarding the impact to animal habitats from clearing the NSDF footprint. In section 1.3 of CMD 22-H7.1, CNL reported that the proposed NSDF will have a footprint of approximately 37 ha, which is less than 1% of the total area of the CRL site. In section 5.6.7 of the EIS, CNL reported that 33 of the 37 ha include forested ecosystems. A CNL representative explained that CNL characterized the existing forest on the CRL site including identifying the age and species of trees on the site as well as the forest habitats preferred by species at risk.¹⁸⁶ In CMD 22-H7.D, CNSC staff reported that, based on the work that CNL carried out and reported to the CNSC, the forested area to be cleared for the NSDF Project is representative of the surrounding forest and does not represent a unique habitat for the species in the area.
198. The Commission asked for more information on CNL's sustainable forest management plan. CNL representatives explained that the goal of the sustainable forest management plan is to offset the deforestation that will occur during the construction of the NSDF by increasing the quality and biodiversity

¹⁸⁶ *Transcript of the May 30 2022 Public Hearing*, pages 266-267.

of the remaining forest on the CRL site.¹⁸⁷ A CNL representative said that CNL involved the Canadian Forest Service in the development of the sustainable forest management plan¹⁸⁸ and, in CMD 22-H7.1C, CNL noted that it had also involved Indigenous Nations and communities in the development of the plan.

199. In CMD 22-H7.D, CNSC staff clarified that the sustainable forest management plan was a future commitment by CNL in the EIS and that it is currently under development. CNSC staff reported that, once CNL submits the plan to the CNSC, CNSC staff will review the plan and, if necessary, provide comments to CNL until CNSC staff deem the plan to be acceptable. CNSC staff noted that no forest clearing will take place until CNSC staff is satisfied that the measures described in CNL's sustainable forest management plan are adequate to increase the quality and biodiversity of the remaining forest on the CRL site to offset the loss of forested habitat in the NSDF footprint. CNSC staff added that it would also oversee the implementation of the plan.
200. The intervention by K. Lindsay ([CMD 22-H7.124](#)) raised concern about the reduction of carbon sequestration associated with deforestation of the proposed NSDF site. CNL accounted for the reduction of carbon sequestration in its evaluation of the impact of the NSDF Project on greenhouse gas emissions. As discussed in section 5.2.2 of the EIS and in section 3.3.6.1 of this *Record of Decision*, CNL submitted that NSDF Project activities are not likely to result in significant adverse environmental effects. In response to a question on this issue, a CNL representative also stated that the implementation of CNL's sustainable forest management plan would increase the carbon uptake of the remaining forest on the CRL site.¹⁸⁹
201. The intervention from C. Renault (CMD 22-H7.147) raised concerns regarding potential contamination levels in the trees to be removed from the NSDF site. A CNL representative stated that the CRL site is very well characterized and that the NSDF site is located on land that is not contaminated. The CNL representative stated that harvesting vegetation from the NSDF site does not pose a risk of contamination release.¹⁹⁰
202. Following issuance of the Procedural Direction, in CMD 22-H7.111C and CMD 22-H7.113B, KFN and KZA both raised specific concerns that potential impacts to black bears and the eastern wolf, a species of special concern under Schedule 1 of the *Species at Risk Act* (SARA),¹⁹¹ had not been adequately considered in the EIS. KFN submitted that CNL had a lack of baseline data on eastern wolf and black bear populations on the proposed NSDF site, and a lack of understanding of the habitat implications of the NSDF Project on those species.

¹⁸⁷ *Transcript of the May 30 2022 Public Hearing*, pages 266-273.

¹⁸⁸ *Transcript of the June 1 2022 Public Hearing*, page 286.

¹⁸⁹ *Transcript of the June 1 2022 Public Hearing*, page 282.

¹⁹⁰ *Transcript of the May 30 2022 Public Hearing*, page 264.

¹⁹¹ S.C. 2002, c. 29.

Following issuance of the Procedural Direction, KFN completed fieldwork in order to collect data on the presence of the eastern wolf and black bears on the NSDF site. This work is discussed further in section 3.4.3.3 of this *Record of Decision*.

203. In section 5.1 of the EIS, CNL submitted that the eastern wolf and black bear are present in the terrestrial environment surrounding the proposed NSDF site and, as such, were both included as indicator species in the EIS. CNL submitted that the results of the EIS found that the NSDF Project would not have significant adverse environmental impacts on wildlife, including the eastern wolf and black bear, or their habitat, with the proposed mitigation measures in place. In CMD 22-H7.D, CNSC staff confirmed that CNL has proposed adequate mitigation measures to ensure the protection of the eastern wolf, black bears, and their habitat during all phases of the NSDF Project. Further information on the eastern wolf is provided in section 3.3.7.4 of this *Record of Decision*.
204. Based on the information on the record as described above, the Commission concludes that the NSDF Project will not cause significant adverse effects on the terrestrial environment, provided that the committed mitigation measures are implemented. The Commission finds that:
- CNL has proposed sufficient mitigation measures to prevent significant adverse effects on the terrestrial environment, including implementation of a sustainable forest management plan to improve the quality and biodiversity of the remaining forest
 - the Commission is satisfied that no forest clearing will take place until CNSC staff confirm that the measures described in CNL's sustainable forest management plan are adequate to offset the loss of forested habitat
 - the forested area to be cleared for the NSDF Project makes up approximately 1% of the CRL site, is representative of the surrounding forest, and does not represent a unique habitat for the species in the area
 - CNL considered the reduction of carbon sequestration in its evaluation of the impact of the NSDF Project on greenhouse gas emissions, as discussed in section 3.3.6.1 of this *Record of Decision*
 - harvesting vegetation from the NSDF site does not pose a risk of contamination release because the CRL site is well characterized and the NSDF site is located on land that is not contaminated
205. The Commission notes that forest clearing is conditional on CNSC staff's review and acceptance of CNL's sustainable forest management plan. Given CNSC staff's commitment for this, the Commission directs CNSC staff to add an explicit commitment to the *NSDF Licensing Regulatory Actions* for CNSC staff to review the sustainable forest management plan. CNSC staff shall ensure that the sustainable forest management plan is adequate to increase the quality

and biodiversity of the remaining forest on the CRL site to offset the loss of forested habitat in the NSDF footprint.

3.3.7 Potential Effects of the NSDF Project on Valued Components

206. In accordance with paragraphs 5(1)(a) and 19(1)(a) and (b) of CEEA 2012, the EA must consider the environmental effects of the designated project. In section 5.0 of the EIS, CNL provided information on its environmental effects assessment for the NSDF Project including its assessment of impacts to valued components. In section 7.0 of its EA Report, CNSC staff provided information on its review of CNL's assessment of potential impacts to valued components. A summary of valued components is provided in Table 2.2 of its EA Report and includes fish and fish habitats, migratory birds, species at risk, traditional land and resource use, and human health. Overall, CNSC staff reported that, though the NSDF Project would affect valued components in various ways, the NSDF Project is unlikely to result in significant adverse environmental effects, considering the implementation of mitigation and follow-up monitoring program measures.

3.3.7.1 Fish, Fish Habitat and Aquatic Species

207. In accordance with subparagraphs 5(1)(a)(i) and (ii) of CEEA 2012, the EA must take into account the effects of the NSDF Project on fish and fish habitat, as defined in subsection 2(1) of the *Fisheries Act* and on aquatic species, as defined in subsection 2(1) of the *Species at Risk Act*.
208. In section 5.5 of the EIS, CNL submitted that, without mitigation, NSDF Project activities would have the potential to affect aquatic biodiversity. CNL specified that NSDF Project activities have the potential to affect fish habitats and fish survival and reproduction due to potential impacts to water levels, flows, and quality. CNL reported that it would implement mitigation measures including the following:
- restoring disturbed shoreline vegetation
 - executing in-water work outside of critical development periods for spring spawning fish species
 - managing runoff to avoid adverse environmental effects in downstream waterbodies

Considering the planned mitigation measures, CNL predicted that the residual effects from the NSDF Project on aquatic biodiversity would not be significant. CNL further reported it would conduct follow-up surface water quality monitoring to verify that surface water remains protective of fish, fish habitats, and aquatic species.

209. In section 7.1 of its EA Report, CNSC staff reported that the NSDF Project is not likely to cause significant adverse environmental effects on fish health or habitat. CNSC staff noted that, while physical changes to fish habitat are expected from the installation of the diffuser and transfer line construction, these changes are expected to be offset by CNL's proposed mitigation measures. CNSC staff also noted that, while effluent discharge and leakage of leachate could cause effects to fish health during the construction and operation phases of the NSDF Project, these effects are not expected to affect fish populations. In both cases, CNSC staff reported that the effects are expected to be fully reversible once project activities cease. CNSC staff also submitted that CNL's proposed mitigation and follow-up monitoring measures are comprehensive and adequate to address potential effects to fish and fish habitat.
210. Multiple Indigenous intervenors including the AOO (CMD 22-H7.98), AOPFN (CMD 22-H7.109), and ABL (CMD 22-H7.139, CMD 22-H7.139A) raised concerns about potential impacts of the NSDF Project on fish health and its contribution to a continued reduction of traditional fishing activities. In section 5.5 of the EIS, CNL reported that by meeting effluent discharge targets within the Perch Creek and Perch Lake Watershed, fish in the Ottawa River would be protected. CNL further explained in section 4.3 of the EIS that all treated effluent from the NSDF WWTP would be sampled to ensure that it meets treatment targets prior to release to the environment and that pilot testing has demonstrated that the effluent discharge targets can be achieved.
211. Following issuance of the *Procedural Direction*, in CMD 22-H7.111C and CMD 22-H7.113B, KFN and KZA both raised concerns regarding the impact of surface water quality on lake sturgeon and the Hickorynut mussel in the Ottawa River and specifically near Fitzpatrick Island.¹⁹² In CMD 22-H7.D, CNSC staff submitted that the EIS addressed potential effects to these species via the use of proxy indicator species and through consideration of effects to surface water quality, as discussed in section 6.2 and 7.1 of its EA Report. CNSC staff noted that, while KFN and KZA linked these species to their asserted Aboriginal rights, little additional information was provided to give context to the specific impacts from the NSDF Project on these species. CNSC staff remain of the view that the NSDF Project will have negligible effects to water quality, lake sturgeon and Hickorynut mussels, including at Fitzpatrick Island.
212. Based on the information on the record as described above, the Commission concludes that the NSDF Project will not cause significant adverse effects on fish, fish habitat and aquatic species, provided that the committed mitigation measures are implemented. The Commission finds that:

¹⁹² Fitzpatrick Island is an island of traditional and historical importance to the Algonquin Nation in the Kichi Sibi watershed. It is located approximately 40 km downstream of the CRL site on the Ottawa River

- CNL has proposed sufficient mitigation measures, including restoration of disturbed shoreline vegetation, to prevent significant adverse effects to fish, fish habitat and aquatic species
- CNL's effluent discharge targets for the NSDF WWTP are protective of fish, fish habitat, and aquatic species
- CNL will sample treated effluent from the NSDF WWTP to ensure that it meets targets prior to release
- CNL has conducted pilot testing that has demonstrated that the effluent discharge targets can be achieved
- CNL's EIS addressed potential effects to lake sturgeon and the Hickorynut mussel via the use of proxy indicator species and through consideration of effects to surface water quality; impacts to both species are expected to be negligible

3.3.7.2 Migratory Birds

213. In accordance with subparagraph 5(1)(a)(iii) of CEEA 2012, the EA must take into account the effects of the NSDF Project on migratory birds, as defined in subsection 2(1) of the *Migratory Birds Convention Act, 1994*.
214. CNL considered impacts of the NSDF Project on migratory birds. In section 5.6.4.2 of the EIS, CNL submitted that a total of 117 migratory bird species are known or have the potential to be present in the regional study area.¹⁹³ The migratory bird species include several species at risk, which are further discussed in section 3.3.7.4 of this *Record of Decision*. CNL reported that, without mitigation, the NSDF Project has the potential to cause adverse effects to migratory birds through habitat loss or alteration, and through sensory disturbance during the construction and operation of the NSDF. To limit impacts to migratory birds, CNL committed to implement mitigation measures including the following:
- avoiding activities with the highest levels of noise and habitat disturbance during the most sensitive life history phase for birds (i.e., breeding and nesting periods)
 - completing pre-clearing bird and bat surveys to confirm no active nests are present in trees to be felled
 - implementing migratory bird exclusion measures at the surface water management ponds
 - temporarily suspending blasting activities if wildlife is observed in the blasting area

¹⁹³ The regional study area is the maximum area within which the potential effects of the project may interact with the effects of other projects and activities (or anticipated projects and activities), resulting in a potential for cumulative effects. The regional study area for the NSDF Project EA included the Quebec shoreline of the Ottawa River.

CNL reported that, with the implementation of mitigation measures, residual effects of the NSDF Project on migratory birds are not expected to be significant. CNL noted that potentially suitable habitat for migratory birds is broadly available in the regional study area outside of the NSDF footprint. To verify the EA predictions, CNL reported that it would collect and assess data every 5 years, on relative abundance and other key demographic parameters for breeding birds in the regional study area.

215. In section 5.6.5.2.1 of the EIS, CNL submitted that the *Migratory Birds Convention Act, 1994* prohibits the destruction of migratory bird nests during the breeding season. As such, CNL reported that it would clear vegetation outside of the migratory bird nesting period and complete pre-clearing surveys to confirm no active nests are present in trees to be felled.
216. In section 7.2 of its EA Report, CNSC staff provided information on its review of CNL's assessments of potential impacts of the NSDF Project on migratory birds. Considering input from other government agencies, Indigenous Nations and communities and the public, and considering the implementation of mitigation measures and follow-up monitoring measures, CNSC staff found that the NSDF Project is not likely to cause significant residual adverse environmental effects on migratory birds due to habitat disruption or sensory disturbance. Regarding habitat impacts, CNSC staff reported that the large majority of migratory bird habitat within the regional study area will remain unaffected by NSDF Project activities. Regarding sensory disturbances, CNSC staff also submitted that sensory disturbances to migratory birds are anticipated to be reversible at the end of the operations phase of the NSDF Project. CNSC staff noted that sensory disturbance effects are relatively small in a population context and are not predicted to adversely affect populations of migratory birds within the regional study area.
217. Based on the information on the record as described above, the Commission concludes that the NSDF Project will not cause significant adverse effects on migratory birds, provided that the committed-to mitigation measures are implemented. The Commission finds that:
- CNL has proposed sufficient mitigation measures to prevent significant adverse effects to migratory birds, including conducting activities with the highest levels of noise and habitat disturbance outside of the most sensitive life history phase for birds
 - the NSDF footprint accounts for 1% of the CRL site; the large majority of migratory bird habitat within the regional study area will remain unaffected by NSDF Project activities
 - sensory disturbances to migratory birds are anticipated to be reversible at the end of the operations phase of the NSDF Project
 - CNL will collect and assess data on key demographic parameters for breeding birds in the regional study area every 5 years to verify EA predictions

3.3.7.3 Traditional Land and Resource Use

218. In accordance with subparagraph 5(1)(c)(iii) of CEAA 2012, the EA must consider the effects of the NSDF Project on the current use of lands and resources for traditional purposes by Indigenous peoples. In accordance with subparagraphs 5(1)(c)(ii) and 5(2)(b)(ii) of CEAA 2012, the EA must consider the effects of the NSDF Project on the physical or cultural heritage of Indigenous peoples. In accordance with subparagraphs 5(1)(c)(iv) and 5(2)(b)(iii) of CEAA 2012, the EA must also consider the effects of the NSDF Project on any structure, site or thing that is of historical, archaeological, paleontological, or architectural significance to Indigenous peoples.
219. In section 6.4 of the EIS, CNL provided information on its assessment of the potential effects of the NSDF Project on traditional land and resource use by Indigenous Nations and communities. CNL reported that it considered the potential impacts of the NSDF Project on harvesting rights including trapping, hunting, gathering, fishing, as well as on cultural resources. CNL noted that the NSDF Project is located entirely within the CRL site boundary, where access is restricted.
220. In section 6 of its Indigenous Engagement Report (IER) which was submitted as CMD 22-H7.1C, CNL reported that it collected information on Indigenous peoples' traditional land use activities from consultation activities, existing studies and reports, Indigenous organization websites, the MNO Traditional Knowledge and Land Use Study, the AOO and AOPFN's respective Algonquin Knowledge and Land Use Studies, and general knowledge of the region. In the absence of specific feedback from other Indigenous Nations and communities, CNL conservatively assumed traditional land and resource use occurs wherever there are accessible lands.
221. CNL reported that there would not be significant residual effects from the NSDF Project on traditional land and resource use because the NSDF Project is located on the CRL site where traditional uses do not occur and CNL does not anticipate any off-site effects that would affect traditional use. CNL submitted that, taking proposed mitigation measures into consideration, the NSDF Project is not predicted to have any residual impacts to aquatic biodiversity, the terrestrial environment beyond the CRL site, archaeological resources, or access to cultural resources.¹⁹⁴ Measures proposed by CNL to mitigate effects to traditional land and resource use are summarized in section 6.4.5 of the EIS and include the following:
- implementing CNL's existing procedure for management and monitoring of emissions, which includes operational control monitoring and verification monitoring

¹⁹⁴ CMD 22-H7.1 section 4.6.8.

- installing a perimeter fence around the NSDF site to exclude terrestrial wildlife
- addressing visual/aesthetic concerns so that the NSDF Project is not visible to traditional use outside of the CRL site
- conducting environmental monitoring to verify the EA prediction that there will be no residual impacts to aquatic biodiversity or the terrestrial environment beyond the CRL site

222. In section 7.3 of its EA Report, CNSC staff provided information on its review of CNL's assessment of potential effects to traditional land and resource use near the proposed NSDF Project site. Considering the implementation of proposed mitigation and follow-up measures, CNSC staff found that the NSDF Project is not expected to cause any significant adverse effects to trapping, hunting, gathering, fishing, and access to cultural resources. CNSC staff noted that many mitigation measures proposed by CNL in relation to the terrestrial, aquatic, and surface water environments also apply as mitigation for effects on traditional land and resource uses.
223. In section 6.4.5 of the EIS, CNL acknowledged that Indigenous Nations and communities have expressed concerns with respect to the perception of health and safety risks associated with the CRL site. CNL submitted that Indigenous Nations and communities have noted that these perceptions have led some rights-holders to avoid or reduce their exercise of traditional activities in the area. CNL noted its commitment to continuing to work with Indigenous Nations and communities to address fear and avoidance behaviours by promoting awareness of actual risk during engagement activities and by involving Indigenous Nations and communities in environmental monitoring activities.
224. In section 4.6.7 of CMD 22-H7.1 and section 5.9 of the EIS, CNL reported that it completed an archaeological assessment for the NSDF Project in accordance with the [*Standards and Guidelines for Consultant Archaeologists*](#).¹⁹⁵ The archaeological assessment found that no items of cultural heritage value or interest remain on the site, and the locations of the archaeological work have been fully documented; therefore, no further archaeological work was required. In the *NSDF Project Consolidated Commitment Lists*, CNL committed to suspend construction activities immediately and engage a licensed consultant to carry out archaeological fieldwork, in compliance with subsection 48 (1) of the [*Ontario Heritage Act*](#),¹⁹⁶ should any previously undocumented archaeological resources be discovered. In section 6.4 of its EA Report, CNSC staff submitted that CNL's proposed mitigation measures and commitment to follow the guidance under the *Ontario Heritage Act* pertaining to archaeology would mitigate any potential effects.

¹⁹⁵ *Standards and Guidelines for Consultant Archaeologists*, Ontario Ministry of Tourism and Culture, 2011.

¹⁹⁶ R.S.O. 1990, c. O.18.

225. Multiple Indigenous intervenors including the AOO (CMD 22-H7.98), AOPFN (CMD 22-H7.109), KFN (CMD 22-H7.111, CMD 22-H7.111A) and KZA (CMD 22-H7.113) raised concerns that the NSDF Project might impact access to nearby Algonquin cultural sites including Oiseau Rock and Pointe au Baptême.¹⁹⁷ CNL submitted, in section 6.4 of the EIS, that the NSDF Project will not physically impact nor restrict access to the Pointe au Baptême and Oiseau Rock sites; access to these two sites would remain the same as prior to the NSDF Project. In section 7.3. of its EA Report, CNL staff reported that there will be no changes in access to cultural resources for ceremonial purposes, given CNL's commitment to continue to provide access to the aforementioned sites. Regarding the appearance of the NSDF site from Oiseau Rock, a CNL representative stated that the mound would not rise above the ridge on which it is to be located and that, when closed, the NSDF site would have the appearance of a grassy field.¹⁹⁸ In the *NSDF Consolidated Commitment Lists*, CNL committed to engaging with interested Indigenous Nations and communities on updates to the NSDF Closure Plan¹⁹⁹.
226. The intervention by the AOO voiced disagreement with CNL's conclusion that the NSDF Project would not have significant residual effects on traditional land and resource use. Similar concerns were also raised by KZA, KFN, and ABL. In section 4.6.8 of CMD 22-H7.1, CNL acknowledged this area of disagreement between CNL and Indigenous Nations and communities.
227. Based on the information on the record as described above, the Commission concludes that the NSDF Project will not cause significant adverse effects on the use of lands and resources for traditional purposes, provided that the committed mitigation measures are implemented. The Commission finds that:
- CNL has proposed sufficient mitigation measures to prevent significant adverse effects to traditional land and resource use, including management and monitoring of facility emissions
 - CNL has completed an archaeological assessment for the NSDF Project and will follow guidance under the *Ontario Heritage Act* should any previously undocumented archaeological resources be discovered
 - the NSDF Project will not physically impact nor restrict access to Pointe au Baptême or Oiseau Rock, which are currently used for traditional purposes
 - CNL will continue to engage with Indigenous Nations and communities to address fear and avoidance behaviours

¹⁹⁷ Oiseau Rock is located on the Quebec side of the Ottawa River across from the CRL site. Pointe au Baptême is located within the regional study area but outside of the CRL site. Both sites are of cultural importance to many Indigenous Nations and communities and are used for spiritual, ceremonial, and sacred purposes.

¹⁹⁸ *Transcript of the May 31 2022 Public Hearing*, page 55.

¹⁹⁹ The NSDF Closure Plan describes the program for completing final closure of the ECM and associated facilities. In section 3.2.3 of the EIS, CNL reported that updates to the NSDF Closure Plan will occur approximately every 5 years and that a Final Closure Plan will be prepared at the time of closure of the ECM.

- CNL will engage with interested Indigenous Nations and communities on the NSDF Closure Plan

3.3.7.4 Species at Risk

228. In accordance with subsection 79(2) of the SARA, the EA must also consider the adverse effects of the project on the listed wildlife species in Schedule 1 of the SARA and associated critical habitat.

229. In section 5.6 of the EIS, CNL provided information on its terrestrial biodiversity assessment, which included an assessment of impacts to species at risk. CNL reported that it focused its assessment on species identified on Schedule 1 of the SARA, including the Canada warbler, eastern whip-poor-will, eastern wood pewee, wood thrush and golden-winged warbler, bats, Blanding's turtle, eastern milksnake and monarch butterfly. CNL also noted that these species are also useful indicators for broader groups of species.²⁰⁰ CNL submitted that its assessment predicted residual effects to the aforementioned species resulting from habitat loss, sensory disturbance, change in movement, and risk of injury or mortality. CNL further reported that, with the implementation of mitigation measures, residual effects of the NSDF Project on species at risk are not significant. In the *NSDF Project Consolidated Commitment Lists*, CNL committed to mitigation measures, including the following:

- conducting activities with high noise levels outside of migratory bird nesting period and bats' maternity roosting period
- installing bat boxes
- implementing a sustainable forest management plan to ensure long-term retention of trees serving as maternity roosts for bat species;
- constructing artificial Blanding's turtle nesting mounds
- installing reptile fencing
- continuing implementation of the Blanding's Turtle Road Mortality Mitigation Plan
- maintaining a treeline and wetland buffer
- managing milkweed removal in accordance with CNL's environmental protection program
- installing signs warning drivers of high-use wildlife areas

CNL also committed to follow-up monitoring measures, including the following:

- monitoring and refining the use of bat boxes

²⁰⁰ An indicator species is an organism whose presence, absence or abundance reflects a specific environmental condition. Indicator species can signal a change in the biological condition of a particular ecosystem, and thus may be used as a proxy to diagnose the health of an ecosystem.

- collecting and assessing breeding bird data
 - monitoring road mortality
 - inspecting exclusion fencing
 - inspecting Blanding's turtle nest mounds
 - annually assessing of Blanding's turtle critical habitat as part of the SARA permitting process
230. In section 1.4.1 of the EIS, CNL reported that a permit from ECCC will be required under Section 73 of the SARA prior to the construction of the NSDF. CNL noted that the process for obtaining the SARA permit was being finalized in parallel with the completion of the EA process and that, while the final NSDF EIS does include mitigation measures for the protection of species at risk, the terms and conditions of the finalized SARA permit would define the overarching requirements. During the hearing, a representative from ECCC confirmed that ECCC was reviewing CNL's SARA permit application. The ECCC representative raised no concerns and noted that ECCC could not issue a SARA permit until the EA decision has been made by the Commission.²⁰¹
231. In section 8.1 of its EA Report, CNSC staff provided information on its assessment of potential impacts of the NSDF Project on species at risk. Considering the implementation of mitigation measures and follow-up monitoring program measures, CNSC staff found that the NSDF Project is not likely to cause significant adverse environmental effects on the species at risk identified within the regional study area.
232. Following issuance of the *Procedural Direction*, both KFN and KZA expressed concern that impacts to species at risk including Blanding's turtle, eastern wolf, Hickorynut mussel, and lake sturgeon were not adequately considered in the EIS. In sections 2.1.1.3 and 2.1.2.3 of CMD 22-H7.1E, CNL submitted that species at risk were considered as part of the NSDF site selection process and that detailed species at risk studies have taken place across the CRL site since 2008. CNL reported that these studies provided information to evaluate species present in the area for which appropriate permits are required from ECCC to ensure their protection. CNL acknowledged that there are additional considerations that can be better understood through the incorporation of Indigenous Knowledge systems, values, and perspectives. As such, CNL reported that it is committed to ensure that this additional knowledge is incorporated into its mitigation strategies. CNL reported that it provided the Blanding's Turtle Road Mortality Mitigation Plan, sustainable forest management plan and the draft NSDF EA Follow-up Monitoring Program to KFN and KZA for their input, and is committed to incorporating their knowledge. The Hickorynut mussel and lake sturgeon are discussed specifically in section 3.3.7.1 of this *Record of Decision*.

²⁰¹ *Transcript of the February 22 2022 Public Hearing*, pages 121-122.

233. In Appendix L of CMD 22-H7.1E, CNL provided specific information on the work it had conducted since 2012 to characterize the presence of the eastern wolf on the CRL site. CNL reported that, since 2012, it had completed various surveys to collect data on the presence of the eastern wolf on the CRL site including passive trail camera surveys, driving and hiking surveys targeting observations of wolf signs (e.g. paw prints, kill sites), howl surveys, and genetic sample collection (e.g. scat, and urine). Regardless of the genetics results, CNL adopted a precautionary approach and considered all canid observations as being Eastern Wolves. CNL is of the view that its recent collaborative fieldwork with KFN had improved the data collection process regarding the presence and behaviour of the eastern wolf on the CRL site. CNL committed to continuing to work with KFN to include the data and findings into the NSDF Project as it moves forward.
234. Based on the information on the record as described above, the Commission concludes that the NSDF Project will not cause significant adverse effects on the identified species at risk, provided that the committed mitigation measures are implemented. The Commission finds that:
- CNL has proposed sufficient mitigation measures to prevent significant adverse effects to species at risk identified within the regional study area, including conducting activities with high noise levels outside of migratory bird nesting period and bats' maternity roosting period
 - CNL is required to obtain a permit from ECCC under section 73 of the SARA prior to the construction of the NSDF that will define the overarching requirements for the protection of species
 - Additional information provided to the Commission following the *Procedural Direction* did not change the reasonableness of the conclusions of the EIS or EA Report that the NSDF Project is not likely to cause significant adverse environmental effects on the species at risk

3.3.7.5 Human Health

235. In accordance with paragraphs 5(1)(c) and 5(2)(b) of CEAA 2012, the EA must consider the effects of the NSDF Project on human health, specifically including the health of Indigenous peoples.
236. In section 5 of CMD 22-H7.1, CNL submitted information on potential radiological and non-radiological impacts to human health through the various phases of the NSDF Project. CNL reported that it completed a human health assessment to assess potential impacts of the project on workers on site, members of the public, and Indigenous Nations and communities.

237. The [Radiation Protection Regulations](#)²⁰² limit the amount of radiation that persons may receive from licensed activities at nuclear facilities in Canada. Per the *Radiation Protection Regulations*, the dose limit for a nuclear energy worker (NEW) is 50 mSv in any one year and 100 mSv over a 5-year dosimetry period. The dose limit for a person who is not a NEW is 1 mSv in a calendar year. Predicted doses to NEWs and the public throughout the different phases of the NSDF Project are discussed in the following paragraphs. To provide relative context, CNL reported that the average Canadian receives a background radiation dose of 1.8 mSv/y.

Pre-Closure

238. In section 5 of CMD 22-H7.1, CNL reported that no radiological material would be present during the site preparation and construction phases of the NSDF Project, and that radiation hazards would be introduced during the operations phase. CNL reported that conventional (non-radiological) hazards for the site preparation and construction phase would result in negligible health effects to the workers and the public. CNL noted that any conventional hazards that may be present during the construction of the NSDF Project would be managed by CNL's conventional health and safety program. CNL's conventional health and safety program is discussed further in section 3.5.2.8 of this *Record of Decision*.
239. CNL predicted that annual effective doses to workers would be lower than the 50 mSv annual regulatory dose limit for a NEW. CNL explained that the radiological dose to an on-site worker would mainly occur during the operational phase as the result of carrying out tasks related to waste emplacement at the ECM and activities within the WWTP. In section 5.8.6.1.2.1 of the EIS, CNL reported that the highest effective doses to a worker at the ECM and a worker at the WWTP is estimated at 10.4 mSv/y and 5.2 mSv/y, respectively.
240. In section 5.3 of CMD 22-H7.1, CNL submitted that access to the CRL site is restricted; however, without mitigation, there may be instances where the public or Indigenous peoples receive a dose as a result of potential waterborne or airborne emissions from the NSDF Project during normal operations. CNL reported that it would limit public dose through the establishment of effluent discharge targets, which are protective of human health and the environment, and by controlling airborne releases of dust during operations. As such, dose to the public and Indigenous peoples during the operations phase is expected to be approximately 50 times lower than the regulatory public dose limit of 1 mSv/yr.
241. Regarding the impact of non-radiological contaminants on human health, CNSC staff reported in section 7.4 of its EA Report that there are no residual effects identified for human health from non-radiological contaminants during all

²⁰² SOR/2000-203.

phases of the NSDF Project. CNSC staff noted that all wastes to be emplaced in the NSDF will be required to meet the WAC. In section 4.1 of CMD 22-H7.1, and as previously discussed in this *Record of Decision*, CNL reported that the WAC will limit the acceptance of non-radiological contaminants in accordance with O. Reg. 347. CNL noted that the O. Reg. 347 levels for non-radiological contaminants are set to be protective of the environment.

242. Several intervenors including CELA (CMD 22-H7.104) and Ottawa River Institute ([CMD 22-H7.129](#)) expressed the view that the highest estimated dose for a NEW of 10.4 mSv/y could result in a significant dose over a worker's career. Per the *Radiation Protection Regulations*, a dose of 10.4 mSv/y is within the regulatory dose limit for NEWs. The Commission asked CNL and CNSC staff to comment on this matter. A CNL representative explained that the dose assessments for the NSDF Project were conservative and provided an upper limit for the expected dose to a worker or member of the public. The CNL representative said that, in practice, CNL regularly evaluates worker doses in accordance with the as low as reasonably achievable (ALARA) principle and will make changes to a worker's environment or assignments as required to avoid any individual getting a particularly elevated dose. CNSC staff noted that CNL must ensure that worker doses are kept ALARA per the conditions of CNL's current licence for the CRL site.²⁰³

Post-Closure

243. In section 5.5 of CMD 22-H7.1, CNL reported that, during the post-closure phase institutional controls would be in place to prevent access to the facility, and environmental monitoring would confirm that the facility is performing as intended. CNL's NSDF PCSA evaluates the performance of the ECM and the resulting radiological dose to humans. A normal evolution scenario and a variety of sensitivity cases, disruptive events, and other lower probability scenarios were assessed. The PCSA is discussed further in section 3.1.6 of this *Record of Decision*.
244. In section 5.8.10 of the EIS, CNL reported that the estimated dose to an on-site worker during the post-closure phase would be less than the estimated dose to a worker during the operations phase. During the post-closure phase the final cover system would be completely installed over the ECM. The estimated dose for a worker during the operations phase is expected to be well below the regulatory limit of 50 mSv/y and therefore the dose to a worker during the post-closure phase is also expected to be well below regulatory limits.
245. In section 5.5 of CMD 22-H7.1, CNL reported that the dose to the public during the post-closure phase was conservatively calculated using the hypothetical case of a farmer with a family living directly on the ECM. CNL reported that for the most disruptive event, the radiological dose to a member of the public would

²⁰³ *Transcript of the May 31 2022 Public Hearing*, pages 35-40.

still be less than the regulatory public dose limit of 1 mSv/y, meaning that the predicted residual effects from the NSDF Project on public health are not significant during the post-closure phase.

246. Interventions from multiple Indigenous Nations and communities including the AOO (CMD 22-H7.98), AOPFN (CMD 22-H7.109), and KFN (CMD 22-H7.111, CMD 22-H7.111A) expressed concerns regarding the potential effect of the NSDF Project on their health and a perception of risk of harvesting near the CRL site. CNL noted that Indigenous peoples have a greater degree of reliance on foods obtained from traditional land and resource use than the general public. As discussed in section 3.1.6 of this *Record of Decision*, CNL assessed the maximum predicted dose to an Indigenous person who is completely reliant on local traditional food sourced from the NSDF Project site and surrounding areas. That assessment found that the highest estimated radiological dose to this individual would be 0.077 mSv/y, occurring 520 years post-closure. CNL noted that this is over 13 times lower than the regulatory dose limit of 1 mSv/y and, therefore, predicted residual effects from the NSDF Project on Indigenous health are not significant.
247. Based on the information on the record as described above, the Commission concludes that the NSDF Project will not cause significant adverse effects on human health, including the health of Indigenous peoples, provided that the committed mitigation measures are implemented. The Commission finds that:
- the highest estimated dose to an NSDF NEW is 10.4 mSv/y; well below the regulatory dose limit for a NEW of 50 mSv/y
 - the estimated dose to persons who are not NEWs is expected to be well below the regulatory dose limit of 1 mSv/y during both the pre-closure and post-closure periods
 - no residual effects on human health from non-radiological contaminants are expected during any phase of the NSDF Project; the NSDF WAC will limit the acceptance of non-radiological contaminants in accordance with O. Reg. 347

3.3.8 *Effects of the Environment on the Project*

248. In accordance with paragraph 19(1)(h) of CEAA 2012, the EA must consider any change to the NSDF Project that may be caused by the environment. This includes extreme and periodic weather events.
249. In section 4.5 of CMD 22-H7.1, CNL provided information on its consideration of environmental events in the design of the NSDF. CNL submitted that it assessed the potential impact of environmental hazards such as seismic events, climate change, flooding, tornadoes, and forest fires. Further detail on this analysis and the related design features and mitigation measures is provided in

section 10 of the EIS. CNL also reported that it has existing procedures in place to respond to extreme environmental events on the CRL site, should they occur.

250. In section 8.3 of its EA Report, CNSC staff provided a summary of the environmental factors that CNL considered in the design of the NSDF and the corresponding design feature or proposed mitigation measure to mitigate potential effects on NSDF Project components. CNSC staff noted that CNL used a systematic approach to identify and categorize the major natural external hazards and initiating events for the proposed NSDF Project. CNSC staff submitted that CNL adequately considered the effects of the environment on the NSDF Project and that the proposed preventive measures, mitigation measures and response measures are appropriate to account for the potential effects of the environment on the project.

3.3.8.1 Seismic Events

251. Regarding the potential impact of seismic events on the proposed NSDF, CNL submitted in section 4.4 and 4.5 of CMD 22-H7.1 that the CRL site is located in a low to moderate seismic zone. In section 10.3 of the EIS, CNL reported that the NSDF is designed to withstand a significant seismic event and that, through a site-specific seismic hazard assessment, CNL selected a once-in-10,000-year earthquake as the design basis earthquake for the ECM in line with the guidance of CSA N289.1 *General Requirements for Seismic Design and Qualification of Nuclear Power Plants*.²⁰⁴ CNL noted that this selection was conservative as the radioactive inventory in the ECM would be significantly less than the radioactive inventory of a nuclear power plant. CNL reported that the inventory of radioactive material in the NSDF is low hazard and will experience significant decay in the first 100 years. A CNL representative further explained that the NSDF design basis earthquake is 100 times larger than any earthquake seen in the region over the last 350 years. CNL stated that, through seismic modelling, it has demonstrated that the ECM can withstand the design basis earthquake while maintaining waste containment.²⁰⁵ In section 3.5 of CMD 22-H7, CNSC staff submitted that CNL has comprehensively assessed seismic impacts on the NSDF, and that the NSDF can resist a once-in-10,000-year earthquake.
252. The Commission asked for more information regarding how seismic events were considered in the design of the NSDF. A CNL representative explained that a multi-layer liner system was selected for the NSDF due to its flexibility and ability to withstand the strain of potential seismic events.²⁰⁶ In section 4.4 of CMD 22-H7, CNL also reported that the NSDF will be built on bedrock, noting that structures founded on bedrock are generally seismically resistant. In

²⁰⁴ CSA N289.1-18: *General Requirements for Seismic Design and Qualification of Nuclear Power Plants*, CSA Group, 2018 [CSA N289.1].

²⁰⁵ *Transcript of the May 31 2022 Public Hearing*, pages 12-13.

²⁰⁶ *Transcript of the February 22 2022 Public Hearing*, pages 127-128.

addition, to mitigate the potential for the liquefaction of soil near the NSDF during a seismic event, CNL reported that it would remove sandy soil in the vicinity of the ECM during construction and replace it with compacted engineered granular fill material.

253. The Commission asked NRCan to comment on the concern raised in the intervention by D. Snider (CMD 22-H7.134) that “NRCan states that an earthquake occurs on average every five days in this zone”. A representative from NRCan confirmed that its [website](#) states that an earthquake occurs in the Western Québec seismic zone every five days on average, however, this is in a large zone extending from Montréal to Temiscaming and that the majority of those earthquakes are too small to be felt.²⁰⁷ As discussed earlier in this section, CNL reported that the ECM was designed to withstand a significant, once-in-10,000-year earthquake while maintaining waste containment.
254. The Commission asked NRCan for its view on the impact of seismic activity to the proposed NSDF. An NRCan representative stated that NRCan considers the NSDF seismic assessment to be acceptable. The NRCan representative explained that NRCan reviewed CNL’s probabilistic seismic hazard assessment, for the NSDF, which was used to determine the level of seismic hazard to be accounted for in the design of the ECM, and found it to be thorough. The NRCan representative noted that the seismic hazard levels CNL used in its assessment were more conservative than those required by the [National Building Code of Canada 2015](#).²⁰⁸ The NRCan representative noted that while NRCan had since updated its seismic hazard model for the [National Building Code of Canada 2020](#),²⁰⁹ the values used by CNL in its seismic hazard assessment were similar to NRCan’s 2020 seismic hazard values.²¹⁰
255. Asked why NRCan’s seismic hazard values increased between 2015 and 2020, the NRCan representative explained that the new values captured an increased understanding of the shaking caused by a given earthquake at a given distance and were informed by work done by the NGA-East²¹¹ research team. The NRCan representative noted that while this is an area of ongoing study, the new values are robust and unlikely to change.²¹²
256. The Commission asked for further information on how CNL modelled the effects of seismic events. An AECOM representative said that CNL used industry-recognized software to assess the potential effects of seismic events on the NSDF. The AECOM representative explained that the results of analyses

²⁰⁷ *Transcript of the June 1 2022 Public Hearing*, pages 104-105.

²⁰⁸ *National Building Code of Canada 2015*, National Research Council Canada, 2015.

²⁰⁹ *National Building Code of Canada 2020*, National Research Council Canada, 2020.

²¹⁰ *Transcript of the February 22 2022 Public Hearing*, pages 129-130.

²¹¹ NGA-East is a multi-disciplinary research project coordinated by the Pacific Earthquake Engineering Research center, with headquarters at the University of California, Berkeley. The objective of NGA-East is to develop a new ground motion characterization model for Central and Eastern North America.

²¹² *Transcript of the June 1 2022 Public Hearing*, pages 108-109.

using those programs found that the NSDF perimeter berm would remain intact during a design basis seismic event and that any settlement would remain within acceptable criteria.²¹³

257. The Commission is satisfied that CNL has adequately considered the potential impacts of seismic events on the NSDF Project. The Commission notes that, in line with the guidance of CSA N289.1, the NSDF was designed to withstand a once-in-10,000-year earthquake.

3.3.8.2 Climate Change

258. In section 10.4 of the EIS, CNL reported that it conducted a climate change effects assessment for the NSDF following guidance provided by the Federal-Provincial-Territorial Committee on Climate Change and Environmental Assessment. CNL recognized that climate change may result in shifts in the frequency and/or intensity of extreme weather events and forest fires. As such, CNL reported that the NSDF Project design features and mitigation measures, particularly regarding extreme precipitation, high winds, flooding, and forest fires, also consider the potential effects of climate change.
259. CNL noted that the effects of climate change are typically measured over long periods of time, with the potential for climate change effects increasing as the period over which they are measured increases. As an adaptation measure for future effects, CNL reported that monitoring will be incorporated into the NSDF Closure Plan to help identify any potential future climate change effects beyond what was considered in the climate change assessment. This would include evaluating long-term monitoring results, documented changes in the local climate, and up-to-date climate change predictions.
260. The Commission asked CNL for more information on the ability of the NSDF to withstand the temperature effects of climate change. A representative from AECOM explained that the HDPE geomembrane to be used in the base liner and final cover systems for the proposed NSDF has a wide range of temperature capabilities and that climate change is not expected to have a long-term effect on the integrity of the geomembrane. The AECOM representative also noted that the geomembrane layers would be buried within the multi-layered liner and cover systems that would help regulate its temperature.²¹⁴
261. The Commission asked ECCC to comment on CNL's consideration of climate change in the EIS. An ECCC representative said that ECCC views the greatest climate change risk to the NSDF to be that from increased precipitation, particularly during the construction phase. The ECCC representative noted that ECCC worked closely with CNL and CNSC staff and was of the view that severe precipitation had been adequately considered in the NSDF design. The

²¹³ *Transcript of the May 31 2022 Public Hearing*, pages 95-96.

²¹⁴ *Transcript of the June 1 2022 Public Hearing*, pages 102-103.

ECCC representative noted that ECCC would continue to engage with CNL and CNSC staff to ensure that severe precipitation issues remained adequately addressed.²¹⁵

262. The Commission is satisfied that CNL has adequately considered the potential impacts of climate change on the NSDF Project. The Commission notes that CNL has completed a climate change effects assessment for the NSDF Project and has incorporated the potential effects of climate change into the NSDF Project design features and mitigation measures. The Commission further notes that CNL will incorporate monitoring into the NSDF Closure Plan to identify any future climate change effects beyond what was considered in the climate change assessment.

3.3.8.3 Extreme Precipitation

263. In section 4.5 of CMD 22-H7.1, CNL provided information on how extreme precipitation events were considered in the design of the NSDF and WWTP. CNL reported that the storage capacity and maximum flow rate of the WWTP were based on back-to-back, 100-year, 24-hour storm events. In section 3.4.2 of the EIS, CNL submitted that back-to-back 100-year, 24-hour storm events would produce a contact water volume of 4,710 m³ at a maximum rate of 75 m³/hr. CNL submitted that the design of the ECM also includes stormwater features such as drainage, ditches, culverts, and surface water management ponds that have been designed for peak flows.
264. In section 3.6 of CMD 22-H7, CNSC staff also reported that the cover and liner for the ECM were designed to resist erosional forces from surface water flow resulting from a probable maximum precipitation event. CNSC staff submitted that it had reviewed the analysis of the ECM barrier system performance, and performed independent analyses, and found the ECM barrier system to be robust.
265. The Commission is satisfied that CNL has adequately considered the potential impacts of extreme precipitation on the NSDF Project and has designed the NSDF and WWTP to withstand and accommodate extreme precipitation events. The Commission notes that CNL considered extreme precipitation events in the design of the NSDF.

3.3.8.4 Flooding

266. In section 4.5 of CMD 22-H7.1, CNL reported that it considered flooding of the Ottawa River, as well as nearby creeks and wetlands, when completing the siting assessment for the proposed NSDF Project. CNL submitted that the base of the NSDF is located approximately 163 metres above sea level, which is

²¹⁵ *Transcript of the June 1 2022 Public Hearing*, pages 59-61.

approximately 50 metres above the current water levels of the Ottawa River. In section 3.5 of CMD 22-H7, CNSC staff noted that the maximum flood level of the Ottawa River due to upstream dam breaks is calculated to be just 122 metres above sea level. Therefore, the proposed NSDF is situated well outside of potential floodplains.

267. The Commission is satisfied that CNL has adequately considered the potential impacts of flooding on the NSDF Project. The Commission notes that the proposed NSDF site is located outside of the Ottawa River floodplain.

3.3.8.5 High Winds

268. In section 10.1.4 of the EIS, CNL submitted that the effects of tornadoes or extreme winds on the ECM are expected to have negligible consequences. CNL reported that it managed the risks associated with severe winds or tornadoes through design criteria and management practices. CNL noted that the NSDF is designed to withstand a design basis tornado for the CRL site which is an upper EF2 tornado²¹⁶ with a 10,000-year return period. CNL reported that the design basis tornado event for the CRL site was reviewed in 2018 after a series of tornados occurred in the Ottawa Valley and that the current choice of an upper EF2 tornado for the CRL site remains appropriate. CNL further submitted that consequences of potential tornadoes, such as a power outage, are encompassed by CNL's emergency preparedness program.
269. The Commission is satisfied that CNL has adequately considered the potential impacts of high winds on the NSDF Project. The Commission notes that the NSDF was designed to withstand an EF2 tornado with a 10,000-year return period.

3.3.8.6 Forest Fires

270. In section 10.2 of the EIS, CNL provided information on the potential impact of forest fires on the proposed NSDF. CNL reported that the potential for a forest fire to affect the NSDF Project is limited through meeting minimum distances between the NSDF Project and the forest edge, in compliance with NFPA 1144, *Standard for Reducing Structure Ignition Hazards from Wildland Fires*²¹⁷. CNL submitted that the design of NSDF infrastructure incorporates fire protection per the *National Building Code of Canada 2015* and that top layers of the ECM cover system would protect the HDPE geomembrane from potential forest fire conditions.

²¹⁶ An Enhanced Fujita 2 (EF2) tornado is a tornado with wind speeds up to 220 km/hr.

²¹⁷ NFPA 114: *Standard for Reducing Structure Ignition Hazards from Wildland Fires*, National Fire Protection Association, 2013.

271. CNL further reported that it completed an assessment of the consequences of a fire during the operations phase at the proposed NSDF Project site as part of the NSDF *Safety Analysis Report (SAR)*.²¹⁸ CNL submitted that the evaluation found that the radiological doses to workers and members of the public due to a fire event were below regulatory limits and met the safety objectives for the NSDF Project. CNL noted that fire response is facilitated through CNL's existing emergency preparedness and fire protection programs.
272. The Commission is satisfied that CNL has adequately considered the potential impacts of forest fires on the NSDF Project. The Commission notes that CNL applied fire protection measures from NFPA 1144 and the *National Building Code of Canada 2015* to the design of the NSDF.
273. Based on the information on the record as described above, the Commission concludes that the design of the NSDF Project is sufficient to withstand the effects of the environment, provided that the committed mitigation measures are implemented. The Commission finds that:
- CNL sufficiently considered the potential impacts of environmental events such as seismic activity, climate changes, extreme precipitation, flooding, high winds, and forest fires in the EIS
 - CNL has considered the impacts of environmental events in the design of the NSDF
 - CNL will incorporate monitoring into the NSDF Closure Plan to help identify any potential future climate change effects beyond what has been considered in the climate change assessment
 - ECCC will continue to engage with CNL and CNSC staff to ensure that severe precipitation issues remained adequately addressed

3.3.9 *Effects of Accidents and Malfunctions*

274. In accordance with paragraphs 19(1)(a) and (b) of CEAA 2012, the EA must consider the environmental effects of malfunctions or accidents that may occur in connection with the NSDF Project. Accidents and malfunctions refer to events or upset conditions that are not part of the normal operation of the NSDF Project. Accidents refer to unintended events, including operating errors, equipment failures or other mishaps, the consequences or potential consequences of which are significant from the point of view of protection or safety.
275. In section 7.0 of the EIS, CNL submitted that it identified, characterized, and evaluated the accidents and malfunctions that may occur during the pre-closure (i.e., construction, operation, and closure) phases of the proposed NSDF Project in the *NSDF Safety Analysis Report*. In line with the safety objectives of CNSC

²¹⁸ *Near Surface Disposal Facility Safety Analysis Report*, Revision 2, 232-508770-SAR-002, CNL, October 2020.

REGDOC-2.4.1, *Deterministic Safety Analysis*,²¹⁹ CNL reported that it identified credible radiological and non-radiological hazards and events through a review of proposed NSDF activities. Such accidents and malfunctions included dropped waste package, fire within the ECM, fire within the WWTP, and a wastewater spill in the WWTP. CNL analyzed each event to determine the resultant dose estimate for workers and the public. In section 7.3.3.1 of the EIS, CNL provided information on the dose consequences of potential accidents and malfunctions. CNL reported that the dose consequences for all potential accidents and malfunctions were below the regulatory dose limits for NEWS and members of the public and, therefore, residual effects from accidents and malfunctions of the NSDF Project would not be significant.

276. In section 8.2 of its EA Report, CNSC staff submitted that it evaluated CNL's assessment of potential accidents and malfunctions for the NSDF Project in accordance with the CNSC Generic Guidelines and REGDOC-2.9.1. CNSC staff found CNL's identification and assessment of key accidents and malfunctions at the ECM and the WWTP, and the proposed mitigation measures, to be adequate. Regarding radiological accidents, CNSC staff further reported that it found the dose acceptance criteria, the methodology for the assessment of radiological consequences, and the calculated dose rate to both on-site and off-site workers to be adequate. Considering the assessment of exposure pathways, mitigation measures, short duration of accidents, and the fact that potential adverse effects are localized, CNSC staff found that the predicted residual effects to the public and the environment resulting from potential accidents and malfunctions at the ECM and the WWTP are negligible.
277. The Commission asked CNL to explain how the NSDF may be impacted by a loss of power. A CNL representative explained that the NSDF, as a Class IB facility, would have back-up power via the CRL Class III diesel generators. The CNL representative noted that back-up power to the NSDF would help maintain monitoring and lighting, but was not required to maintain safety. In section 4.5 of CMD 22-H7, CNSC staff noted that it found the design of the electrical power system for the NSDF to be acceptable and in compliance with CSA N290-5 *Requirements for electrical power and instrument air systems of CANDU nuclear power plants*.²²⁰ CNSC staff noted that compliance with N290-5 is conservative for non-reactor facilities.²²¹
278. The Commission asked CNL if it had considered a scenario where multiple minor events lead to a more significant accident. A CNL representative said that, in preparation of the NSDF *Safety Analysis Report*, CNL identified operational hazards, possible events that may occur during operations, and the consequences of those events. The CNL representative explained that the

²¹⁹ REGDOC-2.4.1, *Deterministic Safety Analysis*, CNSC, May 2014 [REGDOC-2.4.1].

²²⁰ CSA N290-5 *Requirements for electrical power and instrument air systems of CANDU nuclear power plants*, CSA Group, 2016.

²²¹ *Transcript of the May 31 2022 Public Hearing*, pages 58-59.

approach it followed to evaluate event consequences was bounding; meaning that, though a specific series of events may not have been directly evaluated, the potential consequences of such events had been accounted for in the safety analysis.²²²

279. Based on the information on the record as described above, the Commission concludes that NSDF Project accidents and malfunctions would not cause significant adverse environmental effects, provided that the committed mitigation measures are implemented. The Commission finds that:
- CNL assessed the impacts of accidents and malfunctions in compliance with regulatory requirements including the CNSC Generic Guidelines, REGDOC-2.4.1, and REGDOC-2.9.1
 - doses for NEWs and members of the public in respect of all potential accidents and malfunctions remain below the regulatory dose limits

3.3.10 Cumulative Environmental Effects

280. In accordance with paragraphs 19(1)(a) and (b) of CEAA 2012, the EA must consider any cumulative environmental effects that are likely to result from the NSDF Project in combination with other physical activities that have been or will be carried out.
281. In section 4.6.10 of CMD 22-H7.1, CNL reported that it completed a cumulative effects assessment to evaluate the contribution of effects from the NSDF Project in combination with previous, existing, or reasonably foreseeable developments or activities in the region that may overlap spatially and temporally. In section 8 of the EIS, CNL submitted that its cumulative effects assessment found that:
- In most cases, the NSDF Project effects were not predicted to overlap spatially or temporally with reasonably foreseeable development project effects
 - For valued components where cumulative effects were identified, these cumulative effects were not significant
282. In section 8.4 of its EA Report, CNSC staff submitted information on its review of CNL's cumulative effects assessment. CNSC staff submitted that, for all valued components for which potential cumulative effects had been identified (air quality, surface water quality, and the Blanding's turtle) the mitigation and follow-up monitoring program measures proposed by CNL were comprehensive and adequate to address the potential cumulative effects. As a result, CNSC staff found that the NSDF Project is not likely to cause significant adverse cumulative effects. CNSC staff also noted that follow-up monitoring will

²²² *Transcript of the June 1 2022 Public Hearing*, pages 11-13.

consider cumulative effects and will be used to confirm predictions and ensure the environment remains protected.

283. Noting concerns from both Indigenous and non-Indigenous intervenors regarding the adequacy of CNL's consideration of cumulative effects, the Commission asked for additional information regarding the scope of CNL's cumulative effects assessment. CNSC staff noted that Table 8.5 in its EA Report lists the past, present, and reasonably foreseeable future projects that were included in CNL's cumulative effects assessment.²²³ Past activities included neighbouring historical waste management areas and existing contamination in the receiving environment. Reasonably foreseeable future projects included those related to the proposed Small Modular Reactor on the CRL site, new CRL support infrastructure, decommissioning and environmental remediation at the CRL site, the proposed Nuclear Power Demonstration in-situ decommissioning project, and activities at Garrison Petawawa.
284. Many Indigenous intervenors including AOPFN (CMD 22-H7.109), KFN (CMD 22-H7.111, CMD 22-H7.111A) and KZA (CMD 22-H7.113), raised concerns regarding the adequacy of the cumulative effects assessment as it relates to potential cumulative effects on asserted Aboriginal rights and interests. The Commission acknowledges that cumulative effects of an ongoing project, and historical context, inform the scope of the duty to consult. However, incorporating cumulative effects is not an attempt to redress past wrongs; it is to recognize an existing state of affairs and to address the consequences of what may result from the Project. In CMD 22-H7.D, CNSC staff submitted that cumulative effects on both the environment and on the exercise of Aboriginal or treaty rights had been adequately characterized and addressed in the EIS. In section 8.4 of its EA Report, CNSC staff reported its assessment that, when taking into consideration all identified mitigation measures and commitments by CNL, the NSDF Project would not contribute to any additional cumulative effects on the environment. CNSC staff considered cumulative impacts on Aboriginal rights for potentially impacted Indigenous Nations and communities in section 9 of its EA Report. Impacts to the rights of individual Nations and communities are discussed further in section 3.4.3 of this *Record of Decision*.
285. Following the issuance of the *Procedural Direction*, KFN (CMD 22-H7.111C) and KZA (CMD 22-H7.113B) provided additional details on their concerns regarding cumulative effects to both the environment and their Aboriginal treaty rights. KZA again raised concern that the cumulative effects assessment conducted under CEAA 2012 was not adequate and that a comprehensive cumulative effects review is necessary in order to adequately consider how the environment and the exercise of KZA's rights have already been impacted. In Appendix A of CMD 22-H7.D, CNSC staff reported that the additional information provided by KZA did not change CNSC staff's original conclusions

²²³ *Transcript of the June 1 2022 Public Hearing*, pages 342-343.

on cumulative effects as outlined in its EA Report. CNSC staff reiterated its view that cumulative effects on both the environment and on the exercise of Aboriginal and/or treaty rights had been adequately assessed and that additional cumulative effects studies were not required in relation to the NSDF Project.

286. Based on the information on the record as described above, the Commission concludes that NSDF Project would not cause significant adverse cumulative environmental effects, provided that the committed mitigation measures are implemented. The Commission finds that:
- CNL adequately considered cumulative environmental effects that are likely to result from the NSDF Project, in combination with the environmental effects of past, existing and reasonably foreseeable projects or activities, in accordance with CEAA 2012
 - for valued components where cumulative effects were identified, CNL proposed adequate mitigation and follow-up measures to address the potential cumulative effects
 - the cumulative effects analysis considered impacts to Aboriginal rights and treaty rights, factoring historical harms

3.3.11 Socio-Economic Environment

287. In accordance with subparagraphs 5(1)(c)(i) and 5(2)(b)(i) of CEAA 2012, the EA must consider the effects of the NSDF Project on socio-economic conditions, including those impacting Indigenous peoples.
288. In section 4.6.9 of CMD 22-H7 and section 5.10 of the EIS, CNL provided information on its assessment of the potential residual effects of the NSDF Project on the socio-economic environment. As part of this assessment, CNL evaluated the potential effects on the labour market, economic development, government finances, housing and accommodations, services and infrastructure, quality of life, and public safety. CNL provided a summary of predicted residual socio-economic effects in section 5.10 of the EIS along with associated mitigation measures. Examples of such mitigation measures include transporting construction materials outside of peak traffic times as well as continued compliance with all applicable health and safety standards and CNL's existing environmental, safety and security programs.
289. After the incorporation of mitigation measures, CNL reported that it did not identify residual effects related to government finances, quality of life, or public safety. Regarding potential positive residual effects, CNL reported that local Indigenous peoples had expressed an interest in potential job opportunities for the NSDF Project. CNL submitted that it would continue to engage with Indigenous peoples on such opportunities. As a result, CNL found that residual effects of the NSDF Project on the labour market and economic development to be positive.

290. Regarding potential negative socio-economic effects, CNL submitted that the NSDF Project could put pressure on commercial accommodations, increase public transportation and road degradation, and increase demand for community services such as health, education, and protective and emergency services. With the implementation of mitigation measures, CNL reported that residual effects of the NSDF Project on housing and accommodation, services, and infrastructure are not significant.
291. In section 12 of its EA Report, CNSC staff submitted that the environmental effects of the NSDF Project and their significance had been determined using assessment methods and analytical tools that reflect current accepted practices of environmental and socio-economic assessment practitioners.
292. Several Indigenous intervenors, including the AOO (CMD 22-H7.98) and KFN (CMD 22-H7.111, CMD 22-H7.111A), raised concerns regarding the adequacy of the socio-economics assessment completed under CEAA 2012. In section 4.4.1.3 of the IER and section 2.1.1.3 of CMD 22-H7.1E, CNL noted that the changes to the socio-economic assessment requested by the AOO and KFN were consistent with the provisions under the IAA, which are beyond the scope of CEAA 2012. CNL noted that the EIS, including the socio-economic assessment, was completed in accordance with the requirements of CEAA 2012. In section 1.2 of its EA Report, CNSC staff submitted that it found CNL's final EIS to be complete and in compliance with the requirements of CEAA 2012.
293. In CMD 22-H7.111C, following the issuance of the *Procedural Direction*, KFN provided additional socio-economic and cultural information about its community. In the revised rights impact assessment (RIA) for KFN (Appendix A.1 of CMD 22-H7.D), CNSC staff reported that it reviewed the additional information provided by KFN and was of the view that the information had not shown a direct linkage to potential impacts on the exercise of KFN's asserted rights because of the NSDF Project. CNSC staff reported that the additional information KFN provided additional details regarding general socio-economic information and general areas of concern of KFN community members that did not pertain specifically to the NSDF Project.
294. Based on the information on the record as described above, the Commission concludes that the NSDF Project would not cause significant adverse socio-economic effects, provided that the committed mitigation measures are implemented. The Commission finds that:
- CNL's EIS, including the socio-economic assessment, was completed in accordance with the requirements of CEAA 2012 and reflects current accepted practices of environmental and socio-economic assessment practitioners
 - the residual effects of the NSDF Project on socio-economic factors are positive or not significant

3.3.12 *Environmental Assessment Follow-Up Monitoring Program*

295. In accordance with paragraph 19(1)(e) of CEAA 2012, the EA must take into account the requirements of the follow-up program in respect of the designated project. The follow-up program is a program for verifying the accuracy of the environmental assessment of a designated project and for determining the effectiveness of any mitigation measures.
296. In section 4.7 of CMD 22-H7.1, CNL reported that the EA Follow-up Monitoring Program (EAFMP) would include effluent, environmental, and operational monitoring programs to monitor and verify the EA predictions for the NSDF Project. CNL provided information on each monitoring area and reported that, wherever possible, CNL's existing environmental monitoring and management programs would be adapted to meet EAFMP monitoring objectives. CNL submitted that it had made publicly available a [Draft Environmental Follow-Up Monitoring Program for the Near Surface Disposal Facility](#)²²⁴ which would be finalized pending the Commission's decision on the application to authorize the construction of the NSDF.
297. CNL submitted that it had solicited feedback on the draft EAFMP from the Federal-Provincial Review Team,²²⁵ the public, and Indigenous Nations, communities, and organizations and that it had worked to disposition the feedback received. CNSC staff noted that the opportunity remains for direct involvement in the development and implementation of the EAFMP. In its *NSDF Project Consolidated Commitment Lists*, CNL has multiple commitments related to involving Indigenous Nations and communities in the development and implementation of the NSDF EAFMP.
298. Regarding species at risk, CNL submitted in section 4.7 of CMD 22-H7.1 that it would integrate monitoring and follow-up programs for the Canada warbler, eastern whip-poorwill, eastern wood-pewee, golden-winged warbler, wood thrush, bats, Blanding's turtle, and eastern milksnake into CNL's existing biodiversity monitoring program. CNL reported it would monitor for species at risk during the construction and operations phases of the NSDF Project as well as during the closure phase where appropriate. CNL explained that these monitoring programs would be used to confirm the predictions made in the terrestrial biodiversity assessment, including the effectiveness of mitigation measures.
299. In section 4.7 of CMD 22-H7.1, CNL reported that, if the EAFMP identifies adverse environmental effects that are greater than predicted, CNL will evaluate whether the effects change the conclusions in the EIS. CNL submitted that if changes are confirmed, it would then evaluate the need for revised mitigation

²²⁴ *Draft Environmental Assessment Follow-Up Monitoring Program for the Near Surface Disposal Facility*, 232-509220-PLA-001, Revision 0, Golder Associates, February 25 2021.

²²⁵ The Federal-Provincial Review Team includes the OMECP, Quebec Direction Adjointe Des Projets Industriels et Miniers, and ECCC.

actions and develop such actions as required. CNL reported that this evaluation process is documented in CNL's Environmental Protection procedures.

300. In section 11.0 of its EA Report, CNSC staff reported that it would verify and monitor the final design and implementation of the EAFMP as well as CNL's reporting of the program results. CNSC staff noted the importance of CNL's commitment to involve Indigenous Nations and communities in the EAFMP and to share the results of the EAFMP throughout all phases of the NSDF Project. CNSC staff reported that, should the Commission issue a positive decision, CNL will be required to finalize and implement the EAFMP for the NSDF Project in consultation with Indigenous Nations and communities, and relevant regulators.
301. The Commission asked CNL to comment on whether it would make NSDF EAFMP data available to the public. CNL would produce annual EAFMP reports including environmental monitoring data and trends that it would submit to the CNSC and make available to the public. The CNL representative also explained that the EAFMP includes trigger levels which, if exceeded, may initiate more immediate results reporting.²²⁶
302. Based on the information on the record as described above, the Commission concludes that the follow-up monitoring measures for the NSDF Project are adequate. The Commission finds that:
- CNL has prepared a draft EAFMP to monitor and verify the EA predictions for the NSDF Project
 - CNL's draft EAFMP is to be finalized pending the Commission's decision on the application to authorize the construction of the NSDF
 - CNL has committed to implementing the EAFMP and CNSC staff will verify CNL's implementation; the Commission views this commitment and subsequent verification to be adequate to meet the objectives of CEAA 2012
 - wherever possible, CNL's existing environmental monitoring and management programs would be adapted to meet EAFMP monitoring objectives
 - if the EAFMP identifies adverse environmental effects that are greater than predicted, CNL will evaluate whether the effects change the conclusions in the EIS and will develop revised mitigation actions if required
 - CNL has committed to involving Indigenous Nations and communities in the finalization and implementation of the EAFMP; the Commission views this commitment as an important aspect of the EAFMP, and considers it a requirement of fulfilling the EAFMP going forward
 - CNL will produce annual EAFMP reports which will be provided to the CNSC and made available to the public

²²⁶ *Transcript of the May 31 2022 Public Hearing*, pages 121 and 127-128.

3.3.13 Public Engagement

303. In accordance with paragraph 19(1)(c) of CEAA 2012, the EA must take into account comments from the public that are received in accordance with this Act. Section 24 of CEAA 2012 requires that the responsible authority ensure that the public is provided with an opportunity to participate in the EA of a designated project. In section 1 of CMD 22-H7.1B, CNL provided information on its public engagement activities related to the NSDF EA and licensing processes. CNL submitted that it began public engagement activities related to the NSDF Project in 2016 in accordance with the requirements of CEAA 2012 and the NSCA. This section focuses on EA-specific public engagement activities. Further information on CNL's public information and disclosure program is discussed in section 3.5.3.1 of this *Record of Decision*.
304. In CMD 22-H7.1B, CNL provided information on its NSDF-specific public engagement activities including public information sessions, site visits, publication of fact sheets, participation in community events, increased transparency with the media, use of social media, and publication of its EIS and key technical documents on the CNL website. In March 2020, the COVID-19 pandemic impacted CNL's in-person engagement activities. CNL reported that it adapted to pandemic restrictions by providing online platforms for virtual meetings, workshops, webinars, NSDF Project updates, and open houses.
305. CNL reported that most concerns heard during public engagement sessions were related to the following:
- justification for the project
 - waste inventory
 - design details
 - long-term monitoring and accountability
 - alternative means assessment
 - environmental events
 - protection of the Ottawa River
- In Table 1 of CMD 22-H7.1B, CNL provides explanations for how it incorporated each key concern into the final EIS. CNL noted that some comments from the public, related to follow-up environmental monitoring and verification of mitigation measures, remain outstanding. CNL reported that these topics would be addressed as part of the development of the EAFMP, which will not be finalized until after the Commission makes its EA decision.
306. In section 6.1.1 of CMD 22-H7, CNSC staff reported that CNL made reasonable efforts to keep targeted audiences, including the public, Indigenous Nations and communities, and stakeholders, informed about the NSDF Project and to address Project-specific issues and concerns raised.

307. In section 6.1.2 of CMD 22-H7, CNSC staff provided information on its public engagement activities with respect to the NSDF Project. CNSC staff reported that it focused its public engagement activities on introducing the NSDF Project, providing information on the EA and licensing processes and the role of the CNSC in the review of the project, bringing awareness to participation opportunities, and encouraging the public participation. CNSC staff reported that its engagement efforts included activities such as hosting open houses, attending community events, and holding sessions with municipal councils and Members of Parliament, upon request. CNSC staff reported that it updated its public engagement approach in 2020 in response to both the COVID-19 pandemic and feedback around a need for increased transparency. As a result, CNSC staff developed and launched an NSDF landing page on the CNSC website, hosted a series of webinars, hosted moderated technical sessions, and produced a regular NSDF Project update bulletin.
308. In section 10 of its EA Report, CNSC staff reported that the CNSC provided four formal opportunities for the public, Indigenous Nations and communities, and government reviewers to participate in the EA process for the NSDF Project. During these opportunities, CNSC staff solicited comments on the NSDF Project Description, the revised NSDF Project Description, CNL's draft EIS, and CNSC staff's EA Report. In addition, CNSC staff reported that it also responded to public inquires, posted regular project updates and documentation on the Canadian Impact Assessment Registry, and held multiple open house information sessions.
309. The Commission asked CNL to describe the geographic extent of its public engagement efforts. A CNL representative explained that initial engagement activities began with communities located close to the CRL site, including Renfrew County and la municipalit  regionale de comt  (MRC) Pontiac, and extended to include engagement with the cities of Ottawa, Gatineau, and Montreal.²²⁷
310. In its intervention, MRC Pontiac ([CMD 22-H7.122](#)) stated that it was not engaged early in the NSDF Project. A CNL representative objected to this claim and said that CNL began engagement with MRC Pontiac in 2016. The CNL representative said that CNL's engagement efforts included hosting MRC Pontiac officials at the CRL site, providing CNL delegations to MRC Pontiac Council, and having a staff representative from MRC Pontiac sit on the Environmental Stewardship Council.²²⁸ Asked by the Commission if there had been any gaps in overall public engagement efforts following public review of the EIS, a CNL representative said that CNL has continuously engaged with the public since 2016 and expressed that there had not been a gap in engagement activities.²²⁹

²²⁷ *Transcript of the May 31 2022 Public Hearing*, page 308.

²²⁸ *Transcript of the June 3 2022 Public Hearing*, pages 92-93.

²²⁹ *Transcript of the June 1 2022 Public Hearing*, pages 398-399.

311. During its presentation of CMD 22-H7.1C, CNL reported that it utilized a third-party organization to conduct public attitude surveys within the Renfrew and Pontiac counties in both 2018 and 2022. CNL reported that most survey respondents voiced confidence that CNL can safely construct and operate the NSDF and that CNL has followed the necessary regulatory review processes in developing the NSDF Project proposal. Noting that a number of Quebec municipalities had previously adopted resolutions opposing the NSDF Project, the Commission asked whether CNL had identified changes in public opinion towards the NSDF Project over time. A CNL representative said that public attitude survey data showed an increase in support and knowledge of the NSDF Project between 2018 and 2022.²³⁰ The CNL representative further noted that CNL plans to continue to conduct public attitude surveys on an ongoing basis.²³¹
312. The Commission asked if CNL and CNSC staff had targeted any engagement efforts towards young people. A CNL representative explained that CNL had visited universities and high schools, issued a youth-focused newsletter, and used various social media platforms to engage with younger members of the public. CNSC staff said that it created an NSDF landing page on the CNSC website, hosted webinars, and posted recordings of the webinars on YouTube to increase accessibility for young people. CNSC staff recognized that the CNSC has an opportunity to improve with regards to youth-focused engagement.²³²
313. In its intervention, the City of Ottawa (CMD 22-H7.16) questioned how the public would be notified of an event at the NSDF. A CNL representative said that event response is covered by CNL's existing emergency preparedness program.²³³ In section 6.10 of CMD 22-H.7, CNL reported that its emergency preparedness program at the CRL site covers emergency plans and procedures, emergency drills, and emergency response coordination and communication with federal, provincial, and municipal officials.
314. The Commission asked if the NSDF SAR is publicly available. A CNL representative explained that the NSDF SAR is included in the Canadian Impact Assessment's registry of documents for the NSDF Project and is available to the public in its full technical detail. The findings of the NSDF SAR are also summarized in EIS and *NSDF Safety Case* which are both publicly available.²³⁴
315. Based on the information on the record as described above, the Commission concludes that comments from the public were adequately considered with respect to the NSDF Project. The Commission finds that:

²³⁰ *Transcript of the May 30 2022 Public Hearing*, page 185.

²³¹ *Transcript of the June 3 2022 Public Hearing*, pages 118-121.

²³² *Transcript of the May 31 2022 Public Hearing*, pages 309-314.

²³³ *Transcript of the May 30 2022 Public Hearing*, page 71.

²³⁴ *Transcript of the May 31 2022 Public Hearing*, page 34-37.

- CNL made reasonable efforts to keep targeted audiences, including the public, Indigenous Nations and communities, and other interested parties, informed about the NSDF Project and address Project-specific issues and concerns raised
- CNL considered public feedback and, when appropriate, incorporated the feedback into the NSDF Project or EIS
- the CNSC provided four formal opportunities for the public, Indigenous Nations and communities, and government reviewers to participate in the EA process for the NSDF Project
- CNSC staff responded to public inquiries, held information sessions, and posted regular project updates and documentation online

The Commission appreciates the valuable information provided by the public.

3.3.14 Indigenous Consultation and Engagement

316. The common law duty to consult with Indigenous Nations and communities is engaged when the Crown contemplates action that may adversely affect established or potential Aboriginal and/or treaty rights. The CNSC, as an agent of the Crown and as Canada's nuclear regulator, recognizes and understands the obligation to fulfill the duty to consult and ensure that it considers impacts to Aboriginal and/or treaty rights, pursuant to section 35 of the *Constitution Act, 1982*, when it makes EA decisions under CEAA 2012.
317. In section 9.0 of its EA Report, CNSC staff submitted that, in order to satisfy the duty to consult, CNSC staff sought information from potentially impacted Indigenous Nations and communities about the nature of their Aboriginal and/or treaty rights protected under section 35 of the *Constitution Act, 1982* and how they may be impacted by the NSDF Project. CNSC staff considered all new information arising from CNL and Indigenous Nations and communities about the potential impacts of the NSDF Project, as it emerged, in an effort to understand the nature, scope and extent of adverse impacts on rights. A detailed account of CNSC staff and CNL's engagement efforts with Indigenous Nations and communities, along with the Commission's determination regarding the discharge of the duty to consult is provided in section 3.4 of this *Record of Decision*.

3.3.15 Conclusions on the Environmental Assessment under CEAA 2012

318. Based on its consideration of the information on the record of this hearing, the Commission concludes that the NSDF Project is not likely to cause significant adverse environmental effects as described in subsections 5(1) and 5(2) of the CEAA 2012, provided that CNL implements all proposed mitigation measures and follow-up monitoring measures. Considering the implementation of all proposed mitigation measures and follow-up monitoring measures, the Commission finds that:

- the factors described in paragraphs 19(1)(a) to 19(1)(h) of CEAA 2012, as determined in the Commission's March 2017 decision on the scope of the EA were considered for the NSDF Project
- the NSDF Project is not likely to cause significant adverse environmental effects to fish and fish habitat as defined in subsection 2(1) of the *Fisheries Act* (CEAA 2012, subparagraph 5(1)(a)(i))
- the NSDF Project is not likely to cause significant adverse environmental effects to aquatic species as defined in subsection 2(1) of the *Species at Risk Act* (CEAA 2012, subparagraph 5(1)(a)(ii))
- the NSDF Project is not likely to cause significant adverse environmental effects to migratory birds as defined in subsection 2(1) of the *Migratory Birds Convention Act, 1994* (CEAA 2012, subparagraph 5(1)(a)(iii))
- the NSDF Project is not likely to cause significant adverse effects on federal lands, in a province other than the one in which the Project is being carried out or outside of Canada (CEAA 2012, paragraph 5(1)(b))
- the NSDF project is not likely to cause significant adverse effects with respect to Aboriginal peoples (CEAA 2012, paragraphs 5(1)(c) and 5(2)(b))
- the NSDF Project is not likely to cause significant adverse environmental impacts as a result of changes other than those referred to in CEAA 2012 paragraphs 5(1)(a) and (b), that may be caused to the environment that are directly linked or necessarily incidental to any federal decisions pursuant to other legislation (CEAA 2012, paragraph 5(2)(a))

As such, the Commission may move forward with its consideration of the proposed licence amendment under the NSCA. The Commission's consideration of the proposed licence amendment is provided in section 3.5 of this *Record of Decision*.

319. Having heard concerns from Indigenous Nations and communities regarding species of cultural significance, and notwithstanding the conclusions of the EA, the Commission encourages CNL to continue to engage Indigenous Nations and communities about culturally significant species located on the CRL site.

3.4 Indigenous Engagement and Consultation

320. The Commission considered the information provided by CNSC staff and CNL regarding Indigenous consultation and engagement activities in respect of this application and by Indigenous rights-holders and their representatives about their impacted rights and interests. The Commission also assessed how Indigenous views and information were considered and factored into the Project by CNSC staff and CNL.

321. The common law duty to consult is grounded in the key principle of the honour of the Crown. The duty is engaged when the Crown contemplates conduct that may adversely affect established or potential Aboriginal and/or treaty rights of which the Crown has real or constructive knowledge.²³⁵ The CNSC, as an agent of the Crown and as Canada's nuclear regulator, recognizes and understands the importance of building relationships and engaging with Canada's Indigenous Nations and communities. The CNSC ensures that its EA decision under the CEAA 2012 and licensing decision under the NSCA uphold the honour of the Crown and consider potential or established Aboriginal and/or treaty rights pursuant to section 35 of the *Constitution Act, 1982*.

322. In meeting its obligations towards Indigenous rights-holders and their representatives, the Commission may rely on steps and efforts undertaken by CNSC staff as well as the opportunities for Indigenous Nations and communities to give submission directly to the Commission. The CNSC's consultation process provides for all potentially impacted Indigenous Nations and communities to:

- participate, receive, and assess project information
- apply for participant funding
- make submissions—both oral and written—about their concerns and how their concerns could be accommodated

The process is flexible and open to receiving information from Indigenous Nations and communities regarding any specific right that could be impacted by CNSC-regulated projects and activities.

323. Both the EA and licensing decisions in this application trigger the Crown's duty to consult, and where appropriate, to accommodate Indigenous interests where potential or established Aboriginal and/or treaty rights, under section 35 of the *Constitution Act, 1982*, have the potential to be impacted by the proposed NSDF Project. The Commission must be satisfied that the duty to consult is met prior to making relevant decisions.

3.4.1 *Indigenous Consultation by CNSC Staff*

324. CNSC staff's consultation and engagement activities relative to the NSDF Project since 2016 are set out in several submissions to the Commission, including [CMD 22-H7](#), [CMD 22-H7.B](#), [CMD 22-H7D](#), [CMD 22-H7.E](#). CNSC staff's submissions provide the Commission with valuable information about CNSC staff's engagement activities over the many years of this application, including a period of supplementary consultation directed by the Commission in the *Procedural Direction*. As new information was received by CNSC staff, CNSC staff reviewed it and considered the appropriateness of its original

²³⁵ *Haida Nation v. British Columbia (Minister of Forests)*, 2004 SCC 73 at para 35.

conclusion, as set out in CMD 22-H7. Throughout, CNSC staff found that its assessments and recommendations to the Commission as presented in CMD 22-H7 remained appropriate.

325. CNSC staff provided the Commission with information about its engagement activities with the Indigenous Nations and communities that it identified as having a potential interest in, or could potentially be impacted by, the proposed NSDF Project.²³⁶ In CMD 22-H7, CNSC staff identified the following Indigenous Nations and communities due to the proximity of their communities, treaty areas, and/or traditional territories to the proposed NSDF Project's location, or due to previously-expressed interest in being kept informed:

- Anishinabek Nation
- Algonquin Anishinabeg Nation Tribal Council
- Algonquins of Ontario (AOO)
- Algonquins of Pikwakanagan First Nation (AOPFN)
- Algonquin Nation Secretariat:
 - Wolf Lake First Nation (WLFN)
 - Timiskaming First Nation
 - Mitchikanibikok Inik, Algonquins of Barriere Lake (ABL)
- Kebaowek First Nation (KFN)
- Kitigan Zibi Anishinabeg (KZA)
- Métis Nation of Ontario (MNO)
- Williams Treaties First Nations:
 - Alderville First Nation
 - Chippewas of Beausoleil First Nation
 - Chippewas of Georgina Island First Nation
 - Chippewas of Rama First Nation
 - Curve Lake First Nation (CLFN)
 - Hiawatha First Nation
 - Mississaugas of Scugog Island First Nation

326. CNSC staff reported that it conducted consultation activities in an integrated manner with the federal EA and CNSC licensing processes. CNSC staff provided timelines of its engagement and consultation efforts in section 5.2 of CMD 22-H7, section 9 of its EA Report, as well as sections 2.1 and 3.1 of CMD 22-H7.D. CNSC staff reported that its key consultation and engagement activities since 2016 included the following:

- Providing all interested Indigenous Nations and communities the opportunity to develop a mutually agreeable approach to consultation that suited their needs, capacity, and level of interest in the NSDF Project

²³⁶ CMD 22-H7 section 5.2, EA Report section 9, CMD 22-H7B section 3.2, and CMD 22-H7D sections 2.1 and 3.1.

- Sending written correspondence and meeting in-person and virtually with representatives from identified Indigenous Nations and communities
- Organizing community open houses and engagement sessions
- Incorporating Indigenous Knowledge into the EA and licensing processes
- Supporting the gathering of Indigenous Knowledge and Land Use information specific to the NSDF Project through multiple large-scale studies for the AOO, AOPFN and the MNO
- Signing Terms of References for collaborative approaches to consultation, the EA and RIA processes
- Collaboratively developing sections of its EA Report and RIAs with a number of the identified Nations and communities
- Developing summaries of the key issues and concerns of each Nation and community
- Ensuring CNL's engagement activities meet REGDOC-3.2.2 and related guidance

327. In section 5.2 of CMD 22-H7, CNSC staff submitted that it was able to successfully maintain relationships, information sharing, and collaboration with identified Indigenous Nations and communities throughout the COVID-19 pandemic. CNSC staff reported that, in collaboration with each Indigenous Nation or community, it adjusted the process for consultation and engagement by shifting to virtual meetings, increased email correspondence, and adjusting process timelines as appropriate.

328. In section 9 of its EA Report, CNSC staff reported that it sought information from potentially impacted Indigenous Nations and communities about the nature of their Aboriginal and/or treaty rights protected under section 35 of the *Constitution Act, 1982* and how they may be impacted by the proposed NSDF Project. CNSC staff completed RIAs for potentially impacted Indigenous Nations and communities including the Algonquin First Nations represented by the Algonquin Anishinabeg Nation Tribal Council (including KFN and KZA), the AOO, AOPFN, and the MNO. In an effort to ensure that interested Indigenous Nations and communities were able to present their views with respect to impacts of the Project on their Aboriginal rights, CNSC staff offered opportunities to co-draft RIAs, culminating in co-drafted RIAs for the AOO, AOPFN, and the MNO. After the supplemental consultation following the *Procedural Direction*, CNSC staff worked with KFN and KZA to validate and update RIAs; this work is reflected in CNSC staff's CMD 22-H7.D. Sections 3.4.3.3 and 3.4.3.4 below review KFN and KZA's respective additional submissions after the *Procedural Direction*.

329. Based on the consultation and the RIAs, CNSC staff found that the NSDF Project has the potential to impact the following broad categories of Aboriginal and/or treaty rights:

- harvesting rights – potential impacts include reduced long-term harvesting area, impacts to wildlife habitat as a result of forest clearing, and increased perceived risk of contamination to species harvested
- governance and stewardship rights – potential impacts include permanence of the NSDF Project, the lack of adoption of a “willing host” model as an aspect of free, prior, and informed consent (FPIC), and transportation of radioactive waste to the CRL site
- cultural continuity rights – potential impacts include increased stigma of contamination impacting connection to the land, disturbance to unfound archaeological and heritage resources during construction, and access to Pointe au Baptême and Oiseau Rock

CNSC staff also reported that, as part of the RIA process, it assessed the proposed mitigation measures and commitments from CNL, AECL, and CNSC staff to address the potential impacts of the NSDF Project. These mitigation measures are discussed throughout sections 3.3 and 3.4 of this *Record of Decision*. CNSC staff determined that the proposed measures would be adequate to effectively address and mitigate the identified impacts.

330. CNSC staff noted that some Indigenous Nations and communities did not actively participate and engage with the CNSC throughout the regulatory process. For these Nations and communities, CNSC staff reported that it continued to ensure that information regarding the NSDF Project’s EA and licensing process was made available and continued to offer to consult in alignment with the honour of the Crown. CNSC staff also ensured that CNL’s engagement activities met the requirements of REGDOC-3.2.2, including for the Nations and communities that did not respond to CNSC staff’s consultation efforts.
331. In section 9.4 of its EA Report, section 3.2.5 of CMD 22-H7.B, and section 5 of CMD 22-H7.D, CNSC staff reported that it is of the view that the potential impacts of the NSDF Project on Aboriginal and/or treaty rights within the scope of the NSDF Project-specific CEAA 2012 EA and the CNSC’s mandate under the NSCA have been adequately identified, assessed and mitigated. CNSC staff are also of the view that consultation with all identified and interested Indigenous Nations and communities was reasonable, fair, and transparent and upheld the honour of the Crown regarding the duty to consult and accommodate. As such, CNSC staff submitted that the duty to consult pursuant to section 35 of the *Constitution Act, 1982* has been discharged in an appropriate and adequate manner. Considering the location of the NSDF site and CNL’s identified mitigation and follow-up program measures, CNSC staff is of the view that the NSDF Project will have no new impacts on any potential or established Aboriginal and/or treaty rights.
332. Following issuance of the *Procedural Direction*, CNSC staff submitted CMD 22-H7.D which detailed CNSC staff’s continued consultation and engagement efforts with KFN and KZA since July 2022. In CMD 22-H7.D, CNSC staff

reported that it had worked with KFN and KZA to develop long-term relationship arrangements (LTRA), and Terms of Reference (ToR) for consultation on the NSDF Project.²³⁷ As a result of this work, CNSC staff and KFN entered into an LTRA, and developed a ToR which had yet to be signed. CNSC staff also entered an NSDF-specific ToR with KZA and worked on the development of an LTRA. CNSC staff further reported that both KFN and KZA provided additional information regarding NSDF Project-specific impacts to their rights to help validate and update the RIAs for the NSDF Project.²³⁸ CNSC staff noted that it provided additional participant funding to both KFN and KZA to support continued consultation and engagement on the NSDF Project and that it appreciated the efforts and information provided by KFN and KZA.

333. In section 5 of CMD 22-H7.D, CNSC staff reported that it reviewed the new information provided by KFN and KZA and found that the concerns had been comprehensively addressed in the original RIAs as stated in CMD 22-H7. This information is discussed further in sections 3.4.3.3 and 3.4.3.4 of this *Record of Decision*. CNSC staff maintained the view that the potential impacts of the NSDF Project on the environment, as well as on Aboriginal and/or treaty rights, have been adequately assessed and mitigated such that there are no residual impacts expected to KFN or KZA's asserted Aboriginal rights.

334. CNSC staff reported that it is committed to building and maintaining long-term relationships with each of the identified Indigenous Nations and communities. In section 1.4 of CMD 22-H7, CNSC staff stated its commitment to the following actions regarding ongoing Indigenous engagement and consultation:

- engagement with members of the public, Indigenous Nations and communities, and local authorities and seeking feedback early on future IEMP sampling campaigns related to the NSDF and the CRL site
- long-term relationships with each of the identified Indigenous Nations and communities and to involving them in the ongoing monitoring and oversight of the implementation of mitigation measures and follow-up program measures, should the NSDF Project proceed
- engagement activities with Indigenous Nations and communities at a frequency mutually agreed upon with each of the Indigenous Nations and communities
- regular outreach activities related to the NSDF Project and/or the CRL site with local communities

CNSC staff also submitted that it would systematically track the implementation of these commitments and report publicly on any updates or progress made.

²³⁷ The LTRA and Project ToR are tools the CNSC uses to formalize relationships and consultation and engagement processes with Indigenous nations and communities. The ToRs outline a collaborative and agreed-upon approach for consultation and engagement, including timelines and deliverables.

²³⁸ The updated RIAs are appended to CMD 22-H7.D.

3.4.2 Indigenous Engagement by CNL

335. The Commission examined the information submitted by CNL regarding its ongoing engagement with Indigenous Nations and communities near the proposed NSDF site. CNL provided the Commission with a detailed record of its engagement with the identified Indigenous Nations and communities on the NSDF Project in its IER, submitted as CMD 22-H7.1C, and on activities during the supplemental period following the issuance of the *Procedural Direction*, provided in CMD 22-H7.1E.
336. Section 2 of the IER details how CNL's Indigenous engagement activities align with various requirements including CEAA 2012 and REGDOC-3.2.2. In the IER, CNL detailed its specific engagement activities regarding the NSDF Project, the issues and concerns raised by Indigenous Nations and communities, how CNL has addressed those concerns, and next steps. CNL reported that it would update the IER over the course of the lifecycle of the NSDF Project.
337. Regarding CNL's engagement methods, CNL detailed in the IER that it has engaged with Indigenous Nations and communities via written correspondence, phone calls, meetings, workshops, community open houses, site visits, provision of funding to support participation and Indigenous-led studies, and project-specific engagement agreements. CNL noted that it adjusted its engagement activities according to the unique interests, concerns, and information needs of each Indigenous Nations and community. CNL further noted that it adapted to COVID-19 pandemic restrictions by hosting virtual meetings, workshops, webinars, NSDF Project updates, and open houses.
338. In CMD 22-H7.1E, CNL detailed its continued consultation and engagement with KFN and KZA following the *Procedural Direction*. CNL reported that the time provided by the *Procedural Direction* offered the opportunity for more meaningful and collaborative engagement with both KFN and KZA and allowed CNL to develop a deeper understanding of each Nation's concerns. CNL submitted that its additional engagement included activities such as collaborative fieldwork activities with KFN, signing a Long-Term Engagement Framework Agreement with KFN, and establishing monthly meetings with KZA.
339. In section 3 of CMD 22-H7.1E, CNL reported that data collected through studies initiated by KFN had been supplementary to findings in baseline studies and assessments previously conducted. CNL reported that none of the additional information collected following the *Procedural Direction* changed CNL's conclusions within the final NSDF EIS. CNL remained of the view that the NSDF Project will not pose any potential limitation on the exercise of Aboriginal and/or treaty rights. CNL reported that, based on its findings, the NSDF Project is not predicted to have significant terrestrial or aquatic effects beyond the CRL site. CNL highlighted that the proposed location for the NSDF

Project is located entirely within the CRL site boundary where public access is restricted.

340. In section 2.1 of CMD 22-H7.1, and again in section 3 of CMD 22-H7.1E, CNL informed the Commission of its ongoing commitment to engage with interested Indigenous Nations and communities during all phases of the NSDF Project. CNL reported that it is committed to developing strong relationships with Indigenous Nations and communities by providing meaningful avenues for participation, developing contribution and long-term agreements that include appropriate support for capacity, and by seeking to understand and incorporate Indigenous perspectives and traditional knowledge in project documentation.
341. In section 9.4 of its EA Report and section 4 of CMD 22-H7.D, CNSC staff reported that it had monitored and assessed CNL's engagement activities throughout the regulatory review process to ensure that CNL was actively engaging as per REGDOC-3.2.2. CNSC staff's view is that CNL conducted a thorough engagement process with all identified Indigenous Nations and communities including the identification, addressing and validation of key issues and concerns raised. CNSC staff found that CNL conducted engagement of an appropriate level and quality, including the collaborative development of commitments lists to address the key concerns raised by each Indigenous Nation or community.

3.4.3 Submissions by Indigenous Nations and Communities

342. The Commission received the following submissions from Indigenous Nations, communities, and organizations:
- Algonquins of Ontario ([CMD 22-H7.98](#))
 - Algonquins of Pikwakanagan First Nation ([CMD 22-H7.109](#), [CMD 22-H7.109A](#), [CMD 22-H7.109B](#), [CMD 22-H7.109C](#),²³⁹ [CMD 22-H7.109D](#))
 - Kebaowek First Nation ([CMD 22-H7.111](#), [CMD 22-H7.111A](#), [CMD 22-H7.111C](#), [CMD 22-H7.111D](#), [CMD 22-H7.111E](#))
 - Kitigan Zibi Anishinabeg ([CMD 22-H7.113](#), [CMD 22-H7.113A](#), [CMD 22-H7.113B](#), [CMD 22-H7.113C](#), [CMD 22-H7.113D](#))
 - Wolf Lake First Nation ([CMD 22-H7.120](#), [CMD 22-H7.120A](#))
 - Mitchikanibikok Inik, Algonquins of Barriere Lake ([CMD 22-H7.139](#), [CMD 22-H7.139A](#), [CMD 22-H7.139B](#))
 - Curve Lake First Nation ([CMD 22-H7.140](#))
 - Métis Nation of Ontario ([CMD 22-H7.151](#))

AOPFN, KFN, KZA, WLFN, and ABL also made oral interventions.

²³⁹ CMD 22-H7.109C is confidential and not available publicly as it contains AOPFN proprietary knowledge.

3.4.3.1 Algonquins of Ontario

343. The AOO informed the Commission that it is comprised of ten Algonquin communities, including AOPFN, located in present-day Ontario. The AOO submitted that its member communities are working together to negotiate a modern-day treaty with the federal and provincial governments for their unceded settlement area within the watersheds of the Kichi-Sìbì (Ottawa River) and the Mattawa River in Ontario. The CRL site is located within the boundaries of that land claim. In its intervention, the AOO provided information on its rights and interests and submitted that it disagrees with CNL and CNSC staff's assessment that potential impacts of the NSDF Project on the environment and on Algonquin rights and interests are low. The AOO came to this conclusion based on the outcomes of its 2020 Algonquin Knowledge and Land Use Study²⁴⁰ and its review of the technical documentation pertaining to the NSDF Project.
344. In its intervention, the AOO outlined its outstanding concerns related to potential impacts of the NSDF Project on human health, fish and wildlife, cultural heritage values, as well as concerns related to the socio-economic assessment, environmental and cultural heritage monitoring, cumulative effects assessment, the transportation of offsite waste to the CRL site. The AOO noted that CNL had made commitments to address some of the AOO's concerns in the *NSDF Project Consolidated Commitment Lists*, however, it recommended several additional measures to ensure that the impacts of the NSDF Project on Algonquin Aboriginal rights and interests are effectively addressed. Such measures included additional assessment of cumulative effects of the NSDF Project on Algonquin Aboriginal Rights and interests.
345. The Commission has considered the topics of concern raised and the information provided by the AOO. The Commission notes that the topics are discussed comprehensively in the following sections of this *Record of Decision*:
- 3.1.5 Waste Management
 - 3.3.6.4 Terrestrial Environment
 - 3.3.7.3 Traditional Land and Resource Use
 - 3.3.7.5 Human Health
 - 3.3.10 Cumulative Environmental Effects
 - 3.3.11 Socio-Economic Environment
 - 3.3.12 Environmental Assessment Follow-Up Monitoring Program

The AOO's concerns related to engagement, consultation, and impacts to rights are discussed in this section of the *Record of Decision*.

²⁴⁰ *Algonquin Knowledge and Land Use Study: Near Surface Disposal Facility (NSDF) Project, Shared Values Solutions and Algonquins of Ontario, December 15 2020.*

346. Regarding the socio-economic and cumulative effects assessments, the AOO is of the view that the scope of both assessments under CEAA 2012 was too narrow. From the AOO's perspective, the execution of a cumulative effects assessment under the IAA would have been more thorough and may have drawn different conclusions. The AOO asserted that section 35 of the *Constitution Act, 1982*, and the corresponding duty to consult and accommodate, supersedes the defined scope of CNSC's regulatory processes and relevant legislation. The AOO also pointed to the recent provincial Supreme Court of British Columbia decision, *Yahey v. British Columbia*,²⁴¹ that recognized failures in the provincial government's consideration of cumulative impacts leading to treaty infringement.
347. Referencing *R. v. Sparrow, 1990*,²⁴² *Delgamuukw v. British Columbia, 1997*,²⁴³ and *Tsilhqot'in Nation v. British Columbia, 2014*,²⁴⁴ the AOO submitted that Aboriginal title confers on the rights-holding group the right to determine how the land is used and the right to benefit from those uses. The AOO reported that successful accommodation of Algonquin Aboriginal rights for the NSDF Project is contingent upon the finalization of a LTRA. At the time of its submission, the AOO had not finalized a LTRA with CNL.
348. In section 4.4.1 of the IER, CNL provided information on its engagement with the AOO and feedback received from the AOO regarding the NSDF Project. A detailed record of CNL's engagement with AOO beginning in 2016 is provided in Appendix J.1 of the IER. In Appendix J.2 and J.3 of the IER, CNL provided summaries of AOO's key interests and concerns and detailed the commitments included in the *NSDF Project Consolidated Commitment Lists* related to each item. Some such commitments include:
- developing an LTRA with the AOO
 - involving the AOO in the review and execution of the NSDF EAFMP
 - developing an NSDF-specific cultural heritage protection plan with the AOO
 - providing capacity to AOO to complete a country foods survey
 - seeking input from the AOO for additional mitigation measures to include within the NSDF Project Environmental Protection Plan
 - engaging AOO in the development of the sustainable forest management plan
 - providing economic opportunities to the AOO
349. In section 4.4.1 of the IER, CNL noted that it updated the EIS to include the results of the AOO's Algonquin Knowledge and Land Use Study. CNL acknowledged areas of disagreement between CNL and the AOO and stated its

²⁴¹ 2021 BCSC 1287.

²⁴² [1990] 1 SCR 1075.

²⁴³ [1997] 3 SCR 1010.

²⁴⁴ [2014] 2 SCR 257.

commitment to ongoing engagement with the AOO. CNL reported that an LTRA would provide an enhanced platform to carry out future communications.

350. In section 9.2.1 of its EA Report, CNSC staff provided specific details on its consultation activities with the AOO. CNSC staff reported that it began consulting with the AOO regarding the NSDF Project in 2016. CNSC staff's consultation activities with the AOO included letters, emails, phone calls, and meetings. CNSC staff also provided the AOO with funding to support the completion of the AOO's Algonquin Knowledge and Land Use Study. Through its consultation activities, CNSC staff reported that it worked to address the AOO's concerns and incorporate them into its EA Report.
351. In Appendix C of its EA Report, CNSC staff summarized the AOO's key issues and concerns. CNSC staff reported that CNL and the AOO had developed a mutually agreed upon path forward to continue addressing outstanding technical issues pertaining to the aquatic environment, species at risk, and human health. CNSC staff reported that it is of the view that the AOO's concerns regarding the socio-economic assessment are outside of the scope of CEEA 2012. More information on socio-economic and cumulative effects assessments are provided in section 3.3.11 and 3.3.10 of this *Record of Decision*, respectively.
352. CNSC staff included an assessment of impacts to the AOO's rights in section 9.3.2 of CNSC staff's EA Report. Both the views of CNSC staff and the AOO were reflected in this assessment. CNSC staff found that the potential impacts of the NSDF Project on AOO's asserted Aboriginal rights and interests, including Aboriginal title, are of low severity²⁴⁵ and can be adequately managed with the mitigation and follow-up measures proposed by CNL, AECL and CNSC staff. Therefore, CNSC staff is of the view that there are no residual impacts to the AOO's rights. The AOO disagreed and is of the view that the socio-economic and cumulative impact assessments under CEEA 2012 were inadequate to fully assess potential impacts to the AOO's rights. The AOO, CNL, AECL and CNSC staff all noted their commitment to ongoing engagement and collaboration in relation to the NSDF Project and the CRL site in general.

3.4.3.2 Algonquins of Pikwakanagan First Nation

353. AOPFN informed the Commission that its members are Algonquin peoples of the Ottawa River who have, since time immemorial, exercised their rights to hunt, trap, fish, gather, and perform other activities integral to their culture throughout their unceded traditional territory. AOPFN explained that the CRL

²⁴⁵ The purpose of a rights impact assessment is to assess the potential severity of impacts of the Project on the Aboriginal and/or treaty rights of an Indigenous Nation or community. Tables 9.4 and 9.5 in CNSC staff's EA Report provide the criteria and matrix used for assessing the severity of impacts to Aboriginal and/or treaty rights.

site is located on their unceded territory and is 55 km northwest of their primary residential community.

354. AOPFN made submissions concerning the adequacy of consultation and engagement, the proximity of the proposed NSDF site to the Ottawa River, impacts on AOPFN culture and rights, the lack of adoption of a “willing host” model as an aspect of FPIC, transportation of offsite waste to the CRL site, the consideration of Algonquin Knowledge, the scope of the EA, consideration of cumulative effects, monitoring, and the lack of evidence of project benefits to offset adverse changes.
355. The Commission has considered the topics of concern raised and the information provided by AOPFN. The Commission notes that the topics are discussed comprehensively in the following sections of this *Record of Decision*:
- 3.1.5 Waste Management
 - 3.3.2 Completeness of the Environmental Assessment
 - 3.3.5.1 Site Selection
 - 3.3.6.2 Surface Water Environment
 - 3.3.6.4 Terrestrial Environment
 - 3.3.7.1 Fish, Fish Habitat and Aquatic Species
 - 3.3.7.3 Traditional Land and Resource Use
 - 3.3.10 Cumulative Environmental Effects
 - 3.3.12 Environmental Assessment Follow-Up Monitoring Program
- AOPFN’s concerns related to engagement, consultation, and impacts to rights are discussed in this section of the *Record of Decision*.
356. AOPFN noted that, prior to 2020, CNL and CNSC staff had engaged with the AOO rather than directly with AOPFN. Since being informed by AOPFN that NSDF Project-specific engagement and consultation must occur directly with AOPFN Consultation Team, AOPFN reported that CNSC staff and CNL had engaged in consultation and engagement activities with AOPFN and funded AOPFN studies to support a better understanding of likely impacts of the NSDF Project on AOPFN rights and interests. Such studies included the AOPFN Knowledge and Land Use Study,²⁴⁶ Culture and Rights Study, and Diet and Harvest Study. AOPFN also noted its appreciation that CNSC staff worked with AOPFN to conduct an RIA for the NSDF Project.
357. In section 4.4.2 of the IER, CNL described its engagement activities with AOPFN including the feedback it received from AOPFN regarding the NSDF Project. CNL provided a detailed account of its engagement with AOPFN, beginning in 2015, in Appendix K.1 of the IER. In Appendix K.2 and K.3 of the IER, CNL provided information on the commitments included in the *NSDF*

²⁴⁶ *Algonquin Knowledge and Land Use Study: Near Surface Disposal Facility (NSDF) Project*, Shared Values Solutions and Algonquins of Pikwakanagan First Nation, September 14, 2020.

Project Consolidated Commitment Lists pertaining to AOPFN's interests. Such commitments include:

- continuing to provide capacity to AOPFN for engagement on the NSDF Project
- developing additional communication materials to communicate NSDF Project details to AOPFN's community more clearly and frequently
- involving AOPFN in the development of the EAFMP
- seeking input from AOPFN for additional mitigation measures to include within the NSDF Project Environmental Protection Plan
- providing capacity for the development of an AOPFN Guardian Program, as it relates to the NSDF Project

358. In section 9.2.1 of its EA Report, CNSC staff submitted information on its consultation activities with AOPFN regarding the NSDF Project. CNSC staff reported that it began consultation efforts with AOPFN through the representative organization AOO in 2016 and had continued consultation efforts directly with AOPFN since 2019, as requested by AOPFN. CNSC staff reported that its consultation activities with AOPFN included written correspondence, regular meetings, and community visits. CNSC staff also provided AOPFN with funding to conduct AOPFN's Algonquin Knowledge and Land Use Study. Through its consultation activities, CNSC staff reported that it worked to address AOPFN's concerns and incorporate them into CNSC staff's EA Report.
359. In Appendix C of its EA Report, CNSC staff summarized AOPFN's key issues and concerns. CNSC staff noted that there are unresolved concerns between CNL and AOPFN, however, CNSC staff reported that CNL and AOPFN have developed a mutually agreed upon path forward to work to address outstanding issues. CNSC staff reported that it is committed to ongoing engagement with AOPFN respecting the NSDF Project, including discussions about developing an agreement for long-term engagement. CNSC staff further submitted that it will engage AOPFN in the monitoring of CNL's implementation of mitigation measures and commitments pertaining to the NSDF Project.
360. In Appendix D-1 of its EA Report, CNSC staff provided the co-drafted AOPFN RIA. The RIA identified a variety of AOPFN's harvesting, governance and stewardship, and cultural continuity rights as the principle asserted rights that could potentially be impacted by the NSDF Project. CNSC staff and AOPFN reported that the potential impacts on AOPFN rights range from low to moderate severity, except for governance and stewardship rights which AOPFN considered to be of moderate to high severity. With the proposed mitigation and follow-up measures, CNSC staff and AOPFN submitted that the agreed-to NSDF Project impacts can be adequately managed. AOPFN, however, disagreed regarding the manageability of impacts on governance and stewardship rights. CNSC staff encouraged AOPFN to continue to work with CNL and AECL to find a path forward to resolve these issues. In addition, AOPFN, CNL, AECL and the CNSC reported that they are committed to

ongoing engagement and collaboration in relation to the NSDF Project and the CRL site in general.

361. The Commission asked CNSC staff for more information regarding why direct engagement with AOPFN did not occur earlier in the NSDF Project. CNSC staff said that, when the NSDF Project started in 2016, it contacted all the identified Nations, communities, and organizations, including AOPFN and the representative organization AOO. CNSC staff explained that there was a protocol in place that consultation and engagement with the Crown or proponents would go through the AOO. CNSC staff noted that it confirmed this arrangement with AOPFN representatives at AOO meetings from 2016 to 2019. In 2019 AOPFN informed CNSC staff that it wished to be engaged directly regarding the NSDF Project. Similarly, a CNL representative explained that CNL began its engagement activities in 2016; however, it was not informed that AOPFN wanted to be directly engaged until early 2020. CNSC staff and the CNL representative noted that their respective organizations took immediate action once informed of AOPFN's desire to be directly engaged.²⁴⁷
362. The Commission asked about the status of AOPFN's relationships with CNL and CNSC staff. An AOPFN representative explained that it takes time to build meaningful relationships and that time was a challenge to its relationships with CNL and CNSC staff due to the late start of direct engagement with AOPFN in the NSDF Project. An AOPFN representative said that AOPFN believes that CNL and CNSC staff have good will for continued engagement, but is of the view that, though CNL and CNSC staff may listen to AOPFN's concerns, there is more work to be done to respect AOPFN's right to give its FPIC.²⁴⁸
363. The Commission asked CNL how it had addressed the recommendations made by AOPFN and how the differences of opinion were managed. A CNL representative explained that CNL had met with AOPFN and AECL to discuss AOPFN's recommendations. The CNL representative noted that CNL's response to the recommendations was an ongoing process and noted its commitment to continue to engage AOPFN on its concerns.²⁴⁹
364. Regarding management of differences of opinion, a CNL representative provided the example of how disagreements regarding the EIS were addressed. CNL noted that it provided AOPFN with an opportunity to review the EIS and provide feedback on how AOPFN's studies were incorporated. CNL integrated the feedback into the final EIS and, for areas where a concern could not be resolved, CNL developed commitments with AOPFN regarding the next steps. These commitments are documented in CNL's *NSDF Project Consolidated Commitment Lists* as well as in the IER and include CNL's commitment to co-develop a cultural protection plan with AOPFN to be integrated into the NSDF

²⁴⁷ *Transcript of the June 2 2022 Public Hearing*, pages 50-53.

²⁴⁸ *Transcript of the June 2 2022 Public Hearing*, pages 46-47 and 69-70.

²⁴⁹ *Transcript of the June 2 2022 Public Hearing*, pages 57-58.

Environmental Protection Plan. AOPFN noted that some disagreements have arisen as it is difficult to capture their way of life on paper. For example, AOPFN noted a difference between how CNL captured cultural continuity in the EIS and how AOPFN members perceive cultural continuity in their lives. AOPFN noted that it believes there is an opportunity to share its culture with proponents to further build understanding, however that will take time and commitment from all parties.²⁵⁰

365. The Commission asked for an update on the status of a formal engagement agreements with AOPFN. A CNL representative explained that CNL, AECL, and AOPFN had entered into a memorandum of understanding which will aid in ongoing relationship building beyond the scope of individual projects.²⁵¹ CNSC staff stated that it had signed a project-specific terms of reference with AOPFN for the NSDF Project and two other projects, and that it is working with AOPFN on a long-term relationship terms of reference that will cover projects and activities within their traditional territory, including the NSDF and the CRL site.²⁵²

366. In CMD 22-H7.109, AOPFN asserted that, at the time, it was not ready to provide its FPIC for the NSDF Project. AOPFN reiterated this stance at the Part 2 hearing. AOPFN noted its view that, as informed by Canada's commitment to fully implement the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP), it has the right to make its own FPIC decision in relation to the proposed NSDF and to have its decision respected by CNL and AECL. AOPFN reported that, as a proposed permanent hazardous waste disposal facility, the proposed NSDF fits under section 29.2 of UNDRIP, which provides that:

“States shall take effective measures to ensure that no storage or disposal of hazardous materials shall take place in the lands or territories of indigenous peoples without their free, prior and informed consent.”

367. The Commission asked AECL how it will advance the Government of Canada's objective around UNDRIP. An AECL representative stated that AECL, as an agent of the Crown, is committed to the Government's objectives related to UNDRIP and FPIC and that AECL believes that FPIC is about listening and learning, in partnership and respect, and working together in good faith and on decisions that impact rights and interests. The AECL representative noted that FPIC, per the Government of Canada's interpretation, does not necessarily mean having a veto or requiring unanimity in government decision-making.²⁵³

²⁵⁰ Transcript of the June 2 2022 Public Hearing, pages 61-65.

²⁵¹ Transcript of the June 2 2022 Public Hearing, page 54.

²⁵² Transcript of the June 2 2022 Public Hearing, pages 74-75.

²⁵³ Transcript of the June 2 2022 Public Hearing, pages 70-74.

368. In June 2023, AOPFN submitted its final submission, CMD 22-H7.109D, in which it expressed its view of the overall body of evidence on the record. AOPFN reported that it was now of the view that it could provide its FPIC to the NSDF Project in accordance with UNDRIP. AOPFN noted that its consent for the NSDF Project is predicated on the implementation of all commitments and mitigation measures made by CNL in relation to the NSDF Project.

3.4.3.3 Kebaowek First Nation

369. KFN informed the Commission that it is one of 9 recognized communities that make up the Algonquin Nation in present day Quebec. KFN submitted that the proposed NSDF site is located within Algonquin Nation traditional territory, and adjacent to KFN's title territory. KFN reported that its members have rights, per section 35 of the *Constitution Act, 1982*, to harvest, hunt, fish, and engage in cultural and spiritual activities on the lands that surround the proposed NSDF Project. As such, KFN is concerned about the potential impacts that the NSDF Project may have on the environment and its members' way of life. In its intervention, KFN provided information on its specific concerns regarding the NSDF Project including issues with the consultation and hearing processes, the proximity of the proposed site to the Ottawa River, potential impacts to animal and human health, as well as cumulative environmental effects.

370. The Commission has considered the topics of concern raised and the information provided by KFN. The Commission notes that the topics are discussed comprehensively in the following sections of this *Record of Decision*:

- 3.3.5.1 Site Selection
- 3.3.6.4 Terrestrial Environment
- 3.3.6.2 Surface Water Environment
- 3.3.7.1 Fish, Fish Habitat and Aquatic Species
- 3.3.7.3 Traditional Land and Resource Use
- 3.3.7.4 Species at Risk
- 3.3.7.5 Human Health
- 3.3.10 Cumulative Environmental Effects

KFN's concerns related to engagement, consultation, and impacts to rights are discussed in this section of the *Record of Decision*.

371. KFN submitted that it was not adequately consulted on the NSDF Project, asserting that CNSC staff's consultations with the Algonquin Anishinabeg Nation Tribal Council (AANTC) did not fulfil the CNSC's obligations to consult KFN. KFN reported that CNSC staff had only recently made meaningful efforts towards establishing a consultation framework agreement, noting that a funding agreement between KFN and CNSC staff had been finalized in April 2022. KFN reported that the late engagement and availability

of funding had impacted its ability to review the technical documentation provided by CNL and to conduct its own studies to assess the potential impacts of the NSDF Project.

372. KFN reported that the duty to consult and accommodate regarding the NSDF Project falls on the high end of the consultation spectrum and requires deep consultation. KFN informed the Commission that the CNSC's current consultation approach does not allow for the meaningful two-way dialogue that is required by deep consultation and that the duty to consult and accommodate had not been satisfied.
373. KFN submitted that the requirements of CEAA 2012 had not been met. KFN noted that section 5(1)(c) of CEAA 2012 requires that impacts to Aboriginal²⁵⁴ peoples must be taken into account as part of the environmental impacts to be considered. KFN submitted that the Commission cannot be satisfied that this requirement has been met because it does not have the requisite information from KFN to make this assessment. KFN stated that the consultation process had not adequately accounted for the cultural and environmental concerns of its community, considered KFN's Indigenous Knowledge, provided suitable timeframes to implement studies within a mutually agreed upon consultation framework agreement, identified appropriate mitigation measures, or supported community-led assessments. Specific discussion of the consideration of impacts to Indigenous peoples in the EA can be found in sections 3.3.7.3 and 3.3.7.5 of this *Record of Decision*.
374. KFN provided information on UNDRIP and the ability of Indigenous peoples to provide their FPIC prior to the approval of projects which may affect their lands, territories, or resources. KFN expressed the view that CNSC staff had not engaged KFN in a good faith process intended to obtain the FPIC of KFN's community with respect to the NSDF Project.
375. KFN addressed its participation relative to whether it frustrated consultation. KFN reported that it did not refuse to engage with CNSC staff on the NSDF Project, rather, it demanded that engagement occur in line with the CNSC's duty to consult and accommodate. KFN clarified its view that abstaining from engaging in inadequate consultation does not equate to frustrating consultation. Referencing *Saugeen First Nation v. Ontario*,²⁵⁵ KFN explained that, due to its limited resources, late receipt of funding from the CNSC impacted its ability to undertake the measures required to properly engage on the project.
376. In section 4.4.6 of the IER, CNL summarized its engagement efforts with KFN including the feedback it received from KFN regarding the NSDF Project. In Appendix O.1 of the IER, CNL provided a detailed account of its engagement with KFN which began in 2016. In Appendix O.2 and O.3 of the IER, CNL

²⁵⁴ "Aboriginal" is the term used in CEAA 2012.

²⁵⁵ *Saugeen First Nation v. Ontario (MNR)*, 2017 ONSC 3456 at para 159.

provided information on the commitments included in the *NSDF Project Consolidated Commitment Lists* pertaining to KFN and AANTC interests. Such commitments include:

- meaningful engagement with KFN on the NSDF Project
- involvement of all interested Indigenous communities in the EAFMP

377. In section 9.2.1 of its EA Report and section 3.2.1 of CMD 22-H7.B, CNSC staff submitted information on its consultation and engagement efforts with KFN. CNSC staff submitted that it began consultation efforts with the AANTC and KFN in 2016 and began direct engagement with KFN in 2021 following a request to do so from KFN. Though the AANTC took the lead in communicating and engaging with CNSC staff regarding the NSDF Project prior to 2021, CNSC staff reported that it sent KFN leadership all correspondence and followed up with them directly. CNSC staff reported that its consultation activities with KFN included emails, phone calls, and both virtual and in-person meetings.
378. In Appendix C of its EA Report CNSC staff summarized the key issues and concerns of the AANTC, KFN, and KZA. Overall, CNSC staff reported that it was of the view that the concerns raised by KFN have been, and will continue to be, addressed through the commitments of CNL and CNSC staff. CNSC staff noted that, at the time of submission of its EA Report, it had not received a response from KFN regarding CNSC staff's request for KFN to verify CNSC staff's summary of KFN's interests and concerns.
379. In section 9.3.1 of its EA Report, CNSC staff provided its RIA of the NSDF Project on the Aboriginal rights of member Nations under the AANTC, including KFN. CNSC staff reported that the potential impacts of the NSDF Project on the Algonquin First Nations in Quebec, including KFN, are of overall low severity. CNSC staff submitted that the proposed mitigation and follow-up measures were sufficient to adequately manage all identified potential impacts. Therefore, CNSC staff reported that "there are no residual impacts expected to the rights and interests of KFN with respect to the NSDF Project". CNSC staff noted its and CNL's commitment to ongoing engagement and collaboration with KFN in relation to the NSDF Project and CRL site. CNSC staff also noted that it offered the AANTC and KFN the opportunity to collaborate on the RIA; however did not receive a response prior to the issuance of its EA Report.
380. Asked to summarize its engagement with KFN, CNSC staff said that it first engaged KFN and the AANTC regarding the NSDF Project in 2016 and was advised by KFN's Chief at the time to continue coordinating engagement through the AANTC. In 2019, KFN began to reach out to CNSC staff directly and CNSC staff offered to establish a direct engagement protocol. CNSC staff said that, between 2019 and 2020, KFN chose instead to pursue a broader protocol with NRCan. In the summer of 2020, the Minister of Natural

Resources²⁵⁶ advised KFN to work directly with the CNSC. CNSC staff explained that, since 2021, it has established regular meetings with KFN, entered in negotiations to develop an engagement protocol, and awarded funding to KFN to participate in the hearing process.²⁵⁷

381. The Commission asked CNSC staff to compare its engagement with KFN and AOPFN, noting that CNSC staff had collaborated with AOPFN on CNSC staff's EA Report and AOPFN's RIA. CNSC staff said that AOPFN provided information on its concerns and traditional knowledge directly to CNSC staff and that CNSC staff had not received the same information from KFN. CNSC staff noted that it did have access to publicly available information which informed its assessment of potential impacts to KFN. This information included the 2013 *Statement of Assertion of Aboriginal Rights and Title*²⁵⁸ and previous issues raised by KFN to CNSC staff. CNSC staff noted its ongoing commitment to working with KFN to understand its specific concerns.²⁵⁹
382. The Commission asked CNL to provide more information on its engagement with KFN. A CNL representative said that CNL first contacted both KFN and the AANTC in 2016 at the start of the NSDF Project and continued to share information on the draft and final versions of the EIS from 2017 through 2021. The CNL representative explained that CNL offered to provide funding to support KFN's participation in the EA process; however, development of a contribution agreement was paused in 2020 while KFN sought engagement from Natural Resources Canada. The CNL representative noted that CNL continued to share information with KFN and the AANTC during this time. The CNL representative said that KFN reached back out to CNL in July 2021 at which point CNL worked to develop a letter of intent to negotiate a long-term framework agreement. The letter of intent was signed in January 2022.²⁶⁰
383. The Commission asked for KFN's view on the path forward for consultation. A KFN representative voiced their optimism, noting that KFN had heard CNL and CNSC staff's willingness to conduct meaningful consultation efforts. KFN representative said, however, that more time was needed for proper consultation actions to be performed.²⁶¹
384. The Commission sought assurance that consultation efforts would continue to progress. A KFN representative highlighted the importance of capacity to support consultation efforts. CNSC staff recognized the capacity concerns raised by KFN and other Indigenous Nations and communities and stated that it

²⁵⁶ In July 2023, the title of the Minister of Natural Resources changed to the Minister of Energy and Natural Resources.

²⁵⁷ *Transcript of the June 2 2022 Public Hearing*, pages 144-147.

²⁵⁸ *Statement of Assertion of Aboriginal Rights and Title*, Timiskaming, Wolf Lake and Eagle Village [Kebaowek] First Nations, January 2013.

²⁵⁹ *Transcript of the June 2 2022 Public Hearing*, pages 147-147.

²⁶⁰ *Transcript of the June 2 2022 Public Hearing*, pages 149-151.

²⁶¹ *Transcript of the June 2 2022 Public Hearing*, pages 151-155.

has continuously offered opportunities for participant funding to support collaborative work and the gathering of Indigenous knowledge. A CNL representative explained that CNL included capacity in its letter of intent with KFN to establish a long-term engagement framework, which would facilitate future engagement activities.²⁶²

385. Following the issuance of the *Procedural Direction*, KFN submitted CMD 22-H7.111C in which KFN provided additional information on its engagement with CNSC staff and CNL. KFN reported that it had entered into long-term relationship arrangements with both the CNSC and CNL, and that it had used the time provided by the *Procedural Direction* to conduct fieldwork with CNL at the CRL site that involved locating and identifying species at risk, such as the eastern wolf, as well as identifying cultural and habitat values that could be lost or impacted by the NSDF. KFN also used the time to conduct a community survey and to complete a socio-cultural-economic impact study with the goal of understanding how its community had been affected by the cumulative effects of colonial development, and its community's views regarding future land development. KFN submitted that the results of its studies identified gaps in the NSDF EA.
386. As discussed in section 3.4.1 of this *Record of Decision*, CNSC staff submitted CMD 22-H7.D following the issuance of the *Procedural Direction*. In CMD 22-H7.D, CNSC staff reported that, in the additional time afforded by the *Procedural Direction*, KFN had provided additional information regarding NSDF Project-specific impacts to its rights to help validate and update its RIA for the NSDF Project. CNSC staff provided KFN's updated RIA in Appendix A.1 of CMD 22-H7.D. CNSC staff reported that, based on the information gathered throughout the additional consultation and engagement conducted with KFN from July 2022 until April 2023, CNSC staff did not receive any new evidence that would change its rights impact conclusions. Therefore, CNSC staff remain of the view that the NSDF Project will result in no new impacts on KFN's asserted Aboriginal rights.
387. As discussed in section 3.4.2 of this *Record of Decision*, CNL submitted CMD 22-H7.1E following the issuance of the *Procedural Direction*. In section 3 of CMD 22-H7.1E, CNL reported that data collected through studies initiated by KFN had been supplementary to findings in baseline studies and assessments previously conducted. CNL reported that none of the additional information collected following the *Procedural Direction* changed CNL's conclusions within the final NSDF EIS. CNL remained of the view that the NSDF Project will not pose any potential limitation on the exercise of KFN's Aboriginal and/or treaty rights.

²⁶² *Transcript of the June 2 2022 Public Hearing*, pages 161-165.

388. In CMD 22-H7.111D, KFN submitted a joint final submission with KZA. KFN and KZA also presented their joint final submissions orally to the Commission at the oral hearing held on August 10, 2023. The presentation is documented in CMD 22-H7.111E. In their final submissions, KFN and KZA reiterated their view that the duty to consult and accommodate had not been met and that approving the NSDF Project would violate the UNDRIP. KFN and KZA restated their view that the NSDF Project has the potential to negatively impact KFN and KZA's rights. KFN and KZA also highlighted their remaining concerns regarding impacts of the NSDF Project on human health, wildlife, and the environment. KFN and KZA disagreed with both CNL and CNSC staff's position that the additional evidence provided during the period afforded by the *Procedural Direction* did not introduce information that would change the conclusions of the EIS or EA Report.

3.4.3.4 Kitigan Zibi Anishinabeg

389. KZA is an Algonquin Anishinabeg First Nation. Its reserve lands are on Lake Kipawa, Quebec, about 295 km north of Chalk River. KZA has asserted Aboriginal title and rights over broad areas that straddle the Ottawa River basin, on both sides of the provincial boundary.

390. KZA submitted that the proposed NSDF site is located on unceded KZA traditional territory that overlaps with lands shared by other Algonquin Nations. In its intervention, KZA detailed its concerns with the NSDF Project including issues with the consultation process, potential adverse impacts on the Ottawa River, the waste acceptance criteria, tritium releases, and long-term monitoring.

391. The Commission has considered the topics of concern raised and the information provided by KZA. The Commission notes that the topics are discussed comprehensively in the following sections of this *Record of Decision*:

- 3.1.5 Waste Management
- 3.3.6.2 Surface Water Environment
- 3.3.6.4 Terrestrial Environment
- 3.3.7.1 Fish, Fish Habitat and Aquatic Species
- 3.3.7.3 Traditional Land and Resource Use
- 3.3.12 Environmental Assessment Follow-Up Monitoring Program

KZA's concerns related to engagement, consultation, and impacts to rights are discussed in this section of the *Record of Decision*.

392. KZA submitted that, until 2021, CNSC staff and CNL engaged with the AANTC rather than with KZA directly, and therefore KZA was not adequately engaged or consulted on the NSDF Project. Due to late direct engagement and allocation of funding, KZA reported that it did not have enough time or capacity to consult with experts on the environmental effects of the NSDF Project. KZA

noted the extensive technical documents pertaining to the NSDF Project and asserted that CNL and CNSC staff should have done more to summarize key aspects of the documents in a way that would be more easily understood by KZA community members.

393. KZA informed the Commission of the inherent water and fire understandings of the Algonquin Nation, explaining that women are keepers of the waters and men are keepers of fire. KZA also noted that the Government of Canada has a commitment to gender-based analysis and to recognize the traditional roles of Algonquin men and women. Regarding KZA's teaching about women being waterkeepers, the Commission asked KZA if it had had the opportunity to discuss its concerns about potential impacts to the watershed with CNSC staff and CNL. KZA said that it had not had the opportunity for proper dialogue on the matter and highlighted the importance of honouring and respecting the water.²⁶³
394. In section 4.4.5 of the IER, CNL provided information on its engagement efforts with KZA including feedback received. In Appendix N.1 of the IER, CNL provided a detailed account of its engagement with KZA beginning in 2016. In Appendix N.2 and N.3 of the IER, CNL provided information on the commitments included in the *NSDF Project Consolidated Commitment Lists* pertaining to KZA and AANTC interests. Such commitments include:
- ongoing engagement with KZA on the NSDF Project
 - involvement of all interested Indigenous communities in the EAFMP
395. In section 9.2.1 of its EA Report and section 3.2.2 of CMD 22-H7.B, CNSC staff submitted information on its consultation efforts with KZA. Similar to KFN, CNSC staff submitted that it began consultation efforts with the AANTC and KZA in 2016. In 2021 KZA requested that CNSC staff engage with KZA directly, and CNSC did so going forward. Though the AANTC took the lead in communicating and engaging with CNSC staff regarding the NSDF Project prior to 2021, CNSC staff reported that it sent KZA leadership all correspondence and followed up with them directly. CNSC staff reported that its consultation activities with KZA included emails, phone calls, and both virtual and in-person meetings.
396. In Appendix C of its EA Report, CNSC staff summarized the key issues and concerns of the AANTC, KFN, and KZA. Overall, CNSC staff reported that it was of the view that the concerns raised by KZA had been, and would continue to be, addressed through the commitments of CNL and CNSC staff. CNSC staff noted that, at the time that CNSC staff submitted its EA Report, it had not received a response from KZA regarding CNSC staff's request for KZA to verify CNSC staff's summary of KZA's interests and concerns.

²⁶³ *Transcript of the June 2 2022 Public Hearing*, pages 103-106.

397. In section 9.3.1 of its EA Report, CNSC staff provided its RIA of the NSDF Project on the Aboriginal rights of member Nations under the AANTC, including KZA. CNSC staff reported that the potential impacts of the NSDF Project on the AANTC, including KZA, are of overall low severity. CNSC staff submitted that the proposed mitigation and follow-up measures are sufficient to adequately manage all identified impacts. Therefore, CNSC staff reported that there are no residual impacts expected to the rights and interests of KZA with respect to the NSDF Project. CNSC staff noted its and CNL's commitment to ongoing engagement and collaboration with KZA in relation to the NSDF Project and CRL site. CNSC staff also noted that it offered the AANTC and KZA the opportunity to collaborate on the RIA; however CNSC staff did not receive a response prior to the issuance of its EA Report.
398. The Commission asked for additional information on engagement and consultation activities pertaining to KZA. CNSC staff explained that, in 2016, it contacted the AANTC and all Algonquin Nations and communities regarding the NSDF Project. CNSC staff said that it organized a meeting at the AANTC office to discuss the NSDF Project with leaders from the Algonquin communities. CNL was also present at this meeting. CNSC staff said that its understanding following the meeting was that it was to work through the AANTC to ensure coordination with the Algonquin communities. CNSC staff noted that, in recent years, it has heard an interest from communities, including KZA, in being directly engaged. CNSC staff said that they are open to whichever approach the Algonquin communities prefer.²⁶⁴
399. Regarding CNL's engagement with KZA, CNL representatives noted that CNL began engagement with KZA and AANTC on the NSDF Project in 2016, including information sharing, discussions, and a site tour. A CNL representative noted that CNL received little feedback from KZA between 2018 and 2020, however, as of November 2021, CNL has had ongoing discussions and information sharing with KZA regarding the NSDF Project.²⁶⁵
400. Asked what good consultation would look like, KZA stated that good consultation would include agreeing on a consultation framework with not only KZA, but with all Algonquin Nation communities. KZA noted that the current approach to consultation can feel confrontational and that KZA's traditional approach would instead involve a circle of discussion among all parties. KZA emphasized that allowances for consultation must be incorporated into project timeline and budget planning so that Indigenous concerns and input can be heard and considered.²⁶⁶ Regarding a potential joint consultation framework with all Algonquin Nation communities, CNSC staff and a CNL representative both stated that they are open to the approach.²⁶⁷

²⁶⁴ *Transcript of the June 2 2022 Public Hearing*, pages 100-103.

²⁶⁵ *Transcript of the June 2 2022 Public Hearing*, pages 95-97.

²⁶⁶ *Transcript of the June 2 2022 Public Hearing*, page 95 and 98-99.

²⁶⁷ *Transcript of the June 2 2022 Public Hearing*, pages 100 and 103.

401. Following the additional engagement period provided by the *Procedural Direction*, KZA submitted CMD 22-H7.113B which detailed its engagement with CNSC staff and CNL since July 2022 as well as its outstanding concerns pertaining to the NSDF Project. KZA reported that time and capacity constraints continued to inhibit its ability to both retain technical staff and to properly assess the potential impacts of the NSDF Project on its community. Due to this lack of information, KZA submitted that it cannot provide its FPIC. KZA further noted that it worked with CNSC staff to update its RIA; however, it is of the view that the RIA remains incomplete.
402. As discussed in section 3.4.1 of this *Record of Decision*, CNSC staff submitted CMD 22-H7.D following the issuance of the *Procedural Direction*. In CMD 22-H7.D, CNSC staff reported that, in the additional time afforded by the *Procedural Direction*, KZA had provided additional information regarding NSDF Project-specific impacts to its rights to help validate and update its RIA for the NSDF Project. CNSC staff provided KZA's updated RIA in Appendix A.2 of CMD 22-H7.D. CNSC staff reported that the additional information provided by KZA following the *Procedural Direction* did not change its conclusions that the NSDF Project will result in no new impacts on KZA's asserted Aboriginal rights.
403. As discussed in section 3.4.2 of this *Record of Decision*, CNL submitted CMD 22-H7.1E following the issuance of the *Procedural Direction*. In section 3 of CMD 22-H7.1E, CNL reported that it is appreciative of the learnings gained during interactions with KZA, however, none of the additional information collected following issuance of the *Procedural Direction* changed CNL's conclusions within the final NSDF EIS. CNL reported that it is of the view that the NSDF Project will not pose any potential limitation on the exercise of KZA's Aboriginal and/or treaty rights.
404. In CMD 22-H7.113C, KZA submitted a joint final submission with KFN. KFN and KZA also presented their final submission orally to the Commission at the oral hearing on August 10, the presentation is documented in CMD 22-H7.113D. In their final submission, KFN and KZA reiterated their view that the duty to consult and accommodate had not been met and that approving the NSDF Project would violate UNDRIP. KFN and KZA restated their view that the NSDF Project has the potential to negatively impact KFN and KZA's rights. KFN and KZA also highlighted its remaining concerns regarding impacts of the NSDF Project on human health, wildlife, and the environment. KFN and KZA disagreed with both CNL and CNSC staff's position that the additional evidence provided during the period afforded by the *Procedural Direction* did not introduce information that would change the conclusions of the EIS or EA Report.

3.4.3.5 Wolf Lake First Nation

405. WLFN submitted that it is one of 9 communities representing the Algonquin Nation in present day Quebec and that Algonquin traditional territory includes the CRL site. WLFN noted that its community does not have designated reserve lands. In its intervention, WLFN reported that CNSC staff failed to engage with WLFN directly and instead contacted the Algonquin Nation Secretariat (ANS). WLFN noted that the Algonquin Nation Secretariat does not represent the rights and title of WLFN and that CNSC staff incorrectly assumed that a lack of response from the Algonquin Nation Secretariat indicated that WLFN was not interested in engaging on the NSDF Project.
406. WLFN asserted that, for the NSDF Project, the duty to consult and accommodate falls on the high end of the spectrum and requires deep consultation. WLFN further asserted that the CNSC has not undertaken the deep consultation required to satisfy its duty as it had not made an effort to directly engage with WLFN. WLFN is of the view that it has not frustrated consultation as it was never given the opportunity to engage. Further, given this lack of engagement and consultation, WLFN submitted that the Commission does not have the information required to make an EA decision under CEAA 2012 or to authorize CNL's licence amendment application.
407. In section 4.4.16 of the IER, CNL provided information on its engagement with the ANS, including WLFN. A detailed record of CNL's engagement with the ANS and WLFN is provided in Appendix Y.1 of the IER. CNL reported that, at the time of submission of the IER, the ANS, including WLFN, had not provided CNL with feedback on the NSDF Project. In Appendix Y.3 of the IER, CNL summarized its commitments related to the ANS. The commitments are documented in the *NSDF Project Consolidated Commitment Lists* and include:
- inclusion of Indigenous communities in CNL's monitoring programs
 - seeking input on the EAFMP
 - informing the ANS of NSDF Project activities.
408. In section 9.2.1 of its EA Report and section 3.2.4 of CMD 22-H7.B, CNSC staff provided information on its consultation activities with the ANS beginning in 2016. CNSC staff noted that its consultation activities with the ANS included letters, emails, and phone calls and that it offered multiple opportunities and options for ANS and the communities they represent, including WLFN, to be engaged in the consultation and regulatory process for the NSDF Project. CNSC staff reported that, at the time of submission of CNSC staff's EA Report the ANS, including WLFN, had not provided any feedback on the NSDF Project to CNSC staff. CNSC staff reported that WLFN did not communicate a specific interest in getting involved in the CNSC's regulatory or consultation process for the NSDF Project until WLFN submitted an intervention to the Commission indicating that they had not been consulted on the NSDF Project.

409. The Commission asked for additional information on WLFN's community and traditional territory. WLFN noted that it has been difficult keeping its sense of community without a reserve, but that its people stay connected through traditional activities such as hunting, gathering, and learning from Elders. Regarding its traditional territory, WLFN said that the 2013 *Statement of Assertion of Aboriginal Rights and Title* describes WLFN's asserted rights and title. WLFN noted that the statement provides a map of WLFN's traditional territory, which includes the CRL site.²⁶⁸
410. The Commission asked for clarification regarding why engagement activities were conducted with the ANS rather than directly with WLFN. CNSC staff stated that, when it first contacted the ANS about the NSDF Project in 2016, it was informed that CNSC staff were to engage with the ANS and that the ANS would then communicate with the represented communities, including WLFN. CNSC staff noted that it proceeded to copy the Chiefs of each community on all email communications with the ANS and followed up with the ANS to ensure that the messages were being received. WLFN claimed to not have received any email communication from CNSC staff and is of the view that CNSC staff should have taken additional follow-up measures.²⁶⁹
411. Regarding engagement by CNL, a CNL representative explained that CNL completed engagement activities with ANS because it also understood that the ANS was representing WLFN. The CNL representative stated that CNL was not informed of WLFN's interest in being directly engaged on the NSDF Project until WLFN submitted its intervention for the Part 2 hearing. The CNL representative noted that, upon being informed of WLFN's interest, CNL promptly reached out to WLFN to begin direct engagement.²⁷⁰
412. Asked about its preferences for engagement moving forward, WLFN stated that it believes that engagement should start at the community level. WLFN voiced its interest in having in-community meetings that would allow the time and space for comprehensive conversation. WLFN also noted its desire to have capacity support to conduct its own studies and research. A CNL representative stated that CNL would welcome the opportunity to visit the WLFN community.²⁷¹

3.4.3.6 Mitchikanibikok Inik, Algonquins of Barriere Lake

413. In its intervention, ABL informed the Commission that it is a member of the Algonquin Nation and that the CRL site is within Algonquin traditional territory. ABL reported its concerns regarding the potential impacts of the

²⁶⁸ *Transcript of the June 2 2022 Public Hearing*, pages 191-194.

²⁶⁹ *Transcript of the June 2 2022 Public Hearing*, pages 199-201.

²⁷⁰ *Transcript of the June 2 2022 Public Hearing*, pages 195-196.

²⁷¹ *Transcript of the June 2 2022 Public Hearing*, pages 194-196.

NSDF Project on ABL's lands, waterways, rights, sovereignty, and laws. ABL also raised concerns regarding the application of UNDRIP, lack of consideration of Indigenous Knowledge in the EA, and lack of consultation and engagement from CNSC staff and CNL. ABL noted that it does not consent to the approval of the NSDF Project and requested that its intervention be documented as consultation under protest.

414. The Commission has considered the topics of concern raised and the information provided by ABL. The Commission notes that the topics are discussed comprehensively in the following sections of this *Record of Decision*:

- 3.3.6.2 Surface Water Environment
- 3.3.6.4 Terrestrial Environment
- 3.3.7.1 Fish, Fish Habitat and Aquatic Species
- 3.3.7.3 Traditional Land and Resource Use

ABL's concerns related to engagement, consultation, and impacts to rights are discussed in this section of the *Record of Decision*.

415. ABL submitted that CNSC staff attempted consultation through the ANS rather than engaging with ABL directly. ABL asserted that the CNSC, and therefore the Crown, has not fulfilled its duty to consult and accommodate with respect to the NSDF Project. ABL noted that it had not frustrated consultation as it was never given the opportunity to engage. Given the lack of consultation, ABL reported that it has not had the opportunity to consider the NSDF Project's potential impacts on its rights and has not been able to complete a land use, occupancy, traditional knowledge, or cumulative effects study on the affected area. Therefore, ABL is also of the view that the Commission does not have the information required to make an EA decision under CEAA 2012 or to authorize CNL's licence amendment application. Further to its April 1, 2022 request for ruling, ABL requested in its intervention that the Commission defer its decision by a period of 12 months to allow additional time for consultation.

416. In section 4.4.16 of the IER, CNL provided information on its engagement with the ANS, including ABL. A detailed record of CNL's engagement with the ANS and ABL beginning in 2016 is provided in Appendix Y.1 of the IER. CNL reported that, at the time of submission of the IER, the ANS, including ABL, had not provided CNL with feedback on the NSDF Project. In Appendix Y.3 of the IER, CNL summarized its commitments related to the ANS. The commitments are documented in the *NSDF Project Consolidated Commitment Lists* and include:

- inclusion of Indigenous communities in CNL's monitoring programs
- seeking input on the EAFMP
- informing the ANS of NSDF Project activities

417. In section 9.2.1 of its EA Report and section 3.2.3 of CMD 22-H7.B, CNSC staff provided information on its consultation activities with the ANS beginning in 2016. CNSC staff noted that its consultation activities with the ANS included letters, emails, and phone calls and that it offered multiple opportunities and options for ANS and the communities they represent, including ABL, to be engaged in the consultation and regulatory process for the NSDF Project.
418. CNSC staff reported that, at the time it submitted its EA Report, the ANS, including ABL, had not provided any feedback on the NSDF Project to CNSC staff. CNSC staff reported that ABL did not communicate a specific interest in getting involved in the CNSC's regulatory or consultation process for the NSDF Project until ABL submitted a request for participant funding in March 2022 to facilitate its review of NSDF documentation and participation in the Part 2 hearing. Upon receipt of the request, CNSC staff worked to award funding to ABL through the CNSC's PFP and offered to meet with the community to discuss any concerns. CNSC staff reported that, prior to the Part 2 hearing, ABL had not expressed an interest to meet with CNSC staff and had not informed CNSC staff of any specific concerns with regards to how the proposed NSDF Project could cause new adverse impacts on the exercise of ABL's rights and interests.
419. The Commission asked for clarity on the relationship between the ANS and the communities it represents. An ANS representative explained that the ANS is a tribal council whose role is to provide programs and support services to its individual member communities: ABL, Timiskaming First Nation, and WFLN. An ANS representative further explained that rights and title are held at the community level, and it is at the community level and where consultation issues should be addressed. The ANS has a mandate to direct any consultation efforts it receives to the respective communities.²⁷²
420. The Commission noted that ABL raised similar concern to WFLN regarding engagement with the ANS. Representatives from CNL and CNSC staff confirmed that, at the beginning of the NSDF Project, both organizations understood that they were to engage with the ANS and that the ANS would communicate with its member nations, including WFLN and ABL. CNSC staff noted that it also copied the Chiefs of each community in its correspondence with the ANS, and never received a response regarding a desire to change its engagement approach. ABL remarked that it had not received emails from CNL or CNSC staff but noted that a change in leadership and lack of resources may have impacted the transfer of communications. Both CNSC staff and CNL noted their willingness to directly engage with ABL going forward.²⁷³

²⁷² *Transcript of the June 2 2022 Public Hearing*, pages 222-223.

²⁷³ *Transcript of the June 2 2022 Public Hearing*, pages 219-221 and 226-228.

421. In CMD 22-H7.139B, ABL submitted a written final submission regarding its views of the evidence on the record for this matter. ABL also presented its final submission to the Commission at the oral hearing on August 10, 2023. In the final submission, ABL restated its view that the duty to consult and accommodate had not been met and that the EA and licencing regulatory process was not completed in a manner that has upheld the UNDRIP. ABL also voiced its support for KFN and KZA's final submission and detailed its outstanding environmental concerns, including the potential impact of the NSDF Project on the Ottawa River and to species at risk.

3.4.3.7 Curve Lake First Nation

422. In its intervention, the CLFN, a Williams Treaties First Nation, agreed with CNSC staff's conclusion that the NSDF Project has low probability to impact the environment or Aboriginal rights. The CLFN expressed gratitude regarding CNSC staff's EA Report, noting that the report demonstrated that CNL and CNSC staff had actively listened to the CLFN's comments. Though not yet at the point of "meaningful" consultation and relationship building, the CLFN acknowledged CNSC staff and CNL's ongoing efforts in engaging the CLFN on the NSDF Project and noted its interest in continued engagement. The CLFN also provided recommendations on how to optimize engagement activities through the next phases of the project, should it progress.
423. In section 4.4.12 of the IER, CNL provided information on its engagement activities with the CLFN and the feedback received regarding the NSDF Project. A detailed account of CNL's engagement with CLFN, beginning in 2016, is provided in Appendix U.1 of the IER. In Appendix U.2 and U.3 of the IER, CNL described the commitments it included in the *NSDF Project Consolidated Commitment Lists* in response to CLFN's feedback. One such commitment included continuing engagement with CLFN and providing notifications of project activities to CLFN, unless otherwise instructed. Another commitment, to develop a contribution agreement for CLFN's participation in the NSDF EA process, was completed in November 2021.
424. In section 9.2.1 of its EA Report, CNSC staff summarized its consultation activities with the CLF which included letters, emails, phone call, and meetings. In Appendix C of its EA Report, CNSC staff summarized CLFN's key issues and concerns of CLFN. CNSC staff reported that CLFN had not identified any specific concerns regarding potential impacts from the NSDF Project on CLFN's potential or established rights. CLFN expressed that the commitments made and mitigations proposed by CNL and CNSC staff will address CLFN's previously expressed concerns related to the NSDF Project.

3.4.3.8 Métis Nation of Ontario

425. The intervention by the MNO asserted that the NSDF Project has the potential to negatively impact Métis citizens who use the traditional territory in the vicinity of the proposed NSDF site. The MNO noted that some of its original concerns with the NSDF Project had been addressed, and that it was working with CNL and CNSC staff to address its remaining concerns. The MNO reported that it was developing a mutually acceptable LTRA with CNL to formalize its continued engagement. The MNO also expressed that it looked forward to continuing engagement with the CNSC regarding the NSDF Project.

426. The Commission has considered the topics of concern raised and the information provided by the MNO. The Commission notes that traditional land and resource use is discussed comprehensively in section 3.3.7.3 of this *Record of Decision*. The MNO's concerns related to engagement, consultation, and impacts to rights are discussed in this section of the *Record of Decision*.

427. In section 4.4.3 of the IER, CNL summarized its engagement activities with the MNO and described the feedback received from the MNO regarding the NSDF Project. A detailed account of CNL's engagement with the MNO, beginning in 2016, is provided in Appendix L.1 of the IER. In Appendix L.2 and L.3 of the IER, CNL provided information on the commitments included in the *NSDF Project Consolidated Commitment Lists* pertaining to the MNO's interests. Such commitments include:

- continuing the development of a LTRA with the MNO
- working with the MNO on the NSDF EAFMP
- seeking input from the MNO for additional mitigation measures to include within the NSDF Project Environmental Protection Plan
- engaging the MNO in the development of the sustainable forest management plan
- regularly updating the IER

CNL noted that it signed a memorandum of understanding with the MNO to support its on-going working relationship and engagement with the Métis community.

428. In section 9.2.1 of its EA Report, CNSC staff provided information on its consultation activities with the MNO which began in 2016 and included letters, emails, phone calls, and in-person and virtual meetings. CNSC staff summarized the MNO's key issues and concerns in Appendix C of its EA Report. CNSC staff reported that the MNO's concerns had, and would continue to be, addressed through agreed upon commitments and mitigation measures. CNSC staff noted that it would verify the effectiveness of mitigation measures through the EAFMP and regular oversight activities.

429. In Appendix D-2 of its EA Report, CNSC staff included the co-drafted MNO RIA. In the RIA, CNSC staff and the MNO reported that Métis harvesting rights were the principle asserted right that could potentially be impacted by the NSDF Project. Project impacts on the exercise of harvesting rights by MNO citizens may occur through access restrictions, avoidance behaviours, and/or sensory disturbances. Based on the information gathered and the collaborative RIA process, CNSC staff found the potential impacts of the NSDF Project on MNO rights and interests to be of low severity, and that they could be adequately managed by the proposed mitigation and follow-up monitoring program measures. Therefore, CNSC staff is of the view that there are no residual impacts expected to the MNO's Aboriginal rights in relation to the NSDF Project. In section 5.0 of the co-drafted RIA, the MNO agreed with the findings and recommendations of the RIA. The MNO, CNL, AECL and the CNSC each reported their respective commitment to ongoing engagement and collaboration in relation to the NSDF Project and CRL site.

3.4.4 *Conclusions on Indigenous Engagement and Consultation*

430. The common law duty to consult with Indigenous Nations and communities is engaged when the Crown contemplates conduct that may adversely affect established or potential Aboriginal and/or treaty rights. The Commission acknowledges its obligation to fulfill the duty to consult and ensure that it considers impacts to Aboriginal and/or treaty rights, pursuant to section 35 of the *Constitution Act, 1982* in the matter before it. The duty to consult must be satisfied before the Commission can make its decisions on the EA or the licence amendment. The duty, an obligation rooted in the honour of the Crown, has both “informational and response components”²⁷⁴ requiring government to listen to the views and concerns about potential impacts of government decision making on Aboriginal and treaty rights, and where necessary and possible, modify the action or decision to avoid or minimize infringement of those rights. The duty does not direct a specific outcome; rather, it requires a process of give and take that at least leads to a “mutual understanding of the core issues – the potential impact on Aboriginal or treaty right, and possible accommodations” and to balancing “competing societal interests with Aboriginal and treaty rights”.²⁷⁵
431. The necessary give and take needed to come to a mutual understanding of the core issues has been supported in this matter by the provision of participant funding for the participation of Indigenous Nations and communities. Consultation activities undertaken by CNSC staff and CNL, and direct engagement with Indigenous Nations and communities on the part of the

²⁷⁴ *Roseau River First Nation v. Attorney General of Canada, Canadian Energy Regulator and Manitoba Hydro*, 2023 FCA 163, para 28.

²⁷⁵ *Clyde River (Hamlet) v. Petroleum Geo-Services Inc.*, 2017 SCC 40, at para 49 and *Chippewas of the Thames First Nation v. Enbridge Pipelines Inc.*, 2017 SCC 41 at para 59.

Commission during the public hearing, provided opportunities for learning about the Aboriginal rights held in the area surrounding the Project, and the views of Indigenous Nations and communities about what impacts the project could have on those rights. Through the consultation efforts rights impact reports were developed, and the proposed mitigation measures, follow-up monitoring measures and commitments that have been described in this decision were formed. The Commission finds that the concerns expressed by Indigenous Nations and communities, including on the quality of the environment and resources, impact pathways, and the exercises of any Aboriginal or treaty rights in the vicinity of the CRL site, are addressed in the EA. CNL will be required to implement the mitigation measures, follow-up monitoring measures, and commitments documented in the *NSDF Project Consolidated Commitment Lists* under the proposed amended licence and draft LCH. Based on the information presented on the record, having read and heard the submissions of all participants, and having reviewed CNL's proposed mitigation measures, follow-up monitoring measures and commitments, the Commission is satisfied that consultation has been adequate to discharge the duty to consult.

432. A number of Indigenous Nations and communities have invoked the [United Nations Declaration on the Rights of Indigenous Peoples Act](#) (UNDA)²⁷⁶ and *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) in the context of the duty to consult and the authorization of the project. The Commission recognizes Canada's commitment to UNDRIP and the framework for reconciliation and implementation of UNDRIP set out within UNDA. However, while the jurisprudence on the legal effect of UNDA will surely develop over time, the Commission, as a creature of statute, is not empowered to determine how to implement UNDRIP in Canadian law and must be guided by the current law on the duty to consult. This decision is therefore rooted in the law on the duty to consult as articulated in jurisprudence to date, and the legal parameters for its decision making under CEEA 2012 and the NSCA.
433. The duty to consult is not a general obligation, and therefore each Indigenous Nation or community's views must be considered individually. It could be that consultation with one group has been meaningful and adequate while not so with another. The Commission has heard, and understands, that some of the Indigenous rights holders that have participated in this matter do not think the duty to consult has been met, and that some do not think impacts to their rights have been adequately understood, accommodated or mitigated. In fulfilling the consultation obligation, the Commission notes that it is not held to a standard of perfection.²⁷⁷ "The focus is on the process and whether reasonable efforts were

²⁷⁶ S.C. 2021, c. 14.

²⁷⁷ *Roseau River First Nation*, supra note 274, at para 28-30, citing *Coldwater First Nation v. Canada*, 2020 FCA 34, at para 54 [*Coldwater First Nation*].

made, and not on the substantive outcome.”²⁷⁸ The Commission has heard extensive evidence, as described throughout this decision, of engagement and consultation that has taken place between potentially affected Indigenous rights-holders and their representatives, CNL and CNSC staff. Through the *Procedural Direction*, the Commission extended the opportunities for consultation on the project before undertaking its decision making in this matter. While the Commission acknowledges that not all Indigenous Nations and communities engaged in this matter are satisfied with the result of the consultation to date, considering the scope of the obligations upon it and the details of the consultation and mitigation measures that have been undertaken, the Commission is of the view that consultation has been meaningful, and adequate to satisfy the duty to consult, as required by law. Overall, the evidence on the record demonstrates that the duty to consult has been met and that the honour of the Crown has been upheld.

434. Understanding the context, history and concerns of the Indigenous Nations and communities is a considerable task that is fundamental to both environmental assessment and project authorization in Canada. All Indigenous Nations and communities participating in this matter have shared valuable time, energy, and knowledge with the Commission. The Commission has carefully weighed the information gathered, both in determining whether and how the concerns raised have been addressed through the proposed mitigation measures, and how to assess what is adequate in order for it to discharge its duty within the parameters of the law. The Commission sees its obligation to satisfy the duty to consult within a broader obligation towards reconciliation. Reconciliation is not an easy undertaking, nor it is something that can be satisfied during one project review - it is a multi-generational process that will take small steps and enduring commitment. The Commission acknowledges that CNL’s NSDF Project is expected to have many phases, beyond this application for a licence amendment to authorize its construction. The Commission expects both CNSC staff and CNL to continue their respective consultation and engagement activities over the lifecycle of this Project and any subsequent applications to the Commission with all implicated Indigenous rights-holders and their representatives. Having heard concerns from Indigenous Nations and communities regarding species of cultural significance, and notwithstanding the conclusions of the EA, the Commission encourages CNL to continue to engage Indigenous Nations and communities about culturally significant species located on the CRL site.

3.5 Licence Amendment under the NSCA

435. The construction of the proposed NSDF is considered a new Class IB Nuclear Facility as per paragraph 19(a) of the GNSCR. This new Class IB Nuclear

²⁷⁸ Roseau River First Nation, *supra* note 274, at para 34, citing *Coldwater First Nation*, *supra* note 277, at paras 29 and 53.

Facility is not authorized in the current CRL licence NRTEOL-01.00/2028 and therefore a licence amendment is required before CNL can proceed with the construction of the NSDF.

436. In making its licensing decision, the Commission considered a number of issues and submissions relating to CNL's qualification to carry out the licensed activities under its existing licence, as well as the activities that the amended licence would authorize. The Commission also considered the adequacy of the proposed measures for protecting the environment, the health and safety of persons, national security and international obligations to which Canada has agreed.
437. In section 1.2.1 of CMD 22-H7, CNSC staff explained that, although the scope of the activities in CNL's application is limited to construction, section 5 of the [*Class I Nuclear Facilities Regulations*](#),²⁷⁹ along with international guidance and practices recommend that operational and post-closure safety assessments be sufficiently detailed and reviewed by the regulator to provide for the basis to proceed with construction. Therefore, during this licensing phase, CNSC staff also assessed the adequacy of the design, construction, commissioning, operation, decommissioning, closure, and post-closure performance of the NSDF against the respective regulatory requirements and international standards and guidance as well as industry best practices.
438. The Commission decision focuses on the issues relevant for this application, specifically:
- Assessment of the licence amendment application
 - CNL's performance at the CRL site and considerations for the construction of the NSDF
 - Indigenous engagement and consultation
 - Other matters of regulatory importance
 - Licence amendment and delegation of authority

3.5.1 Assessment of Licence Amendment Application

439. On October 23, 2015, CNL notified CNSC staff of its intention to proceed with a request to construct a radioactive waste disposal facility at the CRL site. On April 1, 2016, CNL followed this notification with an initial regulatory application to initiate the EA process for the NSDF Project. On March 31, 2017 CNL submitted a licence amendment application to construct the proposed NSDF. CNL submitted an updated application, including updated technical documentation, on [March 26, 2021](#).

²⁷⁹ SOR/2000-204.

440. In its consideration of this matter, the Commission assessed the application and the adequacy of the information submitted by CNL, as required by the NSCA, the GNSCR, the *Class I Nuclear Facilities Regulations*, and other applicable regulations made under the NSCA, including the [Nuclear Security Regulations](#)²⁸⁰ and the *Radiation Protection Regulations*. Section 5 of the *Class I Nuclear Facilities Regulations* sets out requirements for information that must be included in an application to construct a new Class IB facility, such as the NSDF. Section 6 of *Class I Nuclear Facilities Regulations* sets out the requirements for information relevant to CNL's operation of the CRL site under its current licence.
441. As previously mentioned in this *Record of Decision*, the Commission's decision pertaining to this licence amendment applies to authorization of the construction of the NSDF Project and does not include future authorization to operate the NSDF. Operation of the NSDF would be subject to a future Commission licensing decision, should CNL come forward with a licence application for authorization to operate the NSDF.
442. The GNSCR call on an applicant for a licence amendment to provide information regarding any changes in information to the CNSC as part of its application. Section 6 of the GNSCR provides:

“An application for the amendment, revocation or replacement of a licence shall contain the following information:

- (a) a description of the amendment, revocation or replacement and of the measures that will be taken and the methods and procedures that will be used to implement it;
- (b) a statement identifying the changes in the information contained in the most recent application for the licence;
- (c) a description of the nuclear substances, land, areas, buildings, structures, components, equipment and systems that will be affected by the amendment, revocation or replacement and of the manner in which they will be affected; and
- (d) the proposed starting date and the expected completion date of any modification encompassed by the application.”

Section 7 of the GNSCR provides:

“An application for a licence or for the renewal, suspension in whole or in part, amendment, revocation or replacement of a licence may incorporate by reference any information that is included in a valid, expired or revoked licence.”

²⁸⁰ SOR/2000-209.

443. In its application, CNL provided clause-by-clause responses to the application requirements set out in the NSCA, the GNSCR, and the *Class I Nuclear Facilities Regulations*. CNL described how it would satisfy the requirements for construction of a new Class IB facility and how it would continue to meet the requirements of its operating licence for the CRL site. In section 1.3 of CMD 22-H7, CNSC staff reported that CNL's licence amendment application complies with all applicable regulatory requirements. CNSC staff supported its view with a regulatory compliance matrix provided in Appendix E of CMD 22-H7.

444. The interventions by W. Turner (CMD 22-H7.64) and the Council of Canadians Kitchissippi-Ottawa Valley Chapter (CMD 22-H7.45) and Ottawa Chapter ([CMD 22-H7.117](#)) submitted that CNL's application did not satisfy GNSCR paragraph 3(1)(j) and was therefore incomplete. GNSCR paragraph 3(1)(j) provides:

“An application for a licence shall contain the following information:

(j) the name, quantity, form, origin and volume of any radioactive waste or hazardous waste that may result from the activity to be licensed, including waste that may be stored, managed, processed or disposed of at the site of the activity to be licensed, and the proposed method for managing and disposing of that waste;”

In Appendix E of CMD 22-H7, CNSC staff reported that CNL satisfied the requirements of GNSCR paragraph 3(1)(j) in the *NSDF Safety Case*, *NSDF Safety Analysis Report*, and *NSDF Post-Closure Safety Assessment*. The waste inventory and waste acceptance criteria for the NSDF Project are further discussed in section 3.1.5 of this *Record of Decision*.

445. The Commission concludes that CNL's licence amendment application is complete and complies with the regulatory requirements respecting an application for licence amendment. The Commission notes that CNL's application is comprehensive and that CNSC staff's assessment confirms that CNL's application complies with the regulatory requirements respecting an application for licence amendment set in the NSCA and applicable regulations.

3.5.2 *CNL's Performance at CRL and Considerations for the Construction of the Proposed NSDF*

446. In consideration of CNL's past performance at CRL, the Commission examined CNSC staff's assessment of CNL's performance with respect to the CNSC's [safety and control area](#) (SCA) framework. CNSC staff assessed CNL's performance as it pertains to the following SCAs applicable to CNL's licence amendment application:

- Management System
- Human Performance Management
- Operating Performance
- Safety Analysis
- Physical Design
- Fitness for Service
- Radiation Protection
- Conventional Health and Safety
- Environmental Protection
- Emergency Management and Fire Protection
- Waste Management
- Security
- Safeguards and Non-Proliferation

In section 4 of CMD 22-H7, CNSC staff reported that CNL's performance in all SCAs had remained "satisfactory" throughout the current licence period (2018-2020). CNSC staff based its conclusions on oversight activities including desktop reviews and compliance verification inspections.

447. The packaging and transport SCA covers the safe packaging and transport of nuclear substances and radiation devices to and from a licensed facility. Given that CNL's licence application is limited to the construction of the NSDF and does not include activities to transport off-site waste to the CRL site for emplacement in the NSDF, CNSC staff did not assess this SCA for this licensing stage. CNSC staff submitted that, should the Commission authorize the construction of the NSDF, CNSC staff will monitor CNL's performance over the licensing period to ensure that CNL continues to meet packaging and transport requirements, as part of ongoing compliance oversight at the CRL site.
448. In section 4 of CMD 22-H7, CNSC staff confirmed that, should the Commission authorize the construction of the NSDF, CNSC staff will monitor NSDF-specific activities through the conduct of regular compliance verification activities to ensure that CNL continues to meet the requirements of the applicable SCAs. For some SCAs, CNSC staff also provided information on future commitments and the assessment of information related to future stages of the NSDF, where appropriate. CNSC staff noted that it would revisit this information and provide the Commission with more detail at the applicable licensing stage.

3.5.2.1 Management System

449. The management system SCA covers the framework that establishes the processes and programs required to ensure that CNL achieves its safety objectives, continuously monitors its performance against these objectives, and fosters a healthy safety culture. Section 3 of the GNSCR contains requirements

that form the basis of a management system. Paragraph 3(d) of the *Class I Nuclear Facilities Regulations* states that an application for a licence for a Class I nuclear facility shall contain “the proposed management system for the activity to be licensed, including measures to promote and support safety culture.” Regarding the construction of the NSDF, paragraph 5(g) of the *Class I Nuclear Facilities Regulations* states that the application shall contain the proposed quality assurance program for the design of the nuclear facility.

450. CNSC regulatory document [REGDOC-2.1.2, *Safety Culture*](#)²⁸¹ sets out requirements and guidance for fostering a healthy safety culture and conducting safety culture assessments. The CSA standard CSA N286-12 provides an overall management framework and direction to develop and implement sound management practices and controls for the licensing basis.
451. In section 6.1 of CMD 22-H7.1, CNL provided information on its management structure, management system document suite, quality assurance program, compliance program, supply chain program, and information management system. CNL reported that its management system implements the requirements of CSA N286-12, REGDOC-2.1.2, and ISO 9001:2015, *Quality Management Systems – Requirements*.²⁸² Regarding the NSDF Project, CNL reported that its management system is relevant to all phases of the NSDF Project as it ensures safe and effective conduct of NSDF Project activities while ensuring that CNL’s commitments are fulfilled.
452. In section 4.1 of CMD 22-H7, CNSC staff confirmed that CNL has implemented and maintained a mature corporate-wide management system in accordance with CSA N286-12 and that this existing program is adequate to support the proposed construction of the NSDF. CNSC staff explained that CNL’s management system applies to all work performed by CNL employees, contractors, and sub-contractors, which would include construction of the NSDF. CNSC staff reported that, since 2017, it has inspected CNL’s change management, document and records management, corrective action process, and safety culture, and that CNL has either closed or implemented appropriate corrective actions for all inspection findings.
453. Due to the proposed use of contractors for the construction of the NSDF Project, CNSC staff provided information on CNL’s management of contractors. CNSC staff reported that, since 2017, it conducted focused inspections on CNL’s contractor management and qualification of contractors. Specific to the NSDF Project, CNSC staff inspected CNL’s management of the NSDF design phase, including the processes CNL followed to qualify the engineering service provider for the NSDF Project. CNSC staff found that CNL took appropriate corrective actions in response to all inspection findings. CNSC staff submitted that the continued implementation of CNL’s existing contractor

²⁸¹ REGDOC-2.1.2, *Safety Culture*, CNSC, April 2018.

²⁸² ISO 9001:2015. *Quality management systems – Requirements*, 2015 (R2021).

management program and adherence to accepted NSDF-specific procedures is adequate for managing external contractors with respect to NSDF construction activities.

454. In their intervention, M. Flood ([CMD 22-H7.46](#)) raised concern regarding the government-owned, contractor-operated (GoCo) model and questioned which organization would be accountable for the outcomes of the NSDF Project. In CMD 22-H7.99, AECL submitted that, as owner of the CRL site, AECL is and would be responsible for the liabilities for all phases of the NSDF Project, including construction, operations, closure, and post-closure. During the hearing an AECL representative confirmed that AECL was responsible for the assets and liabilities on federal nuclear sites.²⁸³ A CNL representative noted that CNL, as the licensee, is fully liable to comply with its licence for the CRL site.²⁸⁴
455. Based on the information on the record as described above, the Commission concludes that CNL has the appropriate organization and management system in place to carry out the licensed activities that the amended licence would authorize. The Commission comes to this conclusion on the following basis:
- CNL has implemented and maintained a management system that meets regulatory requirements, including CSA N286-12
 - CNL's existing management system is adequate to support the proposed construction of the NSDF.
 - CNL has appropriate processes in place for the management of contractors
 - CNL has implemented adequate corrective actions in response to inspection findings over the current licence term
 - The Commission is satisfied that CNL is qualified to fulfill its responsibilities under the GoCo model

3.5.2.2 Human Performance Management

456. Human performance management encompasses activities to ensure that CNL workers are sufficient in number in all relevant job areas, and have the necessary knowledge, skills, procedures, and tools in place to safely carry out their duties. To satisfy regulatory requirements, CNL must implement and maintain a human performance management program in accordance with the GNSCR, *Class I Nuclear Facilities Regulations*, CSA N286-12, and [REGDOC-2.2.2 Personnel Training, Version 2](#).²⁸⁵

²⁸³ *Transcript of the May 30 2022 Public Hearing*, page 17.

²⁸⁴ *Transcript of the June 3 2022 Public Hearing*, pages 67-68.

²⁸⁵ REGDOC-2.2.2, *Performance Training*, Version 2, CNSC, December 2016 [REGDOC-2.2.2].

457. Paragraphs 12(1)(a) and 12(1)(b) of the GNSCR establish requirements for a licensee to have sufficient qualified workers and to train workers to carry on the licensed activity in accordance with the NSCA, its regulations and the licence. Paragraphs 3(d.1), 5(l), 6(m), and 6(n) of the *Class I Nuclear Facilities Regulations* also establish requirements with respect to the provision of information regarding a licensee's human performance and training programs. REGDOC-2.2.2 sets out requirements and guidance for the analysis, design, development, implementation, evaluation, documentation, and management of training at nuclear facilities within Canada, including the essential principles and elements of an effective training system.
458. In section 6.2 of CMD 22-H7.1, CNL submitted that it manages human performance under its performance assurance program, which uses information from CNL and the nuclear industry to improve the safety of operations and reduce the likelihood of unplanned events at CNL sites. CNL reported that it based its human performance program on the guidance provided in [REGDOC-2.2.1, Human Factors](#).²⁸⁶ CNSC staff assessed CNL's past performance and documentation and reported that CNL's existing human performance program meets regulatory requirements and is adequate to support the proposed construction of the NSDF.
459. Although minimum staff complement is not applicable to the construction of the NSDF, CNL informed the Commission that it will provide information on the minimum staff complement for the NSDF once it has prepared the NSDF operating procedures. CNL committed that staffing will meet the requirements of [REGDOC-2.2.5 Minimum Staff Complement](#),²⁸⁷ the [Canada Labour Code](#),²⁸⁸ and [REGDOC-2.2.4 Fitness for Duty: Managing Worker Fatigue](#).²⁸⁹ CNSC staff submitted that it would assess staffing levels including minimum staff complement once CNL submits the NSDF operating procedures.
460. Regarding personnel training, CNL submitted that it maintains a training and development program which includes processes for implementing a systematic approach to training in accordance with REGDOC-2.2.2. Specific to the NSDF Project, CNL submitted that the NSDF Facility Authority²⁹⁰ will develop and implement a NSDF-specific training plan in accordance with CNL's training and development program. CNL submitted that it will also require the construction contractor to submit a training plan which must be accepted by the NSDF Facility Authority and will be subject to oversight by CNL. Based on its

²⁸⁶ REGDOC-2.2.1, *Human Factors*, CNSC, March 2019.

²⁸⁷ REGDOC-2.2.5, *Minimum Staff Complement*, CNSC, April 2019.

²⁸⁸ R.S.C., 1985, c. L-2.

²⁸⁹ REGDOC-2.2.4, *Fitness for Duty: Managing Worker Fatigue*, CNSC, March 2017.

²⁹⁰ From CMD 22-H7.1, A Facility Authority is assigned to each Class I or II nuclear facility and has delegated authority from the Site Licence Holder, for ensuring safety and compliance with all applicable licensing and regulatory requirements and has the overall responsibility for the safe and compliant operation of their respective facility.

assessment of CNL's past performance, CNSC staff reported that CNL continues to implement and maintain a personnel training program in compliance with regulatory requirements and that the program is adequate to properly carry out the NSDF Project construction activities.

461. On fitness for duty, the requirements of REGDOC-2.2.4 *Fitness for Duty: Managing Worker Fatigue* and [REGDOC-2.2.4 *Fitness for Duty, Volume II: Managing Alcohol and Drug Use, Version 3*](#)²⁹¹ apply to all workers on the CRL site, including CNL employees and contractors carrying out NSDF construction activities. CNSC staff reviewed CNL's existing corporate fitness for duty documents and found them to be adequate to support the proposed construction of the NSDF. Additionally, based on past performance at the CRL site, CNSC staff submitted that CNL continues to meet fitness for duty regulatory requirements.
462. Based on the information on the record as described above, the Commission concludes that CNL has adequate measures in place to manage human performance for the conduct of the licensed activities which the amended licence would authorize. The Commission finds that:
- CNL has implemented and maintained a satisfactory human performance management program at the CRL site
 - CNL has a training program in place that meets regulatory requirements, including REGDOC-2.2.2
 - CNL has a fitness for duty program in place which meets regulatory requirements, including REGDOC-2.2.4 *Fitness for Duty: Managing Worker Fatigue* and REGDOC-2.2.4 *Fitness for Duty, Volume II: Managing Alcohol and Drug Use, Version 3*
 - CNL's existing human performance program is adequate to support the construction of the NSDF

3.5.2.3 Operating Performance

463. Operating performance includes an overall review of the conduct of the licensed activities and the activities that enable effective performance at CRL, as well as improvement plans and significant future activities.
464. Paragraph 5(c) of the *Class I Nuclear Facilities Regulations* states that the application shall contain the proposed construction program, including its schedule. Paragraph 5(e) of the *Class I Nuclear Facilities Regulations* states that the application shall contain a description of the systems and equipment proposed to be installed at the nuclear facility, including their design and their

²⁹¹ REGDOC-2.2.4, *Fitness for Duty: Volume II: Managing Alcohol and Drug Use, Version 3*, CNSC, January 2021.

design operating conditions. Paragraphs 6(d) and 6(e) of the *Class I Nuclear Facilities Regulations* provide that the application shall contain information on the proposed measures, policies, methods and procedures for operating and maintaining the nuclear facility and the proposed procedures for handling, storing, loading and transporting nuclear substances and hazardous substances. Additionally, [REGDOC-3.1.2, Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills](#)²⁹² sets out requirements and guidance for reports and notifications that licensees of Class I nuclear facilities must submit to the CNSC.

465. CNL provided information in section 6.3 of CMD 22-H7.1 on its conduct of operations, construction, commissioning, reporting, and configuration management programs and procedures relevant to its current licence. CNL detailed how these operations programs have and will apply to the development of plans and procedures for the construction of the NSDF. In section 4.3 of CMD 22-H7, CNSC staff submitted that CNL's operations programs effectively ensure that licensed activities at the CRL site are performed safely and in compliance with regulatory requirements. CNSC staff is of the view that CNL's existing programs are adequate to support the proposed construction of the NSDF.
466. Regarding reporting requirements, CNL is required to report information to the CNSC as outlined in REGDOC-3.1.2. Should the Commission authorize the construction of the NSDF, CNL will be required to report unplanned events that may occur during construction to the CNSC. CNL submitted, in section 6.3.4 of CMD 22-H7.1, that its procedure *Reporting to Regulatory Agencies* describes the requirements and processes for reporting to the CNSC as required by the NSCA and associated regulations. In section 4.3 of CMD 22-H7, CNSC staff confirmed that CNL's existing reporting and submission process met the regulatory requirements.
467. Based on the information on the record as described above, the Commission concludes that CNL has appropriate programs and measures in place to conduct the licensed activities that the amended licence would authorize in a manner that provides for the protection of the health and safety of persons and the environment. The Commission finds that:
- CNL has an operations program in place at the CRL site that meets regulatory requirements and is adequate to support the proposed construction of the NSDF
 - CNL's procedures for reporting to the CNSC meet regulatory requirements, including REGDOC-3.1.2

²⁹² REGDOC-3.1.2, *Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills*, CNSC, January 2018 [REGDOC-3.1.2].

3.5.2.4 Safety Analysis

468. Safety analysis, which supports the overall safety case for a facility, includes a systematic evaluation of the potential hazards associated with the conduct of the licensed activity or the operation of a facility. Safety analysis also considers the effectiveness of preventive measures and strategies in reducing the effects of such hazards.
469. Paragraph 3(1)(i) of the GNSCR provides that an application for a licence shall contain a description and the results of any test, analysis or calculation performed to substantiate the information included in the application. Paragraph 5(f) of the *Class I Nuclear Facilities Regulations* requires that the application shall contain a preliminary safety analysis report demonstrating the adequacy of the design of the nuclear facility. Paragraphs 6(c) and 6(h) of the *Class I Nuclear Facilities Regulations* require that the application shall contain a final safety analysis report demonstrating the adequacy of the design of the nuclear facility and the effects on the environment and the health and safety of persons that may result from the operation and decommissioning of the nuclear facility, and the measures that will be taken to prevent or mitigate those effects. The requirements of paragraphs 6(c) and 6(h) of the *Class I Nuclear Facilities Regulations* pertain to information on CNL's existing safety analysis program. Should CNL come forward with a future licence amendment application to authorize the operation of the NSDF, updates to the CRL site-wide safety analysis to include the NSDF would be considered at that time.
470. In section 6.4 of CMD 22-H7.1, CNL provided information on its safety analysis program, including information on the management of safety analysis documentation and nuclear criticality safety. CNL reported that its safety analysis and nuclear criticality safety programs implement the requirements of REGDOC-2.4.1 and [REGDOC-2.4.3, Nuclear Criticality Safety, Version 1.1](#),²⁹³ respectively. Specific to the NSDF, CNL submitted the preliminary *NSDF Safety Analysis Report (SAR)*, the *NSDF Safety Case*, and the *NSDF Post Closure Safety Assessment (PCSA)* to the CNSC. The *NSDF Safety Case* summarizes and integrates the results from the SAR for pre-closure safety, and the PCSA report for post-closure safety. The *NSDF Safety Case* is also publicly available on the [CNL website](#).
471. In section 6.4.1 of CMD 22-H7.1, CNL submitted information on the NSDF SAR. CNL reported that the NSDF SAR presents the operational safety analysis of the NSDF Project based on the detailed design package, proposed operations, and identified hazards. The NSDF SAR considers normal operations as well as accident conditions during the NSDF construction, operation, and closure periods. CNL reported that the NSDF SAR demonstrates that:

²⁹³ REGDOC-2.4.3, *Nuclear Criticality Safety*, Version 1.1, CNSC, September 2020 [REGDOC-2.4.3].

- the safety of the off-site public, and on-site personnel is protected
- the dose acceptance criteria are met for radiological consequences to the on-site and off-site receptors
- there are no significant adverse impacts on the environment
- the NSDF design is adequate
- the proposed design of the NSDF conforms to regulatory requirements and guidance provided by the CNSC and the IAEA
- waste containment is maintained for the duration of the facility operation under normal operating conditions

CNL reported that it will update the NSDF SAR during the life of the NSDF, including following successful commissioning of the facility.

472. In section 4.4 of CMD 22-H7, CNSC staff submitted that CNL has maintained a safety analysis program at the CRL site that is compliant with regulatory requirements. Regarding the NSDF Project, CNSC staff reported that the NSDF SAR and supporting analyses also meet regulatory requirements. CNSC staff provided specific information on its assessment of CNL's deterministic safety and hazard analyses, reporting that the NSDF SAR contains adequate deterministic safety analysis, hazard analysis, and consideration of defence in depth, in compliance with regulatory requirements and guidance including REGDOC-2.4.1 and IAEA SSR-4, *Safety of Nuclear Fuel Cycle Facilities*.²⁹⁴ CNSC staff further noted that CNL is required to update the NSDF SAR at a minimum of every 5 years, or as new information becomes available.
473. While nuclear criticality is not applicable to NSDF construction activities given that there will be no waste emplacement during the construction period, CNL reported in section 6.4.2 of CMD 22-H7.1 that it completed criticality safety assessments for the NSDF in accordance with the requirements of REGDOC-2.4.3. CNL submitted that its assessments found that fissionable material disposed of in the NSDF will remain subcritical under all normal and credible abnormal conditions during the operational and post-closure phases. In section 4.4 of CMD 22-H7, CNSC staff reported that it assessed CNL's criticality safety documentation and found that the document satisfied all applicable requirements specified in REGDOC-2.4.3 and CNL's existing licence.
474. Based on the information on the record as described above, the Commission concludes that CNL's safety analysis is adequate for the licensed activities that would be authorized under the amended licence. The Commission finds that:
- CNL has maintained a safety analysis program at the CRL site that is compliant with regulatory requirements, including REGDOC-2.4.1
 - CNL has maintained a nuclear criticality program at the CRL site that is compliant with regulatory requirements, including REGDOC-2.4.3

²⁹⁴ SSR-4, *Safety of Nuclear Fuel Cycle Facilities*, IAEA, 2017.

- CNL has performed the necessary safety analyses to ensure that mitigation of risks to workers, the public, and the environment have been conducted
- the NSDF SAR and supporting analyses meet regulatory requirements

3.5.2.5 Physical Design

475. Physical design includes the activities to design systems, structures, and components to meet and maintain the design basis of a facility. The design basis is the range of conditions, according to established criteria, that the facility must withstand without exceeding authorized limits for the planned operation of safety systems. Paragraph 5(e) of the *Class I Nuclear Facilities Regulations* requires that the application shall contain a description of the systems and equipment proposed to be installed at the nuclear facility, including their design and their design operating conditions. This section focuses on the CNL's physical design program at the CRL site and its application to the NSDF. Detailed characteristics of the NSDF design are discussed in section 3.1 of this *Record of Decision*.
476. In section 6.5 of CMD 22-H7.1, CNL provided information on its physical design program at the CRL site, including information on its design engineering program and pressure boundary program. CNL reported that its physical design program complies with CSA N286-12, ISO 9001:2015, and CSA N285.0 *General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants*.²⁹⁵ Specific to the NSDF, CNL submitted that both its design engineering and pressure boundary programs are applicable to the design and construction of the NSDF.
477. CNSC staff submitted that CNL's existing physical design program is adequate for conducting physical design activities related to the NSDF Project. In section 4.5 of CMD 22-H7, CNSC staff confirmed that CNL's physical design program at the CRL site meets regulatory requirements. CNSC staff reported that CNL's design program is adequate to ensure the ability of systems, components, and structures to maintain their design basis given new information arising over time and taking changes in the external environment into account.
478. CNSC staff provided information on its review of CNL's NSDF design documents and supporting analyses. CNSC staff submitted that it assessed the adequacy of the NSDF's physical design, including design governance, site characterization, and structure, system, and component design. CNSC staff found that the NSDF design meets all applicable regulatory requirements, relevant codes and standards, and aligns with industry good practices. CNSC

²⁹⁵ CSA N285.0 *General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants*, CSA Group, 2017.

staff noted that CNL had addressed all technical comments from CNSC staff regarding the design.

479. Regarding seismicity, CNSC staff reported that the overall seismic and structural design criteria for the NSDF design are acceptable and in alignment with the *National Building Code of Canada 2015*. CNSC staff noted that the seismic design criteria adopted for the ECM design are comparable to those for the nuclear power plants, which is conservative for non-reactor facilities.
480. CNSC staff reported that, if Commission authorizes the construction of the NSDF, it will conduct further assessments during the construction phase, based on the results of NSDF commissioning and testing. CNSC staff explained that these assessments would verify whether the facility performance meets the design requirements and determine if any structural and system design improvements are required.
481. Based on the information on the record as described above, the Commission concludes that CNL has implemented and maintained a physical design program at the CRL site that is adequate for the licensed activities that would be authorized by the amended licence. The Commission finds that:
- CNL has implemented and maintained a physical design program at the CRL site in compliance with regulatory requirements.
 - CNL's existing physical design program is adequate for conducting physical design activities related to the NSDF Project
 - the NSDF design meets all applicable regulatory requirements, relevant codes and standards, and aligns with industry good practices.

3.5.2.6 Fitness for Service

482. Fitness for service covers activities that are performed to ensure that systems, structures and components at the CRL site, including the NSDF Project, continue to effectively fulfill their intended purpose. CNL must manage the aging of structures, systems and components at the CRL site in accordance with the requirements of [REGDOC-2.6.3, *Aging Management*](#).²⁹⁶ In addition, [REGDOC-2.6.2, *Maintenance Programs for Nuclear Power Plants*](#)²⁹⁷ provides guidance to CNL in relation to the maintenance of structures, systems and components.
483. In section 6.6 of CMD 22-H7.1, CNL provided information on the fitness for service program in place at the CRL site, including information on its maintenance and equipment reliability functional support areas. CNL reported that its fitness for service program implements the requirements of REGDOC-

²⁹⁶ REGDOC-2.6.3, *Aging Management*, CNSC, March 2014 [REGDOC-2.6.3].

²⁹⁷ REGDOC-2.6.2, *Maintenance Programs for Nuclear Power Plants*, CNSC, August 2017 [REGDOC-2.6.2].

2.6.3 and the guidance of REGDOC-2.6.2. CNL provided information on NSDF design features to support the long-term reliability of the facility, and noted that it would perform monitoring and surveillance activities throughout the life of NSDF to support aging management and ensure the continued fulfilment of safety functions.

484. In section 4.6 of CMD 22-H7.1, CNSC staff reported that CNL has implemented and maintained a fitness for service program to ensure that systems, components, and structures remain effective over time. CNSC staff also confirmed that CNL's aging management program meets the requirements of REGDOC-2.6.3. Regarding the NSDF, CNSC staff provided specific information on its review of CNL's maintenance, chemistry control, and aging management programs. CNSC staff found that CNL had adequately considered design elements related to fitness for service and carried out sufficient preparatory work for the establishment of required programs under the fitness for service SCA during the operation phase. CNSC staff are of the view that CNL has met the appropriate fitness for service requirements for this licence application.
485. Based on the information on the record as described above, the Commission concludes that the measures that CNL has in place to ensure the fitness for service of equipment at the CRL site are adequate for CNL to carry on the licensed activities that the amended licence would authorize. The Commission finds that:
- CNL has a fitness for service program in place that meets regulatory requirements, including REGDOC-2.6.3
 - CNL has adequately considered NSDF design elements related to fitness for service and carried out sufficient preparatory work for the establishment of required fitness for service programs during the operation phase of the NSDF

3.5.2.7 Radiation Protection

486. Radiation protection includes measures for protecting the health and safety of persons from hazards associated with ionizing radiation. Radiation protection ensures that contamination levels and radiation doses received by individuals are monitored, controlled and maintained ALARA, while taking into consideration social and economic factors. While there are no radiological activities to be performed during the construction phase of the NSDF, CNL must demonstrate that the planning for radiation protection moving to the operation phase is acceptable.

487. Section 4 of the *Radiation Protection Regulations* requires licensees to implement a radiation protection program. As part of this program, licensees must keep effective and equivalent doses received by, and committed to, persons ALARA, taking into account social and economic factors, and ascertain the quantity and concentration of any nuclear substance released as a result of the licensed activity. Section 14 of the *Radiation Protection Regulations* also prescribes equivalent dose limits for NEWs and any other person. Paragraph 5(i) of the *Class I Nuclear Facilities Regulations* requires that the application shall contain the effects on the environment and the health and safety of persons that may result from the construction, operation and decommissioning of the nuclear facility, and the measures that will be taken to prevent or mitigate those effects. Paragraph 6(e) of the *Class I Nuclear Facilities Regulations* requires that the application shall contain the proposed procedures for handling, storing, loading, and transporting nuclear substances and hazardous substances. Paragraph 6(h) of the *Class I Nuclear Facilities Regulations* requires that the application shall contain the effects on the environment and the health and safety of persons that may result from the operation and decommissioning of the nuclear facility, and the measure that will be taken to prevent or mitigate those effects.
488. In section 6.7 of CMD 22-H7.1, CNL provided information on its radiation protection program, including information on the use of dosimetry and application of the ALARA principle to ensure that all radiation doses to personnel or members of the public are justified and maintained below regulatory limits. CNL reported that its radiation protection program is compliant with the *Radiation Protection Regulations*.
489. CNL reported that all work at NSDF involving ionizing radiation will be planned and controlled per CNL's existing procedures. CNL prepared an NSDF ALARA Assessment Report and an NSDF Radiation Protection Plan which specifies NSDF-specific radiation protection and dosimetry requirements. CNL explained that, following the construction phase, radiation protection staff will be included in the day-to-day NSDF work planning and monitoring activities and that radiation protection requirements will continue to be applied in a graded manner throughout the life of the NSDF.
490. In section 4.7 of CMD 22-H7, CNSC staff submitted that CNL's radiation protection program meets the requirements of the *Radiation Protection Regulations* and ensures that adequate measures are in place to control radiological hazards and occupational exposures to radiation, to report doses received by workers, and to maintain radiation doses ALARA. CNSC staff noted that CNL's radiation protection program would be applicable during the potential future operation of the NSDF, if authorized by the Commission.

491. CNSC staff further reported that it reviewed CNL's NSDF Radiation Protection Plan. CNSC staff found the plan to be consistent with CNL's radiation protection program and that the plan would ensure that measures are in place to control doses to workers at the NSDF. CNSC staff noted that the plan includes aspects such as training and qualification of workers, access control, and the establishment of action levels.²⁹⁸ CNSC staff also submitted that it reviewed CNL's NSDF ALARA Assessment Report and confirmed that it met regulatory requirements.
492. As described in section 3.3.7.5 of this *Record of Decision*, the estimated doses to workers from the operation of the NSDF are expected to be well below regulatory limits. In section 4.7 of CMD 22-H7, CNSC staff noted that CNL will review and revise the dose estimates once operating procedures for the NSDF are developed. CNSC staff reported that it will validate the revised dose estimates when they are available.
493. Based on the information on the record as described above, the Commission concludes that CNL has an adequate radiation protection program in place to protect the health and safety of persons and the environment from radiation hazards associated with the CRL site, including construction of the NSDF. The Commission comes to this conclusion on the following basis:
- CNL has implemented a radiation protection program that meets regulatory requirements, including the *Radiation Protection Regulations*
 - there is no radiological risk to workers during the construction phase of the NSDF Project
 - at this stage in the project, CNL has carried out sufficient preparatory work for the establishment of required radiation protection programs during the operation phase of the NSDF
 - the estimated doses to NSDF workers during the operations phase of the NSDF Project are below regulatory limits

3.5.2.8 Conventional Health and Safety

494. A conventional health and safety program's objective is to minimize risk to the health and safety of workers posed by conventional (non-radiological) hazards in the workplace. A conventional health and safety program manages conventional workplace safety hazards and ensures compliance with applicable labour codes. The NSCA provides that the Commission must ensure that a licence applicant takes the necessary measures to safeguard the health and safety of persons.

²⁹⁸ Action levels are designed to alert licensees before regulatory dose limits are reached. By definition, if an action is reached, a loss of control of some part of the associated radiation protection program may have occurred, and specific action is required, as defined in the *Radiation Protection Regulations*.

495. The regulation of non-radiological health and safety at CRL is governed by Part II of the *Canada Labour Code* and the [Canada Occupational Health and Safety Regulations](#),²⁹⁹ which are administered by Employment and Social Development Canada. Paragraph 3(f) of the *Class I Nuclear Facilities Regulations* requires that an application for a licence in respect of a Class I nuclear facility, other than a licence to abandon, shall contain the proposed worker health and safety policies and procedures.
496. In section 6.8 of CMD 22-H7.1, CNL provided information on its corporate wide occupational safety and health program and safety and health policy, including that the program and policy both comply with the *Canada Labour Code* and the *Canada Occupational Health and Safety Regulations*. CNL reported that occupational safety and health program and safety and health policy will be used to control conventional health and safety hazards during each phase of the NSDF Project. CNL also noted that it will involve its occupational safety and health staff in the day-to-day work planning and monitoring activities for the NSDF Project.
497. In section 4.8 of CMD 22-H7, CNSC staff reported that CNL has implemented a conventional health and safety program at the CRL site that meets regulatory requirements. CNSC staff reported that CNL actively promotes conventional health and safety through the provision of information, training, instructions, and supervision of employees and contractors, and that CNL's reported recordable lost-time injury frequency is lower than that of comparable industries in Ontario, as per Ontario Workplace Safety and Insurance Board data. Regarding the NSDF, CNSC staff assessed CNL's licence amendment application and past performance at the CRL site and is of the view that CNL's existing conventional health and safety program is adequate to support the proposed construction of the NSDF.
498. The Commission asked CNL to provide more information on conventional health and safety risks to workers during the NSDF construction phase. A CNL representative stated that the conventional health and safety risks that workers would face during construction of the NSDF are similar to those that workers would face during other construction activities at the CRL site.³⁰⁰
499. Based on the information on the record as described above, the Commission concludes that CNL has made, and will continue to make, adequate provision for the protection of the health and safety of persons with respect to conventional hazards arising from the licensed activities that the amended licence would authorize. The Commission finds that:

²⁹⁹ SOR/86-304.

³⁰⁰ *Transcript of the May 31 2022 Public Hearing*, pages 31-32.

- CNL's conventional health and safety program meets regulatory requirements
- CNL's reported recordable lost-time injury frequency is lower than that of comparable industries in Ontario
- CNL will involve occupational safety and health staff in the day-to-day work planning and monitoring activities for the NSDF Project
- Conventional health and safety risks that workers would face during construction of the NSDF are similar to the risks that workers would face during other construction activities that are currently being adequately managed at the CRL site

3.5.2.9 Environmental Protection

500. Environmental protection programs are intended to identify, control, and monitor all releases of radioactive and hazardous substances, and aim to minimize the effects on the environment which may result from the licensed activities. These programs include effluent and emission control, environmental monitoring, and estimated doses to the public.
501. In accordance with the NSCA, licensees are required to make adequate provision for the protection of the environment. Paragraphs 12(1)(c) and (f) of the GNSCR require each licensee to take all reasonable precautions to protect the environment and the health and safety of persons, and to control the release of radioactive nuclear substances or hazardous substances within the site of the licensed activity and into the environment.
502. Paragraphs 3(g) and 3(h) of the *Class I Nuclear Facilities Regulations* require an application for a licence to contain information in relation to environmental protection policies and procedures, and effluent and environmental monitoring programs. Paragraph 5(i) of the *Class I Nuclear Facilities Regulations* requires that the application contain the effects on the environment and the health and safety of persons that may result from the construction, operation and decommissioning of the nuclear facility, and the measures that will be taken to prevent or mitigate those effects. In accordance with paragraphs 6(e), 6(h), 6(i), and 6(j) of the *Class I Nuclear Facilities Regulations*, the licence application shall also include information on potential effect on the environment and health and safety of persons from licensed activities, mitigation measures, the location and quantity of releases to the environment, and measures to control releases of nuclear and hazardous substances to the environment.

503. In section 6.9 of CMD 22-H7.1, CNL submitted that it has implemented an environmental protection program at the CRL site that complies with REGDOC-2.9.1. CNL reported that its environmental protection program includes:
- an integrated environmental monitoring program that meets the requirements of CSA N288.4, *Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills*³⁰¹
 - an effluent monitoring program that meets the requirements of CSA N288.5-11
 - a groundwater protection and monitoring program that meets the requirements of CSA N288.7-15
 - established and implemented action levels to control releases to the environment from nuclear facilities in compliance with CSA N288.8-17, *Establishing and implementing action levels to control releases to the environment from nuclear facilities*³⁰²
 - an environmental risk assessment performed according to the CSA N288.6-12, *Environmental risk assessment at Class I nuclear facilities and uranium mines and mills*³⁰³

CNL also provided information on how it measures the effectiveness of its environmental protection program and reports to CNSC staff. CNL's existing environmental protection program would also apply to the NSDF.

504. In section 4.9 of CMD 22-H7, CNSC staff reported that CNL has implemented and maintained an effective environmental protection program at the CRL site in compliance with regulatory requirements including CSA N288.4, N288.5-11, N288.6-12, and REGDOC-2.9.1. CNSC staff provided information on its assessment of CNL's environmental management system, effluent and environmental monitoring programs, environmental risk assessment, and protection of people near the CRL site. CNSC staff submitted that continued implementation of CNL's existing site-wide program elements and NSDF-specific plans, activities, and mitigation measures are sufficient and acceptable to support the proposed construction of the NSDF.
505. CNSC staff submitted that that CNL's current environmental management system is acceptable for the NSDF Project construction activities. CNSC staff reported that CNL is required to maintain an environmental management system to provide a documented framework for integrated activities related to environmental protection. CNSC staff found that CNL's environmental

³⁰¹ CSA N288.4, *Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills*, CSA Group, 2010 (R2015)

³⁰² CSA N288.8-17, *Establishing and implementing action levels to control releases to the environment from nuclear facilities*, CSA Group, 2017.

³⁰³ CSA N288.6-12, *Environmental risk assessment at Class I nuclear facilities and uranium mines and mills*, CSA Group, 2012 (R2017).

management system meets regulatory requirements, noting that it also conforms to ISO 14001:2015, *Environmental Management Systems – Requirements with Guidance for Use*.³⁰⁴

506. Regarding effluent and emission control, CNSC staff reported that CNL has implemented an effluent verification monitoring program at the CRL site in compliance with CSA N288.5 to ensure that releases from the CRL site meet requirements. CNSC staff further submitted that, in preparation for the operation phase of the NSDF Project, CNL has proposed a high-level effluent monitoring program and committed to develop a detailed program prior to the commissioning of the NSDF WWTP. CNSC staff reviewed CNL's NSDF-specific documentation and found it sufficient and acceptable to support the proposed construction of the NSDF. CNSC staff noted that, should the Commission authorize the construction of the NSDF, CNL will be required to integrate NSDF operational activities into the current CRL effluent verification monitoring program.
507. CNSC staff reported that CNL has implemented an environmental monitoring program at the CRL site in compliance with CSA N288.4. Specific to the NSDF, CNSC staff submitted that CNL prepared a dust management plan and an NSDF environmental protection plan which served as the framework for its NSDF environmental protection program. The dust management plan is discussed further in section 3.3.6.1 of this *Record of Decision*. CNSC staff reviewed both plans and found them to be sufficient to support site construction activities. CNSC staff noted that, should the Commission authorize the construction of the NSDF, CNL will be required to integrate NSDF operational activities into the current CRL environmental monitoring program.
508. CNSC staff also found the proposed mitigation measures and monitoring activities to be adequate for the NSDF construction phase. These include mitigation measures and monitoring activities to limit potential effects to the atmospheric, surface water, geological, hydrogeological, and terrestrial environments, as well as to traditional land and resource use and human health. Such measures are discussed throughout section 3.3 of this *Record of Decision*.
509. CNSC staff submitted that it had conducted a comprehensive review of the environmental risks in support of the NSDF EA and licence amendment application. CNSC staff confirmed that the assessment of environmental risks met the requirements of CSA N288.6-12 and demonstrated that the environment would be protected throughout the lifecycle of the project, including during construction. CNSC staff noted that, if authorized by the Commission, the NSDF will be incorporated into the CRL sitewide environmental risk assessment that is required to be reviewed at least every five years, in accordance with the CRL licensing basis.

³⁰⁴ ISO 14001:2015. *Environmental Management Systems – Requirements with Guidance for Use*, 2015.

510. On the matter of protection of people, CNSC staff reported that the NSDF construction phase is expected to result in no releases of nuclear substances and negligible releases of hazardous substances to the environment. CNSC staff explained that the proposed location of the NSDF is in an undisturbed area of the CRL site and that CNL's sampling of trees and surface soil has not detected nuclear substances above background levels at this location. As such, CNSC staff found that there is no radiological or hazardous exposure risk to people from NSDF during the construction phase.
511. Based on the information on the record as described above, the Commission concludes that CNL has adequate measures in place at CRL for the purpose of environmental protection under the NSCA to conduct the licensed activities that the amended licence would authorize. The Commission finds that:
- CNL has implemented and maintained an effective environmental protection program at the CRL site in compliance with regulatory requirements, including REGDOC-2.9.1
 - CNL has implemented an effluent verification monitoring program at the CRL site in compliance with CSA N288.5
 - CNL has implemented an environmental monitoring program at the CRL site in compliance with CSA N288.4
 - CNL has proposed adequate mitigation measures and monitoring activities for the NSDF construction phase
 - the NSDF construction phase is expected to result in no releases of nuclear substances and negligible releases of hazardous substances to the environment
 - the assessment of environmental risks meets the requirements of CSA N288.6-12 and demonstrates protection of the environment throughout the lifecycle of the NSDF Project, including construction

3.5.2.10 Emergency Management and Fire Protection

512. Emergency management and fire protection programs cover the measures for preparedness and response capabilities implemented by CNL in the event of emergencies and non-routine conditions at the CRL site. These measures include nuclear emergency management, conventional emergency response, and fire protection and response. Paragraph 6(k) of the *Class I Nuclear Facilities Regulations* requires that a licence application contain information on the licensee's proposed measures to prevent or mitigate the effects of accidental releases of nuclear substances and hazardous substances on the environment, the health and safety of persons and the maintenance of national security.
513. To satisfy regulatory requirements, CNL must implement and maintain emergency response and fire protection programs at the CRL site in accordance with [REGDOC-2.10.1 Nuclear Emergency Preparedness and Response](#).

[Version 2](#),³⁰⁵ CSA Group standard N393-13: *Fire protection for facilities that process, handle, or store nuclear substances*,³⁰⁶ and the [National Fire Code of Canada](#).³⁰⁷ REGDOC-2.10.1 sets out requirements and guidance related to the development of emergency measures for licensees and licence applicants of Class I nuclear facilities. CSA Group standard N393-13 sets out fire protection requirements for facilities which process, handle, or store nuclear substances. The *National Fire Code of Canada* sets out the technical provisions regulating activities related to the construction, use or demolition of buildings and facilities, the condition of specific elements of buildings and facilities, and the design or construction of specific elements of facilities related to certain hazards as well as the protection measures for the current or intended use of buildings.

514. With respect to emergency management, CNL submitted, in section 6.10.1 of CMD 22-H.7.1, that it has an emergency preparedness program in effect at the CRL site which meets the requirements of REGDOC-2.10.1 and covers emergency plans and procedures, emergency drills, and emergency response coordination with federal, provincial, and municipal officials. Regarding construction of the NSDF, CNL specified that the construction contractor will be required to prepare and submit to CNL for acceptance, an emergency response plan that is compliant with CNL's emergency procedures.
515. In section 4.10 of CMD 22-H7, CNSC staff confirmed that CNL has adequate personnel and equipment available at the CRL site to respond to conventional or nuclear emergencies. These resources will continue to be available to respond to any potential NSDF emergencies. Based on CNSC staff's assessment of CNL's emergency response plan and emergency exercise results, CNSC staff found that CNL's emergency management program meets regulatory requirements and that emergency response measures for the NSDF Project can be incorporated into the existing program.
516. In its intervention, the Agence de bassin versant des 7 ([CMD 22-H7.159](#)) questioned how local municipalities would be involved in response to incidents at the NSDF. CNL submitted, in section 6.10 of CMD 22-H7.1, that in the case of an accident or emergency, CNL coordinates emergency response for the CRL site with regional municipalities and responsible provincial and federal agencies to ensure that emergency resources are properly deployed.
517. Regarding fire protection, CNL submitted, in section 6.10.2 of CMD 22-H.7.1, that it has a fire protection program in effect at the CRL site which meets the requirements of CSA N393-13 and the *National Fire Code of Canada*. CNL reported that the CRL site's existing fire response capabilities will be available to the NSDF throughout the construction, operations, and closure phases of the

³⁰⁵ REGDOC 2.10.1, *Nuclear Emergency Preparedness and Response*, Version 2, CNSC, February 2016.

³⁰⁶ CSA N393-13, *Fire protection for facilities that process, handle or store nuclear substances*, CSA group, 2013 (R2016).

³⁰⁷ *National Fire Code of Canada 2015*, National Research Council Canada, 2015.

project. In section 4.10 of CMD 22-H7, CNSC staff reported that it assessed CNL's licence amendment application and past performance at the CRL site and found CNL's existing fire protection program to satisfy regulatory requirements. CNSC staff also confirmed that CNL has sufficient resources to respond to fire events at the NSDF.

518. With respect to the fire hazards analysis, CNSC staff reported in section 4.10 of CMD 22-H7 that CNL completed, and carried out a third-party review of, the NSDF Fire Hazard Analysis and code compliance review in accordance with applicable codes and standards. CNSC staff assessed and determined that the NSDF fire hazard analysis complies with the programmatic and operational requirements of the applicable standards.
519. Based on the information on the record as described above, the Commission concludes that CNL's nuclear and conventional emergency management program and the fire protection measures in place at CRL are adequate to protect the health and safety of persons and the environment for the licensed activities that would be authorized by the amended licence. The Commission finds that:
- CNL's emergency management program meets regulatory requirements, including REGDOC-2.10.1
 - CNL's fire protection program meets regulatory requirements, including CSA N393-13
 - CNL's existing emergency and fire response capabilities are sufficient to respond to emergencies at the NSDF site

3.5.2.11 Waste Management

520. Waste management covers waste-related programs that form part of a facility's operations up to the point where the waste is removed from the licensed site for storage, treatment, or disposal at another licensed location, and includes waste minimization, segregation, characterization, and storage programs. The waste management SCA covers the waste generated during CRL operations, including construction of the NSDF.
521. Paragraph 3(1)(j) of the GNSCR provides that the licence application must include the name, quantity, form, origin and volume of any radioactive waste or hazardous waste that may result from the activity to be licensed, including wastes that may be stored, managed, processed, or disposed of at the site of the activity to be licensed, and the proposed method for managing and disposing of that waste.

522. In section 6.11.1 of CMD 22-H7.1, CNL provided information on its waste management program including waste management documentation, CNL's integrated waste strategy, and application of CNL's waste hierarchy to ensure that waste disposal is always the last resort. CNL reported that its waste management program ensures that all waste generated or received at CNL-operated sites not only meet waste management requirements but are managed in a safe and environmentally responsible manner. CNL noted that it prepared an NSDF Waste Management Plan to ensure that wastes generated during each phase of the NSDF lifecycle will be managed in accordance with the requirements of the waste management program. CNL also reported that it had committed to implementing the following newly published REGDOCs into its waste management program:

- REGDOC-2.11, *Framework for Radioactive Waste Management and Decommissioning in Canada, Version 2*
- REGDOC-2.11.1, *Waste Management, Volume I: Management of Radioactive Waste*
- REGDOC-2.11.1, *Waste Management, Volume III: Safety Case for the Disposal of Radioactive Waste*

The Commission expects CNSC staff to continue to monitor CNL's implementation of these REGDOCs.

523. In section 4.11 of CMD 22-H7, CNSC staff confirmed that CNL implements a waste management program at the CRL site in compliance with regulatory requirements and international and industry best practices for waste characterization, waste minimization, and waste management. CNSC staff reported that it found CNL's NSDF Waste Management Plan to comply with CNL's existing waste management program, applicable regulatory requirements including CSA N292.0:19 and N292.3-14 *Management of low- and intermediate-level radioactive waste*,³⁰⁸ and industry good practice.

524. The Commission noted that NRCAN was in the process of modernizing Canada's radioactive waste policy and asked if the new *Policy for Radioactive Waste and Decommissioning* would impact CNL's integrated waste strategy or NSDF proposal. A CNL representative said that CNL's integrated waste strategy and NSDF proposal were aligned with both Canada's existing radioactive waste policy and the draft of the revised policy. The CNL representative noted that CNL has been actively involved in the review of the draft policy and does not anticipate anything in the final policy that would impede the NSDF Project. CNL is committed to updating its integrated waste strategy and NSDF proposal based on the final policy, as required.³⁰⁹

³⁰⁸ CSA N292.3-14, *Management of low- and intermediate-level radioactive waste*, CSA Group, 2014.

³⁰⁹ *Transcript of the May 30 2022 Public Hearing*, page 48 and *Transcript of the June 3 2022 Public Hearing*, page 135.

525. Based on the information on the record as described above, the Commission concludes that CNL has implemented and continues to maintain a waste management program to safely manage waste at the CRL site. The Commission finds that:

- CNL has a waste management program at the CRL site that meets regulatory requirements, including CSA N292.0:19 and N292.3-14
- CNL's existing waste management programs are sufficient to manage wastes generated during the construction of the NSDF
- CNL is committed to updating its integrated waste strategy and NSDF proposal based on the Canada's modernized Policy for Radioactive Waste Management and Decommissioning, as required.

3.5.2.12 Security

526. The security SCA covers the implementation of a program to prevent the loss, unauthorized removal and sabotage of nuclear substances, nuclear materials, prescribed equipment, or information. CNL's security program for CRL must comply with applicable provisions of the GNSCR and Part 2 of the NSR. [REGDOC-2.12.3, Security of Nuclear Substances: Sealed Sources and Category I, II and III Nuclear Material, Version 2.1](#)³¹⁰ sets out the security measures that must be implemented to prevent the loss, sabotage and illegal use, possession, or illegal removal of sealed sources during its entire lifecycle.

527. Paragraph 12(1)(c) of the GNSCR requires a licensee to take all reasonable precautions to protect the environment and the health and safety of persons, and to maintain the security of nuclear facilities and of nuclear substances. Paragraphs 12(1)(g) and 12(1)(h) require the licensee to implement measures for alerting the licensee to the illegal use or removal of a nuclear substance, prescribed equipment or prescribed information, or the illegal use of a nuclear facility, and measures for alerting it to acts or attempts of sabotage, anywhere at the site of the licensed activity. Paragraph 12(1)(j) requires the licensee to instruct workers on the physical security program at the site of the licensed activity and on their obligations under that program.

528. In section 6.12 of CMD 22-H7.1, CNL submitted that it has a security program in place at the CRL site to protect CNL employees, facilities, and nuclear materials in accordance with the CNL Security Policy. Specific to the NSDF, CNL submitted that security measures proposed for the NSDF are appropriate for low-level radioactive waste and will prevent unauthorized access, unauthorized removal of radioactive material, and acts of sabotage or attempted sabotage. CNL noted that the NSDF Project site can only be accessed from within the CRL site boundary and that access to the CRL site is controlled by security personnel.

³¹⁰ REGDOC-2.12.3, *Security of Nuclear Substances: Sealed Sources and Category I, II and III Nuclear Material*, Version 2.1, CNSC, September 2020 [REGDOC-2.12.3].

529. Regarding cyber-security, CNL submitted that it has implemented a cybersecurity program which applies to all users of CNL information technology assets. Specific to the NSDF, CNL reported that its cybersecurity program will include appropriate security measures for the supervisory control and data acquisition system, which provides monitoring and supervisory control of the proposed WWTP. CNSC staff reported that CNL has implemented its cybersecurity program in accordance with CSA N290.7-14, *Cyber-security for nuclear power plants and small reactor facilities*.³¹¹
530. In section 4.12 of CMD 22-H7, CNSC staff reported that CNL's security program meets regulatory requirements and that all required security systems and access control measures have been implemented and maintained at the CRL site. CNSC staff also noted that CNL has an established response protocol with local law enforcement to ensure the timely response of armed police officers, should a security related incident occur. Regarding the NSDF, CNSC staff assessed CNL's NSDF site security proposal and determined that the proposal is adequate to carry out NSDF Project construction activities in accordance with security requirements.
531. The Commission asked for more information on how CNL will maintain security during the construction phase and over the lifetime of the NSDF. A CNL representative said that, as a Class IB facility, the NSDF will be surrounded by a fence to both control access and demark that it contains nuclear substances. The fence will be present during all NSDF Project phases, including construction and institutional control. The CNL representative explained that CNL has included in its institutional control proposal that the facility will have a fence as well as signs and markers noting that the site is restricted.³¹²
532. Based on the information on the record as described above, the Commission concludes that CNL's programs and measures in place to provide for the physical security of the CRL site are adequate. The Commission finds that:
- CNL's security program meets regulatory requirements, including the GNSCR, NSR, and REGDOC-2.12.3
 - CNL has implemented a cybersecurity program in accordance with regulatory requirements, including CSA N290.7-14
 - CNL's NSDF site security proposal is adequate to carry out NSDF construction activities in accordance with security requirements

3.5.2.13 Safeguards and Non-Proliferation

533. The CNSC's regulatory mandate includes ensuring conformity with measures required to implement Canada's international obligations under the [*Treaty on*](#)

³¹¹ CSA N290.7-14, *Cyber-security for nuclear power plants and small reactor facilities*, CSA group, 2014 (R2015).

³¹² *Transcript of the June 3 2022 Public Hearing*, pages 154-156.

[the Non-Proliferation of Nuclear Weapons](#)³¹³ (NPT). Pursuant to the NPT, Canada has entered into a [Comprehensive Safeguards Agreement](#)³¹⁴ and an [Additional Protocol](#)³¹⁵ (safeguards agreements) with the IAEA. The objective of these safeguards agreements is for the IAEA to provide credible assurance on an annual basis to Canada and to the international community that all declared nuclear material is in peaceful, non-explosive uses and that there is no undeclared nuclear material or activity in this country.

534. Paragraphs 5(h) and 6(f) of the *Class I Nuclear Facilities Regulations* require that the application contain the proposed measures to facilitate Canada's compliance with any applicable safeguards agreement. [REGDOC-2.13.1 Safeguards and Nuclear Material Accountancy](#)³¹⁶ sets out requirements and guidance for safeguards programs for applicants and licensees who possess nuclear material, operate a uranium and/or thorium mine, carry out specified types of nuclear fuel-cycle related research and development work, and/or carry out specified types of nuclear-related manufacturing activities.
535. In section 6.13 of CMD 22-H7.1, CNL submitted that it has implemented a nuclear materials and safeguards management program which meets the requirements of REGDOC-2.13.1 and applies to all nuclear material and safeguards management activities performed at CNL facilities. Regarding the NSDF, CNL submitted that no material currently subject to safeguards will be accepted for disposal in the NSDF during the operations phase of the project. No nuclear substance of any kind will be placed in the NSDF during the construction phase.
536. In section 4.13 of CMD 22-H7, CNSC staff confirmed that CNL has implemented and maintained an effective safeguards and non-proliferation program in accordance with regulatory requirements. CNSC staff noted that the IAEA performed a complementary access activity at the CRL site on October 20, 2021. CNSC staff added that, at that time, the IAEA sought and was provided with further information on CNL's process to characterize and verify wastes prior to emplacement in the NSDF. CNSC staff reported that CNL will be required to continue to provide the IAEA and the CNSC operational and design information specific to the NSDF during the construction phase of the NSDF Project. CNL is also expected to provide access and assistance to the IAEA, and the CNSC, if the IAEA requests to perform a complementary access activity.
537. Based on the information on the record as described above, the Commission is satisfied that CNL has implemented and maintains a safeguards program that provides for the implementation of measures that are necessary for maintaining

³¹³ INFCIRC/140.

³¹⁴ INFCIRC/164.

³¹⁵ INFCIRC/164/Add.1.

³¹⁶ REGDOC-2.13.1, *Safeguards and Nuclear Material Accountancy*, CNSC, February 2018 [REGDOC-2.13.1].

national security, and for implementing international agreements to which Canada has agreed. The Commission finds that:

- CNL's safeguards and non-proliferation program meets regulatory requirements, including REGDOC-2.13.1
- no material currently subject to safeguards will be accepted for disposal in the NSDF during the operations phase of the project. No nuclear material of any kind will be placed in the NSDF during the construction phase
- CNL has provided the IAEA with the necessary access and assistance for it to perform its activities, and complied with all safeguards and non-proliferation regulatory requirements over the current licence period
- CNL will be required to continue to provide the IAEA and the CNSC operational and design information specific to the NSDF during the construction phase of the NSDF Project

3.5.2.14 Conclusions on CNL's Performance at CRL and Considerations for the Construction of the Proposed NSDF

538. Based on the review and the analysis of all of the information provided and discussed above, the Commission is satisfied and concludes that CNL is qualified to carry on the licensed activities under the proposed amended licence. The Commission finds that CNL has adequate programs in place with respect to the applicable SCAs to ensure that the health and safety of workers, the public and the environment will be protected during the construction of the NSDF. The Commission further concludes that CNL will continue to maintain measures to provide for the maintenance of national security and to implement international obligations to which Canada has agreed.

3.5.3 Other Matters of Regulatory Importance

3.5.3.1 Public Information and Engagement

539. CNL is required to maintain a public information and disclosure program (PIDP) for the CRL site in accordance with [REGDOC-3.2.1, Public Information and Disclosure](#).³¹⁷ The primary goal of the PIDP is to ensure that information related to the health, safety and security of persons and the environment, and other issues associated with the lifecycle of nuclear facilities is effectively communicated to the public. In section 2 of CMD 22-H7.1B, CNL reported that it has a corporate-wide public information program in place which satisfies the requirements of REGDOC-3.2.1. CNL's public information program, including its public disclosure protocol, is available on the [CNL](#)

³¹⁷ REGDOC-3.2.1, *Public Information and Disclosure*, CNSC, May 2018 [REGDOC-3.2.1].

[website](#). In accordance with its existing public information program, CNL noted that it is committed to continuing the use of various methods to inform, educate, and discuss the NSDF Project with the public and to enable the public to provide valuable feedback.

540. In section 6.1 of CMD 22-H7, CNSC staff reported that it reviewed CNL's public information program and found that CNL has maintained an effective PIDP for the CRL site that meets the requirements of REGDOC-3.2.1. As the NSDF is not specifically included in CNL's current PIDP, CNSC staff assessed the effectiveness of CNL's public engagement for the NSDF Project by reviewing CNL's NSDF stakeholder engagement reports, public engagement information provided in CNL's EIS, CNL's NSDF-specific webpage, and by observing several in-person and virtual engagement activities. CNSC staff is of the view that CNL has conducted appropriate public engagement, including seeking feedback and addressing project-specific issues and concerns raised, to the extent possible. Additional information on public engagement activities pertaining to the NSDF Project are discussed in section 3.3.13 of this *Record of Decision*.
541. CNSC staff reported that, should the Commission authorize construction of the NSDF, CNSC staff expect CNL to update its CRL site PIDP to align with CNL's formal, written commitments to public information and disclosure in respect of the NSDF Project.
542. Based on the information on the record as described above, the Commission concludes that CNL has adequate measures in place to communicate to the public information about the health, safety and security of persons and the environment and other issues related to the CRL site and the NSDF Project. The Commission finds that:
- CNL's PIDP for the CRL site meets regulatory requirements, including REGDOC-3.2.1
 - CNL has conducted appropriate public engagement regarding the NSDF Project

Following issuance of this decision, the Commission expects CNL to update the CRL site PIDP to align with CNL's commitments to public information and disclosure for the NSDF Project.

3.5.3.2 Decommissioning Plans and Financial Guarantee

543. The NSCA and its regulations require licensees to make adequate provision for the safe decommissioning of their facilities and for the long-term management of waste produced during the lifespan of a facility. In order to ensure that adequate resources are available for the safe and secure future decommissioning of the CRL site, the Commission requires that an adequate financial guarantee

for the realization of planned activities be put in place and maintained in a form acceptable to the Commission. The Commission considered whether the financial guarantee maintained by CNL is sufficient for the decommissioning of the CRL site, including the NSDF supporting facilities and infrastructure.

544. In section 6.11.2 of CMD 22-H7.1, CNL provided information on its cleanup function including its land use, decommissioning and demolition, and environmental remediation programs. CNL also reported that it had committed to implementing the newly published [REGDOC-2.11.2, Decommissioning](#)³¹⁸ into its cleanup function. In section 4.11 of CMD 22-H.7, CNSC staff reported that it assessed CNL's PDP for the NSDF and found it to be compliant with CSA N294-09, *Decommissioning of facilities containing nuclear substances*³¹⁹ and CNSC guidance document G-219, *Decommissioning Planning for Licensed Activities*.^{320,321}
545. CNL reported that it prepared an NSDF Waste Management Plan to ensure that wastes generated during each phase of the NSDF lifecycle will be managed in accordance with the requirements of the waste management program. CNL also submitted that it has prepared both a Preliminary Decommissioning Plan (PDP) and a Post-closure Care Plan for the NSDF which will be reviewed and updated throughout the lifecycle of the facility, as further information on waste streams generated and projected future waste generation becomes available. In section 4.11 of CMD 22-H.7, CNSC staff submitted that it would review these plans during the construction phase to assess CNL's readiness for the operation phase.
546. The intervention by the Council of Canadians Ottawa Chapter (CMD 22-H7.117) raised concerns regarding how the waste generated during the future decommissioning of the WWTP and NSDF support facilities would be managed. The Commission asked CNL for more information on this matter. A CNL representative said that the future decommissioning of the WWTP would likely produce a small amount of LLW that would be managed in accordance with CNL's integrated waste strategy. Another CNL representative noted that the integrated waste strategy would identify what waste facilities are available at that time.³²²
547. In section 7.2 of CMD 22-H7.1, CNL submitted that, while ownership of CNL has transferred to Canadian National Energy Alliance, AECL retains ownership of the lands, assets, and liabilities associated with CNL's licences, including

³¹⁸ REGDOC-2.11.2, *Decommissioning*, CNSC, January 2021 [REGDOC-2.11.2].

³¹⁹ CSA N294-09, *Decommissioning of facilities containing nuclear substances*, CSA Group, 2009 (R2014).

³²⁰ G-219, *Decommissioning Planning for Licensed Activities*, CNSC, June 2000.

³²¹ G-219 has since been superseded by REGDOC-2.11.2. In section 6.11 of CMD 22-H7.1, CNL reported that it completed a gap analysis which identified one gap related to the requirements in REGDOC-2.11.2 that necessitates an update to the NSDF PDP. CNL has identified this as an action and is being tracked as a regulatory commitment to the CNSC.

³²² *Transcript of the June 3 2022 Public Hearing*, pages 130-132.

that for the CRL site. The Minister of Natural Resources officially recognized these liabilities in a letter dated July 31, 2015³²³ and re-affirmed in 2020.³²⁴

548. In section 6.3 of CMD 22-H7, CNSC staff submitted that, per [REGDOC-3.3.1 Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities](#),³²⁵ an expressed commitment from a federal or provincial government is an acceptable form of financial guarantee. CNSC staff reported that the financial guarantee is sufficient for the decommissioning of the CRL site, including the NSDF supporting facilities and infrastructure.
549. The Commission is satisfied that the existing financial guarantee, in the form of an expressed commitment from the federal government, remains sufficient for the decommissioning of the CRL site, including the NSDF and supporting infrastructure.

3.5.3.3 Cost Recovery

550. The Commission examined CNL's standing under the [Canadian Nuclear Safety Commission Cost Recovery Fees Regulations](#)³²⁶ (CRFR) requirements for the CRL site. Paragraph 24(2)(c) of the NSCA requires that a licence amendment application be accompanied by the prescribed fee, as set out by the CRFR and based on the activities to be licensed.
551. In section 7.1 of CMD 22-H7.1, CNL submitted that CRL is in good standing with respect to the provision of CNSC licensing fees and will continue to provide all necessary fees as and when required.
552. In section 6.2 of CMD 22-H7, CNSC staff confirmed that CNL is in good standing with respect to the CNSC CRFR requirements for CRL. CNSC staff noted that CNL has paid its cost recovery fees in full and CNSC staff do not have concerns regarding the payment of future cost recovery fees.
553. Based on the information submitted by CNL and CNSC staff, the Commission is satisfied that CNL has satisfied the requirements of the CRFR for the purpose of this licence amendment.

³²³ Rickford, G., (NRCan), Letter to Binder, M., (CNSC), *untitled, relating to provision of financial guarantees for CNL sites in Canada*, 2015 July 31

³²⁴ Boyle, P. (CNL), Letter to Murthy, K. (CNSC), *Submission of Information Regarding Financial Guarantees for All Atomic Energy of Canada Limited Sites Operated by Canadian Nuclear Laboratories*, 2020 August 25

³²⁵ REGDOC-3.3.1, *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities*, CNSC, January 2021.

³²⁶ SOR/2003-212.

3.5.3.4 Nuclear Liability Insurance

554. The [*Nuclear Liability and Compensation Act*](#)³²⁷ (NLCA) establishes a compensation and liability regime in the unlikely event of a nuclear accident resulting in civil injury and damages. The Commission notes that there is no requirement for nuclear liability insurance with respect to an application to construct the NSDF at the CRL site as the proposed facility during the construction licensing phase is not considered a nuclear installation and as such, the NLCA does not apply.

3.5.4 Proposed Licence Amendment and Delegation of Authority

555. The Commission considered CNL's licence amendment application to authorize the construction of the proposed NSDF. CNL's current licence, NRTEOL-01.00/2028, authorizes CNL to operate the CRL site.

3.5.4.1 Proposed Licence Amendment

556. Part IV of CNL's current licence, NRTEOL-01.00/2028, authorizes CNL to:

“a) prepare a site for, construct, operate, modify, decommission or abandon a nuclear facility”

Licence Condition G.1 states that:

“The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis, defined as:

- (i) the regulatory requirements set out in the applicable laws and regulations;
- (ii) the conditions and safety and control measures described in the facility's or activity's licence and the documents directly referenced in that licence; and
- (iii) the safety and control measures described in the licence application and the documents needed to support that licence application;

unless otherwise approved in writing by the Canadian Nuclear Safety Commission (hereinafter “the Commission”).”

Licence Condition 3.1 states the following under *Construction and operation of New Nuclear Facilities*:

³²⁷ S.C. 2015, c. 4, s. 120.

“The licensee may construct or install facilities, buildings, structures, components or equipment only if that construction or installation is compliant with the licensing basis.”

The proposed NSDF is considered a new Class IB Nuclear Facility per paragraph 19(a) of the GNSCR. This new Class IB Nuclear Facility is not authorized in the current CRL licence and therefore falls outside of the current licensing basis. As such, a licence amendment is required to proceed with construction of the NSDF.

557. In Part 2 of CMD 22-H7, CNSC staff provided a proposed amended licence and an associated draft licence LCH that incorporate two new NSDF-specific licence conditions. The new licence conditions, as proposed by CNSC staff, are as follows:

- Licence Condition G.7: The licensee shall implement the licensing regulatory actions prescribed by the Commission. Review and closure of the licensing actions is administered by the Commission or a person authorized by the Commission.
- Licence Condition G.8: The licensee shall implement the Environmental Assessment (EA) regulatory commitments prescribed by the Commission. Review and closure of the EA regulatory commitments is administered by the Commission or a person authorized by the Commission.

In section 1.2.3 of CMD 22-H7, CNSC staff highlighted that CNL will be required to report on the progress of the implementation of licensing regulatory actions and EA regulatory commitments to CNSC staff on an annual basis or as required by the Commission. These requirements are described in the draft LCH. CNSC staff informed the Commission that it would track the implementation of these actions and verify compliance through regular oversight activities. CNSC staff stated that it would keep the public informed of CNL’s progress with regards to its commitments during the public presentation of the periodic *Regulatory Oversight Report for Canadian Nuclear Laboratories Sites*.³²⁸

558. The Commission notes that the licensing regulatory actions are documented in *NSDF Licensing Regulatory Actions* and EA regulatory commitments are documented in the *NSDF Project Consolidated Commitment Lists*. Both documents would become compliance verification criteria under the proposed amended licence, as described in the draft LCH.

³²⁸ *Transcript of the June 1 2022 Public Hearing*, page 127.

3.5.4.2 Delegation of Authority

559. In order to provide adequate regulatory oversight of changes that do not require a licence amendment nor Commission authorization, the Commission may delegate authority for certain approval or consent, as contemplated in licence conditions that contain the phrase “a person authorized by the Commission.” In section 6.6 of CMD 22-H7, CNSC staff recommended that the Commission delegate authority for licence conditions G.7 and G.8 to the following CNSC staff:

- Director, Canadian Nuclear Laboratories Regulatory Program Division
- Director General, Directorate of Nuclear Cycles and Facilities Regulation
- Executive Vice-President and Chief Regulatory Operations Officer, Regulatory Operations Branch

3.5.5 Conclusion on Proposed Licence Amendment and Delegation of Authority

560. The Commission accepts licence conditions G.7 and G.8 as proposed by CNSC staff in CMD 22-H7 modified as follows (changes shown in bold) to specify applicability to the NSDF Project:

- Licence Condition G.7: The licensee shall implement the **Near Surface Disposal Facility Project** licensing regulatory actions prescribed by the Commission. Review and closure of the licensing actions is administered by the Commission or a person authorized by the Commission.
- Licence Condition G.8: The licensee shall implement the **Near Surface Disposal Facility Project** Environmental Assessment (EA) regulatory commitments prescribed by the Commission. Review and closure of the EA regulatory commitments is administered by the Commission or a person authorized by the Commission.

561. The Commission delegates its authority for the purposes of licence conditions G.7 and G.8, to the following CNSC staff, as recommended:

- Director, Canadian Nuclear Laboratories Regulatory Program Division
- Director General, Directorate of Nuclear Cycles and Facilities Regulation
- Executive Vice-President and Chief Regulatory Operations Officer, Regulatory Operations Branch

The Commission notes that the delegation of authority of the identified licence conditions is for the purpose of the administration of each licence condition.

The Commission is satisfied that this approach is reasonable and notes that CNSC staff can bring any matter to the Commission as required.

562. The Commission is of the opinion that providing opportunities to hear from communities, for intervenors to voice their views and for the Commission to hear them is very important to nurture and maintain a dialogue with members of the public and Indigenous Nations and communities. The Commission notes that the periodic *Regulatory Oversight Report for Canadian Nuclear Laboratories Sites* provides the opportunity for ongoing public participation throughout the licence term. As it directed in its 2018 licence renewal [decision](#)³²⁹ for CRL, the Commission expects CNSC staff to report on the performance of CRL, including the status of the NSDF Project, and any changes made to the CRL LCH, as part of the periodic *Regulatory Oversight Report for Canadian Nuclear Laboratories Sites*.

4.0 CONCLUSION

563. The Commission has considered CNL's application for the amendment of its licence for the CRL site to authorize the construction of an NSDF. The Commission has considered the information and submissions of CNL, CNSC staff, and all participants, as set out in the material available for reference on the record, including all oral submissions at the hearings.
564. Based on its consideration of the information on the record for this application, the Commission concludes that:
- the factors described in paragraphs 19(1)(a) to 19(1)(h) of CEEA 2012, as determined in the Commission's March 2017 decision on the scope of the EA were considered for the NSDF Project
 - the NSDF Project is not likely to cause significant adverse environmental effects as described in subsections 5(1) and 5(2) of CEEA 2012, provided that all proposed mitigation measures are implemented
 - the duty to consult, and where applicable, accommodate, has been adequately discharged with respect to established or potential Aboriginal and/or treaty rights in relation to both the EA and licensing decisions
 - CNL is qualified to carry on the activities that the amended licence would authorize
 - in carrying on that activity, CNL will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed

³²⁹ *Record of Decision in the Matter of Canadian Nuclear Laboratories' Application to Renew the Nuclear Research and Test Establishment Operating Licence for the Chalk River Laboratories*, CNSC, March 2018.

565. The Commission acknowledges that CNL's NSDF Project is expected to have many phases beyond this application for a licence amendment to authorize its construction. Some of those NSDF Project phases will require licensing decisions by the Commission. The Commission notes that its decision regarding the authorization of the construction of the NSDF does not mark the end of the Crown's obligations regarding the duty to consult. The Commission expects CNSC staff and CNL to continue their respective consultation and engagement efforts over the lifecycle of the NSDF Project, and any subsequent applications to the Commission, with Indigenous rights-holders and their representatives, as well as with the public.
566. Therefore, the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, amends the Nuclear Research and Test Establishment Operating Licence issued to Canadian Nuclear Laboratories for Chalk River Laboratories, located in Deep River, Ontario. The amended licence, NRTEOL-01.01/2028, remains valid until March 31, 2028.

[The original document was signed on the 8th of January 2024 \(e-Doc 7197253\)](#)

Rumina Velshi
Presiding Member,
Canadian Nuclear Safety Commission

APPENDIX A – INTERVENORS

Intervenors – Oral Presentations	Document Number
North American Young Generation in Nuclear, represented by M. Mairinger	CMD 22-H7.9 CMD 22-H7.9A
Organization of Canadian Nuclear Industries, represented by B. Fehrenbach	CMD 22-H7.10 CMD 22-H7.10A
City of Ottawa, represented by J. Elliott	CMD 22-H7.16 CMD 22-H7.16A
Evelyn Gigantes	CMD 22-H7.19 CMD 22-H7.19A CMD 22-H7.19B
Erwin Dreessen	CMD 22-H7.21 CMD 22-H7.21A
Ish Theilheimer	CMD 22-H7.33
Old Fort William Cottagers’ Association, represented by J. McCann	CMD 22-H7.36 CMD 22-H7.36A CMD 22-H7.36B
Corporation of the Town of Deep River, represented by S. D’Eon and G. Doncaster	CMD 22-H7.39 CMD 22-H7.39A
City of Pembroke, represented by M. LeMay	CMD 22-H7.40 CMD 22-H7.40A
Sierra Club Canada Foundation, represented by O. Hendrickson and G. Fitzgerald	CMD 22-H7.41 CMD 22-H7.41A CMD 22-H7.41B
Kitchissippi-Ottawa Valley Chapter, Council of Canadians, represented by A. Pohl and M. Hay	CMD 22-H7.45 CMD 22-H7.45A
Martin Flood	CMD 22-H7.46 CMD 22-H7.46A
David V. Thompson	CMD 22-H7.49
Ottawa Raging Grannies, represented by J. Wood and B. Whitmore	CMD 22-H7.50
Kinectrics Inc., represented by J. West	CMD 22-H7.55 CMD 22-H7.55A
Chris Cavan	CMD 22-H7.58
Kerry Rowe	CMD 22-H7.60 CMD 22-H7.60A CMD 22-H7.60B
Canadian Nuclear Laboratories, represented by K. Chaplin	CMD 22-H7.62 CMD 22-H7.62A CMD 22-H7.62B
James Walker	CMD 22-H7.63 CMD 22-H7.63A CMD 22-H7.63B

William Turner	CMD 22-H7.64 CMD 22-H7.64A CMD 22-H7.64B
Pontiac Environmental Protection, represented by D. Giroux	CMD 22-H7.69 CMD 22-H7.69A
David McNicoll	CMD 22-H7.72
Concerned Citizens of Renfrew County and Area, represented by O. Hendrickson	CMD 22-H7.74 CMD 22-H7.74A CMD 22-H7.74B
Prevent Cancer Now, represented by M. Meyer	CMD 22-H7.75
Shaughn McArthur	CMD 22-H7.76
Ipsos Custodes, represented by C. Russell	CMD 22-H7.79 CMD 22-H7.79A
Gabrielle Psocka	CMD 22-H7.80 CMD 22-H7.80A
Nuclear Waste Management Organization, represented by D. Wilson	CMD 22-H7.81 CMD 22-H7.81A CMD 22-H7.81B
Georgina Bartos	CMD 22-H7.84 CMD 22-H7.84A
Westinghouse Electric Canada Inc., represented by Z. Keldani	CMD 22-H7.87
Canadian Nuclear Association, represented by J. Gorman and S. Coupland	CMD 22-H7.88 CMD 22-H7.88A
Canadian Nuclear Laboratories, represented by G. Sandhu	CMD 22-H7.89 CMD 22-H7.89A
Canadian Nuclear Workers' Council, represented by B. Walker, D. McGrath and M. Ivanco	CMD 22-H7.94 CMD 22-H7.94A
Action Environnement Basses-Laurentides, represented by L. Massé	CMD 22-H7.95 CMD 22-H7.95A
CANDU Owners Group Inc., represented by L. Lemieux	CMD 22-H7.96 CMD 22-H7.96A
Atomic Energy of Canada Limited, represented by F. Dermarkar, J. Cameron and A. MacDonald	CMD 22-H7.99 CMD 22-H7.99A CMD 22-H7.99B CMD 22-H7.99C
County of Renfrew, represented by P. Emon	CMD 22-H7.101 CMD 22-H7.101A
Radiation Safety Institute of Canada, represented by C. Caldwell	CMD 22-H7.102 CMD 22-H7.102A
Nuclear Waste Watch, represented by J. Jackson	CMD 22-H7.103 CMD 22-H7.103A
Canadian Environmental Law Association, represented by K. Blaise, T. McClenaghan, I. Fairlie and T. Markvart	CMD 22-H7.104 CMD 22-H7.104A CMD 22-H7.104B

Ralliement contre la pollution radioactive, represented by G. Provost	CMD 22-H7.105 CMD 22-H7.105A
Michael B. Benson	CMD 22-H7.106 CMD 22-H7.106A
Bruce Power, represented by D. Lacroix	CMD 22-H7.108 CMD 22-H7.108A
Algonquins of Pikwàkanagàn First Nation, represented by A. Two-Axe Kohoko and B. Sarazin * CMD 22-H7.109C is confidential	CMD 22-H7.109 CMD 22-H7.109A CMD 22-H7.109B CMD 22-H7.109C* CMD 22-H7.109D
Kebaowek First Nation, represented by R. Wawatie Beaudoin, J. Roy, V. Polson, R. Pelletier, L. Haymond, K. Blaise and R. Van Schie * CMD 22-H7.111C replaced CMD 22-H7.111B	CMD 22-H7.111 CMD 22-H7.111A CMD 22-H7.111C* CMD 22-H7.111D CMD 22-H7.111E
Kitigan Zibi Anishinabeg First Nation, represented by V. McGregor, D. Whiteduck and R. Pelletier	CMD 22-H7.113 CMD 22-H7.113A CMD 22-H7.113B CMD 22-H7.113C CMD 22-H7.113D
Ottawa Chapter of the Council of Canadians, represented by E. Schacherl	CMD 22-H7.117 CMD 22-H7.117A CMD 22-H7.117B
Duncan Noble	CMD 22-H7.119 CMD 22-H7.119A
Wolf Lake First Nation, represented by L. Robinson and S. Robertson	CMD 22-H7.120 CMD 22-H7.120A
MRC Pontiac, represented by J. Toller	CMD 22-H7.122 CMD 22-H7.122A
Kathryn Lindsay	CMD 22-H7.124 CMD 22-H7.124A
Ottawa Riverkeeper, represented by L. Reinsborough and L. Holman	CMD 22-H7.125 CMD 22-H7.125A
Action Climat Outaouais, represented by R. Lalande	CMD 22-H7.126
Sophie Chatel, MP of Pontiac	CMD 22-H7.127
Ottawa River Institute, represented by O. Hendrickson	CMD 22-H7.129 CMD 22-H7.129A
Communauté métropolitaine de Montréal, represented by M. Vodanovic	CMD 22-H7.130 CMD 22-H7.130A
Brilliant Energy Institute at Ontario Tech University, represented by J. Hoornweg	CMD 22-H7.131
Gillian Walker	CMD 22-H7.132 CMD 22-H7.132A
Janet Graham	CMD 22-H7.133

Lynn Jones	CMD 22-H7.136 CMD 22-H7.136A CMD 22-H7.136B
Responsable national et Co-autorité réglementaire de la radioprotection du Québec, represented by M.B. Gagnon and Y. Dutil	CMD 22-H7.137
Northwatch, represented by B. Lloyd	CMD 22-H7.138 CMD 22-H7.138A CMD 22-H7.138B
Mitchikanibikok Inik, Algonquins of Barriere Lake, represented by Chief T. Wawatie (2022), Chief C. Ratt (2023), C. Ratt (Councillor), A. Decoursay, S. MacNeil, V. Wicks, R. Van Schie, N. Matchewan and S. Glickman	CMD 22-H7.139 CMD 22-H7.139A CMD 22-H7.139B
Provincial Council of Women of Ontario, represented by G. Janes	CMD 22-H7.141 CMD 22-H7.141A
Judith Fox Lee	CMD 22-H7.142
Greenspace Alliance of Canada's Capital, represented by J. P. Unger	CMD 22-H7.143 CMD 22-H7.143A
Canadian Coalition for Nuclear Responsibility, represented by G. Edwards	CMD 22-H7.144 CMD 22-H7.144A
Nira Dookeran	CMD 22-H7.146
Christian Renault	CMD 22-H7.147 CMD 22-H7.147A
Simon J. Daigle	CMD 22-H7.150
Municipality of Clarington and the Canadian Association of Nuclear Host Communities, represented by A. Foster	CMD 22-H7.160 CMD 22-H7.161
Isabelle Sawyer	CMD 22-H7.167
Intervenors – Written Submissions	Document Number
Woo-Jae Cheong	CMD 22-H7.3
Colin Robb	CMD 22-H7.4
Canadian Nuclear Society	CMD 22-H7.5
Donna Snowden	CMD 22-H7.6
Diana Gillam	CMD 22-H7.7
Municipalité de l'Île-du-Grand-Calumet	CMD 22-H7.8
William J. Holtslander	CMD 22-H7.11
Bob French	CMD 22-H7.12
Brian Colby	CMD 22-H7.13
John and Diane Almstedt	CMD 22-H7.14
Sylvia Fedoruk Canadian Centre for Nuclear Innovation Inc.	CMD 22-H7.15
Benjamin Rouben	CMD 22-H7.17
Victor Golovko	CMD 22-H7.18
Margit Dehnicke-Templeton	CMD 22-H7.20
Training and Development Team at CNL	CMD 22-H7.22
Morgan Brown	CMD 22-H7.23

Nuclear Innovation Institute	CMD 22-H7.24
Tetra Tech Canada Inc. and ES-Fox Limited	CMD 22-H7.25
Mohammad Madani	CMD 22-H7.26
Lawrence Johnson	CMD 22-H7.27
Alan Soucie	CMD 22-H7.28
Brendon Walsh	CMD 22-H7.29
AECOM Canada Ltd	CMD 22-H7.30
Christina and Robbie Anderman	CMD 22-H7.31
David Caron	CMD 22-H7.32
Nathan Benkhe	CMD 22-H7.34
Council of the Town of Laurentian Hills	CMD 22-H7.35
Dylan Verburg	CMD 22-H7.37
Renate Manthei	CMD 22-H7.38
Municipality of Bristol	CMD 22-H7.42
Jane Higgison	CMD 22-H7.43
Mark McLoughlin, Deputy Minister, Saskatchewan Ministry of Environment	CMD 22-H7.44
BWXT Canada Ltd.	CMD 22-H7.47
Decommissioning and Environmental Remediation Program Integration at CNL	CMD 22-H7.48
Stephanie Clement	CMD 22-H7.51
Philip Kompass	CMD 22-H7.52
Ontario Power Generation	CMD 22-H7.53
Port Hope and District Chamber of Commerce	CMD 22-H7.54
Moltex Energy	CMD 22-H7.56
Women in Nuclear Canada	CMD 22-H7.57
TRIUMF, Inc.	CMD 22-H7.59
Ian Clark	CMD 22-H7.61
Society of United Professionals	CMD 22-H7.65
Jacques Plourde	CMD 22-H7.66
NB Power	CMD 22-H7.67
Anita Sawyer, William Sawyer and Maureen Maloney	CMD 22-H7.68
Zackary Krowchuk	CMD 22-H7.70
Cathy Vakil	CMD 22-H7.71
Luc Bégin	CMD 22-H7.73
Sohan Chouhan	CMD 22-H7.77
Tracy Sanderson	CMD 22-H7.78
Fuel Program and Projects Division at CNL	CMD 22-H7.82
Kathy Eisner	CMD 22-H7.83
Aecon	CMD 22-H7.85
Municipality of Port Hope	CMD 22-H7.86
Philip Sweetnam	CMD 22-H7.90
Facilities Decommissioning and Environmental Remediation at CNL	CMD 22-H7.91
M. Sullivan & Son Ltd.	CMD 22-H7.92
Cameco Corporation	CMD 22-H7.93

Bailey Waite	CMD 22-H7.97
Algonquins of Ontario	CMD 22-H7.98
John Yakabuski, M.P.P., Renfrew-Nipissing-Pembroke	CMD 22-H7.100
Gordon MacMillan	CMD 22-H7.107
Dewar Industrial Services Inc.	CMD 22-H7.110
Cleanup Function at CNL	CMD 22-H7.112
James Harrington	CMD 22-H7.114
Waste Services at CNL	CMD 22-H7.115
Edward Waller	CMD 22-H7.116
Antony G. Morris	CMD 22-H7.118
Annette Chaplin	CMD 22-H7.121
Division of Decommissioning and Environmental Remediation at CNL	CMD 22-H7.123
Erica Coulombe	CMD 22-H7.128
David Snider	CMD 22-H7.134
Richard Sexton	CMD 22-H7.135
Curve Lake First Nation	CMD 22-H7.140
Rena Ginsberg and Boyd Reimer	CMD 22-H7.145
Pamela Schreiner	CMD 22-H7.148
Christine Graham	CMD 22-H7.149
Métis Nation of Ontario	CMD 22-H7.151
Waste Strategy Program at CNL	CMD 22-H7.152
Gregory Csullog	CMD 22-H7.153
Daniel Hoornweg	CMD 22-H7.154
Johanna Echlin	CMD 22-H7.155
Joanne Mantha	CMD 22-H7.156
Lisa Shaw-Verhoek	CMD 22-H7.157
David K. Raman	CMD 22-H7.158
Agence de bassin versant des 7	CMD 22-H7.159
Rotary Club of Port Hope	CMD 22-H7.162
Power Workers' Union	CMD 22-H7.163
Greg Stack	CMD 22-H7.164
Pierre Lemay	CMD 22-H7.165
Cheryl Gallant, MP, Renfrew-Nipissing-Pembroke	CMD 22-H7.166