



**Written submission from
Canadian Nuclear Laboratories Ltd.**

**Mémoire des
Laboratoires Nucléaires Canadiens Ltée**

In the Matter of

À l'égard de

**Application by Canadian Nuclear
Laboratories Ltd. for the Amendment of the
Port Granby Long-Term Low-Level
Radioactive Waste Management Project
Licence WNSLW1-2311.01/2021**

**Demande des Laboratoires Nucléaires
Canadiens Ltée concernant la modification du
permis numéro WNSLW1-2311.01/2021 pour
le projet de gestion à long terme des déchets de
faible activité de Port Granby**

Hearing in writing based on written
submissions

Audience par écrit fondée sur des mémoires

March 2019

Mars 2019

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2018 June 01

Haidy Tadros, Director General
Directorate of Nuclear Cycle and Facilities Regulation
Canadian Nuclear Safety Commission
280 Slater Street
P.O. Box 1046, Station B
Ottawa, ON K1P 5S9

4502-CNNO-18-0017-L
SF-2018-052

Dear Ms. Tadros:

**APPLICATION FOR AMENDMENT AND MODERNIZATION OF
THE PORT GRANBY LONG-TERM LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT PROJECT
WNSL-W1-2311.01/2021 – REVISION OF RELEASE LIMITS FOR LIQUID EFFLUENT (APPENDIX B)**

The purpose of this letter is to apply for an amendment of the release limits for liquid effluent for the Port Granby (PG) waste water treatment system, as outlined in Appendix B of the Waste Nuclear Substance Licence for the Port Granby Long-Term Low-Level Radioactive Waste Management Project (WNSL) [1].

In addition to the amendment application, CNL is requesting Canadian Nuclear Safety Commission (CNSC) staff update the WNSL format to ensure the licence is in alignment with the CNSC' safety and control areas. This format modernization would also extend to the associated licence conditions handbook.

This application is submitted in accordance with Section 24(2) of the Nuclear Safety and Control Act, and pursuant to Section 6 of the General Nuclear Safety and Control Regulations (GNSCR).

Request:

A new waste water treatment plant was fully commissioned at the PG site in 2016 October and has consistently been meeting the design objectives for the WWTP as outlined in the Port Granby Licence Condition Handbook (LCH) [2]. With the operating data now available, CNL and CNSC staff have agreed upon new release limits.

The subject of this application is for an amendment to the release limits for liquid effluent from the Port Granby waste water treatment system operated by Canadian Nuclear Laboratories (CNL). CNL is requesting the release limits for liquid effluent be applied broadly to the PG site and apply to the point of final discharge to Lake Ontario. This would allow CNL the opportunity to pursue alternative

Canadian Nuclear Laboratories
Port Hope Area Initiative
Management Office
115 Toronto Road
Port Hope, Ontario
Canada, L1A 3S4
Telephone: 905-885-8830
Fax: 905-885-9344

Laboratoires Nucléaires Canadiens
Bureau de gestion de l'Initiative dans
la région de Port Hope
115, rue Toronto
Port Hope (Ontario)
Canada, L1A 3S4
Téléphone: 905-885-8830
Télécopieur: 905-885-9344



water treatment options, such as the use of portable water treatment systems, provided these systems are capable of meeting the release limits.

Based on current CNSC licencing practices, CNL is requesting licence condition 2.11 and Appendix B be removed from the current WNSL. In place of Appendix B, CNL is requesting the LCH be updated to include the approved effluent release limit table. CNL is also in the process of revising the Port Granby Project Environmental Monitoring Plan (4502-509247-PLA-001) [3] to include the approved [4] effluent release limits table for the Port Granby waste water treatment system. This document is listed as "N" (notification upon implementation) in Appendix C of the WNSL.

Rationale:

Establishing revised release limits for the water treatment systems at Port Hope and Port Granby was a documented priority in the 2016 November Port Hope Area Initiative status update to the Commission.

The release limits currently listed in the Port Granby WNSL were applicable to the previous water treatment building at the Port Granby site that removed a limited range of contaminants with low to moderate efficiency. The water treatment building has been decommissioned and dismantled.

As per the Port Granby LCH (S. 2.11), CNL has previously established Action Levels for the Port Granby water treatment system, which have been accepted by CNSC staff [5]. The action levels were established in alignment with the CSA N.288.8 standard [6].

CNSC staff conducted a technical assessment of exposure-based and technology-based release limits and proposed release limits for the Port Granby water treatment system [7]. Overall, CNL was in agreement with the CNSC proposed limits, but did comment on the frequency of toxicity testing and the discharge point where effluent samples would be collected.

The agreed upon approach for the discharge limits (Table 1) were based on:

- Technology-based approach;
- Consideration of federal and provincial requirements;
- Both weekly concentrations (composite) and monthly mean concentrations; and
- Reduced frequency toxicity testing with 12 consecutive months pass of non-toxic criteria.



Table 1: Release limits for the Port Granby Project Waste Water Treatment System.

Contaminant	Units	Weekly Concentration in a Composite Sample	Monthly Mean Concentration
Radium-226	Bq/L	0.74	0.37
Arsenic (As)	mg/L	0.2	0.1
Cadmium (Cd)	mg/L	0.002	0.001
Cobalt (Co)	mg/L	0.01	0.005
Copper (Cu)	mg/L	0.01	0.005
Phosphorus (P)	mg/L	0.7	0.35
Selenium (Se)	mg/L	0.06	0.03
Thallium (Tl)	mg/L	0.016	0.008
Uranium (U)	mg/L	0.2	0.1
Vanadium (V)	mg/L	0.08	0.04
Ammonia-N (NH ₃)	mg/L	11.5	5.75
Nitrite-N (NO ₂)	mg/L	3	1.5
Nitrite-N (NO ₃)	mg/L	150	75
pH	pH	6 – 9.5	6 – 9.5
Total Suspended Solids	mg/L	30	15
Acute Toxicity	-	-	Cannot be toxic ¹

¹ Acute toxicity testing may be performed quarterly after 12 consecutive months of non-toxic monthly results. CNL shall select and record the sampling date not less than 30 days in advance of collecting the grab sample to be used in toxicity testing. CNL shall inform CNSC staff when the toxicity testing frequency is changed.

Should you require any additional information regarding this application, please do not hesitate to contact me (908-885-8830 ext. 41160; sandra.faight@cnl.ca).

Regards,

Sandra Faught
Manager, Programs and Compliance

SF:sm:la



Attachment (1):

[A] Information Required by Section 6 of the General Nuclear Safety and Control Regulation

References:

- [1] *Waste Nuclear Substance Licence Port Granby Long-Term Low-Level Radioactive Waste Management Project, WNSL-W1-2311.01/2021*. E-doc 4541235, 2014 October 22.
- [2] *Port Granby Long-Term Low-Level Radioactive Waste Management Project Licence Conditions Handbook, WNSL-W1-LCH-2311*. Revision 1, 2014 December 04.
- [3] Plan – Environmental Monitoring Plan, Port Granby Project, 4502-509247-PLA-001, Revision 0, 2011 September 01.
- [4] R. Buhr (CNSC), letter to S. Faught (CNL). *Port Granby Project Waste Water Treatment Plant Release Limits*, 4502-NOCN-18-0010-L, 2018 April 4.
- [5] R. Buhr (CNSC), letter to S. Faught (CNL). *CNSC Staff Acceptance of the Proposed Port Granby Project Action Levels*, eDoc: 54310065 [4502-NOCN-17-0015-L Rev. 0](#), 2017 August 18.
- [6] CSA Group. (2017). CSA N288.8-17, Establishing and Implementing Action Levels for Releases to the Environment from Nuclear Facilities.
- [7] R. Buhr (CNSC), letter to S. Faught (CNL). *Proposed Port Granby Project Waste Water Treatment System Release Limits*, eDoc: 5259513 [4502-NOCN-17-0016-L Rev. 0](#), 2017 June 5.

cc. R. Buhr (CNSC) P. Burton (CNSC) cnscl.licensee-titulaires.ccsn@canada.ca L. Ethier (CNSC)
Z. Heilig (CNSC) K. Murthy (CNSC) S. Cotnam D. Cox K. Daniels
K. Kehler S. Parnell T. Preisig H. Seto J. West
G. Dolinar S.Karivelil >PHAI Correspondence >DWM Info Bridge >PH Licensing
>CR Licensing



ATTACHMENT A

Background Information - APPLICATION FOR AN AMENDMENT TO THE CLEAN-UP CRITERION AS OUTLINED IN APPENDIX C OF THE PORT HOPE LONG-TERM LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT PROJECT WNSL-W1-2310.01/2022

A.1 Information required as outlined in Section 6 of the General Nuclear Safety and Control Regulations (GNSCR) – Application for Amendment, Revocation or Replacement of Licence:

6. 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.

A.2 Information submitted regarding the requirements:

6 (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.*

CNL is requesting an amendment of the release limits for liquid effluent as outlined in Appendix B of the Waste Nuclear Substance Licence for the Port Granby Long-Term Low-Level Radioactive Waste Management Project (WNSL) [1].

The amendment involves:

- Removing Appendix B from the current WNSL. In place of Appendix B, CNL is requesting the Port Granby Licence Condition Handbook (LCH) be updated to include the approved effluent release limit table,
- changing the list of contaminants being measured (from three to sixteen),
- changing the release limits, and



- updating how the information is being regularly reported (monthly mean reported on quarterly basis to weekly concentration in a composite and monthly mean reported on a quarterly basis).

CNL will report any release limit exceedance immediately to the Commission through the CNSC Duty Officer, followed by a full report at 21 days, as required by the General Nuclear Safety and Control Regulations.

6 (b) A statement identifying the changes in the information contained in the most recent application for the licence.

CNL requests Appendix B of the PG WNSL be removed and that Table 1 be included in the PG LCH:

Table 1: Release limits for the Port Granby Project Waste Water Treatment System.

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record the sampling date not less than 30 days in advance of collecting the grab sample to be used in toxicity testing. CNL shall inform CNSC staff when the toxicity testing frequency is changed.

6 (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.

This amendment is related to the discharge limits for liquid effluent associated with the Port Granby WNSL.

6 (d) the proposed starting date and the expected completion date of any modification encompassed by the application.

CNL has been implementing compliance with the revised release limits since 2018 April 4, and will continue to do so until such time a formal licence amendment has been completed.