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Written submission from the Mohawks of the Bay of Quinte

In the Matter of

Application from Canadian Nuclear Laboratories (CNL) requesting a one-year licence renewal for the Port Granby Project

Public Hearing - Hearing in writing based on written submissions

November 2021

Mémoire de Mohawks of the Bay of Quinte

À l'égard de

Demande de renouvellement de permis pour une période d'un an présentée par les Laboratoires Nucléaires Canadiens (LNC) pour leur projet de Port Granby

Audience publique - Audience fondée sur des mémoires

Novembre 2021

Canada

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October 25, 2021 **XCG File No.: 1-664-72-01**

Chief and Council
Mohawks of the Bay of Quinte
24 Meadow Drive
Tyendinaga Mohawk Territory, ON
K0K 1X0

Re: Environmental Review of Licensing Documentation Related to the Canadian Nuclear Laboratories One-Year Licence Renewal for the Port Granby Long-Term Low-Level Radioactive Waste Management Project

Dear Chief and Council:

1. INTRODUCTION

XCG Consulting Limited (XCG) was retained by the Mohawks of the Bay of Quinte (MBQ) to conduct a review and analysis, from the perspective of MBQ and their interests, of relevant licensing documentation in relation to the Canadian Nuclear Laboratories (CNL) one-year licence renewal for the Port Granby Project (PGP) Long-Term Low-Level Radioactive Waste Management project at the long-term waste management facility (LTWMF). This engagement was made possible through the Canadian Nuclear Safety Commission (CNSC) Participant Funding Program (PFP), which provided participant funding to various stakeholders, including MBQ.

The PGP site is located in the Municipality of Clarington, in the Regional Municipality of Durham, about 100 kilometres east of Toronto on the north shore of Lake Ontario. The PGP site is bounded to the north by the CN Railway, to the west by Elliot Road, to the east by Nichols Road, and to the south by Lake Ontario.

The purpose of this one-year licence is to extend the expiry date to coincide with the Port Hope Project licence expiry date of December 31, 2022, at which time CNL intends to propose that the license for the related Port Granby Project and the Port Hope Project be consolidated into one licence, reducing the administrative burden created with different licences for similar projects under the Port Hope Area Initiative (PHAI) portfolio.

The MBQ community, the Tyendinaga Mohawk Territory (TMT), is on the north shore of the Bay of Quinte, approximately 103 kilometres east of the PGP site. Protection of the natural environment is a high priority for the MBQ.

Thus, it is of critical importance to the MBQ that environmental management of site activities and long-term operations at the PGP be carried out in a manner that will minimize the risk of environmental and human health impacts that could affect the MBQ and its traditional lands. This principle was a key consideration during the completion of XCG's environmental review.

2. PROJECT SUMMARY

The PGP is a federal initiative for the cleanup and safe long-term management of historic low-level radioactivity that was produced by refining operations in neighboring Port Hope. The wastes requiring cleanup were originally generated at the Port Hope site and buried at the Port Granby waste management facility. The legacy wastes in Port Granby are a federal liability as they ultimately derived from the operations of a former Crown Corporation, Eldorado Nuclear Limited (ENL). ENL became the privately-held Cameco Corporation (Cameco) in 1988 and wastes produced after 1988 became the responsibility of Cameco.

The waste was buried throughout the Port Granby site at a waste management facility during 33 years of operation. Buried wastes included neutralized raffinate (a by-product from refining of uranium ores and concentrates), calcium fluoride (waste from uranium hexafluoride production), industrial refuse (garbage and industrial scrap) and mixed chemical waste (miscellaneous wastes). These wastes resulted in the contamination of groundwater and underlying subsoils from leaching of wastes and groundwater movement.

The PGP involves the relocation of these historic low-level radioactive wastes and marginally contaminated soils that were buried to a new engineered aboveground mound located approximately 1 kilometre north of the existing waste management facility adjacent to Lake Ontario. In addition, the PGP includes a groundwater collection system installed in the East Gorge to capture groundwater and pump it to a Wastewater Treatment Plant (WWTP) for treatment.

The PGP has three distinct phases as summarized below:

- Phase I - Environmental Assessment, detailed design and awarding of contracts;
- Phase II - the construction of the new LTWMFs, construction and operation of a WWTP and remediation of the Port Granby waste management facility; and
- Phase III – long-term monitoring and maintenance of the new long-term waste management facilities.

The following is an excerpt from the project licence description of the PGP provided to MBQ by CNSC during the application process for the PFP:

The current licence, which expires on December 31, 2021, authorizes CNL to remove waste and perform final landscaping and demobilization in the Port Granby Area. In its licence renewal application, CNL is seeking approval to continue the same activities that the current licence authorizes, with no changes to the existing terms and conditions. CNL has also indicated its intent to seek approval for consolidation of the Port Granby Project and the Port Hope Project waste nuclear substance licences when the Public Commission hearing is held on the licence renewal.

Currently the PGP is nearing completion of Phase II with a total 1,315,061 metric tonnes of low-level radio-active waste (LLRW) having been transferred to the LTWMF. The transfer of this waste started in 2016 and ended in 2020.

During the period covered by the proposed one-year licence, final landscaping and demobilization of the equipment and infrastructure used for the remediation activities would be completed prior to the project's transition to Phase III.

3. INFORMATION SOURCES

3.1 Licensing Documentation and Reports Reviewed

Documents and related reports XCG reviewed were downloaded from the CNSC and Port Hope Area Initiative websites pertaining to the PGP. Based on available allotted review time, the following documents were identified as containing the most relevant information related to the scope of this review:

- Canadian Nuclear Laboratories Written Submission, "Application from Canadian Nuclear Laboratories (CNL) requesting a one-year licence renewal for the Port Granby Project," Commission Member Document CMD 21-H102.1, dated March 8, 2021. [Referred to in this review as the "CNL CMD report"];
- Canadian Nuclear Safety Commission, "A Licence Renewal Canadian Nuclear Laboratories Application to Renew the Licence for the Port Granby Long-Term Low-Level Radioactive Waste Management Project," Commission Member Document CMD 21-H102, dated September 3, 2021. [Referred to in this review as the "CNSC CMD report"];
- Canadian Nuclear Laboratories, "Application for Renewal of the Port Granby Project Waste Nuclear Substance Licence WNSL-W1-2311.02/2021," Document 4502-CNNO-21-0005-L MH-2021-001, dated April 8, 2021. [Referred to in this review as the "CNL letter renewal"]; and
- Port Hope Area Initiative (PHAI) Website Hyperlink:

  https://www.phai.ca/en/home/port-granby-project/default.aspx

4. ENVIRONMENTAL REVIEW FINDINGS

Presented below are the key findings of XCG's review of the information obtained from the sources described in Section 3.

4.1 Safety

The PGP site, as part of the licence application, was required to provide the applicant's organizational management structure, including the internal allocation of functions, responsibilities and authority. The management system is in place to satisfy the requirements set out in the Nuclear Safety and Control Act (NSCA), regulations made pursuant to the NSCA, the licence, and measures necessary to ensure safety is of paramount consideration in the implementation of the management system. The management system promotes and supports a healthy safety culture which includes:

- Safety as a clearly recognized value;
- Accountability for safety is clear;
- Safety is integrated into all activities;
- A safety leadership process exists; and
- Safety culture is learning driven.

A conventional Health and Safety program exists for the site and is subject to all the requirements of the Canada Labour Code and Canada Occupational Heath and Safety Regulations.

Included as part of the safety program for the PGP site is environmental protection with a set of action levels. The set of action levels describes actions that must be undertaken when an action level is approached or exceeded. The environmental protection aspect of the facility safety is described in more detail in the following sections as they pertain to facility and environmental safety.

As the PGP is a licenced site there are many relevant Safety and Control Areas (SCAs) that are applicable with each activity and facility. As noted in the CNSC CMD report, CNSC staff rated all SCAs as consistently "satisfactory," which is indicative of good safety performance throughout the current licence period.

CNL and/or CNSC contingency plans should be in place to maintain integrity of containment structures and facilities at the site and in the future. Stakeholders including MBQ should be notified when contingency plans are implemented.

4.2 WWTP

The Port Granby WWTP became operational in 2016 to treat contaminated water at the PGP site. Port Granby WWTP release limits were established based on 12 months of operational data along with action levels for ongoing monitoring of the performance of the WWTP.

It was reported in PHAI website literature that during waste excavation at the existing site and waste placement in the mound, the WWTP was estimated to treat a volume of 175,000 cubic metres of contaminated wastewater per year and will decrease to approximately 100 cubic metres of wastewater per year. No information was available indicating actual volumes of treated wastewater for comparison to anticipated volumes. Reviewed licence documentation did not provide any details on groundwater extraction systems or locations of discharges to Lake Ontario.

The CNSC CMD Report commented that inspections by CNSC have occurred since the construction of the LTWMF and WWTP to ensure the design requirements in the licence were met. All findings from inspections conducted over the current licence period were of low safety significance and did not affect the health and safety of workers, the public, the environment, or the safe operations at the PGP site. The CNSC CMD report indicated that CNSC staff's review of the WWTP effluent results confirmed that releases from the WWTP were below design objectives and did not have any apparent adverse effects on the environment or public health. As noted in Section 4.4, a toxicity exceedance was reported on November 23, 2020. It is unclear why this toxicity exceedance was not identified in the CNSC CMD report.

PHAI public disclosure documents noted that sampling data collected on August 18, 2021, showed a level of 6 micrograms/litre (µg/L) for copper which is above the action level of 5 µg/L, but below the release limit of 10 µg/L. This demonstrated the use of action levels to identify an issue prior to exceeding a release limit. A review of possible contributing factors was completed and mitigation measures were introduced to address elevated copper levels.

Based on reviewed information, environmental monitoring programs currently conducted by CNL appear to illustrate acceptable performance of the WWTP and related effluent and monitoring programs.

The TMT is downstream and downwind of the PGP site. Many TMT community members fish in the Bay of Quinte, and thus their livelihood and well-being depends on the quality of the fish and other freshwater aquatic life in Lake Ontario and in the Bay of Quinte, in particular. Any discharges have the potential to negatively impact freshwater aquatic life. Therefore, it is important, from the MBQ's perspective, that CNL follow through with its efforts to minimize exceedances of any action levels as much as possible.

4.3 Environmental Monitoring

Compliance monitoring requires CNL to provide quarterly written reports on monitoring of liquid effluent releases, annual compliance reporting, written quarterly progress reports and written reports at the completion of project activities.

A Radiation Protection Program (RPP) requires CNL to implement a program that records doses for each person who performs any duties in connection with an activity that is authorized by the NSCA or is present at a place where that activity is carried out. In addition, the RPP specifies the requirements related to action levels.

CNSC conducts an Independent Environmental Monitoring Program (IEMP) to support compliance activities and confirm that the public and environment remains safe. CNSC staff reported that in 2019 an IEMP confirmed that the public and environment in the vicinity of the PGP site is protected and that there are no expected health impacts from CNL's operations. In addition, CNSC also conducted IEMPs in 2013, 2014 and 2017 with the results reported below both provincial and federal environmental guidelines and standards.

PHAI website documentation indicates that a groundwater collection system is installed in the East Gorge to capture groundwater and pump it to the WWTP for treatment. No information on the treatment system was included in the reviewed commission member documents from CNL or CNSC.

Since the PGP site will remain in a maintenance and monitoring period for hundreds of years, with continued monitoring by CNL and CNSC, IEMPs are necessary to ensure public and environmental protection. Details regarding the long-term monitoring of the PGP site are not included in this one-year licence.

XCG recommends that any changes or reductions to the current monitoring plans be addressed in future licensing reviews and circulated to the MBQ for review and comment.

Immediate notification should be provided to MBQ in the event of any health parameter exceedances that have the potential to negatively impact TMT lands, waters, or residents.

4.4 Reportable Events and Notifications of Discharges

The current licence stipulates that CNL must maintain an environmental protection program which includes a set of action levels and that the commission must be notified with seven days of any action level that has been reached.

The CNSC CMD report and the PHAI public disclosure website identified the following recent spills that have occurred:

- June 23, 2017 - An unplanned discharge of untreated water from the West Gorge Reservoir at the Port Granby WMF due to a restriction in a pipe causing an overflow of no more than 7 cubic metres. This spill was subject to an Event Initial Report (EIR).
- November 23, 2020 – Failure of an effluent toxicity test at the Port Granby WWTP. The failure resulted in an exceedance of the effluent licence for toxicity.
- July 25, 2020 – Water holding tank leak at the Port Granby WWTP. It was estimated that 20 to 50 cubic metres of water leaked and entered the storm water management pond.
- January 27, 2020 - An unplanned release of approximately 200 to 600 cubic metres of surface water from the Port Granby WMF occurred. It was noted that Environment and Climate Change Canada issued a warning on February 2, 2021.

It was reported by the CNSC that the above releases did not pose a risk to human health or the safety of the public, and the impacts on the environment were negligible. Although the above spills would not be expected to have caused any negative impacts affecting the MBQ, the periodic occurrence of spills is nevertheless a concern. Immediate notification should be provided to MBQ if any environmental spills have the potential either in the short or long term to impact Lake Ontario directly or indirectly, and subsequently negatively impact TMT lands, waters, or residents.

4.5 Loss of habitat

At the time of this licencing request, the land area between Lake Ontario and the new LTWMF was reported to have already been redeveloped with the work completed in 2020. The construction of the new LTWMF is scheduled to be completed in 2021. There is little to no information in the submission documents regarding loss of habitat or reinstatement of historically lost habitat. There are no species at risk specifically identified in the provided documentation; however, they are known to be present in the area.

It is recognised that cleanup efforts and site restoration of the former Port Granby WMF and associated works is restorative to the environment and will allow for the reestablishment of native plant species to the area and will provide habitat for wildlife including species at risk.

It is not clear if there is an overall plan to restore the now disused Port Granby WMF areas of the site to a natural state allowing for plant habitat and wildlife to return to and make use of the site. PHAI literature depicts hydroseeding on the Port Granby WMF site, which is not consistent with restoration to native habitat.

MBQ may be interested in providing input into restoration activities with respect to habitat restoration. It is recommended that MBQ be contacted at an appropriate time and provided with an opportunity to do this.

4.6 Environmental Practices During Construction

The LTWMF construction and final grading is almost complete in 2021. Continued environmental diligence by CNL regarding erosion, sediment, dust, and surface water control plans, etc. is necessary to reduce any potential environmental impact to the local ecosystem. It is imperative that no releases occur to Lake Ontario that could in any way be detrimental to fish and/or fish habitat since the TMT is downstream of the LTWMF in Lake Ontario.

Many TMT community members fish in the Bay of Quinte, and thus their livelihood and well-being depends on the quality of the fish and other freshwater aquatic life in Lake Ontario and in the Bay of Quinte, in particular. It is important, from the MBQ's perspective, that CNL follow through with its efforts to limit releases and update policies and procedures as necessary to reduce any future releases.

4.7 Seismic Events and Extreme Weather

Reviewed information provided does not include any detail on seismic design parameters for the LTWMF and WWTP. Recent earthquakes affected Ontario in 2010 and 2012 that measured 5.0 and 5.2, respectively, on the Richter scale. In July of 2021, an EF2 tornado occurred in Barrie approximately 100 kilometres northwest of the PGP site. This demonstrates the potential for natural disasters and extreme weather events to occur in the vicinity of the LTWMF and WWTP. Therefore, it is imperative that CNL utilize the highest design standards to withstand earthquakes and tornadoes, and any other natural disasters that have the potential to occur.

CNL makes note of the additional higher than average rainfall over the course of the project that required the installation of temporary lake tanks at the WWTP to provide additional effective storage of contaminated water. The frequency of 100-year storms is increasing in the GTA area, with six 100-year storms occurring over a 14 year period; therefore, surface water must be managed appropriately. Detailed design occurred during Phase I of the project and, therefore, XCG has not had an opportunity to review the design with respect to the application of design standards for withstanding 100-year storms and other natural disasters such as earthquakes and tornadoes. If there are any deficiencies in applying such standards during the design phase, appropriate modifications should be made to ensure adequate protection of the environment.

The Canadian Council of Ministers of the Environment (CCME) document titled "Guidance on Good Practices in Climate Change Risk Assessment", dated 2021, should be used in conjunction with other methodologies to carry out a Climate Change Vulnerability and Risk Assessment for the site.

5. SUMMARY OF KEY FINDINGS

The following summarizes the key findings of this environmental review:

1. As the PGP is a licenced site there are many relevant SCAs that are applicable with each activity and facility. As noted in the CNSC CMD report, CNSC staff rated all SCAs as consistently "satisfactory," which is indicative of good safety performance throughout the current licence period.
2. Based on reviewed information, environmental monitoring programs currently conducted by CNL appear to illustrate acceptable performance of the WWTP and related effluent and monitoring programs. Clarification on why the toxicity exceedance was not noted in the CNSC CMD report is warranted. Immediate notification should be provided to MBQ in the event of any health parameter exceedances that have the potential to negatively impact TMT lands, waters, or residents.
3. The TMT is downstream and downwind of the PGP site. Many TMT community members fish in the Bay of Quinte, and thus their livelihood and well-being depends on the quality of the fish and other freshwater aquatic life in Lake Ontario and in the Bay of Quinte, in

particular. Any discharges have the potential to negatively impact freshwater aquatic life. Therefore, it is important, from the MBQ's perspective, that CNL follow through with its efforts to minimize exceedances of any action levels as much as possible.

4. Since the PGP site will remain in a maintenance and monitoring period for hundreds of years, with continued monitoring by CNL and CNSC, IEMPs are necessary to ensure public and environmental protection. Details regarding the long-term monitoring of the PGP site are not included in this one-year licence. XCG recommends that any changes or reductions to the current monitoring plans be addressed in future licensing reviews and circulated to the MBQ for review and comment.

5. A number of releases to the natural environment were identified to have occurred based on the CNSC CMD report. It was reported by the CNSC that these releases did not pose a risk to human health or the safety of the public, and the impacts on the environment were negligible. Although the above spills would not be expected to have caused any negative impacts affecting the MBQ, the periodic occurrence of spills is nevertheless a concern. Immediate notification should be provided to MBQ if any environmental spills have the potential either in the short or long term to impact Lake Ontario directly or indirectly, and subsequently negatively impact TMT lands, waters, or residents.

6. It is not clear if there is an overall plan to restore the now disused Port Granby WMF areas of the site to a natural state allowing for plant habitat and wildlife to return to and make use of the site. PHAI literature depicts hydroseeding on the Port Granby WMF site, which is not consistent with restoration to native habitat. MBQ may be interested in providing input into restoration activities with respect to habitat restoration. It is recommended that MBQ be contacted at an appropriate time and provided with an opportunity to do this.

7. The LTWMF construction and final grading is almost complete in 2021. Continued environmental diligence by CNL regarding erosion, sediment, dust, and surface water control plans, etc. is necessary to reduce any potential environmental impact to the local ecosystem. It is imperative that no releases occur to Lake Ontario that could in any way be detrimental to fish and/or fish habitat since the TMT is downstream of the LTWMF in Lake Ontario.

8. The frequency of 100-year storms is increasing in the GTA area, with six 100-year storms occurring over a 14-year period; therefore, surface water must be managed appropriately. Detailed design occurred during Phase I of the project and, therefore, XCG has not had an opportunity to review the design with respect to the application of design standards for withstanding 100-year storms and other natural disasters such as earthquakes and tornadoes. If there are any deficiencies in applying such standards during the design phase, appropriate modifications should be made to ensure adequate protection of the environment. The CCME document titled "Guidance on Good Practices in Climate Change Risk Assessment," dated 2021, should be used in conjunction with other methodologies to carry out a Climate Change Vulnerability and Risk Assessment for the site.

9. In the event of implementation of any CNL and/or CNSC contingency plans, MBQ and other stakeholders should be notified.

6. LIMITATIONS

This review relied on information provided in documents produced by others. In conducting this peer review, XCG assumed that the information presented in these documents is accurate. XCG did not conduct investigations or inquiries in order to independently verify the information provided in the documents. Therefore, XCG does not accept responsibility for any inaccuracies in the available information.

The scope of this letter report is limited to the matters expressly covered. This report was prepared for the sole benefit of the Mohawks of the Bay of Quinte to whom the report is addressed, and may not be relied upon by any other person or entity without the written authorization of XCG Consulting Limited. As such, the scope of services performed in the execution of this investigation may not be appropriate to satisfy the needs of other users. If others use or reuse this document or the findings, conclusions, or recommendations represented herein it is at the sole risk of said users.

7. CLOSURE

If you have any questions regarding the above, or require anything further, please do not hesitate to contact me.

Yours very truly,

XCG CONSULTING LIMITED

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