

PORT HOPE PROJECT 2020 ANNUAL COMPLIANCE MONITORING REPORT EXECUTIVE SUMMARY

This annual compliance monitoring report for the 2020 calendar year has been prepared as per licence condition 2.3 of the Port Hope Long-Term Low-Level Radioactive Waste Management Project Licence WNSL-W1-2310.01/2022 (PHP Licence) and Section 3.2.3 (e.) of the Port Hope Licence Conditions Handbook (PH LCH) as a summary report of annual compliance monitoring and operational performance.

The Port Hope Long-Term Low-Level Radioactive Waste Management Project (PHP) is part of the larger Port Hope Area Initiative (PHAI). The PHAI is a community-based project designed to develop and implement a safe, local, long-term management solution for historic low-level radioactive waste (LLRW) within the Port Hope and Clarington municipalities. The PHAI is defined by *An Agreement for the Cleanup and Long-Term Safe Management of Low-Level Radioactive Waste Situated in The Town of Port Hope, The Township of Hope and the Municipality of Clarington* (Legal Agreement), which took effect on 2001 March 29, between the Government of Canada and the municipalities of Port Hope and Clarington for the management of the LLRW within each of the communities. Canadian Nuclear Laboratories (CNL) is responsible for the direction and execution of the PHAI in compliance with the Legal Agreement, licences and Environmental Assessment (EA) decisions. CNL has overall responsibility for managing the PHAI on behalf of Atomic Energy of Canada Limited, a federal Crown corporation.

This report provides site-specific information to supplement information in the *Annual Compliance Monitoring Report for Canadian Nuclear Laboratories*, which provides corporate updates to 14 Safety and Control Areas as they are applied across all CNL. Performance highlights for 2020 are outlined below.

Management system

- CNL completed all required reporting as outlined in section 3.2.3, PHP LCH.
- In 2020, an annual Self-Assessment Plan for FY 2020/2021 stemming from the CNL Integrated Assessment Plan, was developed for all Historic Waste Program Management Office (HWP MO) sites.
- There was 1 external audit conducted by SAI Global for the maintenance of CNL's ISO 9001:2015 certification specific to the PHP in 2020.

Human performance management

- A wide range of mandatory and other job-specific training activities were carried out in 2020 to ensure that all PHP employees and contractors acquired mandated training (including refresher training) as appropriate for their duties to ensure the safe operation of the PHP facility and to conduct work under the PHP Licence.

- The Curriculum Review Committee continued to meet throughout 2020 to support the PHAI's Systematic Approach to Training program.

Facility and Equipment

- PH LTWMF: In 2020 work continued to support construction of temporary onsite infrastructure and support facilities including Cell 2a and 2b construction and a base-liner system for the mound; partial completion of additional layers of subgrade, Compacted Clay Layer, and an additional layer of winter protection was completed in 2020 summer; continued excavation of the 'Future Brush Area to be Cleared'; continued placement of waste from other PHP sites into the PH LTWMF; initiated final design profile shaping verification of cell readiness for capping in cell 3.
- Small Scale Sites: characterization and design of properties and roads continued throughout 2020; progress included work to confirm 4602 properties with external lots have been characterized and 997 have been identified with LLRW; 4397 properties with interior spaces have been characterized and 196 have been identified with LLRW; secondary delineation activities for Road Allowances were completed. Characterization of internal properties was put on hold during 2020 due to COVID-19 Pandemic restrictions. Excavations of exterior historic LLRW was completed at 17 properties, 10 properties of which have completed backfill. Interior remediation was completed at 2 properties. 141 exterior property designs and 18 RA designs were completed with 278 exterior property designs and 77 RA designs in the queue resulting in an increase in design production despite limitations associated with COVID-19 Pandemic restrictions.
- Temporary Storage Sites: No Temporary Storage Site remediation activities were completed in 2020 as all Temporary Storage Sites have proceeded through the remediation phase.
- Waterfront Area: the Waterworks East site had all contaminated soils removed and the contractor removed as much contaminated sediment from the buried tanks as was feasibly safe; a special circumstance application for the sediments remaining in the tanks and for the tank walls was initiated and is in progress; Remediation work began at the 95 Mill Street site in 2020 October; A re-characterization on the CN/CP Viaducts was developed to provide more accurate site data prior to remediation; An updated characterization program was executed at the Strachan Street Ravine site; The contractor for the Port Hope Harbour and Centre Pier remediation continued preparation for production dredging operations for a 2020 spring season start-up however, in 2020 March, work was put on hold due to COVID-19 Pandemic restrictions and the site was held in a min-safe state until 2020 June. CNL maintained the site in a min-safe state until 2020 October to support transition to the new contractor's resumption of preparation work for production dredging and improvements to the site Portable Water Treatment System; CNL applied a special circumstance to the outer harbour and has submitted the special circumstance application to MPH. Discussion with the MPH on the special circumstances application were initiated and are in progress.

- Highland Drive Area: Pine Street Extension Consolidation Site (PS-E CS) work began in 2020 with upgrades to internal roads and construction of pads for trailers and parking. Trees were cleared around the consolidation site to advance the work and reduce the risk of overlapping with the bird nesting season. The design for the PS-N CS site remediation was finalized and the contract to execute the work was awarded; The Highland Drive Consolidation site waste movement will be completed in 2021 with a predicted project close-out in the first half of 2022. The Highland Drive Landfill is planned for 2023.
- Industrial Sites:
 - Centre Pier: Phase 2 Environmental Site Assessment (ESA) and Pre-Submission Forms (PSF) were completed and submitted to MPH for review and comment.
 - Lions Park: LLRW characterization and delineation was conducted at the site in 2020. Data from this sampling resulted in a requirement for additional industrial waste delineations, which were conducted in late 2020.
 - Coal Gasification Plant: LLRW characterization and delineation was conducted at the site in 2020. Data from this sampling resulted in the need for additional industrial waste delineations, which were conducted in late 2020.
 - Chemetron Lagoon: LLRW characterization and delineation was conducted at the site in 2020 followed up with additional sludge sampling in the lagoon to better determine its composition and distribution.
- Port Hope Waste Water Treatment Plant (PH WWTP): The PH WWTP operated normally in 2020 and process interruptions were related only to maintenance related activities, intermittent disruptions to the electrical power grid and operational restrictions of the PH LTWWMF.

Safety analysis

- As per the PHP LCH, the Safety Analysis Program is not applicable to the PHP.

Physical Design

- The PH Waste Water Treatment Facility underwent the following upgrades to improve operations:
 - Optimization of the evaporator mechanical and process control systems to maximize operational efficiency.
 - Completed minor modifications to service water circulation process to improve performance of dependent sub-systems and to increase conservation of treated water usage.
 - Continued planning for installation of a supplemental Reverse Osmosis unit and larger storage tanks to hold an increased volume of soda-ash, sodium hydroxide, and sulphuric acid on site.

- Implemented additional concentrate (brine) process modifications to further enhance salt removal and balance in pond return.
- Completed installation and optimized the function of enhanced heat recovery processes.
- Revised release limits with regard to weekly composite sampling including removal of Boron from the PH LTWMF licence effluent release limits as of 2020 April.

Fitness for service

- As per the PHP LCH, the Fitness for Service Program is not applicable to the PHP.

Radiation protection

- As low as reasonably achievable (ALARA) initiatives and activities continued to be at the forefront of the PGP Radiation Protection Program.
- Radiation Protection doses for workers remained As Low As Reasonably Achievable (ALARA) and doses for public remain low. There were no exceedances of regulatory limits and action levels in the dose monitoring program.
- Provided refresher training on the efficacy of the radiation work planning process with inclusion of the Radiation Work Permitting process as applied to under the Integrated Work Control program.
- There were no exceedances of regulatory limits and action levels in the dose monitoring program.
- The annual sealed sources inventory confirmed that there were no lost or stolen sources registered at the PHP; all CNL and contractor sealed sources were categorised as described in CNSC REGDOC-2.12.3; and all sources were confirmed to be exempt and below category 5.

Conventional health and safety

- All licensed activities continued to be carried out safely and securely.
- The HWP MO Site Safety and Health Committee (SSHC) increased its focus on the importance of the COVID-19 Pandemic and resulting shift to remote work for the majority of workers at PHAI project sites.
- In 2020, informal oversight activities were completed and in-depth programmatic site level review and inspections were completed for all sites and contractors to ensure safe restart processes and compliance with COVID-19 Pandemic precautions.
- In addition to monitoring workplace efforts to mitigate the risks of the COVID-19 Pandemic, substantial efforts were made to develop supports to promote stress reduction and mental health wellness and awareness.
- The HWP MO SSHC developed a work-from-home inspection template to support worker identification of hazards at the home / remote workspace. Efforts were also

made to develop enhanced and site specific observation / inspection templates for PHP sites.

- Ergonomic work-at-home virtual assessments were completed to support staff setup of home-office space to manage ergonomic risk.

Environmental protection

- The aquatic environment monitoring program included surface water sampling at Port Granby Creek, surface water sampling at the Lake Ontario diffuser, and drainage water sampling.
- Environmental protection and mitigation continues to be effective; changes from the baseline are minimal and generally within the EA predictions. EA follow-up and operational monitoring continued in 2020 with no areas of concern.
- Real-time dust monitoring results from the Independent Dust Monitoring Program for the PG LTWMF construction continue to be available at www.phai.ca. Weekly reports included daily real time dust measurements and a site map illustrating the locations of the independent real time dust monitors.
- In 2020, there were no dust exceedances of the 15-minute average action level of 120 $\mu\text{g}/\text{m}^3$ at the work site perimeter.

Emergency management and fire protection

- All required annual fire response drills, were completed as per program and regulatory requirements.
- Site emergency plans were updated in conjunction with changed personnel and processes impacted by COVID-19 Pandemic restrictions.
- Work continued on the development of a PHAI 5-year Exercise and Drill Plan to support improved planning and monitoring of annual drill expectations.
- Table-top exercises on COVID-19 Pandemic Contact Tracing and associated protocols were conducted.
- Comprehensive retraining for CNL Emergency Stewards and Officer in Charge Personnel was completed in conjunction with updated emergency plans.
- Staff training on emergency procedures was completed in parallel to improved emergency notification infrastructure upgrades.
- Fire screening assessments were completed in support of CNL's Engineer Change Control process for capital and maintenance / repair projects.

Waste management

- The PH WWTP processing of the solids that was started in 2018 April, continued on a full-time basis throughout 2020. A total of approximately 1,553 metric tonnes of sludge product have been produced and transferred to the PH LTWMF holding cells to date.

- The PH WWTP operated 2 solid waste streams operated as designed in 2020. Key optimizations were made to improve the efficiency and throughput of these processes. A combined total of 743,600 kg of residual solid wastes were generated by the Port Hope Wastewater Treatment Plant in 2020. This represents an increase of 15% in production recorded in 2019.

Security

- Contractors continued to be in compliance with CNL's corporate security policies and programs including those requirements mandated in the *PHAI Security Plan* confirmed through CNL's oversight program.
- No reportable security events occurred at the PHP in 2020.

Safeguards and Non-Proliferation

- The PH LTWMF material balance area received and placed approximately 152 metric tonnes of safeguarded materials (74,921 KgU) from Cameco Corporation in accordance with the requirements of CNL's Nuclear Materials and Safeguards Management program.
- The International Atomic Energy Agency (IAEA) conducted a Physical Inventory Verification/Design Information Verification at the PH LTWMF in 2020 June and were granted a Complimentary Access to conduct various activities in 2020 November.

Packaging and transport

- The PHAI Transportation of Dangerous Goods Program continued to operate the safe off-site transport and shipment of dangerous goods by conforming to all applicable laws and regulations, including company policies and procedures. Shipments of dangerous goods occurred throughout 2020.
- Oversight of each Transportation of Dangerous Goods contract was performed to ensure continuous adherence to the *PHAI Transportation of Dangerous Goods Plan*.
- There were no reportable events related to the Transportation of Dangerous Goods Program in 2020.

Other Matters of Regulatory Interest

- Public consultation, and public stakeholder and indigenous community relations activities continued to be conducted in accordance with the PHAI Public Information Program.
- In 2020 February, CNL provided a presentation and tour of PHAI project sites for Métis Nation of Ontario representatives, staff and Region 5 and 6 Councillors.
- In 2020 March, the *PHAI Phase 2 Public Information Program Plan* was updated to include additional Target Audiences, Tactics and Key Stakeholder Relations details to more accurately reflect current outreach activities and ensure alignment with the CNL Company Wide Public Information Program.

- In 2020 September, a 3-month targeted engagement campaign was launched in support of CNL's *Application for Amendment of the Port Hope Long-Term Low-Level Radioactive Waste Management Project Waste Nuclear Substance Licence – WNSL-W1-2310.02/2022* to revise the PHAI clean-up criteria and was followed up with a virtual Public Information Session in 2020 October.
- More than 4,340 interactions related to the PHAI Small Scale Site's project took place in 2020 including 3,881 phone calls and emails; 159 property owner meetings and 288 site visits.
- 4 Quarterly Agreement Monitoring Group meetings were held in 2020, 1 of which took place in person and 3 of which were hosted through a virtual platform due to COVID-19 Pandemic restrictions.