



Port Hope Area Initiative – Highland Drive Landfill Remediation

Material contaminated with low-level radioactive waste (LLRW) originating from historic radium and uranium refining activities, conducted between the 1930s and 1980s by the former federal Crown corporation, Eldorado Nuclear, has been identified in the municipalities of Port Hope and Clarington, Ontario. To address these legacy impacts, the Government of Canada established the Port Hope Area Initiative (PHAI), a large-scale, multi-year program focused on remediating radiological and industrial contamination across both communities. Within this program, the Highland Drive Landfill represents one of the most complex and significant remediation sites, both within the PHAI portfolio and across Canada.

The Highland Drive Landfill is located in the middle of a residential area of Port Hope and is a historical municipal solid waste landfill that operated between 1940s and 1991. During this time, approximately 250,000m³ of low-level radioactive waste (LLRW) was deposited and became co-mingled with municipal solid waste (MSW). The LLRW was placed in the landfill overlaying MSW as cover material and for other regular landfill operations. The remediation strategy focused on safely isolating, excavating, and transporting all radiologically contaminated material while minimizing disruption to the community and preventing impacts to air quality, groundwater, and adjacent properties. Achieving this required a highly coordinated technical approach supported by strong field controls and continuous community engagement.

A comprehensive excavation and sorting process was employed to separate the LLRW from the MSW. Advanced radiological monitoring, including in-situ scanners, GPS-integrated exposure rate mapping, and laboratory confirmation sampling, guided the excavation and ensured that all contaminated material meeting PHAI criteria was identified and removed. Excavated LLRW and co-mingled soil/waste streams were packaged and transported to the Port Hope Long-Term Waste Management Facility (LTWMF), a federally licensed engineered disposal site. Stringent safety protocols, including air monitoring, vibration monitoring, and dust suppression measures, were implemented throughout the project, as the site is adjacent to other PHAI sites, residences, a recreation center, a park, and a high school. Continuous community engagement and transparent communication ensured public awareness and addressed concerns.

To date, remediation activities have been completed without any lost-time incidents, reflecting the effectiveness of both safety planning and field execution. ECC has successfully excavated, loaded, transported, and disposed of over 540,000 tonnes of LLRW and co-mingled material, with work continuing toward completion. The successful remediation of the Highland Drive Landfill demonstrates the feasibility of safely managing and removing LLRW from complex sites. This project highlights the importance of collaboration between stakeholders, the use of innovative technologies, and adherence to strict safety standards in achieving effective environmental remediation outcomes.

Ryan Tennant ECC

Ryan Tennant is an environmental project manager with eight years of experience leading large-scale environmental remediation and reclamation projects across Canada. His expertise lies in multi-disciplinary coordination and complex project execution. Over the past four years, he has contributed to some of Canada's largest and most challenging remediation efforts as part of the Port Hope Area Initiative.