Groundwater Contamination Review of Former Millbrook Correctional Centre and Watershed

Background

- Site of Former Millbrook Correctional Centre, closed in 2003 and demolished in 2015.
- Upon completion of environmental assessments, contamination was confirmed on site.
- Main contaminant of concern is perchloroethylene (PCE), a dense non-aqueous phase liquid, typically found in industrial and dry cleaning settings as a solvent or degreaser.
- Ontario Drinking Water Quality Standard (ODWS) for PCE is 10 ug/L, and Site Condition Standard (SCS) is 1.6 ug/L.

Research Objectives

This project aims to raise awareness regarding the extent of contamination, potential risks, and responsibilities associated with owning and maintaining the property.

- Who is liable for contamination and who is responsible for clean-up or remediation?
- What are the potential drawdown effects and other environmanetal impacts from contamination?
- What value does the property have for conservation?
- What are the potential risks of high-intensity residential development?

Significance of the Site

- Situated within the Baxter Creek subwatershed, with groundwater linkages to the Oak Ridges Moraine.
- Within the Source Water Protection Area for the Millbrook Municipal wells.
- Significant ecological features on the property that serve as breeding habitats for grassland birds.
- Baxter Creek tributary serves as a headwater and groundwater recharge area.

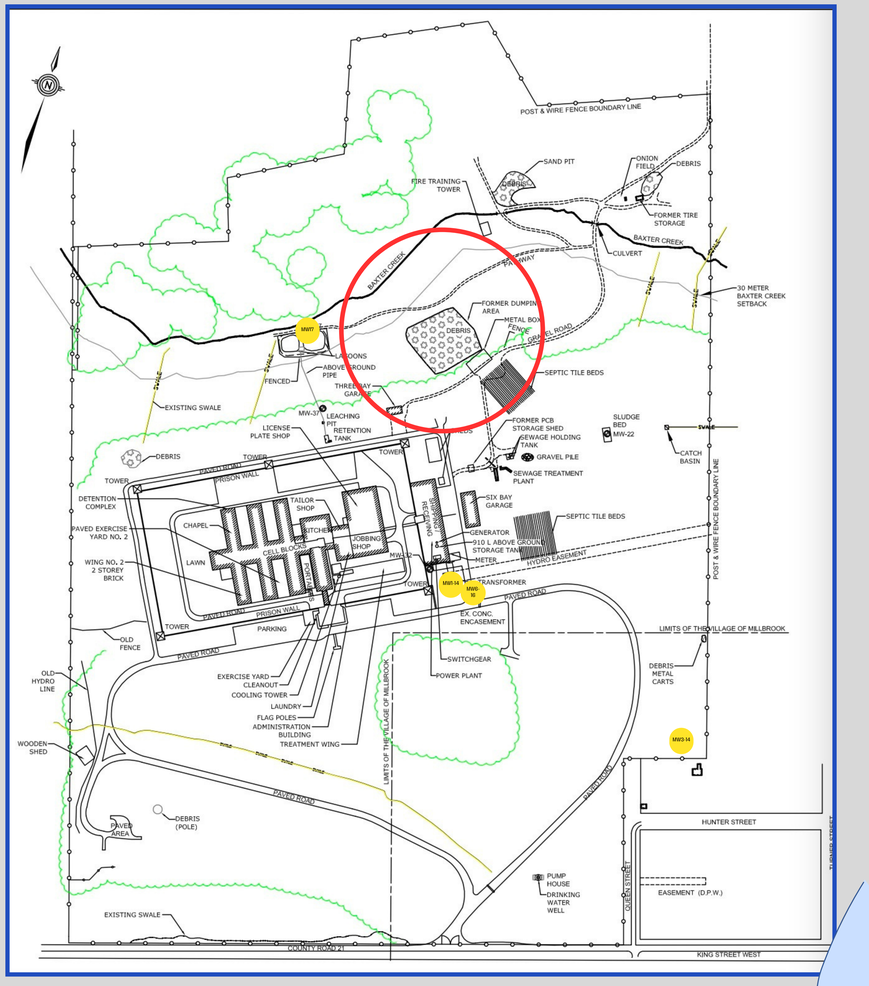

Figure 1. Map of former correctional centre highlighting the dumping area and monitoring wells of interest

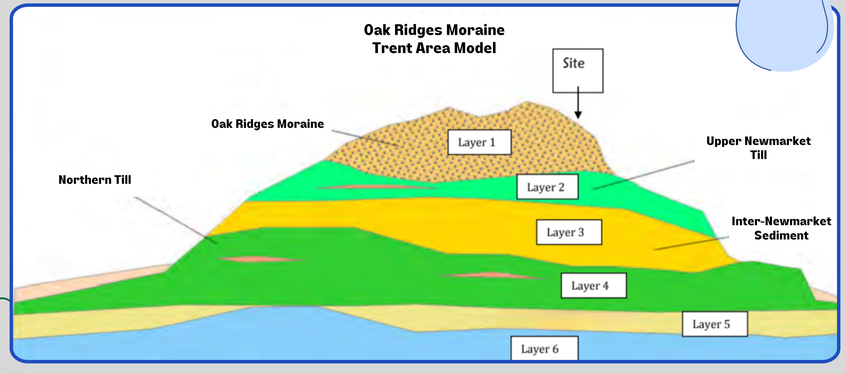

Figure 2. Groundwater layers of interest

Methods

- Analysis of studies and reports completed in Infrastructure Ontario (IO), identifying key details and gaps.
- Literature review focused on contaminants of concern, in response to gaps in IO reports.
- Interviews wtith former employees of the correctional centre to gain firsthand knowledge of chemical disposal and waste removal procedures on site.

Main Findings

- PCE concentrations have been observed in multiple test wells installed in layers 1 and 2.
- PCE concentrations have been observed consistently in layer 3, primarily in MW3-14 and MW6-16, but on a decreasing trend from 2014-2023.
- No PCE concentrations detected above ODWS of 10 ug/L.
- PCE concentrations above SCS of 1.6 ug/L in MW1-14 and MW3-14.
- Ongoing testing will remain to account for most recent findings of TCE and Chloroform exceedances in MW1-14 and MW17, respectively.

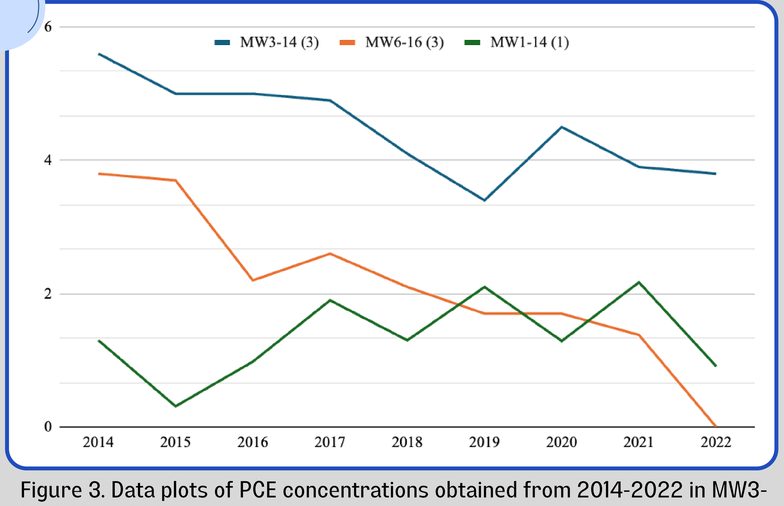

Figure 3. Data plots of PCE concentrations obtained from 2014-2022 in MW3-14, 6-16, and 1-14.

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