



REPORT

Holbrook Landfill

2025 Water Monitoring Report

Submitted to:

County of Oxford

21 Reeve Street
Woodstock, Ontario N4S 7Y3

Submitted by:

WSP Canada Inc.

55 King Street, Suite 700, St. Catharines, ON
L2R 3H5 Canada

(519) 974-5887

CA0024089.5055-02

February 5, 2026



Executive Summary

The closed Holbrook Landfill (site) is located on Part of Lots 20 and 21, Concession III near the village of Holbrook in the Township of Norwich. The site is located north of Quaker Street (Norwich Road 3) and is bounded by agricultural land to the east and west, and Long Point Region Conservation Authority (LPRCA) wetlands to the north and south. It is understood that the landfill site originally started accepting waste around 1970, and was assumed by the County of Oxford in 1982. The landfill operated until July 1986, at which time it was capped and seeded as part of the staged development and closure of the site. The closed site is currently operated under Ministry of the Environment, Conservation and Parks (MECP) Amended Environmental Compliance Approval (ECA) No. A070702, dated March 6, 2018. The 2025 annual monitoring program was completed at the site in accordance with ECA requirements.

Groundwater movement in the shallow flow system across most of the site is inferred to be southwesterly towards the on-site creek, while shallow groundwater movement in the western portion of the site (west of the creek) is inferred to flow east towards the creek. However, the shallow flow system groundwater elevations indicate that a mound exists in the fill area, inducing a localized radial flow away from the fill area to the east and southeast. Thus, groundwater flow in the shallow flow system across the majority of the site is inferred to converge on the on-site stream, with a minor component of localized shallow groundwater flow from the fill area toward the east and southeast.

Groundwater movement in the deeper flow system is inferred to be in a generally south to southeasterly direction beneath the site. The horizontal hydraulic gradient across the site is low, with a grade change of less than 1 m from the north to southeast limits of the site.

There may have been some historical landfill impacts in a number of the shallow groundwater flow system wells adjacent to the northeast and particularly to the east and southeast of the landfill; however, most of these have abated such that there was no clear indication of leachate influence in the shallow observation wells at the downgradient property boundaries to the east/southeast at the site during 2025. The shallow groundwater quality complies with Guideline B-7 (as established by the MECP as a mechanism to assess the acceptable level of leachate impacts on the groundwater system), with the exception nitrate at well 44. The nitrate exceedance at well 44 is not likely to be the result of a landfill leachate impact as nitrate has not been detected within the leachate; the concentration is likely the result of agricultural activities that surround this well location.

There was no clear indication of leachate influence in the deeper groundwater flow system at the property boundaries in 2025. The deep groundwater quality complied with Guideline B-7, with the exception of hardness and iron at wells 27, 37R and 38. Concentrations of hardness and iron are interpreted to be naturally elevated in the deep flow system.

None of the groundwater trigger criteria at the site were exceeded during 2025.

Surface water quality in the wetland at the northeast site boundary, and the northern and southeast on-site retention ponds was not measurably affected by the landfill in 2025. Surface water quality at intermediate station C04 along the on-site stream and retention pond P02 in the central part of the site were inferred to be slightly influenced by the landfill. Surface water quality in the on-site stream leaving the site (station C01) has been affected by landfill influences from the upstream portions of the on-site stream, shallow groundwater discharge, and possibly road salting activities. However, the landfill influences in the surface water quality leaving the site are very weak, based

on the monitoring results, with chloride values typically below the Canadian Environmental Quality Guideline (CEQG) water quality guideline for the protection of aquatic life. Surface water quality leaving the site at station C01 complied with the current trigger level boundary criteria in the spring 2025 sampling event.

The fall 2025 sample collected from downstream station C01 exceeded the current trigger level boundary criteria for chloride and un-ionized ammonia; however, these exceedances could not be confirmed due to dry/frozen stream conditions in November/December 2025. Inspections of the site were completed in accordance with the Site Closure Plan, which did not identify evidence that leachate impacts were occurring in the stream. The elevated concentrations observed in the fall 2025 sample from C01 were attributed to stagnant conditions.

No methane was detected during the 2025 monitoring event at any of the landfill gas monitoring probes, located adjacent to the east, northeast, and north of the landfill mound.

Based on the findings of the 2025 monitoring program, it is recommended that the monitoring program outlined within this report be continued at the site in 2026. In addition, the following will be implemented in 2026, based upon discussions with the MECP (as described in Section 2.4):

- As discussed during recent MECP correspondence, a new gas probe should be installed near existing monitor 28R, for completion of landfill gas monitoring. Leachate well 41 should also be incorporated into the landfill gas monitoring program.
- As discussed during recent MECP correspondence, supplemental PFAS sampling should be completed at wells 26R, 45 and 46 in 2026.
- As discussed during recent MECP correspondence, the reference elevation for monitoring wells 26R, 45 and 46 should be re-surveyed in 2026.
- The existing monitoring wells should be reviewed to determine if any further wells should be equipped with packers, to prevent high groundwater conditions from damaging the wells during the winter.