PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

CONFIDENTIAL ET PRIVILEGED

ENVIRONMENTAL MONITORING FOR MAY 2017 AT THE FORMER SAMBAULT LANDFILL, SAINT-ISIDORE, QUEBEC

Project Report

Our reference : PR17-40

July 2017

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EXECUTIVE SUMMARY

Public Works and Government Services Canada (PWGSC) has mandated TechnoRem to carry out environmental monitoring work at the former Sambault landfill located on Rang Saint-Simon in Saint-Isidore. This work is part of an environmental monitoring of water quality following the discovery of groundwater contamination with chlorinated solvents.

Fieldwork carried out in May 2017 included sampling and analysis of groundwater and surface water, groundwater level measurements and biogas measurements.

The piezometric survey carried out in May 2017 show that groundwater levels are similar to levels measured during the May 2016 survey.

Surface water sampling carried out in May 2017 showed exceedances of criteria for station SURF-4 (total metals), SURF-8 (dissolved metals and total metals), SURF-11 (dissolved metals, total metals and dioxins and furans) and SURF-13 (PH C_{10}-C_{50}, VOC, dissolved and total metals). No criteria were exceeded for SURF-5. None of the two samples (SURF-4 and SURF-11) tested for toxicity showed any chronic or acute toxicity. These results confirm previous data showing excess metals at SURF-4, SURF-8, SURF-11 and PH C_{10}-C_{50}, VOC and metals at SURF-13. SURF-13 is located near a seepage that might be related to shallow groundwater affected by PCE and TCE in wells PO-61, PO-64 and PO 80.

Results on groundwater samples collected in May 2017 from wells screened in the superficial till generally confirm previous findings that showed groundwater contaminated with VOCs, phenolic compounds and/or metals at different locations on the site. Unlike previous sampling, PAHs were not detected in surface water wells. The maximum concentrations of PCE and TCE reached 24 600 µg/L and 14 400 µg/L, while those of benzene reached 15 900 µg/L. These concentrations are lower than in previous sampling. VOC contamination occurs more specifically in two (2) distinct areas, around PO-79 (zone D North) and PO-13 (zone D South). While VOC contamination affects zones D North and South, contamination of shallow groundwater by metals, and in some cases phenol, is found throughout the site of the former landfill.

Dissolved contaminants exceeding applicable criteria found in wells screened in the deep till include VOCs (benzene, toluene, PCE, TCE, DCE, CV, etc.), PAHs, phenol, PCBs (PO-48) and metals. The highest VOC exceedances are observed in the abovementioned zones D North and South, with maximum PCE concentrations of 157 000 µg/L, TCE of 26 600 µg/L and benzene of 44 100 µg/L, in wells of the deep till.

Available data, including high concentrations of PCE (139,000 µg/L), TCE (55,300 µg/L) and vinyl chloride (6,850 µg/L) measured previously at wells C1-1, C1-3B, C2-2A and C3-2B, installed 23 m deep in zone D south (approximately 1 m above bedrock) suggest that groundwater from the bedrock aquifer could also be affected by these pollutants at a depth of 24 m, within the boundaries of the site. However, no VOCs were measured in bedrock wells sampled during the May 2017 sampling, particularly at PO-83. It should be noted that VOCs were detected only in very low concentrations in 2015 and 2016 in the PO-82 well, installed in 2015, in zone D south.

In addition, PAH (anthracene, benzo(a)pyrene, fluoranthene, pyrene, etc.) and metal (As, B, Cd, Cr, Cu, Fe, Mn, Se, Zn, etc.) concentrations above applicable criteria affect groundwater in many wells screened in the deep till and bedrock at various locations on the site. Fluorides also exceeded applicable criteria in several deep wells.

The May 2017 survey generally confirms results from the gas monitoring results which was initiated in 2013, with significant methane concentrations in PO-57 well and VOCs in PO-47 well. Concentrations measured at PO-60 and PO-69 were higher (methane) than in previous surveys. VOC concentrations measured inside wells are generally much higher than in the past, particularly at PO-57 and PO-61. Available data show that biogas is present in the western and eastern parts of the former landfill. Biogas has generally not been detected in ambient air. However, low VOC concentrations (2 ppmV) were measured at the PG-D and PO-71 wells while methane was detected in low concentrations near several wells in the past.