

Readers Guide to the Technical Memorandum on Supplemental Remedial Alternatives Analysis

Executive Summary

The CT Department of Environmental Protection (DEP) issued a conditional approval of the Remedial Action Plan (RAP) for the University of Connecticut (UConn) landfill, former chemical pits and F Lot in June 2003. One of the conditions required UConn to evaluate additional alternatives for reducing or eliminating groundwater flow from the east, which contributes to saturating waste within the landfill. As a result, UConn's technical team re-evaluated potential remedial alternatives for addressing groundwater flow from the east. This memo describes the conclusions of this evaluation, including groundwater modeling results that were used in assessing how remedial alternatives would affect groundwater levels and flow patterns within the landfill and upgradient of the landfill.

The text describes the approach and methodologies used in groundwater modeling. It outlines the screening process the team undertook to choose appropriate technologies for controlling groundwater and eliminating discharges of leachate to surface water and sediment in adjacent wetlands. The following alternatives were re-evaluated:

- Groundwater diversion (forcing groundwater to flow around rather than through the landfill)
- Groundwater interception (capturing groundwater with pumping wells before it flows through the landfill waste)
- Leachate collection and treatment (allowing the groundwater to flow through the base of the landfill, then be collected and pumped to a treatment facility)

The team evaluated each alternative based on implementability, effectiveness, and ability to meet the Consent Order (CO) requirements and regulatory criteria.

Based on the Study Area conceptual model, most of the groundwater from the east – the drumlin (hill) where a new UConn dorm is located – discharges to the wetland to the north of the landfill. The unconsolidated deposits immediately east of the landfill are thin and seasonally unsaturated. These conditions influence the effectiveness of potential alternatives for reducing or eliminating groundwater flow from the east.

- Remedial alternatives need to address groundwater flow in the fractured bedrock. Because of the heterogeneity of fractured bedrock, there is little certainty that alternatives to divert or intercept groundwater in the bedrock will be effective
- Based on field observations and modeling, the wetland to the north controls the regional groundwater elevations to the extent that groundwater elevations under the landfill are unlikely to be lowered below the waste, regardless of the alternative used, including diversion or interception of groundwater flow from the east

The modeling results for the groundwater interception and diversion alternatives indicate that these alternatives would not eliminate saturated waste in the landfill. Because the wetland to the north controls the level of groundwater below the landfill, options for managing the flow from the bedrock to the east are likely to be ineffective. Also, the CO requires that the selected remedial alternative eliminate leachate discharges to surface waters and wetlands. Therefore, these alternatives would need to be supplemented by collecting and treating leachate downgradient of the landfill. There would be minimal benefit in implementing either groundwater diversion or interception as remedies because they will not eliminate leachate generation and LITs are already required to comply with the CO.

Based on this re-evaluation of remedial alternatives, the University is proposing to cap the landfill and former chemical pits and install LITs to meet its obligations under the CO and state law and regulations. The leachate will be treated at the UConn Water Pollution Control Facility (WPCF). The LITs and the other components of the RAP comprise an integrated system that will meet the requirements of the Consent Order, Remediation Standards Regulations, and Solid Waste Regulations.