PROJECT DESCRIPTION

TechnoRem

[X] **Characterization** [X] **Restoration** [ ] Hydrogeology [X] **Modeling** [ ] Risk analysis
[ ] Research and development

COMPLETE ENVIRONMENTAL RESTORATION OF A FORMER INDUSTRIAL LANDFILL, DRUMONDVILLE, QUEBEC

Parameters of Concern:	See Issue
Project Duration:	1999-2000
Performance:	See Obtained Results
Cost:	$5 500 000
Client :	Celanese Canada Inc.

Issue

Environmental assessments of a former industrial landfill in the region of Drummondville, combined with mathematical modeling, documented the presence of a large quantity of contaminated soil and groundwater (CVOC, PAH, C_{10}-C_{50}, metals); hazardous materials (waste exceeding Quebec leachate criteria) including tar, paint and dye; dry materials; metallic debris; as well as several types of residual materials including bunker C and coal ashes, and cellulose acetate. The waste materials were buried at a depth of more than 3 metres or were spread over the surface to form piles, which were more than 4 metres high. The former landfill covered an area of approximately 50,000 m^2 and was almost entirely reforested. Beneath and surrounding the former landfill, the groundwater exhibited an elevated biological oxygen demand (BOD) and chemical oxygen demand (COD).

Work Performed

Following deforestation and the removal of the topsoil, the rehabilitation work consisted of the excavation, screening and segregation of nearly 100,000 cubic meters of waste materials into more than 25 different material types. The resulting sorted materials (including soil, and residual and hazardous materials) was then characterized through physical and chemical analyses in order to determine its clasification and potential for recycling (e.g., metal, plastic, glass). Materials which could not be recycled were properly disposed off-site at 8 treatment centers and authorized landfill sites. During the rehabilitation work, which was subject to a Certificate of Approval granted by the Quebec Ministry of the Environment, air quality and the noise level monitoring was performed in order to ensure that acceptable for the workers and as well as the nearby residents. Approximately 20,000 liters of petroleum hydrocarbon- and cis-1,2-dichloethylene-impacted groundwater was pumped using a vacuum truck and disposed off-site. Following the backfilling and the levelling of the site, the entire area was reseeded in order to restore it to its original state.

Results

The complete restoration of the former industrial landfill was achieved within the proposed schedule of eight months. A two year post remediation groundwater monitoring program confirmed that the groundwater at the site is no longer impacted.