



WATERLOO BARRIER[®] LANDFILL CUT-OFF WALL

SARNIA, ONTARIO

Case History, No. 56

June 2017

Problem

The former landfill seen in Figure 1, operated from 1950 to 1992. For over 20 years it received liquid industrial waste, including dense non-aqueous phase liquids (DNAPLs). The DNAPLs were comprised of varying concentrations of chlorinated organic compounds. For the remainder of the landfill life span (1972 to 1992), the majority of waste received consisted of contaminated soils and non-hazardous waste. Leachate collection and treatment costs were extremely costly due to the amount of groundwater flowing through the landfill.

Solution

A Waterloo Barrier[®] cutoff wall was chosen to nearly eliminate ground water from flowing into the landfill. The bulk hydraulic conductivity of 10^{-7} cm/s along with the high chemical resistivity of the steel and associated sealants indicated it was the ideal solution. The sheets were installed along the two upgradient edges to form an L-shaped barrier wall.

The biggest design challenge during this project was the tight working spaces. The only safe place for a crane to sit was on a small access road barely wide enough for the crane tracks. Additionally, as the sheet pile wall ran through the center of the street, the crane could not freely travel during the installation.



Figure 1. Landfill Aerial Photo



Figure 2. Raked Sheets – North Wall

SITE SUMMARY

Barrier: 47,869 square feet of Waterloo Barrier[®] WZ75 **Depth:** 23 to 34 feet

A C³ Group Company



C3 Environmental Limited
350 Woolwich Street South
Breslau, Ontario
N0B 1M0

Telephone: 519-648-3611
Fax: 519-648-3505
Email: c3enviro@c3group.com
Web: www.c3group.com



WATERLOO BARRIER® LANDFILL CUT-OFF WALL

SARNIA, ONTARIO

Case History, No. 56

June 2017

To combat this problem, sheets along the northern edge of the landfill were installed in three stages. Initially they were laced and driven using a vibratory hammer to the elevation seen in figure 2. Second, an impact hammer was used to push the sheets down to the ground elevation. At that elevation, the crane could travel back over the wall to the starting point, see Figure 3. Finally, a narrow, 1-meter deep trench was dug on either side of the sheets to allow the impact hammer to install the Waterloo Barrier® to the final elevation. Once complete, the Waterloo Barrier® cutoff wall was proven successful in reducing the groundwater flow into the landfill. With reduced leachate accumulation, the resulting treatment costs decreased significantly.

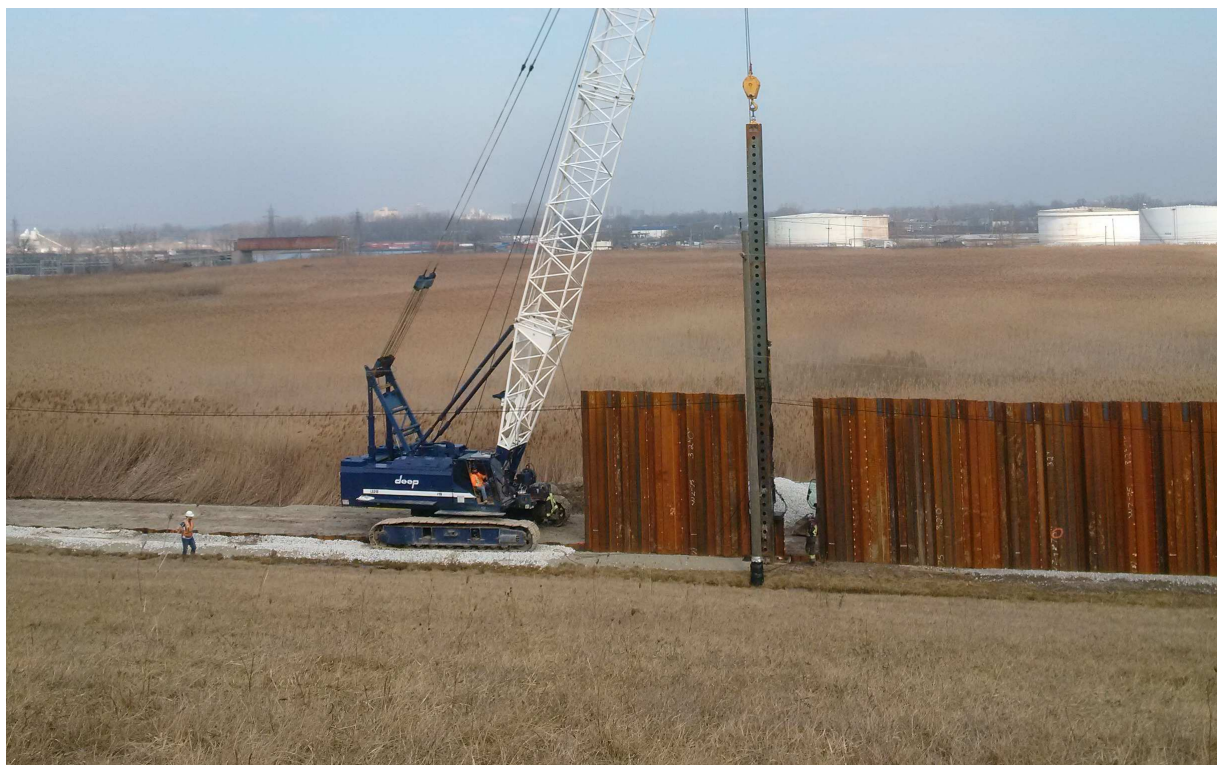


Figure 3. Stage 2 of North Wall Installation

SITE SUMMARY

Barrier: 47,869 square feet of Waterloo Barrier® WZ75 **Depth:** 23 to 34 feet

A C³ Group Company



C3 Environmental Limited
350 Woolwich Street South
Breslau, Ontario
N0B 1M0

Telephone: 519-648-3611
Fax: 519-648-3505
Email: c3enviro@c3group.com
Web: www.c3group.com