Project Summary

Chlorinated Solvent Investigation and Remediation

Client:
A. P. Nonweiler Investments

Contact:
Confidential

Project Manager:
Mr. Kendrick A. Ebbott, PG, CGWP

Regulatory Status:
Investigation Complete, Remedial Action Implemented

Project Features

- Approval of Innovative Remedial Action by WDNR
- Manage Concerns of Nearby Property Owners
- Injection of EOS to Enhance Reductive Dechlorination
- Pilot Test Demonstration of Success
- Indoor and Outdoor Injection
- Groundwater Monitoring
- Off-Site Access

Introduction and Value to Client

Alpha Terra Science worked with a property owner to define the extent of soil and shallow groundwater containing trichloroethene (TCE). The source of contamination remains undefined but is related to a sanitary sewer lateral. An affordable remedial option involving injection of Edible Oil Substrate (EOS) was approved by the WDNR. Negotiations with WDNR also defined reasonable closure criteria.

Synopsis

In the mid-1990's, a consultant hired by the WDNR identified a wide area (approximately 1 square mile) of groundwater containing chlorinated solvent contamination. The WDNR required municipal water connection and a well construction prohibition for the approximately 50 to 100 homes in the area.

A thirty-plus monitoring well network has been established, and the extent of chlorinated solvent contamination in the groundwater has been defined. An active manufacturing facility that has chlorinated solvent contamination (TCE) in soil and groundwater is suspected of being the source of the contamination.

Alpha Terra Science evaluated the extent of contamination in soil and groundwater at the property, and defined the extent of contamination adequately for proposal of remedial actions. The soil consists of silty clay with intervals of silt, and the dolomite bedrock is present at approximately 18 feet below grade. Groundwater is present at a very shallow depth (1 to 5 feet below grade) and flows to the east toward Lake Winnebago, located less than one mile to the east. An approximately 150-foot length adjacent to and south of a sanitary sewer lateral contains the highest contaminant concentrations.

A phased remedial action was completed by Alpha Terra, including pre-remedial sampling, obtaining an injection permit, and completion of a pilot test. The test included injection of EOS surrounding the most contaminated well in January 2007. EOS promotes biological degradation of the contamination by modifying the subsurface conditions.

Results from May 2007 demonstrated significant levels of reductive dechlorination of the TCE to the breakdown product cis 1,2-dichloroethene (cis 1,2 DCE). Full-scale injection of EOS across the targeted contaminant zone was completed in September 2007. Injection was performed using fifty-three Geoprobe borings advanced to the bedrock surface at approximately 18 feet, including four borings through the factory floor inside the building. Care was taken to avoid disruption to sensitive machinery within the facility.

Groundwater monitoring will be completed per a negotiated schedule to monitor contaminant degradation. Upon demonstration of stable or declining contaminant trends at key downgradient monitoring locations, closure will be requested. Closure will include notification of off-site property owners, and GIS listing for approximately 50 to 100 affected properties.