

Groundwater Remediation

Iron Reactive Barriers

Iron Reactive Barrier

Location: Gardena, California
Year completed: 2002 (on-going)

An active manufacturing facility in Gardena, California was contaminated with chlorinated solvents in the soil and groundwater. Groundwater contamination consists of a variety of volatile chlorinated solvents; namely, PCE, TCE and DCE. The remediation system for the site includes an *in situ* iron reactive barrier for remediation of the groundwater VOC contamination. GeoSierra was retained to design and build the iron reactive barrier. The iron reactive barrier was selected due to better performance, minimal operation and maintenance and lower cost compared to alternative remedies.



Location of Iron Permeable Reactive Barrier



Aerial View of Site

The iron reactive barrier system is to be installed by GeoSierra's azimuth controlled vertical hydraulic fracturing technology. The site consists of silts and fine sands overlying an aquitard consisting primarily of clays and silts. The iron reactive barrier is to be constructed in the upper sands and silts and keyed into the underlying aquitard. The fine silty sands vary in permeability from 0.1 up to 5Darcy.

The iron permeable reactive barrier is to be constructed from a depth of 18' down to a total depth of 100' below ground surface. The reactive barrier is planned to be constructed in two phases, with the first phase a full scale system 100' in length followed by an extension of 675' in length for the second phase. The *in situ* iron reactive permeable barrier has the capacity to degrade extremely high concentrations of VOCs to below their MCL levels, as the groundwater flows naturally through the barrier. The VOC's in the presence of iron below the water table are progressively degraded to non-toxic end products such as ethene. Construction of the first phase of the iron reactive barrier system is planned for the winter of 2002.



Mixing and Pumping Equipment