

Residential Property Treated for TPHd Concentrations in Groundwater

Combined Remedies Remediate Persistent Contamination from Former Heating Oil Storage Tank

Project Highlights

- Excavation and remediation injections performed in a tight residential setting with intense local community involvement.
- Treatment included shoring/excavation, soil handling and off-site disposal, in situ chemical oxidation (ISCO), bioremediation and sewer replacement.
- Groundwater sampling post-remediation indicates an overall decrease in TPHd concentrations and monitoring is ongoing.



Both RegenOx and ORC Advanced were used on-site.

Project Summary

An underground heating oil storage tank contaminated the groundwater below a residential property in Northern California. The two-story home, located near a downtown beach community, had a 100-gallon heating oil tank that was removed in 1994. Site investigation and groundwater monitoring activities were conducted since the removal, when apparent petroleum hydrocarbon impacts were identified. TPHd concentrations of 3,300 ug/L were detected on-site.

Remediation proved to be difficult considering the location of the residential property. The home was surrounded by other residences on three of its corners, with a bed and breakfast and swimming school located to the northwest of the property. A tight injection approach was required so the neighboring properties were not disturbed.

Remediation Approach

To meet the objective mass reduction of residual TPHd in both soil and groundwater, the remedial approach combined excavation/shoring and removal of TPHd impacted soils. It also included ISCO using RegenOx® and bioremediation using Oxygen Release Compound (ORC Advanced®). Approximately 233 cubic yards of soil were removed. A total of 2,350 pounds of RegenOx Part A and 1,320 pounds of Regenox Part B, along with 716 pounds of ORC Advanced® in slurry form, was injected into the subsurface via 16 direct-push injections.

Technology Description

ORC Advanced is a proprietary formulation of food-grade, calcium oxy-hydroxide that produces a controlled-release of molecular oxygen for periods of up to 12 months upon hydration.

RegenOx is an advanced chemical oxidation technology that destroys contaminants through powerful, yet controlled chemical reactions and not through biological means. This product maximizes in situ performance while using a solid alkaline oxidant that employs a sodium percarbonate complex with a multi-part catalytic formula.

Site Type: Residential

Contaminant of Concern:
Petroleum Hydrocarbons

Concentration: 3,300 ug/L

Remediation Approach:
In Situ Chemical Oxidation
Combined Remediation

Soil Type: Silty Sand

Technology Used: ORC
Advanced Pellets, RegenOx

Treatment Area: 3,000-square
feet