

Redevelopment of a Former Petroleum Fueling Station, Sweden

Residual Petroleum Hydrocarbon Contamination Treatment



Summary

Significant TPH and MtBE contamination were discovered during the redevelopment of a former petrol fueling station in Fjällbacka, Sweden. In operation since the 1940s, the contamination was the result of historic leakages of underground storage tanks (USTs).

The USTs were removed and grossly contaminated soil excavated, however dissolved phase contamination was still present throughout the site and beneath site structures which were currently in use.

Treatment

In situ remediation of the dissolved phase contamination using ORC Advanced was deemed most appropriate by the environmental consultant. The ORC Advanced stimulated and maintained the enhanced natural attenuation of the groundwater contamination for up to 12 months from a single injection.

Application works were undertaken using a Direct-Push injection on a 3 m by 3 m injection grid across a 50 m² treatment area.

Why of Special Interest?

As contamination was present beneath operational site structures, an in-situ remedial solution was the only viable option. A pump and treat (P&T) system was initially considered, however, due to low residual dissolved phase contamination and a low permeability superficial geology this technology would have been largely ineffective.

ORC Advanced was able to degrade dissolved phase contamination down to very low target concentrations and was effective even in a low permeability setting.

Remediation Details

Site Type:
Former Petrol Fueling Station

Remediation Driver:
Site Redevelopment

Remediation Approach:
Enhanced Aerobic Bioremediation

Technologies:
ORC-Advanced®

Geology

	Bedrock
	Gravel
	Sand
	Silt
X	Clay

Medium

X	Groundwater
	Saturated Soil
	Vadose Zone

COC

X	Petro HCs
	Petro LNAPL
	Chlorinated VOCs
	Metals

COC Concentration Levels:
TPH - up to 10,000 µg/L

Treatment Depth:
2 m to 4 m BGL

Treated Volume:
100 m³

Remediation Cost:
€17,500