



Groundwater Monitoring at Former Naval Air Station

Peeper Sampler

Summary

Media:	Shallow saturated soil porewater (groundwater)
Study Type:	Side-by-side study
Technology:	Equilibration
Peer Reviewed:	Yes
Publication Date:	September 2020

Study Description

- Results are provided for a side-by-side comparison of a direct-push High Resolution Passive Profiler (HRPP) with a variety of other groundwater monitoring technologies (soil cores, standard monitoring well, multilevel monitoring well, membrane interface probe (MIP), hydraulic profiling tool (HPT), and Bio-Trap samplers) for equilibration of chlorinated volatile organic compounds (CVOCs) in shallow groundwater at a former naval air station in Alameda, California.
- Seven total HRPPs were deployed at three locations up to 9 meters below ground surface (bgs) in heterogeneous sand and silty/clayey sands in a trichloroethene (TCE) dense nonaqueous phase liquid (DNAPL) source zone with groundwater table at ~1.5 m bgs.
- Analyzed HRPP data sets included concentrations of VOCs and geochemical indicators, microbial community composition, compound-specific isotope analysis, and multidirectional interstitial porewater velocity.

Remedial Phase

Not applicable. Study was performed to demonstrate HRPP performance relative to other monitoring methodologies, not to assess remediation.

Outcome

The study concluded that the HRPP was capable of delineating an aquifer at 30-cm resolution, providing multiple parameters in a single tool. Potential limitations of the HRPP include those deployed by direct-push methods such as shallow deployment depth (9 meters below ground surface) and only certain geologic conditions, a relatively long deployment time of about 3 weeks, and costs associated with drilling-rig use. However, it is simple to deploy and can collect a wide variety of parameters at the same time, thus giving the tool an advantage over many existing aquifer characterization methods. The information collected can improve conceptual site models and understanding of CVOC fate and transport, leading to more effective remediation efforts.

Source/Reference

Schneider, H.A.; W.A. Jackson; P.B. Hatzinger; and C.E. Schaefer. 2020. High-Resolution Characterization of a Chlorinated Solvent Impacted Aquifer Using a Passive Profiler. *Groundwater Monitoring & Remediation* 40(4): 27-43.