



Low-Flow Sampling for PFAS

Dual Membrane Passive Diffusion Bag Sampler (DMPDB)

Summary

Media:	Groundwater
Study Type:	Side by side study
Technology:	Equilibration
Peer Reviewed:	No
Publication Date:	Presented April 16, 2021

Study Description

This study was conducted at a DoD site in Nebraska to compare the results from groundwater samples collected for PFAS analysis using a Dual Membrane Passive Diffusion Bag (DMPDB) to results from low-flow pumping. The study was undertaken to validate a sampling technology that would reduce sampling cost, lower the chance for cross-contamination, allow for depth-specific profiling, and generate less investigation-derived waste.

Ten wells were sampled with the DMPDB and with low-flow purge using HDPE tubing and a submersible pump. Eight wells employed one DMPDB sampler set in the center of the screen, and two wells were completed with tandem DMPDBs at different depths. All samples were packed in ice and shipped to a DOD-accredited analytical laboratory in accordance with Quality Systems Manual Version 5.3 Table B-15 for 24 PFAS.

PFAS was reported in 126 pairs (one DMPDB result paired with one low flow result) of results, which were plotted on a 1:1 regression plot. Results that were more than five times the reporting detection limits were also evaluated using relative percent difference.

Remedial Phase

Long-term monitoring

Outcome

The slope of a 1:1 correspondence plot was 1.01 and the R^2 value was greater than 0.99, demonstrating that the results from sampling with the DMPDBs for PFAS correlated well with the field study samples and did not produce any results that affected comparisons to screening levels. Results appeared to be consistent for both long- and short-chain PFAS, indicating the DMPDB may be suitable for sampling on future projects.

Case Study Source

Caprio, Paul. 2021. Results of a Field Study Comparing the DMPDB to Low-Flow Sampling for PFAS at a DOD Site.

Prepared by: EA Engineering Science and Technology. [Dual Membrane Passive Diffusion Bag Sampling Study - EA \(eaest.com\)](https://www.eaest.com).

Reference

Caprio, P., Thieleman, E., & Gragert, S. 2021. "Collecting groundwater samples for PFAS Analysis." *The Military Engineer* 113 (734): 76–77.