CASCADE PROJECT OVERVIEW

PFAS Investigation and High Resolution Site Characterization

Defining PFAS Migration Pathways

PROJECT: Site Characterization

LOCATION: Massachusetts

SERVICE: Waterloo^{APS} ™ Groundwater Profiling for PFAS

DURATION: 3 Mobilizations over 1.5 years

CHALLENGE

A former industrial property in Massachusetts had impacted nearby drinking water wells with per- and polyfluoroalkyl substances (PFAS). To support ongoing site investigation efforts, the project team needed a clearer understanding of groundwater flow patterns, subsurface conditions, and PFAS migration pathways. The ultimate objective was to accurately delineate the extent of the PFAS plume and better understand how contaminants were moving through the subsurface toward sensitive receptors. Cascade was contracted to provide high resolution site characterization (HRSC) services and support development of the site's conceptual site model.

SOLUTION

Cascade deployed the Waterloo^{APS} HRSC system using direct push technology to collect hydraulic conductivity data and groundwater samples across multiple depths. The investigation provided detailed information on hydrostratigraphy, groundwater movement, and contaminant concentrations within a single integrated characterization program. The resulting dataset enabled the project team to correlate PFAS concentrations with groundwater flow conditions and better understand contaminant migration pathways.

The project required advancing deeper direct push borings and adhering to stringent PFAS sampling and decontamination protocols. Cascade utilized certified PFAS-free water for hydraulic conductivity testing and careful equipment decontamination to help maintain sample integrity throughout the investigation. The project also required multiple mobilizations due to turn around time on PFAS analysis of collected groundwater samples, but the Engineer was able to develop increasingly dynamic scopes and investigation designs with the additional data.

THE RESULTS

The investigation generated a high resolution dataset that improved the understanding of groundwater flow and PFAS transport throughout the study area. Groundwater samples collected at multiple depths identified varying PFAS concentrations across the site, including locations where total PFAS concentrations exceeded applicable Massachusetts groundwater criteria. The vertical and lateral distribution of PFAS detections provided valuable insight into contaminant migration pathways and their relationship to site hydrogeology. Analysis of these results enabled the project team to refine the conceptual site model and make more informed decisions regarding future monitoring and site management activities. Data generated through the investigation ultimately supported the installation of monitoring wells in key locations for continued evaluation.