MASSACHUSETTS U.S. DRINKING WATER PILOT

A drinking water plant in Massachusetts, United States (U.S.) where treated groundwater is served as drinking water completed a pilot to evaluate sorbents for PFAS treatment. This pilot compared FLUORO-SORB® Adsorbent with commercially available granular activated carbon (GAC) and anion exchange resin (AER). PFAS breakthrough with GAC was rapid while the AER and FLUORO-SORB Adsorbent had comparable performance throughout the pilot. Over 275,000 bed volumes, FLUORO-SORB Adsorbent consistently reduced PFAS below the U.S. Environmental Protection Agency (U.S. EPA) maximum contaminant levels (MCLs) and the MassDEP PFAS6 regulatory limits.

PROJECT DETAILS

Drinking Water Pilot (Groundwater)

LOCATION

Massachusetts, U.S.

PRODUCT USED

FLUORO-SORB® 200 Adsorbent

CHALLENGE:

A municipality in Massachusetts detected PFAS in source water which is treated and served to the community as drinking water. These include the MassDEP PFAS6 (PFHpA, PFHxS, PFOA, PFNA, PFOS, and PFDA) with individual concentrations ranging from 2 to 8 ng/L. This required implementation of PFAS treatment that could address both U.S. EPA MCLs (PFOA & PFOS <4 ng/L, individually) as well as Mass DEP PFAS6 (∑PFAS6 <20 ng/L) limits in order to continue serving the public.

SOLUTION:

Commonly used sorbent technologies, GAC and AER, were tested along with FLUORO-SORB Adsorbent to determine which sorbent had the best removal performance at this plant. Both duration and cost of sorbents were considered in this pilot study.

SOLUTION:

Effluent samples were collected at 25, 50, 75, and 100% bed depths throughout the trial. Based on breakthrough at the 25% tap, FLUORO-SORB Adsorbent performance was competitive with two AER, outperformed the third AER, and significantly outperformed the GAC sorbent. No PFAS breakthrough above U.S.EPA or MassDEP PFAS6 were detected at the 100% tap after 257,000 bed volumes of FLUORO-SORB Adsorbent. At the end of the study, the only detection in the FLUORO-SORB Adsorbent column at the 100% tap was of PFOA (3.05 ng/L). Based on these results, FLUORO-SORB Adsorbent was specified for the full-scale installation at this site due to the balance of cost and performance.

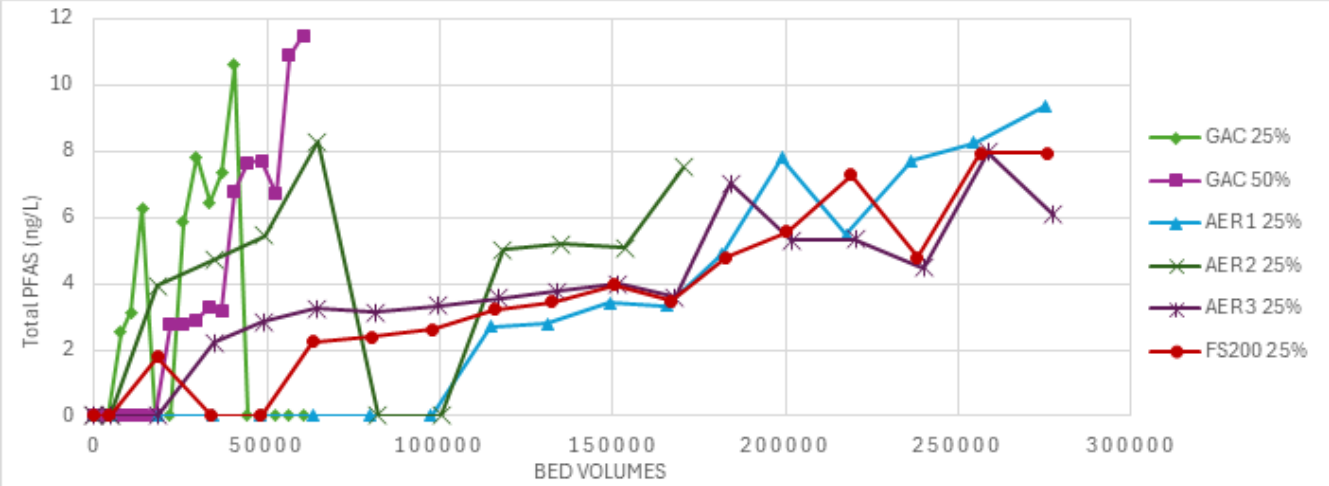

Figure 1: PFAS concentrations in effluent at 25% tap (except GAC shown at both 25 and 50%) throughout the pilot for PFAS6 over 275,000 bed volumes. One GAC, three AER, and FLUORO-SORB Adsorbent were evaluated in this pilot.

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