

Yorba Linda Water District Installs Largest Ion Exchange PFAS Water Treatment Plant in the US

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Background/Objectives. Per- and polyfluoroalkyl substance (PFAS) contamination is currently a national issue for both military and civilian drinking water sites. Granular activated carbon (GAC) and ion exchange (IX) resin treatment have become the most economical solution in removing PFAS compounds from groundwater. The Yorba Linda Water District (YLWD) was one of 11 groundwater producers whose wells had low levels of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS).

Approach/Activities. To address this contamination, YLWD entered into a partnership with the Orange County Water District (OCWD), which manages the Orange County Groundwater Basin, to build a treatment plant that removes PFOA and PFOS from groundwater. OCWD agreed to manage and fund the design and construction of this plant and to share half of the operations and maintenance (O&M) costs with YLWD. This technical session will detail the process YLWD went through to evaluate the best solution for their site and water quality and OCWD's role in taking a proactive approach to addressing PFOA and PFOS in the groundwater. With all of YLWD's wells affected, YLWD chose to build a centralized 25 MGD PFAS water treatment plant, which included six pre-filters and 22 vessels in lead/lag configuration. An evaluation was completed to compare life cycle costs, treatment technologies (e.g., reverse osmosis, ion exchange, GAC), media performance and O&M issues. OCWD and YLWD also ran pilot studies to evaluate media from different manufacturers to assess PFAS removal performance. As a result of this evaluation, IX treatment was identified as the preferred solution.

Results/Lessons Learned. This session will include an overview of the pilot testing and the chosen design for YLWD's equipment while highlighting the importance of a quality system to prevent corrosion, optimize media, lower overall head loss, and minimize the plant footprint and O&M requirements. As part of the manufacturing and construction process discussion, supply chain issues and their effect on the overall project and schedule will be addressed. The session will conclude with lessons learned throughout the process of building the country's largest ion exchange treatment plant.