

PFAS TECHNICAL SUPPORT AND ALTERNATIVES ANALYSIS

CITY IN NORTHERN CALIFORNIA



Since March 2019, the California State Water Resources Control Board (Water Board) has issued several investigative orders to likely per- and polyfluoroalkyl substances (PFAS) source industries including public water systems, airports, landfills, chrome plating facilities, publicly owned treatment works (POTWs); and bulk fuel terminals/refineries. EKI assisted a City in Northern California with its evaluation of its public water system and wastewater at its POTW in response to such Water Board orders.

Drinking water:

In 2020, the Water Board issued Order WQ 2020-0003-DDW, which required select public water systems to sample for PFAS. EKI provided technical support to this City related to their response to the order and the detection of PFAS in their groundwater supply, including the following:

- Develop a PFAS sampling and analysis plan;
- Determine the extent of the PFAS impact;
- Assist the City in meeting dynamic regulatory requirements;
- Evaluate water supply reliability impacts of removing certain groundwater wells from service; and
- Evaluate potential treatment and blending options.

EKI presented initial findings to the City Council, after which EKI was retained to perform bench-scale Rapid Small-Scale Column Tests (RSSCTs) to evaluate the effectiveness of granulated activated carbon (GAC) in the removal of PFAS in the City's groundwater supply. EKI additionally prepared a feasibility study of potential alternatives. Alternatives included:

- Permanently removing several impacted wells from service;
- Modifying impacted wells with the intent to reduce PFAS concentrations;
- Groundwater and surface water blending;
- Wellhead PFAS treatment; and
- Centralized PFAS treatment at the City's existing groundwater treatment facility.

EKI also evaluated the effects of oxidation used at the City's existing groundwater treatment facility on PFAS distribution and concentrations. The oxidation treatment uses sodium hypochlorite, ferric iron, and filter media to remove arsenic. To assess how this process affected PFAS, EKI collected groundwater samples before and after the oxidation dosing and compared PFAS species present and their

concentrations. EKI found that PFAS were unaffected by this oxidation step, concentrations of perfluoroalkyl acids remaining stable. Based on: (1) the PFAS drinking water regulatory setting at the time that the work was completed, (2) an assessment of the prior detections of PFAS in the City's groundwater, and (3) an evaluation of potential alternatives, EKI recommended that the City:

- Restart production wells with non-detect PFAS concentrations or with PFAS concentrations below applicable notification levels;
- Expand its quarterly monitoring to all wells and the combined flow at the centralized treatment facility;
- Conduct Depth Specific Profiling of production wells to identify zones of relatively low- and high-water production and quality to ultimately modify the impacted wells with the intent to reduce PFAS concentrations; and
- Evaluate potential sources of the PFAS contamination.

Wastewater:

In 2020, the Water Board issued Order WQ 2020-0015-DWQ, which required POTWs designed to treat over one million gallons per day (MGD) to sample for PFAS. EKI assisted this City by developing a site-specific sampling plan for its POTW to help enable their staff to properly collect and submit samples for PFAS analyses over the course of the reporting period. The sampling plan included sampling, analysis, and quality control protocols for wastewater, biosolids, and groundwater.

In this sampling plan, completed in December 2020, EKI detailed the rigorous steps to be taken to avoid PFAS contamination during sampling including avoiding cross-contamination in staging and setup, PFAS-free field clothing and personal protective equipment, sampling equipment decontamination protocol, and PFAS-free sampling materials. Additionally, EKI detailed the Water Board's reporting requirements and sample analysis methodology.

