AEC
AQUEOUS ELECTROSTATIC CONCENTRATOR

CASE STUDY

BioLargo Aqueous Electrostatic Concentrator (AEC) PFAS Removal System - Case Study #3

The AEC reduced PFAS contamination of water from a town in New Jersey

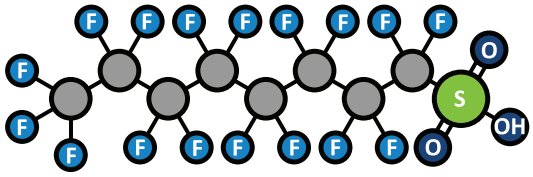
SUMMARY:

A town in New Jersey needs a treatment process to remove per- and polyfluoroalkyl substances (PFAS) from their water. BioLargo's Aqueous Electrostatic Concentrator (AEC) was tested and found to reduce all seven PFAS compounds in their water to below their respective levels of detection. Unlike carbon filtration or ion exchange, the AEC generates little PFAS-laden waste, is highly tolerant of varying water quality, and has been shown to remove both long- and short-chain PFAS to below the EPA's proposed regulatory limits.

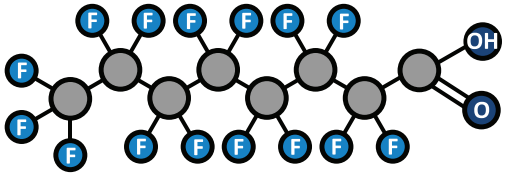
THE PROBLEM:

A town in New Jersey has well water that is contaminated with seven different per- or polyfluoroalkyl substances (PFAS), water pollutants of rapidly escalating regulatory concern at both a state and federal level. The town is seeking alternatives to traditional decontamination technologies like carbon filtration and ion exchange, which generate large amounts of PFAS-contaminated solid waste. They are seeking a technology that offers high PFAS removal rates, low operating costs, easy maintenance and service, low waste production, and which can remove both long- and short-chain PFAS.

PFOS



PFOA



Per- and polyfluoroalkyl substances (PFAS) are man-made chemicals that contaminate 60% of public wells in the US. They are linked to myriad adverse health effects. New regulatory efforts made one municipality search for a better treatment alternative to traditional technologies ion exchange or carbon filtration.

BioLargo
Engineering, Science & Technologies

AEC
AQUEOUS ELECTROSTATIC CONCENTRATOR

THE SOLUTION:

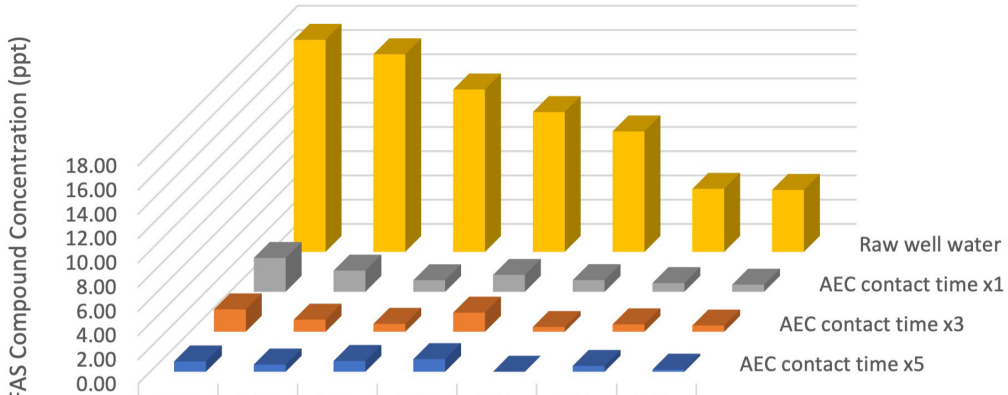
The municipality approached BioLargo Engineering, Science & Technologies, LLC (BLEST) to assess treatment of their PFAS-contaminated water by their Aqueous Electrostatic Concentrator (AEC), a patent-pending system that exploits the inherent polarity of PFAS molecules to rapidly and effectively deposit them onto proprietary membranes.

10 gallons of well water from the municipality was sent to the BLEST facility in Oak Ridge, TN. After the baseline water chemistry was analyzed, the system parameters of the AEC were selected to optimize PFAS removal. The AEC was tuned to achieve maximum removal of each PFAS contaminant by modulating the contact time (either 1x, 3x, or 5x standard contact times).

RESULTS OF THE CASE STUDY:

The AEC reduced each of the seven PFAS contaminants significantly. Both PFOA and PFOS were reduced to below the EPA Minimum Reporting Level in a single pass and below the laboratory level of detection at 3x contact time (Figure 1). These results suggest the AEC would be a suitable solution to reduce PFAS concentration in the municipality's water to the maximum extent possible.

Figure 1: PFAS Reduction from Well Water



	PFOA	PFOS	PFPeA	PFBS	PFHxA	PFHxS	PFHpA
AEC contact time x5	0.85	0.59	0.89	1.04	0.00	0.47	0.17
AEC contact time x3	1.85	1.00	0.65	1.58	0.39	0.61	0.51
AEC contact time x1	2.79	1.75	0.95	1.39	0.96	0.72	0.59
Raw well water	17.49	16.30	13.39	11.53	9.94	5.20	5.11

Selected PFAS Compounds (>4ppt) in EPA Method 533

THE NEXT STEPS:

As a result of these positive results, the town's water system decided to specify BioLargo Aqueous Electrostatic Concentrator PFAS removal system as the technology of choice for a bid for a 50 gallon-per-minute PFAS treatment system. The bid was recently awarded to a general contractor, and work to install the AEC system in the town's water treatment system is expected to begin in 2024.

For more information about BioLargo's AEC technology,
go to biolargoengineering.com
or email tonya.chandler@biolargo.com

BioLargo
We Make Life Better