



## SOLUTIONS FOR POLY- AND PERFLUOROALKYL SUBSTANCES (PFAS)

### THE PROBLEM

Poly- and perfluoroalkyl substances (PFAS) in drinking water are affecting 15 million Americans. It is pervasive in our water supplies and can be difficult to remove. Envirogen has successfully developed a highly effective and cost-efficient means to remove PFAS from water. We can provide comprehensive engineering, system build, operations, ongoing sampling to assure compliance, and service for our equipment.

### BACKGROUND

PFAS are a group of organic compounds (PFOA, PFOS, PFNA, PFHxS, (PFHxA), and PFBS) used for industrial and consumer applications such as nonstick coatings and firefighting foams. These compounds have potential health implications for humans and wildlife and have been detected in 162 U.S. drinking water systems in recent Environmental Protection Agency testing. They are persistent in the environment and highly soluble in water. Recent testing by the Centers for Disease Control and Prevention (CDC), found some level of PFAS present in the bloodstream of nearly all Americans (about 98%). As public pressure mounts to reduce the health effects of these compounds, EPA has established a health advisory level at 70 parts per trillion, and water treatment experts are devising solutions.

### ENVIROGEN HAS THE SOLUTION

Envirogen has successfully validated a method for reducing these compounds in contaminated water streams to meet or exceed the EPA guidelines and the customer's effluent targets. With over 30 years' experience in solving the most complex water treatment problems, our engineering team assesses the site requirements, evaluates the variety of constituents in the water, selects the optimum treatment technology, and designs a robust system for our customers to provide the lowest life cycle cost for the project. When choosing a supplier for an emerging issue like PFAS, it is critical to work with a team that has a proven background in selecting and applying best solutions for the site-specific problem, and who has the data to support the efficacy of their system.

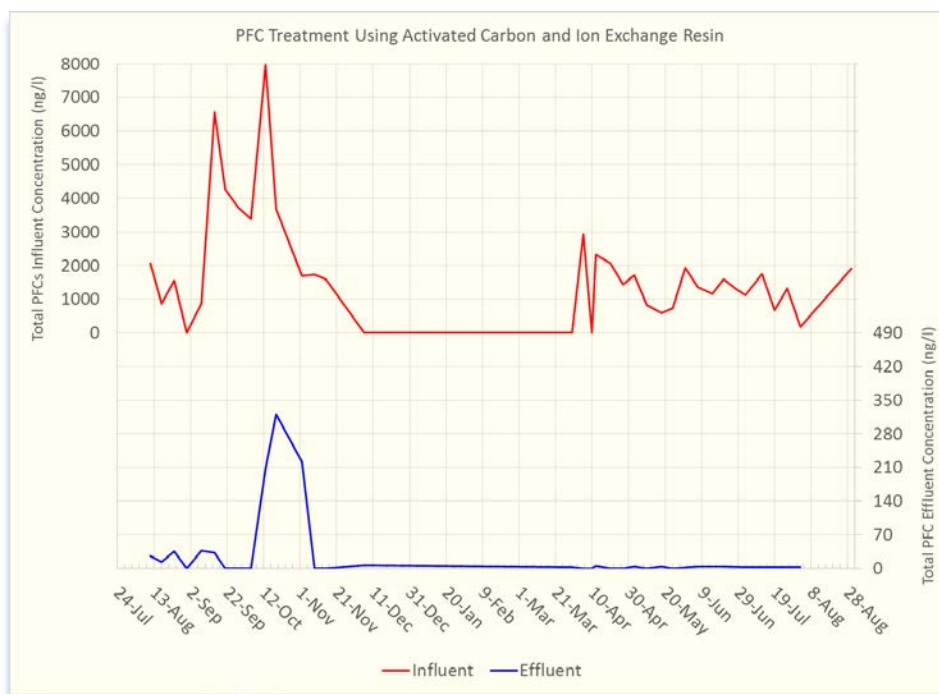
### CASE STUDY

Envirogen was contracted to design, install and operate a system at a site heavily contaminated with PFAS. Actual site data, shown below shows the efficacy of the Envirogen system:

PFAS Species	Average concentration in influent (ng/l)	Max concentration in influent (ng/l)	Average Effluent Concentration (ng/l)
Perfluoro-octanesulfonate	64	130	0.21
Perfluorobutanesulfonate	6	18	0.14
Perfluorodecanoic acid	65	180	0.56
Perfluorododecanoic acid	3	33	0.17
Perfluoroheptanoic acid	232	510	6.34
Perfluorohexanesulfonate	13	41	0.19



Perfluorohexanoic acid	563	1100	37.7
Perfluorononanoic acid	60	140	0.46
Perfluorooctanoic acid	404	850	5.17
Perfluoroundecanoic acid	4	13	0.19
Total PFAS	1344	2923	48.7



Additional, critical learnings from this site include development of proper sampling techniques and a reliable sampling protocol that assures data accuracy and thereby the continued efficiency of the system. Envirogen provides the assurance of a robust, effective and cost-efficient solution, with ongoing compliance.

### CONTINUED SUPPORT

Envirogen’s team works with consulting firms and directly with facility engineering teams to engineer best solutions, by adapting technology to meet the needs of a specific treatment application. We can provide design, build, permitting, system start-up, and on-site operations as required, monitor compliance with effluent targets, and deliver guaranteed performance *and* guaranteed costs over the life of an installation.

Contact Envirogen for an assessment of your application and let us deliver the most effective and cost-efficient solution for your site.