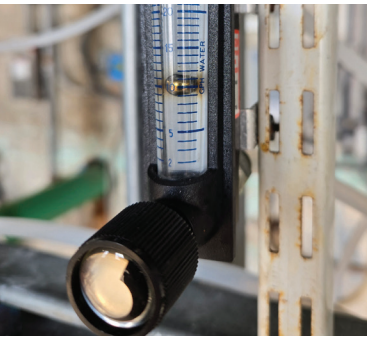
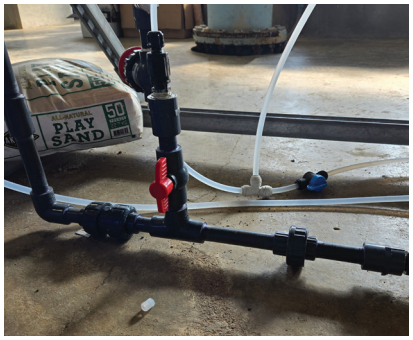
SOUTH GRANVILLE WATER AND SEWER AUTHORITY

Pilot Report

FINAL REPORT | January 2026









CDM Smith

FINAL REPORT

JANUARY 2026

South Granville Water and Sewer Authority
Pilot Report



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Appendix B SGWASA PFAS Pilot Test Plan

Appendix C Media Loading & Start Up Summary

Appendix D Pilot Backwashing SOP

Appendix E SGWASA Pilot Daily Log Data

Appendix F SGWASA Raw Data

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Executive Summary

Introduction

This report is written in support of the proposed Post-Filter Per- and polyfluoroalkyl substances (PFAS) Treatment System at the South Granvile Water and Sewer (SGWASA) Water Treatment Plant (WTP). The objectives of this report are to:

- Summarize the results of the pilot testing undertaken
- Provide design considerations for SGWASA based on the results of the pilot, to be vetted and refined in the preliminary engineering phase of this project.

The results of this study will assist SGWASA in selection of advanced treatment for PFAS. The intended audience for this report includes SGWASA's directorial and water plant supervisory staff, along with regulatory agencies and stakeholders.

SGWASA sources its raw water from the R.D. Holt Reservoir located just northwest of the Town of Butner, NC. The SGWASA WTP treats this water using conventional coagulation, flocculation, settling, dual-media anthracite and sand filtration, sodium hypochlorite primary disinfection, and chloramine secondary disinfection. The WTP enhances treatment through the use of powdered activated carbon (PAC) for taste and odor (T&O) and total organic carbon (TOC) control and permanganate for manganese oxidation. The WTP sends its finished water to the Town of Butner, City of Creedmoor, Town of Stem, and southern portions of unincorporated Granville County. The WTP's finished water at the entry point to the distribution system (EPTDS) currently exceeds the Environmental Protection Agency's (EPA) forthcoming maximum contaminant levels (MCLs) for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), hence the need and purpose of this project to reduce PFAS levels below the EPA's MCLs. Additional background is provided in Section 1 of this report.

Test Objectives

The primary goals of the pilot study were to:

- Demonstrate the effectiveness of PFAS removal technologies in continuous, long-term operations.
- Determine the approximate life of media until breakthrough is reached, to inform a lifecycle cost comparison of the treatment alternatives.
- Provide data to develop design criteria and operating strategies for further design.

The pilot study had multiple secondary goals, including:

- Evaluate propensity of media to foul.
- Examine potential for media removal of other contaminants such as TOC, disinfection byproduct (DBP) precursors, and pharmaceuticals and personal care products (PPCPs).
- Quantify how media may impact water quality during startup, i.e. arsenic leaching in granular activated carbon (GAC) and altered chloride-sulfate ratio for anion exchange resin (AER).

The project team initially scheduled the pilot to run for 10 months. However, multiple media did not experience PFAS breakthrough by the end of the 10 months, hindering the team's ability to characterize changeout frequency and, in turn, lifecycle costs. As such, the pilot was extended to run a total of 16 months. As of the time of this report, the pilot has operated for over 12 months. Lifecycle costs will be presented at the end of the extended pilot study.

The project team has summarized some observations and recommendations based on the results of the pilot study thus far:

- Pilot data confirms that PFOA will be the controlling PFAS with respect to media changeout for the initial PFAS rule.
- All media tested successfully controlled PFAS to levels below the MCLs for at least 12 months with the recommended number of contactors.
- PAC likely had a beneficial effect on media service life, particularly for GAC.
- SGWASA will need to enact tight process control measures to prevent manganese deposition on the post-filter media.
- Media pressure contactors will likely require some periodic backwashing, or at least "fluffing" in the case of AER.
- Cartridge filters are recommended for both AER and the novel sorbent (NS), i.e. Fluorosorb 200.
- GAC may be used as a pretreatment step for AER in lieu of cartridge filters.
- Initial flushing will be required for all media tested, both as a means for pH stabilization, arsenic waste from GAC, and chloride-sulfate mass ratio (CSMR) stabilization for AER.
- GAC provided the most benefit of the media tested in terms of TOC removal.
- T&O compounds and PPCPs were not detected in any samples taken (raw water, filter effluent, and column effluents). As such, no conclusions are given regarding media efficacy removing these compounds.
- Chloramine pretreatment for AER did effectively control differential pressure increases, but simulated distribution system testing showed some nitrosamine formation above baseline conditions.
- The Fluorosorb 200 saw high levels of nitrosamine formation and increased formation of total trihalomethanes (TTHMs) above baseline conditions.

Methods and results of the piloting effort are discussed in Section 2 of this report.

Next Steps

Due to the rapid advancement of new media technologies for PFAS treatment, CDM Smith recommends the plant proceed with design and construction of a hybrid media facility able to house multiple types of media. The project team will continue evaluating media alternatives as additional data becomes available from the pilot. The project team is currently executing early work items associated with the design phase of this project, including survey work, subsurface investigation, manganese profiling at the WTP, and site location evaluation. The project team will issue an addendum to this report to detail the lifecycle costs after the conclusion of the pilot study and delivery of the Basis of Design Report (BODR) with associated Opinion of Probable Construction Cost (OPCC).

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1.0 Introduction and Background

1.1 Background

The South Granville Water and Sewer Authority (SGWASA) serves residents in the City of Creedmoor, Town of Butner, Town of Stem, and portions of southern Granville County, North Carolina. The plant sources its raw water from the R.D. Holt Reservoir located just northwest of Butner as shown in **Figure 1.1**. The SGWASA Water Treatment Plant (WTP) treats this water using conventional coagulation, flocculation, settling, dual-media anthracite and sand filtration, sodium hypochlorite primary disinfection, and chloramine secondary disinfection. The WTP enhances treatment through the use of powdered activated carbon (PAC) for control of taste and odor (T&O) compounds and total organic carbon (TOC). Likewise, the WTP uses permanganate for manganese oxidation.

The WTP sends its finished water to the Town of Butner, City of Creedmoor, Town of Stem, and southern portions of unincorporated Granville County. The SGWASA WTP has a permitted capacity of 7.5 million gallons per day (MGD). The average daily flow (ADF) is approximately 2.5 MGD and maximum daily flow (MDF) is 3.7 MGD.

The project team estimated future demand based on existing WTP flows and the dry weather waste flows projected in CDM Smith's *I-85 Gravity Sewer Replacement Project Phase I Preliminary Engineering Report* (PER), dated January 2023. The project team took the projections given in this PER, applied a ratio of WTP flows to these waste flows, and used the projection to give an approximation of demand over the next 20 years. Based on this approach, the maximum daily demand (MDD) is expected to increase to 12.7 MGD over the next 20 years (**Figure 1.2)**.

Based on discussion with SGWASA executive staff on November 5, 2025, SGWASA anticipates a buildout of the SGWASA WTP to 10 MGD in the next 7 to 10 years to accommodate regional growth.

SGWASA initiated a pilot study with a focus on per- and polyfluoroalkyl substances (PFAS) removal and future resiliency to prepare for the new PFAS regulations discussed below.



Figure 1.1. R.D. Holt Reservoir and SGWASA WTP

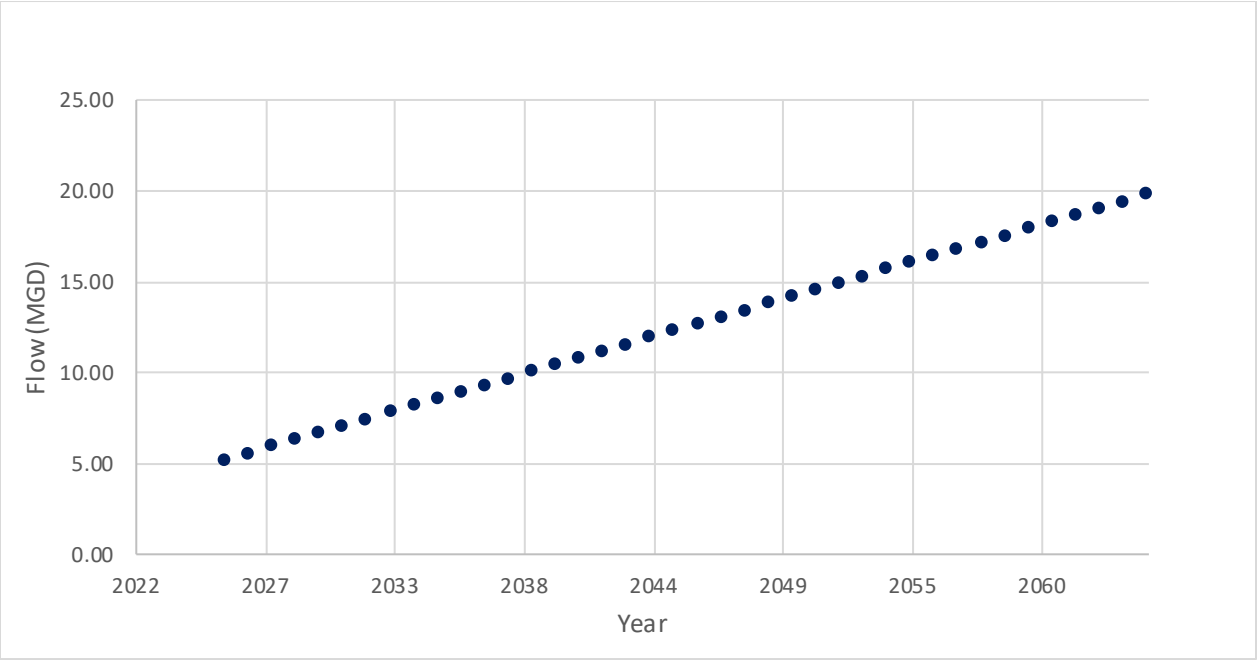


Figure 1.2 Projected Maximum Daily Demand for SGWASA

1.2 Regulatory Drivers

Federal and state authorities have established a number of health-based regulatory values or advisory levels for PFAS since the mid-2010s. On the federal level, final regulations were promulgated for PFAS on April 10, 2024, when the U.S. Environmental Protection Agency (EPA) issued the first-ever legally enforceable National Primary Drinking Water Regulations (NPDWRs) for six PFAS under the Safe Drinking Water Act (SDWA). The new regulation is summarized in **Table 1.1**, with perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) notably having the lowest maximum contaminant levels (MCLs) of the six compounds.

Under the new EPA regulations issued in April 2024, public water systems are required to begin initial monitoring for the six regulated PFAS by 2027. Full compliance with the MCLs is required by 2029.

It should be noted that at the time of this report, EPA issued a press release announcing its intent to rescind and reconsider the regulations for perfluorohexane sulfonate (PFHxS), perfluorononanoic acid (PFNA), hexafluoropropylene oxide dimer acid (HFPO-DA, otherwise known as GenX), and perfluorobutane sulfonate (PFBS), but no official actions to do so have been taken at the time of this study. Additionally, the press release announced intent for a two-year extension for the compliance deadline, which would make the new deadline 2031 if executed.

Table 1.1 Summary of EPA 2024 PFAS Regulations

PFAS	MCL (ng/L or ppt)[1]	Significant Figure Requirements	Rounding for Reporting Example
PFOA	4.0	2	RAA of 4.04 ng/L=round to 4.0 ng/L = **Compliance** RAA of 4.05 ng/L = round to 4.1 ng/L = **Exceedance**
PFOS	4.0		
PFNA	10	1	RAA of 14.9 ng/L =round to 10 ng/L = **Compliance** RAA of 15.0 ng/L = round to 20 ng/L = **Exceedance**
PFHxS	10		
HFPO-DA	10		
PFNA, PFHxS, HFPO-DA, and PFBS (Mixture)	HI Value of 1 (unitless)	1	RAA of 1.49 = round to 1 = **Compliance** RAA of 1.50 ng/L = round to 2 = **Exceedance**

Compliance monitoring is based on a running annual average (RAA), which is typically quarterly unless a facility is approved for reduced monitoring. **Appendix A**, CDM Smith PFAS Fact sheet provides more information on this rule and allowances for reduced sampling.

An example of how to calculate the Hazard Index (HI) is presented in Figure 1.3. The HI regulates each individual compound relative to a Health-Based Water Concentration (HBWC), at which these compounds are expected to produce unacceptable adverse health consequences, and relative to each other in mixtures containing two or more. In other words, the HI only applies for any mixture containing two or more of the four PFAS. The HBWCs of PFNA, PFHxS, and HFPO-DA are the same as their MCLs. As such, the primary impact of the HI for these compounds is regulating their concentration relative to each other. PFBS, however, is only regulated as part of the HI.

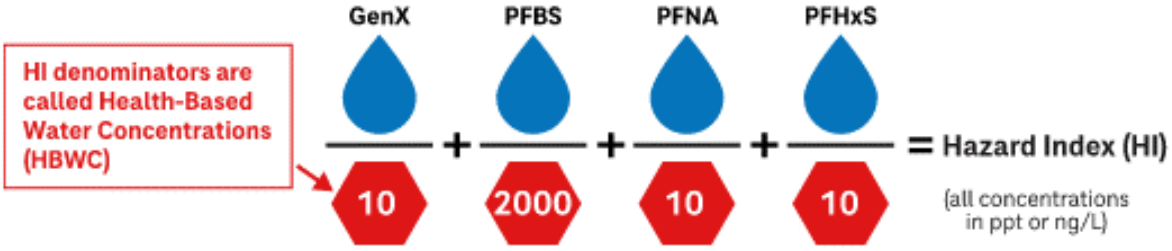


Figure 1.3 EPA Hazard Index Calculation

It should be noted that the EPA is currently monitoring the regulated PFAS as well as 23 additional PFAS as part of the fifth Unregulated Contaminant Monitoring Rule (UCMR 5). These compounds are subject to future regulation as well as other PFAS that may be monitored in the future.

The North Carolina Department of Environmental Quality (NCDEQ) has also considered state regulations to complement the federal regulations as they relate to surface water discharge limits. NCDEQ was considering regulations on surface water discharge of the six federally regulated compounds noted above, along with perfluorobutanoic acid (PFBA) and perfluorohexanoic acid (PFHxA). However, in July 2024, the NC Environmental Management Commission (EMC) directed NCDEQ to revise their proposed rules from the eight compounds noted to just three compounds, namely PFOA, PFOS, and HFPO-DA. As such, there is not an immediate concern for additional PFAS regulations, but other PFAS could be regulated in the future. Any PFAS treatment scheme proposed should consider the potential for future regulations.

1.2.1 Existing Treatment Processes

The existing process flow diagram of the SGWASA WTP is presented in **Figure 1.4**. The WTP process includes raw water pumping, rapid mix, coagulation, flocculation, sedimentation with plates settlers, dual media filtration with sand and anthracite as the filter media, clearwell storage and finished water pumping. PAC is added to the raw water prior to reaching the plant. Ferric sulfate is used as the coagulant, caustic is used for pH control, and free chlorine is used on the filters for manganese control and primary disinfection. Chloramines are used as a secondary disinfectant in the distribution system.

1.3 Raw and Filter Water Quality Summary

The historical general water quality tables for raw water and finished water are provided in **Table 1.2 and 1.3**, respectively. The raw water quality summary has been updated from the pilot test plan (attached as **Appendix B**) to include the latest monthly operating report data from September 2023 to September 2025 (as available). **Tables 1.4 and 1.5** provide a statistical summary of PFAS of current regulatory interest for raw and finished water, respectively. **Figures 1.5 and 1.6** show the historical and current raw water trends for PFOA and PFOS, respectively. The available data suggest that the PFOA and PFOS concentrations are not trending in any particular direction overall. Several recent raw water PFOA samples as part of the pilot study are trending slightly higher than past samples, but ongoing monitoring can confirm if PFOA trends upward significantly in the future. As such, the results of the pilot study should be indicative of full-scale operating conditions.

As discussed further in Section 2, the WTP's use of PAC provides some removal of PFAS, but not enough to be compliant with the EPA's MCLs. **Table 1.6** summarizes the data sources used in the aforementioned tables.

1.4 Project Objective

PFAS concentrations at SGWASA WTP exceeded the proposed MCLs for PFOA and PFOS of 4 ng/L each. As such, the purposes of this study are to:

- Evaluate treatment technologies for PFAS that are currently regulated and potentially regulated in the future
- Provide design considerations for subsequent preliminary design based on pilot results and observations

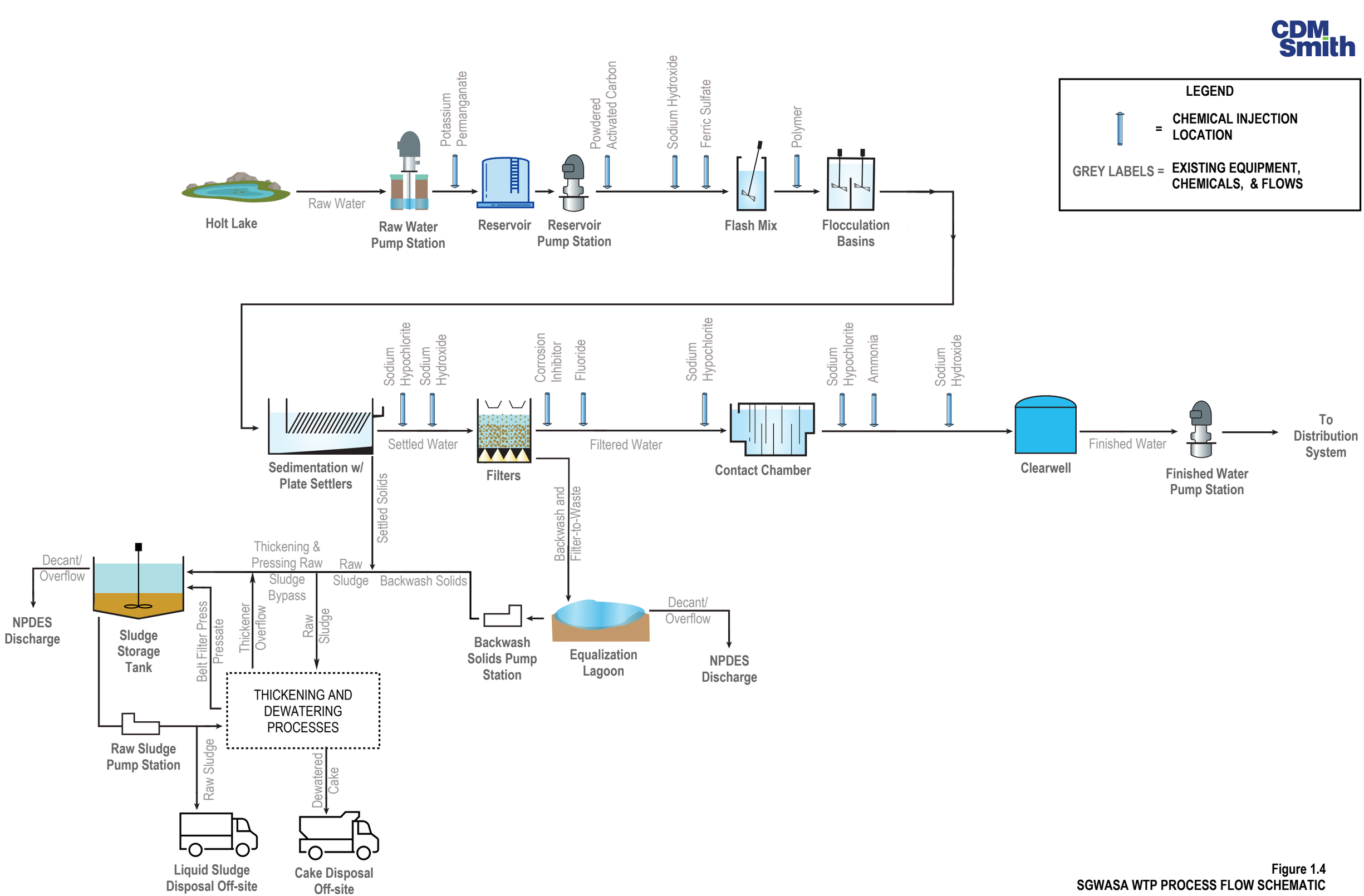


Figure 1.4
SGWASA WTP PROCESS FLOW SCHEMATIC

Table 1.2 Historical Raw Water Quality Data (April 2022-September 2025)

Parameters	Holt Reservoir Intake		
	Range	Average	# Samples
Temperature, °C	2.00 – 30.9	19.8	1,226
Turbidity, Nephelometric Turbidity Units (NTU)	1.63 – 41	10.6	1,248
TOC, mg/L	8.09 – 14.6	10.7	19
pH	5.2 - 7.9	6.68	1,248
Total Manganese, mg/L	0 – 0.94	0.22	1,247
Total Iron, mg/L	0.02 – 2.38	0.80	1,248
Total Alkalinity, mg/L as CaCO3	8.9 – 25.8	15.2	1,244

Table 1.3 Historical Finished Water Quality Data (April 2022-September 2025)

Parameters	Filter Effluent		
	Range	Average	# Samples
Turbidity, NTU	0.01 – 0.6	0.12	7,465
TOC, mg/L	2.06 – 6.11	3.69	20
pH	4.8 – 9.0	7.71	1,248
Total Manganese, mg/L	0 – 0.13	0.01	1,247
Total Iron, mg/L	0 – 0.72	0.07	1,248
Total Alkalinity, mg/L as CaCO3	11.2 – 31.2	19.6	1,244
Total Chlorine Residual, mg/L	0.5 – 4.2	2.64	1,035
Monochloramine, mg/L	0.18 – 5.54	2.56	1,034

Table 1.4 Raw Water PFAS Summary (November 2023-August 2025)

PFAS	Raw Water		
	Range (ng/L)	Average (ng/L)	# Samples
PFOA	6.4 - 13	9.58	17
PFOS	15 – 28.1	22.1	17
PFBA	ND – 9.8	3.25	16
PFBS	ND – 3.1	1.87	14
PFHxS	1.2 – 3.9	2.56	14
PFNA	ND – 4.4	1.78	14
PFHxA	ND – 1.9	1.15	13

1. When finding the averages for compounds that had non-detected (ND) data values, zero was assumed to complete the calculation. The number of ND for the different compounds are as follows: PFBA has 5, PFBS has 5, PFNA has 14, and PFHxA has 14.
2. Non-detect (ND) indicates that a compound was not at a high enough level to be detected by laboratory equipment/procedure.
3. "J" values indicate an estimated reported amount that is lower than the reporting limit, but above the method detection limit. "J" values were utilized when available in the provided data sets.
4. Samples from 4/4/2023 and 6/8/2023 were taken as a composite sample with multiple samples from a single day averaged into a single representative value.

Table 1.5 Finished Water PFAS Summary (November 2023-August 2025)

PFAS	Finished Water		
	Range (ng/L)	Average (ng/L)	# Samples
PFOA	ND – 11	6.28	19
PFOS	ND – 19	10.6	20
PFBA	ND – 6.9	3.46	16
PFBS	ND – 2.1	1.46	16
PFHxS	ND – 2.4	1.40	16
PFNA	ND – 1.9	1.61	16
PFHxA	ND – 1.8	0.78	15
GenX	ND – 1.6	0.89	7

1. For GenX, the data available is limited to three monthly NCDEQ samples from September, October, and November 2022 and four UCMR5 samples from 2023 and 2024.
2. Non-detect (ND) indicates that a compound was not at a high enough level to be detected by laboratory equipment/procedure.
3. When finding the averages for compounds that had ND, data values, zero was assumed to complete the calculation. The number of ND for the different compounds are as follows: PFOA has 1, PFOS has 1, PFBS has 2, PFNA has 4, PFHxS has 1, PFBA has 1, GenX has 7.
4. "J" values indicate an estimated reported amount that is lower than the reporting limit, but above the method detection limit. "J" values were utilized when available in the provided data sets.

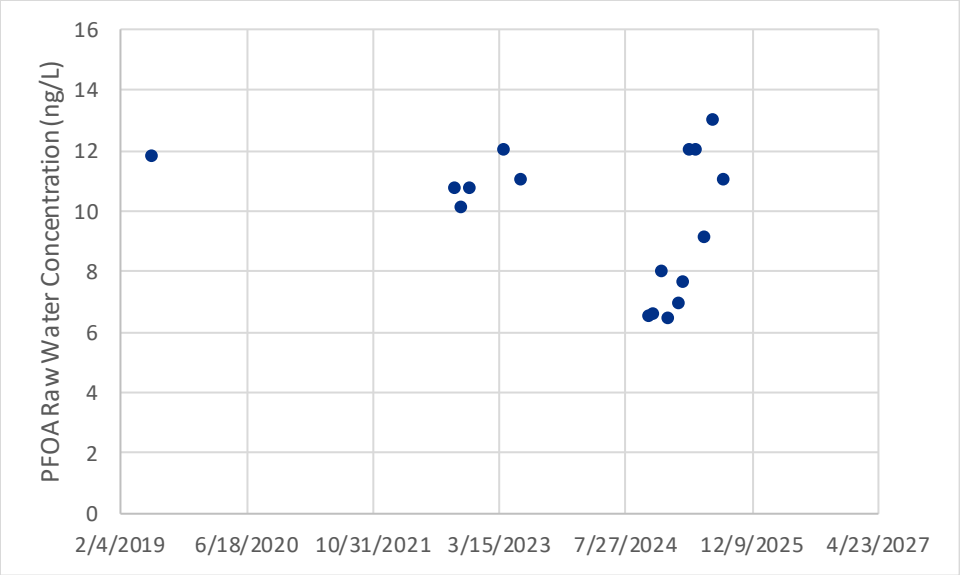


Figure 1.5 Historical PFOA Raw Water Concentrations

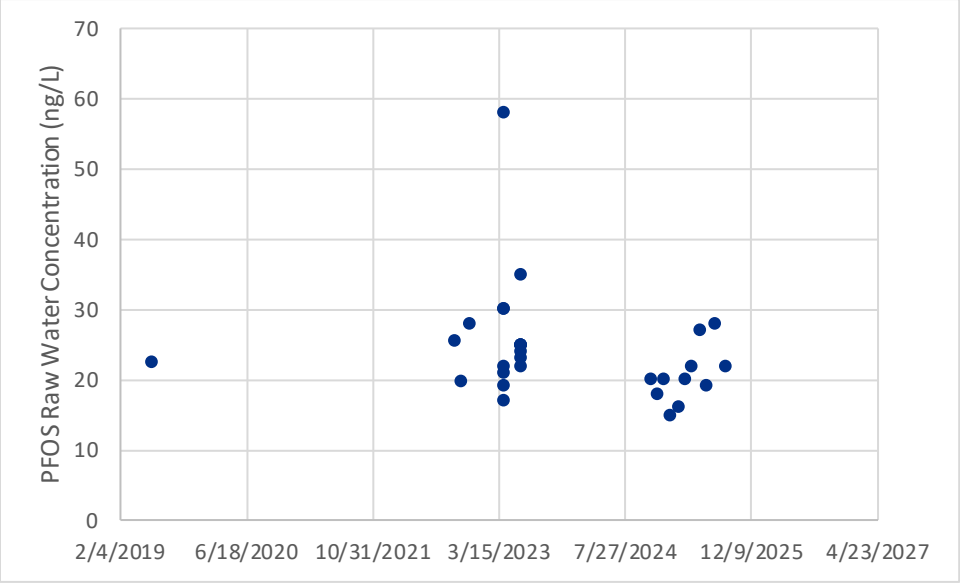


Figure 1.6 Historical PFOS Raw Water Concentrations

Table 1.6 Data Source Summary

Data Source	Sampling Locations	Data Period	Analytes
UCMR3	Finished Water	March 2015 – January 2016	Chlorate, Chromium, Chromium-6, & Strontium
UCMR4	Finished Water	May 2018 – June 2019	Haloacetic Acids (HAA), & Manganese
NC PFAS Testing Network	Raw Water	June 2019 – November 2022	45 PFAS chemicals and 1,4 Dioxane
SGWASA Monthly Operating Reports (MORs)	Raw and Finished Water	April 2022 – September 2025	pH, Alkalinity, Manganese, Iron, Turbidity, and Chloramination
SGWASA Lab Books	Raw and Filtered Water	April 2022 – September 2025	TOC
NCDEQ	Raw and Finished Water	September 2022 – December 2022	1,4 Dioxane, PFOS, PFOA, and GenX
Pace Analytical Services, Raleigh, NC	Finished Water	April 2023 – June 2023	18 PFAS chemicals
PFAS Assessment Study		June - 2023	24 PFAS Chemicals
UCMR5	Finished Water	May 2023 - February 2024	29 PFAS Chemicals and Lithium
PFAS Pilot Study	Raw and Finished Water	October 2024 - October 2025	25 PFAS Chemicals

1.5 Report Organization

A summary of the report organization is presented in **Table 1.7**.

Table 1.7 Summary of Report Organization

Section	Title	Content
ES	Executive Summary	Provides a high-level summary of study findings, costs estimates, and recommendations.
1	Introduction and Background	Covers the background, historical data, goals, and report organization
2	Pilot Testing	Presents summary and findings of the pilot study including PFAS removal performance for the three adsorptive media tested.
3	Conceptual Design Considerations	Presents conceptual design considerations for subsequent preliminary design and costing efforts.
4	Overall Observations and Recommendations	Summarizes notable findings from the pilot study, major proposed process additions, considerations for implementation, and next steps.

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2.0 Pilot Testing

2.1 Pilot Objectives

The primary goals of the pilot study were to:

- Demonstrate the effectiveness of PFAS removal technologies in continuous, long-term (12 month) operations.
- Determine the approximate life of media until breakthrough is reached, to inform a subsequent lifecycle cost comparison of the treatment alternatives.
- Provide data to develop design criteria and operating strategies for further design.

The pilot study had multiple secondary goals, including:

- Evaluate propensity of media to foul.
- Examine potential for media removal of other contaminants such as TOC, disinfection byproduct (DBP) precursors, and pharmaceuticals and personal care products (PPCPs).
- Quantify how media may impact water quality during startup, i.e. arsenic leaching during granular activated carbon (GAC) startup and altered chloride-sulfate ratio during anionic exchange resin (AER) startup.

2.2 Study Design and Media Selection

As detailed in the Pilot Test Plan, attached as **Appendix B**, the team initially developed the pilot study to be conducted over ten months for analysis of post-filter media performance for PFAS removal across multiple seasons of water quality and achieve breakthrough of PFAS in the media columns. For this study, a targeted breakthrough will be represented as 75% of the MCL for PFOA and PFOS (3 ng/L). Each PFAS will have a unique breakthrough curve. As detailed further below, the breakthrough curve of PFOA will drive the media changeout frequency for SGWASA. Since much of the pilot media effluent concentrations have either been non-detect or below the MCL in the media effluents during the first 10 months, the pilot was extended 6 months to attempt to capture more data on PFOA breakthrough curve trends. At the time of writing, the pilot has continued operation for over 12 months.

Table 2-1 shows the media columns and design conditions that were tested in the pilot. The media selections for GAC, AER, and novel sorbent (NS) were based on their previous performance in other pilot studies conducted by CDM Smith. In general, the selected media loading rates, bed depths, and EBCT are congruent with the vendor's recommendations and match SGWASA's planned loading conditions if installed at full-scale. To prevent media loss, a #100 mesh gasket strainer was installed at the bottom of each of the columns.

Table 2.1 Pilot Treatment Train Design Criteria

Train	Media Category	Specific Media Type	Hydraulic Loading Rate (gpm/sf)	EBCT (min)	Column Diameter, Each (in)	Sand Bed Depth (in)	Media Depth per Column (ft)	No. of Columns in Series
A	GAC	Calgon F400	6	10	4	None	4	2[1]
	AER	DuPont Amberlite PSR2+	8	2.5	2	4	2.7	1
B	NS	CETCO Fluorosorb 200	8	2.5	2	4	2.7	1
C	AER	DuPont Amberlite PSR2+	8	2.5	2	4	2.7	1

1. Each column will provide an EBCT of 5 minutes.
2. Overflow from Train A GAC effluent into AER influent will be 0.35 gpm.

2.3 Means and Methods

2.3.1 Column Configuration

The pilot team arranged the columns in three (3) different treatment trains labeled as A through C (**Figures 2-1, 2-2,** and detailed in Table 2-1). For AER and NS media, one pilot column is used to represent one full scale vessel. The GAC pilot columns were constrained height-wise due to logistical issues of backwashing taller columns as GAC requires more bed depth than AER and NS. Thus, the GAC was separated into two 4-ft deep pilot columns to represent one full-scale 8-ft deep vessel.

The pilot was set up in the SGWASA WTP filter gallery. Plant combined filter effluent (FE) was pumped from the FE collection box in the pump room to the pilot system using a small sample pump. It should be noted that SGWASA currently doses polyphosphate downstream of the filters. During the pilot, SGWASA relocated the phosphate feed downstream of the pilot intake. Phosphate is considered a competitive anion that can reduce AER performance, so SGWASA may consider moving this chemical feed as part of full-scale contactor implementation.

Flow was controlled using rotameters with integral needle valves upstream of each of the three trains and monitored 3-4 times a week throughout the duration of the pilot. Flow control valves were also installed downstream of each column as another means to control flow. The team also plumbed in an additional rotameter downstream of the GAC in Train A (GAC and AER in series), to adjust and measure the flow going to the smaller AER column downstream of the GAC and route the excess flow to the drain.

Liquid ammonium sulfate was dosed to convert the free chlorine into monochloramine upstream of Train C. The DuPont Amberlite PSR2+ gel-based AER used in this study is sensitive to oxidative damage as well as biofouling without any disinfectant. CDM Smith's past studies and vendor modeling have shown that a low dose of a weaker oxidant like monochloramine can help to manage biofouling while reducing the potential for resin damage.

All treatment trains had a 5-micron cartridge filter installed on them. Trains B (NS) and C (AER) each received a filter positioned upstream of their respective contactors. For Train A, the cartridge filter was installed upstream of the Amberlite PSR2+ contactor only. The effects of these cartridge filters on pilot performance are discussed in detail in Section 2.5.2.2.

Pressure gauges were installed upstream and downstream of the contactors for Trains B and C. For Train A, pressure gauges were installed upstream of the first CAG column and downstream of the second GAC column, just before the train flow split. Additional gauges were also positioned upstream of the Amberlite PSR2+ column after the flow split, as well as at the downstream end of the same column on Train A. The team installed an additional pressure gauge downstream of the horizontal centrifugal pump to validate pump operation. A sample port was located on the discharge line of each contactor.

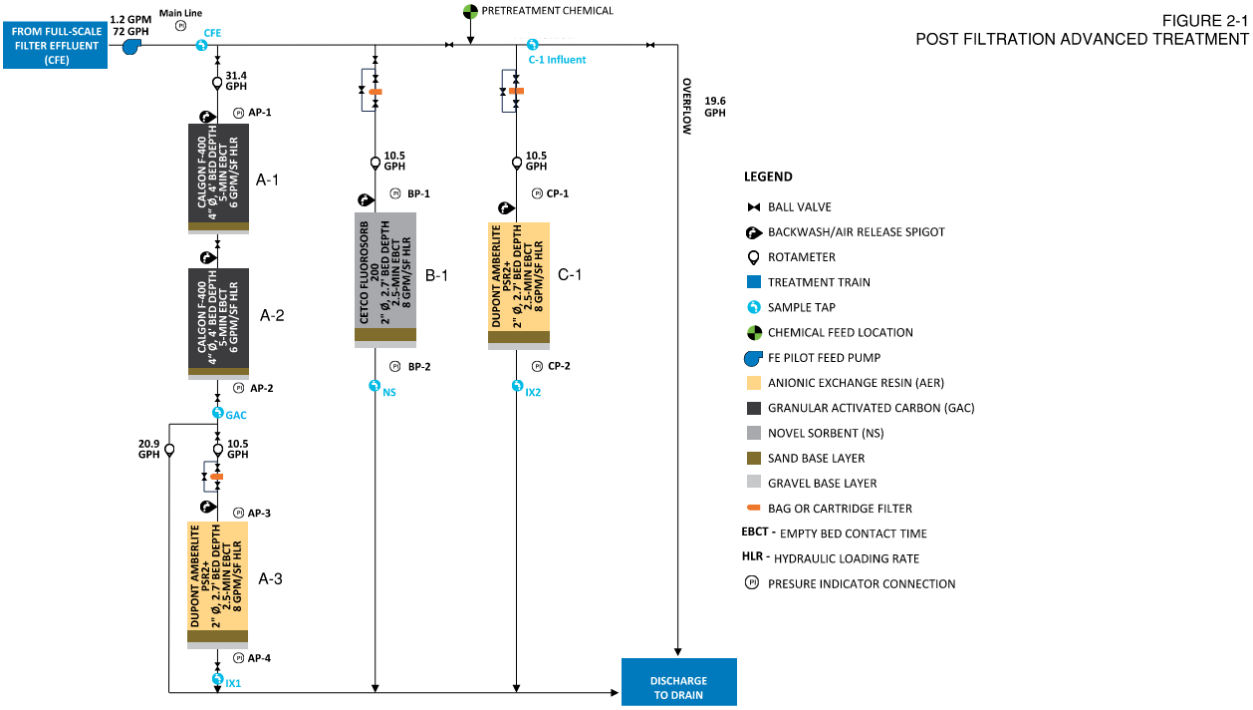


Figure 2.1 Post Filtration Advanced Treatment

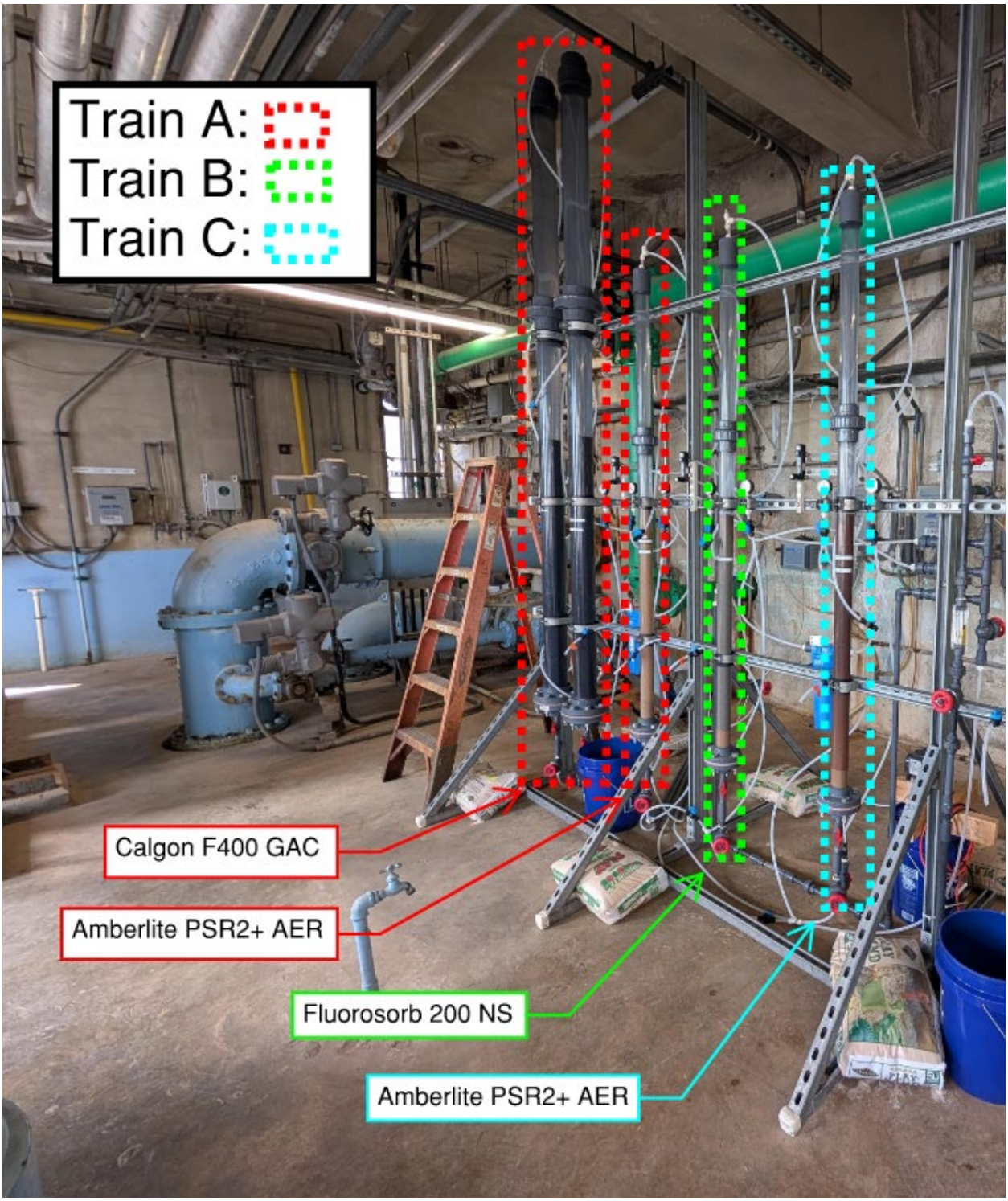


Figure 2.2 Pilot Filter Column Arrangement

2.3.2 Startup Procedures

After flushing the pilot skid to test for leaks and rinse off solvents and residue, the team loaded and backwashed/conditioned media in accordance with vendor instructions as available (**Appendix C**).

Once the team finished loading and backwashing all media and confirmed successful operation of the dechlorination chemical pump, the team to balanced flows through the columns to match the loading rates specified in the Table 2.1. The pilot testing period commenced on October 14, 2024.

2.3.3 Backwash Procedures

During testing, differential pressure within the columns gradually increased over time. Once the pressure reached a critical threshold, the influent flow rate dropped below the target range. If target flows could not be reached by adjusting the rotameters, a backwashing event was initiated. The SOP for backwashing is provided in **Appendix D**. For purposes of the pilot, backwashes were kept to an absolute minimum to avoid interference with laboratory samples and test media propensity to foul. For a full-scale pressure contactor system, backwashes would generally occur more often, once a terminal differential pressure (ΔP) increase of approximately 10-20 psi was reached. As an example, Pender County's WTP – a surface water treatment facility similar to SGWASA's – backwashes their post-filter GAC pressure contactors about once a month.

Air scouring was occasionally employed during pilot backwash operations to "fluff" the media and encourage fluidization when water backwash alone could not fluidize the media. In practice, for full-scale pressure contactor operations, air scouring is generally not needed in the case of GAC bed fluidization and not recommended at all for AER washing, due to the potential to disrupt the AER mass-transfer zone (MTZ).

2.3.4 Operation Challenges

2.3.4.1 Apparent Manganese Staining

During Fall 2024, staining began to appear on the columns and rotameters, as shown in **Figure 2.3**. By inspection and data validation, the pilot team suspected manganese precipitation as the cause of the staining. On November 19, 2024, backwashing was initiated due to a rapid differential pressure increase. **Figure 2.4** shows the dark color of the backwash effluent coming from the Amberlite PSR2+ media. Discussions with plant operators revealed that manganese is a recurring issue during the fall and spring seasons. This is attributed to Lake Holt undergoing seasonal turnover during these periods. Lake turnover causes the accumulated soluble manganese at the lake bottom to mix throughout the water body, resulting in elevated manganese concentration entering the plant's intake system. A study is ongoing for SGWASA to optimize manganese removal and reduce precipitated solids deposition.



Figure 2.3 Manganese Staining on Pilot Equipment



Figure 2.4 Backwash Waste from Column C-1 on November 19, 2025 Backwashing Event

2.3.4.2 Apparent Algae Growth

The pilot skid was installed in front of southeast-facing windows of the filter gallery, exposing it to direct sunlight during certain times of the day. During routine monitoring on March 4, 2025, the team observed biological growth on columns A-2 and A-3. Based on observation alone, this biological growth was identified as algae. Over the following weeks, algae continued to spread across the columns, tubing, and rotameters. To mitigate further growth, pipe insulation was wrapped around each column (as shown in **Figure 2.5**), and tubing was replaced based on visual inspection.

The project team does not anticipate algae growth to occur in a full-scale facility, as full-scale pressure contactors are opaque and thus block out sunlight. Pressure contactor media can become biologically active in absence of sufficient oxidizing agents and presence of organic carbon available to microbiota. Depending on the media, biology in pressure contactors can be carefully managed through a combination of pretreatment processes, media backwashing or "fluffing" (i.e. periodic upflows which do not induce full-bed fluidization but can break up media clumps), chemical cleaning, or media skimming.



Figure 2.5 Algae Growth on Pilot Equipment and Subsequent Column Wrapping

2.4 Testing and Sampling

Table 2.2 summarizes the sampling conducted over the course of the 12-month study. This table includes analytes tested, testing methods used, and frequency of testing. The log of daily measurements is included as **Appendix E**.

2.5 Results and Analysis

This section provides an overview of the pilot study results. Tabulated data is attached as **Appendix F**.

2.5.1 Raw and Filtered Water Quality

This section provides an overview of the raw and filtered water quality. The filtered water quality is most important for the PFAS removal performance in the media as this is directly fed to each of the columns. However, raw water is important when considering how likely variations in the raw water quality are to impact the filter effluent, and processes upstream of filtration have the potential to change in the future.

Specifically, the application of PAC by SGWASA to the raw water stream enhances the removal of a broad range of contaminants—including PFAS, TOC, T&O compounds, and DBP precursors—prior to filtration. In addition, the existing conventional pretreatment processes are effectively reducing TOC and DBP levels.

This raw and filtered water quality analysis considers the impact of PAC on PFAS and TOC at the existing dosages used by SGWASA.

Table 2.3 summarizes the water quality data from the raw and filtered water during the pilot study.

Table 2.2 Sampling Plan

Parameter	Raw Water pre-PAC addition	Combined Filter Effluent	GAC + AER			NS	AER
			Column A-1	Column A-2	Column A-3	Train B-1	Train C-1
			5-min EBCT Calgon F400 GAC	10-min EBCT Calgon F400 GAC	2.5-min EBCT Amberlite PSR2+	2.5-min EBCT Fluorosorb 200	2.5-min EBCT Amberlite PSR2+
pH[1]		W	W	W		W	W
Temperature[1]		D					
Flow[1]		D	D	D	D	D	D
Differential Pressure/ Pressure[1]		D	D	D	D	D	D
Chlorine Residual		D					
TOC	M	M		M	M	M	M
Turbidity[1]		BW					
Total Dissolved Solids		2					
Total Suspended Solids (TSS)		3					
Metals 200.7[3]	2	2		2			
Trihalomethanes		2		2	2	2	2
Haloacetic Acids		2		2	2	2	2
Nitrosamines		2		2	2	2	2
Anions 300.0[5]		2					
PFAS (4, EPA Drinking Water Method 533)	M	M		M	M	M	M
PFAS (4, EPA Draft Method 1633)	1	1		1	1	1	1
PPCPs	2	2		2	1		
T&O Compounds	1	1		1			
Microplastics	1	1		1			
Sulfate[2]	1	6		1	6	6	1
Chloride[2]	1	6		1	6	6	1
Arsenic[2]		5		5			
Uranium		2					
Perchlorate		2					
Chlorate	2	2		2			
TKN		2					
Ammonia		2					

Notes:

1. Indicates samples tested in field. All others are sent to a contract lab for analysis
2. Several contaminants or compounds will be monitored frequently upon start up and less frequently or not at all after the first month of operations. This is to monitor compounds that may possibly leach from the media or alter the water chemistry downstream at startup.
3. Metals including Manganese, Chromium, and Strontium were sampled together for RW and GAC. Metals including Manganese, Chromium, Strontium, Iron, Aluminum, Copper, Calcium, Magnesium, Potassium, and Sodium were sampled together for the FE.
4. PFAS samples were taken approximately each month for media contactors. EPA Method 1633 includes more compounds and is intended to be sampled at start-up and then quarterly for media contactors. Depending upon breakthrough curves and PFAS performance observed in the pilot, the quantity of PFAS allocated for the lead and the lag may shift in favor of sampling one vessel over another and there will be a period of overlapping samples when both lead and lag are sampled.
5. Anions include Fluoride, Orthophosphate, Nitrite, Nitrate.

Key:

D = DAILY during pilot visits, typically 3 days per week

W = WEEKLY

BW = BI-WEEKLY

M = MONTHLY

= Samples taken throughout pilot

Table 2.3 Raw and Filter Effluent Water Quality During Pilot Duration

Analyte	Analytical Method	Units	Raw Water Results[1]				Filtered Water Results[1]			
			Min	Max	Average[2]	No. of Samples	Min	Max	Average[2]	No. of Samples
PFOA	EPA 533	ng/L	6.4	13.0	9.0	11	4.5	8.9	6.5	11
PFOS	EPA 533	ng/L	15.0	28.0	20.6	11	7.3	15.0	10.6	11
PFNA	EPA 533	ng/L	ND	ND	ND	11	ND	ND	ND	11
PFHxS	EPA 533	ng/L	1.2	3.9	2.4	11	0.1	2.4	1.2	11
GenX	EPA 533	ng/L	ND	ND	ND	11	ND	ND	ND	11
PFBS	EPA 533	ng/L	0.2	3.1	1.9	11	0.2	2.1	1.4	11
TOC	SM 5310B-2014	mg/L	5.0	10.0	6.8	11	1.1	3.1	1.7	11
TSS	SM 2540D-2015	mg/L	-	-	-	0	ND	ND	ND	3
TDS	SM 2540C-2015	mg/L	-	-	-	0	-	-	74.0 – 93.0	2
Nitrite	EPA 300.0	mg/L	-	-	-	0	ND	ND	ND	2
Nitrate	EPA 300.0	mg/L	-	-	-	0	-	-	0.1 – 0.3	2
Manganese	EPA 200.7	ug/L	-	-	130 – 155	2	-	-	11.0 – 11.4	2
Chromium	EPA 200.7	ug/L	-	-	ND	2	ND	ND	ND	2
Iron	EPA 200.7	ug/L	-	-	-	0	-	-	39.6 – 50.8	2
Aluminum	EPA 200.7	ug/L	-	-	-	0	ND	ND	ND	2
Copper	EPA 200.7	ug/L	-	-	-	0	ND	ND	ND	2
Calcium	EPA 200.7	mg/L	-	-	-	0	-	-	3.02 – 3.70	2
Magnesium	EPA 200.7	mg/L	-	-	-	0	-	-	1.31 – 1.45	2
Potassium	EPA 200.7	mg/L	-	-	-	0	-	-	ND – 1.41	2
Sodium	EPA 200.7	mg/L	-	-	-	0	-	-	13.1 – 16.6	2
pH	N/A	-	-	-	-	0	4.2	6.1	5.7	93
Temperature	N/A	°C	-	-	-	0	5.5	32.9	20.3	170
Turbidity	N/A	NTU	-	-	-	0	0.03	1.53	0.12	44
Trihalomethanes	EPA 524.2	mg/L	-	-	-	0	-	-	0.04	1
Haloacetic Acids	EPA 552.2	mg/L	-	-	-	0	-	-	0.03	1
Ammonia	EPA 350.1	mg/L	-	-	-	0	-	-	ND	2
Fluoride	EPA 300.0	mg/L	-	-	-	0	-	-	0.073 – 0.075	2
Orthophosphate	SM 4500-P E-2011	mg/L	-	-	-	0	-	-	ND – 0.015	2
TKN	EPA 351.2	mg/L	-	-	-	0	-	-	ND	2
Sulfate	EPA 300.0	mg/L	-	-	-	0	45.4	47.1	46.2	5
Chloride	EPA 300.0	mg/L	-	-	-	0	5.6	6.0	5.8	5
Arsenic	EPA 200.8	ug/L	-	-	-	0	ND	ND	ND	5
Uranium	EPA 200.8	ug/L	-	-	-	0	ND	ND	ND	1
Perchlorate	EPA 314.0	mg/L	-	-	-	0	ND	ND	ND	2
Chlorate	EPA 300.1	mg/L	-	-	ND	2	-	-	0.03 – 0.1	2

Notes:

1. Non-detect (ND) are results that are below both the Method Reporting Limit (MRL) and Method Detection Limit (MDL). If results are below the MDL, then the results are recorded as 0.
2. Ranges are provided for analytes with 2 or fewer samples.

2.5.1.1 PFAS Removal Upstream of Pilot Contactors

SGWASA doses PAC at an average of 9.13 mg/L in the raw water with a contact time of approximately 3 to 4 minutes prior to coagulant dosage and at the plant's current ADF of 2.5 MGD (See **Figure 2.6** and **Figure 2.7**). Figure 2.6 shows how PAC is removing PFAS from the raw water. Over the course of the pilot study, PAC reduced the concentration of total PFAS (measured as the sum of all detected PFAS using EPA Method 533) by 33% on average. The typical range of PFAS removal using PAC is typically around 30-50%. The focus of this pilot study is advanced treatment PFAS removal of filtered water so the existing pretreatment can offer the optimal feedwater quality for PFAS treatment processes, but it should be noted that jar testing can be used to confirm optimal PAC doses and PAC products, should SGWASA wish to pursue PAC as an interim PFAS control strategy. As currently dosed at the WTP, PAC alone did not reliably reduce PFOS and PFOA concentrations under the 4 ng/L MCL.

Figure 2.8 shows that PAC disproportionately removes more long-chain PFAS from the raw water than short-chain PFAS. The Interstate Technology Regulatory Council (ITRC) classifies PFAS differently for polymeric perfluoroalkyl carboxylic acids (PFCAs) and perfluoroalkyl sulfonic acids (PFSAs). PFCAs with 7 or fewer carbons are defined as short-chain whereas PFSAs of 5 or fewer carbons. The chemical structure of PFCAs results in behavior resembling that of a relatively shorter-chain length. Non-polymeric PFAS are not chains per se but may be behave more closely to a short or long chain depending on structure. HFPO-DA, for example, is an ether that behaves more like a short-chain PFAS. **Figure 2.9** shows how PAC also disproportionately removes more PFSAs compared to PFCAs given the nature of these compounds. Non-polymeric PFAS are not included in Figure 2.8 and 2.9 graphs.

As discussed later in this section, media contactors can have benefits for SGWASA in terms of co-contaminant removal, such as TOC, T&O, and DBP precursors. If SGWASA were to eliminate PAC in the future and instead use PFAS media contactors to reduce these co-contaminants, the filter effluent quality would more closely match the raw water quality with respect to PFAS, as the PAC is the only full-scale treatment process on site consistently documented as capable of removing PFAS. Note that PAC generally provides some increase of GAC media bed life by removing contaminants that take up sorption sites on the GAC, and other pilot studies in the region suggest PAC increases GAC life more than it does for other types of media. The use of PAC in tandem with GAC contactors is a balancing act which SGWASA will have to optimize. For a further discussion of contactor bed life with respect to PAC dosage, see Section 3.

2.5.1.2 TOC Removal Upstream of Pilot Contactors

TOC is known to have an inhibitory effect on sorptive processes' efficacy for PFAS removal, given TOC competes with PFAS for sorptive sites on the media. TOC compounds are often larger than PFAS, may take up media adsorptive capacity, and can potentially contribute to media fouling. Often, the higher the TOC concentration, the more likely technologies like GAC, AER, and NS are to have reduced PFAS removal. Thus, it is important to monitor the two together. From **Figure 2.10**, one can see that filtered water TOC does increase or decrease proportionally to the raw water quality; however, filtered water TOC was relatively stable throughout the study.

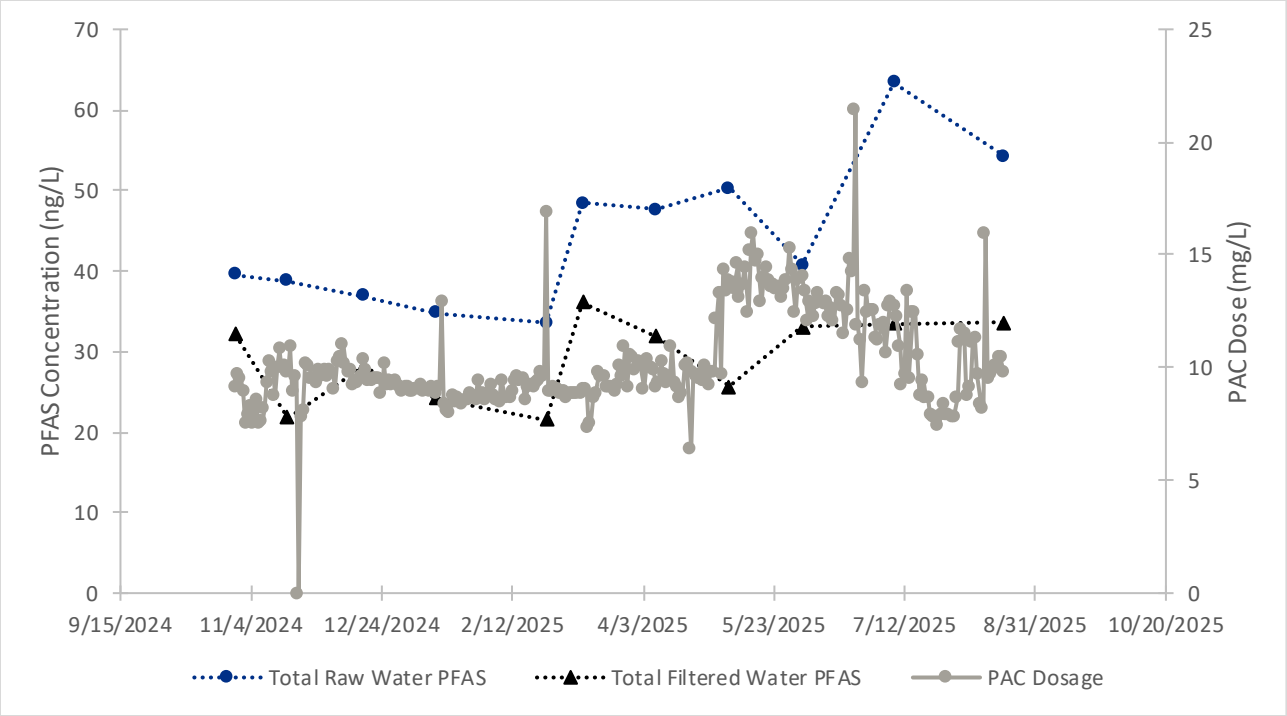


Figure 2.6 Total PFAS Removal from Raw to Filtered Water vs. PAC Dose (All Compounds under Method 533)

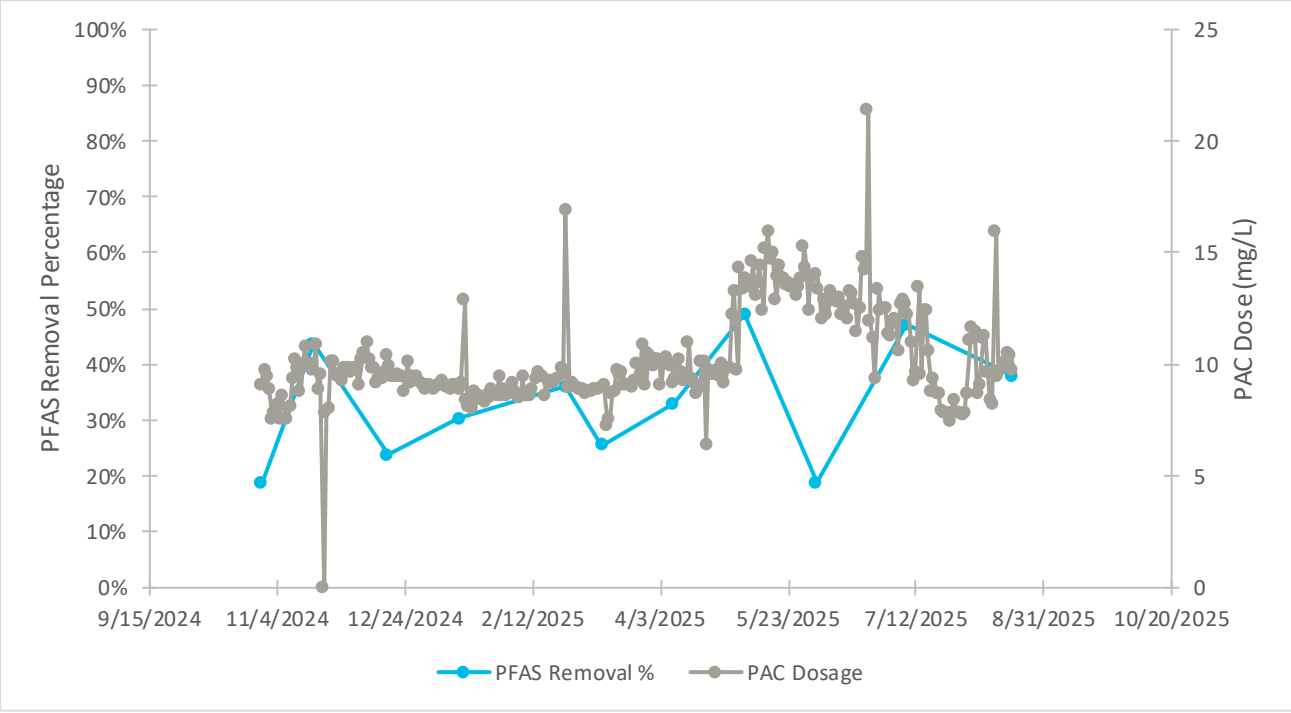


Figure 2.7 Total PFAS Removal Percentage from Raw to Filtered Water vs. PAC Dose (All Compounds under Method 533)

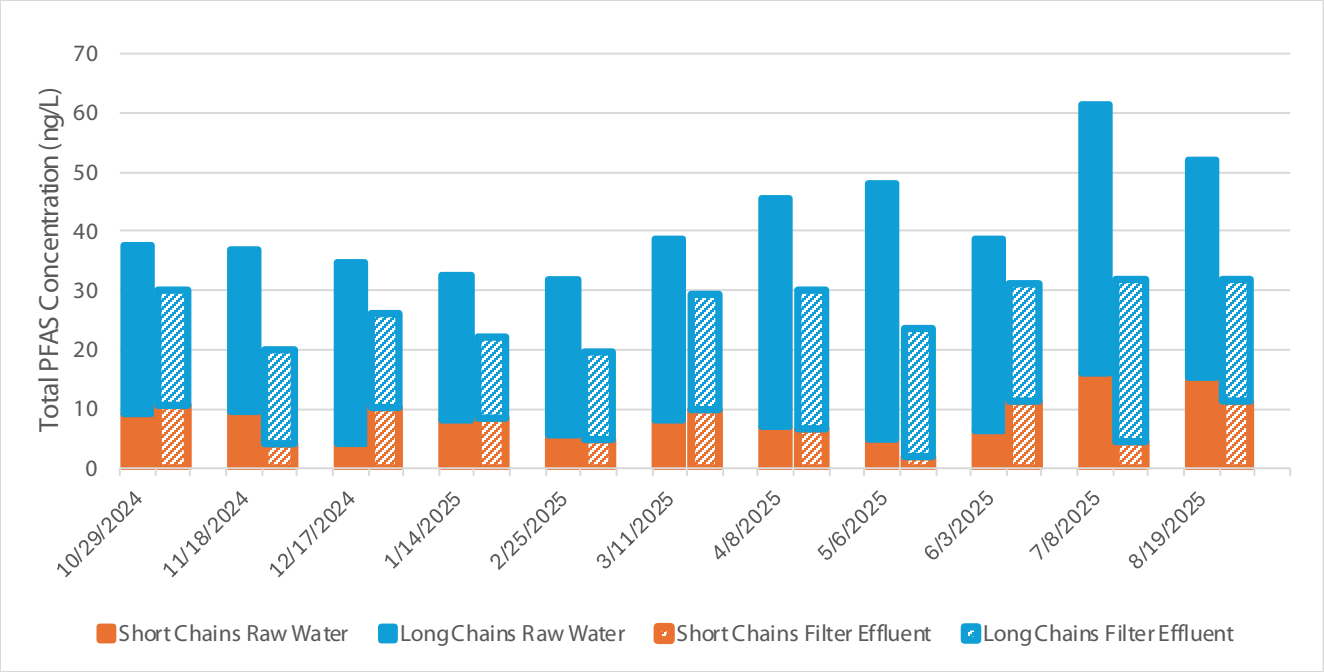


Figure 2.8 Total PFAS Composition in Raw Water vs Filtered Water (All Compounds under Method 533)

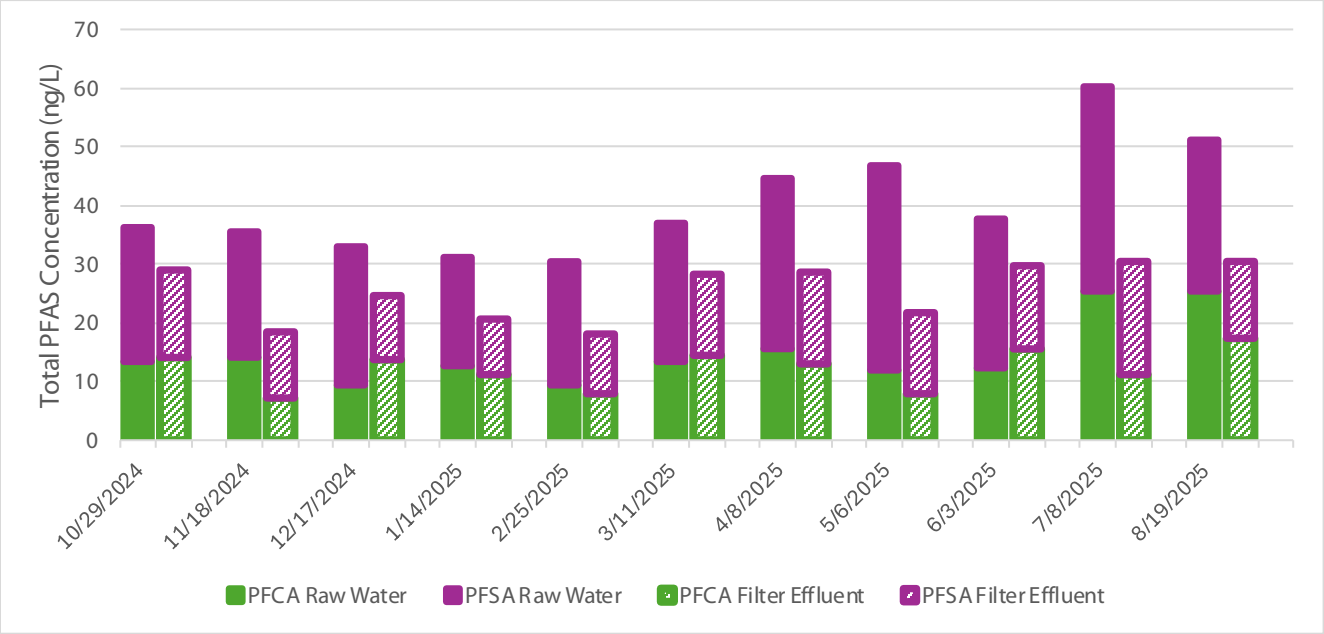


Figure 2.9 PFCA vs PFSA Composition in Raw Water vs Filtered Water (All Compounds under Method 533)

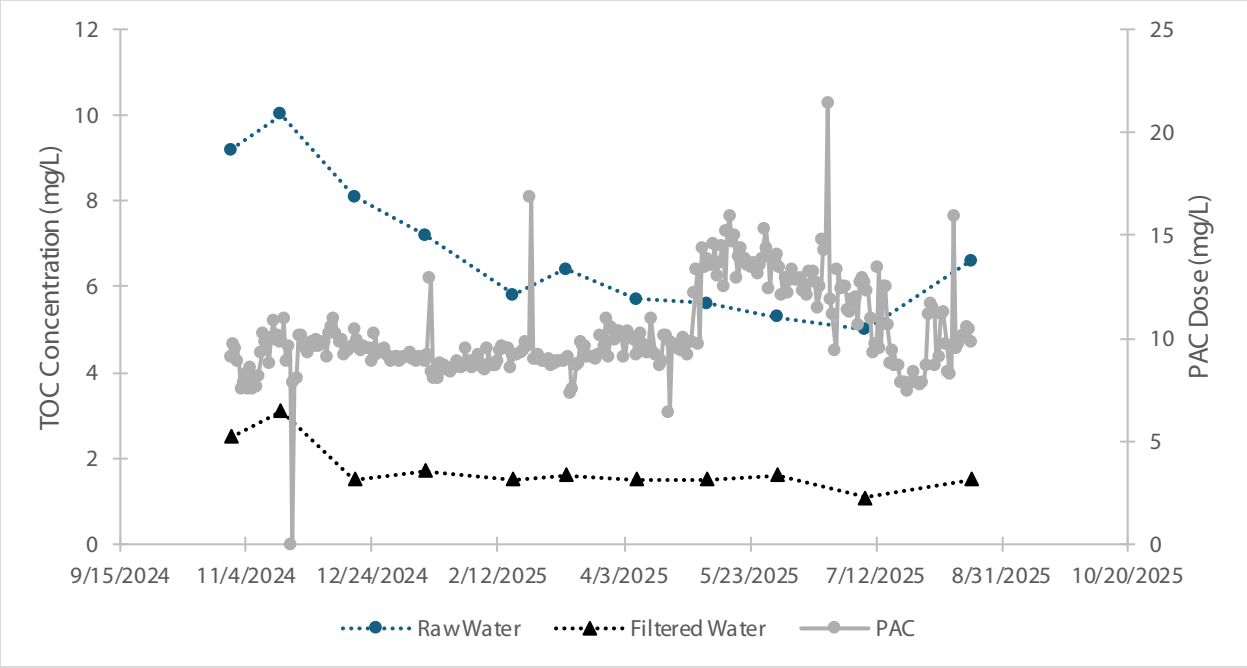


Figure 2.10 TOC Removal from Raw to Filtered Water with PAC Dosed

PAC, enhanced coagulation, and filtration processes all contribute to reducing TOC concentration from the raw to filtered water. As noted above, PAC can impact PFAS treatment by removing PFAS in the raw water. PAC also has the potential to impact media PFAS removal to a lesser degree, indirectly, by removing TOC. Figure 2.10 suggests that the TOC concentration in the filtered water is not strongly dependent on PAC (at the existing doses). The percentage of TOC removed from raw to filtered water was approximately 75% throughout the study and did not increase appreciably with the higher PAC doses.

2.5.2 Pilot Operations

This section provides an overview of the operational parameters monitored throughout the study. Raw data for daily measurements are listed in the pilot operational log included as Appendix E.

2.5.2.1 Flows

Flow rates were routinely monitored to ensure operational consistency. The Calgon F400 media was operated at a target flow rate of 31.5 gph, while the PSR2+ and Fluorosorb 200 media were each maintained at a target flow rate of 10.5 gph. Since startup, the standard deviation of flow, expressed as a percentage of the mean, ranged from 8% to 13%, with an average deviation of approximately 10%. No significant or prolonged drops in flow were observed, indicating stable performance throughout the pilot. With flow rates remaining steady, the corresponding loading rates also remained consistent (see **Table 2.4**). Maintaining a consistent loading rate is critical to ensuring that pilot-scale conditions accurately reflect full-scale operations, as these loading rates will be replicated in the final design. Note that loading rates employed in the pilot are not maximum loading rates the WTP could expect to see with a full-scale system, as lower loading rates can provide a better sense of media life under regular WTP operating conditions.

Table 2.4 Average Loading Rate of Each Column Throughout the Pilot

Column	Media	Target Loading Rate (gpm/sf)	Average Loading Rate (gpm/sf)	Standard Deviation (gpm/sf)
A-1	Calgon F400 GAC	6	5.7	0.5
A-2	Calgon F400 GAC	6	5.7	0.5
A-3	PSR2+ AER	8	8.0	1.0
B-1	Fluorosorb 200 NS	8	7.8	0.9
C-1	PSR2+ AER	8	7.9	0.6

2.5.2.2 Cartridge Filters

At the start of the pilot, a 5-micron cartridge filter was installed upstream of the Amberlite PSR2+ media on Train A. Subsequently, two additional 5-micron cartridge filters were installed upstream of the Fluorosorb 200 and PSR2+ medias on Trains B and C respectively. These installations were precautionary measures taken in response to increasing differential pressure across the media.

Cartridge filters are typically used to remove colloidal solids from the filter effluent, helping to prevent premature buildup or fouling of the media. Initially, filters were not used on the Fluorosorb 200 and PSR2+ medias, Trains B and C, to observe how the media would perform without prefiltration, but were later installed on October 18, 2024, and November 4, 2024, respectively due to high ΔP across the columns. Throughout the pilot, the cartridge filters were replaced several times, as detailed in **Table 2.5**. **Figure 2.11** shows the ΔP of the cartridge filters over the course of the pilot. In Figure 2.11, the black dashed line with square markers designates the cartridge filter located downstream of the Calgon F400 GAC media and upstream of the Amberlite PSR2+ media. One possible reason for the consistently low ΔP observed throughout the pilot is that the GAC is effectively removing contaminants that would otherwise contribute to pressure drop across the cartridge filter. On October 18, 2024, the cartridge filter for Train B (Fluorosorb 200) was replaced due to high ΔP across the cartridge filter, and the other trains' cartridge filters were replaced for precautionary purposes. For a full-scale system, the cartridge filters would be replaced once the differential pressure increase reached a given threshold, often approximately 10-20 psi. This threshold with be established during preliminary design of the full-scale system.

Figure 2.12 shows the condition of the cartridge filters following manganese fouling observed on November 19, 2024. The darker areas visible in Figure 2.12 are likely the presence of manganese, and the lighter spots are likely iron.

Two total suspended solids (TSS) sample sets were taken in the filtered water and downstream of the cartridge filter during the study, all of which were less than the contract lab's TSS detection limit of 2.5 mg/L. While it is evident that the cartridge filters are providing removal of materials such as iron, manganese, and algae, the level of removal cannot be quantified explicitly given this data.

Table 2.5 Cartridge Replacement Date and Reasoning

Cartridge Filter Replacement Date	Train	Media	ΔP Before Change Out (psi)	Likely Reason for Replacement
11/19/2024	A, B, C	Calgon F400 GAC followed by PSR2+ AER, Fluorosorb 200 NS, PSR2+ AER	2.5, 21, 3.5	Manganese fouling
04/14/2025	A	Calgon F400 GAC followed by PSR2+ AER	1	Algae growth
08/05/2025	A	Calgon F400 GAC followed by PSR2+ AER	1	Algae growth
09/23/2025	C	PSR2+ AER	23	High ΔP

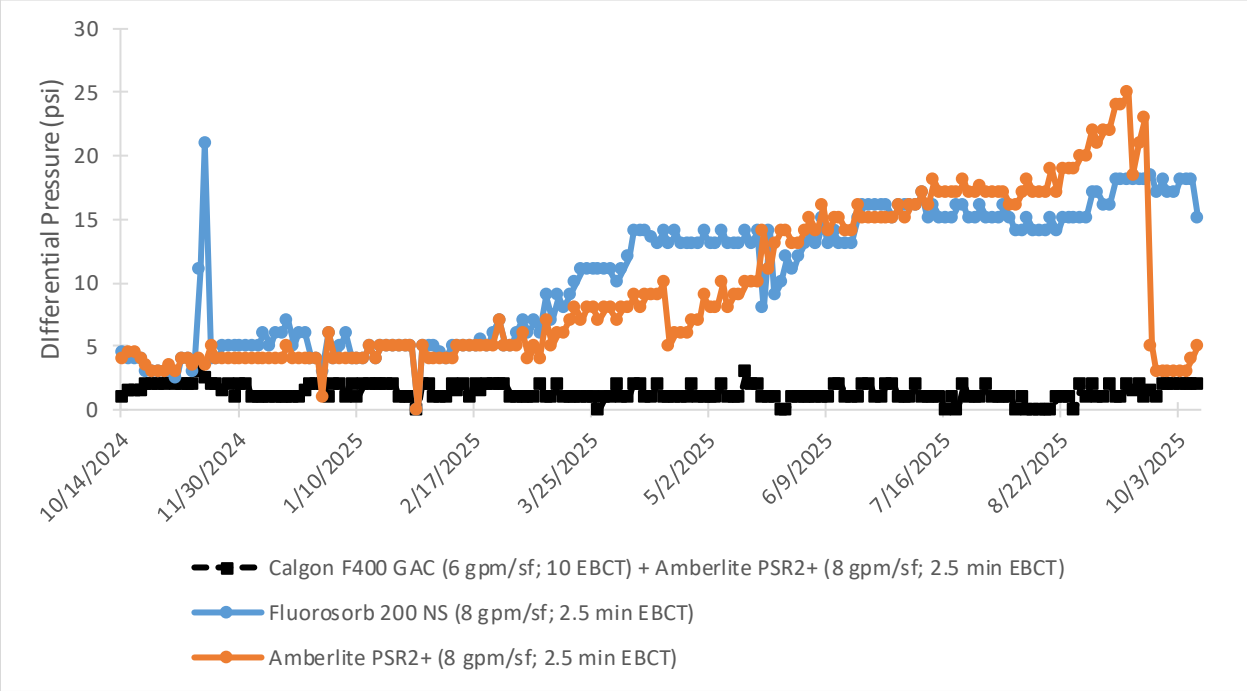


Figure 2.11 Cartridge Filter Differential Pressure

Note: The black dashed line with square markers represents the cartridge filter positioned between the Calgon F400 GAC and the Amberlite PSR2+ media in Train A. Unlike the other two media, this filter did not receive water directly from the upstream filters.

It should be noted that the cartridge filters used in the pilot are intended for point of use systems and therefore do not represent full-scale cartridge filter changeout frequency. However, the physical evidence and increased cartridge filter ΔP over time indicate that SGWASA should plan to include cartridge filters in full-scale design for treatment trains with only AER or NS. Ongoing studies may help to optimize the plant processes and reduce solids upstream. The cartridge filters used in this study meet the media supplier recommendations for removal of 5-micron solids; however, solids should be reduced such that the TSS is less than 0.3 mg/L in the future per recommendation from DuPont (the manufacturer of the Amberlite PSR2+ tested in this study).



Figure 2.12 Iron and Manganese Stained 5-Micron Cartridge Filters

2.5.2.3 Chlorine Residual

As noted above, to mitigate biofouling and prevent damage to the DuPont Amberlite PSR2+, the influent to Train C—operated at 8 gpm/sf and containing this resin—was dosed with ammonium sulfate to convert the filter effluent chlorine residual into monochloramine. The filter effluent chlorine residual was not modified upstream of train A, also containing DuPont Amberlite PSR2+. This was because Train A utilized GAC as a lead media, which effectively quenched free chlorine before it could contact the AER. This arrangement allowed the project team to test two alternate approaches to AER pretreatment.

Introducing water to the AER system without any oxidative agent carries a risk of biofouling, which can reduce the longevity of the media and may necessitate more frequent media fluffing. Each fluffing event disturbs the MTZ responsible for PFAS removal, which can theoretically lead to earlier detection of PFAS in the media effluent. That said, in this pilot study, the AER media continued to effectively remove PFAS even after fluffing. This data suggests that light disturbance of the media at full-scale may not be as detrimental for PFAS removal as convention would suggest. A more detailed discussion of AER performance and PFAS removal efficiency is provided later in this section.

Figure 2.13 shows the chlorine doses measured over the course of the study in filter effluent and Train C influent prior to AER treatment. Free chlorine residual in pilot feed ranged from 0.20 to 1.60 mg/L. This unadjusted filter effluent was fed into Trains A and B. **Table 2-6** gives a summary of the chlorine, chloramine, and ammonia levels over the course of the pilot with respect to converting to monochloramine upstream of Train C. The results suggest that the free chlorine conversion to monochloramine was generally successful with efforts to limit free chlorine and free ammonia in the C-1 influent as much as possible.

Table 2.6 Chlorine and Ammonia Summary

Location	Analyte	Concentration (mg/L)		
		Min	Max	Average
CFE	Free Chlorine	0.20	1.60	0.68
C-1 Influent	Free Chlorine	0.03	0.96	0.13
	Monochloramine	0.12	2.07	0.94
	Free Ammonia	0.00	1.20	0.60
	Total Chlorine	0.60	2.60	1.31

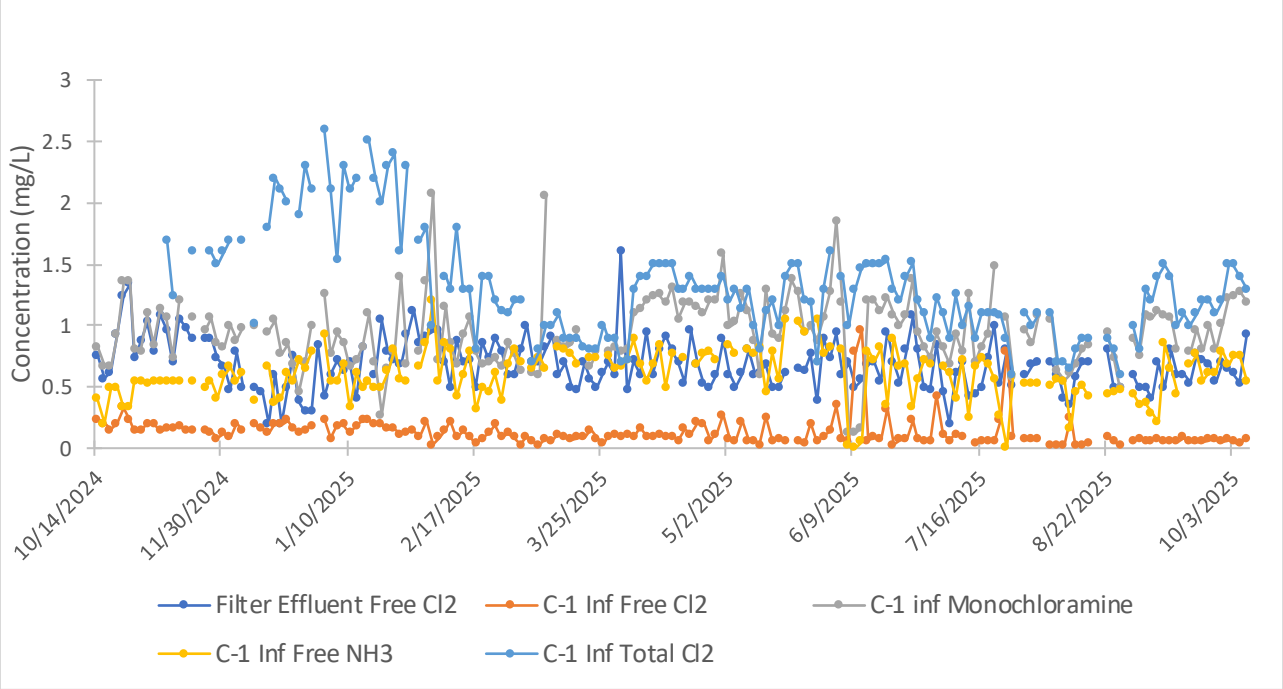


Figure 2.13 Pilot Study Chlorine Monitoring

Differential Pressure

Differential pressure was monitored for all trains. While full-scale GAC and NS filters can be routinely backwashed, this practice is not common for AER contactors beyond light fluffing, as vigorous backwashing of AER can disrupt the MTZ and alter the media breakthrough curve. In contrast, GAC and NS media are less sensitive to such disturbances, making backwashing less problematic for those systems. While not explicitly recommended by some media vendors, backwashing is becoming increasingly used to mitigate fouling for these media in pilot studies.

GAC has a quenching effect on chlorine; and it is possible that GAC may have quenched enough chlorine to allow the potential for biological growth to occur downstream of the first few feet of GAC in the column. Biological growth causes GAC to foul by decreasing the void space in the media, leading to an increase in ΔP. Additionally, the consistently low pH—averaging around 5.7—combined with low free chlorine residuals may have facilitated the deposition of manganese onto the media (see Figure 2.12 above). Further evaluation of manganese control strategies are being conducted in the design phase of this project.

As described above, AER is sensitive to clogging due to biofouling without chlorine in the feed as well as particulate accumulation associated with TSS. Reducing the ΔP drop across the DuPont Amberlite PSR2+ continues to challenge some facilities using the resin. For this reason, the chlorine resistance of macroporous resins is an appealing characteristic. However, other studies (such as the one completed for the Western Intake Partnership) suggest that fluffing DuPont Amberlite PSR2+ resin does not reduce its performance appreciably compared to Calgon 2301, a high-performing macroporous resin for PFAS removal, following a backwash.

Oftentimes, pressure buildup will occur while a media bed may still have remaining PFAS removal capacity. Thus, the PFAS adsorption capacity is not always the limiting factor for media life if a clogged bed cannot be successfully flushed, unclogged, or backwashed. **Figure 2.14** shows the ΔP over the course of the study for the GAC, AER, and NS media, respectively, alongside finished water manganese concentrations.

As previously noted, the plant experienced elevated manganese levels in November, which contributed to a higher ΔP at the onset of the pilot. For the stand-alone DuPont Amberlite PSR2+, the ΔP remained stable following the backwash performed on November 11, 2024, and continued to do so through the remainder of the pilot.

In contrast, the Calgon F400 GAC media exhibited a gradual increase in ΔP in the first column after its initial backwash. Over the course of the pilot, it underwent three backwashing events, with the intervals between each becoming progressively shorter—189 days between the first and second, and only 93 days between the second and third. This trend suggests that the media may be seeing biological activity in addition to manganese deposition. It also suggests the media may require more frequent backwashing over time to maintain performance, and this observation is consistent with the GAC pressure contactor practices of some facilities. For example, the Pender County WTP backwashes its post-filter GAC pressure contactors about once a month.

To mitigate ΔP for GAC, backwashing of the second GAC pilot column was necessary early in the project. The observed fouling in the first column is likely attributable to TSS and/or biological growth. As previously noted, GAC exhibits a chlorine quenching effect, primarily within the upper few inches of the first column. This localized quenching renders the remainder of the first column—and the entirety of the second column—more vulnerable to biological activity. This conclusion is further supported by the chlorine demand analysis presented later in this section.

The CETCO Fluorosorb 200 media displayed a similar pattern to the GAC media, albeit less pronounced. After the first backwash, the ΔP returned closer to 0 psi and increased more gradually, indicating a slower rate of fouling compared to the GAC media.

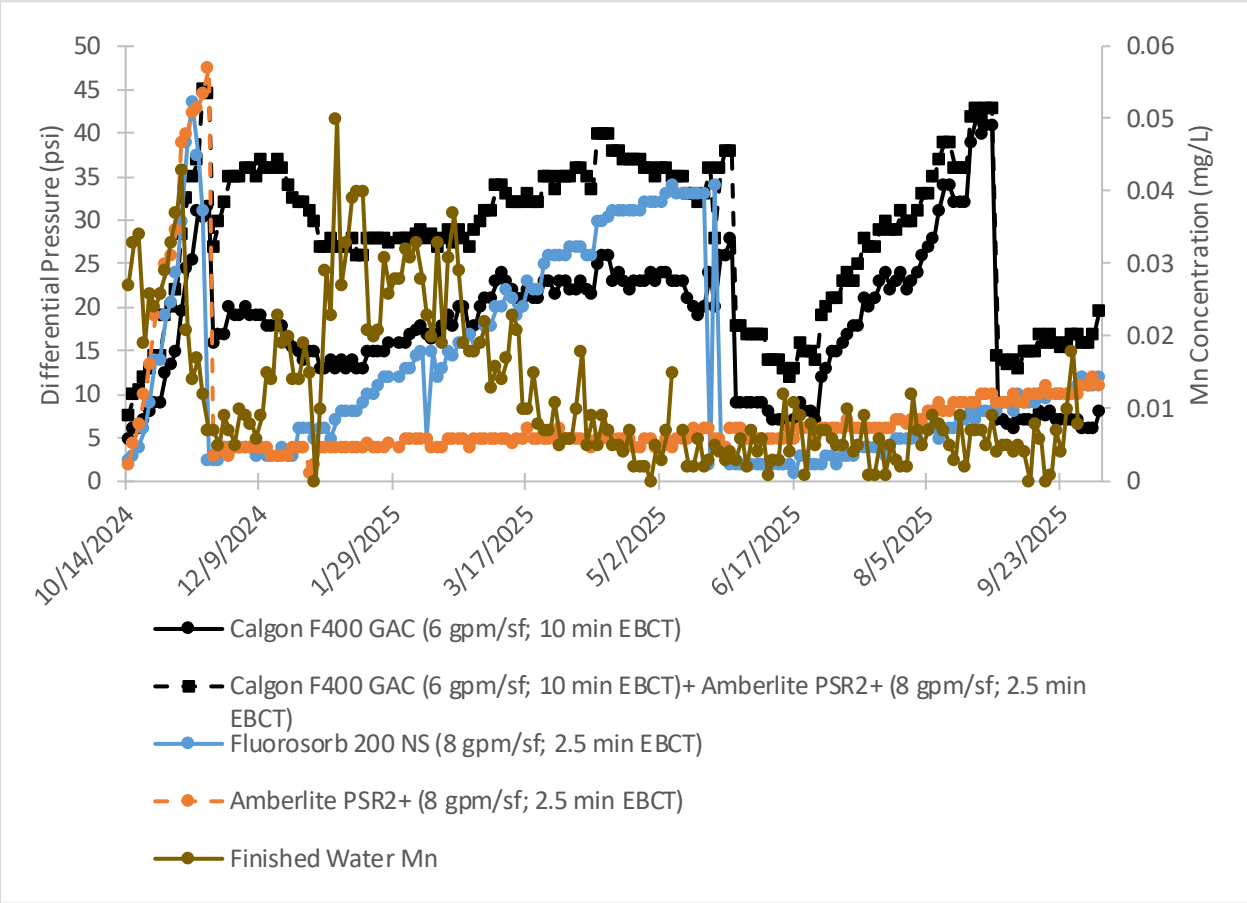


Figure 2.14 Manganese Concentration Impact on Differential Pressure in Post-Filter Treatment Trains

During the pilot test, four backwashing events were conducted as shown in **Table 2.7**:

Table 2.7 Backwashing Events

Date	Column	ΔP Before Backwash (psi)	ΔP After Backwash (psi)	Media
11/19/2024	A-1	31.5	16.0	Calgon F400 GAC (6 gpm/sf; 10 min EBCT)
	B-1	31.0	2.5	Fluorosorb 200 NS (8 gpm/sf; 2.5 min EBCT)
	C-1	47.5	3.0	Amberlite PSR2+ AER (8 gpm/sf; 2.5 min EBCT)
5/20/2025	B-1	34.0	4.0	Fluorosorb 200 NS (8 gpm/sf; 2.5 min EBCT)
5/27/2025	A-1	28.0	9.0	Calgon F400 GAC (6 gpm/sf; 10 min EBCT)
	A-2	12.0	8.0	Calgon F400 GAC (6 gpm/sf; 10 min EBCT)
8/28/2025	A-1	41.0	7.0	Calgon F400 GAC (6 gpm/sf; 10 min EBCT)
	A-2	2.0	5.5	Calgon F400 GAC (6 gpm/sf; 10 min EBCT)

During the May 20th backwashing event, mudballs were observed at the bottom of column B-1 containing Fluorosorb 200 media, as shown in **Figure 2.15**. The mudballs compromise the media's filtration efficiency, disrupts uniform flow distribution within the bed, and could contribute to increased head loss or flow short-circuiting. As differential pressure builds, material in the media bed compacts, making the media more resistant to fluidization, hence making backwashing more challenging.

On August 28th, air was introduced to assist with the backwash process for the Calgon F400 GAC columns. During flow reversal, the media bed exhibited difficulty fluidizing, prompting the use of a small air compressor to inject air into the column. This helped dislodge clumped media and restore proper fluidization. As previously noted, while air augmentation can be beneficial for backwashing at the pilot scale, it is not typically required for full-scale operations of pressure contactors.

Analytical samples were not taken for the pilot column backwash events, as pilot backwash characterization was beyond the scope of this study. However, SGWASA may consider sampling pilot backwash waste to better characterize it during the preliminary design phase of the project.



Figure 2.15 Mudballs in The Bottom of Column B-1 (Fluorosorb 200).

2.5.2.4 Temperature

The filtered water temperature through the study is plotted in **Figure 2.16**. Colder temperatures have the potential to increase the media contactor pressure drop due to the higher viscosity of the water. While the colder temperatures in autumn do align with increased ΔP values, this observation is more likely due to the high manganese concentration present during that time. After the columns were backwashed on November 19, 2024, the ΔP stayed steady from the winter through spring, suggesting that the temperature did not have a strong impact on ΔP.

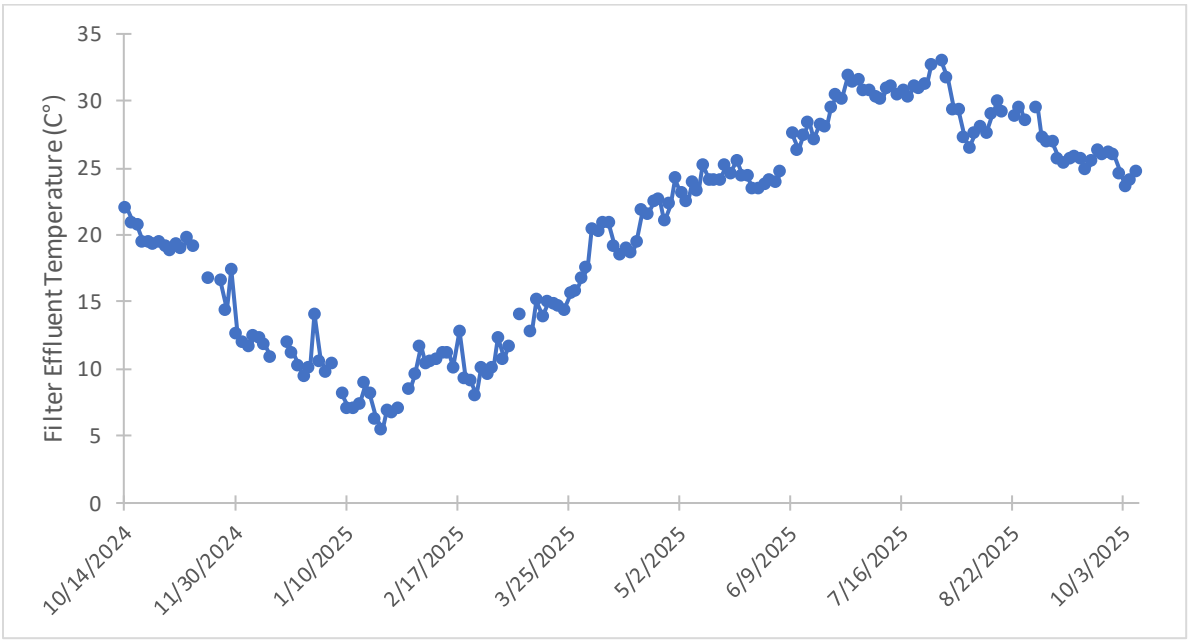


Figure 2.16 Pilot Influent Temperature Monitoring

2.5.3 Startup

This section reviews the startup parameters and the potential for the test media to leach unwanted contaminants in the treated effluent or impact the corrosion control parameters.

2.5.3.1 pH

The pH of the pilot feed and all train effluents was monitored throughout the study. After startup, the filter effluent/pilot feed pH as well as all the treatment effluent pH measurements stayed consistent for all treatments close to the baseline filter effluent/pilot feed values as shown in **Figure 2.17**. **Figure 2.18** shows how the Calgon F400 GAC effluent pH values initially spiked higher than the typical filter effluent, hovering around 9.88 and dropping back down to a value closer to the filter effluent pH after about 3 days. The DuPont Amberlite PSR2+ had an opposite trend compared to the GAC by having a more acidic pH being around 3.79 compared to the typical filter effluent due to the uptake of alkalinity by the resin. After around 1 day the AER stabled closer to the filter effluent pH, while the GAC took around 3 days to stabilize. GAC increases pH by 4.15 and AER decreases pH by 1.96. These observations suggest pH adjustments are merited for the initial flows from these contactors. If these initial flows were routed to the WTP's waste handling facilities, they could also be diluted with the rest of the WTP's residuals.

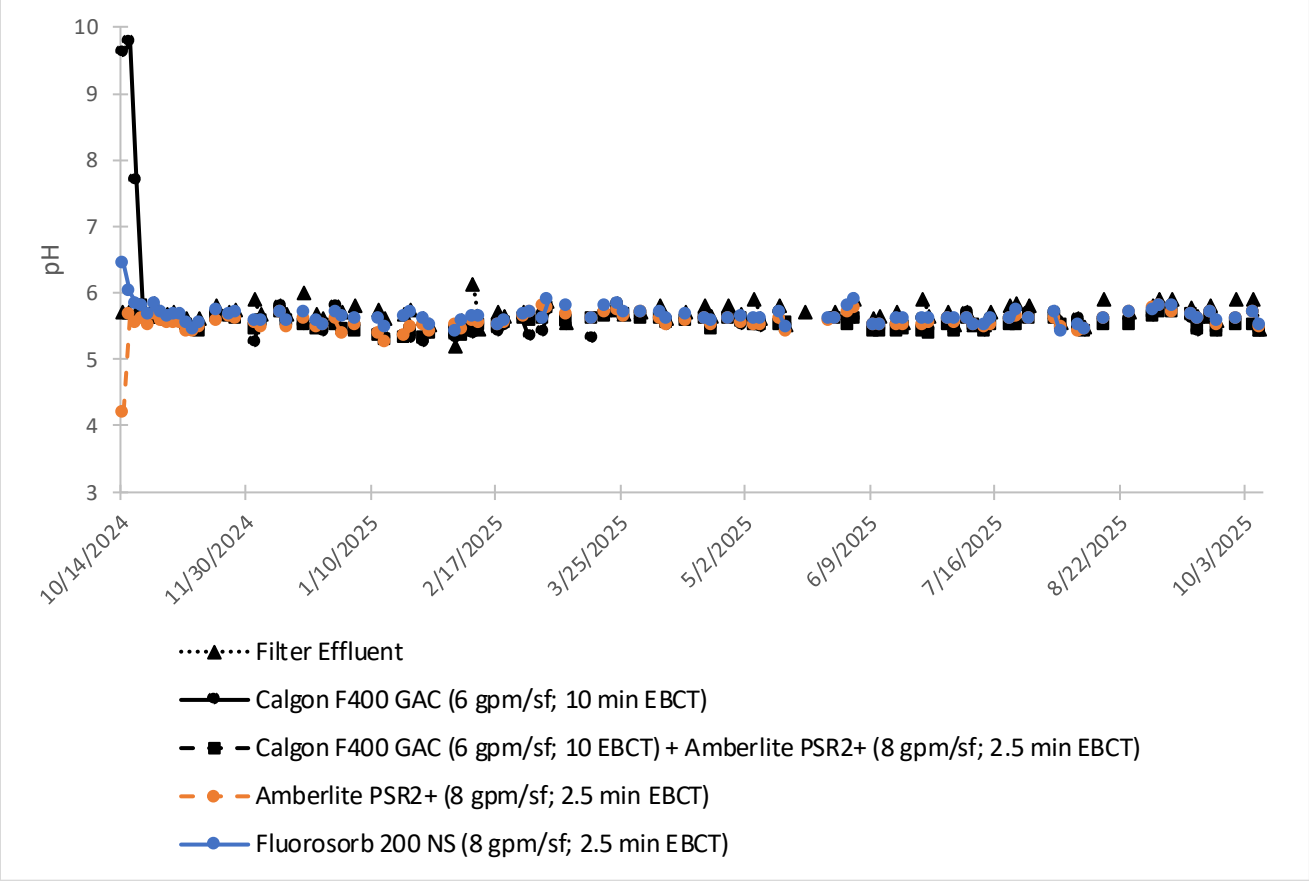


Figure 2.17 Pilot Effluent pH Monitoring

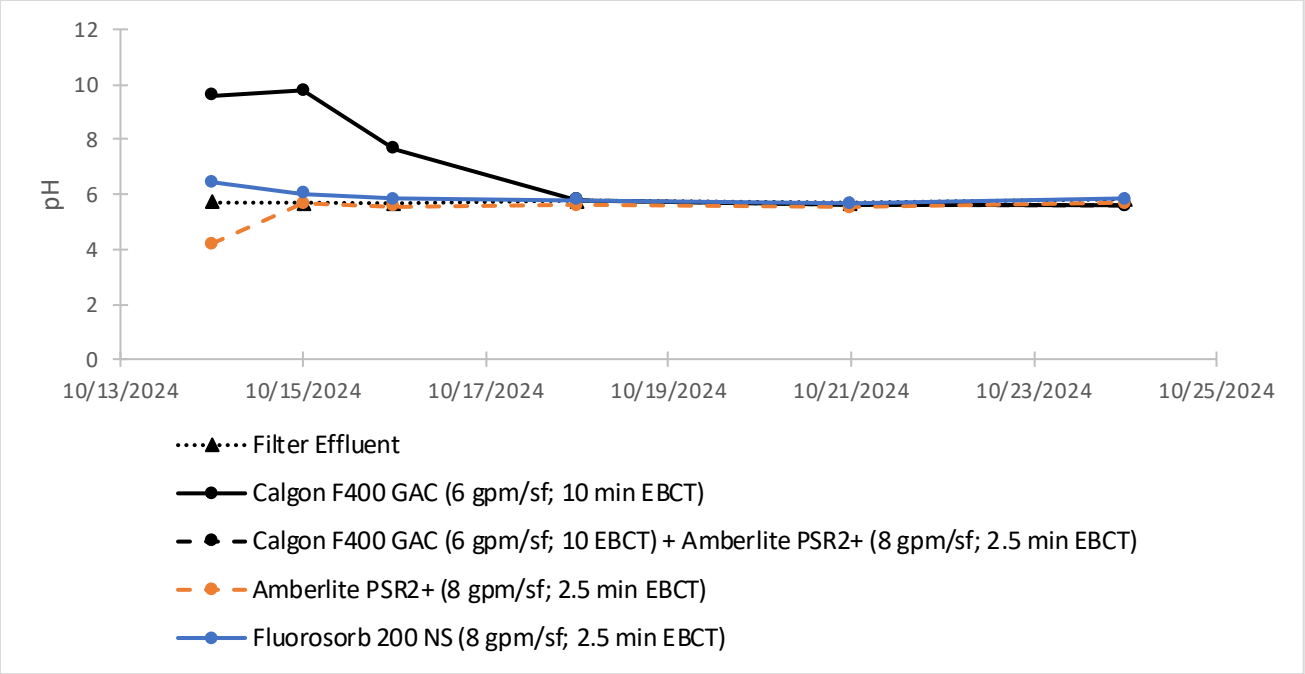


Figure 2.18 pH Fluctuation at Startup

2.5.3.2 GAC & Arsenic

It is common for GACs to release arsenic at startup depending upon the influent source, the specific GAC material, the mine of origin, and the manufacturer processing of the media. If a GAC's raw material is mined from a location with arsenic, the GAC can be pretreated with an acid rinse to lessen arsenic leaching at startup; however, acid-rinsed GAC is more costly. Arsenic, if present at all, will be released shortly after startup, but it is difficult to predict exactly how long as each batch of GAC may needs to be rinsed to prevent elevated arsenic levels in treated water. **Figure 2-19** shows arsenic results for the Calgon F400 tested in the pilot study. The GAC leached arsenic initially, exceeding the MCL, but arsenic concentrations were no longer detected 4 hours into operations, or 27 bed volumes (BV).

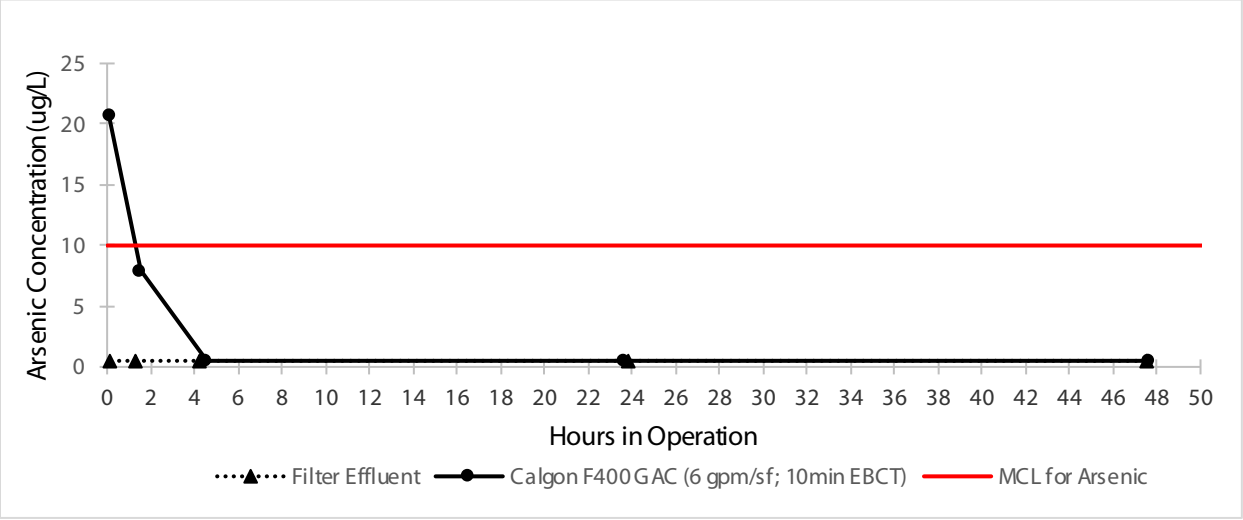


Figure 2.19 Monitoring of Arsenic Leaching in GAC During Startup

2.5.3.3 AER & Chloride: Sulfate Ratio

The chloride-to-sulfate mass ratio (CSMR) is important for corrosion control in the distribution system. AER is known to impact this ratio as it can release the preloaded chloride anions and uptake sulfate anions at startup, increasing the CSMR of treated water. **Figure 2.20** shows the chloride to sulfate ratio at startup. The Amberlite PSR2+ media showed the most increase in the ratio from the filter effluent. However, this ratio returned to baseline between the first and second day of operations. Like arsenic, this will need to be controlled at full-scale immediately upon startup, likely by wasting some initial water to the residuals handling processes and diluting it with other residuals.

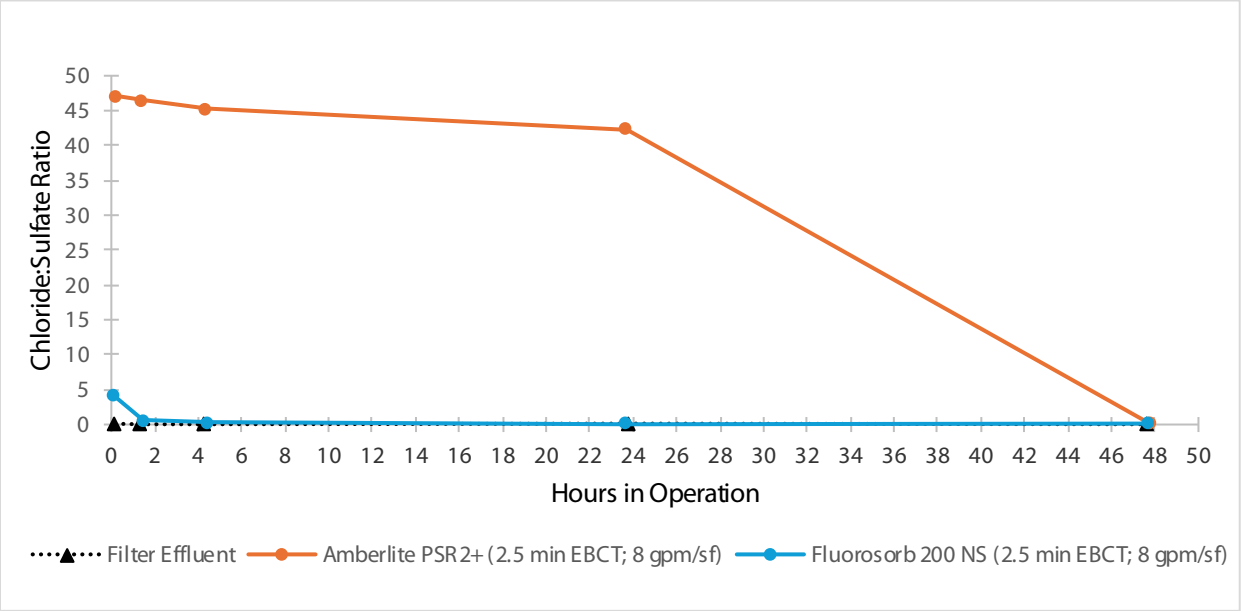


Figure 2.20 Monitoring of Chloride-to-Sulfate Ratio at Startup

2.5.4 Contaminant Removal with Pilot Contactors

2.5.4.1 PFAS

As noted previously, the WTP's PAC reduced the concentration of PFAS (mostly long-chained compounds) and TOC in the pilot feed. If PAC is removed from full-scale operation, the media lifespan for PFAS treatment of filtered water is expected to be reduced due to higher levels of PFAS and co-contaminants competing for sorption sites.

The project team focused on profiling the six PFAS included under the EPA's April 2024 MCLs. The project team also analyzed PFBA and PFHxA, as NCDEQ had previously identified them as compounds for potential future regulation. Regulated PFAS are evaluated relative to their respective MCLs and/or HIs. This section also presents a summary of removal of all PFAS evaluated in this study, i.e. a sum of all detected PFAS measured under EPA Method 533.

This study used EPA Method 533 as the primary means to assess PFAS removal efficacy of each media. Method 533 includes 25 of the 29 PFAS compounds monitored under UCMR5. The UCMR5 PFAS, among other PFAS compounds not currently monitored, may be subject to future regulation. While it is important to gain as broad a picture of the PFAS "footprint" of the plant's source and finished water as possible,

there are nearly 15,000 documented PFAS compounds, hence the targeted approach pursued in this study.

For quality assurance, duplicate sets of PFAS 533 samples were collected at each sampling location during the February 18, 2025 event (See **Table 2.8**). One set was submitted to a PACE laboratory in Florida, while the other was sent to a PACE laboratory in the New England region. Both laboratories reported consistent results, confirming the accuracy and reliability of the data the project team has been receiving.

Another quality assurance check was conducted on June 3, 2025. Instead of sending the samples to two separate labs, two different testing methods were used— EPA Method 533 and EPA Method 1633. Method 1633 is a more general PFAS test for 40 compounds in a wide range of media (wastewater, groundwater, surface water, etc.), while Method 533 is a more specific testing method for drinking water analyzing 25 specific PFAS compounds. **Table 2.9** shows the outcome of this test. Results are generally consistent between the two methods, with some exceptions such as PFBA between Methods 533 and 1633.

PFAS results have been plotted by compound, with concentration as a function of run time. Since the EPA considers values below the Method Detection Limit (MDL) as zeros for the purposes of calculating PFAS RAAs, the project team likewise set non-detect values as zero. Values below the labs' MRLs but above the MDLs are estimated values – commonly referred to as "J-values" – and are reported herein as numerical values matching those in the lab report. In practical terms, as concentrations increase, so too increases the precision of the analytical methods. MRL and MDL values have been excluded from these plots for clarity – as they can vary by each sample and compound – but they are available in the lab data summarized in Appendix F. For compounds of concern to this study, the MDLs and MRLs range from 0.37-1.4 and 1.4-6.0 ppt, respectively.

The project team has also plotted the normalized concentrations, C/C0 (effluent concentration divided by influent concentration) for each compound. Normalized concentration graphs provide a different visualization of the mass balance of PFAS moving through the media:

- When C/C_0 is less than 1, the media is removing PFAS from the water.
- When C/C_0 equals 1, the media is no longer removing PFAS from the water. This state is commonly called, "full breakthrough".
- When C/C_0 is greater than 1, PFAS is desorbing from the media and entering into the water stream.

Table 2.8 Split Sampling Results (Sampled February 18, 2025)

	Raw Water		Filtered Water		Calgon F400 GAC (6 gpm/sf; 10 min EBCT)		Calgon F400 GAC (6 gpm/sf; 10 min EBCT) + Amberlite PSR2+ AER (8 gpm/sf; 2.5 min EBCT)		Amberlite PSR2+ (8 gpm/sf; 2.5 EBCT)		Fluorosorb 200 NS (8 gpm/sf; 2.5 EBCT)	
	Florida Lab	New England Lab	Florida Lab	New England Lab	Florida Lab	New England Lab	Florida Lab	New England Lab	Florida Lab	New England Lab	Florida Lab	New England Lab
PFOS	15.0	16.0	5.9	8.0	1.7	2.3	ND	ND	ND	ND	ND	ND
PFOA	7.2	6.9	4.9	4.8	2.1	2.5	ND	ND	ND	ND	1.8	1.9
Gen X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFBS	1.6	2.0	1.2	1.2	0.5	0.6	ND	ND	ND	ND	0.5	ND
PFNA	0.6	ND	0.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxS	1.6	2.4	ND	1.0	ND	ND	ND	ND	ND	ND	ND	ND
PFBA	2.3	1.4	2.0	1.1	1.7	0.7	0.9	ND	2.4	1.5	2.2	1.0
PFHxA	1.2	ND	0.7	0.9	0.4	ND	ND	ND	ND	ND	0.8	0.9

Table 2.9 PFAS 533 vs 1633 Results (Sampled June 3, 2025)

	Concentration (ng/L)											
	Raw Water		Filtered Water		Calgon F400 GAC (6 gpm/sf; 10 min EBCT)		Calgon F400 GAC (6 gpm/sf; 10 min EBCT) + Amberlite PSR2+ AER (8 gpm/sf; 2.5 min EBCT)		Amberlite PSR2+ (8 gpm/sf; 2.5 EBCT)		Fluorosorb 200 NS (8 gpm/sf; 2.5 EBCT)	
Analyte	Method 1633 (ng/L)	Method 533 (ng/L)	Method 1633 (ng/L)	Method 533 (ng/L)	Method 1633 (ng/L)	Method 533 (ng/L)	Method 1633 (ng/L)	Method 533 (ng/L)	Method 1633 (ng/L)	Method 533 (ng/L)	Method 1633 (ng/L)	Method 533 (ng/L)
PFOS	18	19	10	11	1.2	1.1	ND	ND	ND	ND	ND	ND
PFOA	10	9.1	7.5	6.3	2.5	2.2	ND	ND	ND	ND	ND	ND
Gen X	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFBS	2.1	2.1	1.7	1.6	1.1	0.80	ND	ND	ND	ND	ND	ND
PFNA	0.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PFHxS	2.3	2.9	1.4	1.6	ND	0.43	ND	ND	ND	ND	ND	ND
PFBA	7.2	ND	8.6	6.9	2.5	4.5	2.5	2.7	5.5	ND	7.9	ND
PFHxA	1.2	0.9	1.0	0.9	0.6	0.6	ND	ND	0.7	ND	0.4	ND

2.5.4.1.1 PFOA

PFOA is an 8-chain carbon carboxylate, making it the shortest carboxylate still classified as a long-chain PFAS by the ITRC. From a current regulatory standpoint, the media performance for removal of PFOA is most important for SGWASA compared to other PFAS. PFOA and PFOS (reviewed below) are both regulated and present in high concentrations in SGWASA's raw and filtered water relative to the MCL of each at 4 ng/L. As shown in **Table 2.3**, the average PFOS concentration is close to double that of PFOA in the raw and filtered water. However, PFOS is a sulfonate, and sulfonate tend to be easier to remove by sorptive media than carboxylic acids such as PFOA. PFOA and PFOS both technically have the same number of carbons, but carboxylic PFAS behave as though they are of a shorter chain length than they are due to one less carbon-fluorine bond than PFOS. Typically, the shorter a PFAS chain is, the more difficult it is to remove. Shorter lengths have less sites along the length of the carbon-chain for hydrophobic interactions between the chain and the adsorptive media, a removal mechanism used by all media tested.

Figure 2.21 shows the PFOA concentrations in the raw water, filter effluent (pilot feed), and media column effluents throughout the duration of the pilot study. To date, PFOA has only been detected in Calgon F400 and Fluorosorb 200 effluents. PFOA in the Calgon F400 effluent was recorded at an initial concentration of 2.50 ng/L, which remained consistent for roughly 200 days of the pilot. Fluorosorb 200 showed a peak concentration of 2.30 ng/L after startup, maintaining that level for 56 days before returning to non-detect levels for the rest of the study to date. This trend may be attributed to the clay-based composition of Fluorosorb 200. Upon initial loading, the media may not have been fully expanded. CETCO has previously explained this phenomenon on other pilots by noting the clay can swell over time, increasing the number of available adsorption sites for PFOA. This expansion could explain the observed rise and subsequent decline in detection levels. Figure 2.22 presents the C/C0 profiles for the various media evaluated. This figure indicates all media have additional sorptive capacity for PFOA, even after 12 months of testing.

The GAC's rapid increase in PFOA followed by a leveling out could be related to the need to backwash the GAC. Each backwash can mix up the MTZ for a uniformly graded media, leaving fresher media scattered from top to bottom of the contactor instead of all at the bottom of the contactor. However, GAC generally has a wider gradation than other media such as AER, hence backwashing alone cannot fully explain the flatlining observed in the pilot. The project team has contacted Calgon to provide context on this observation, but the team has yet to reach a firm conclusion. Notably, were PAC not being employed by the WTP, it is possible this flatline could have appeared at a concentration greater than the MCL. Further, previous pilot studies suggest that PAC disproportionately extends the life of GAC over AER or Fluorosorb 200. As discussed further in Section 3, for the time being, the project team assumes SGWASA would continue dosing PAC at current levels regardless of which technology were implemented for post-filter PFAS treatment. The project team intends to investigate this GAC flatlining phenomenon further during preliminary design.

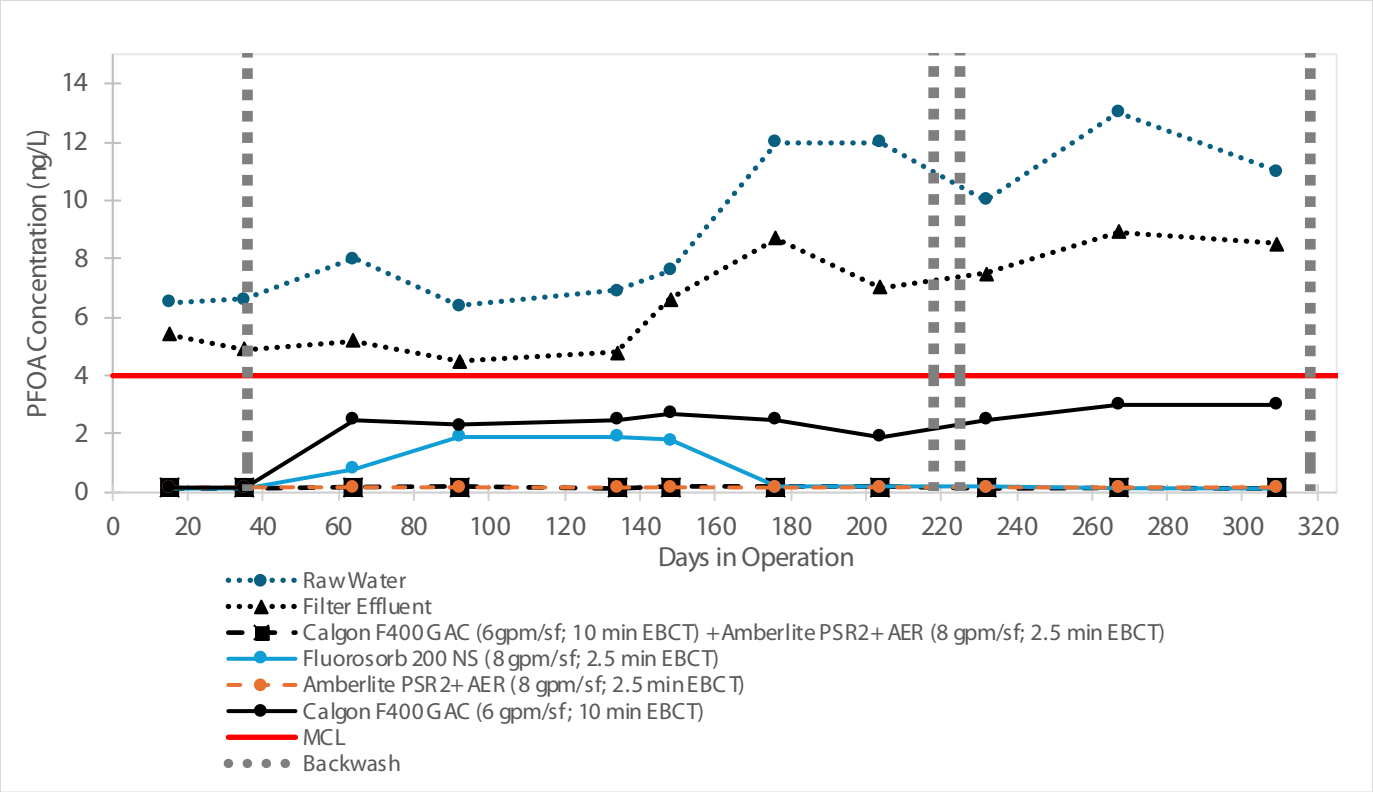


Figure 2.21 PFOA Breakthrough Curves

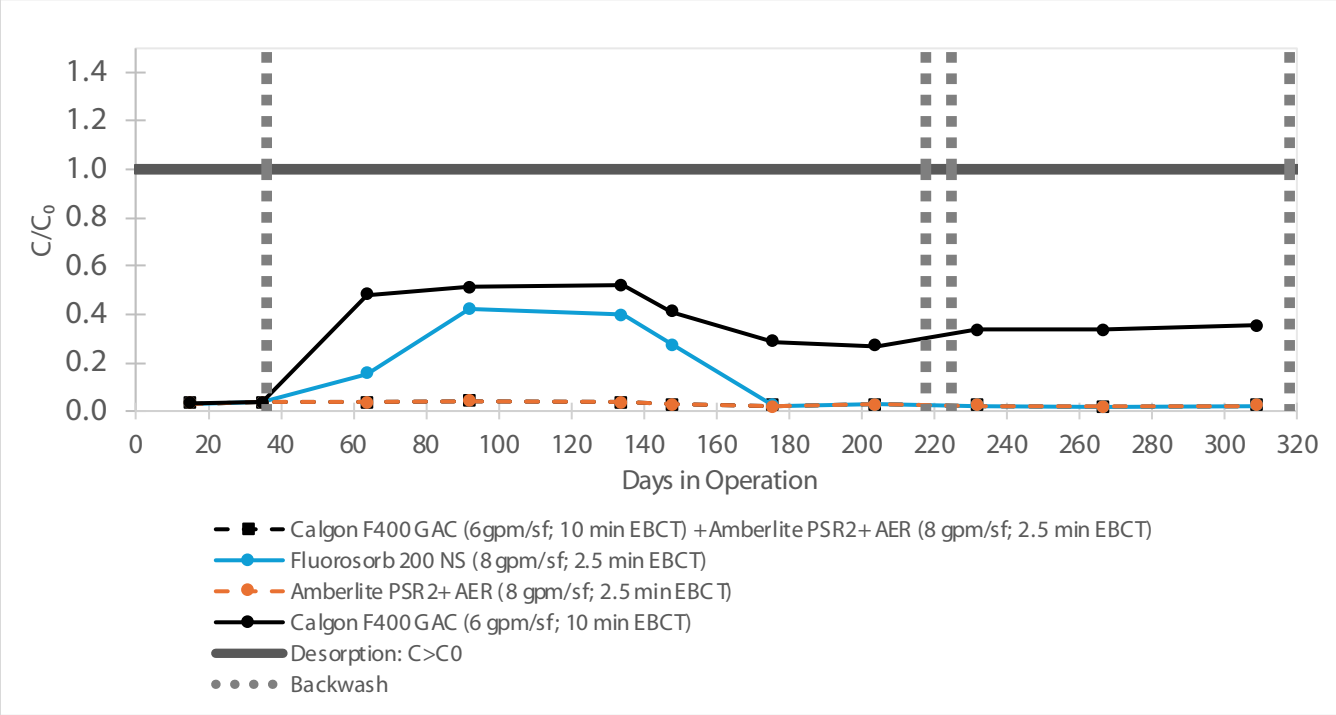


Figure 2.22 PFOA C/C_0 Profile

The pilot extension will provide more information on relative media performance and time to breakthrough/changeout, but it is clear from current data and promulgated regulations that PFOA will be the driver for media changeouts at SGWASA in the near future. While GAC media effluent PFOA concentrations are relatively higher than AER and FS 200, GAC (in tandem with PAC) continues to remove PFOA to levels below the MCL and offers additional benefits aside from PFAS removal that the other media do not. The existing data show that all media are consistently removing PFOA below the MCL over the last 12 months at least, and therefore, the three alternatives all remain tenable options for SGWASA. The forthcoming Basis of Design Report (BODR) will provide details on the design assumptions and recommendations for a facility that can utilize any of the 3 media tested.

2.5.4.1.2 PFOS

Figure 2.23 illustrates the concentration of PFOS throughout the duration of the pilot study. PFOS, along with PFOA, is one of the two PFAS compounds regulated under the MCL of 4 ng/L. Among the three media types evaluated, only Calgon F400 exhibited detectable levels of PFOS in its effluent, with a peak concentration of 2.40 ng/L. Following this peak, PFOS levels declined over time, eventually returning to non-detectable concentrations. While unclear the reason for this peak and leveling, the GAC has continually reduced PFOS levels below the MCL over the life of the 12-month pilot. Also, notably, despite the raw and filtered water PFOS values being about twice as high as PFOA values, all medias have reduced PFOS levels substantially, and PFOA appears to be breaking through before PFOS. This breakthrough profile confirms that PFOA will likely dictate the frequency the plant needs to change out its PFAS removal media at full-scale.

Figure 2.24 presents the C/C_0 profiles for each media. In no media has the C/C_0 value exceeded 30%, indicating all media have substantial adsorption capacity remaining before full PFOS breakthrough occurs ("full" breakthrough being when $C/C_0 \geq 1$).

2.5.4.1.3 PFBS

PFBS is a 4-chain carbon sulfonate, making it one of the shorter chain compounds tested under Method 533. While it has no explicit MCL, it is one of the four compounds included in the EPA's Hazard Index. PFBS has a health-based value of 2000 ng/L, which is significantly higher than the other PFAS MCLs and health-based values. Due to the high health-based value and lack of an explicit MCL, PFBS is seldom a regulatory driver for water plants at present.

As seen in **Figure 2.25**, SGWASA has very low levels of PFBS in the raw and filtered water, never exceeding 3.1 ng/L. Even at such low levels, the media tested performed well for removal of these compounds. While PFBS is getting close to fully breaking through the GAC, it has yet to do so. **Figure 2.26** likewise indicates that no media has fully broken through yet with respect to PFBS.

2.5.4.1.4 PFHxS

PFHxS is a 6-chain carbon sulfonate which has an MCL of 10 ng/L and is part of the Hazard Index, with a health-based value identical to its MCL. As pictured in **Figure 2.27**, PFHxS never exceeded 3.9 ng/L in SGWASA's raw water over the course of the pilot. Other than a few J-values for the GAC, PFHxS was not detected in any media column effluent. As such, a C/C_0 profile would provide only trivial results, hence it is excluded from this report.

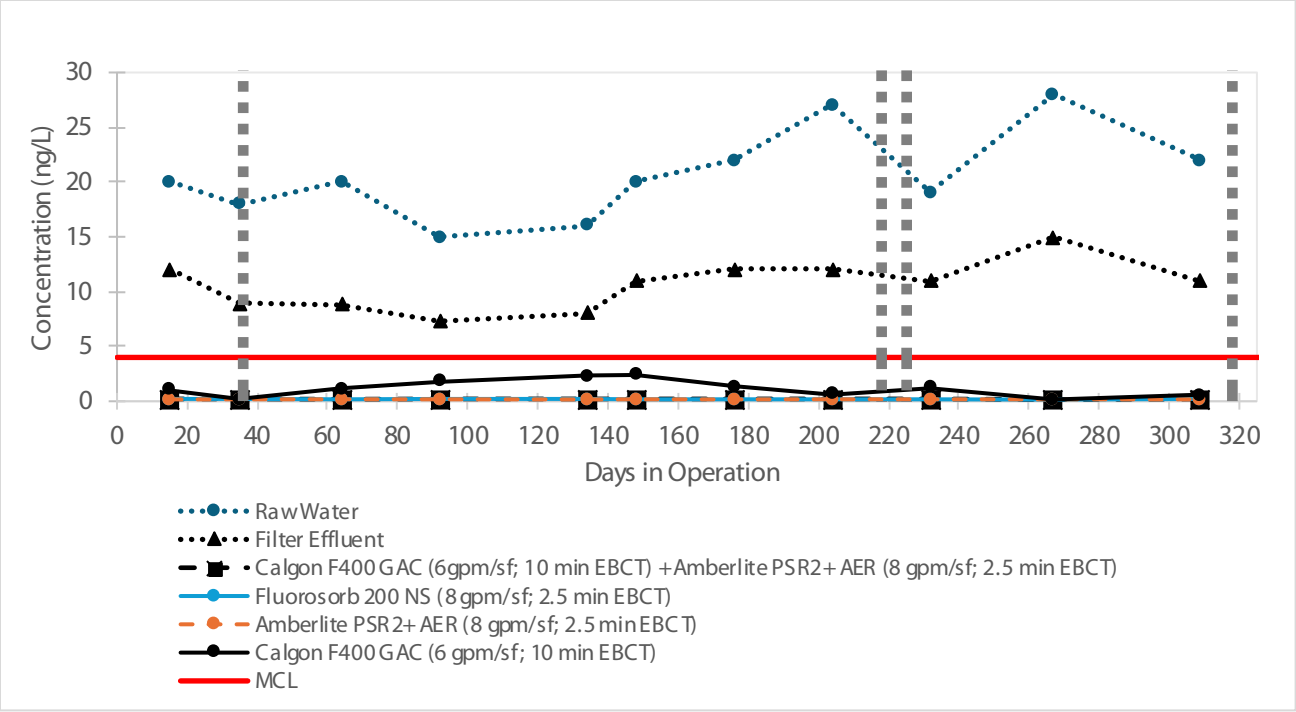


Figure 2.23 PFOS Breakthrough Curves

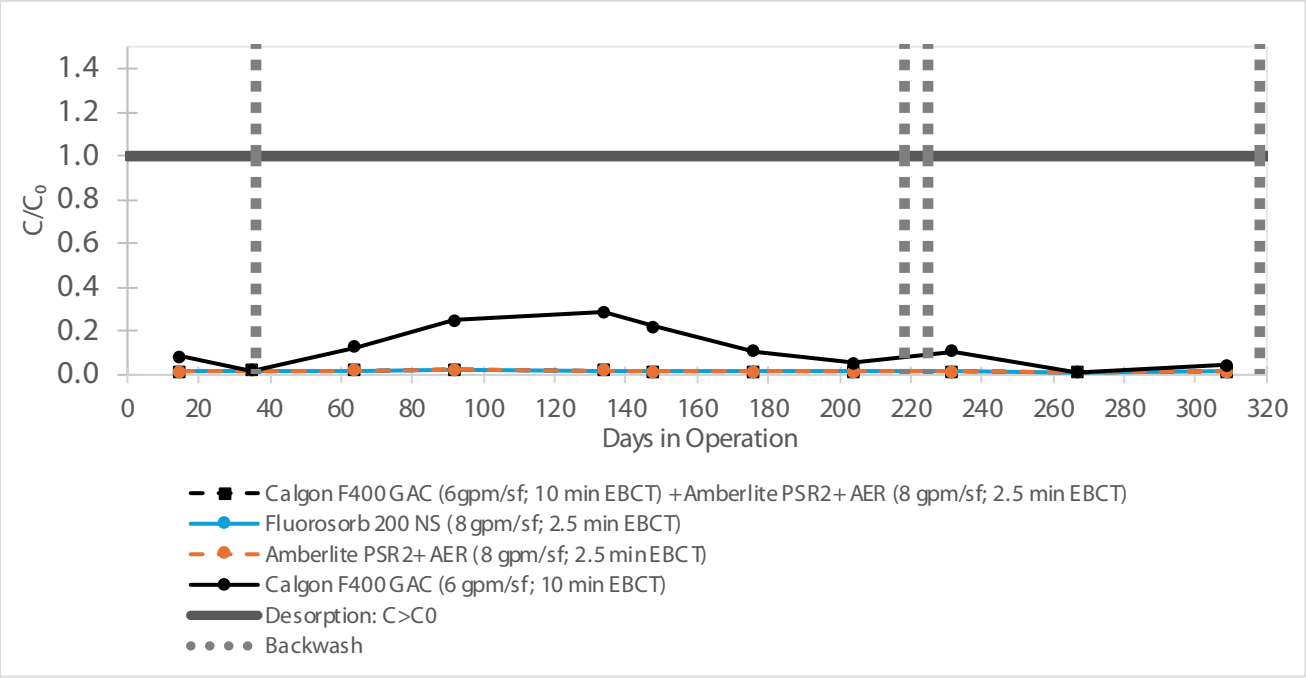


Figure 2.24 PFOS C/C_0 Profile

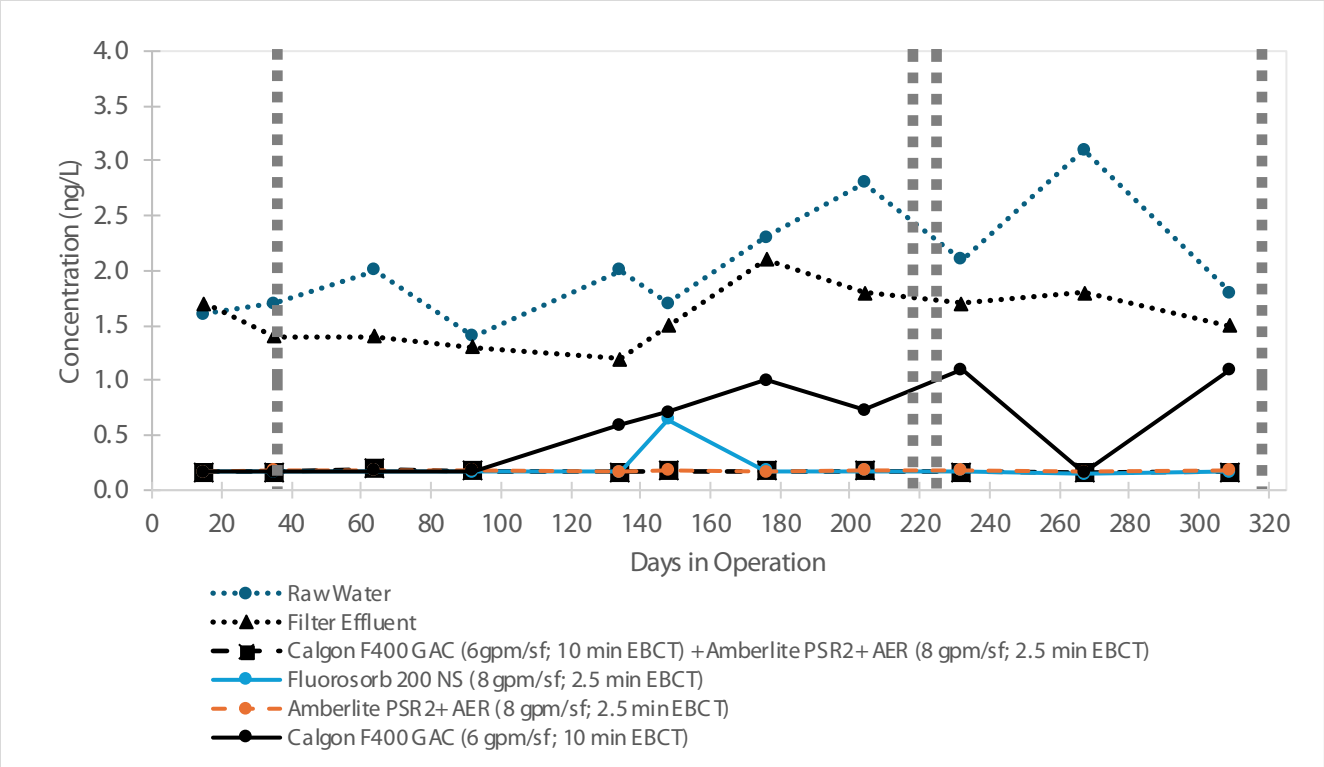


Figure 2.25 PFBS Breakthrough Curves

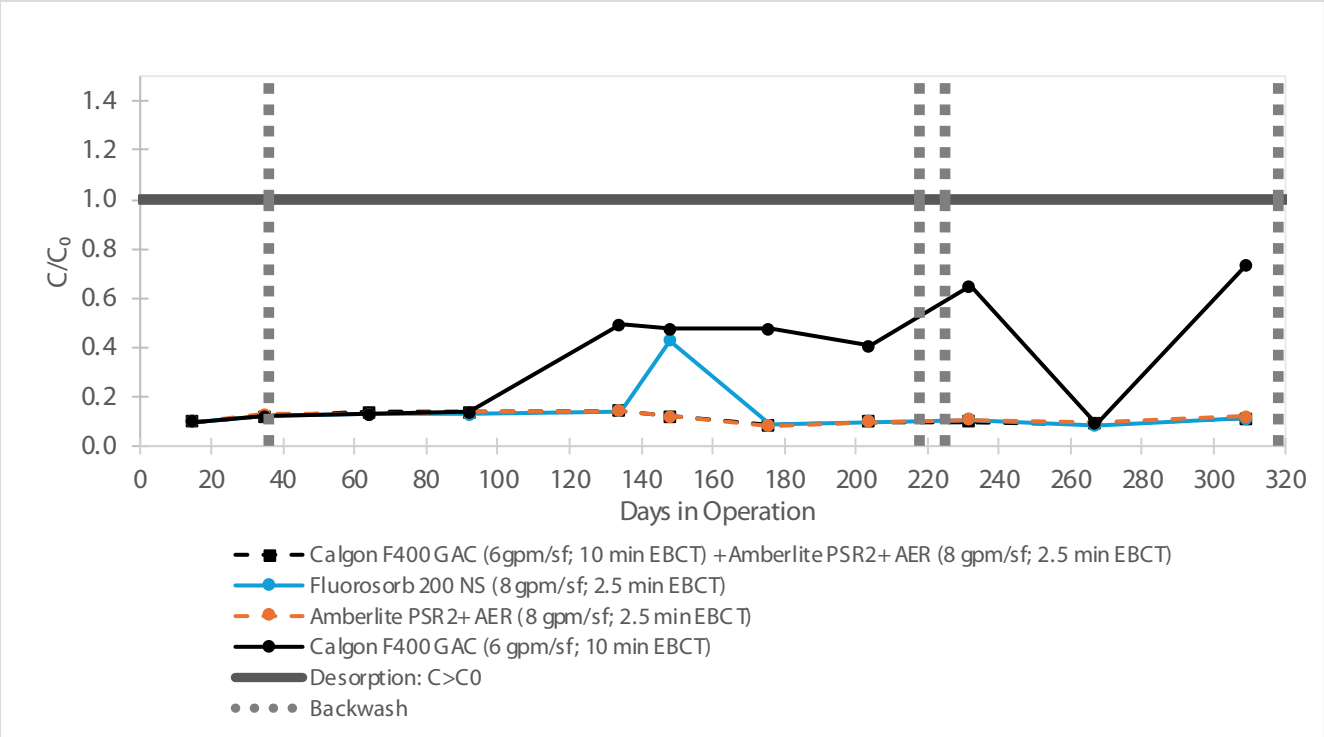


Figure 2.26 PFBS C/C_0 Profile

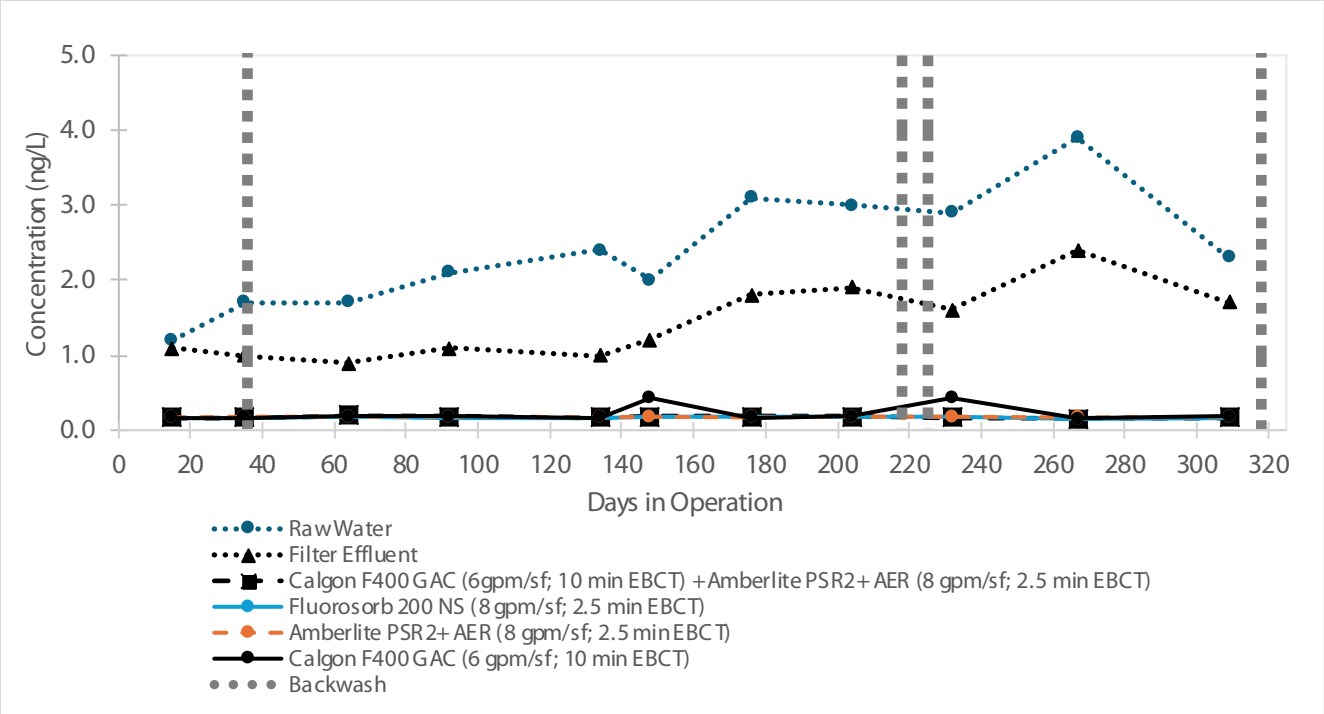


Figure 2.27 PFHxS Breakthrough Curves

2.5.4.1.5 PFBA

As outlined in Section 1, while regulation of PFBA in the U.S. is not imminent, PFBA is among the compounds on the EPA's and NCDEQ's radar for future regulation. Further, PFBA is particularly difficult to remove with sorptive processes, as it is a 4-chain carbon carboxylate. Given its difficulty to remove, PFBA will often break through media columns before other PFAS, in some cases serving as a precursor for breakthrough of other PFAS. However, PFBA is also very difficult to quantify at low levels (<10 ng/L) using conventional analytical methods, hence additional data is merited to firmly define breakthrough of other compounds.

Figures 2.28 and 2.29 depict the breakthrough profiles of PFBA through the various pilot media. Note several adjustments have been made to these figures to more clearly display the data:

- Samples from April and May 2024 were both non-detect in the raw and filtered water samples. Plotting these data points would result in "infinite" normalized breakthrough in Figure 2.29, confounding further analysis. As such, data from these months were discarded.
- The December 2024 sampling event reported non-detect for PFBA in the raw water, while the November 2024 and July 2025 events both reported non-detect in the filter effluent. By inspecting the data, these events are likely false negatives due to low concentrations and potential lab interferences. As such, the project team has averaged the events immediately before and after these non-detect values to provide estimated values in these figures.

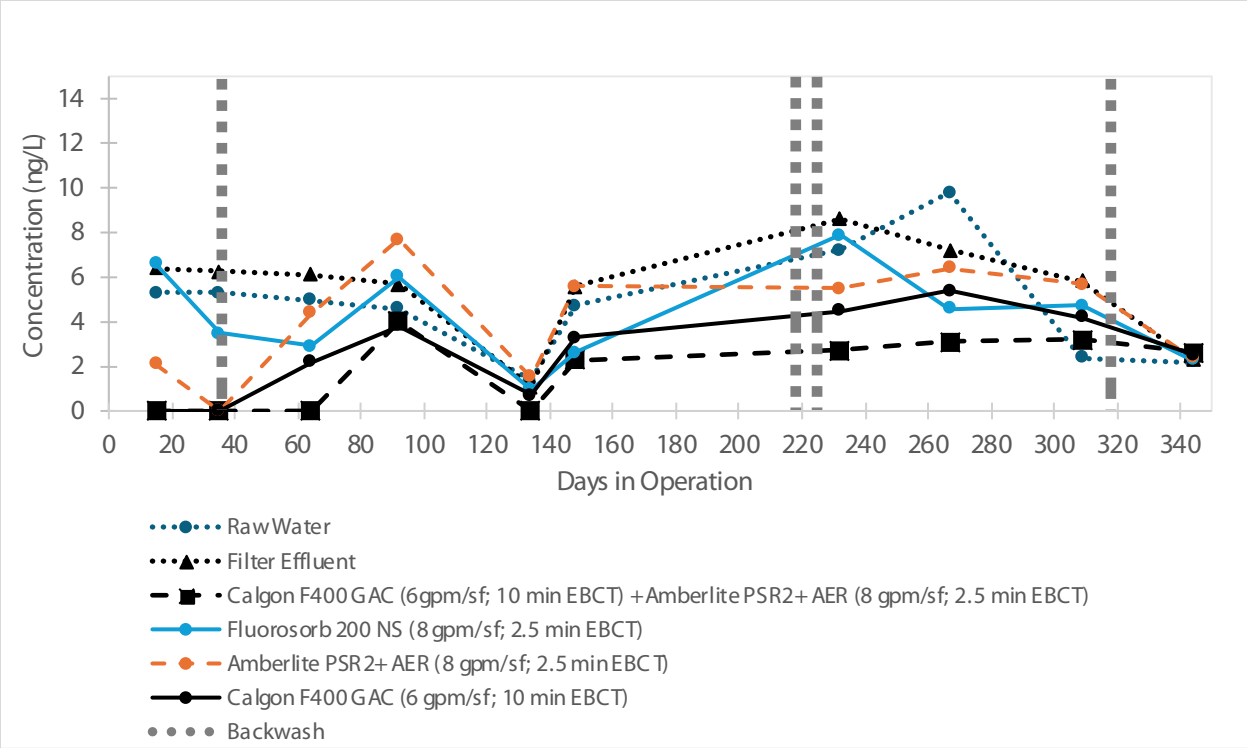


Figure 2.28 PFBA Breakthrough Curves

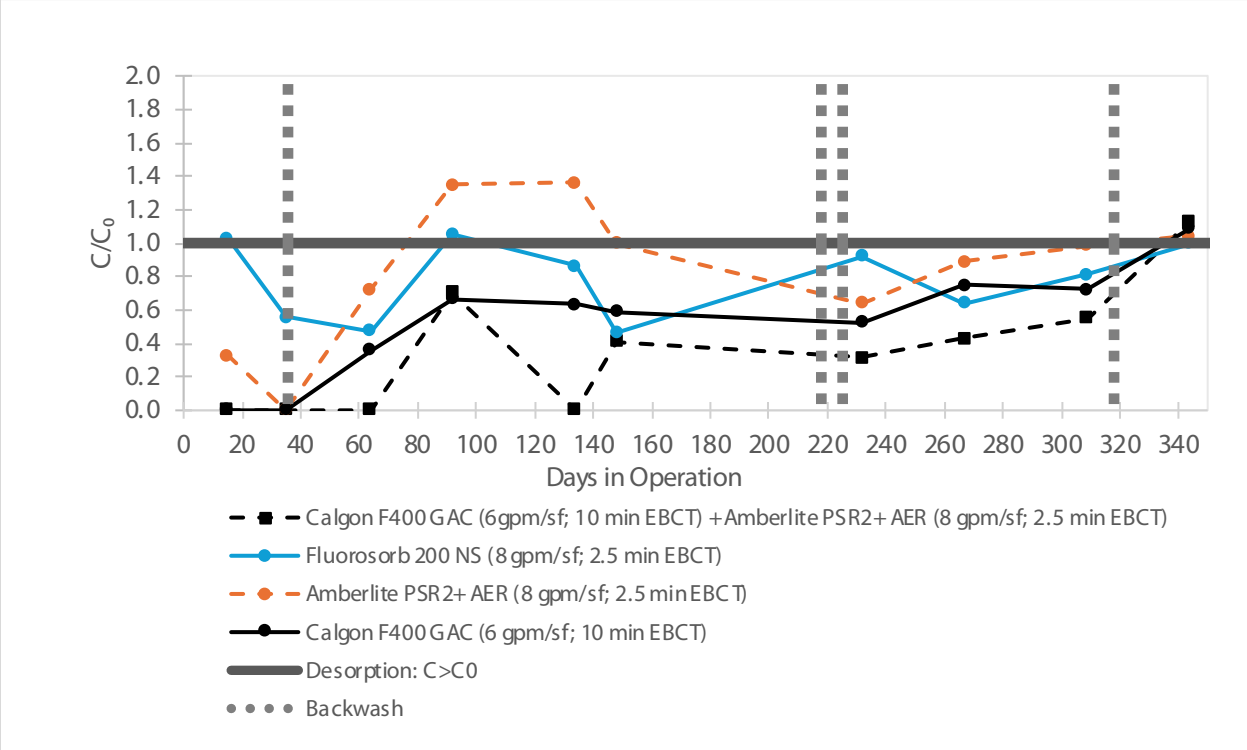


Figure 2.29 PFBA C/C_0 Profile

The PFBA data provides the following observations:

- Some raw water values are less than corresponding values for the filter effluent. This phenomenon could suggest:
  - Matrix interference for extracting PFBA in the raw water due to suspended solids and co-contaminants in the raw water, or
  - Other PFAS transforming to PFBA in the plant's treatment processes.
- While breakthrough data is somewhat unstable at such low concentrations of PFBA, the data suggests
  - The F400 GAC initially broke through and stabilized at about 60% C/C_0, trending towards full breakthrough by the end of the study.
  - The PSR2+ resin downstream of the carbon had a similar breakthrough curve as the upstream GAC, somewhat attenuated by the GAC's presence.
  - The PSR2+ reached full breakthrough at about the 70-day mark of the pilot.
  - Fluorosorb 200 removed a negligible amount of PFBA throughout the pilot. CETCO has noted that Fluorosorb 200 is not formulated to remove short-chain compounds, and these results are consistent with those seen on other pilots.

In general, none of the media tested performed well with respect to PFBA removal, either failing to remove it appreciably or breaking through very quickly. PFBA could be controlled through frequent GAC and AER changeouts, but the low levels of PFBA and the lack of an immediate regulatory driver suggest this operational strategy is not warranted at this time.

2.5.4.1.6 PFHxA

PFHxA, a 6-chain carbon carboxylate, is another compound not currently under regulation in North Carolina, but it is also on the EPA's and NCDEQ's radar for potential future regulation. While the project did see detections of PFHxA in the raw and filtered waters and the column effluent for a few media, all detections were below 1.5 ng/L, very close to the MDL of about 0.5 ng/L. This low concentration resulted in frequent, periodic non-detects in both the raw and filtered water. **Figure 2.30** depicts the concentration of PFHxA with smoothing applied to raw and filtered water non-detect values, using previous and subsequent sampling events to estimate the concentration. Likewise, **Figure 2.31** provides normalized breakthrough of each pilot media.

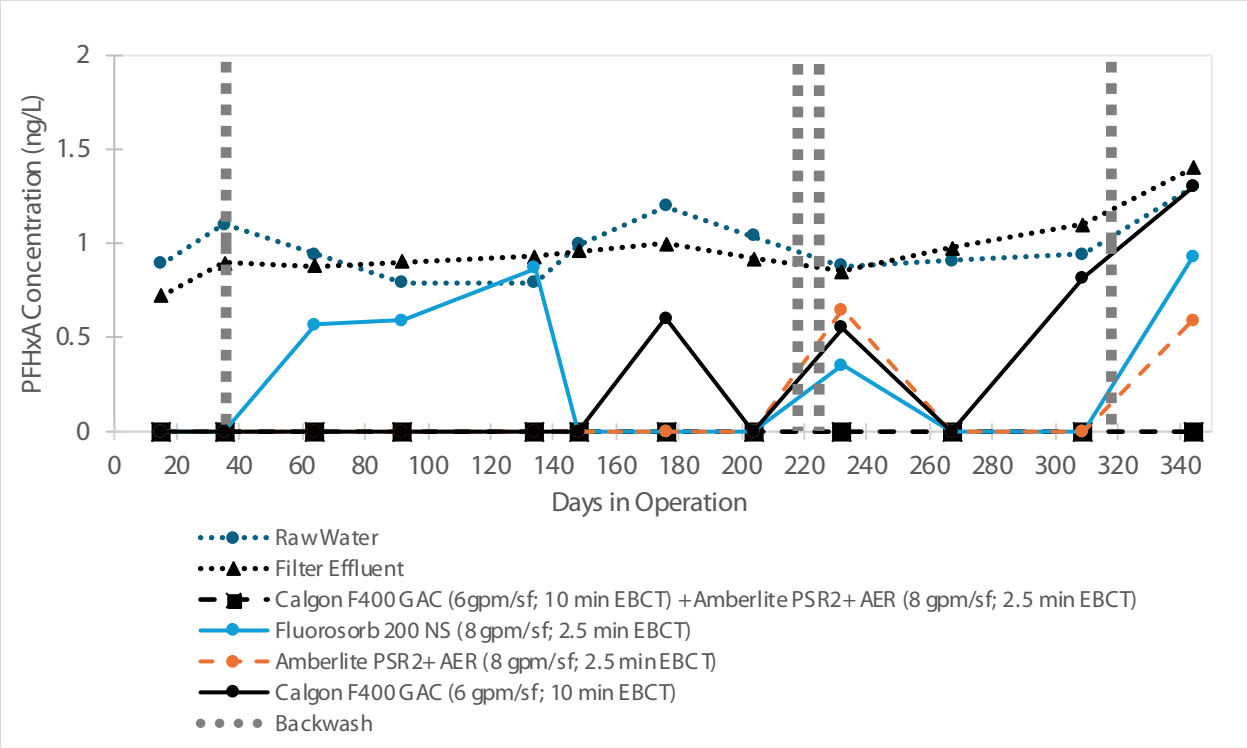


Figure 2.30 PFHxA Breakthrough Curves

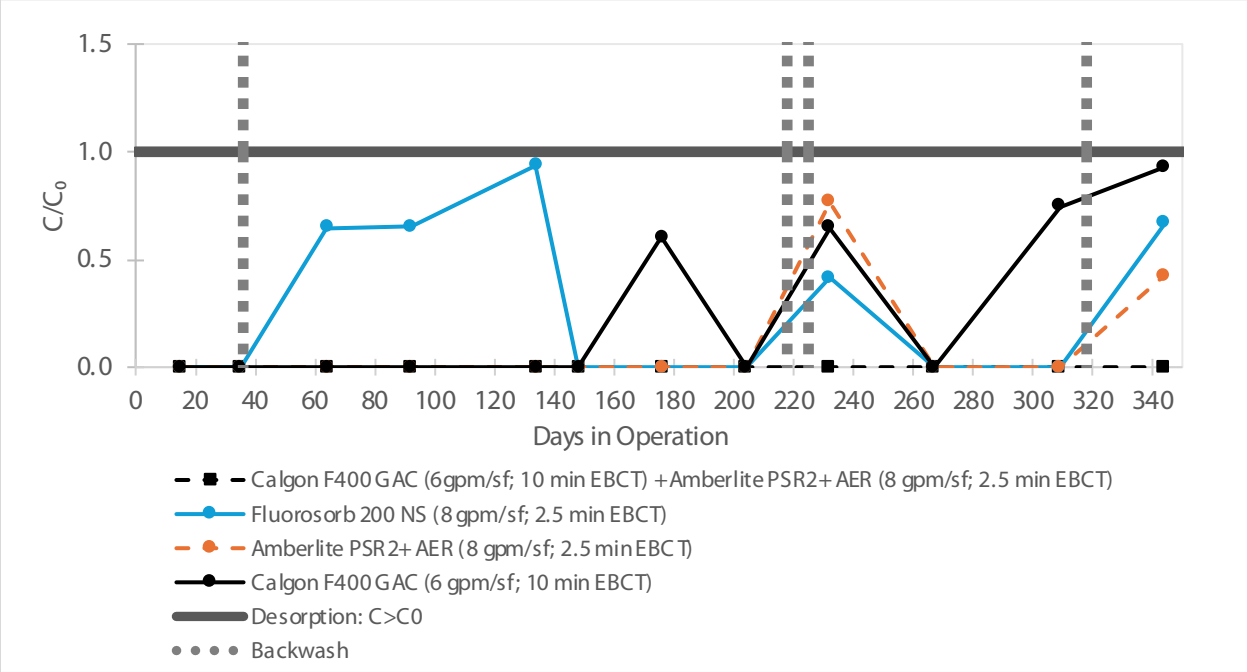


Figure 2.31 PFHxA C/C_0 Profile

It is difficult to reach firm conclusions regarding removal efficacy of PFHxA at such low concentrations. That said, the project team has several observations:

- Fluorosorb 200 seems to have an early breakthrough "bump", seen with other compounds but more pronounced here. The project team once again suspects this is due to an initial clay swelling period, after which more PFAS binding sites are available.
- The Calgon F400 appears to reach total breakthrough around the one-year mark.
- The Fluorosorb 200 and the PSR2+ resin (without GAC) both appear to hit initial breakthrough a little past the 300-day mark. Additional data will validate the full breakthrough profile of these media.
- The PSR2+ resin downstream of the GAC has not yet broken through with respect to PFHxA.

2.5.4.1.7 HFPO-DA and PFNA

HFPO-DA and PFNA are both PFAS with explicit MCLs of 10 ng/L each, with both included in the Hazard Index with health-based values identical to their MCLs. While PFNA is a simple 9-chain carboxylate, HFPO-DA, commonly known as GenX, has a more complicated molecular structure, with five fluorinated carbons, a carboxyl group, and an oxygen atom bisecting the carbon chain. HFPO-DA is notable for its use and discharge in the Lower Cape Fear River Basin. Neither HFPO-DA nor PFNA were detected in the raw water, filtered water, nor in any column effluent.

2.5.4.1.8 PFAS Summary

Out of 25 PFAS compounds analyzed under Method 533 throughout this pilot, 12 compounds were detected over the course of the pilot study. **Table 2.10** summarizes all the PFAS compounds that were found in at least one sample, arranged from shortest to longest carboxylate compounds followed by shortest to longest sulfonate compounds. These results suggest some high-level observations:

- Most PFAS detected in the raw and filtered water were at significantly lower concentrations than PFOA and PFOS.
- GAC performance generally improved with longer chain lengths and removing sulfonates over carboxylates.
- All media struggled to remove the 4- and 5-chain carbon carboxylates (PFBA and PFPeA), with the GAC+AER arrangement performing the best for these compounds.
- AER outperformed the other media in terms of removal of all compounds other than PFBA and PFPeA, even when not preceded by GAC.
- For the Method 1633 sample taken in June 2025, no compounds exclusive to that method (i.e. compounds not measured under Method 533) were detected in any sample. While thousands of PFAS compounds exist, this result suggests that for SGWASA's water, Method 533 does a good job capturing a short list of compounds of public interest.

Table 2.10 Summary of PFAS Compounds Detected During Pilot Test

Analyte		Concentration (ng/L)					
		Raw Water	Filtered Water	Calgon F400 GAC (10 min EBCT)	Calgon F400 GAC (10 min EBCT) + Amberlite PSR2+ AER (2.5 min EBCT)	Amberlite PSR2+ AER (2.5 min EBCT)	Fluorosorb 200 NS (2.5 min EBCT)
PFBA	Min	ND	ND	ND	ND	ND	ND
	Average[1]	3.3	3.7	2.4	1.6	3.3	3.3
	Max	9.8	8.6	5.4	4.0	7.7	7.9
PFPeA	Min	ND	ND	ND	ND	ND	ND
	Average[1]	1.0	0.2	0.2	0.1	0.3	0.2
	Max	8.4	1.3	1.1	0.7	1.3	1.1
PFHxA	Min	ND	ND	ND	ND	ND	ND
	Average[1]	0.6	0.8	0.3	ND	0.1	0.3
	Max	1.3	1.4	1.3	ND	0.7	0.9
PFHpA	Min	0.9	0.9	ND	ND	ND	ND
	Average[1]	1.8	1.6	0.5	ND	ND	0.3
	Max	3.0	2.2	1.7	ND	ND	1.1
PFOA	Min	6.4	4.5	ND	ND	ND	ND
	Average[1]	9.2	6.7	2.4	ND	ND	0.5
	Max	13.0	9.1	6.2	ND	ND	1.9
PFNA	Min	ND	ND	ND	ND	ND	ND
	Average[1]	0.1	ND	ND	ND	ND	ND
	Max	0.7	ND	ND	ND	ND	ND
PFBS	Min	1.4	1.2	ND	ND	ND	ND
	Average[1]	2.1	1.6	0.6	ND	ND	ND
	Max	3.1	2.2	1.9	ND	ND	0.6
PFPeS	Min	ND	ND	ND	ND	ND	ND
	Average[1]	0.5	0.1	ND	ND	ND	ND

Analyte		Concentration (ng/L)					
		Raw Water	Filtered Water	Calgon F400 GAC (10 min EBCT)	Calgon F400 GAC (10 min EBCT) + Amberlite PSR2+ AER (2.5 min EBCT)	Amberlite PSR2+ AER (2.5 min EBCT)	Fluorosorb 200 NS (2.5 min EBCT)
	Max	1.2	0.8	0.6	ND	ND	ND
PFHxS	Min	1.2	0.9	ND	ND	ND	ND
	Average[1]	2.4	1.5	0.2	ND	ND	ND
	Max	3.9	2.4	1.1	ND	ND	ND
PFHpS	Min	ND	ND	ND	ND	ND	ND
	Average[1]	0.3	ND	ND	ND	ND	ND
	Max	0.8	ND	ND	ND	ND	ND
6:2 FTS	Min	ND	ND	ND	ND	ND	ND
	Average[1]	0.6	0.2	ND	ND	ND	ND
	Max	7.9	3.1	ND	ND	ND	ND
PFOS	Min	15.0	7.3	ND	ND	ND	ND
	Average[1]	20.7	10.8	1.3	ND	ND	ND
	Max	28.0	15.0	3.7	ND	ND	ND

Notes:

1. 13 samples taken for each compound at each sample point
2. 13 PFAS compounds analyzed as part of EPA 533 were undetected: 4:2 FTS, 8:2 FTS, 9Cl-PF3ONS, 11Cl-PF3OUdS, ADONA, HFPO-DA, NFDHA, PFDA, PFDoA, PFEESA, PFMBA, PFMPA, and PFUnA
3. One sample set of PFAS 1633 was collected on June 3, 2025, and the following compounds were undetected in this sample: 4:2 FTS, 6:2 FTS, 8:2 FTS, ADONA, 9Cl-PF3ONS, 11Cl-PF3OUdS, FHpPA (7:3FTCA), FPePA (5:3FTCA), FPrPA (3:3FTCA), HFPO-DA, NEtFOSA, NEtFOSAA, NEtFOSE, NFDHA, NMeFOSA, NMeFOSAA, NMeFOSE, PFDA, PFDoA, PFDoS, PFDS, PFEESA, PFHpS, PFMBA, PFMPA, PFNS, PFOSA, PFTeDA, PFTrDA, and PFUnA.

2.5.4.2 TOC

As discussed previously, the TOC was reduced by 74% on average from the raw water to the filter effluent due to a combination of PAC use, enhanced ferric sulfate coagulation, and pre-oxidation. **Figure 2.32** and **Table 2.11** show the reduction of TOC between the filter effluent and the pilot contactor effluent. Raw water data is excluded from this figure and table for greater data resolution. These data indicate that GAC provided the most TOC reduction, followed by AER with a smaller reduction and NS with the smallest. These numbers are in keeping with general understanding of the removal mechanism of these compounds: GAC is a "scavenger" material, sorbing to a myriad of compounds, while AER and NS are more targeted sorbents. As such, GAC may benefit the WTP by enhancing TOC removal, contributing to lowering the potential for forming total trihalomethanes (TTHMs) and five haloacetic acids (HAA5) in the distribution system. However, due to GAC's shorter PFOA breakthrough when compared to AER and NS, this benefit should be weighed against the added cost of more frequent media changeout.

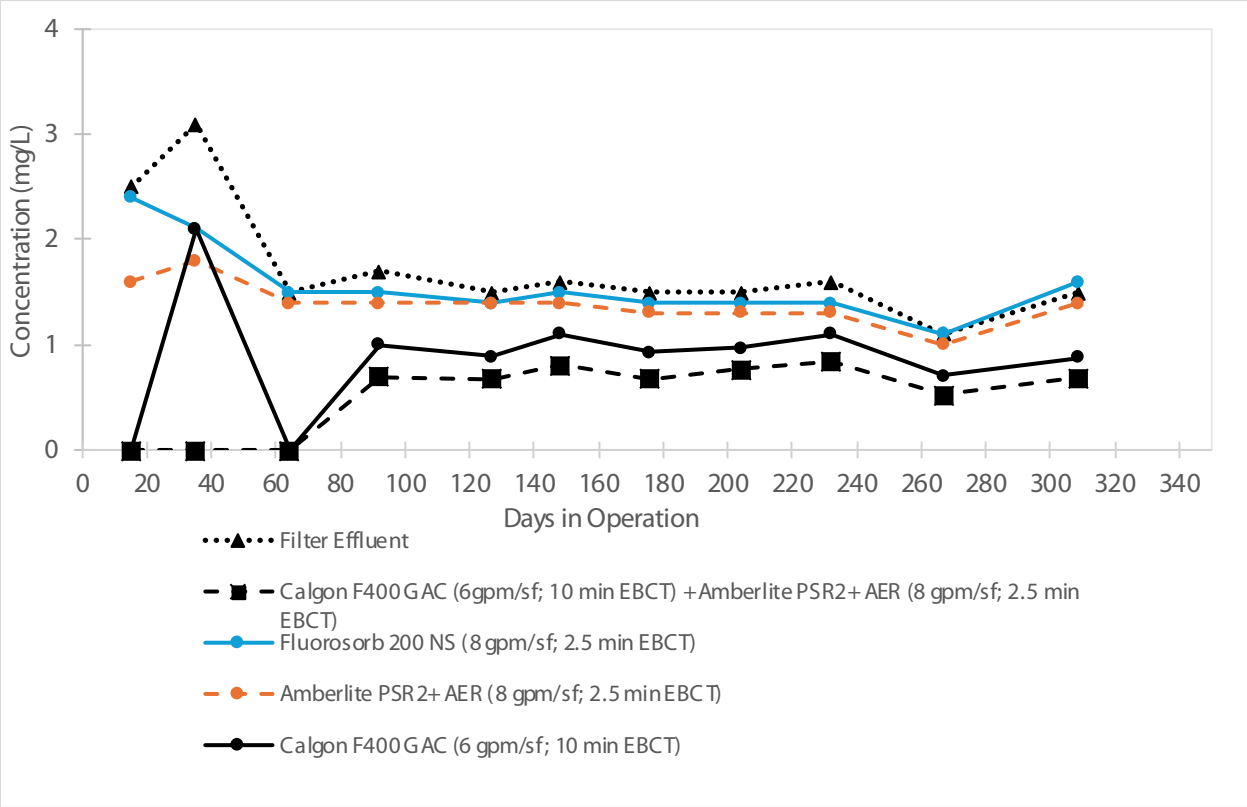


Figure 2.32 TOC Reduction by Pilot Media

Table 2.11 TOC Reduction Percentages by Pilot Media

	Filtered Water	Calgon F400 GAC (10 min EBCT)	Calgon F400 GAC (10 min EBCT) + Amberlite PSR2+ AER (2.5 min EBCT)	Amberlite PSR2+ AER (2.5 min EBCT)	Fluorosorb 200 NS (2.5 min EBCT)
Average TOC (mg/L)[1]	1.7	0.88	0.52	1.4	1.6
Reduction % from Filtered Water	N/A	48%	69%	18%	6%

1. Total of 11 TOC sampling events

2.5.4.3 Disinfection Byproducts and Simulated Distribution System Testing

The project team investigated the potential for each treatment technology to lessen – or in some cases, form – DBPs in SGWASA's distribution system. This investigation was accomplished through the use of a simulated distribution system (SDS) procedure, with the following goals:

- Characterize each media's propensity to remove precursors to TTHMs and HAA5 while accounting for the changes in chlorine demand for each treatment media.
- Characterize media propensity to form nitrosamine compounds, such as N-nitrosodimethylamine (NDMA) and N-nitrosodibutylamine (NDBA), while once again accounting for the changes in chlorine demand and process modifications for each treatment media.

TTHMs and HAA5 are both regulated under the EPA's Disinfectants and Disinfection Byproducts Rules. They are formed when organic carbon reacts with halogens in the water, such as free chlorine, and they tend to form more as the water age in a distribution system increases. Many water plants – especially those with large distribution systems and diffuse service connections – utilize GAC contactors to remove TOC from their water, which in turn reduces the TTHMs and HAA5 in their distribution systems. Using such contactors for PFAS removal may have the added benefit of reducing these DBPs.

Nitrosamines, while not regulated, have been flagged by the EPA under the previous UCMR2. Several states, such as California and Massachusetts have identified non-MCL guideline values for NDMA in drinking water (10 ng/L in both of these examples).

In the context of water treatment, nitrosamines can form when chloramines come in contact with nitrogen-containing compounds in the water. Research suggests that many ion exchange resins can release nitrosamines and their precursors during initial rinsing, regeneration, and when brought in contact with free chlorine or monochloramines (Flowers and Singer, 2013). While Amberlite advertises their PSR2+ resin as resistant to low levels of oxidants, the project team investigated the potential for release of nitrosamines with chloramination for this media, to better assess the benefits of low-level chloramination against the potential for nitrosamine formation. Similarly, the project team aimed to better characterize if the Fluorosorb 200 could potentially release nitrosamine precursors, as has been suggested as a possibility on similar pilots in the region.

The testing protocol was as follows:

- Collect samples from each column effluent. Transmit to procedural laboratory for dosing and incubation.
- Procedural laboratory doses samples with caustic soda, sodium hypochlorite, and ammonium chloride to reach target pH and chloramine speciation, the same values the WTP targets:
  - pH 7.4 to 7.8
  - Total/monochloramine level of 2.4 to 2.8 mg/L as Cl_2
  - Free chlorine residual under 0.4 mg/L as Cl_2
- Procedural lab incubates samples at 25° C for 7 days.
- Procedural lab quenches free chlorine.
- Procedural lab analyzes samples for TTHMs and HAA5.
- Procedural lab ships an aliquot of samples to analytical lab for nitrosamine analysis.

The SGWASA WTP achieves primary disinfection using residual free chlorine on the filter effluent, hence this protocol was designed to simulate chloramine formation downstream of the WTP's chlorine contact chamber. As discussed further in Section 3, the project team acknowledges that different media could be implemented upstream or downstream of the plant's chlorine contact chamber. However, for purposes of this analysis, modeling the chlorine contact chamber free chlorine residual and retention time was considered negligible. The project team chose 7 days as an incubation time, given no water system model was available at the time of testing.

The SDS procedure was completed in duplicate, once in August 2025 and again a month later in September 2025, to validate results. An initial set of samples collected in July 2025 were discarded due to quality control standards in transmission not being met. **Tables 2.12** and **2.13** summarize the results of these two tests. TOC tests on the corresponding dates are also reproduced in these tables for comparison purposes.

Results from these tests indicate the procedural lab was generally able to mimic the SGWASA WTP's existing system with reasonable accuracy. For the August samples, the lab noted some issues achieving stable results without an explicit hold time between dosing and "post treatment" sample measurement. The team decided to allow a one-hour hold period for the September samples to rectify this issue.

For the August samples, the GAC column's ΔP had risen substantially prior to sampling, indicating the column might have gone biological. The chlorine demand for this sample is much higher, substantiating this hypothesis. It is unlikely a full-scale system would see this level of chlorine demand, as a backwash would be initiated prior to this level of ΔP in the full-scale contactor.

Table 2.12 Simulated Distribution System Testing Results – August 2025

	Parameter	Filtered Water	Calgon F400	Calgon F400 + Amberlite PSR2+	Fluorosorb 200	Amberlite PSR2+
Initial	pH	6.0	6.3	6.6	6.0	6.4
	Free Cl (mg/L CL2)	0.50	0	0	0.17	0
	MonoCl (mg/L CL2)	0.06	0	0	0	0.38
Doses	NaOH (mg/L)	5.0	5.0	3.8	5.0	2.5
	NaOCl (mg/L)	2.9	21.0	4.2	3.8	2.7
	NH4Cl (mg/L)	2.0	9.7	2.0	2.0	0.4
Post-Treat	pH	7.86	7.35	7.67	8.84	7.58
	Free Cl (mg/L CL2)	0.73	0.27	0.81	1.48	0.08
	MonoCl (mg/L CL2)	2.72	2.39	2.71	2.78	2.85
Post-7-Day	pH	6.5	6.2	6.8	6.7	6.7
	Free Cl (mg/L CL2)	0.25	2.68	0	0	1.38
	Total Cl (mg/L CL2)	0.57	3.45	0	0.13	1.90
	MonoCl (mg/L CL2)	0.28	0.14	0.06	0.11	1.51
DBPs	TTHMs (µg/L)	40	39	26	56	30
	HAA5 (µg/L)	30	14	3	25	18
	NDMA (ng/L)	2.1	0	0	6.1	3.5
	NDBA (ng/L)	0	0	0	0	25
TOC (mg/L)		1.5	0.88	0.69	1.6	1.4

Table 2.13 Simulated Distribution System Testing Results – September 2025

	Parameter	Filtered Water	Calgon F400	Calgon F400 + Amberlite PSR2+	Fluorosorb 200	Amberlite PSR2+
Initial	pH	6.8	6.3	6.3	6.5	6.2
	Free Cl (mg/L CL2)	0.51	0	0	0.25	0
	MonoCl (mg/L CL2)	0.1	0.07	0.08	0.12	0.31
Doses	NaOH (mg/L)	7.5	9.4	5.5	5.8	5.0
	NaOCl (mg/L)	5.2	5.7	5.4	5.2	2.0
	NH4Cl (mg/L)	3.7	3.9	3.8	3.7	0.5
Post-Treat	pH	7.40	7.45	7.62	7.40	7.70
	Free Cl (mg/L CL2)	0.15	0.08	0.08	0.15	0.09
	MonoCl (mg/L CL2)	2.58	2.37	2.86	2.58	2.70
Post-7-Day	pH	7.0	7.1	7.2	7.0	7.2
	Free Cl (mg/L CL2)	0.15	0.09	0.14	0.15	0.21
	Total Cl (mg/L CL2)	1.12	0.84	1.14	1.12	1.66
	MonoCl (mg/L CL2)	0.97	0.73	0.98	0.97	1.64
DBPs	TTHMs (µg/L)	45	23	19	52	25
	HAA5 (µg/L)	41	5.9	3.9	36	15
	NDMA (ng/L)	2.8	2	6.5	15	0
	NDBA (ng/L)	5.3	4.3	0	320	6.1
TOC (mg/L)		1.5	1.8	1.4	1.1	1.7

Figures 2.33a-2.33h display the TTHMs, HAA5, NDMA, and NDBA concentrations for both sampling events. Note that NDMA and NDBA were the only nitrosamines detected in any sample. The following seven (7) compounds were analyzed but not detected in any samples:

- N-Nitrosodiphenylamine (NDPhA)
- N-Nitrosomorpholine (NMOR)
- N-Nitrosopiperidine (NPIP)
- N-Nitrosopyrrolidine (NPYR)
- N-Nitrosodi-n-propylamine (NDPA)
- N-Nitrosodiethylamine (NDEA)
- N-Nitrosomethylethylamine (NMEA)

Several observations are worth noting with respect to these results:

- For all four parameters and in both sampling events, the GAC reduced DBP formation from the filter effluent. The exception is NDBA in August 2025, which was not detected in the filter effluent nor the GAC effluent.
- The PSR2+ resin downstream of the GAC provided some nominal DBP control with respect to TTHM and HAA5. The PSR2+ being treated with chloramines also provided some control of these compounds, despite the absence of GAC in that treatment train.
- The PSR2+ being treated with chloramines saw a small increase in NDMA from the filter effluent in the August sampling event, but not the September one. By contrast, the PSR2+ downstream of the GAC had a small increase in NDMA in the September sampling event, but not the August one. These results suggest that the PSR2+ resin may contribute to some NDMA formation in the finished water, but at lower concentrations in September. Further, the results between August and September samples do not agree – as such, the project team withholds firm conclusions as to PSR2+'s propensity to form nitrosamines.
- The PSR2+ following GAC did not produced detectable levels of NDBA, while the PSR2+ being treated with chloramines did: 25 ng/L in August, and 6.1 ng/L in September. These results suggest that PSR2+ treated with chloramines may contribute to NDBA formation in the finished water.
- The Fluorosorb 200 novel sorbent increased the formation of TTHMs and NDMA in both instances, and it resulted in a very high 320 ng/L of NDBA in the September sample. While it did provide some nominal removal of HAA5 compared to the filter effluent, it performed poorly on HAA5 removal compared to the other media.

Finally, the project team tested GAC's potential to remove chlorate from the filtered water, as chlorate is a DBP listed under the UCMR3. **Table 2.14** indicates that GAC actually resulted in an increased chlorate concentration, but the reason for this observation is unclear. Additional monitoring of chlorate would be warranted should SGWASA seek to pursue a GAC contactor system at full scale. As an overall takeaway from this analysis, SGWASA must carefully consider the benefits of these media against the potential for forming other unregulated compounds in the water.

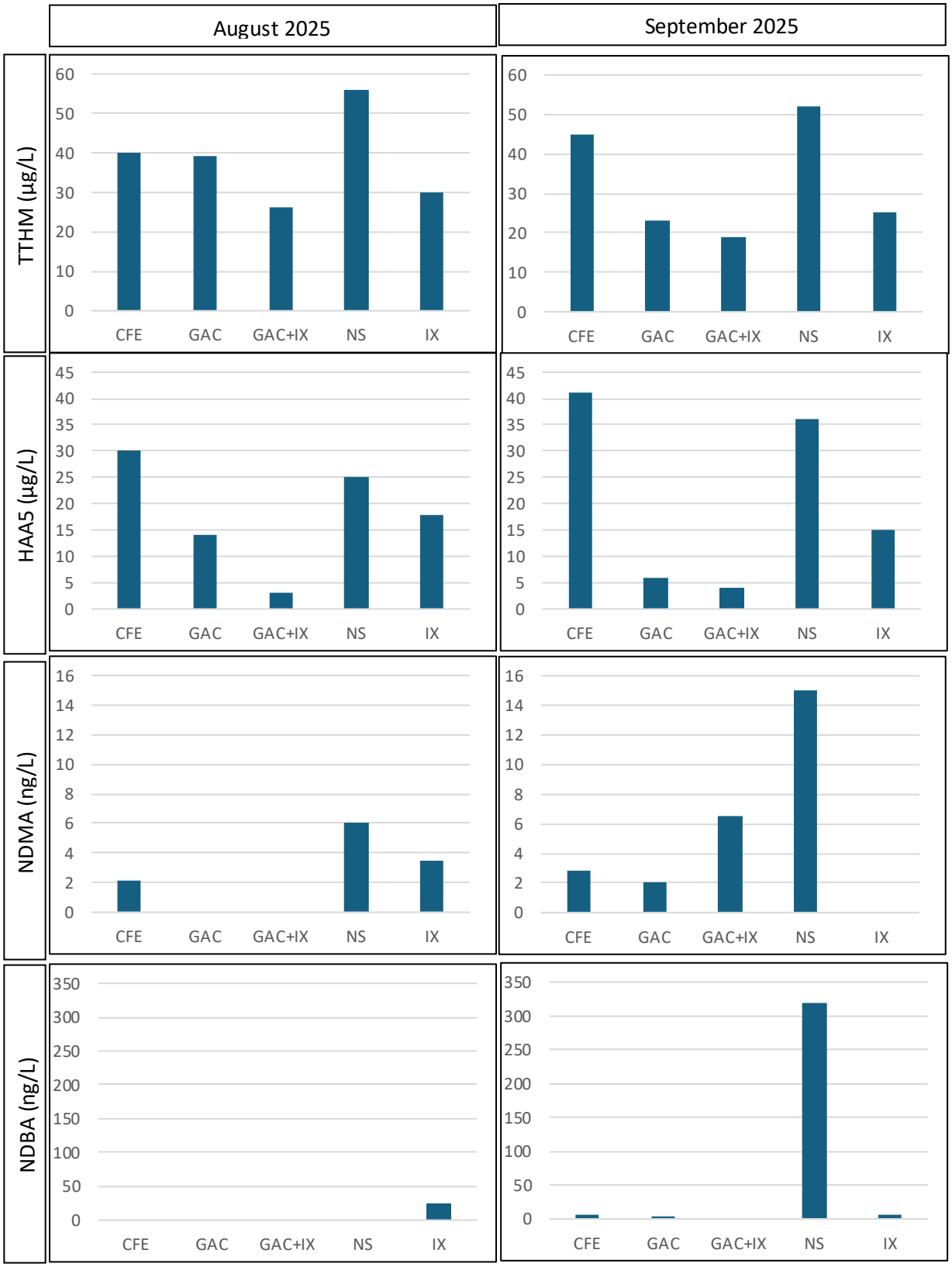


Figure 2.33a-h Disinfection Byproduct Formation by Media

Table 2.14 Chlorate Concentrations (all results in µg/L)

Sampling Event	Filter Effluent	GAC Effluent
November 2024	102	141
February 2025	28.1	38.1

2.5.4.4 Metals

The project team tested GAC's potential to scavenge additional compounds of potential concern:

- Chromium – regulated metal with the potential to cause allergic dermatitis at sufficient concentrations.
- Chromium-VI – form of chromium with potential chronic toxicity. Not regulated on its own.
- Manganese – metal which causes aesthetic issues in drinking water (color, taste). The EPA has set a Secondary MCL (SMCL) for manganese of 0.05 mg/L.
- Strontium – stable strontium is unregulated, while radioactive strontium is regulated as a radionuclide.

Table 2.15 summarizes the results for these compounds as sampled in November 2024 and February 2025. Chromium was not detected in any sample from either event, while strontium appeared relatively inert at about 28 µg/L across samples. Likewise, the raw water values for manganese were an order of magnitude higher than the filter effluent and GAC effluent values, which were comparatively close to one another.

Table 2.15 Metal Sampling Results* (all results in µg/L)

	November 2024			February 2025		
	RW	**CFE**	**GAC**	**RW**	**CFE**	**GAC**
Chromium	ND	ND	ND	ND	ND	ND
Chromium-VI	ND	ND	ND	ND	ND	ND
Manganese	155	11.0	8.7	130	11.4	17.0
Strontium	26.7	23.2	24.6	32.4	28.0	33.1

* ND = "non-detect"

2.5.4.5 PPCPs

The project team samples for Pharmaceutical and Personal Care Products (PPCPs) twice over the life of the pilot, sampling the raw and filtered waters, plus the GAC and AER downstream of the GAC. This sample scheme was intended to show if GAC provides any additional benefits with respect to PPCP removal. Of the 34 compounds tested for, all were non-detect across all samples.

2.5.4.6 Microplastics

At present, microplastics are a poorly understood class of analytes with various emerging definitions, analytical measurement methods, and toxicological profiles. For the purposes of this study, the project team engaged ALS Global to profile microplastics in SGWASA's water using their proprietary analytical method. ALS measures microplastics based on particle size, not composition, and their method defines

microplastics as polymerics which are smaller than 5 mm. ALS reports microplastic results in microplastic particles per liter (MPP/L).

Microplastic samples were taken in January and May 2025 for the plant's raw water, filter effluent, and the pilot GAC column effluent, to better understand how this GAC interacts with microplastics in the water. **Table 2.16** indicates no clear trend between microplastic particle numbers and interactions with existing plant processes nor with respect to the piloted GAC media. Note that cross-contamination of microplastic samples may be possible due to the plastic components of the pilot system. Further, microplastic analytical methods are still in their infancy, with poor standardization. The project team and industry as a whole continue to adapt and improve strategies for microplastics quantification.

Table 2.16 Microplastic Sampling Results (all results in MPP/L)

Sampling Event	Raw Water	Filter Effluent	GAC Effluent
January 2025	107.01	494.94	243.46
May 2025	153.83	48.16	115.04

2.5.4.7 T&O Compounds

Taste and odor (T&O) compounds require tight process control to remove and avoid customer complaints. T&O compounds are seldom removed from water via conventional treatment techniques. Usually a sorptive process, such as PAC dosing, is required to remove certain T&O compounds like 2-Methylisobomeol (MIB) and geosmin.

The project team sampled for several T&O compounds in January 2025 and May 2025, namely:

- 2,4,6-Trichloroanisole (TCA)
- 2-Methylisobomeol (MIB)
- Geosmin
- Isobutyl Methoxy Pyrazine (IBMP)

The project team sampled the raw water, filter effluent, and GAC effluent for these compounds. All samples returned non-detect for all analytes. It is possible that, in the future, the plant may see algal blooms off of Lake Holt, which could lead to higher levels of these T&O compounds. SGWASA may consider "spiking" these T&O compounds under future studies to determine if their post-filter media provide any benefit removing them, in turn potentially leaving room to reduce PAC doses.

2.6 Summary of Findings

The following findings and observations from the pilot study as they relate to the design criteria and recommendations are summarized in **Table 2.17**.

Table 2.17 Pilot Study Design Applications

Pilot Study Observation	Design Commentary/ Recommendations
Media Performance	
PFOA is the first regulated PFAS compound to breakthrough at concentrations relatively close to the MCL for all media.	PFOA will be the driver for future media changeouts. The goal for removal will be 3 ng/L PFOA.
The composition of raw and filter effluent PFAS was notably impacted by PAC. On average PAC removed 33% of PFAS measured using EPA 533 from the plant's raw water.	Maintaining PAC dose as is currently used will ensure that all media remove PFOA to below the MCL. The impact of PAC on media life is estimated to be more significant for GAC than other AER and NS based on pilot data.
The breakthrough curve of the GAC media was relatively flat following initial breakthrough. The GAC initial breakthrough did occur shortly after the initial backwash.	SGWASA should closely monitor breakthrough of PFOA in GAC full-scale operations given the removal may hover below the goal for most of the time.
CETCO FS 200 showed initial breakthrough, but subsequently removed PFOA to non-detect levels.	CETCO FS 200 media performance tends to improve after a few months following startup. If using this product, SGWASA should stagger contactor startups to provide sufficient performance for PFAS removal.
DuPont PSR2+ AER has remained non-detect with respect to PFOA throughout the study to date.	The DuPont PSR2+ is the most promising media in terms of reliable PFAS removal performance. The overall media recommendation will be further evaluated when all pilot data has been collected.
The Calgon F400 performed best with respect to TOC removal and DBP reduction.	Despite being outperformed by the Amberlite PSR2+ and Fluorosorb 200 with respect to PFAS removal, the Calgon F00 provides additional water quality benefits as a scavenger media. The project team recommends implementing a hybrid contactor facility which can house different kinds of media to meet SGWASA's evolving water quality goals.
The Fluorosorb 200 seems to cause nitrosamine formation in the simulated distribution system. The PSR2+ also produced some nitrosamines when treated with chloramines, but to a lesser extent than the Fluorosorb 200.	If SGWASA intends to implement Fluorosorb 200 or PSR2+, careful consideration must be given to appropriate pretreatment of these media, and their benefits must be weighed against the potential for release of unregulated nitrosamines.
Typical Operational Considerations	
Shortly after startup, all media darkened in color, suggesting manganese staining. All media required backwashing or fluffing to lower the ΔP across the media.	SGWASA should closely monitor manganese control processes at full-scale. An ongoing study is evaluating opportunities to improve upstream manganese removal.
Throughout the study, ΔP for the cartridge filters on Trains B (NS) and C (AER) increased.	Cartridge filters appear effective at removing particles and solids greater than 5 µm upstream of AER and NS when there is no GAC used as media pretreatment. The project team recommends implementing cartridge filters for the NS or AER media if not preceded by GAC.
Free chlorine upstream of Train C (AER) was chloraminated to reduce fouling potential on this media while avoiding oxidation damage to the AER associated with free chlorine.	Chloramines did not appear to negatively impact AER's PFAS removal performance. However, SDS results suggest chloramine treatment on this media may produce low levels of nitrosamines. The project team recommends allowing for either free chlorine removal or chloramination at full scale should AER be selected.
All media required backwashing or fluffing at least once throughout the study. Despite these events, all media performed well with respect to PFOA removal.	For a full-scale system, a ΔP increase of 10 to 20 psi is a reasonable target to trigger a backwash. It is possible backwashes may be needed more often with a full-scale system than in the pilot, perhaps about once per month based on similar facilities. The project team recommends including provisions for backwashing contactors at full-scale.
The project team observed mudball formation in the Fluorosorb 200 column. Discussions with the manufacturer indicate increased backwash rates could rectify this issue.	SGWASA should make provisions for an air scour backwash system if using Fluorosorb 200 media in the future. The project team will include floor space for an air scour blower in its preliminary design.
Startup Operational Considerations	
As is typical, AER resin at startup resulted in a pH drop and increased the chloride:sulfate ratio in the effluent at startup.	Startup backwash and forward flush/ filter-to-waste water should be sent to the existing residuals equalization lagoon and treated as part of the residuals processing.
As is typical, GAC released arsenic at startup and temporarily increased the effluent pH.	Startup backwash and forward flush/ filter to-waste water should be sent to the existing residuals equalization lagoon and treated as part of the residuals processing. Coagulant may be added to aid settling of GAC fines during backwash and potentially treat arsenic. Sufficient dilution of GAC waste can adjust pH and arsenic to levels allowable in the plant's NPDES permit.

3.0 Conceptual Design Considerations

This section provides design considerations for the proposed Advanced Treatment Building based on observations during the pilot study. The project team will detail design parameters and provide an Opinion of Probable Construction Cost (OPCC) under the heading of the Basis of Design Report (BODR). Once the BODR and associated OPCC are issued, and once the pilot study has been completed, the project team will use the OPCC and breakthrough data to provide SGWASA a lifecycle cost assessment of the alternatives considered via a Pilot Report Addendum.

3.1 General Concept and Related Assumptions

3.1.1 Process Flow Diagram

Figure 3.1 shows the process flow schematic for the SGWASA advanced Treatment Building to include PFAS treatment. The proposed treatments are detailed below. Notably, there are different treatment configurations required when using different media, as verified in the pilot study (Section 2) and summarized in **Table 3.1**. As Fluorosorb 200 shares some pretreatment properties with GAC and others with AER, it is not shown in Figure 3.1 for clarity.

Table 3.1 Pretreatment Recommendations for Different Media

Parameter	Treatment Technology		
	GAC	AER	Fluorosorb
Oxidant Tolerance	Low Levels of Free Chlorine or Other Oxidants1	Chloramines2	Low Levels of Free Chlorine or Other Oxidants1
Preferred Feed Location Relative to Chlorine Contact Chamber	Upstream	Downstream	Upstream
Cartridge Filters	Not Required	Required	Required

1. All oxidants take up some binding sites on GAC and NS, potentially lowering the media life. However, a low level of oxidant (such as free chlorine residual in the filter effluent) may be beneficial by cutting down on biology formation in the media.
2. Amberlite PSR2+ will deteriorate if fed free chlorine, but it can tolerate low levels of chloramines, which can cut down on biology formation in the media. Other resins have different oxidant tolerance properties.

3.1.2 Process Design Equipment

3.1.2.1 Booster Pump Station and Hydraulics

The project team recommends the use of vertical turbine pumps to transfer water from SGWASA's filter effluent (either upstream or downstream of the chlorine contact chamber) to the Advanced Treatment Building. Vertical turbine pumps are advantageous in this design due to their flexible flow and head conditions, flooded suction, and smaller footprint than other pumps like split-case centrifugal pumps. Depending on plant hydraulics and operation, either suction cans or a wetwell may be used to house these pumps.

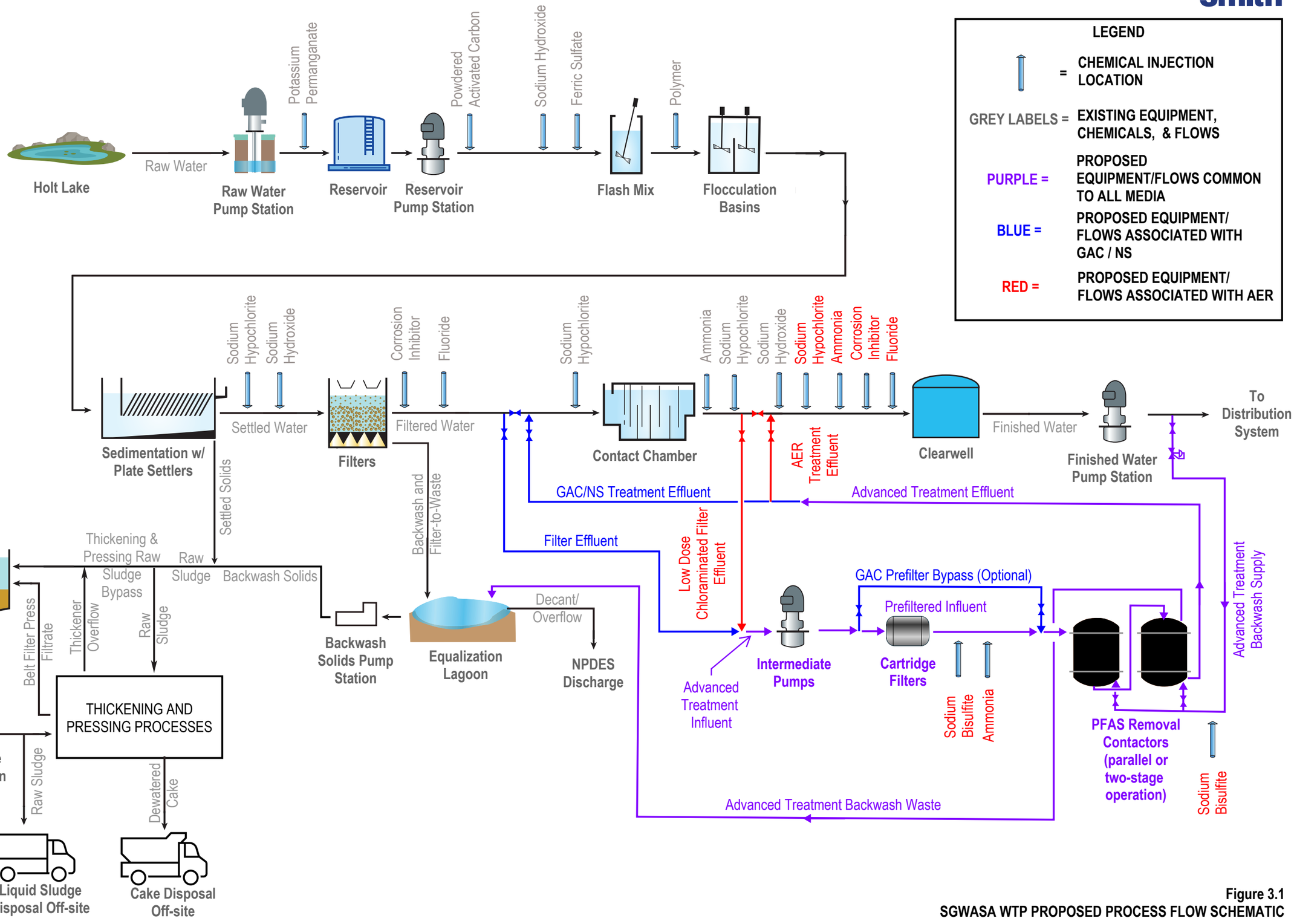


Figure 3.1
SGWASA WTP PROPOSED PROCESS FLOW SCHEMATIC

As shown in Figure 3.1 above, the project team recommends allowing for tie-in points both upstream and downstream of the chlorine contact chamber for implementation of different treatment technologies. As discussed in Section 2, GAC and Fluorosorb can handle some residual free chlorine, but free chlorine will damage gel-based AER. Allowing for tie-in points both upstream and downstream of the chlorine contact basin will allow the plant to continue forming chloramines downstream of their primary disinfection process, regardless of the technology employed. The PFAS-treated water should be returned either prior to the chlorine contact basin for GAC/Fluorosorb or after the chlorine contact basin for AER. In both cases, the plant can maintain using free chlorine for primary disinfection, then form chloramines for secondary disinfection.

The pump discharge will be designed to accommodate the additional varying pressure needed for the different advanced treatment processes/media, likely with the use of VFDs. Note that the addition of cartridge filters for AER/NS may necessitate higher head on the pumps than GAC alone.

3.1.2.2 Media

As previously presented to SGWASA, CDM Smith recommends a hybrid pressure vessel facility designed to accommodate any of the media piloted including granular activated carbon (GAC), anion exchange resin (AER), or novel sorbent Fluorosorb 200 (NS). Descriptions of these media can be found in Appendix B—SGWASA Pilot Test Plan. Such a design would allow for the most future flexibility as all these media effectively removed PFOA and PFOS to below the MCLs in the pilot study, and it is possible more effective PFAS media may emerge in the market in the future. However, a facility designed around one specific media may not require as many pretreatment and backwash provisions as a more flexible facility. As such, SGWASA may consider a purpose-built facility for a particular type of media to save on capital and operational costs. Such a decision would come at the cost of operational flexibility.

The project team notes that, at present, no Fluorosorb media have been implemented at full-scale for treatment of PFAS in surface water, outside of demonstrational tests only. Despite good removal of PFOA at the pilot scale, implementing Fluorosorb at the SGWASA WTP would be a novel application. Further, as detailed in Section 2, Fluorosorb 200 presents some concerns for DBP formation, more so than AER, specifically with respect to nitrosamine formation. Should Fluorosorb present as the most cost-effective lifecycle media, SGWASA will need to carefully consider the cost savings of such a media against the risks of a relatively novel product implemented at full scale.

3.1.2.3 Pressure Vessel Design

Full-scale pressure vessel systems are typically designed in “lead-lag” fashion at a given design flow for a total EBCT of 10 to 20 minutes for GAC (10 minutes per each vessel) and 2 to 6 minutes for AER (2-3 minutes per each vessel). The Fluorosorb manufacturer (CETCO) and system provider (Chart) recommend that Fluorosorb 200 be operated in similar conditions to those of AER. The Ten State Standard requirements for “adequate” PFAS adsorption are 10 min EBCT for GAC and 2-min EBCT for AER.

A lead-lag arrangement would allow the WTP to remove additional PFAS prior to media changeout and provide greater operational flexibility while meeting the PFAS MCLs. However, lead-lag operation at *full plant capacity* would require a higher number of pressure vessels, increasing capital costs. For this reason, PFAS pressure contactor systems are typically designed in vessel pairs with a valve tree between

them, which can be adjusted to operate as either parallel or lead-lag. As such, during preliminary design, the design team will consider a system which can operate in lead-lag for average plant flows and parallel for maximum flows, given one pair of vessels offline for media changeout operations. The project team will also investigate hydraulic control schemes during preliminary design to see if parallel operation can maintain an odd number of contactors online. Similarly, a bypass will be investigated in preliminary design to see if the plant could realize cost savings under a "blend" scheme, where some of the filter effluent bypasses PFAS treatment and blends with the finished water to remain in compliance with the EPA's MCLs.

A 12-foot diameter pressure vessel is typically designed to operate at a maximum loading rate of 8.5 gpm/sf for GAC. Certain AER media can be uprated to higher loading rates, but a "hybrid" design would need to assume the lowest loading rate of any media considered. As detailed in Section 2, the pilot columns were operated at loading rates of 6 and 8 gpm/ sf for GAC and AER/NS respectively, to better understand how these media would perform under *typical* loading conditions. Once breakthrough is reached across media, the time to breakthrough full-scale will be extrapolated from the pilot linearly based on the quantity of bed volumes to breakthrough in the pilot.

As detailed in Section 2, a conservative way to define breakthrough is when the effluent concentration of the system exceeds the desired plant finished water goal. For SGWASA, this goal is set at 3 ng/L of PFOA, to give some operational buffer before reaching the MCL. The lead-lag configuration provides additional buffer for media changeout once breakthrough occurs in the lead vessel. The project team will use lead vessel media breakthrough as the basis for lifecycle costs: when the lead vessel effluent reaches 3 ng/L of PFOA, the team assumes the media would be changed. As such, once the pilot columns reach 3 ng/L of PFOA in their effluent, the project team will tabulate the number of bed volumes to breakthrough and use this value to assess the lifecycle costs of each media.

As discussed in Section 2, the GAC piloted had a relatively flat breakthrough curve which did not hit 3 ng/L for many months after initial breakthrough. Without PAC, the project team estimates that the GAC could have broken through between 70 and 200 days sooner. However, without analytical data to prove GAC's longevity without PAC, the project team will estimate the media lifecycles assuming PAC remains on, at similar doses to the present, regardless of media implemented. SGWASA may realize additional operating cost optimization by adjusting their PAC dosage once PFAS treatment is implemented.

Hybrid pressure vessels for AER or NS will require underdrains that can accommodate finer material. Using a standard Calgon vessel system as an example, this means using stainless steel nozzles in the underdrain and larger valve tree piping of 10 inches versus the default requirements for GAC pressure vessel systems instead of polypropylene underdrains and 8-inch valve tree piping. However, it is generally recommended using stainless steel nozzles regardless of whether media is GAC or AER given the more robust design.

All pressure vessels should be designed with upflow headers at the base of the vessel to evenly distribute backwash flow from the bottom of the vessel. Provisions to reduce the risk of media loss during backwash should be evaluated in design. Some vendors believe nozzles to retain media are feasible while others do not and prefer to prevent media loss using strict setpoints on backwash flows.

An example of a pressure vessel pair arrangement is shown in **Figure 3.2**. Note these vessels are 12 feet in diameter and about 27 feet tall.

Pressure vessels can be brought into the facility using services of a rigging company. Equipment in the facility can be brought in on rolling equipment, then tilted up using a special boom truck and forklift. During media changeouts, GAC and AER are typically loaded from a truck as a slurry.

3.1.2.4 Backwash

The project team will evaluate if the plant's high service pumps can produce sufficient pressure to backwash the media contactors at the required backwash flow rate. The team will evaluate the use of a pressure reducing valve and flow control valve to throttle the high service pump discharge as needed. It should be noted that designated backwash supply pumps can be provided for this purpose if preferred. The backwash system will be further vetted in the preliminary design phase.

The project team will also evaluate routing and potential treatment of Advanced Treatment Building wastes under the Basis of Design Report (BODR). Typical wastes associated with advanced treatment systems include slurry water, backwash waste, filter-to-waste, and building drains. The pilot results suggest that GAC wastes from initial washing and flushing will potentially contain arsenic, while AER wastes will include elevated chloride levels and an elevated chloride-to-sulfate ratio (CSMR). Both likewise impact initial pH levels, and some media like GAC can have fine materials in their wastes. During preliminary design, the project team will assess how to address wastes from the contactors, including the potential use of ferric coagulant for arsenic wastes.

3.1.2.5 Pretreatment Provisions

As noted in Table 3.1, different pretreatment provisions are required for different media. The project team recommends including provisions for cartridge filters, dechlorination, chloramination, and tie-ins upstream or downstream of the chlorine contact chamber.

Dechlorination and Rechlorination

Most AER resins (including the PSR2+ that was piloted) are sensitive to oxidative damage by chlorine, albeit some less than others. FS 200 is more resistant to chlorine damage than AER but is sensitive, nonetheless. The average chloramine concentration downstream of the contact basin is 2.56 and up to 5.54 mg/L historically. A small monochloramine residual of 1 mg/L, as targeted in the pilot, could be maintained upstream of the AER to prevent biological fouling. Therefore, the project team recommends having provisions to either quench or form chloramines from the low free chlorine residual downstream of the contact chamber, then boost the chloramine level downstream of the AER media to meet the plant's secondary residual targets. The project team proposes providing provisions for both chlorine quenching and chloramination upstream of the AER, but only one or the other would be used at a time.

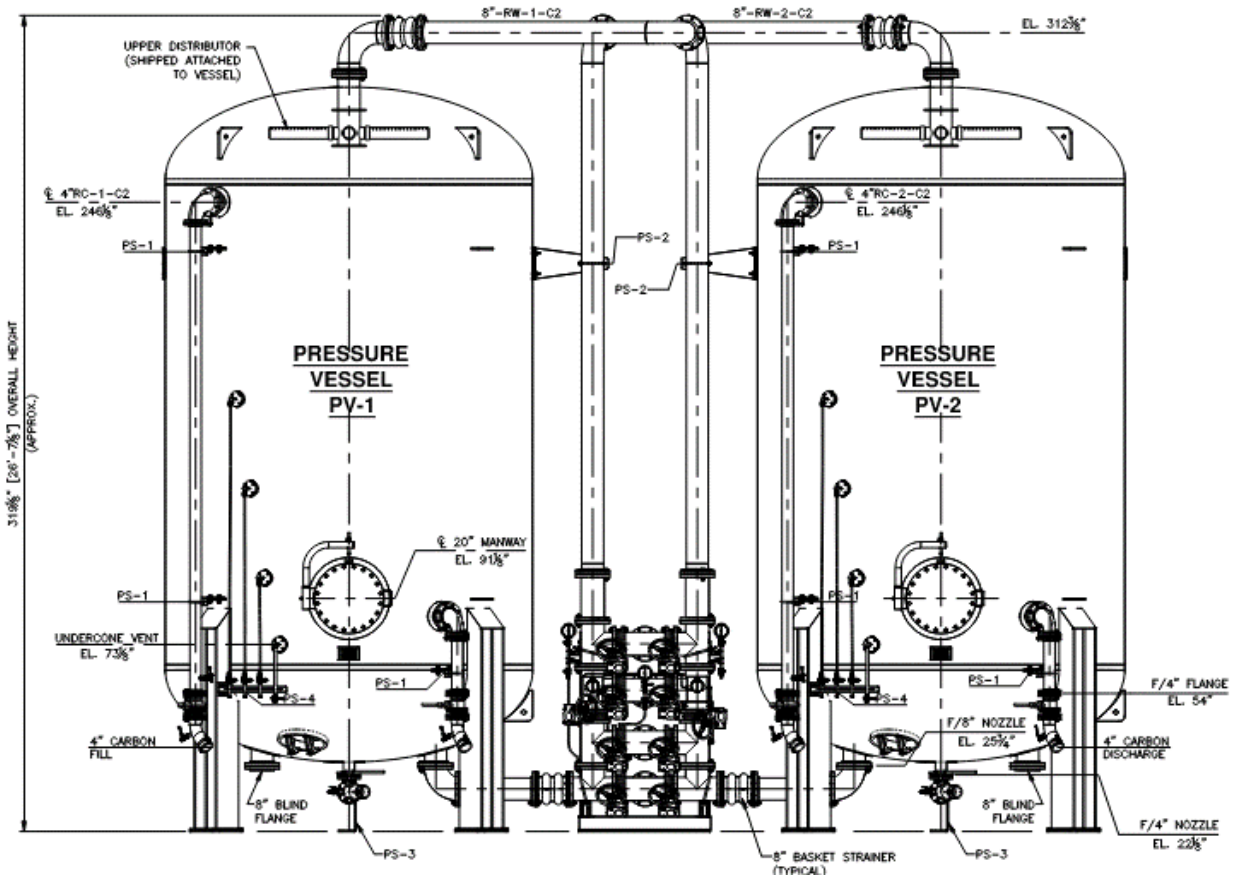


Figure 3.2 Pressure Vessel Pair (Courtesy of Calgon)

The quenching chemical feed and storage system will also be used to dechlorinate backwash "fluffing" supply water feed for AER, which could be diverted from the finished water.

Both sodium bisulfite and calcium thiosulfate are potential dechlorination chemicals. It should be noted sodium bisulfite is more effective, less costly, and requires shorter contact time than calcium thiosulfate, but is odorous. Future evaluation of the plant's existing chloramination system will determine if the plant's existing ammonia system has sufficient capacity to accommodate chloramination at the new process. Similarly, the project team will evaluate SGWASA's existing dechlorination facilities which are part of the residuals process.

Cartridge Filters

Cartridge filters remove solids and particulates that could otherwise result in fouling of AER and FS200. Cartridge filters themselves are loaded in dedicated pressure vessel housings. It should be noted that cartridge filters will not prevent fouling attributed to solids accumulation entirely but should reduce the frequency of backwashes required due to solids buildup (a separate concern from biofouling), as shown in Section 2. A horizontal cartridge filter pressure vessel alternative is shown in **Figure 3.3**. It should be noted that bag filters are a similar option to cartridge filters. Bags are a lower cost maintenance item than cartridges. However, bag filters must be installed in vertical applications and may allow particulates greater than the rated size to pass through. Horizontal units have a slightly larger footprint than vertical pressure vessels but are easier for maintenance. Cartridge filters can slide in and out of the housing from the flanged pressure housing end for changeout operations.

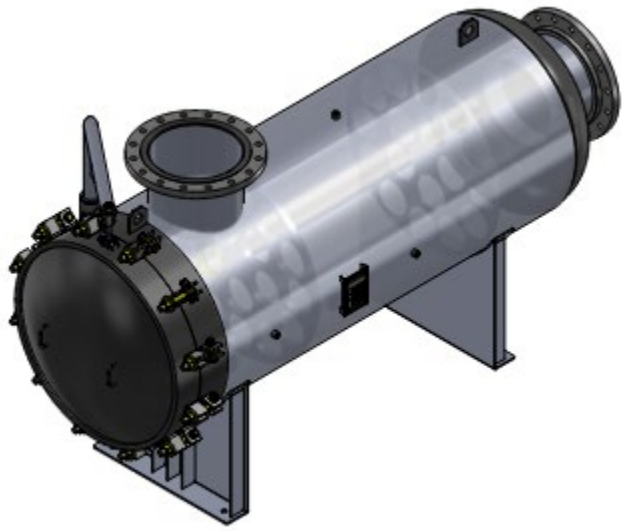


Figure 3.3. Cartridge Filter Pressure Vessel Housing (Courtesy of Towner Filtration).

Air Scour

Air scour would be helpful for Fluorosorb 200 media backwashing but is not usually employed for AER or GAC pressure vessels. As noted in Section 2, Fluorosorb 200 tends to form "mudballs" and air scour helps to break these apart. GAC and AER in pressure vessels can usually be backwashed without the aid of air scouring. CDM Smith is actively researching the value proposition of air scour for these vessels under the project design phase.

3.1.2.6 Additional Process Considerations

Hybrid Pressure Vessel Usage

Pressure vessels for AER and FS200 require a finer mesh underdrain than what would be required for GAC alone. Larger piping and valving, at least 10-inch, is also recommended for AER systems whereas the standard for GAC may be smaller. Hybrid pressure vessels straight wall height should be as tall as GAC vessels, as GAC bed depth will drive the height for all media types given the longer EBCT.

AER and NS Future Considerations

SGWASA may consider allocating footprint near the Advanced Treatment Building for AER and NS regeneration facilities. Media regeneration is an emerging area of study and may make these media more cost effective in the future. Such facilities would likely include dedicated regeneration pumps and likely a brine or other chemical storage tank.

Phosphates for Corrosion Control

The SGWASA WTP currently feeds polyphosphate downstream of the filters. The pilot feed was located upstream of the polyphosphate dosing point for the pilot study. SGWASA may consider relocating their polyphosphate feed downstream of the Advanced Treatment Building. Phosphates can negatively impact the removal of PFAS for AER media. The relocation of polyphosphate can be evaluated further in the ongoing corrosion control optimization study and in detailed design.

4.0 Overall Observations and Recommendations

This Section summarizes the project team's findings as a result of this pilot study. The project team offers the following observations and recommendations:

- *SGWASA will likely see substantial increases in demand over the next 5-10 years as development gains traction in the region*. SGWASA's WTP has an existing capacity of 7.5 MGD, average daily flow (ADF) of 2.5 MGD, and maximum daily flow (MDF) of 3.7 MGD. Per discussion with SGWASA staff on October 29, 2025, the project team assumes a WTP buildout capacity of 10 MGD.
- *SGWASA's existing PAC system removes some PFAS, but not enough to be compliant with the EPA's MCLs for PFOA and PFOS (4 ng/L each)*. The plant's current PAC dosing scheme removes approximately 25-30% of the sum of PFAS measured under Method 533.
- *Pilot data confirms that PFOA will be the controlling PFAS with respect to media changeout for the initial EPA PFAS rule*. The project team recommends lifecycle evaluation assuming changeout at 3 ng/L to provide some operational buffer between changeout events when operating the system as one-stage.
- *All media tested successfully controlled PFAS to levels below the MCLs for at least 12 months if installing the number of contactors recommended*. Fluorosorb 200 struggled to remove short-chain compounds more than the other media tested, but most compounds other than PFOA and PFOS are at much lower concentrations in the plant's raw water to begin with.
- *PAC likely had a beneficial effect on media service life, particularly for GAC.* Were the plant to eliminate PAC dosage, the life of the media would likely decrease, especially for GAC. For the purposes of this study, the project team will assume PAC remains on regardless of the implemented alternative.
- *SGWASA will need to enact tight process control measures to prevent manganese deposition on the post-filter media.* Data suggest that manganese had a deleterious effect on media differential pressures but not necessarily PFAS removal effectiveness. The project team is conducting a study for manganese optimization at the SGWASA WTP.
- *Media pressure contactors will likely require some backwashing, or at least "fluffing" in the case of AER.* Similar facilities in North Carolina using GAC pressure contactors have to backwash them about once a month. It is unknown if cartridge filters in front of GAC contactors would have a substantial impact on backwash frequency.
- *Cartridge filters for both AER and Fluorosorb 200 provided removal of solids and particulates larger than 5 µm, evidenced by the increase in differential pressure across these units, and thus should be implemented at full scale.* It is possible these cartridge filters either removed manganese, microbiota, or colloidal solids.

- In contrast, *the cartridge filter between the GAC and AER on Train A did not see an increase in differential pressure, hence it should not be implemented at full scale for a "GAC-only" facility.* Note that the "GAC-only" facility option is formulated primarily for cost savings at the expense of flexibility of different media types. Pilot data suggests that a GAC product would not benefit direct from upstream cartridge filters, hence the "GAC-only" facility excludes them.
- *Both GAC pretreatment and chloramines helped cut down on differential pressure increases with AER, without a deleterious effect on PFAS removal.* When compared to similar pilot data where dechlorination is used upstream of AER, the benefit of GAC pretreatment or chloramines become more strongly evident.
- However, *chloramine SDS testing did result in some nitrosamine formation above baseline conditions for the AER.*
- *The Fluorosorb 200 saw high levels of nitrosamines in the SDS test and also increased formation of TTHMs above baseline conditions.*
- *Initial flushing will be required for all media tested: pH stabilization for all media, arsenic leaching for GAC, and CSMR for AER.* Based on similar facilities in the region, the project team anticipates about 70 bed volumes for backwash waste and another 70 for filter-to-waste.
- *GAC provides the most benefit in terms of TOC removal.* In turn, SDS testing of the GAC effluent resulted in lower TTHMs and HAA5 compared to the filtered water. However, TOC competitively binds to sorption sites on the GAC, potentially impacting GAC's service life for PFAS removal.
- *The project team recommends SGWASA pursue a facility designed to accommodate any of the three medias tested*. The team has summarized design considerations for a "hybrid" facility able to accommodate multiple types of media. While such a facility would require additional expenditures for hydraulic flexibility, media pretreatment, and associated building footprint, it would provide SGWASA significant operational flexibility and allow for implementation of future improved media technologies.

The project team will issue an addendum to this report to detail the lifecycle costs after the conclusion of the pilot study and delivery of the Basis of Design Report (BODR) with associated Opinion of Probable Construction Cost (OPCC).

Appendix A – CDM Smith PFAS Regulations Fact Sheet

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EPA's Final Regulations: What Do You Need To Know?

On April 10th, 2024, EPA announced the final National Drinking Water Standards for six PFAS (PFOS, PFOA, PFNA, PFBS, PFHxS, and GenX).

Numerical levels for compliance

PFAS	MCL (ng/L or ppt*)	Significant Figure Requirement	Rounding for Reporting Example
PFOA	4.0	2	Running annual average value (RAA) of 4.04 ng/L = round to 4.0 ng/L = **Compliance** RAA of 4.05 ng/L = round to 4.1 ng/L = **Exceedance**
PFOS	4.0		
PFNA	10	1	RAA of 14.9 ng/L = round to 10 ng/L = **Compliance** RAA of 15.0 ng/L = round to 20 ng/L = **Exceedance**
PFHxS	10		
GenX	10		
PFNA, PFHxS, GenX, and PFBS (Mixture)	HI Value of 1 (Unitless)	1	RAA of 1.49 = round to 1 = **Compliance** RAA of 1.50 = round to 2 = **Exceedance**

**Maximum Contaminant Level (nanograms per liter or parts per trillion)*

HI denominators are called Health-Based Water Concentrations (HBWC)

$$\frac{\text{GenX}}{10} + \frac{\text{PFBS}}{2000} + \frac{\text{PFNA}}{10} + \frac{\text{PFHxS}}{10} = \text{Hazard Index (HI)}$$

(all concentrations in ppt or ng/L)

HI MCL only applies for any mixture containing two or more of the four PFAS. *See next page for HI examples.*

Why did EPA develop these regulations?

- PFOA and PFOS: kidney and liver cancer risks - (MCL Goal or MCLG = 0 ng/L)
  - *4 ng/L is the practical quantitation level (PQL) where the lowest PFOA/PFOS can be reliably measured.*
- PFNA (decreased body weight gain and developmental effects, MCLG = 10 ng/L), PFHxS (thyroid effects), PFBS (thyroid effects) & GenX (liver effects, MCLG = 10 ng/L) - (MCLG for a mixture of 4 compounds = 1, unitless)
- PFBS is included in the HI MCL without finalization of its individual regulatory determination because of 1) dose-additive adverse effects when present in a mixture, 2) substantial likelihood of its co-occurrence, and 3) meaningful opportunity for health risk reduction by regulating mixture combinations.

Treatment

- Best Available Technology (BAT):
  - *Granular activated carbon (GAC), anion exchange (AIX),* nanofiltration (NF), and reverse osmosis (RO)
- Point of use (POU) or point of entry (POE) systems not listed as compliance options because the MCLs are below the currently available NSF/ANSI certification standards for these treatment systems

Compliance Deadline Extended

April 2024	April 2027	April 2029
Final PFAS rule published	Initial monitoring deadline	Compliance deadline

Monitoring

Initial Monitoring:

- Entry point to the distribution system samples by EPA Method 533 or 537.1 Version 2.0
- Large groundwater systems serving >10,000 people and surface water systems to complete quarterly monitoring over 12-months (2-4 months apart).
- Small groundwater systems serving <10,000 people to complete monitoring twice over 12-months (5-7 months apart).
- Must be completed within 3 years of the final rule
- Previous monitoring results may be used
  - *UCMR 5 or other data collected using EPA Methods 533 or 537.1 Version 2.0 after 1/1/2023*
  - *Data collected between 1/1/2019-12/31/2022 can be used if they are below the MCLs*

Compliance Monitoring:

- Quarterly monitoring, unless approved for reduced monitoring
- Compliance based on a **running annual average (RAA)**.
- Results <PQL will be summed as zero
  - *Example 1: PFOA results of* **2.0**, **1.5**, **5.0** *and* **1.5** *ng/L (***results below PQL***)*
    - RAA = (**0.0** + **0.0** + 5.0 + **0.0**) / 4 = **1.3 ng/L** for **2** significant figures
  - *Example 2: GenX (HFPO-DA) of* **3.2**, *6.1, 5.5 and* **2.7** *ng/L*
    - RAA = (**0.0** + 6.1+ 5.5 + **0.0**) / 4 = 2.9 but **3 ng/L** for **1** significant figure
- If more than one sample taken per quarter, all samples are used in the RAA.

Contaminant	PQL
PFOA	4.0 ng/L
PFOS	4.0 ng/L
PFNA	4.0 ng/L
PFHxS	3.0 ng/L
GenX	5.0 ng/L
PFBS	3.0 ng/L

Reduced Monitoring:

Triennial Sampling:

- If all samples **during initial monitoring** are below trigger levels, 1 sample per 3-year compliance period
- To be collected during the quarter with the highest prior concentration identified in the most recent year
- A single sample exceeding the trigger levels requires quarterly sampling and is required to be used for 1st quarter result of RAA calculation

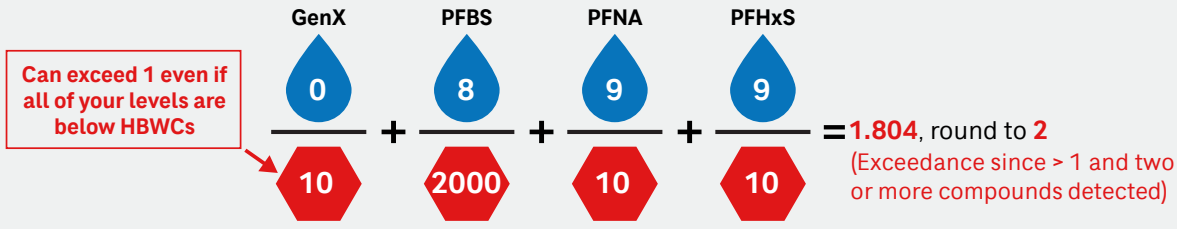
Contaminant	Trigger Level
PFOA	2.0 ng/L
PFOS	2.0 ng/L
PFNA	5 ng/L
PFHxS	5 ng/L
GenX	5 ng/L
Hazard Index	0.5 (unitless)

Annual Sampling:

- Determining the system is below the trigger level and reliably and consistently below the MCL requires 4 consecutive quarterly samples **during compliance monitoring**
- To be collected during the quarter with the highest prior concentration identified in the most recent year
- After 3 years with results below the trigger levels, the state may allow triennial monitoring
- A single sample exceeding the MCL requires quarterly sampling and is required to be used for 1st quarter result of RAA calculation

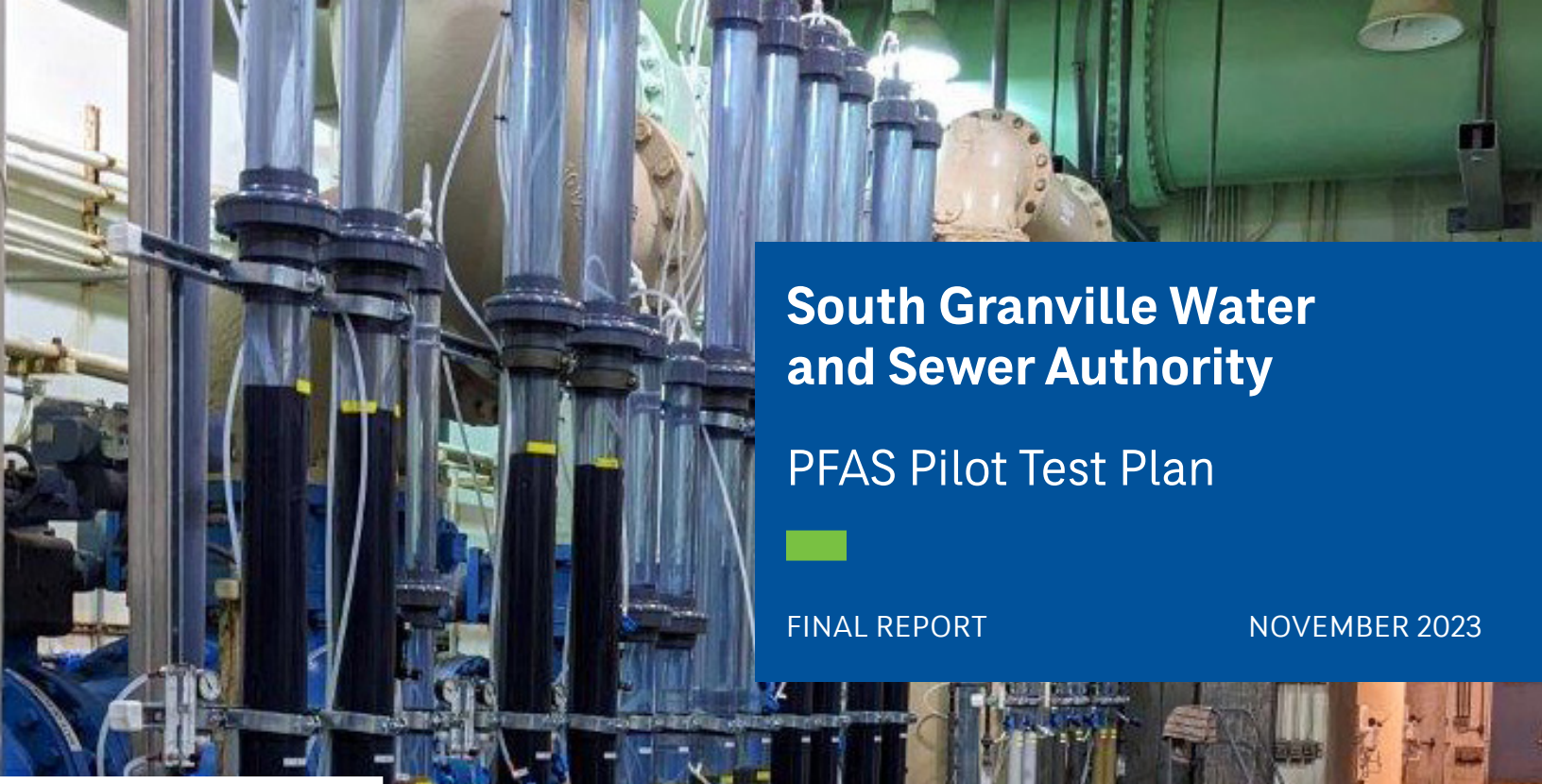
HI Calculation Example

- HI MCL is violated if RAA HI exceeds the MCL AND two or more HI analytes are detected above the PQLs
  - *Example: 9 ng/L of PFHxS, 8 ng/L of PFBS and 9 ng/L for PFNA and ND for GenX*



Appendix B – SGWASA PFAS Pilot Test Plan

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South Granville Water and Sewer Authority

PFAS Pilot Test Plan

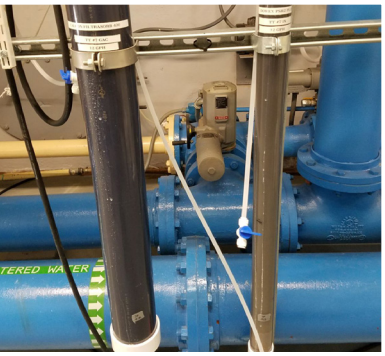
FINAL REPORT

NOVEMBER 2023















CDM Smith

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Section 1
Introduction and Background

In March 2023, the United States (US) Environmental Protection Agency (EPA) released a proposed National Primary Drinking Water Regulation (NPDWR) to establish legally enforceable levels, called Maximum Contaminant Levels (MCLs), for six per- and polyfluoroalkyl substances (PFAS) in drinking water. These draft MCLs are presented in **Table 1-1**. The EPA has indicated that the regulation will be finalized by the end of 2023 or early 2024, following a comment and review period. Compliance will be required three years from the publication date per the draft regulation. There is a chance EPA will add the provision for requesting two additional years to compliance if doing capital improvements since that provision exists in many similar regulations, but EPA did not include that provision in the draft regulation.

Table 1-1. EPA Proposed MCLs for PFAS

Compound	Proposed MCL (enforceable levels)
Perfluorooctanoic acid (PFOA)	4.0 ppt
Perfluorooctane sulfonate (PFOS)	4.0 ppt
Perfluorononanoic Acid (PFNA)	1.0 (unitless) Hazard Index
Perfluorohexane Sulfonate (PFHxS)	
Perfluorobutane sulfonate (PFBS)	
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	

The proposed Hazard Index MCL is calculated as follows:

$$\text{Hazard Index} = \left(\frac{[\text{GenX}_{\text{water}}]}{[10\text{ ppt}]}\right) + \left(\frac{[\text{PFBS}_{\text{water}}]}{[2000\text{ ppt}]}\right) + \left(\frac{[\text{PFNA}_{\text{water}}]}{[10\text{ ppt}]}\right) + \left(\frac{[\text{PFHxS}_{\text{water}}]}{[9.0\text{ ppt}]}\right)$$

The purpose of this report is to provide the South Granville Water and Sewer Authority (SGWASA) a draft pilot test plan for removal of PFAS compounds.

1.1 Background

The SGWASA serves the Granville County, North Carolina residents including the City of Creedmoor, Town of Butner, and Town of Stem. The plant sources its raw water from the R.D. Holt Reservoir located just northwest of Butner. The SGWASA water treatment plant (WTP) has a permitted capacity of 7.5 million gallons per day (MGD). The average daily flow (ADF) is approximately 2.8 MGD and peak flow is between 4.0 to 4.5 MGD.

1.1.1 Existing Treatment Processes

The existing process flow diagram is presented in **Figure 1-1**. The WTP process includes raw water pumping, rapid mix, coagulation, flocculation, sedimentation with plates settlers, dual media filtration with sand and anthracite as the filter media, clearwell storage and finished water pumping, Powdered activated carbon (PAC) is added to the raw water prior to reaching the plant. Ferric sulfate is used as the coagulant, caustic is used for pH control, free chlorine is used on the filters for manganese control and primary disinfection and chloramines are used as a secondary disinfectant in the distribution system.

1.2 Project Objective

PFAS concentrations at SGWASA WTP exceeded the proposed MCLs for PFOA and PFOS of 4 ppt each. Considering the anticipation of EPA finalizing the draft regulation for PFAS, the goal of this study is to develop a pilot test plan to evaluate the available treatment technologies for removal of PFAS so that SGWASA is prepared to achieve compliance with the proposed MCLs.

1.3 Report Organization

A summary of report organization is presented in **Table 1-2**.

Table 1-2. Summary of Report Organization

Section	Title	Content
1	Introduction and Background	Covers the background, historical data, goals, and report organization
2	Water Quality Summary	Presents historical water quality data and evaluation
3	Technologies Considered	Discusses treatment options for PFAS removal
4	Pilot Test Plan	Presents details of pilot test plan

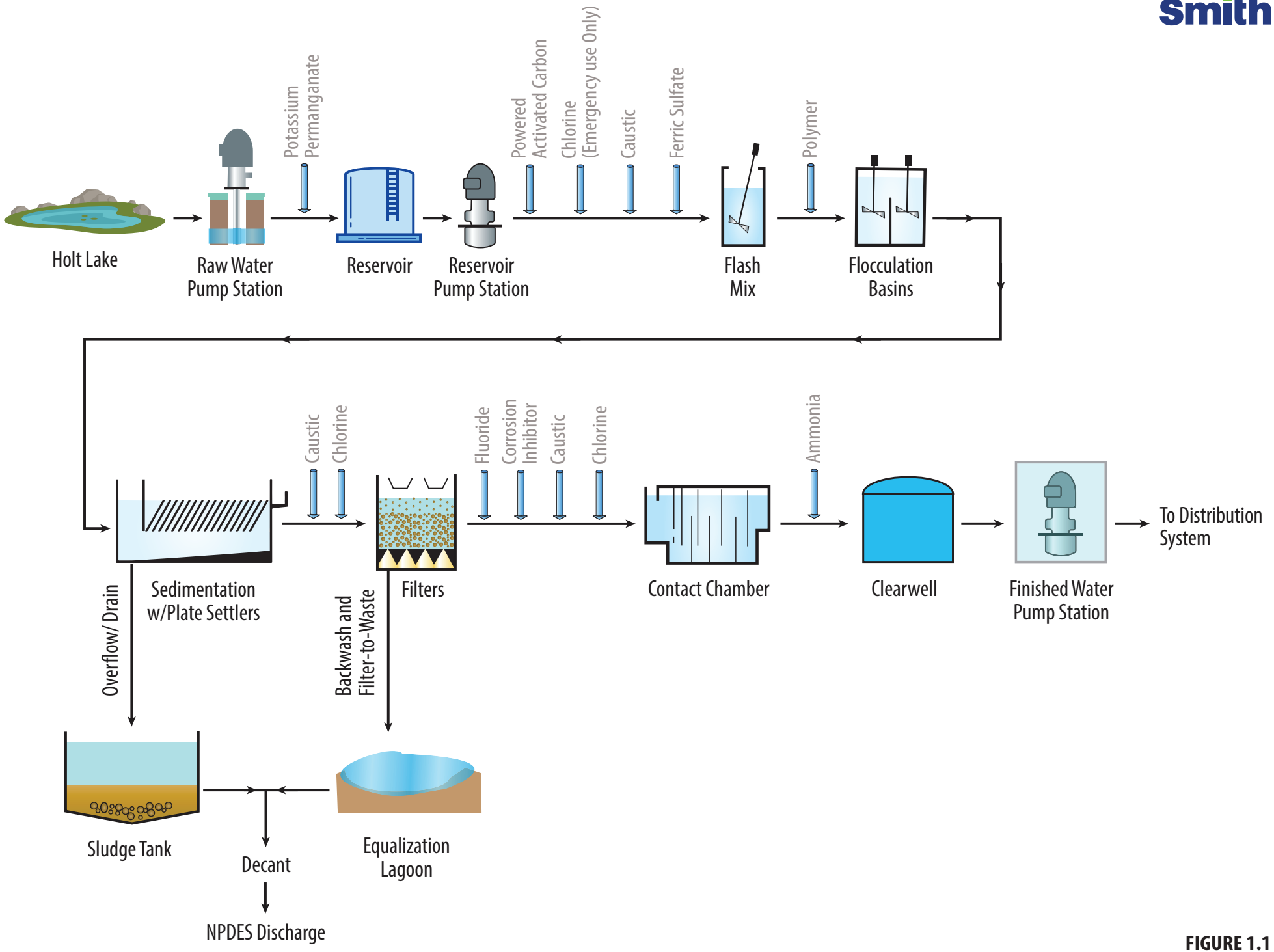


FIGURE 1.1
SGWASA WTP PROCESS FLOW SCHEMATIC

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Section 2
Historical Data

2.1. Data Sources

Data was compiled from a variety of sources for the Holt Reservoir and SGWASA WTP. The datasets are summarized in **Table 2-1** and described in further detail in the following paragraphs.

Table 2-1. Description of Sample Locations, Data Period and Analytes

Data Source	Sampling Locations	Data Period	Analytes
UCMR3	Finished Water	March 2015 – January 2016	Chlorate, Chromium, Chromium-6, & Strontium
UCMR4	Finished Water	May 2018 – June 2019	HAA5, HAA6Br, HAA9, & Manganese
NC PFAS Testing Network	Raw Water	June 2019 – November 2022	45 PFAS chemicals and 1,4 Dioxane
SGWASA Monthly Operating Reports (MORs)	Raw and Finished Water	April 2022 – August 2023	pH, Alkalinity, Manganese, Iron, Bromide, Turbidity, TOC, and Chlorine Residual
NCDEQ	Raw and Finished Water	September 2022 – December 2022	1,4 Dioxane, PFOS, PFOA, and GenX
PFAS Assessment Study	Raw and Finished Water	April 2023 - June 2023	24 PFAS Chemicals
UCMR5	Finished Water	June & September 2023	24 PFAS Chemicals

It is critical to note that each source utilized had different levels of detection for their collection data. For example, when analyzing data in 2015 compared to 2023, the detection level was higher in 2015 due to minimal regulations on these compounds in the past. Now, research aims to be able to detect these compounds at lower detection levels. Even in 2023, these levels can be inconsistent across different compounds and laboratory data capability. Therefore, whenever a compound is not detected (ND) in this data, there is some leniency on what that value can be assumed to be. While this data was evaluated, ND was assumed to be zero throughout for consistency in presentation.

2.2. Routine Water Quality Parameters

2.2.1 Raw Water

A summary of raw water quality for the intake location is summarized in **Table 2-2**. This historical data was collected from SGWASA's Monthly Operating Reports (MORs). Per discussion with plant staff, there are taste and odor (T&O) concerns with raw water. To alleviate those concerns, powdered activated carbon (PAC) is injected continuously between the raw water pump station and the plant at a feed rate of approximately 7 lbs/hr, which is the lowest that plant

staff said can be fed using the existing system. This equates to a PAC dose of 7.2 mg/L at average daily plant flow.

Table 2-2. Historical Raw Water Quality Data (April 2022-September 2023)

Parameters	Holt Reservoir Intake		
	Range	Average	# Samples
Turbidity, NTU	3.74 - 21.9	8.98	487
TOC, mg/L	8.09 – 14.6	10.73	19
pH	5.2 - 7.9	6.61	487
Total Manganese, mg/L	0 – 0.94	0.22	486
Total Iron, mg/L	0.03 - 1.77	0.71	487
Bromide, ug/L	1.8 – 3.3	2.61	30
Total Alkalinity, mg/L as $CaCO_3$	1.2 – 58.7	16.15	487

2.2.2 Finished Water

The finished water quality is an important indicator of how well the plant is operating. The critical data compiled from SGWASA's MORs are displayed in **Table 2-3**.

Table 2-3. Historical Finished Water Quality Data (April 2022-September 2023)

Parameters	Filter Effluent		
	Range	Average	# Samples
Turbidity, NTU	0.60 – 7.86	1.07	485
TOC, mg/L	2.06 – 6.11	3.69	20
pH	4.8 – 9.0	8.03	487
Total Manganese, mg/L	0 – 0.11	0.01	486
Total Iron, mg/L	0 - 5	0.08	487
Total Alkalinity, mg/L as CaCO3	11.2 – 31.2	21.7	486
Free Chlorine Residual, mg/L	0.5 – 3.4	2.57	418

2.3 Emerging Contaminants

2.3.1 PFAS

The evaluation of historical PFAS data is broken down into several compounds. The Interstate Technology Regulatory Council (ITRC) defines long-chain PFAS as perfluoroalkyl carboxylic acids (e.g., PFOA) with eight or more carbons and perfluoroalkane sulfonates (e.g., PFOS) with six or more carbons as shown in **Figure 2-1**. PFAS with lower number of carbons are referred to as short-chain. Of the six regulated compounds described in Section 1, PFOA, PFOS, PFNA, and PFHxS are considered long-chain and PFBS is considered a short-chain compound.

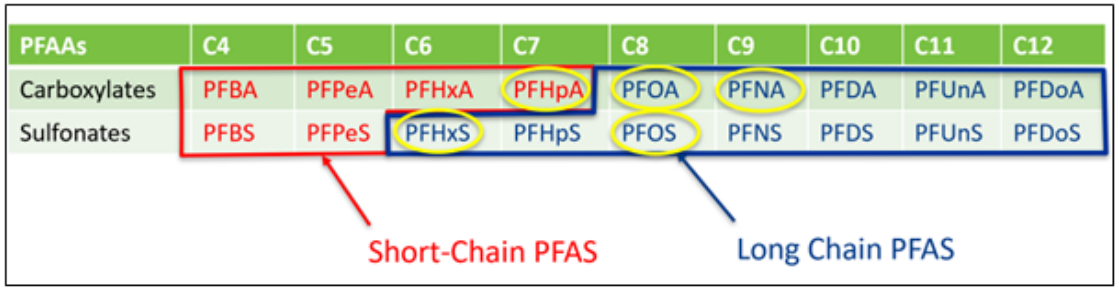


Figure 2-1. ITRC long- and short-chain PFAS definitions.

Raw Water

Table 2-4 shows the range and average levels of the six regulated PFAS compounds.

Table 2-4. Raw Water Regulated PFAS Summary

PFAS Compound	Raw Water		
	Range (ng/L)	Average (ng/L)	# Samples
PFOA	7.7 - 15	10.19	19
PFOS	17 – 58	26.14	19
PFBA	ND – 4.4	1.67	16
PFBS	ND – 3.1	1.74	16
PFHxS	2.1 - 12	3.25	16
PFNA	ND - 5	0.59	16

1. When finding the averages for compounds that had not detected data values, zero was assumed to complete the calculation. The number of ND for the different compounds are as follows: PFBA has 5, PFBS has 5, and PFNA has 14.

PFOA and PFOS levels have been consistently higher than EPA's proposed MCL for each over the past few years. The concentration values taken over the years in comparison to the proposed MCL for PFOA and PFOS are shown in **Figure 2-2** and **Figure 2-3**, respectively.

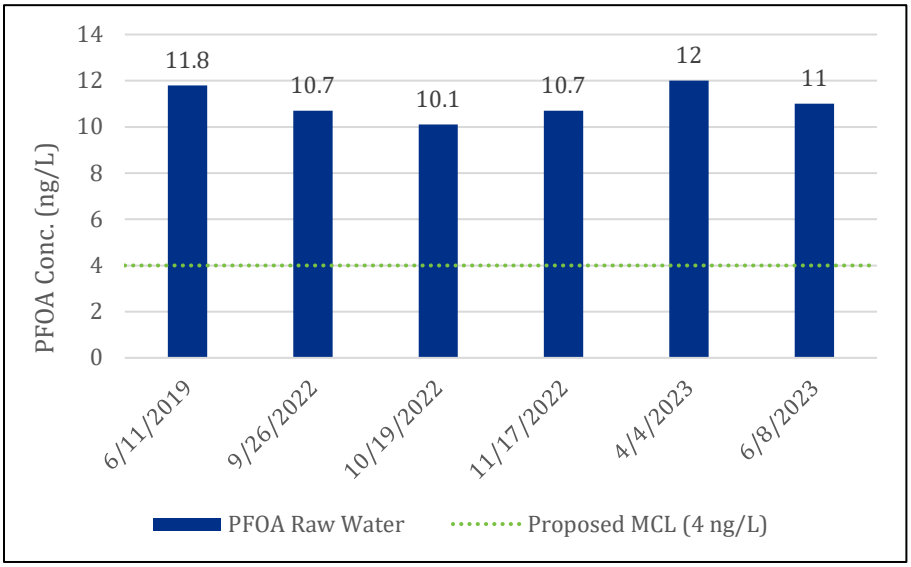


Figure 2-2. PFOA Raw Water Concentration vs. Time

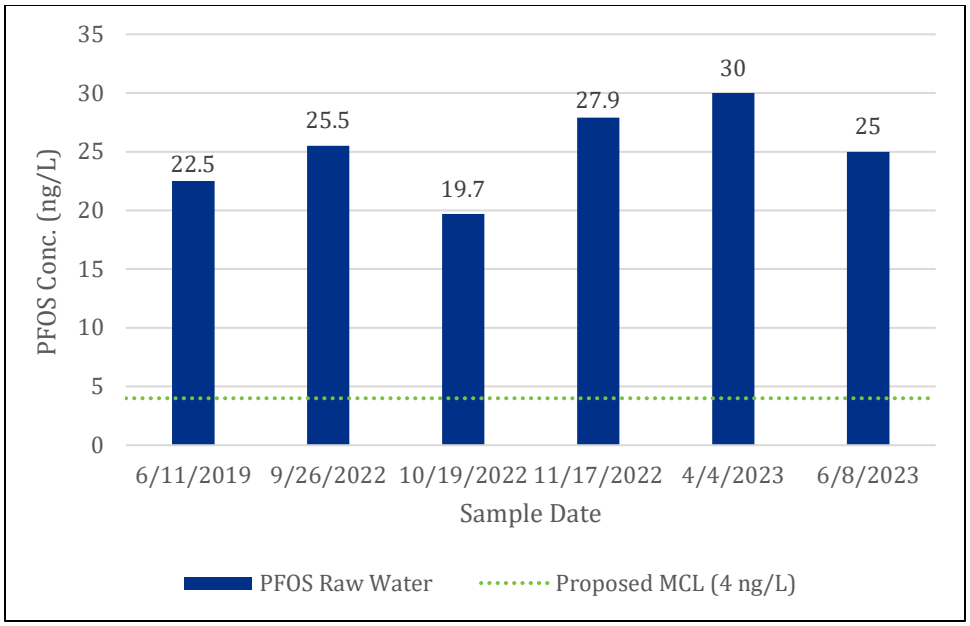


Figure 2-3. PFOS Raw Water Concentration vs. Time

The raw water concentrations for PFBA, PFBS, PFHxS, and PFNA can be found in **Figure 2-4.**

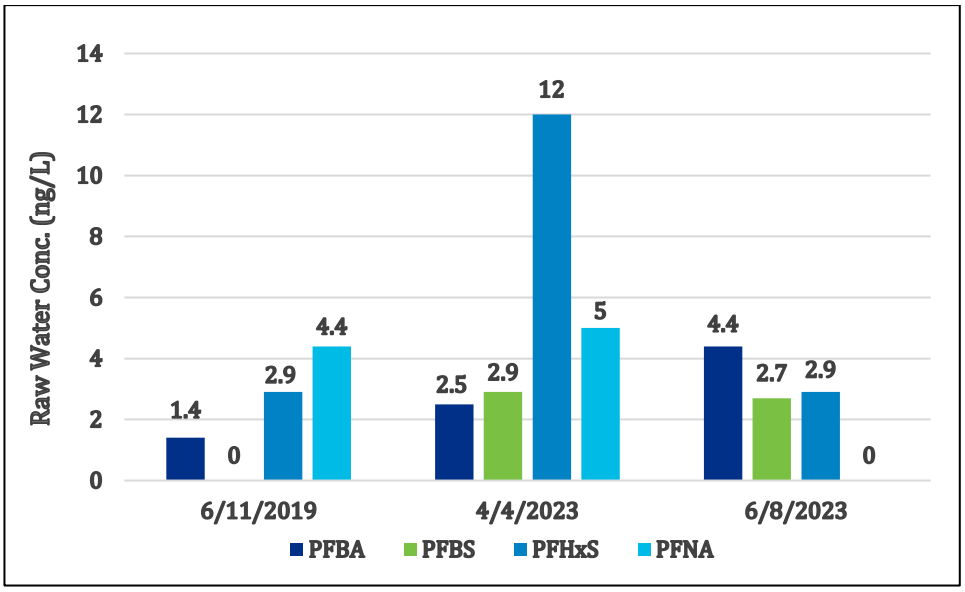


Figure 2-4. PFBA, PFBS, PFHxS, and PFNA Raw Water Concentration vs. Time

Additional compounds to consider would be GenX and 1,4 dioxane. GenX has consistently been not detected through the data collection of 6/11/2019 through 10/19/2022. The compound 1,4-dioxane was not detected in the raw water samples taken in September, October, and November of 2022 by the NCDEQ.

Finished Water

The PFAS levels in the finished water compared to the raw water are typically lower. However, the finished water PFOA and PFOS values are still above the proposed MCL of 4 ppt, each. **Table**

2-5 shows the detected level of PFAS compounds in the finished water as they relate to the proposed EPA regulations. The PFOA and PFOS reduction from raw to finished water ranged from 18-40% in three sampling events conducted by North Carolina Department of Environmental Quality (NCDEQ). Since conventional treatment does not remove PFAS, this removal is attributed to the use of PAC, which is known to remove long chain PFAS, including PFOA and PFOS.

The hazard index was calculated at 0.16 utilizing the equation in Section 1 using the data available. The estimated hazard index included here is only intended to provide an estimate of SGWASA's current hazard index. To accurately calculate the hazard index, one would use the running annual average of the samples taken over the last year to calculate the true hazard index.

Table 2-5. Finished Water PFAS Summary

PFAS Compound	Finished Water		
	Range (ng/L)	Average (ng/L)	# Samples
PFOA	0.7 – 8.48	4.78	5
PFOS	1.2 – 17.4	10.2	5
PFBS	0.15 – 0.91	0.53	2
PFHxS	0.16 – 0.91	0.54	2
PFNA	0.13 – 1.2	0.67	2
GenX	ND – 1.5	0.33	5

1. For PFOA, PFOS, and GenX, the data available is limited to three monthly NCDEQ samples from September, October, and December 2022 and one sample from September 2023. Only two samples were available for PFBS, PFHxS, and PFNA from the June and September 2023 data.

A comparison of the raw water and finished water data for PFOA and PFOS are provided in **Figure 2-5** and **Figure 2-6**, respectively. Data for September 2023 was not available for both PFOA and PFOS.

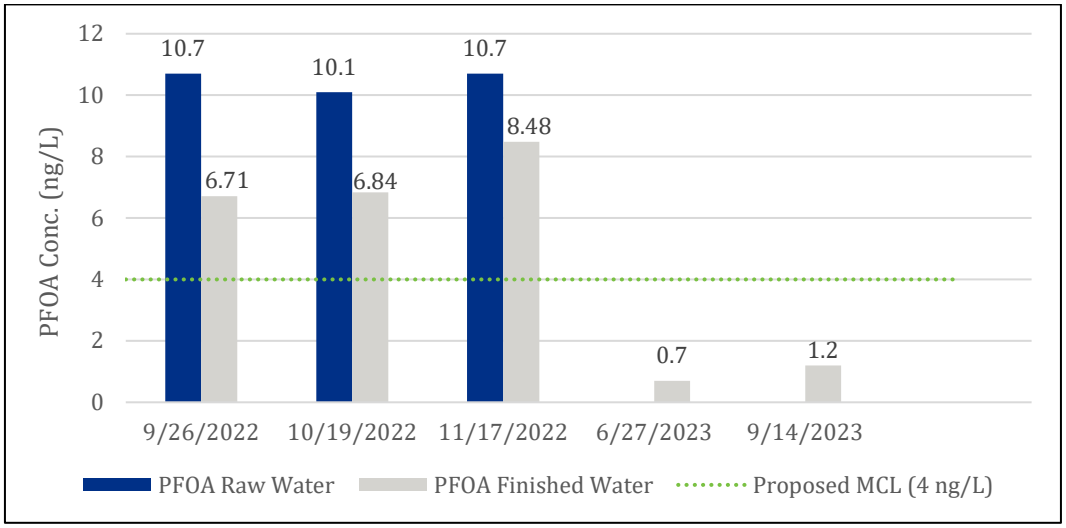


Figure 2-5. Raw and Finished Water PFOA

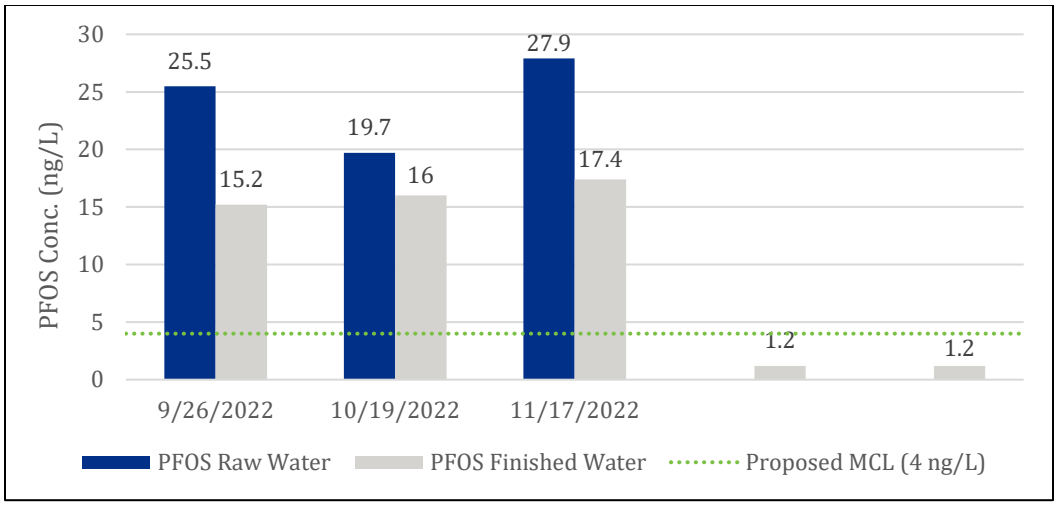


Figure 2-6. Raw and Finished Water PFOS

2.3.2 Other UCMR Contaminants

Data for detected contaminants monitored under UCMR3 and UCMR4 for SGWASA WTP are summarized in **Table 2-6**. This data is important to note for future reference since these contaminants have not been regulated yet.

Table 2-6. Summary of Contaminants Detected at SGWASA WTP as part of UCMR3 and UCMR4

Contaminants	Finished Water			EPA Guidelines	
	Range (µg/L)	Average (µg/L)	# Samples	EPA Lifetime Health Advisory (µg/L)	EPA Primary (P) or Secondary (S) Standard MCL (µg/L)
Strontium	30.1 - 35.2	32.6	4	4000	---
Chlorate	84 - 270	176	4	---[1]	---
Total Chromium	0.4 – 0.5	0.45	4	---	100 (P)
Chromium-6	0.21 – 0.41	0.31	4	---	---[2]
HAA_5	0.34 – 49.62	24.13	24	---	60 (P)
HAA_6Br	0 – 7.63	3.09	24	---	---
HAA_9	0.34 – 55.13	26.7	24	---	---
Manganese	8.64 – 29.6	16.73	4	---	50 (S)

1. The health advisory for perchlorate (oxidized chlorate) is 15 µg/L
2. Total chromium standard assumes all detected chromium is 100% Chromium-6.

Section 3
PFAS Treatment Alternatives

As noted in Section 1, this study was initiated to lower PFAS concentrations to below the proposed new limits. However, this pilot may be used as an opportunity to identify any technologies that may remove: T&O, UCMR 3 and 4 compounds that were detected in SGWASA finished water, and other emerging contaminants of concern such as microplastics, nitrosamines, 1,3-diphenylguanidine, pharmaceuticals and personal care products (PPCPs) in addition to PFAS.

The stability of the PFAS carbon-fluorine (C-F) bonds make this contaminant extremely resistant to destruction with negligible removal by conventional drinking water treatment technologies. PFAS compounds may degrade or convert to other PFAS compounds but remain in the water.

This section presents an overview of the following post-filter treatment alternatives for pilot testing for PFAS removal.

- Granular Activated Carbon (GAC)
- Anion Exchange Resin (AER)
- Novel sorbents (NS), and
- Reverse Osmosis (RO)

3.1 GAC

GAC is produced from carbonaceous material such as coal, which is activated by heating the material to temperatures greater than 800 degrees Celsius. It is porous in nature and is associated with high surface area and high adsorptive capacity as demonstrated by **Figure 3-1**.

While GAC can be used as a filter media, a finer GAC of smaller mesh size can be used downstream of filters for contaminants that are difficult to remove via filtration but can be removed by adsorption. Post-filtration GAC is a common treatment technology and provides a broad adsorptive removal barrier for many compounds such as PFAS, T&O compounds, color-forming organics, pharmaceuticals and personal care products (PPCPs) and some disinfection byproduct (DBP) precursors. PFAS removal using post-filtration GAC depends on water-specific chemistry and presence of co-contaminants.

Long-chained PFAS, particularly perfluorinated sulfonates such as PFOS, are treated effectively using GAC since the hydrophobic tail has an increased chance of interacting with hydrophobic adsorptive GAC sites. On the other hand, shorter-chained PFAS such as perfluorobutanoic acid (PFBA) are treated less effectively and therefore is the driver for media changeout when targeted for removal. GAC can also enhance removal of SGWASA's other contaminants of concern including T&O compounds such as methylisoborneol (MIB) and geosmin, and historically detected UCMR compounds strontium, chromium, chlorate, and HAA DBP precursors. Hence, prior to full-scale design/implementation, bench-scale and/or pilot-scale testing is recommended to compare

contaminant removal efficacy among commercially available GAC products and to predict media longevity.

GAC used for advanced treatment can be installed in gravity contactors or pressure vessels as shown in **Figures 3-2** and **3- 3**, respectively. Pressure vessels are typically installed in lead-lag configuration. When the lead vessel media breaks through, the media in the lead vessel is replaced and the previous lag vessel becomes the new lead such that the lag vessel always has a higher adsorptive capacity. Gravity contactors are generally a better option for larger installations due to operation and maintenance of large number of valves associated with GAC pressure contactors. GAC contactors (steel pressure vessels or concrete contactor tanks) can be located either outdoors or inside a building. When located outdoors, all exposed piping and valves would need heat traced and insulated.

Contaminants such as iron, manganese, and solids can result in premature fouling of the GAC media. Where manganese or iron levels are high enough to exceed the secondary maximum contaminant level (SMCL), pretreatment is recommended not only to meet the SMCL but also to protect the GAC. The GAC is rinsed for removal of fines at startup and may occasionally require backwashing during operation to mitigate the headloss that may build up over time. Differential pressure can increase over the GAC media bed due to biological growth (in the absence of chlorine), collection of fines that are inadequately washed out on the media, or solids deposition (such as natural turbidity, inerts, iron, manganese, etc.). If left unchlorinated, biological growth can also contribute to headloss. Chlorine can be used upstream of the vessel to control biological growth.

Some GACs can leach low levels of arsenic, especially initially after changeout. Arsenic concerns can be managed through the purchase of acid rinsed GAC products and/or flushing of water through the GAC bed until arsenic levels decrease to the targeted value. Soaking overnight and then backwashing helps with initial arsenic removal.

GAC used to remove PFAS can be reactivated to be restored to an almost virgin-like material whereas regeneration is a less involved process and produces a lower quality product with more contaminants remaining on the treated carbon. Reactivation of GAC, as described by Calgon, is a process whereby GAC is heated to temperatures around 1800°F in a low oxygen environment, volatizing or desorbing adsorbates on the carbon surface. Adsorbates that are desorbed but not volatized are then treated in an abatement system including a thermal oxidizer/afterburner, a scrubber, and a baghouse. Although the reactivation process should remove most of contaminants on the used GAC and can be purchased for a lower price than virgin GAC, CDM Smith typically recommends consideration of the use of virgin GAC for drinking water since a small percentage of contaminants (less than 0.001% per Calgon) will remain on reactivated GAC. The GAC regeneration process is considered a less effective process for contaminant removal from the GAC by Calgon. Regenerated GAC is not recommended for drinking water use. However, vendors like Calgon will reactivate the GAC and use it for industrial clients, eliminating the liability for the utility as it becomes Calgon's product. Therefore, one of the advantages to using GAC compared to the other removal technologies is its relatively low solid waste production assuming the GAC is returned to the manufacturer for reuse instead of disposing in a landfill.

Piloting GAC is relatively easy to do as the pressure contactor (or a gravity bed) can be simulated by loading media in a large, clear polyvinylchloride pipe (PVC) pipe and monitoring the flow and/or pressure. GAC is commonly used for PFOA and PFOS removal with empty bed contact times (EBCT)s generally around 10 minutes per vessel or 20-minutes per lead-lag system.

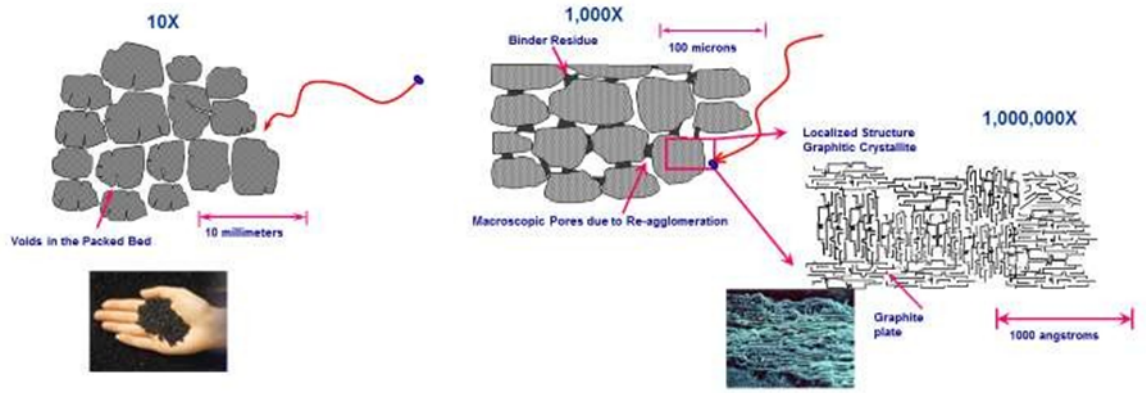


Figure 3-1. Magnified GAC Particle (Courtesy of Calgon Corporation)



Figure 3-2. Example GAC Gravity Contactor



Figure 3-3. GAC Pressure Vessel

3.2 AER Resin

Although AER was used less extensively than GAC prior to 2020, the effectiveness of AER to remove both short and long-chain PFAS has resulted in AER being used in many recent PFAS treatment systems. Ion exchange involves the use of synthetic carbon-based organic molecules e.g., styrene formed into resin beads (**Figure 3-4**). These resins have loosely adsorbed negative ions attached to positive sites. Those anions are exchanged for negatively charged heads of PFAS molecules, for which the adsorptive sites have a higher affinity. It should be noted that, depending on the exchanged anion, some resins release chloride (Cl-) into the drinking water effluent, potentially causing corrosion if not mitigated. Not only do the resin beads offer an exchange site for the anionic PFAS heads, but the resin matrix also typically comprises of a material for which the hydrophobic chains may have an affinity. Similar to GAC, a number of water-specific chemical parameters can impact AER performance including the nature and extent of PFAS present in the influent water; elevated levels of TOC, iron, manganese, and competing anions such as fluoride, orthophosphate, sulfate, nitrate, and bicarbonate; and presence of co-contaminants or treatment residuals such as residual chlorine. AER is particularly sensitive to clogging due to total suspended solids (TSS), requiring 5-micron filters upstream of AER. Like GAC, longer-chained PFAS are generally treated more effectively using AER than shorter-chained counterparts; however, AER tends to remove more short-chain PFAS than GAC as PFAS tails can bind to the AER hydrophilic base and the PFAS heads adhere to the exchange sites. With short chain PFAS having shorter tails, the exchange site for the PFAS head becomes more important. In addition, perfluorinated sulfonates are better removed than the carboxylates counterparts, rendering shorter chained perfluorinated carboxylates the driver for media changeout in most cases.

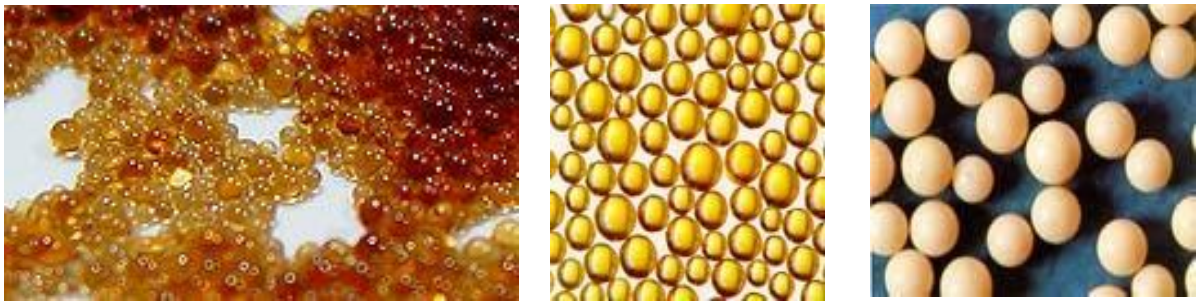


Figure 3-4. Anion Exchange Resin

AER resins are also installed in a lead-lag configuration in pressure vessels like GAC as shown in **Figure 3-5**. Typical EBCTs of 2-5 minutes per vessel or 4-10 minutes per system are used. While there do not seem to be any current installations of AER in gravity contactors, the possibility of such an installation for a larger scale facility cannot be ruled out. High pressure on the AER media bed can damage the beads and affect resin performance. Unlike GAC, select AER products can be subject to onsite or offsite regeneration using a brine solution although single use AER are most used in drinking water applications, and potable water approved regeneration of IX used for PFAS removal does not exist yet..

While some AERs may require backwash at startup, backwashing is not typical and generally not recommended. Single use AERs are especially vulnerable to fouling, wherein many AERs cannot tolerate the presence of an oxidant such as chlorine, potassium permanganate, or ozone. In some cases, these resins' PFAS removal capacity may be exhausted before fouling or biological growth becomes a significant issue. Options are currently being explored for control of differential pressure across these beds. Some resins are more tolerant of chlorine such as Calgon's CalRes 2301 and others can withstand relatively low, consistent doses of chlorine. Some facilities have removed and replaced the top layer of AER in a vessel when fouling becomes an issue.

The AER process exchanges its chloride for negatively charged sulfonates or carboxylates located on head of the PFAS compound (specifically where the H+ dissociates from the OH, forming an OH- when dissolved in water) as shown in **Figure 3-6**. The AER releases much of the chloride in the first 300-500 bed volumes (typical bed volume life is 150,000 to 250,000 bed volumes) and the PFAS concentration is so low relative to typical chloride levels that chloride exchanged for PFAS is a relatively low concentration. Increased chloride increases the chloride to sulfate ratio (CSMR), with higher CSMR values being associated with galvanic corrosion of lead solder connected to copper pipe. Changes in the CSMR value could require staggering the changeout of resin beds to minimize the changes to the composite CSMR or the addition of corrosion control treatment (such as orthophosphate).

AER being a single use product requires disposal after use either by incineration or in a hazardous waste landfill. Direct disposal puts the responsibility on the owner and may result in long term liability as a hazardous waste generator. Like GAC, AER is relatively easy to pilot using PVC columns.



Figure 3-5. Anion Exchange Pressure Vessel

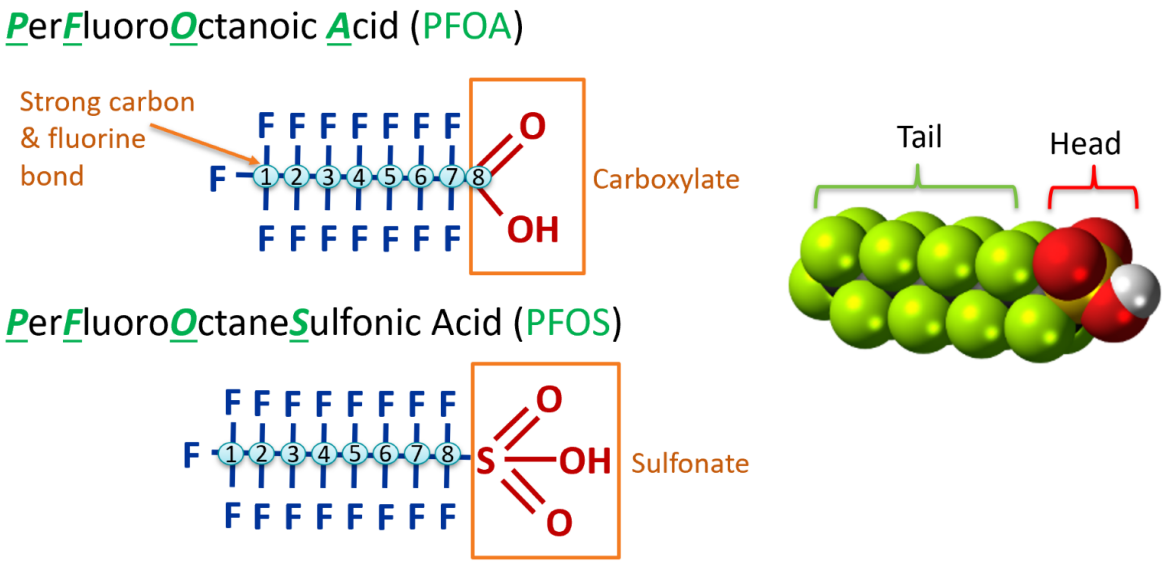


Figure 3-6. PFAS Structure

3.3 Novel Sorbents

Two NSF-61 certified novel sorbents that are gaining acceptance for PFAS removal are CETCO's Fluorosorb and Cyclopure's Dexsorb. These are also intended to be used in lead-lag pressure vessels similar to GAC and AER. Fluorosorb vessel sizing follows the same criteria as AER, ranging from 2-5 minutes of EBCT per vessel or 4-10 minutes per lead-lag system. Dexsorb has a vessel sizing between AER and GAC at a recommended EBCT of 5 minutes per vessel and 10 minutes per lead-lag system.

Fluorosorb, shown in **Figure 3-7**, is a media derived from surface modification to sodium bentonite, creating an environment that is energetically favorable for PFAS to partition onto/within the clay surface than remain in the water. The adsorption process is similar to ion exchange. The PFAS anion is attracted to the functional groups on the surface and there are hydrophobic interactions of the PFAS tails that adhere carbon chains to the surface. Fluorosorb-200 has similar removal, design parameters, and sizing as AER, but at a lower price point and operational flexibility comparable to GAC. Fluorosorb can also tolerate a relatively higher chlorine level, an occasional chlorine wash, and potentially a backwash. Testing of Fluorosorb has demonstrated that it performs well across the full spectrum of PFAS compounds (although recent CDM Smith pilots have shown some short-chain PFAS release early in the pilot). Another benefit of Fluorosorb is that its surface chemistry inhibits competition from other contaminants that impact performance of AER and GAC. According to CETCO, Fluorosorb is not significantly impacted by co-contaminants, but performance does vary for different water treated. Like AER and GAC, Fluorosorb may initially release some compounds that may require flushing. Specifically quaternary amines are released in the early flushing of Fluorosorb, increasing the TOC released. Like AER, a 5-micron filter is recommended for Fluorosorb, but depending on water quality, it is possible to forego the micron filter for Fluorosorb.

Like AER, Fluorosorb is a single use product that must be disposed of after use either by incineration or in a landfill or hazardous waste landfill pending hazardous designation. Direct disposal puts the responsibility on the owner and may result in long term liability as a hazardous waste generator

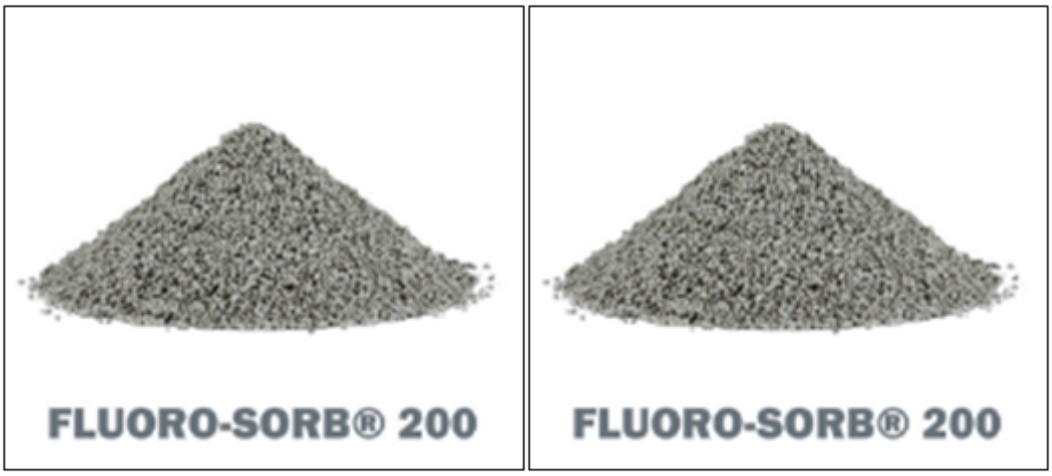


Figure 3-7. Fluorosorb® 200 Novel Sorbent Media

Dexsorb, shown in **Figure 3-8**, is a renewable adsorbent material made from corn. Like Fluorosorb, Dexsorb is theoretically not affected by upstream water quality. The media offers a broad non-specific adsorptive removal barrier via hydrophobic interactions like GAC but is more molecularly selective than GAC, excluding contaminants on the basis of size. Dexsorb traps PFAS in nano-sized cups via hydrophobic interactions with the polymer designed to exclude other larger contaminants such as TOC. Dexsorb can be regenerated by Cyclopure in a process that completely destroys the PFAS and restore the media to its original adsorptive capacity up to ten times before incineration or landfill disposal. Dexsorb loading rate and contact time is in between

GAC and AER, but closer to AER sizing. Like Fluorosorb, Dexsorb is also a fraction of the purchase cost of AER. Unlike AER and Fluorosorb, Dexsorb does not require a 5-micron filter. Dexsorb is also resistant to low levels of chlorine.



Figure 3-8. Dexsorb Novel Sorbent Media

3.4 Reverse Osmosis

Membrane separation technologies such as RO (**Figure 3-9**) can effectively remove PFAS from drinking water. RO can also remove SGWASA's other contaminants of concern.

In these applications, the feed water is forced through a semi-permeable membrane at high pressure (specific pressure is dependent upon the application), resulting in a high-quality finished water. Excellent (i.e., >90% and often closer to 100%) removal of PFAS, including short-chained PFAS, can be attained using low-pressure RO (LPRO).LPRO is the most effective treatment of those listed here; however, it is typically the costliest technology for removal of long-chain PFAS due to high capital cost and energy demand and the need to still treat and/or dispose of the concentrate. Given that LPRO may be susceptible to fouling, an antiscalant and/or a pre-treatment step may be required to minimize potential membrane clogging.

A National Pollutant Discharge Elimination System (NPDES) permit to discharge the PFAS-laden RO concentrate may also be required, requiring an additional concentrate treatment to dispose and/or destroy the PFAS to accompany RO. However, RO is the most risk-adverse technology in terms of likely being adequate for removal of other future contaminants when considering future regulations for, not only PFAS, but the vast majority of unregulated contaminants.

Piloting RO would require a high pressure and flow of at least 15 gallons per minute (gpm) at a feed pressure of about 100 psi and disposal of concentrate at the pilot facility for a single stage test (full scale is typically 2-3 stages). This level of pilot testing evaluates the ability of the membrane to remove the contaminants of concern. Higher flow, multiple stage, longer duration pilot testing is need if membranes are then selected for final design.

In contrast to the GAC or IX options, RO requires 5 to 20 percent more feedwater than the required permeate flow to account for the discharge of a concentrated residual flow. The RO

effluent also has low pH with minimal hardness and total dissolved solids and would require pH adjustment and addition of calcium and alkalinity to reduce its corrosivity.

Even though RO membranes have been effectively shown to remove PFAS, pilot testing is recommended to obtain site-specific full-scale data including PFAS concentrations in raw and finished water, fouling/ performance control for the membranes.



Figure 3-9. Two-Stage RO Membrane Skid using Standard 8-inch Diameter Pressure Vessels

3.5 Treatment Alternatives Summary and Recommendation

Table 3-1 provides a summary of the efficacy of these technologies (or combinations thereof) for SGWASA's contaminants of concern. While PFAS are of primary concern for this study, some treatments offer additional treatment including removal of contaminants like T&O, TOC and PPCPs. **Table 3-2** provides a summary of the advantages and disadvantages of the proposed post-filter technologies considered.

Compared to AER, GAC requires deeper media beds, longer contact times, and a lower loading rate all contributing to a larger footprint. GAC media is less expensive per cubic foot than AER and provides a broad removal barrier for not only PFAS and other contaminants of emerging concern but also T&O causing compounds. AER and novel sorbent media can be specifically targeted for PFAS removal and often outperforms GAC particularly in terms of short-chain PFAS removal. Some challenges to successful operation of AER include sensitivity to co-contaminants leading to high pressure drop in a clean bed as well as a sensitivity to chlorine resulting in biofouling of the media (while it still has adsorptive capacity remaining). Some AER media are affected by background contamination or chlorination, which can be reduced by an upstream GAC contactor;

thus these two can pair well together in series. Both GAC and AER are established technologies that have been used in full-scale drinking water post-filtration advanced treatment applications.

There is not enough full-scale experience with novel adsorbents to definitively say how these will perform for drinking water treatments compared to GAC or AER; however, results from other pilot studies on these media have been promising, particularly regarding removal of long-chain PFAS and less certainly short-chain PFAS. It is likely the Fluorosorb and DEXSORB will also pair well with GAC. The main attraction of novel sorbents is the cost especially if they can provide similar performance as AER with the same raw water source. An added benefit of these novel sorbents is that PFAS adsorption is less susceptible to interferences from background organic matter contamination compared to AER; therefore, these media may remove PFAS just as well with or without GAC upstream and do not require micron-filters upstream. Both novel sorbents reviewed herein have some resistance to biofouling whereas AER media do not.

The PFAS removal media recommended to be pilot tested at SGWASA WTP include the following:

- Calgon F400 GAC – This has been generally the best performing GAC (for other CDM Smith pilot studies in North Carolina and elsewhere) and the raw bituminous coal is both mined and processed in the U.S., which can sometimes be a requirement for funding opportunities or quality specifications and thus far has been able to keep up with demand. The GAC400 product data sheet is attached as **Appendix A**.
- DuPont Amberlite PSR2+ AER (formerly known as Dowex PSR2+) - This resin was originally designed to remove perchlorate but has since had a wide range of success among various pilot studies in the U.S. as well as other CDM Smith pilot studies in North Carolina for surface water. The DuPont Amberlite PSR2+ product data sheet is attached as **Appendix B.**
- CETCO's Fluorosorb 200 - Test conditions for Fluorosorb media will match those of AER as it offers a similar PFAS removal capacity but for lower cost. The Fluorosorb 200 media is still relatively new and has had mixed results, outperforming all other media in California's Orange County pilot study. In CDM Smith's experience, the short-chain removal is more uncertain. For the Western Intake partnership (WIP) pilot, Fluorosorb 200 did not provide significant removal of some short-chain PFAS in the pilot but did show similar performance to AER for RSSCT for many PFAS. The CETCO Fluorosorb200 product data sheet is attached as **Appendix C.**
- Calgon F400 and DuPont Amberlite PSR2+ resin operating in series as these two technologies are known to complement each other well when paired. GAC can remove both PFAS and co-contaminants like TOC that negatively impact the PFAS removal if in the AER feed, thus extending the AER bed life.
- Single membrane test using RO.

Recommended optional tests include:

- Testing the same type of media from multiple manufacturers (i.e. more than one GAC or AER) as the same media technology will perform differently depending on the manufacturing process and media raw materials or structure.

Table 3-1. Summary of Advanced Treatment Efficacy

Treatment	PFAS	PPCPs	TOC/ DBP Precursors	T&O	Strontium	Manganese	Hexavalent Chromium	Chromium	Chlorate	Microplastics	1,3-diphenylguanidine (DPG)	Nitrosamines
GAC	X	X[2]	X[3]	X[3]		X[4]				X[2]	X	X
AER	X	X[2,5]	X						X[5]			
GAC + AER	XX	X[2]	XX[3]	X[3]		X[4]			X[5]			
RO	XXX	X[2]	XX[2]	XX	XXX	XXX	XXX	XXX	XXX	XXX[2]	Possibly (pilot)	X
Novel Adsorbent Fluorosorb-200	X								Possibly (pilot)			
Novel Adsorbent Dexsorb	X	X[6]										

1. More than one X indicates significant or very significant removal. Combining treatments may result in increased removal for the listed contaminant. Site specific water quality and design conditions always have the possibility to affect removal efficacy.
2. Dependent on contaminant. GAC removes some PPCPs. AER may remove some anionic PPCPs.
3. GAC will initially remove TOC and T&O by adsorption and, as adsorptive capacity is exhausted and biological growth is established, by biological activity.
4. GAC will remove Manganese in combination with an upstream oxidant such as chlorination or ozone or can remove manganese via biological activity.
5. Dependent on resin.
6. Dexsorb may adsorb PPCPs if they are in the nano particle size range.

Table 3-2. Summary of Pros and Cons of PFAS Removal Media Considered

	GAC	AER	Fluorosorb	Dexsorb
Footprint	Largest	Smallest	Smallest	Mid-range
Recommended for Pressure Vessel Installations?	Yes	Yes	Yes	Yes
Recommended for Gravity Contactor Installations?	Yes	No	Yes[1]	Uncertain
Clogging Potential		Highest		
Micron Filters Required?	No	Possibly (pilot)	Possibly (pilot)	No
Backwash capability?	Yes, as a last resort	Not recommended by vendor but option as last resort	Yes, as a last resort	Uncertain
Chlorine Sensitivity	None	Highest[2]	Mid-range	Mid-range
Cost per unit volume[3]	Lowest-lower	Highest	Low-Mid-range	Mid-range to Higher
PFAS Adsorptive capacity on a per volume basis	Lowest	Highest	Mid-range – Highest[4]	Mid-range-High[4]
Adsorptive capacity for other contaminants	Highest	Lower[5]	Lower	Mid-range[6]
Potential to leach contaminants at startup?	Yes, arsenic	Yes, chloride	Yes, quaternary amines	None known to date
Historic use for PFAS removal	Highest	Mid-range	Lower	Lowest
Hazardous Disposal Risk	Lowest[7]	Higher	Higher	Lowest[7]

1. This has not previously been done for a drinking water treatment design but is possible although dependent on mesh size.
2. This is dependent on resin. Most resins are sensitive to chlorine but some are less so such as Calgon CalRes 2301.
3. It is important to note that, due to the increased adsorptive capacity per unit volume, to provide similar treatment using the same compounds, you need more Dexsorb or GAC. The amount is highly site specific and dependent on design conditions but can range from roughly 10-15 times more GAC and 2-3 times more Dexsorb than AER or Fluorosorb.
4. Data is still limited.
5. AER are media are generally selected for PFAS removal specifically, many of which were originally designed to remove other anions such as perchlorate.
6. Dexsorb has nano-size cups for removal of nano-size compounds.
7. Most manufacturers (not necessarily all GAC manufacturers) offer reactivation and will assume the disposal risks when media is returned. CETCO is able to regenerate Dexsorb up to 10 times and destroy PFAS in the process.

3.6 Testing Methods Considered

3.6.1 Bench-Scale Testing

RSSCT is bench scale testing to quickly develop contaminant (PFAS) breakthrough curves for post filtration sorbtive treatment media for full scale design. CDM can perform RSST testing in-house at our Research and Testing Laboratory (RTL) using filtered water from SGWASA's WTP.

Although we recommend performing RSSCT Testing to quantify the effect of PAC use on PFAS removal, we understand that RSSCT is not feasible due to funding limits, and therefore have excluded RSSCT from this pilot study. As an alternative to RSSCT, an empirical estimate will be developed to estimate the effect of PAC on post-filtration technologies. Typically the use of PAC increases media bed life, and mass ratios (lb PAC/lb Media) are developed to predict the extended bed life, or media reduction, when PAC is used for contaminant removal.

3.6.2 Pilot Testing

3.6.2.1 PFAS Adsorption Media

Unlike RSSCT, pilot testing PFAS adsorption media can demonstrate the effects of seasonal raw water variation on PFAS removal and more precisely predict media bed life and time between media changeouts. Additionally, pilot testing gives insight to the operational challenges such as how quickly biological growth increases the pressure drop across the media beds (if at all). The pilot testing is anticipated to occur in the SGWASA WTP filter gallery using SGWASA's filtered water to feed the pilot over the duration of 12 months. This will be detailed in Section 3.

3.6.2.2 RO

As noted above, RO is the most effective treatment for PFAS removal and would remove other problematic contaminants for SGWASA; however, it is often the highest (initial) capital cost solution and is often balanced by lower lifecycle costs. Additionally, the topic of waste management and the associated permitting is an ongoing topic in NC. A feasible RO pilot for SGWASA would be limited to the first stage of RO treatment with 50% recovery and would require a relatively high pressure. Such a pilot would be able to demonstrate proof of PFAS removal (as well as several other contaminants of concern) in the permeate for SGWASA filtered water, but, given that there are typically two or three stages to full-scale RO treatments, this pilot would be limited to the purpose screening and selected technology. If RO was the eventual selected alternative, future design-level pilot testing would need to be performed to look at design-level details under a 2- or 3-stage condition, and to project the useful lifespan of the membrane elements.

Section 4
Pilot Test Pan

This section summarizes the screening level pilot testing plan to assist process selection for PFAS treatment for SGWASA WTP.

4.1 Pilot Design Criteria

This section reviews the design criteria for PFAS removal via adsorptive media as well as RO.

4.1.1 PFAS Removal Media Contactors

As discussed in Section 3, it is recommended to test GAC, AER, NS Fluorosorb, and GAC in combination with AER using manufacturers of the best-performing media from pilot studies at facilities similar to SGWASA. Optionally, each train can be tested as a single "vessel" or as a lead-lag system, as would be proposed for a typical design with two "vessels" operating in series and the ability to reverse the flow through the vessels.

When designing a pilot, the hydraulic loading rate (HLR) should match the full-scale hydraulic loading rate to the extent feasible. The loading rates for this pilot were determined assuming:

- At full-scale, SGWASA will operate these systems at the upper end of the recommended HLR on maximum day (plant capacity).
- A peaking factor of 1.5 for approximating the average day flow vs maximum day flow.

GAC media bed pressure drop starts increasing as rates rise, particularly beyond an HLR of 9 gpm/ft^2; thus this is assumed to be the maximum day HLR, resulting in an average daily flow (ADF) loading rate of 6 gpm/ft^2. The recommended HLR for AER is 8-12 gpm/ft^2 per Ten State Standards (though there are applications above this loading rate). For this study, the maximum day AER HLR is assumed to be 12 gpm/ft^2 with an average daily flow HLR of 8 gpm/ft^2

Per Ten State Standards, GAC systems are recommended to have a contact time of 10 minutes per vessel and 2-5 minutes per vessel for AER. The bed depth was then determined using the average day HLR and the required empty bed contact time (EBCT). For AER, an EBCT of 2.5 minutes was selected with a bed depth of 2.7 ft. However, it should be noted that the bed depths should not be too shallow, and most vendors recommend a minimum bed depth needed to establish a breakthrough curve through the media. The media depth in full-scale pressure vessels can be designed to provide the recommended EBCT's at plant design flow. Therefore, under average flow conditions, the EBCT will be higher than design, thereby increasing the media life. **Table 4-1** summarizes the recommended pilot design criteria for each treatment train. **Figure 4-1** depicts the pilot treatment.

Table 4-1. Pilot Treatment Train Design Criteria

Train	Treatment	Media Type	Flow (gpm)		EBCT per (Lead or Lead & Lag Vessel (min)	Column Diameter, Each (inches)	Media Depth per Column (ft)	No. of Columns in Series[1]
			gpm	gph				
A	GAC	Calgon F400	0.524	31.4	10 & 20	4	4	4[2]
B	AER	DuPont Amberlite PSR2+	0.175	10.5	2.5 & 5	2	2.7	2[2,3]
C	Novel Adsorbent	CETCO Fluorosorb 200	0.175	10.5	2.5 & 5	2	2.7	2[4]
D	GAC	Calgon F400 or Alternative	0.524	31.4	10	4	4	2[2]
	IX	DuPont Amberlite PSR2+	0.175[5]	10.5	2.5	2	2.7	1

1. Depicting lead-lag operation.
2. Each column will provide an EBCT of 5 minutes.
3. Two columns operating in series will provide an EBCT of 10 minutes; Four columns operating in series will provide an EBCT of 20 minutes.
4. Each column will provide an EBCT of 2.5 minutes.
5. Overflow from Train D GAC effluent into IX influent will be 0.35 gpm.

4.1.2 RO

Table 4-2 describes the recommended design criteria for an RO pilot. If the feed pressure is not as high as what is recommended for a pilot, the recovery will reduce. The RO pilot recommended for SGWASA will indicate what PFAS and other compounds of concern can be removed by RO. This will be a single stage RO pilot, but the contaminant removal in the first stage permeate should be representative of the contaminant removal in the subsequent stages full-scale. **Figure 4-2** illustrates the RO pilot schematic.

Table 4-2. RO Pilot Recommended Design Criteria.

Parameter	Value
Typical RO Feed Pressure (PSI)	~70 – 90 (excluding cartridge filters)
Estimated Concentrate Pressure (PSI)	~40-60
Permeate Pressure (PSI)	~15, atmospheric
Pressure Vessel Brand	Pentair
Feed Flow (gpm)	~15, depending on pressure available
Permeate Flow (gpm)	~7.5 gpm
Concentrate Flow (gpm)	~7.5 gpm
Pilot System Recovery Rate	~50%
Pilot Stages	1
Membrane Brand	LG
Membrane Model	BW 4040s
Diameter (Inches)	4
Number of Membrane Units	8
Individual Membrane Pilot Recovery Rate	15% to 50% pending feed pressure

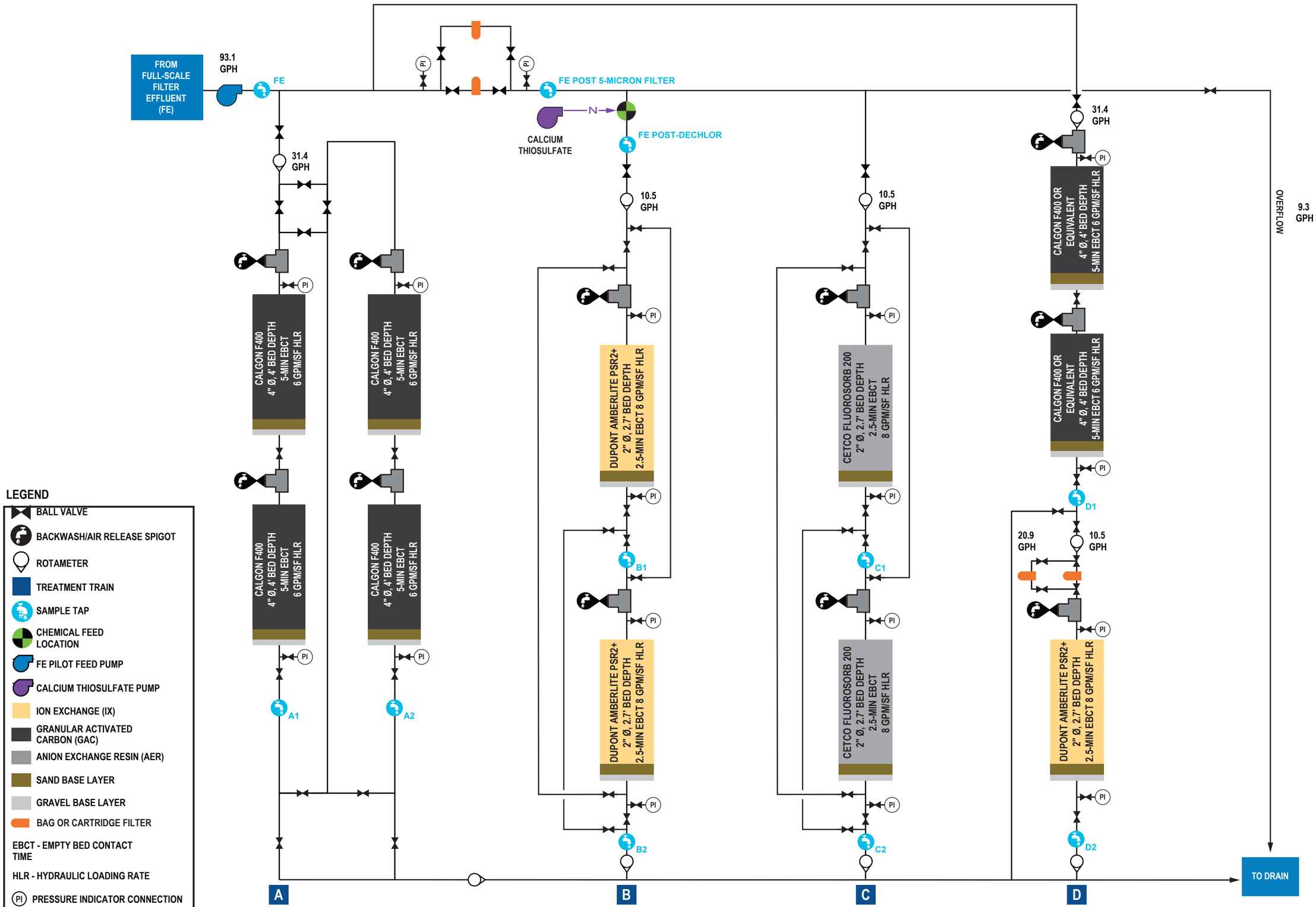
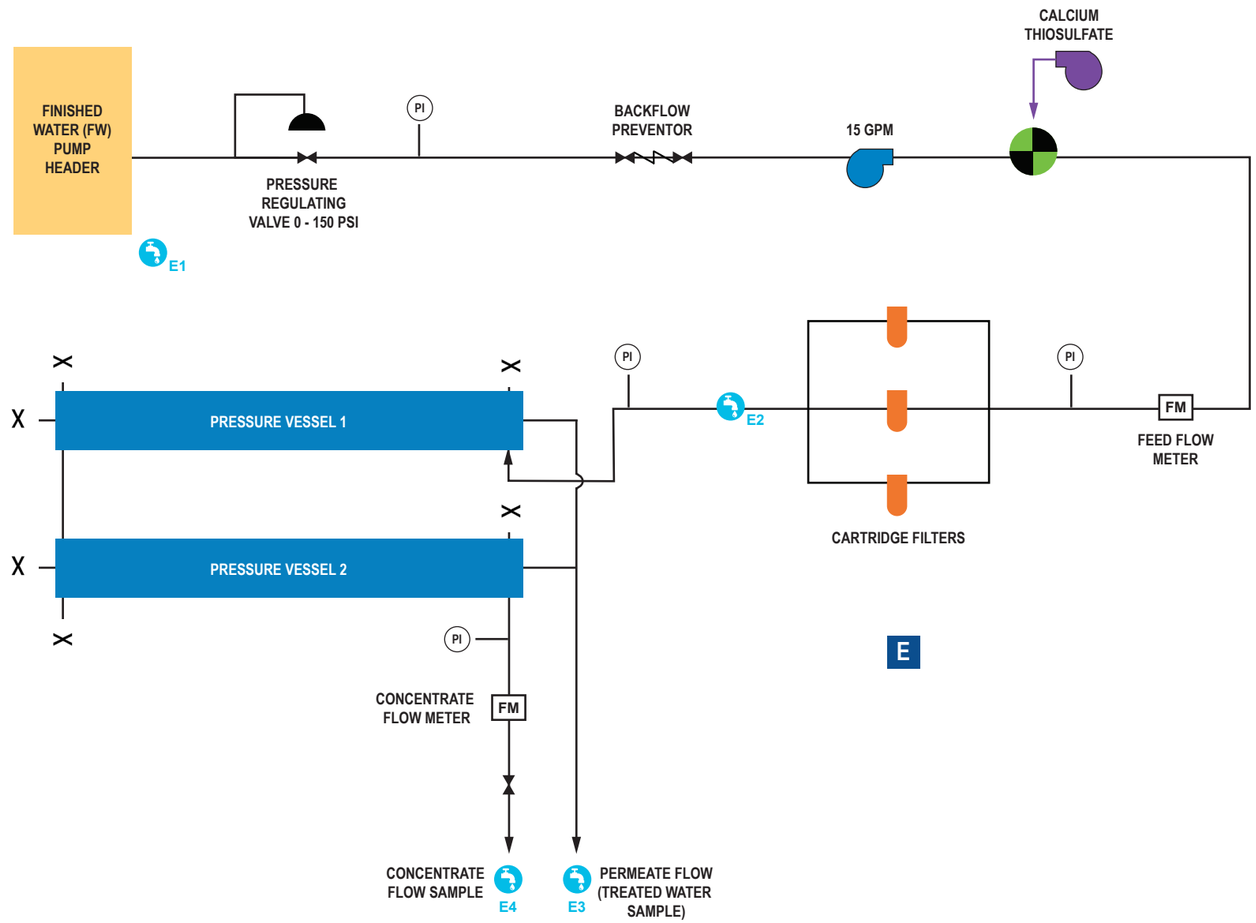


FIGURE 4-1
SGWASA WTP PILOT PROCESS SCHEMATIC— MEDIA CONTACTORS



LEGEND

- BALL VALVE
- TREATMENT TRAIN
- SAMPLE TAP
- CHEMICAL FEED LOCATION
- FW RO FEED PUMP
- CALCIUM THIOSULFATE PUMP
- BAG OR CARTRIDGE FILTER
- PI PRESSURE INDICATOR

FIGURE 4-2
SGWASA WTP PILOT PROCESS SCHEMATIC— REVERSE OSMOSIS

4.2 Pilot Location & Facilities

The pilot facilities will be located in the SGWASA WTP pipe gallery. **Figure 4-3** shows the location of the filtered water source, pilot columns skid, and pilot drainage destination.

4.2.1 Media Contactor Pilot

The pilot feed water for media contactors will be pumped from the combined filter effluent (CFE) well to the pilot skid with a dedicated pilot pump. The CFE well is located downstream of the orthophosphate injection point but was confirmed to be upstream of the fluoride injection. Given that orthophosphate has the potential to impact AER PFAS removal media (estimated reduction between 20-30%), SGWASA is requested to relocate the orthophosphate injection location downstream of the pilot feed for the duration of the pilot study. SGWASA also noted that fluoride can be turned off if needed for the duration of the pilot with approval from North Carolina Department of Environmental Quality (NCDEQ). Per discussions with plant staff, the filtered water free chlorine residual ranges from 0.5 mg/L to 1 mg/L. This range is higher than what the DuPont PSR2+ resin can accommodate. Therefore, the chlorine residual will need to be removed prior to the AER treatment train. The injection point for chlorine quenching agent will be located so that sufficient contact time is available for the quenching agent to react with free chlorine residual in the feed to the AER treatment train.

The pilot PVC columns will be mounted to a Unistrut similar to that shown in **Figure 4-4**. The pilot drain will be routed to the existing sump, which is housed with a sump pump. Therefore, a sump pump for the pilot is not needed. Storage and a feed pump will be required for the AER column chlorine quenching agent.

4.2.2 RO Pilot

The RO pilot should be located next to the finished water pumps in order to take advantage of the high pressure entering the distribution system given that the pilot should ideally have a feed at the membrane of 70 psi. SGWASA's finished water is closer to 40 psi; therefore a booster pump may or may not be used in lieu of having a higher concentrate volume. At this location, the finished water will already have fluoride, orthophosphate, and chloramines added. RO membranes are sensitive to oxidation; thus, the finished water feed to the pilot RO will require dechlorination. An example of a single-stage pilot is shown in **Figure 4-5.**

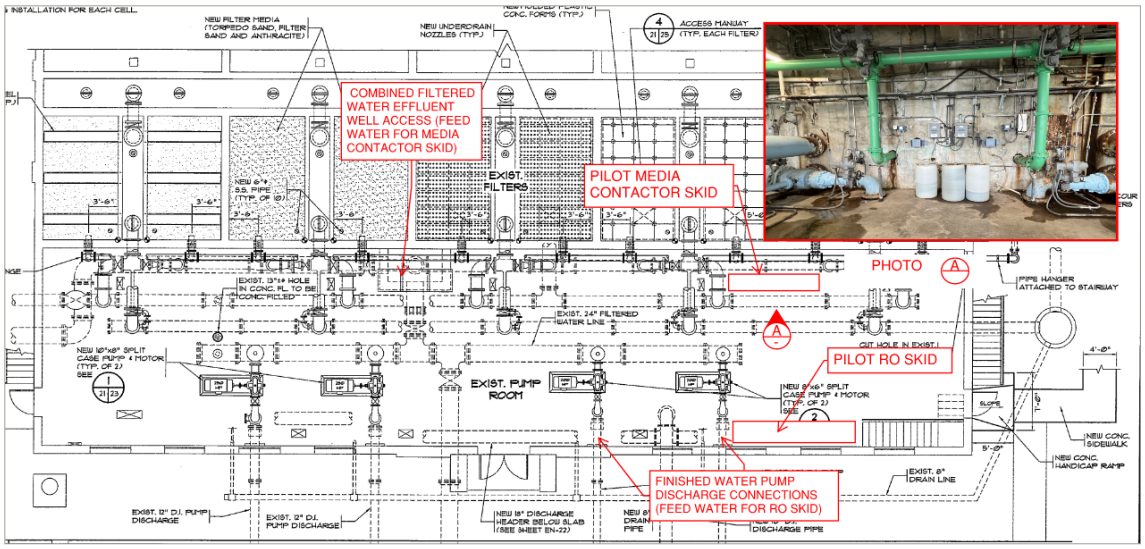


Figure 4-3. Pilot Skid Locations and Feed Water Sources in SGWASA Filter Gallery



Figure 4-4 Example Pilot Column Support System (at Western Intake Partnership Pilot Facility)



Figure 4-5. Example of RO Pilot

4.3 Sampling

Some analytes will be sent to the contract laboratory for analyses while others are measured in field such as chlorine residual when a faster turnaround is needed to maintain pilot operations. PACE Analytical laboratories is SGWASA's preferred laboratory for testing. Several samples will require refrigeration. The refrigerator in SGWASA's WTP laboratory will be used for temporary storage of samples, when needed. Samples will be coordinated to reduce the hold time between sampling and shipping or courier pick up.

Table 4-3 shows the sampling plan as well as other operating parameters to be routinely monitored and recorded based on a 12-month long pilot study. The table details which samples are taken in field and which samples are analyzed by a contract laboratory. The sampling plan does not include more frequent sampling that may be needed for a performance guarantee. If it were to, the frequency of PFAS sampling would roughly double and other samples increase in frequency as well.

It should be noted that some laboratories offer lower detection levels of PFAS; therefore, depending on if the samples are sent to PACE Analytical or another contract laboratory, PFAS breakthrough may be detected sooner. The detection levels or limit of quantification may vary over time, even for the same laboratory, whereas minimum reading levels are more consistent. At the time this Test Plan was written (November 2023), PACE Analytical can consistently detect PFOA and PFOS at or below 0.32-0.8 ng/L and 0.36- 0.7 ng/L, respectively depending on the methodology used.

Table 4-3. Sampling Plan

Parameter	Raw Water pre-PAC addition	Filtered Water pre-Cartridge Filter	Filtered Water post Cartridge Filter	GAC		AER		NS		GAC + AER		RO (6)			
				Train A1	Train A2	Train B1	Train B2	Train C1	Train C2	Train D1	Train D2	Train E1	Train E2	Train E3	Train E4
				10-min EBCT Calgon F400 GAC	20-min EBCT Calgon F400 GAC	2.5-min EBCT Fluorosorb 200	5-min EBCT Fluorosorb 200	2.5-min EBCT Dowex/ Amberlite PSR2+	5-min EBCT Dowex/ Amberlite PSR2+	10-min EBCT GAC (Type TBD)	2.5-min EBCT IX (Type TBD)	Finished Water Pre-Cartridge Filters	Finished Water Post-Cartridge Filter	Permeate	Concentrate
PH (1)		D		W	W	W	W	W	W	W	W		D	D	D
ORP (1)													D	D	D
Conductivity (1)													D	D	D
Temperature (1)		D											D	D	D
Flow (1)		D		D	D	D	D	D	D	D	D		D	D	D
Differential Pressure/ Pressure (1)		D		D	D	D	D	D	D	D	D		D	D	D
Chlorine Residual		D											D		
TOC (2)	M+	M+			M+		AN (3)			M+			W+	W+	W+
Turbidity (1)		BW													
Total Dissolved Solids		Q													
Total Suspended Solids (TSS)		M	M									BW	BW	BW	
Manganese (4)	Q	Q		Q	Q					Q			W	W	
Iron (4)		Q													
Aluminum (4)		Q													
Copper (4)		Q													
Sum of Five and Nine Haloacetic Acids SDS (12)		Q		Q	Q		Q			Q			W (6)	W (6)	
Nitrosamines SDS		4M			4M								W (6)	W (6)	
Nitrite		Q													
Nitrate		Q													
Ammonia		Q													
TKN (3)		AN					AN								
PFAS (5, EPA Drinking Water Method 533)	M-	M+		M-	M-	M-	M-	M-	M-	M-	M-			BW+ (6)	BW+ (6)
PFAS (5, EPA Draft Method 1633)	Q+	Q+		Q+	Q+	Q+		Q+	Q+	Q+	Q+			BW (6)	BW (6)
PPCPs	Q	Q			Q		Q		Q	Q	Q		W(6)	W(6)	
T&O Compounds (7)	Q	Q		Q	Q					Q			W (6)	W (6)	
Fluoride		2M													
Orthophosphate		2M													
Arsenic (3)		AN			AN					AN					
Sulfate (3)		AN					AN		AN						
Chloride (3)		AN					AN		AN						
Uranium		Q													

Parameter	Raw Water pre-PAC addition	Filtered Water pre-Cartridge Filter	Filtered Water post Cartridge Filter	GAC		AER		NS		GAC + AER		RO (6)			
				Train A1	Train A2	Train B1	Train B2	Train C1	Train C2	Train D1	Train D2	Train E1	Train E2	Train E3	Train E4
				10-min EBCT Calgon F400 GAC	20-min EBCT Calgon F400 GAC	2.5-min EBCT Fluorosorb 200	5-min EBCT Fluorosorb 200	2.5-min EBCT Dowex/ Amberlite PSR2+	5-min EBCT Dowex/ Amberlite PSR2+	10-min EBCT GAC (Type TBD)	2.5-min EBCT IX (Type TBD)	Finished Water Pre-Cartridge Filters	Finished Water Post-Cartridge Filter	Permeate	Concentrate
Perchlorate		Q							Q						
Chlorate	Q	Q			Q				Q	Q			W (6)	W (6)	
Hexavalent chromium	Q	Q			Q					Q			W (6)	W (6)	
Chromium	Q	Q			Q					Q			W (6)	W (6)	
Strontium	Q	Q			Q					Q			W (6)	W (6)	
Microplastics	4M	4M			4M					4M			W (6)	W (6)	
1,3-diphenylguanidine (DPG)	4M	4M			4M					4M			W (6)	W (6)	
Calcium		Q													
Magnesium		Q													
Potassium		Q													
Sodium		Q													

Notes:
1. Indicates samples tested in field. All others are intended to be sent to the contract lab for analysis.
2. For weeks with both TOC and PFAS sampling, TOC should be sampled on the same day.
3. Several contaminants or compounds will be monitored frequently upon start up and less frequently or not at all after the first month of operations. This is to monitor compounds that may possibly leach from the media.
4. Metals including iron, manganese, aluminum, and copper should be sampled together.
5. PFAS samples should be taken approximately each month for media contactors; however there are some months when PFAS samples may need to occur more frequently to catch the breakthrough curve. EPA Method 1633 includes more compounds and is intended to be sampled at start-up and then quarterly for media contactors. Depending upon breakthrough curves and PFAS performance observed in the pilot, the quantity of PFAS allocated for the lead and the lag may shift in favor of sampling one vessel over another and there will be a period of overlapping samples when both lead and lag are sampled.
6. RO is only intended to operate for a month; therefore sampling will be more frequent. Weekly PFAS sampling is recommended and can be split between EPA 1633 and EPA 533 methods. Less frequent sampling events screening for contaminants in filtered water should overlap with month of RO sampling if possible to reducing screening for contaminants filtered water to test for RO removal. If initial testing indicates the contaminants are not in the feed water, the remaining tests can be eliminated.
7. Taste and odor testing should be timed with seasonal high occurrences.

Key:

AN = AS NEEDED
D = DAILY during pilot visits, typically 3 days per week
W = WEEKLY
XW = EVERY "X" WEEKS
M = MONTHLY
XM = EVERY "X" MONTHS
Q= QUARTERLY OR EVERY 4 MONTHS FOR A 12 MONTH STUDY
+=FREQUENCY MAY BE SLIGHTLY MORE OFTEN THAN AS LISTED
-=FREQUENCY MAY BE SLIGHTLY LESS OFTEN THAN AS LISTED

4.4 Operations

4.4.1 Roles and Responsibilities

The Pilot Project Team shall construct the Pilot Facility, procure all equipment associated with the Pilot Facility, and maintain primary responsibility for Pilot Facility Operations. Pilot Engineer and Engineering Subconsultant are currently planned to construct, startup and oversee pilot operations. Plant staff shall visually observe the pilot daily for leaks, unusual low or high flows, or other visually apparent operating issues. Daily pilot operations such as taking pressure and flow measurements and conducting/ coordinating sampling will be performed by CDM Smith's pilot engineer and recorded in an operations log. The pilot engineer will also review, compile, organize, tabulate, and graph results as they become available in a sample result log(s).

The pilot sampling plan assumes sample collection will be performed by CDM Smith's pilot engineer in field or a subcontracted laboratory. Collected samples will be mailed to a subcontracted laboratory for analysis. The contract laboratory will be responsible for providing sample analysis results within the time frame specified in the contract.

Should there be any issues with the pilot like those noted above or after power outages, SGWASA WTP should contact the CDM Smith Pilot Engineer and/or Project Manager. In the event no one is available, all pilot flows should be shutdown by SGWASA staff. When sudden changes occur that may affect the pilot operation such as increased filter chlorine dose, SGWASA plant staff is expected to notify the CDM Smith pilot engineer. The Project Manager and Client Service Leader (CSL)will communicate important updates to SGWASA.

SGWASA must provide feedback on the test plan, review pilot status reports, attend pilot workshops, decide on full-scale performance goals based on pilot performance, and provide feedback on the draft study report.

4.4.1.1 Access to SGWASA

- Access will be permitted to CDM Smith staff solely for actions related to the Pilot Facility, including to assemble, operate, maintain and, at the end of the study, disassemble the Pilot Facility.
- Activities relating to operation and maintenance of the Pilot Facility will be limited to between the hours of 7:00 am – 6:00 pm, Monday to Friday, excluding SGWASA holidays. In cases when the Pilot Project Team determines that emergency access to the Pilot Facility is needed, Pilot Project Team will provide maximum practical advance notification.
- All members of the Pilot Project Team on-site shall adhere to SGWASA emergency procedures and security procedures – as incorporated into the Workplan.

4.4.1.2 Provisions and Utilities

The following utilities will be needed in the SGWASA pipe gallery for the pilot.

- Electrical
  - All the equipment needed for the pilot requires fractional horsepower (HP).

- Pilot staff shall be responsible for installing temporary power supply from the point of connection to the Pilot Facility for the media contactor skid as well as the RO feed pump, in a manner acceptable to SGWASA.

- Water
  - Filtered Water for Media Contactor Pilot Feed & Backwash Water:
    - SGWASA will provide a point of connection from the combined filter effluent . Maximum pilot feed is proposed to be between 0.84-2 gpm (50-120 gph) for the post filter columns depending on the pilot test options selected by SGWASA. Initial backwash water required at startup and potentially for periodic maintenance will require a flow of 0.75 gpm.
    - Pilot Project Team shall be responsible for designing/ installing temporary pump and piping from the point of connection at the combined filter effluent well to pilot skid.
    - SGWASA will provide a potable or non-potable water source for pilot project washdown.
    - Waste Storage and Disposal:
      - Waste generated during pilot plant operations (primarily from media effluents and backwashing procedures) and sampling (if applicable) should be handled and disposed as outlined in the SGWASA's standard waste handling and disposal procedures. CDM Smith will provide specific guidance on waste handling and disposal, if necessary.
      - Pilot Project Team shall be responsible for installing temporary piping from the Pilot Facility to the existing sump, in a manner acceptable to SGWASA. The existing sump pump will be used.
  - Finished Water for RO
    - SGWASA will provide a point of connection from the finished water pump discharge up to 15 gpm.
    - Pilot Project Team shall be responsible for designing/ installing temporary booster pump (if used) and piping from the point of connection to the RO membrane skid.
    - Waste Storage and Disposal:
      - Waste generated during pilot plant operations should be handled and disposed as outlined in the SGWASA's standard waste handling and disposal procedures. CDM Smith will provide specific guidance on waste handling and disposal, if necessary. Depending on if a booster pump is used, and the final RO feed pressure, then the RO concentrate could range from 7.5 to closer to 15 gpm.

- Pilot Project Team shall be responsible for installing temporary piping from the Pilot Facility to the existing sump, in a manner acceptable to SGWASA. The existing sump pump will be used. Refrigerated storage space: SGWASA will provide refrigerated storage space for PFAS and any other samples requiring refrigeration for samples in between collection and shipment.
- Pilot Project Team will arrange for procuring the chlorine quenching agent supply and required metering pump and piping.
- Use of bench space in laboratory to run field samples as needed.

4.4.1.3 Housekeeping/ Clean Site

Pilot Project Team shall maintain a well-kept site clear of debris, shall promptly remove trash/refuse associated with the Pilot Facility, and maintain proper housekeeping to prevent health and safety hazards. The pilot columns will be located such that it does not interfere with operation and maintenance of the SGWASA WTP. Equipment that will need to be stored on site for pilot operations will be stored in an organized fashion out of any main thoroughfare.

After completion of the Pilot Study, Pilot Project Team will restore the site to its pre-test condition.

4.4.2 Startup Operations

CDM Smith staff will provide all start up services. Data will be recorded daily. In the early stages, it will be particularly important to take several samples and plot data regularly to adjust operations and chemical dosages as needed.

Prior to startup of the pilot, the chlorine quenching agent dose will be optimized to so that no or little chlorine residual remains upstream of the AER treatment train. The post-filtration pilot treatments will be started as soon as scheduling allows. The media will be loaded but will not be wetted until as close to the pilot start up as possible. At start up, the flows for the respective media will be fine-tuned using rotameters to match those listed in Table 4.1. The pilot piping configuration will include connection for gages to measure pressure at the inlet and outlet of each column or pair of columns representing one contactor/vessel.

The pilot will simulate the lead-lag operation of a full-scale system. Therefore, like a full-scale pressure vessel, the media will be replaced when breakthrough occurs in the first lead vessel. After the media is replaced, the flow through the vessels will be reversed, making the previous lag the new lead. Alternatively, if a media is not performing well and/or there is interest in testing another adsorbent media, the medium may be replaced after sufficient data is collected (likely being breakthrough of the lag vessel). In the event of maintenance issues or power outages, and when the media in the lead vessels are replaced if doing lead and lag vessels, startup of new "vessels" or PVC columns will be required.

4.4.3 Routine Operations

4.4.3.1 Operations Log

Several activities shall be performed daily and on an as needed basis. A daily log will be maintained to document daily operations activities, sampling event dates and times, routine maintenance activities performed, parameters measured, unusual events, etc. The daily operations log should be backed up daily. Daily activities and those recorded in the log shall include but are not limited to:

- Flows and deviations from set points
- Inlet and outlet pressure to each "train"
- Inlet and outlet pressure for each bag/cartridge filter
- Samples taken including date and time
- Chemical dosages (confirmation of setpoint flow as well as adjustments)
- Chemical supply refills
- Backwash date, time, flow rate, and duration (if applicable)
- Confirmation that all treatment train flow meters and pumps are operating correctly
- Unusual activities such as:
  - Leaks
  - Power outages and column restarts
  - Unusual raw water conditions
- Maintenance
- Start-ups and shutdowns
- Flow adjustments
- Any other unusual occurrences or changes made to keep the pilot operating

4.4.3.2 Sample Log

A separate sample results log will be maintained and updated daily with values of measurements taken in the field and contract laboratory as data becomes available. The online log will include plots to view trends. This will allow Pilot Project Team to better catch the PFAS breakthrough curves by altering the sampling schedule as needed and, in the event of unexpected results, quickly identify any operations that may be affecting media PFAS removal performance (i.e., high chlorine residual to AER train).

4.4.4 Emergency Operations

Pilot operations staff should be contacted in the event of emergency. Trent Jackson will serve as primary contact in case of emergency. Mike Poulios will serve as secondary contact should Trent Jackson be unavailable for contact. Refer to **Section 4.4.5** for contact information.

A Health and Safety plan will be provided prior to the startup of the pilot including safety protocols and safety datasheets (SDS) in the event of an emergency related to contact with, ingestion of, or other instance of unspecified interactions with test medium or chemicals. GAC, AER and NS media products and datasheets are included under Appendices A to C and will also be included in the Health and Safety plan.

Pilot operations staff will adjust pilot equipment and scheduling as required by a disaster event, such as a chemical spill on Holt Lake or a tropical storm. CDM Smith pilot staff will review procedures for power supply and water supply cut-off, and safe shutdown of the Pilot Facility with SGWASA staff during pilot start-up operations.

4.4.5 Communication Plan

Issues related to budget or scope should be brought directly to the attention of the Project Manager and Client Service Leader. Technical questions related to pilot testing should be directed to the Project Director or Project Technical Leader. Questions related to the SGWASA facilities should be brought to the attention of Jonathan Yancey with copy to the Project Manager. Contact information is provided in **Table 4-4**.

Whenever visiting the pilot plant, Pilot Project Team shall enter from the main gate, state affiliation with CDM Smith and the pilot, and request entry to the plant. Staff shall sign in at the SGWASA administration building front desk with time and date. Pilot Project Team does not have to schedule pilot visits with SGWASA staff ahead of time, provided visits are kept within standard working hours, 8am-5pm Monday through Friday. Upon departure, pilot staff shall sign out at the SGWASA front desk.

SGWASA and CDM Smith should have a pilot workshop scheduled when the PFAS breakthrough curve begins to emerge and a final workshop to review the pilot results after the pilot report is drafted.

Table 4-4. Contact Information

Organization	Role	Name	Phone	Email
CDM Smith	Client Service Leader	Reed Barton	919-325-3550	bartonr@cdmsmith.com
CDM Smith	Project Manager	Mike Poulios	919-325-3589	pouliosmd@cdmsmith.com
CDM Smith	Project Director	Bill Dowbiggin	919-623-7964	dowbigginwb@cdmsmith.com
CDM Smith	Project Technical Leader	Neerja Rastogi	919-325-3514	rastogin@cdmsmith.com
CDM Smith	Project Engineer	Trent Jackson	919-325-3583	jacksonta@cdmsmith.com
CDM Smith	Pilot Operations Lead	Mariah Riccardi	919-325-3618	ricciardima@cdmsmith.com
Creech Environmental, LLC	Pilot Consultant	Kelvin Creech	919-272-3055	ncblueh2o@yahoo.com
SGWASA	Executive Director	Scott Schroyer	919-575-3367	sschroyer@sgwasa.org
SGWASA	WTP Superintendent	Jonathan Yancey	919-575-3118	jyancey@sgwasa.org

4.4.6 Health & Safety

The Health and Safety Plan will be developed prior to starting the pilot. Pilot Project Team shall employ the "think-safe" process prior to undergoing a given task:

- Determine the goals of the task on hand
- Assess the potential risks associated with the task
- Determine the best course of action to minimize risk for task completion

The think-safe process is a proven mechanism for avoiding potential injuries or near-misses, and it is fast and easy to implement.

Pilot Project Team shall wear proper personal protective gear, such as gloves, goggles, and steel toed shoes, when in active piloting areas.

4.4.7 Data Management Plan

Pilot testing records will be saved on the project Teams site for CDM Smith and SGWASA staff to access. The file sharing location shall include operations logs, tabulated sample result logs, the health and safety plan, safety data sheets, pilot test plan, and any other relevant pilot documentation as needed.

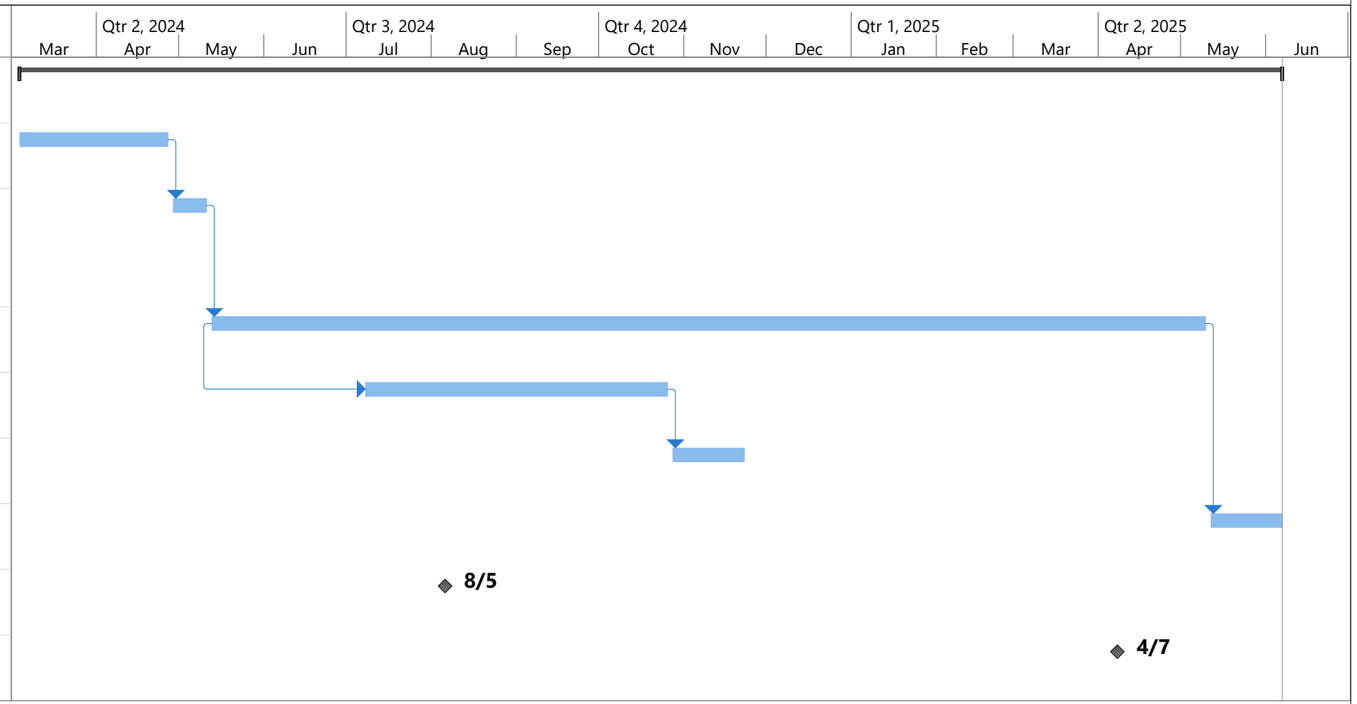
The contract laboratory shall share sample results with both CDM Smith and SGWASA as they become available. CDM Smith shall coordinate with the sampling lab as needed.

4.4.8 Schedule

See **Figure 4-6** for the project schedule. Once the pilot test plan is approved, pilot staff will need at least 2 months to select, procure, and assemble the pilot equipment. Once the pilot is constructed, the media will be loaded into the selected columns and backwashed as needed. Pilot operations are intended to be 12 months. A pilot workshop to review the data and next steps should be scheduled early-mid pilot once PFAS results begin to indicate the shape of the breakthrough curve to review preliminary results and confirm next steps. A final workshop should be held once all the pilot data or almost all the pilot data is received.

SGWASA PILOT PLAN SCHEDULE

ID	Task Mode	Task Name	Duration	Start	Finish
1		**PILOT TEST SCHEDULE**	**330 days**	**Mon 3/4/24**	**Fri 6/6/25**
2		Pilot Procurement and Mobilization	8 wks	Mon 3/4/24	Fri 4/26/24
3		Media Contactor Assembly, Startup and Troubleshooting	2 wks	Mon 4/29/24	Fri 5/10/24
4		Pilot Media Contactor Operation	52 wks	Mon 5/13/24	Fri 5/9/25
5		RO Assembly, Startup, and Troubleshooting	16 wks	Mon 7/8/24	Fri 10/25/24
6		Pilot RO Operation	4 wks	Mon 10/28/24	Fri 11/22/24
7		Pilot Deconstruction	4 wks	Mon 5/12/25	Fri 6/6/25
8		Workshop 1	1 day	Mon 8/5/24	Mon 8/5/24
9		Workshop 2	1 day	Mon 4/7/25	Mon 4/7/25



Project: Schedule
Date: Wed 11/1/23

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	

FIGURE 4-6 PILOT SCHEDULE

Appendix A

Calgon Filtrasorb 400 Data Sheet

Data Sheet

FILTRASORB® 400

Granular Activated Carbon

Applications



FILTRASORB 400 activated carbon can be used in a variety of liquid phase applications for the removal of dissolved organic compounds. FILTRASORB 400 has been successfully applied for over 40 years in applications such as drinking and process water purification, wastewater treatment, and food, pharmaceutical, and industrial purification.

Description

FILTRASORB 400 is a granular activated carbon for the removal of dissolved organic compounds from water and wastewater as well as industrial and food processing streams. These contaminants include taste and odor compounds, organic color, total organic carbon (TOC), industrial organic compounds such as TCE and PCE, and PFAS.

This activated carbon is made from select grades of bituminous coal through a process known as reagglomeration to produce a high activity, durable, granular product capable of withstanding the abrasion associated with repeated backwashing, hydraulic transport, and reactivation for reuse. The raw coal is mined and subsequently manufactured into GAC in the United States to ensure the highest quality and consistency in the finished product. Activation is carefully controlled to produce a significant volume of both low and high energy pores for effective adsorption of a broad range of high and low molecular weight organic contaminants.

FILTRASORB 400 is formulated to comply with all the applicable provisions of the AWWA Standard for Granular Activated Carbon (B604) and Food Chemicals Codex. This product may also be certified to the requirements of NSF/ANSI 61 for use in municipal water treatment facilities. Only products bearing the NSF Mark are certified to the NSF/ANSI 61 - Drinking Water System Components - Health Effects standard. Certified Products will bear the NSF Mark on packaging or documentation shipped with the product.

Features / Benefits

- Produced in the United States from a pulverized blend of high quality, domestically mined bituminous coals resulting in a consistent, high quality product.
- Carbon granules are uniformly activated through the whole granule, not just the outside, resulting in excellent adsorption properties and constant adsorption kinetics.
- The reagglomerated structure ensures proper wetting while also eliminating floating material.
- High mechanical strength relative to other raw materials, thereby reducing the generation of fines during backwashing and hydraulic transport.
- Carbon bed segregation is retained after repeated backwashing, ensuring the adsorption profile remains unchanged and therefore maximizing the bed life.
- Reagglomerated with a high abrasion resistance, which provides excellent reactivation performance.
- High density carbon resulting in a greater adsorption capacity per unit volume.

Specifications[1]	FILTRASORB 400
Iodine Number, mg/g	1000 (min)
Moisture by Weight	2% (max)
Effective Size	0.55–0.75 mm
Uniformity Coefficient	1.9 (max)
Abrasion Number	75 (min)
Screen Size by Weight, US Sieve Series	
On 12 mesh	5% (max)
Through 40 mesh	4% (max)

[1]Calgon Carbon test method

Typical Properties*	FILTRASORB 400
Apparent Density (tamped)	0.54 g/cc
Water Extractables	<1%
Non-Wettable	<1%

*For general information only, not to be used as purchase specifications.

Safety Message

Wet activated carbon can deplete oxygen from air in enclosed spaces. If use in an enclosed space is required, procedures for work in an oxygen deficient environment should be followed.

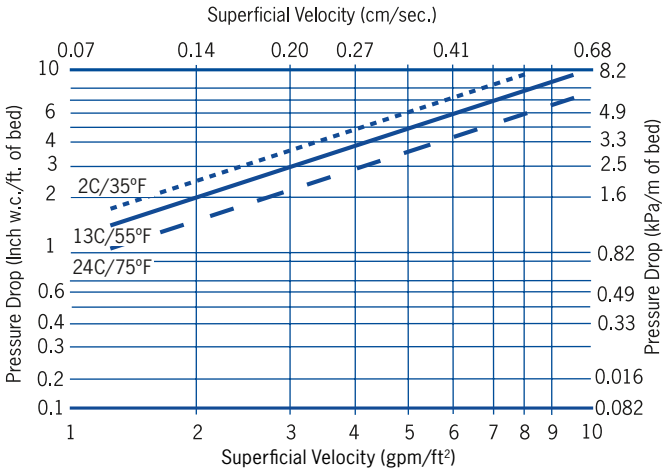
1.800.4CARBON calgoncarbon.com

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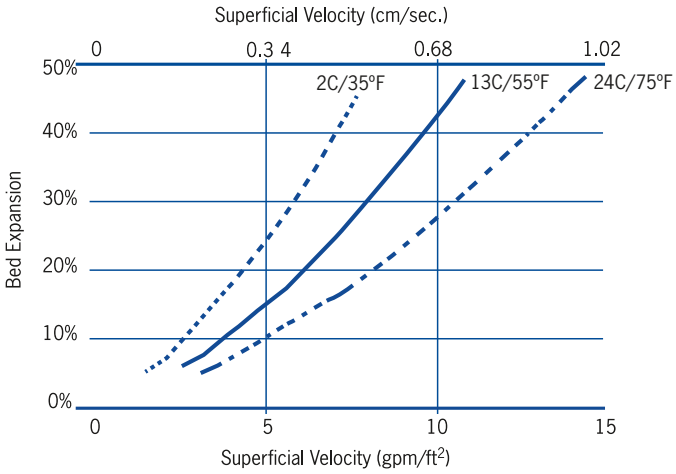
Typical Pressure Drop

Based on a backwashed and segregated bed



Typical Bed Expansion During Backwash

Based on a backwashed and segregated bed



Conditioning and Backwashing

Backwashing and conditioning fresh GAC before placing into operation is critical to GAC performance. The reasons for backwashing before placing fresh media online are to: (1) size segregate the media so subsequent backwashing will return the media to the same relative position in the bed, (2) remove any remaining air from the bed, and (3) remove media fines which can lead to excessive pressure drop and flow restriction. In addition, proper backwashing is a crucial step to collecting the most representative and meaningful post-start up data on compounds of interest, such as metals listed in the NSF/ANSI 61 standard.

Below are the recommended steps for proper conditioning and backwashing of GAC based on Filtrasorb 400 GAC being backwashed at 55°F:

1. Fully submerge GAC bed in clean, contaminant free water for at least 16 hours (overnight)
2. Open backwash inlet and begin up-flow at 3 gpm/ft² for 2 minutes
3. Increase flow to 5 gpm/ft² and maintain for 2 minutes
4. Increase flow to 7 gpm/ft² and maintain for 2 minutes
5. Increase flow to 8.5 gpm/ft² and maintain for 30 minutes*
6. Decrease flow to 7 gpm/ft² and maintain for 2 minutes
7. Decrease flow to 5 gpm/ft² and maintain for 2 minutes
8. Decrease flow to 3 gpm/ft² and maintain for 2 minutes
9. Close backwash inlet and stop flow

*Duration representative of initial backwash conditions. Required duration during operational backwashes can be shorter but will vary by utility, solids load, and GAC throughput. Contact Calgon Carbon for more information"

Design Considerations

FILTRASORB 400 activated carbon is typically applied in down-flow packed-bed operations using either pressure or gravity systems. Design considerations for a treatment system is based on the user's operating conditions, the treatment objectives desired, and the chemical nature of the compound(s) being adsorbed.

Safety Message

Wet activated carbon can deplete oxygen from air in enclosed spaces. If use in an enclosed space is required, procedures for work in an oxygen deficient environment should be followed.

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Appendix B

DuPont Amberlite PSR2 Plus Data Sheet

Product Data Sheet

DOWEX™ PSR2 Plus Cl Ion Exchange Resin

For Selective Removal of Perchlorate from Potable Water

Description

DOWEX™ PSR2 Plus Cl Ion Exchange Resin is a strong base anion exchange resin for the selective removal of perchlorate from potable water.

Designed to offer exceptional selectivity for perchlorate, the gel matrix also helps achieve high capacity while the uniform particle size (UPS) allows operation at lower pressure losses compared to conventional perchlorate removal resins.

Typical Physical and Chemical Properties

Matrix	Styrene-divinylbenzene, gel
Type	Strong base anion
Physical Form	White to yellow spherical beads
Ionic Form as Shipped	Cl^- Form
Total Exchange Capacity	≥ 0.7 eq/L
Water Retention Capacity	25 – 35%
Particle Size	
Particle Diameter [b]	700 ± 50 µm
Uniformity Coefficient	≤ 1.1
< 300 µm	1% max
Particle Density	1.07 g/mL
Bulk Density, as Shipped [c]	690 g/L (43 lb/ft^3)

[b] For additional particle size information, please refer to the Particle Size Distribution Cross Reference Chart (Form No. 177-01775).
[c] As per the backwashed and settled density of the resin, determined by ASTM D-2187.

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Form No. 177-03587, Rev. 1
May 2016

Suggested Operating Conditions

Maximum Operating Temperature	60°C (140°F)
pH Range	0 – 14
Bed Depth, min.	1000 mm (3.1 ft)
Typical Service Flowrate	4 – 64 BV*/h (0.5 – 8 gpm/ft^3)
Typical Linear Velocity	12 – 54 m/h (5 – 22 gpm/ft^2)

* 1 BV (Bed Volume) = 1 m^3 solution per m^3 resin or 7.5 gal per ft^3 resin

Please contact your Dow representative for system design and application testing details.

Commissioning and Limits of Use

DOWEX™ PSR2 Plus Cl Resin is suitable for use in potable water applications after an initial commissioning pretreatment at ambient temperature.

Note

These resins may be subject to drinking water application restrictions in some countries.

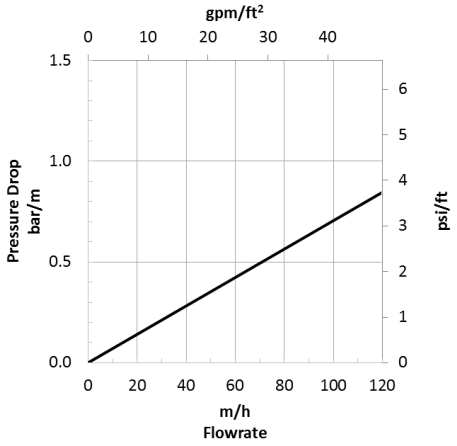
Please check the application status before use and sale.

Hydraulic Characteristics

Pressure drop data for DOWEX™ PSR2 Plus Cl Resin as a function of service flowrate at 20°C (68°F) is shown in Figure 1. The pressure drop for other water temperatures can be calculated with the provided equations. Pressure drop data are valid at the start of the service run with clean water and a correctly classified bed.

Figure 1: Pressure Drop

Temperature = 20°C (68°F)



For other temperatures use:
$P_T = P_{20°C} / (0.026\ T_{°C} + 0.48)$, where P ≡ bar/m
$P_T = P_{68°F} / (0.014\ T_{°F} + 0.05)$, where P ≡ psi/ft

Packaging

- 5-ft^3 (0.14-m^3) fiber drums
- 1000-L (264-gal) super sacks

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Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products—from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

For more information, contact our Customer Information Group:

Asia Pacific	+86 21 3851 4988
Europe, Middle East, Africa	+31 115 672626
Latin America	+55 11 5184 8722
North America	1-800-447-4369

www.dowwaterandprocess.com

WARNING: Oxidizing agents such as nitric acid attack organic ion exchange resins under certain conditions. This could lead to anything from slight resin degradation to a violent exothermic reaction (explosion). Before using strong oxidizing agents, consult sources knowledgeable in handling such materials.

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Form No. 177-03587, Rev. 1
May 2016

Water Quality Association

1/11/2017

CERTIFIED DRINKING WATER SYSTEM COMPONENTS

NSF/ANSI 61 (03/05/2012): Drinking Water System Components - Health Effects is within WQA's ANSI and SCC approved scope of accreditation under the Drinking Water System Component Scheme

The Dow Chemical Company

1803 Bldg/#416
Midland, MI 48674
United States
http://www.dow.com (http://www.dow.com)

Product Type: Ion Exchange Resin

Brand Name	Model	Water Contact Temp	Water Contact Material	Size
	AMBERLITE PWA15 Anion Exchange Resin [4]	Cold (23C)	SYN	525-625 um
	AMBERLITE PWA17 Anion Exchange Resin [3]	Cold (23C)	SYN	16x50 mesh
	DOWEX MARATHON C Cation Exchange Resin [4]	Cold (23C)	SYN	525-625 um
	DOWEX PSR-2 Anion Exchange Resin [1] [2]	Cold (23C)	SYN	16x50 mesh
	DOWEX PSR2 Plus (CL) Ion	Cold(23C)	SYN	0.5 - 0.9 mm

Exchange Resin [11] [12]			
DOWEX SAR Anion Exchange Resin [5]	Cold (23C)	SYN	16x50 mesh
DOWEX TAN-1 Anion Exchange Resin [7]	Cold (23C)	SYN	16x50 mesh
Dowex RSC Na Cation Exchange Resin [8]	Cold (23C)	SYN	16x50 mesh
HCR-S Cation Exchange Resin	Cold (23C)	SYN	16x50 mesh
HCR-S Cation Exchange Resin [6]	Cold (23C)	SYN	300-1200 um

Facility: Fombio, Italy

Product Type: Ion Exchange Resin

Brand Name	Model	Water Contact Temp	Water Contact Material	Size
	Dowex HCR-S/S Cation Exchange Resin	Cold (23C)	SYN	16x50 mesh

Facility: Midland, MI

Product Type: Ion Exchange Resin

Brand Name	Model	Water Contact Temp	Water Contact Material	Size
	HCR-S/S Cation Exchange Resin [9] [4] [10]	Cold (23C)	SYN	16x50 mesh

[1] Anion Resin
[2] Certified for water treatment plant applications. This product has not been evaluated for point of use applications.
[3] This product is certified with a minimum flow rate of = 0.4 gpm/ft3 of media.

[4] This product is certified with a minimum flow rate of = 0.8 gpm/ft3 of media.
[5] Flush at least 3 BV water.
[6] This product is certified with a minimum of = 1.0 gpm/ft3 of media.
[7] Flush 3 BV water at < 20 BV/hour.
[8] This product is certified with a minimum flow rate of = 0.72 gpm/ft3 of media.
[9] Flush 3 BV water at > 20 BV/hour.
[10] The regeneration water consumption is at least .21 liters of regeneration water consumption per 100 grams of media.
[11] This product is certified with a minimum flow rate of 0.38 gpm/ft3 of media
[12] For conditioning the resin; soak 1 hour with water. Then, rinse with RO/DI water at 10BV/hr = 0.044 gallons/minute for 20BV.

Appendix C

CETCO Fluorosorb Data Sheet

PFAS TREATMENT SOLUTIONS – FLUORO-SORB MEDIA

With over 900 water treatment systems treating a variety of contaminants installed and operating since 2002, ChartWater's AdEdge Water Technologies has extensive experience with effective methods for removing PFAS from water. AdEdge designs and manufactures multiple solutions for PFAS treatment to provide a complete treatment system, including pre-treatment as needed, to best fit the application and optimize the total life-cycle cost. One of the most capable media solutions offered is FLUORO-SORB.

FLUORO-SORB is a proprietary modified organo-clay adsorption media manufactured by CETCO and proven to effectively bind and treat the entire spectrum of PFAS. FLUORO-SORB 200 is specifically designed for use in drinking water treatment applications.



FLUORO-SORB® 200

ADEDGE IS AN OFFICIAL DISTRIBUTOR OF FLUORO-SORB FOR DRINKING WATER. CONTACT US TODAY (866-823-3343).

UNIQUE BENEFITS OF FLUORO-SORB

- ✓ Proven PFAS removal with high sorption capacity, resulting in long media life.
- ✓ Fast kinetics requiring an Empty Bed Contact Time (EBCT) of only 2-3 minutes, resulting in fewer and/or smaller vessels for a given design flow rate.
- ✓ Competitive cost per cubic foot, resulting in attractive lifecycle costs compared to alternatives.
- ✓ Saves piloting time: media life projections based on water quality review.
- ✓ Media does not adsorb or leach inorganic ions like nitrate, perchlorate, sulfate, phosphates, or arsenic
- ✓ NSF/ANSI 61 Certified
- ✓ Made in America in an ISO9001:2015 facility (with AdEdge manufacturing in America, systems meet Build America, Buy America Act)
- ✓ Free chlorine tolerant up to 1 mg/L continuous exposure.
- ✓ Effective PFAS removal even in the presence of high TOC and TDS
- ✓ Installed with bag or cartridge filter pre-treatment to protect media bed from TSS

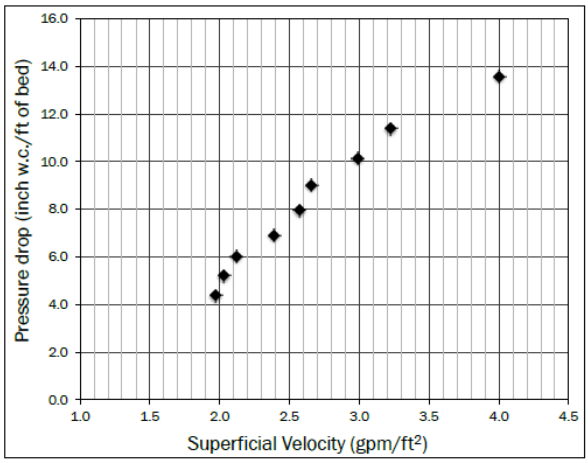
AdEdge Water Technologies, LLC is a Chart Industries Company. ChartWater™, a division of Chart Industries, Inc., is a global manufacturer and service provider of engineered solutions for municipal water treatment and industrial process applications with over 1,100 installations in 22 countries. Chart Industries, Inc. (NYSE: GTLS) is a leading, independent global manufacturer of highly engineered equipment servicing multiple applications in the Energy, Water, and Industrial Gas markets.

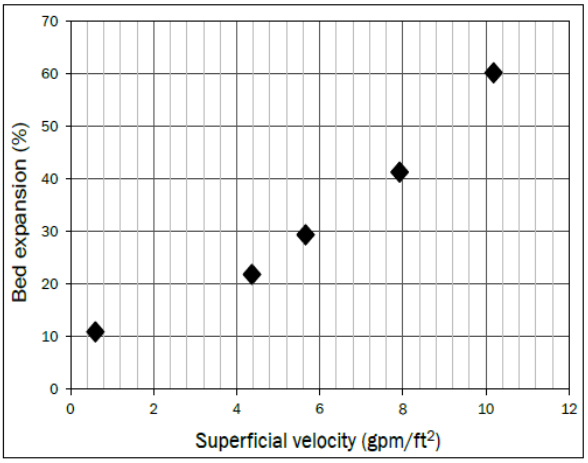
AdEdge water technologies
A Chart Industries Company

CHART WATER

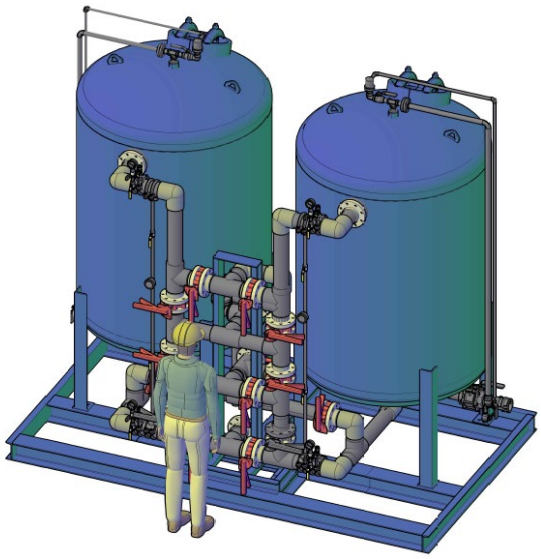
MEDIA CHARACTERISTICS AND OPERATING PARAMETERS

Size (Mesh)	20 x 40
Mean Particle Size (cm)	0.060
Bulk Density (g/cm3)	0.73
Empty Bed Contact Time (min)	2 – 3
Loading Rate (gpm/sqft)	6 – 12 (* Higher loading rates possible, requires AdEdge project specific review)
Bed Depth (in)	36 – 48
Backwash Rate (gpm/sqft)	9.5 (see curve)
Backwash Frequency	Minimal
Pressure Drop	See Curve





ADEDGE TREATMENT SYSTEMS



- ✓ Any size system and flow rate
- ✓ Skid-mounted, modular, and containerized systems available
- ✓ Standard designs or customized solutions to meet site specific constraints
- ✓ Pre-and-post treatment processes and equipment for multi-contaminant removal challenges
- ✓ Treatment as a Service (TaaS) options (systems for emergency treatment with a monthly fee)

AdEdge Water Technologies, LLC | 2055 Boggs Road | Duluth, Georgia 30096 USA | 866-823-3343
www.adedgetech.com | sales@adedgetechnologies.com

Rev08222022









CDM Smith®

Appendix C – Media Loading & Start Up Summary

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Colloid Environmental Technologies Company
2870 Forbs Ave
Hoffman Estates, IL 60192, USA
Phone: 847-851-1800

FLUORO-SORB® Adsorbent Column Set-Up Recommendations

Loading large columns - 4 inches or larger in diameter:

1. FLUORO-SORB Adsorbent can be dry loaded into larger columns, as long as entrained air in the media bed is eliminated.
2. Once the media is loaded into the column, slowly rinse the media top down with influent water until the media is saturated
3. The flow should then be reversed, and the media bed backwashed for 30 min
   - The calculated backwash flowrate should be close to 9 gpm/ft2
   - Adjust flowrate to maintain a minimum of 30% bed expansion during the backwash
4. The media bed height should be measured and media added or removed to make minor adjustments to ensure the desired value is obtained.

Loading small columns - less than 4 inches in diameter:

1. Soak product several hours or overnight in a glass beaker with DI water at room temperature
2. Drain out as much of the soaking water as possible (drained by pouring/tipping the glass beaker)
3. Partially fill column with influent water
4. Use a small (250 mL) glass beaker and glass funnel (if needed) to pour the wet/moist product into the column
   a. Keep pouring in ~6in increments
5. Add more water inside the column (either through the top by pouring or from the bottom using backwashing line)
6. Repeat Step 4 until reaching desired bed depth
7. Saturate entire column
8. Backwash for 30 minutes at an appropriate flow rate:
   - The calculated backwash flowrate should be close to 9 gpm/ft2
   - Adjust flowrate to maintain a minimum of 30% bed expansion during the backwash
9. The media bed height should be measured and media added or removed to make minor adjustments to ensure the desired value is obtained.

IX Media Loading Procedures

1. Load the test column with water to ~ 1.0 ft. depth.

2. Slowly add the IX media to the column a few inches at the time, allowing the media to fully settle before adding more.

3. Use a rubber mallet to tap the column to assist the media with settling homogeneously and to assist with compaction of the media.

4. Repeat steps 2 & 3 until the media level in the column reaches the desired media depth.

5. Keep the water level above the media as it is added to the column. If needed, add water to keep the media submerged during loading.

6. After loading, backwash the media achieving a 30-50% bed expansion rate for approximately 30 mins.

7. After backwashing, tap the column with the rubber mallet as in step 3 to assist the media with settling and compaction.

8. Once media is fully settled and compacted, test column is ready to be placed into service.

FILTRASORB® 400

Granular Activated Carbon

FILTRASORB 400 activated carbon can be used in a variety of liquid phase applications for the removal of dissolved organic compounds. FILTRASORB 400 has been successfully applied for over 40 years in applications such as drinking and process water purification, wastewater treatment, and food, pharmaceutical, and industrial purification.

APPLICATIONS

- Municipal Drinking Water
- Industrial Wastewater
- Pond/Aquarium
- Pharmaceuticals
- Environmental Water Processing
- Water Reuse
- Surface Water
- Groundwater
- Food & Beverage
- Bottling & Brewing

DESCRIPTION

FILTRASORB 400 is a granular activated carbon (GAC) for the removal of dissolved organic compounds from water and wastewater as well as industrial and food processing streams. These contaminants include taste and odor compounds, organic color, total organic carbon (TOC), and industrial organic compounds such as TCE, PCE, and PFAS.

Filtrasorb 400 is made from select grades of bituminous coal through a process known as reagglomeration to produce a high activity, durable, granular product capable of withstanding the abrasion associated with repeated backwashing, hydraulic transport, and reactivation for reuse. The raw coal is mined and subsequently manufactured into GAC in the United States to ensure the highest quality and consistency in the finished product. Activation is carefully controlled to produce a significant volume of both low and high energy pores for effective adsorption of a broad range of high and low molecular weight organic contaminants.

FILTRASORB 400 is formulated to comply with all the applicable provisions of the AWWA Standard for Granular Activated Carbon (B604) and Food Chemicals Codex. FILTRASORB 400 is also certified to the requirements of NSF/ANSI 61 for use in municipal water treatment facilities. Only products bearing the NSF Mark are certified to the NSF/ANSI 61 - Drinking Water System Components - Health Effects standard. Certified Products will bear the NSF Mark on packaging or documentation shipped with the product.

Specifications

Iodine Number, mg/g	1,000 (min)
Moisture by Weight	2% (max)
Effective Size	0.55–0.75 mm
Uniformity Coefficient	1.9 (max)
Abrasion Number	75 (min)
Screen Size by Weight, US Sieve Series	
On 12 mesh	5% (max)
Through 40 mesh	4% (max)

Typical Properties

Apparent Density	0.57 g/cc
Water Extractables	<1%
Non-Wettables	<1%

FEATURES & BENEFITS

- Produced in the United States from a pulverized blend of high quality, domestically mined bituminous coals resulting in a consistent, high quality product.
- Carbon granules are uniformly activated through the whole granule, not just the outside, resulting in excellent adsorption properties and consistent adsorption kinetics.
- The reagglomerated structure ensures proper wetting and minimal floating material.
- High mechanical strength relative to other raw materials, thereby reducing the generation of fines during backwashing and hydraulic transport.
- Carbon bed segregation is retained after repeated backwashing, ensuring the adsorption profile remains unchanged and therefore maximizing the bed life.
- Reagglomerated with a high abrasion resistance, which provides excellent reactivation performance.
- High density carbon resulting in a greater adsorption capacity per unit volume.
- Carbon is preconditioned to reduce the release of soluble inorganics and thus reduce the volume of rinse water needed during the start-up and conditioning.

SAFETY MESSAGE

Wet, activated carbon can deplete oxygen from air in enclosed spaces. If use in an enclosed space is required, procedures for work in an oxygen deficient environment should be followed.

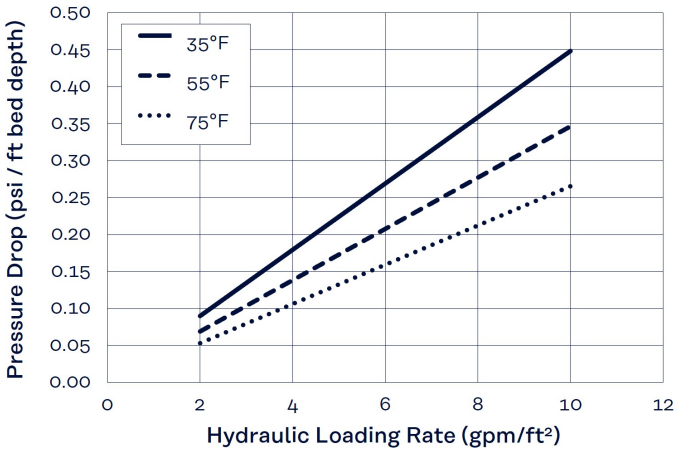
1.800.4Carbon | calgoncarbon.com
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FILTRASORB® 400
Granular Activated Carbon

BACKWASH AND CONDITIONING
Prior to placing a recently filled granular activated carbon (GAC) vessel online, adequate media backwash and media conditioning are required. The following steps are intended to serve as guidelines to condition GAC media prior to placing the system in service. These steps may be able to be tailored to accommodate site specific constraints. For more information, please contact your Calgon Carbon sales or technical representative.

INITIAL BACKWASH
Following GAC media exchange, slowly fill the vessel with potable water in the up-flow direction until the vessel is full. Fill using flow rates that provide less than 5% bed expansion. Soak the new GAC media overnight (approx. 16 hours) to degas the media bed. Once the soaking period is complete, conduct a start-up backwash (up-flow operation) per the steps outlined below.

TYPICAL CLEAN-BED PRESSURE DROP
Based on a backwashed and segregated bed

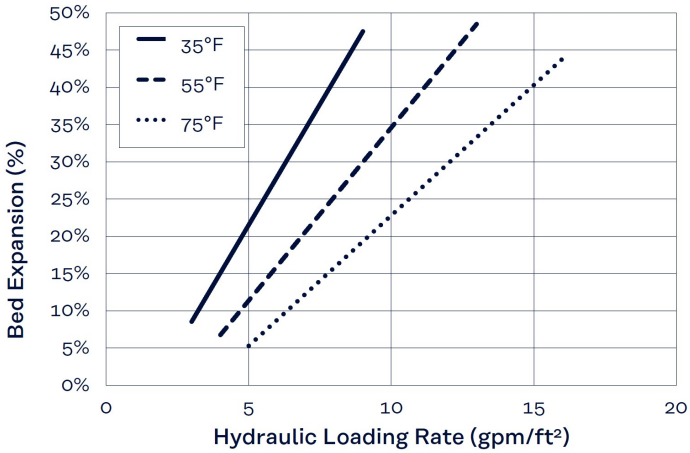


Startup Backwash

1. Flow @ 5% expansion for 2 minutes.
2. Flow @ 10% expansion for 2 minutes.
3. Flow @ 15% expansion for 2 minutes.
4. Flow @ 30% expansion for 30 minutes.
5. Flow @ 15% expansion for 2 minutes.
6. Flow @ 10% expansion for 2 minutes.
7. Flow @ 5% expansion for 2 minutes.

Refer to the bed expansion curve to determine the flowrates needed at each step. Please note, an identical backwash procedure is recommended when a media vessel is restarted after an extended shutdown or restarted after the bed has been drained.

TYPICAL BED EXPANSION DURING BACKWASH
Based on a backwashed and segregated bed



DESIGN CONSIDERATIONS
FILTRASORB 400 activated carbon is typically applied in down-flow packed-bed operations using either pressure or gravity systems. Design considerations for a treatment system is based on the user's operating conditions, the treatment objectives desired, and the chemical nature of the compound(s) being adsorbed.

SAFETY MESSAGE
Wet, activated carbon can deplete oxygen from air in enclosed spaces. If use in an enclosed space is required, procedures for work in an oxygen deficient environment should be followed.

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Summary of Pilot Media Installation/Start-Up
SGWASA PFAS Pilot Testing
11/4/2024

Treatment Train	Column	Media Type	Media	Col. Dia. (in)	Area (sf)	Loading Rate (gpm/sf)	EBCT (min)	Req'd Media Depth (ft)	Sand Bed	Media Pre-Soak?	Backwash Time	Media Skimmed?	Flow (GPH)	Flow (GPM)
A	A-1	GAC	Calgon F400	4	0.0872665	6.0	10	8.0	None	No	30+ mins.	Yes	31.4	0.523
	A-2	GAC	Calgon F400	4	0.0872665	6.0	10	8.0	None	No	30+ mins.	Yes	31.4	0.523
	A-3	AER	Amberlite PSR2+	2	0.0218166	8.0	2.5	2.7	4"	No	30+ mins.	No	10.5	0.175
B	B-1	NS	Fluoro-Sorb 200	2	0.0218166	8.0	2.5	2.7	4"	Yes - 24 hrs	30+ mins.	Yes	10.5	0.175
C	C-1	AER	Amberlite PSR2+	2	0.0218166	8.0	2.5	2.7	4"	No	30+ mins.	No	10.5	0.175

Appendix D – Pilot Backwashing SOP

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SOP for Routine Backwash of Pilot Column

(not for initial backwash at startup)

1) **Equipment**:
    a. Backwash Feed Line
        i. backwash water is fed to the bottom of the pilot column using the backwash feed line – see photo below:



    b. Backwash Waste Assembly
        i. backwash wastewater is conveyed to drain using the backwash waste assembly – see photo:



c. 7/8” socket wrench
    i. For removing the John Guest fitting on the top of the column to attach the backwash waste assembly
d. Rubber Mallett
    i. For tapping the column to loosen media during bed expansion and fluidization
e. Flashlight
    i. Helps see the media closely to evaluate bed expansion and fluidization
f. Ladder

2) Backwash procedure – initial set up

a. Attach the backwash feed line to the male end of a standard ¾” water hose
b. Stop flow through the column to be backwashed using the upper ball valve on the column bottom assembly
c. Close water supply valve for this train on the main valve manifold
d. Open the lower gate valve (throttling valve) to fully open position (100%)
e. Connect the backwash feed line to the column by disconnecting the column discharge line from the lower John Guest fitting and inserting the feed line tubing into the fitting
f. Close the black/blue John Guest valve on the backwash feed line
    i. Backwash flow rate will be controlled by this valve
g. Using ladder, disconnect the column main feed line from the John Guest fitting on the top of the column
h. Remove the John Guest fitting from the top of the column by using the 7/8” socket wrench – set fitting aside
i. Attach the backwash waste assembly (without backwash discharge hose attached) to the top of the column by screwing the pipe into the threaded port (where John Guest fitting was removed)
    i. NOTE – VERY IMPORTANT – tighten the pipe into the upper port by hand only! – stop turning when it just starts to tighten - it doesn’t need to be fully tightened! – just a turn and a half or so is sufficient to prevent leaking
j. Attach the backwash discharge hose to the backwash waste assembly and then run the backwash discharge hose to drain
k. Close the vent valve on the backwash waste assembly

3) Backwashing the media:

a. Turn on water hose to supply the backwash feed line – just crack it open a small amount so that it is easier to control the John Guest valve on the feed line

b. Open the upper ball valve on the bottom of the column
c. Start the backwash water flow by just barely opening the John Guest valve until you start to see some movement of the media
d. Allow things to stabilize for a few seconds to determine how much the initial on-set of flow has begun expanding the media bed
e. Use the rubber to tap several times on the column is lower media bed area to loosen the media
f. Using MICRO adjustments to the John Guest valve, slightly increase flow and continue doing so until the media bed starts to slowly rise in the column
g. Tap with the mallet on the column at the top of the media bed as it rises – it will start to break up – keep tapping until it starts to completely fluidize
h. Use the John Guest valve on the feed line to control the height of the media expansion – if it looks likes its rising fast, then slow down the flow, and vice versa, etc. – if it looks like you're about the wash media all the way to the top of the column, then close the valve and start over
i. Apply enough backwash flow rate to expand the media 30 – 70% being careful not to over expand the bed and wash media out of the column
j. Maintain the bed expansion (by raising and lowering the height of the media in the column) by periodically trimming the position of the John Guest valve as needed
k. Backwash the media for 30 mins. minimum
l. After backwashing for the appropriate time, slow the backwash flow a little to allow the media to start slowly settling
m. Gently tap on the column as the media is settling to assist with packing the media back down & seating the bed
n. Allow the media to settle until it stops, then close slow the flow a little more
o. Repeat this until the flow is completely shut off and the media height is *near* the original level prior to backwash – it may drop a little more after the column is re-started and pressurized

4) Shutting down the backwash:

a. After backwashing the media, close John Guest valve on the feed line to stop flow
b. Close the upper ball valve on the column bottom assembly
c. Disconnect backwash feed line and re-connect the column discharge line to the bottom John Guest fitting
d. De-tach the backwash discharge hose from the backwash waste assembly

e. Remove the backwash waste assembly from the top of the column and re-install the John Guest fitting – use the 7/8" socket wrench ot install the fitting but tighten only until there just starts to be some resistance – DO NOT TIGHTEN DOWN with the socket wrench – looking for just a little more than hand tight!

5) Restoring flow through the column:

a. Re-attach the column main feed line to the John Guest fitting at the top of the column
b. Close the lower gate valve on the column bottom assembly to fully closed (0%)
c. Open the upper ball valve on the column bottom assembly
d. Open the water supply valve for this train on the main valve manifold
e. Restart water flow through the column by slowly opening the lower gate valve to achieve the desired flow rate

6) If AIR ASSISTED backwash is needed (Optional):

a. Use small air compressor set up with 3/8" tubing and John Guest connector fittings to introduce some air into the media bed to facilitate breaking up media beds that are particularly stubborn to fluidize
b. With the column set up for backwashing, disconnect the downstream pressure gauge line from the side branch of the lower tee of the column bottom assembly
c. OR, if no pressure line is attached, remove the ½" hex head plug from the side branch of the tee and install a John Guest push connector in its place
d. Insert the air compressor 3/8" tubing line into the push connector on the tee
e. Close all valves on the air compressor and start the compressor
f. Allow pressure to build up to 40-50psi
g. Open the upper ball valve on the column bottom assembly
h. Crack open the valve on the air compressor to allow a small air flow into the bottom of the column and up into the media bed
i. Allow it to bubble through the media for a few minutes – this is air scour
j. Then close the air compressor valve and start the routine backwash as described in the procedure above
k. For really stubborn media beds, you can also crack open the air compressor valve to allow a small air flow into the column simultaneously in conjunction with the backwash water flow

Appendix E – SGWASA Pilot Daily Log Data

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	Operator	Temperature (°C)	pH (s.u.)					Flow (gpm)	Flow (gph)				
Date	Initial	Filter Effluent	Filter Effluent	GAC	IX-1	NS	IX-2	Total Flow	AF-1	AF-2	AF-3	BF-1	CF-1
10/14/2024	KC	22.0	5.71	9.60		6.44	4.20	1.5	31.4	21.5	10.5	10.5	10.5
10/15/2024	KC	20.9	5.69	9.78		6.01	5.67	1.5	31.0	22.0	10.5	10.5	10.0
10/16/2024	KC	20.7	5.67	7.67		5.84	5.55	1.5	31.4	22.0	10.5	10.5	10.5
10/18/2024	KC	19.4	5.75	5.78	5.78	5.79	5.60	1.5	31.4	22.0	10.5	10.5	10.5
10/21/2024	KC	19.4	5.68	5.61	5.61	5.67	5.52	1.4	31.4	22.0	10.5	10.5	10.5
10/24/2024	KC	19.3	5.82	5.60	5.59	5.82	5.66	1.4	31.4	22.0	10.5	10.0	10.0
10/25/2024	KC	19.5	5.70	5.57	5.59	5.69	5.58	1.2	31.4	22.0	10.5	10.5	10.5
10/28/2024	KC	19.2	5.66	5.56	5.58	5.64	5.53	1.2	31.4	22.0	10.5	10.5	10.0
10/29/2024	KC	18.8	5.70	5.57	5.59	5.67	5.55	1.2	31.4	22.0	10.5	10.5	10.5
10/31/2024	KC	19.3	5.67	5.61	5.61	5.65	5.55	1.2	31.4	22.0	10.5	10.0	10.5
11/4/2024	KC	18.9	5.61	5.48	5.51	5.55	5.41	1.2	31.4	22.0	10.5	7.5	7.5
11/7/2024	KC	19.8	5.46	5.45	5.45	5.45	5.42	1.2	31.4	22.0	10.5	8.5	10.5
11/12/2024	KC	19.2	5.61	5.43	5.42	5.55	5.48	1.0	31.4	22.0	10.5	9.5	10.5
11/14/2024	KC							1.0	31.4	22.0	10.5	9.5	10.5
11/18/2024	KC							1.1	31.4	22.0	10.5	6.0	10.5
11/19/2024	KC	16.7	5.78	5.66	5.64	5.72	5.57	1.2	31.4	22.0	10.5	10.5	10.5
11/19/2024	KC												
11/21/2024	KC	16.5	5.70	5.63	5.63	5.67	5.62	1.2	31.4	22.0	10.5	10.5	10.5
11/25/2024	KC	14.4	5.73	5.60	5.59	5.71	5.60	1.2	30.0	22.0	10.0	10.5	10.5
11/27/2024	JM	17.4						1.2	31.0	25.0	10.0	11.0	11.0
11/30/2024	MK	12.6						1.2	31.0	25.0	10.0	11.0	11.0
12/2/2024	JM	11.9	5.90	5.26	5.45	5.56	5.55	1.2	31.0	25.0	9.0	11.0	11.0
12/3/2024	KC	11.6	5.67	5.57	5.58	5.57	5.48	1.2	31.5	23.0	10.5	10.5	10.5
12/4/2024	JM	12.4						1.2	31.0	25.0	10.0	11.0	11.0
12/6/2024	JY	12.3						1.1	31.0	26.0	10.0	11.0	11.0
12/9/2024	BM	11.8	5.80	5.80	5.70	5.70	5.70	1.2	32.0	25.0	12.0	12.0	12.0
12/10/2024	KC	10.8	5.67	5.57	5.58	5.57	5.48	1.2	31.5	22.0	10.5	10.5	10.5
12/11/2024	JM							1.2	31.0	25.0	10.0	11.0	11.0
12/13/2024	DT							1.2	32.0	26.0	12.0	14.0	14.0
12/18/2024	BM	11.9	6.00	5.50	5.50	5.70	5.60	1.2	32.0	25.0	13.0	14.0	14.0
12/20/2024	JM	11.2						1.2	32.0	25.0	11.0	11.0	11.0
12/23/2024	KC	10.2	5.65	5.46	5.44	5.58	5.48	1.2	31.5	22.0	10.5	10.5	10.5
12/23/2024	JM	9.4	5.60	5.40	5.50	5.50	5.50	1.2	32.0	25.0	11.0	12.0	12.0
12/27/2024	JM	10.1						1.2	33.0	24.0	11.0	11.0	11.0
12/30/2024	SE	14.1	5.70	5.80	5.50	5.70	5.60	1.2	32.0	24.0	12.0	12.0	12.0
1/2/2025	TH	10.6	5.71	5.42	5.43	5.62	5.38	1.0	32.0	24.0	11.0	11.0	11.0
1/3/2025	JM	9.8						1.2	33.0	24.0	12.0	11.0	11.0
1/6/2025	SE	10.4	5.80	5.50	5.40	5.60	5.50	1.2	32.0	25.0	12.0	12.0	12.0
1/7/2025	KC							1.2	32.0	24.0	11.0	10.5	10.5
1/8/2025	JM	8.1						1.2	32.0	24.0	11.0	11.0	11.0
1/10/2025	JM	7.1						1.2	32.0	24.0	11.0	11.0	11.0
1/13/2025	JM	7.0	5.73	5.37	5.35	5.61	5.37	1.2	32.0	24.0	11.0	11.0	12.0
1/14/2025	KC	7.3	5.59	5.30	5.29	5.46	5.25	1.2	31.5	22.5	10.5	10.5	10.5
1/15/2025	JM	8.9						1.2	31.0	23.0	11.0	11.0	11.0
1/17/2025	JM	8.1						1.1	31.0	22.0	11.0	11.0	11.0
1/21/2025	KC	6.3	5.65	5.35	5.31	5.63	5.36	1.2	31.5	22.0	10.5	10.5	10.5
1/22/2025	JM	5.5	5.73	5.30	5.41	5.70	5.48	1.1	30.0	22.0	11.0	11.0	11.0
1/24/2025	JM	6.9						1.1	29.0	22.0	11.0	10.0	11.0
1/27/2025	JM	6.7	5.60	5.25	5.32	5.61	5.50	1.1	29.0	21.0	11.0	10.0	11.0
1/28/2025	KC	7.1	5.52	5.39	5.37	5.52	5.40	1.0	31.5	22.0	10.5	10.5	10.5
1/29/2025	KC												
1/29/2025	JM	8.5						1.0	29.0	23.0	11.0	10.0	11.0
1/31/2025	JM	9.5						1.0	30.0	22.0	11.0	10.0	11.0
2/3/2025	SE	11.7	5.20	5.30	5.40	5.40	5.50	1.0	30.0	22.0	12.0	12.0	13.0
2/4/2025	KC	10.4	5.57	5.38	5.36	5.58	5.43	1.0	30.0	21.5	10.5	10.5	10.5
2/7/2025	JM	10.6						1.0	31.0	21.0	11.0	10.0	11.0
2/10/2025	JM	10.7	6.10	5.39	5.42	5.64	5.58	0.9	29.0	20.0	11.0	10.0	11.0

	Operator	Temperature (°C)	pH (s.u.)					Flow (gpm)	Flow (gph)				
2/11/2025	KC	11.1	5.45	5.51	5.51	5.62	5.53	1.0	30.5	22.0	10.5	9.5	10.5
2/12/2025	JM	11.2						1.0	31.0	23.0	11.0	10.0	11.0
2/14/2025	JM	10.1						1.0	31.0	22.0	10.0	10.0	11.0
2/17/2025	SB	12.8	5.70	5.40	5.50	5.50	5.50	1.0	30.0	22.0	12.0	12.0	12.0
2/18/2025	KC	9.2	5.62	5.52	5.53	5.58	5.53	1.0	31.0	21.5	10.5	10.5	10.5
2/19/2025	JM	9.1						1.0	30.0	22.0	10.0	10.0	11.0
2/21/2025	JM	8.0						1.0	30.0	22.0	10.0	10.0	11.0
2/26/2025	KC	10.0	5.69	5.60	5.61	5.67	5.63	0.9	28.0	20.0	10.5	8.5	10.5
2/26/2025	JM	9.5		5.34	5.56	5.70	5.70	1.0	31.0	22.0	11.0	10.0	10.0
2/28/2025	JM	10.1						0.7	29.0	21.0	11.0	10.0	10.0
3/3/2025	SE	12.3	5.80	5.40	5.60	5.60	5.80	0.8	30.0	21.0	11.0	10.0	12.0
3/4/2025	KC	10.7	5.86	5.73	5.76	5.88	5.76	0.9	30.0	21.0	10.0	9.5	10.5
3/5/2025	SE	11.7						0.8	30.0	22.0	22.0	12.0	11.0
3/7/2025	MU							0.8	30.0	22.0	10.0	11.0	10.0
3/10/2025	BM	14.0	5.54	5.51	5.57	5.78	5.66	0.8	30.0	22.0	11.0	11.0	10.0
3/11/2025	KC							0.8	30.5	22.0	10.0	10.0	9.5
3/12/2025	JM	12.8						0.9	31.0	22.0	10.0	11.0	10.0
3/14/2025	JM	15.1						0.9	30.0	22.0	10.0	11.0	10.0
3/17/2025	DT	13.9		5.30	5.60	5.60	5.60	0.8	30.0	22.0	11.0	11.0	11.0
3/19/2025	JM	15.0						0.8	29.0	20.0	10.0	9.0	10.0
3/20/2025	KC	14.9	5.74	5.67	5.64	5.78	5.70	0.8	30.0	20.0	10.0	9.5	10.0
3/21/2025	JM	14.7						0.9	30.0	22.0	10.5	10.5	10.0
3/24/2025	JM	14.4	5.83	5.81	5.69	5.81	5.74	0.8	30.0	22.0	10.5	10.0	10.0
3/25/2025	KC	15.6	5.67	5.63	5.66	5.70	5.63	0.9	31.5	22.0	10.5	10.5	10.5
3/26/2025	JM	15.8						0.8	29.0	22.0	10.5	10.0	10.0
3/28/2025	JM	16.7						0.8	29.0	22.0	10.0	10.0	10.0
3/31/2025	JM	17.5	5.70	5.70	5.60	5.70	5.70	0.8	29.0	21.0	10.5	10.0	10.0
4/1/2025	TH	20.4						0.8	29.0	22.0	10.5	10.0	10.0
4/4/2025	JM	20.2						0.8	27.0	21.0	10.0	9.0	9.5
4/7/2025	JM	20.8	5.80	5.60	5.60	5.70	5.60	0.7	27.0	21.0	10.0	8.0	9.0
4/8/2025	KC	20.8	5.60	5.51	5.53	5.60	5.52	0.8	30.0	21.0	10.5	8.0	9.0
4/9/2025	JM	19.1						0.8	32.0	26.0	10.0	10.5	10.0
4/11/2025	JM	18.5						0.8	31.0	26.0	10.0	10.0	10.0
4/14/2025	KC	18.9	5.69	5.57	5.57	5.68	5.58	0.9	31.5	22.0	10.5	10.5	10.5
4/16/2025	JM	18.6						0.8	30.0	22.0	10.0	10.0	10.0
4/18/2025	MN	19.5						0.8	30.0	22.0	10.0	10.0	10.0
4/21/2025	JM	21.9	5.80	5.60	5.60	5.60	5.60	0.8	30.0	22.0	10.5	10.0	10.0
4/22/2025	KC	21.5	5.62	5.48	5.44	5.57	5.51	0.8	30.0	21.5	10.5	10.5	10.5
4/23/2025	JM	22.4						0.8	30.0	22.0	11.0	10.0	10.0
4/25/2025	JM	22.6						0.8	30.0	22.0	11.0	10.0	10.0
4/28/2025	JM	21.0	5.80	5.60	5.60	5.60	5.60	0.8	29.0	22.0	11.0	9.0	10.0
4/30/2025	JM	22.3						0.7	30.0	22.0	11.0	8.0	10.0
5/1/2025	TH	24.2	5.66	5.51	5.59	5.63	5.55	0.7	30.0	22.0	11.0	8.5	10.0
5/2/2025	JM	23.1						0.7	30.0	22.0	11.0	8.0	9.0
5/5/2025	JM	22.4	5.90	5.50	5.50	5.60	5.50	0.7	29.0	22.0	11.0	7.5	9.0
5/6/2025	TH	23.9	5.60	5.48	5.50	5.60	5.50	0.7	29.0	22.0	11.5	7.5	9.5
5/72025	JM	23.2						0.7	29.0	21.0	11.5	8.0	9.5
5/9/2025	JM	25.2						0.7	29.0	20.0	11.5	7.5	9.5
5/12/2025	JM	24.1	5.80	5.70	5.50	5.70	5.60	0.7	25.0	18.0	12.5	7.0	9.5
5/13/2025	TH	24.1	5.52	5.50	5.55	5.48	5.41	0.7	24.0	16.0	12.5	7.0	9.5
5/14/2025	JM	24.1						0.6	24.0	17.0	13.0	7.0	9.5
5/16/2025	JM	25.1						0.6	23.0	15.0	13.0	7.0	9.0
5/19/2025	BM	24.6	5.69					0.8	32.0	26.0	11.0	11.0	12.0
5/20/2025	TH	25.5						0.8	22.0	12.5	13.0	8.0	9.0

	Operator	Temperature (°C)	pH (s.u.)					Flow (gpm)	Flow (gph)				
5/21/2025	BM	24.3						0.8	34.0	26.0	12.0	13.0	12.0
5/23/2025	BM	24.3						0.8	33.0	25.0	12.0	11.0	12.0
5/27/2025	BW	23.4	4.20	3.16	3.71	5.61	5.57	0.8	31.0	23.0	12.0	11.0	11.0
5/28/2025	JM	23.4	5.71	5.60	5.60	5.60	5.60	0.8	34.0	27.0	10.0	10.0	10.0
5/30/2025	JM	23.8						0.8	31.0	25.0	10.0	10.0	10.0
6/2/2025	JM	24.0	5.80	5.60	5.50	5.80	5.70	0.8	31.0	25.0	10.0	10.0	10.0
6/3/2025	TH	23.9	5.88	5.60	5.61	5.88	5.76	0.8	31.0	25.0	10.5	10.5	10.5
6/4/2025	JM	24.7						0.8	30.0	25.0	10.0	10.0	10.0
6/6/2025	BM							0.8	31.0	25.0	10.0	9.0	11.0
6/9/2025	JM	27.5	5.60	5.50	5.40	5.50	5.50	0.7	29.0	25.0	10.0	10.0	10.0
6/10/2025	TH	26.3	5.64	5.43	5.41	5.52	5.51	0.8	30.0	24.0	10.0	10.0	10.5
6/11/2025	JM	27.4						0.7	28.0	23.0	10.0	9.0	10.0
6/13/2025	JM	28.4						0.7	27.0	23.0	10.0	10.0	10.0
6/16/2025	JM	27.1	5.70	5.50	5.40	5.60	5.50	0.7	25.0	24.0	9.5	9.0	10.0
6/17/2025	TH	28.2	5.54	5.54	5.45	5.60	5.52	0.7	26.0	24.0	9.5	9.5	10.5
6/18/2025	SE	28.0						0.7	30.0	26.0	12.0	12.0	11.0
6/20/2025	JM	29.4						0.7	29.0	26.0	11.0	11.0	10.0
6/23/2025	JM	30.5	5.90	5.60	5.40	5.60	5.50	0.7	27.0	18.0	11.0	11.0	10.0
6/24/2025	TH	30.1	5.62	5.44	5.37	5.60	5.55	0.7	26.0	23.0	11.5	11.0	10.5
6/25/2025	JM	31.8						0.8	33.0	30.0	11.0	11.0	10.0
6/27/2025	JM	31.4						0.7	33.0	30.0	11.0	11.0	10.0
6/30/2025	JM	31.5	5.70	5.60	5.50	5.60	5.60	0.7	32.0	30.0	10.0	11.0	10.0
7/1/2025	TH	30.7	5.51	5.46	5.42	5.59	5.54	0.8	31.5	30.0	10.5	10.5	10.5
7/2/2025	JM	30.7						0.7	31.0	29.0	10.0	11.0	10.0
7/7/2025	JM	30.3	5.70	5.70	5.60	5.60	5.60	0.7	30.0	28.0	10.0	11.0	10.0
7/8/2025	BW	30.1	5.50	5.50	5.50	5.50	5.50	0.7	28.0	27.0	10.0	11.0	10.0
7/9/2025	JM	30.9						0.7	29.0	27.0	10.0	11.0	10.0
7/11/2025	TH	31.1	5.52	5.40	5.40	5.50	5.48	0.7	28.0	26.0	9.0	10.5	10.0
7/14/2025	JM	30.4	5.70	5.60	5.50	5.60	5.50	0.7	28.0	26.0	9.5	11.0	10.0
7/16/2025	JM	30.7						0.6	28.0	26.0	9.5	11.0	10.0
7/18/2025	JM	30.3						0.6	26.0	25.0	9.0	11.0	10.0
7/21/2025	JM	31.1	5.80	5.60	5.50	5.60	5.60	0.6	27.0	26.0	9.0	11.0	10.0
7/23/2025	DR	30.9	5.83	5.54	5.49	5.74	5.63	0.7	27.0	25.0	9.0	12.0	10.0
7/25/2025	JM	31.2						0.6	27.0	26.0	9.0	11.0	10.0
7/28/2025	JM	32.6	5.80	5.70	5.60	5.60	5.60	0.6	30.0	28.0	10.0	11.0	10.0
7/28/2025	KC							0.8	31.5	26.0	10.5	10.5	10.5
7/30/2025	JM	32.9						0.6	30.0	28.0	10.0	11.0	10.0
8/1/2025	JM	31.7						0.6	29.0	28.0	10.0	11.0	10.0
8/4/2025	JM	29.3	5.70	5.70	5.60	5.70	5.60	0.6	28.0	28.0	10.0	11.0	10.0
8/5/2025	KC	29.3	5.53	5.47	5.49	5.40	5.48	0.7	30.0	24.0	10.5	10.5	10.5
8/6/2025	JM	27.2						0.6	26.0	24.0	10.0	11.0	10.0
8/8/2025	JM	26.5						0.7	24.0	18.0	8.0	8.0	10.0
8/11/2025	JM	27.6	5.60	5.60	5.50	5.50	5.40	0.6	23.0	18.0	8.0	8.0	10.0
8/12/2025	TH	28.1	5.46	5.41	5.41	5.43	5.43	0.6	22.0	22.0	8.0	8.0	10.5
8/13/2025	JM	27.6						0.6	21.0	18.0	7.0	8.0	10.0
8/15/2025	JM	29.0						0.6	21.0	18.0	7.0	8.0	10.0
8/18/2025	JM	29.9	5.90	5.60	5.50	5.60	5.60	0.5	20.0	18.0	7.0	8.0	10.0
8/20/2025	JM	29.1						0.6	23.0	18.0	5.0	10.0	10.0
8/20/2025	KC							0.7	26.0	23.0	10.0	10.5	10.5
8/22/2025	JM	28.9						0.6	25.0	28.0	9.0	10.0	10.0
8/25/2025	JM	29.5	5.70	5.60	5.50	5.70	5.70	0.6	25.0	32.0	8.0	10.0	10.0
8/27/2025	JM	28.5						0.6	24.0	32.0	8.0	10.0	10.0
8/28/2025	KC							0.8	32.0	24.0	10.5	10.5	10.5
8/29/2025	JM	29.5						0.7	36.0	24.0	10.0	10.0	10.0
9/2/2025	KC	27.2	5.78	5.63	5.62	5.72	5.76	0.8	33.0	24.0	10.0	10.5	10.5
9/3/2025	JM	26.9	5.90	5.80	5.70	5.80	5.80	0.8	33.0	34.0	10.0	10.0	10.0
9/5/2025	JM	26.9						0.8	33.0	32.0	10.0	10.0	10.0
9/8/2025	JM	25.7	5.90	5.80	5.70	5.80	5.70	0.7	33.0	35.0	10.0	10.0	10.0
9/10/2025	JM	25.4						0.7	33.0	35.0	10.0	10.0	10.0
9/12/2025	JM	25.6						0.7	33.0	35.0	10.0	10.0	10.0
9/15/2025	JB	25.8	5.75	5.60	5.65	5.68	5.65	0.7	33.0	35.0	10.0	10.0	10.0
9/16/2025	KC	25.7	5.62	5.40	5.44	5.61	5.61	0.8	32.0	32.0	10.5	10.5	10.5
9/19/2025	JM	24.8						0.7	33.0	32.0	10.0	10.0	10.0
9/22/2025	JM	25.5	5.80	5.70	5.60	5.70	5.70	0.7	32.0		10.0	10.0	10.0
9/23/2025	KC	26.3	5.58	5.40	5.41	5.57	5.49	0.8	32.0		10.5	10.5	10.5
9/24/2025	JM	26.0						0.7	31.0		10.0	10.0	10.0
9/26/2025	JM	26.2						0.7	31.0		10.0	10.0	10.0
9/29/2025	JM	25.9	5.90	5.60	5.50	5.60	5.60	0.7	30.0		10.0	10.0	10.0
10/1/2025	JM	24.6						0.7	29.0		10.0	10.0	10.0
10/3/2025	JM	23.6						0.7	29.0		10.0	10.0	10.0
10/6/2025	JM	24.1	5.90	5.70	5.50	5.70	5.70	0.7	29.0		10.0	10.0	10.0
10/8/2025	KC	24.7	5.44	5.40	5.42	5.49	5.48	0.8	32.5		10.5	10.5	10.5
10/10/2025	JM	22.9						0.7	33.0		10.0	10.0	10.0
10/10/2025	KC							0.8	32.5		10.5	10.5	10.5

	Operator	Temperature (°C)	pH (s.u.)					Flow (gpm)	Flow (gph)				
10/13/2025	JB	21.2	5.80	5.50	5.40	5.60	5.60	0.8	32.0		11.0	11.0	11.0
10/16/2025	JM	21.9						0.8	34.0		11.0	11.0	11.0
10/17/2025	JM	20.9						0.8	34.0		11.0	11.0	11.0
10/20/2025	JM	20.7	5.90	5.70	5.60	5.60	5.60	0.8	33.0		11.0	11.0	11.0
10/21/2025	KC	20.4	5.62	5.45	5.45	5.63	5.58	0.8	32.0		10.5	10.5	10.5
10/22/2025	JM	20.3						0.8	33.0		11.0	11.0	11.0
10/24/2025	JM	19.5						0.8	33.0		11.0	11.0	11.0
10/27/2025	JM	18.2	5.90	5.70	5.60	5.60	5.60	0.8	33.0		11.0	11.0	11.0
10/28/2025	KC	18.1	5.55	5.50	5.53	5.55	5.54	0.8	32.0		10.5	10.5	10.5

	Operator	Pressure (psi)									Differential Pressure (psi)					
Date	Initial	Feed Pump	AP-1	AP-2	AP-3	AP-4	BP-1	BP-2	CP-1	CP-2	AP-1 to AP-2	AP-2 to AP-3	AP-3 to AP-4	AP-1 to AP-4	BP-1 to BP-2	CP-1 to CP-2
10/14/2024	KC	55	48.5	43.5	42.5	41	50.5	48	51	49	5.0	1.0	1.5	7.5	2.5	2.0
10/15/2024	KC	55	48	42	40.5	38	51	48	50.5	46	6.0	1.5	2.5	10.0	3.0	4.5
10/16/2024	KC	55	48.5	42.5	41	38	51	47	50.5	44	6.0	1.5	3.0	10.5	4.0	6.5
10/18/2024	KC	55	49	42	40.5	37	51	45	51	41	7.0	1.5	3.5	12.0	6.0	10.0
10/21/2024	KC	55	49	41	39	36	52	43	51.5	38	8.0	2.0	3.0	13.0	9.0	13.5
10/24/2024	KC	56	50	41	39	35.5	53	39	53	34	9.0	2.0	3.5	14.5	14.0	19.0
10/25/2024	KC	56	50	41	39	35.5	53	39	53	31.5	9.0	2.0	3.5	14.5	14.0	21.5
10/28/2024	KC	56	49.5	37	35	30.5	53	34	53	28	12.5	2.0	4.5	19.0	19.0	25.0
10/29/2024	KC	56	50	36.5	34	30	53	32.5	52.5	26.5	13.5	2.5	4.0	20.0	20.5	26.0
10/31/2024	KC	56	50	35	33	28	53.5	29.5	53	24	15.0	2.0	5.0	22.0	24.0	29.0
11/4/2024	KC	57	50.5	31	29	22	53	23	53	14	19.5	2.0	7.0	28.5	30.0	39.0
11/7/2024	KC	57	51.5	27	25	19	53	14	53	13	24.5	2.0	6.0	32.5	39.0	40.0
11/12/2024	KC	57	52	26.5	24.5	17	54	10.5	53.5	11	25.5	2.0	7.5	35.0	43.5	42.5
11/14/2024	KC	57.0	51	20	17	14	46	8.5	53	10	31.0	3.0	3.0	37.0	37.5	43.0
11/18/2024	KC	57.0	51.5	21	18.5	6.5	36	5	53.5	9	30.5	2.5	12.0	45.0	31.0	44.5
11/19/2024	KC	57.0	51.5	20	18	7	53	50.5	52	4.5	31.5	2.0	11.0	44.5	2.5	47.5
11/19/2024	KC	56.0	51	35	33	24	52	49.5	52	49	16.0	2.0	9.0	27.0	2.5	3.0
11/21/2024	KC	57.0	51	34	32.5	21	52	49.5	53	49.5	17.0	1.5	11.5	30.0	2.5	3.5
11/25/2024	KC	57.0	51.0	34.0	32.0	19.0	52.0	48.0	53.0	49.0	17.0	2.0	13.0	32.0	4.0	4.0
11/27/2024	JM	57.0	50.0	30.0	29.0	15.0	52.0	48.0	53.0	50.0	20.0	1.0	14.0	35.0	4.0	3.0
11/30/2024	MK	57.0	50.0	31.0	29.0	15.0	52.0	48.0	53.0	49.0	19.0	2.0	14.0	35.0	4.0	4.0
12/2/2024	JM	57.0	50.0	31.0	29.0	15.0	52.0	48.0	53.0	49.0	19.0	2.0	14.0	35.0	4.0	4.0
12/3/2024	KC	57.0	51.0	31.0	30.0	15.0	52.0	48.0	53.0	49.0	20.0	1.0	15.0	36.0	4.0	4.0
12/4/2024	JM	57.0	50.0	31.0	30.0	14.0	52.0	48.0	53.0	49.0	19.0	1.0	16.0	36.0	4.0	4.0
12/6/2024	JY	57.0	50.0	31.0	30.0	15.0	51.0	48.0	53.0	49.0	19.0	1.0	15.0	35.0	3.0	4.0
12/9/2024	BM	57.0	51.0	32.0	31.0	14.0	52.0	48.0	53.0	49.0	19.0	1.0	17.0	37.0	4.0	4.0
12/10/2024	KC	57.0	50.5	32.5	31.5	14.5	51.0	48.0	53.0	49.0	18.0	1.0	17.0	36.0	3.0	4.0
12/11/2024	JM	57.0	51.0	33.0	32.0	15.0	51.0	48.0	53.0	50.0	18.0	1.0	17.0	36.0	3.0	3.0
12/13/2024	DT	58.0	51.0	33.0	32.0	14.0	51.0	48.0	53.0	50.0	18.0	1.0	18.0	37.0	3.0	3.0
12/18/2024	BM	57.0	52.0	34.0	33.0	16.0	52.0	48.0	53.0	50.0	18.0	1.0	17.0	36.0	4.0	3.0
12/20/2024	JM	57.0	51.0	35.0	34.0	17.0	51.0	48.0	53.0	50.0	16.0	1.0	17.0	34.0	3.0	3.0
12/23/2024	KC	57.0	51.5	36.0	34.5	19.0	51.0	48.0	53.0	49.0	15.5	1.5	15.5	32.5	3.0	4.0
12/23/2024	JM	57.0	51.0	36.0	34.0	19.0	53.0	47.0	53.0	49.0	15.0	2.0	15.0	32.0	6.0	4.0
12/27/2024	JM	57.0	51.0	37.0	35.0	19.0	53.0	47.0	53.0	49.0	14.0	2.0	16.0	32.0	6.0	4.0
12/30/2024	SE	45.0	53.0	38.0	36.0	22.0	54.0	48.0	56.0	55.0	15.0	2.0	14.0	31.0	6.0	1.0
1/2/2025	TH	58.0	52.0	37.0	36.0	22.0	52.0	47.0	52.0	50.0	15.0	1.0	14.0	30.0	5.0	2.0
1/3/2025	JM	57.0	51.0	38.0	36.0	24.0	53.0	47.0	53.0	49.0	13.0	2.0	12.0	27.0	6.0	4.0
1/6/2025	SE	43.0	51.0	38.0	36.0	24.0	52.0	46.0	53.0	49.0	13.0	2.0	12.0	27.0	6.0	4.0
1/7/2025	KC	57.0	51.0	37.0	36.0	23.0	51.0	46.0	53.0	49.0	14.0	1.0	13.0	28.0	5.0	4.0
1/8/2025	JM	57.0	51.0	38.0	36.0	24.0	53.0	46.0	53.0	49.0	13.0	2.0	12.0	27.0	7.0	4.0
1/10/2025	JM	57.0	51.0	37.0	36.0	24.0	53.0	45.0	53.0	49.0	14.0	1.0	12.0	27.0	8.0	4.0
1/13/2025	JM	57.0	51.0	38.0	36.0	24.0	53.0	45.0	53.0	49.0	13.0	2.0	12.0	27.0	8.0	4.0
1/14/2025	KC	58.0	52.0	38.0	36.0	24.0	53.0	45.0	53.0	49.0	14.0	2.0	12.0	28.0	8.0	4.0
1/15/2025	JM	57.0	51.0	38.0	36.0	25.0	53.0	45.0	53.0	49.0	13.0	2.0	11.0	26.0	8.0	4.0
1/17/2025	JM	58.0	51.0	38.0	36.0	25.0	53.0	44.0	53.0	49.0	13.0	2.0	11.0	26.0	9.0	4.0
1/21/2025	KC	58.0	52.0	37.0	35.0	24.0	53.0	43.0	53.0	48.5	15.0	2.0	11.0	28.0	10.0	4.5
1/22/2025	JM	58.0	52.0	37.0	35.0	24.0	53.0	43.0	53.0	49.0	15.0	2.0	11.0	28.0	10.0	4.0
1/24/2025	JM	58.0	52.0	37.0	36.0	24.0	53.0	42.0	53.0	49.0	15.0	1.0	12.0	28.0	11.0	4.0
1/27/2025	JM	58.0	52.0	37.0	36.0	24.0	53.0	41.0	53.0	49.0	15.0	1.0	12.0	28.0	12.0	4.0
1/28/2025	KC	58.0	52.0	36.0	35.0	24.5	53.0	41.0	53.0	48.5	16.0	1.0	10.5	27.5	12.0	4.5
1/29/2025	KC															
1/29/2025	JM	58.0	52.0	36.0	34.0	24.0	53.0	41.0	53.0	49.0	16.0	2.0	10.0	28.0	12.0	4.0
1/31/2025	JM	58.0	52.0	36.0	34.0	24.0	53.0	40.0	54.0	49.0	16.0	2.0	10.0	28.0	13.0	5.0
2/3/2025	SE		52.0	35.0	34.0	24.0	53.0	40.0	54.0	49.0	17.0	1.0	10.0	28.0	13.0	5.0
2/4/2025	KC	58.0	53.0	35.5	34.5	24.5	53.5	39.0	54.0	49.0	17.5	1.0	10.0	28.5	14.5	5.0
2/7/2025	JM	58.0	53.0	35.0	34.0	24.0	54.0	39.0	54.0	49.0	18.0	1.0	10.0	29.0	15.0	5.0
2/10/2025	JM	58.0	53.0	36.0	34.0	25.0	53.0	48.0	54.0	49.0	17.0	2.0	9.0	28.0	5.0	5.0
2/11/2025	KC	58.0	52.5	36.0	34.5	24.0	53.0	38.0	53.0	49.0	16.5	1.5	10.5	28.5	15.0	4.0
2/12/2025	JM	58.0	52.0	35.0	33.0	25.0	53.0	41.0	53.0	49.0	17.0	2.0	8.0	27.0	12.0	4.0
2/14/2025	JM	58.0	52.0	34.0	33.0	24.0	53.0	40.0	53.0	49.0	18.0	1.0	9.0	28.0	13.0	4.0
2/17/2025	SB	58.0	53.0	34.0	32.0	24.0	53.0	38.0	53.0	48.0	19.0	2.0	8.0	29.0	15.0	5.0
2/18/2025	KC	58.0	51.5	33.5	32.0	24.0	52.5	38.0	53.0	48.0	18.0	1.5	8.0	27.5	14.5	5.0
2/19/2025	JM	58.0	53.0	33.0	31.0	24.0	53.0	37.0	53.0	48.0	20.0	2.0	7.0	29.0	16.0	5.0
2/21/2025	JM	58.0	52.0	32.0	30.0	24.0	52.0	36.0	53.0	48.0	20.0	2.0	6.0	28.0	16.0	5.0
2/26/2025	KC	56.0	49.0	32.0	30.0	22.0	49.0	32.0	49.0	45.0	17.0	2.0	8.0	27.0	17.0	4.0
2/26/2025	JM	54.0	47.0	29.0	27.0	18.0	49.0	34.0	49.0	44.0	18.0	2.0	9.0	29.0	15.0	5.0
2/28/2025	JM	54.0	49.0	29.0	28.0	19.0	49.0	33.0	49.0	44.0	20.0	1.0	9.0	30.0	16.0	5.0
3/3/2025	SE	53.0	48.0	27.0	26.0	17.0	47.0	29.0	48.0	43.0	21.0	1.0	9.0	31.0	18.0	5.0
3/4/2025	KC	54.0	48.0	27.0	26.0	17.0	47.0	29.0	48.0	43.0	21.0	1.0	9.0	31.0	18.0	5.0
3/5/2025	SE	52.0	48.0	25.0	24.0	14.0	46.0	26.0	48.0	43.0	23.0	1.0	10.0	34.0	20.0	5.0
3/7/2025	MU	53.0	48.0	24.0	23.0	14.0	46.0	26.0	48.0	43.0	24.0	1.0	9.0	34.0	20.0	5.0
3/10/2025	BM	52.0	47.0	24.0	22.0	14.0	46.0	24.0	48.0	43.0	23.0	2.0	8.0	33.0	22.0	5.0
3/11/2025	KC	54.0	47.0	25.0	24.0	15.0	45.0	24.0	47.0	42.5	22.0	1.0	9.0	32.0	21.0	4.5
3/12/2025	JM	52.0	47.0	26.0	25.0	15.0	45.0	26.0	47.0	42.0	21.0	1.0	10.0	32.0	19.0	5.0

	Operator	Pressure (psi)									Differential Pressure (psi)					
3/14/2025	JM	52.0	47.0	26.0	24.0	15.0	43.0	23.0	46.0	41.0	21.0	2.0	9.0	32.0	20.0	5.0
3/17/2025	DT	52.0	47.0	25.0	24.0	14.0	44.0	21.0	46.0	40.0	22.0	1.0	10.0	33.0	23.0	6.0
3/19/2025	JM	52.0	47.0	26.0	25.0	15.0	43.0	21.0	45.0	40.0	21.0	1.0	10.0	32.0	22.0	5.0
3/20/2025	KC	53.0	47.0	26.0	25.0	15.0	43.0	21.0	45.0	40.0	21.0	1.0	10.0	32.0	22.0	5.0
3/21/2025	JM	52.0	47.0	24.0	23.0	12.0	41.0	16.0	45.0	40.0	23.0	1.0	11.0	35.0	25.0	5.0
3/24/2025	JM	52.0	47.0	24.0	23.0	12.0	41.0	15.0	44.0	39.0	23.0	1.0	11.0	35.0	26.0	5.0
3/25/2025	KC	52.0	46.5	25.0	24.0	13.0	41.0	15.0	44.0	39.0	21.5	1.0	11.0	33.5	26.0	5.0
3/26/2025	JM	51.0	47.0	24.0	24.0	12.0	40.0	14.0	44.0	38.0	23.0	0.0	12.0	35.0	26.0	6.0
3/28/2025	JM	51.0	47.0	24.0	23.0	12.0	40.0	14.0	43.0	38.0	23.0	1.0	11.0	35.0	26.0	5.0
3/31/2025	JM	51.0	47.0	25.0	24.0	12.0	40.0	13.0	43.0	38.0	22.0	1.0	12.0	35.0	27.0	5.0
4/1/2025	TH	50.0	47.0	25.0	23.0	11.0	40.0	13.0	43.0	38.0	22.0	2.0	12.0	36.0	27.0	5.0
4/4/2025	JM	50.0	47.0	24.0	23.0	11.0	39.0	12.0	42.0	37.0	23.0	1.0	12.0	36.0	27.0	5.0
4/7/2025	JM	50.0	46.0	24.0	23.0	11.0	38.0	12.0	42.0	37.0	22.0	1.0	12.0	35.0	26.0	5.0
4/8/2025	KC	52.0	45.5	24.0	22.0	12.0	38.0	12.0	43.0	39.0	21.5	2.0	10.0	33.5	26.0	4.0
4/9/2025	JM	50.0	45.0	20.0	18.0	5.0	36.0	6.0	42.0	37.0	25.0	2.0	13.0	40.0	30.0	5.0
4/11/2025	JM	50.0	45.0	19.0	18.0	5.0	36.0	6.0	41.0	36.0	26.0	1.0	13.0	40.0	30.0	5.0
4/14/2025	KC	50.0	45.0	19.0	18.0	5.0	36.5	6.0	41.0	36.0	26.0	1.0	13.0	40.0	30.5	5.0
4/16/2025	JM	49.0	46.0	23.0	21.0	8.0	36.0	5.0	40.0	35.0	23.0	2.0	13.0	38.0	31.0	5.0
4/18/2025	MN	50.0	46.0	22.0	21.0	8.0	36.0	5.0	40.0	35.0	24.0	1.0	13.0	38.0	31.0	5.0
4/21/2025	JM	49.0	45.0	22.0	21.0	8.0	36.0	5.0	44.0	39.0	23.0	1.0	13.0	37.0	31.0	5.0
4/22/2025	KC	50.0	45.0	23.0	22.0	8.0	36.0	5.0	44.0	39.0	22.0	1.0	14.0	37.0	31.0	5.0
4/23/2025	JM	49.0	45.0	22.0	21.0	8.0	36.0	5.0	43.0	39.0	23.0	1.0	13.0	37.0	31.0	4.0
4/25/2025	JM	49.0	45.0	22.0	21.0	8.0	36.0	5.0	43.0	39.0	23.0	1.0	13.0	37.0	31.0	4.0
4/28/2025	JM	49.0	45.0	22.0	20.0	9.0	36.0	4.0	42.0	37.0	23.0	2.0	11.0	36.0	32.0	5.0
4/30/2025	JM	49.0	45.0	21.0	20.0	9.0	36.0	4.0	42.0	37.0	24.0	1.0	11.0	36.0	32.0	5.0
5/1/2025	TH	50.0	44.0	21.0	20.0	9.0	36.0	4.0	41.0	37.0	23.0	1.0	11.0	35.0	32.0	4.0
5/2/2025	JM	49.0	45.0	21.0	20.0	9.0	36.0	4.0	41.0	37.0	24.0	1.0	11.0	36.0	32.0	4.0
5/5/2025	JM	49.0	45.0	21.0	20.0	9.0	36.0	3.0	41.0	36.0	24.0	1.0	11.0	36.0	33.0	5.0
5/6/2025	TH	50.0	45.0	22.0	20.0	10.0	36.0	2.0	40.0	36.0	23.0	2.0	10.0	35.0	34.0	4.0
5/7/2025	JM	49.0	45.0	22.0	21.0	10.0	36.0	3.0	41.0	36.0	23.0	1.0	11.0	35.0	33.0	5.0
5/9/2025	JM	49.0	45.0	22.0	21.0	10.0	36.0	3.0	40.0	35.0	23.0	1.0	11.0	35.0	33.0	5.0
5/12/2025	JM	49.0	45.0	24.0	23.0	12.0	36.0	3.0	40.0	35.0	21.0	1.0	11.0	33.0	33.0	5.0
5/13/2025	TH	50.0	45.0	25.0	22.0	12.0	36.0	3.0	40.0	34.0	20.0	3.0	10.0	33.0	33.0	6.0
5/14/2025	JM	49.0	45.0	26.0	24.0	13.0	36.0	3.0	39.0	34.0	19.0	2.0	11.0	32.0	33.0	5.0
5/16/2025	JM	50.0	46.0	26.0	24.0	13.0	36.0	3.0	40.0	34.0	20.0	2.0	11.0	33.0	33.0	6.0
5/19/2025	BM		42.0	18.0	17.0	6.0	42.0	40.0	36.0	30.0	24.0	1.0	11.0	36.0	2.0	6.0
5/20/2025	TH	50.0	46.0	26.0	25.0	18.0	36.0	2.0	39.0	34.0	20.0	1.0	7.0	28.0	34.0	5.0
5/21/2025	BM		42.0	16.0	15.0	6.0	41.0	37.0	37.0	32.0	26.0	1.0	9.0	36.0	4.0	5.0
5/23/2025	BM		44.0	18.0	18.0	6.0	40.0	36.0	36.0	32.0	26.0	0.0	12.0	38.0	4.0	4.0
5/27/2025	BW	50.0	44.0	16.0	16.0	6.0	38.0	36.0	36.0	30.0	28.0	0.0	10.0	38.0	2.0	6.0
5/28/2025	JM	49.0	44.0	35.0	34.0	26.0	38.0	36.0	36.0	30.0	9.0	1.0	8.0	18.0	2.0	6.0
5/30/2025	JM	49.0	45.0	36.0	35.0	27.0	37.0	35.0	36.0	30.0	9.0	1.0	8.0	18.0	2.0	6.0
6/2/2025	JM	49.0	45.0	36.0	35.0	28.0	36.0	34.0	35.0	30.0	9.0	1.0	7.0	17.0	2.0	5.0
6/3/2025	TH	50.0	45.0	36.0	35.0	28.0	36.0	34.0	35.0	30.0	9.0	1.0	7.0	17.0	2.0	5.0
6/4/2025	JM	49.0	45.0	36.0	35.0	28.0	36.0	34.0	35.0	30.0	9.0	1.0	7.0	17.0	2.0	5.0
6/6/2025	BM	51.0	45.0	36.0	35.0	28.0	36.0	34.0	35.0	30.0	9.0	1.0	7.0	17.0	2.0	5.0
6/9/2025	JM	49.0	45.0	37.0	36.0	31.0	36.0	34.0	35.0	30.0	8.0	1.0	5.0	14.0	2.0	5.0
6/10/2025	TH	50.0	45.0	38.0	36.0	31.0	36.0	34.0	35.0	30.0	7.0	2.0	5.0	14.0	2.0	5.0
6/11/2025	JM	49.0	45.0	38.0	36.0	31.0	36.0	34.0	34.0	29.0	7.0	2.0	5.0	14.0	2.0	5.0
6/13/2025	JM	49.0	45.0	38.0	37.0	32.0	36.0	34.0	35.0	30.0	7.0	1.0	5.0	13.0	2.0	5.0
6/16/2025	JM	49.0	45.0	39.0	38.0	33.0	36.0	34.0	35.0	29.0	6.0	1.0	5.0	12.0	2.0	6.0
6/17/2025	TH	50.0	46.0	39.0	38.0	33.0	35.0	34.0	34.0	29.0	7.0	1.0	5.0	13.0	1.0	5.0
6/18/2025	SE	49.0	45.0	36.0	34.0	29.0	33.0	30.0	34.0	28.0	9.0	2.0	5.0	16.0	3.0	6.0
6/20/2025	JM	49.0	45.0	37.0	35.0	30.0	33.0	30.0	34.0	28.0	8.0	2.0	5.0	15.0	3.0	6.0
6/23/2025	JM	49.0	45.0	37.0	36.0	30.0	33.0	31.0	34.0	28.0	8.0	1.0	6.0	15.0	2.0	6.0
6/24/2025	TH	49.0	45.0	38.0	37.0	31.0	33.0	31.0	34.0	29.0	7.0	1.0	6.0	14.0	2.0	5.0
6/25/2025	JM	49.0	45.0	33.0	31.0	26.0	33.0	31.0	34.0	28.0	12.0	2.0	5.0	19.0	2.0	6.0
6/27/2025	JM	48.0	45.0	32.0	30.0	25.0	33.0	30.0	33.0	27.0	13.0	2.0	5.0	20.0	3.0	6.0
6/30/2025	JM	49.0	45.0	30.0	29.0	24.0	33.0	30.0	33.0	27.0	15.0	1.0	5.0	21.0	3.0	6.0
7/1/2025	TH	49.0	45.0	30.0	29.0	24.0	33.0	31.0	34.0	28.0	15.0	1.0	5.0	21.0	2.0	6.0
7/2/2025	JM	49.0	45.0	29.0	28.0	22.0	33.0	30.0	33.0	27.0	16.0	1.0	6.0	23.0	3.0	6.0
7/7/2025	JM	49.0	45.0	28.0	26.0	21.0	33.0	30.0	33.0	26.0	17.0	2.0	5.0	24.0	3.0	7.0
7/8/2025	BW	50.0	45.0	27.0	26.0	22.0	33.0	30.0	33.0	27.0	18.0	1.0	4.0	23.0	3.0	6.0
7/9/2025	JM	49.0	45.0	27.0	26.0	20.0	34.0	30.0	33.0	27.0	18.0	1.0	6.0	25.0	4.0	6.0
7/11/2025	TH	50.0	46.0	25.0	24.0	18.0	34.0	30.0	32.0	26.0	21.0	1.0	6.0	28.0	4.0	6.0
7/14/2025	JM	49.0	45.0	25.0	24.0	18.0	34.0	30.0	32.0	26.0	20.0	1.0	6.0	27.0	4.0	6.0
7/16/2025	JM	49.0	45.0	24.0	24.0	18.0	34.0	30.0	32.0	26.0	21.0	0.0	6.0	27.0	4.0	6.0
7/18/2025	JM	49.0	46.0	23.0	22.0	17.0	34.0	30.0	32.0	26.0	23.0	1.0	5.0	29.0	4.0	6.0
7/21/2025	JM	49.0	46.0	22.0	22.0	16.0	33.0	30.0	32.0	26.0	24.0	0.0	6.0	30.0	3.0	6.0
7/23/2025	DR	50.0	46.0	24.0	22.0	17.0	34.0	30.0	32.0	26.0	22.0	2.0	5.0	29.0	4.0	6.0
7/25/2025	JM	49.0	46.0	23.0	22.0	17.0	34.0	29.0	32.0	25.0	23.0	1.0	5.0	29.0	5.0	7.0
7/28/2025	JM	49.0	45.0	21.0	20.0	14.0	34.0	29.0	32.0	25.0	24.0	1.0	6.0	31.0	5.0	7.0
7/28/2025	KC	50.0	45.0	23.0	22.0	15.0	34.0	29.0	32.5	26.0	22.0	1.0	7.0	30.0	5.0	6.5
7/30/2025	JM	49.0	45.0	22.0	20.0	15.0	34.0	29.0	32.0	25.0	23.0	2.0	5.0	30.0	5.0	7.0
8/1/2025	JM	49.0	45.0	21.0	20.0	14.0	34.0	29.0	32.0	25.0	24.0	1.0	6.0	31.0	5.0	7.0
8/4/2025	JM	49.0	45.0	19.0	18.0	12.0	34.0	28.0	32.0	25.0	26.0	1.0	6.0	33.0	6.0	7.0
8/5/2025	KC	50.0	45.0	18.0	17.0	12.0	34.0	28.0	33.0	25.0	27.0	1.0	5.0	33.0	6.0	8.0
8/6/2025	JM	49.0	45.0	17.0	16.0	10.0	34.0	28.0	33.0	25.0	28.0	1.0	6.0	35.0	6.0	8.0
8/8/2025	JM	49.0	45.0	14.0	14.0	8.0	35.0	30.0	33.0	24.0	31.0	0.0	6.0	37.0	5.0	9.0
8/11/2025	JM	49.0	47.0	13.0	12.0	8.0	35.0	29.0	32.0	24.0	34.0	1.0	4.0	39.0	6.0	8.0
8/12/2025	TH	50.0	46.0	12.0	12.0	7.0	35.0	29.0	32.0	24.0	34.0	0.0	5.0	39.0	6.0	8.0
8/13/2025	JM	49.0	46.0	14.0	14.0	10.0	35.0	29.0	32.0	23.0	32.0	0.0	4.0	36.0	6.0	9.0
8/15/2025	JM	49.0	46.0	14.0	14.0	10.0	35.0	28.0	32.0	23.0	32.0	0.0	4.0	36.0	7.0	9.0
8/18/2025	JM	49.0	46.0	14.0	14.0	10.0	35.0	28.0	32.0	23.0	32.0	0.0	4.0	36.0	7.0	9.0
8/20/2025	JM	49.0	45.0	6.0	6.0	3.0	34.0	26.0	30.0	21.0	39.0	0.0	3.0	42.0	8.0	9.0
8/20/2025	KC	49.0	45.0	3.0	2.0	2.0	35.0	28.0	32.0	23.0	42.0	1.0	0.0	43.0	7.0	9.0
8/22/2025	JM	49.0	44.0	4.0	3.0	2.0	34.0	26.0	30.0	20.0	40.0	1.0	1.0	42.0	8.0	10.0
8/25/2025	JM	49.0	45.0	4.0	3.0	2.0	34.0	26.0	30.0	20.0	41.0	1.0	1.0	43.0	8.0	10.0

	Operator	Pressure (psi)									Differential Pressure (psi)					
8/27/2025	JM	49.0	45.0	4.0	4.0	2.0	34.0	26.0	30.0	20.0	41.0	0.0	2.0	43.0	8.0	10.0
8/28/2025	KC	49.0	44.0	37.0	35.0	29.5	34.0	26.0	29.0	20.0	7.0	2.0	5.5	14.5	8.0	9.0
8/29/2025	JM	49.0	44.0	37.0	36.0	30.0	34.0	25.0	29.0	20.0	7.0	1.0	6.0	14.0	9.0	9.0
9/2/2025	KC	50.0	44.5	38.0	36.0	31.0	33.0	24.0	28.0	19.0	6.5	2.0	5.0	13.5	9.0	9.0
9/3/2025	JM	49.0	43.0	37.0	36.0	29.0	32.0	24.0	28.0	18.0	6.0	1.0	7.0	14.0	8.0	10.0
9/5/2025	JM	49.0	44.0	37.0	36.0	31.0	33.0	23.0	27.0	18.0	7.0	1.0	5.0	13.0	10.0	9.0
9/8/2025	JM	49.0	45.0	38.0	36.0	30.0	33.0	24.0	27.0	18.0	7.0	2.0	6.0	15.0	9.0	9.0
9/10/2025	JM	50.0	44.0	37.0	36.0	29.0	32.0	23.0	26.0	16.0	7.0	1.0	7.0	15.0	9.0	10.0
9/12/2025	JM	50.0	44.0	37.0	36.0	29.0	32.0	23.0	26.0	16.0	7.0	1.0	7.0	15.0	9.0	10.0
9/15/2025	JB	50.0	45.0	37.0	35.0	28.0	32.0	22.0	25.0	15.0	8.0	2.0	7.0	17.0	10.0	10.0
9/16/2025	KC	50.0	44.5	37.0	35.5	28.5	32.0	22.5	31.5	20.5	7.5	1.5	7.0	16.0	9.5	11.0
9/19/2025	JM	49.0	45.0	37.0	35.0	28.0	31.0	21.0	28.0	18.0	8.0	2.0	7.0	17.0	10.0	10.0
9/22/2025	JM	49.0	44.0	37.0	36.0	28.0	31.0	21.0	26.0	16.0	7.0	1.0	8.0	16.0	10.0	10.0
9/23/2025	KC	50.0	43.5	36.5	35.0	28.0	31.5	21.5	45.0	35.0	7.0	1.5	7.0	15.5	10.0	10.0
9/24/2025	JM	49.0	44.0	37.0	36.0	28.0	32.0	22.0	46.0	36.0	7.0	1.0	8.0	16.0	10.0	10.0
9/26/2025	JM	49.0	45.0	38.0	36.0	28.0	31.0	21.0	46.0	36.0	7.0	2.0	8.0	17.0	10.0	10.0
9/29/2025	JM	49.0	45.0	38.0	36.0	28.0	32.0	21.0	46.0	36.0	7.0	2.0	8.0	17.0	11.0	10.0
10/1/2025	JM	49.0	44.0	38.0	36.0	28.0	32.0	20.0	46.0	35.0	6.0	2.0	8.0	16.0	12.0	11.0
10/3/2025	JM	49.0	44.0	38.0	36.0	28.0	31.0	20.0	46.0	35.0	6.0	2.0	8.0	16.0	11.0	11.0
10/6/2025	JM	49.0	44.0	38.0	36.0	27.0	31.0	20.0	46.0	34.0	6.0	2.0	9.0	17.0	11.0	12.0
10/8/2025	KC	50.0	44.0	36.0	34.0	24.5	32.0	20.0	46.0	35.0	8.0	2.0	9.5	19.5	12.0	11.0
10/10/2025	JM	49.0	44.0	35.0	34.0	24.0	31.0	18.0	46.0	34.0	9.0	1.0	10.0	20.0	13.0	12.0
10/10/2025	KC	58.0	51.0	44.0	42.0	31.0	43.0	27.0	53.0	42.0	7.0	2.0	11.0	20.0	16.0	11.0
10/13/2025	JB	60.0	53.0	43.0	42.0	29.0	41.0	26.0	55.0	42.0	10.0	1.0	13.0	24.0	15.0	13.0
10/16/2025	JM	59.0	53.0	42.0	41.0	28.0	41.0	28.0	55.0	41.0	11.0	1.0	13.0	25.0	13.0	14.0
10/17/2025	JM	59.0	53.0	42.0	42.0	28.0	41.0	26.0	56.0	42.0	11.0	0.0	14.0	25.0	15.0	14.0
10/20/2025	JM	59.0	53.0	42.0	42.0	28.0	41.0	26.0	56.0	42.0	11.0	0.0	14.0	25.0	15.0	14.0
10/21/2025	KC	60.0	53.5	43.0	42.0	28.5	42.0	26.0	55.5	42.0	10.5	1.0	13.5	25.0	16.0	13.5
10/22/2025	JM	59.0	53.0	43.0	42.0	29.0	41.0	26.0	56.0	42.0	10.0	1.0	13.0	24.0	15.0	14.0
10/24/2025	JM	59.0	54.0	43.0	42.0	28.0	41.0	26.0	56.0	42.0	11.0	1.0	14.0	26.0	15.0	14.0
10/27/2025	JM	60.0	54.0	43.0	42.0	28.0	40.0	25.0	56.0	42.0	11.0	1.0	14.0	26.0	15.0	14.0
10/28/2025	KC	60.0	54.0	43.0	42.0	27.0	41.0	25.0	56.0	42.0	11.0	1.0	15.0	27.0	16.0	14.0

	Operator	Turbidity (NTU)	Chlorine/Chloramines (mg/l)					Chemical Feed		Notes
Date	Initial	CFE	Filter Effluent Free Cl2	C-1 Inf Free Cl2	C-1 inf Monochloramine	C-1 Inf Free NH3	C-1 Inf Total Cl2	NH3 Pump Speed (%)	NH3 Dosage (mg/l)	
10/14/2024	KC		0.76	0.24	0.83	0.4		75		System startup. Online at 1:45pm. Collecting startup samples.
10/15/2024	KC		0.57	0.2	0.67	0.2		80		Readjust flows on A&C. Increase NH3 feed to try to lower C-Inf free Cl2. Continue collecting startup samples.
10/16/2024	KC		0.62	0.15	0.66	0.49		80		Complete startup samples.
10/18/2024	KC		0.93	0.2	0.92	0.5		80		Train C diff pressure continues to increase. Put CF into service on train C
10/21/2024	KC		1.24	0.33	1.36	0.33		80		CFE Cl2 residual high - reduce bypass flow to 1.2 to allow more contact time for chloramines
10/24/2024	KC		1.34	0.23	1.36	0.33		80		Readjust flows on B&C. Resupply LAS. Increase NH3 feed from 80-90% due to higher CFE & C-Inf Cl2 residuals.
10/25/2024	KC		0.73	0.14	0.8	0.55		90		CFE & C-Inf Cl2 residuasl back down. Readjust NH3 feed to 85%
10/28/2024	KC		0.87	0.14	0.79	0.55		85		Diff pressure on all columns increasing. Note what appears to be Mn staining in flow meters. Readjust flow on A-3.
10/29/2024	KC		1.03	0.2	1.1	0.52		85		Collect PFAS/TOC/TSS samples.
10/31/2024	KC		0.79	0.2	0.84	0.55		85		Readjust flow on B. Resupply 1.5 gal LAS.
11/4/2024	KC		1.09	0.14	1.13	0.54		42.5		Diff pressure still increasing in all columns. Install CF on B. Rebalance flows to all trains. Rebatch LAS - reduce dilution (increase % conc) to allow for running NH3 pump at lower speed - increase feed 2.5%
11/7/2024	KC	0.120	0.97	0.16	1.06	0.55	1.7	45		Readjust flow on B. Losing flow adjustability due to media fouling
11/12/2024	KC		0.7	0.17	0.74	0.55	1.24	45		Flow drop again on B - can't increase flow due to media fouling
11/14/2024	KC		1.05	0.18	1.2	0.55		45		Collect metals/ions/TDS samples.
11/18/2024	KC		0.98	0.14				45		Backwash B - restore pressure & flow. Collect PFAS/TOC samples.
11/19/2024	KC		0.89	0.15	1.06	0.55	1.6	45		Backwash A-1 & C - restore pressure & flow. Resupply LAS. Replace all 3 cartridge filters.
11/19/2024	KC									After BW - Rebalance flows. Pressures look good.
11/21/2024	KC		0.89	0.15	0.96	0.50		45		C-Inf free Cl2 up - increase NH3 feed to 50%
11/25/2024	KC		0.90	0.13	1.06	0.55	1.6	50		Re-set NH3 feed to 47.5. Rebalance train A flows. Conduct training with plant staff.
11/27/2024	JM		0.73	0.08	0.85	0.41	1.5			
11/30/2024	MK	0.100	0.67	0.12	0.82	0.59	1.6			
12/2/2024	JM		0.48	0.09	1.00	0.66	1.7			
12/3/2024	KC		0.78	0.20	0.88	0.55		47.5		Rebalance train A flows. Resupply 2 gals LAS.
12/4/2024	JM		0.50	0.14	0.98	0.62	1.7			
12/6/2024	JY									
12/9/2024	BM	0.186	0.50	0.19	1.00	0.38	1.02			
12/10/2024	KC		0.46	0.16				47.5		Top off LAS supply. DR300 batteries dead - no chloramines data. Readjust NH3 feed to 45%
12/11/2024	JM		0.20	0.12	0.95	0.67	1.8			
12/13/2024	DT		0.60	0.20	1.04	0.37	2.2			
12/18/2024	BM	0.106	0.20	0.19	0.77	0.41	2.1			PFAS/TOC samples collected by TH & MR on 12/17/28.
12/20/2024	JM		0.50	0.23	0.85	0.62	2			
12/23/2024	KC		0.75	0.17	0.69	0.55		45		Resupply LAS - 3 gals
12/23/2024	JM	0.032	0.38	0.13	0.45	0.71	1.9			
12/27/2024	JM	0.032	0.30	0.15	0.70	0.65	2.3			
12/30/2024	SE	0.081	0.30	0.18	1.00	0.78	2.1			
1/2/2025	TH	0.030	0.84							
1/3/2025	JM		0.42	0.24	1.26	0.92	2.6			
1/6/2025	SE	0.042	0.60	0.08	0.77	0.54	2.1			
1/7/2025	KC		0.71	0.18	0.94	0.55	1.53	42.5		No pH/temp data - batteries dead on meter. Readjust flow on A. Note green tint on front side of sand bed in column A-3 - sunlight from front windows hitting bottom part of these columns - bio growth seems to be occurring due to sunlight & no Cl2? - wrap bottom area subject top sunlight of columns A-1, A-2, & A-3 to shield sunlight.
1/8/2025	JM		0.63	0.19	0.86	0.69	2.3			
1/10/2025	JM		0.70	0.12	0.66	0.33	2.1			
1/13/2025	JM	0.068	0.40	0.18	0.71	0.61	2.2			
1/14/2025	KC		0.82	0.23	0.83	0.50		42.5		Replace pH meter battery. Resupply LAS - 3 gals - increase NH3 feed to 47.5%. Collect PFAS/TOC samples.
1/15/2025	JM			0.23	1.10	0.54	2.5			
1/17/2025	JM		0.60	0.20	0.70	0.49	2.2			
1/21/2025	KC		1.04	0.19	0.27	0.50	2	47.5		Resupply LAS - 2 gals.
1/22/2025	JM	0.114	0.78	0.16	0.64	0.63	2.3			
1/24/2025	JM		0.72	0.16	0.78	0.81	2.4			
1/27/2025	JM	0.115	0.68	0.11	1.40	0.56	1.6			
1/28/2025	KC		0.92	0.13	0.69	0.55	2.3	47.5		Reduce bypass flow to allow for more CT for chloramines formation in C inf. Increase NH3 to 60%. Collect ECs & PPCPs samples.
1/29/2025	KC		1.12	0.14				60		Quick check on free chlorine levels. Resupply 1 gal of LAS. Increase NH3 to 70% to try to get C-Inf free Cl2 lower.
1/29/2025	JM		0.85	0.10	0.79	0.66	1.7	70		
1/31/2025	JM		0.91	0.22	1.36	0.85	1.8	70		
2/3/2025	SE	1.530	0.96	0.03	2.07	1.20	1	70		
2/4/2025	KC		0.96	0.09	0.71	0.55		70		Rebatch LAS to 2x concentration/reduce feed rate to 35% then increase to 40%. Adjust flows on AF1&AF2.
2/7/2025	JM		0.70	0.15	1.16	0.86	1.4	40		Plant shutdown on 2/5/25. Plant staff shutdown pilot pumps, then restarted after shutdown complete. No pilot data recorded on 2/5.
2/10/2025	JM	0.134	0.50	0.22	0.85	0.81	1.3	40		
2/11/2025	KC		0.88	0.09	0.69	0.42	1.8	40		Resupply LAS - 2 gals. Increase NH3 feed to 42.5%. Adjust flows on AF1 & BF1.
2/12/2025	JM		0.70	0.14	0.92	0.60	1.3	42.5		
2/14/2025	JM		0.72	0.10	1.06	0.78	1.3	42.5		
2/17/2025	SB	0.125	0.50	0.04	0.78	0.31	0.8	42.5		
2/18/2025	KC		0.86	0.08	0.68	0.50	1.4	42.5		Collect PFAS split samples/TOC/PPCPs for GAC. Resupply LAS - 1 gal. Note: column B flow was off this morning. Re-started flow and allowed to run for 1+ hrs. before sample collection.
2/19/2025	JM		0.73	0.12	0.70	0.46	1.4	42.5		
2/21/2025	JM		0.90	0.19	0.73	0.61	1.2	42.5		NOTE: 2/25/25 visit by KC: SGWASA filters offline due to clearwell inspection - no flow to pilot - no readings or samples taken; checked everything out - all ok; resupplied 2 gals LAS; sorted/labeled sample bottles for tomorrow
2/26/2025	KC		0.79	0.09	0.66	0.39	1.11	42.5		Recheck today after yesterday's shutdown. Reset flows - AF1, AF2, BF1. Collect metals/anions samples & deliver to lab.
2/26/2025	JM	0.123	0.60	0.12	0.85	0.69	1.1	42.5		
2/28/2025	JM		0.60	0.09	0.77	0.81	1.2	42.5		No flow through column C. Sample backpressure valve inadvertently left closed on 2/26 after running pH. Valve reopened & flow restored.
3/3/2025	SE	0.128	0.80	0.03	0.63	0.70	1.2	42.5		
3/4/2025	KC		1.00	0.10				42.5		Mono-cl & free NH3 not run today - out of reagents/on order. Reset flows to A&B trains. Replaced sample tap backpressure valve on B. Note: algae growth noted in columns A-2 & A-3; pressure drop noted; took photos to document.
3/5/2025	SE		0.70	0.05	0.61	0.65	0.7	42.5		
3/7/2025	MU		0.70	0.03	0.59	0.74	0.8	42.5		
3/10/2025	BM		0.82	0.08	2.05	0.64	1.0	42.5		
3/11/2025	KC		0.91	0.06			1.0	42.5		Multimeter at Harnett for startup sampling - no temp/pH taken. HACH reagents still not delivered - no mono-cl & free NH3. Reset flows to all trains. Resupply 2 gals LAS. Collect PFAS/TOC samples & deliver to lab.
3/12/2025	JM		0.60	0.11	0.87	0.82	1.1	42.5		
3/14/2025	JM		0.70	0.09	0.82	0.81	0.9	42.5		
3/17/2025	DT	0.110	0.50	0.07	0.85	0.77	0.9	42.5		
3/19/2025	JM		0.47	0.09	0.97	0.69	0.9	42.5		
3/20/2025	KC		0.70	0.09			0.8	42.5		Note green tint in sand layer of column C-1. Previously only noted in Train A. Pipe wrap on order to cover all columns. Resupply 1 gal LAS. Reset flows to all trains. Still waiting on re-ship of chloramines reagents from HACH.
3/21/2025	JM		0.56	0.15	0.67	0.73	0.8	42.5		
3/24/2025	JM	0.073	0.50	0.08	0.79	0.74	0.8	42.5		
3/25/2025	KC		0.62	0.04			1.0	42.5		Resupply LAS - 2.5 gals. Wrap columns A-2,A-3,B-1, & bottom of C-1 to prevent sunlight penetration/algae growth. Chloramines reagents scheduled for delivery tomorrow.
3/26/2025	JM		0.70	0.10	0.79	0.75	0.9	42.5		
3/28/2025	JM		0.60	0.11	0.82	0.65	0.9	42.5		
3/31/2025	JM	0.123	1.60	0.09	0.78	0.66	0.7	42.5		
4/1/2025	TH		0.47	0.11	0.80	0.72	0.7	42.5		
4/4/2025	JM		0.71	0.09	1.10	0.89	1.3	42.5		
4/7/2025	JM	0.082	0.60	0.17	1.13	0.69	1.4	42.5		
4/8/2025	KC		0.95	0.10	1.21	0.55	1.4	42.5		Collect PFAS/TOC samples. Re-set flows to all columns - fouling starting to impact ability to adjust flows. Resupply LAS - 2.0 gals. Replace sample tap valve on C-1. Wrap column C-1 - starting to see some algae growth in top of column.
4/9/2025	JM		0.60	0.10	1.24	0.68	1.5	42.5		
4/11/2025	JM		0.80	0.11	1.25	0.84	1.5	42.5		
4/14/2025	KC		0.91	0.10	1.18	0.50	1.5	42.5		Resupply LAS -1.5 gals. Shutdown Train A - replace tubing & cartridge filter due to algae growth - pressures come back up a little afterwards - AP1=45, AP2=24, AP3=22, AP4 =7. Increase LAS feed to 47.5%.
4/16/2025	JM	0.074	0.80	0.10	1.31	0.77	1.5	47.5		
4/18/2025	MN		0.70	0.06	1.05		1.3	47.5		
4/21/2025	JM	0.089	0.53	0.16	1.18	0.74	1.3	47.5		
4/22/2025	KC		0.96	0.11	1.18		1.4	47.5		Resupply LAS 1.5 gals; Review daily ops with TH & TJ
4/23/2025	JM		0.69	0.21	1.16	0.69	1.3	47.5		
4/25/2025	JM		0.52	0.20	1.10	0.77	1.3	47.5		
4/28/2025	JM	0.110	0.50	0.06	1.21	0.78	1.3	47.5		
4/30/2025	JM		0.60	0.11	1.20	0.72	1.3	47.5		
5/1/2025	TH		0.89	0.27	1.58		1.4	47.5		Resupply LAS 1 gal.
5/2/2025	JM		0.60	0.08	0.99	0.84	1.2	47.5		

	Operator	Turbidity (NTU)	Chlorine/Chloramines (mg/l)					Chemical Feed		Notes
5/5/2025	JM	0.065	0.50	0.06	1.03	0.77	1.3	47.5		
5/6/2025	TH		0.61	0.22	1.25		1.1	47.5		Resupply LAS 1 gal.
5/7/2025	JM		0.80	0.06	1.11	0.80	1.3	47.5		
5/9/2025	JM		0.60	0.06	0.87	0.77	1.0	47.5		
5/12/2025	JM		0.62	0.03	0.59	0.83	0.8			
5/13/2025	TH		0.68	0.25	1.30	0.45	1.1	47.5		
5/14/2025	JM		0.50	0.06	0.92	0.78	1.2			
5/16/2025	JM		0.50	0.08	0.89	0.56	1.0			
5/19/2025	BM		0.62	0.06	1.12	1.05	1.4			Didn't record pH and the main line psi is incorrect (they recorded 0.8). I think they recorded the system flow on accident
5/20/2025	TH				1.37		1.5			Resupply LAS 1.5 gal. Shutdown train B for backwash and corrected flows on trains A and C to meet 31.5 gph and 10.5 gph target flow. Pressures after the adjustments and BW: AP1= 42, AP2= 16, AP3= 16, AP4= 6, BP1= 41, BP2= 39.5, CP2= 30.5
5/21/2025	BM		0.64	0.05	1.27	1.03	1.5			Didn't record pH and the main line psi is incorrect (they recorded 0.8). I think they recorded the system flow on accident
5/23/2025	BM		0.63	0.04	0.94	0.95	1.2			Didn't record pH and the main line psi is incorrect (they recorded 0.8). I think they recorded the system flow on accident
5/27/2025	BW		0.77	0.20	0.99		1.2			Resupply LAS 1.5 gal. Shutdown train A for backwashing first column. After backwash, the pressures read as: AP-1: 44 psi, AP-2: 34 psi, AP-3: 31 psi.
5/28/2025	JM		0.38	0.05	0.88	1.05	0.7			
5/30/2025	JM		0.90	0.10	1.06	0.77	1.3			
6/2/2025	JM	0.059	0.73	0.14	1.27	0.82	1.6			
6/3/2025	TH		0.94	0.35	1.85					Resupply LAS 1.5 gal. Train C Inf Total Cl2 read as too high to read.
6/4/2025	JM		0.60	0.07	1.18	0.81	1.4			
6/6/2025	BM		0.70	0.06	0.13	0.02	1.0			
6/9/2025	JM	0.090	0.50	0.78	0.12	0.00	1.3			
6/10/2025	TH		0.56	0.96	0.17	0.05	1.5			Chem pump influent line came off pump and was fixed at 2 PM on 06/10/2025
6/11/2025	JM		0.69	0.06	1.21	0.79	1.5			
6/13/2025	JM		0.70	0.09	1.20	0.71	1.5			
6/16/2025	JM	0.089	0.55	0.07	1.11	0.82	1.5			
6/17/2025	TH		0.95	0.32	1.23	0.36	1.5			Adjusted flows on train A and B to reach targeted flows.
6/18/2025	SE		0.70	0.03	1.09	0.90	1.3			
6/20/2025	JM		0.53	0.07	1.00	0.67	1.2			
6/23/2025	JM	0.097	0.80	0.07	1.09	0.68	1.4			
6/24/2025	TH		1.08	0.23	1.38	0.33	1.5			Adjusted flow on train A to reach target flows.
6/25/2025	JM		0.80	0.08	0.95	0.56	1.2			
6/27/2025	JM		0.50	0.06	0.83	0.71	1.1			
6/30/2025	JM	0.076	0.48	0.05	0.74	0.69	0.9			
7/1/2025	TH		0.84	0.43	0.94		1.2			
7/2/2025	JM		0.46	0.11	0.82	0.66	1.1			
7/7/2025	JM	0.070	0.20	0.06	0.69	0.61	0.9			
7/8/2025	BW		0.61	0.11	0.93	0.41	1.3			
7/9/2025	JM		0.70	0.09	0.78	0.72	1.0			
7/11/2025	TH		0.43		1.25	0.25	1.2			
7/14/2025	JM	0.080	0.44	0.04	0.70	0.66	0.9			
7/16/2025	JM		0.50	0.06	0.83	0.73	1.1			
7/18/2025	JM		0.73	0.06	0.93	0.69	1.1			
7/21/2025	JM	0.098	1.00	0.05	1.48	0.57	1.1			
7/23/2025	DR		0.53	0.23		0.27	1.1			
7/25/2025	JM		0.80	0.79	1.06	0.00	0.9			
7/28/2025	JM	0.121	0.51	0.09	0.58	0.60	0.6			
7/28/2025	KC							50		Discover NH3 feed has stopped - discharge line disconnected from pump - check/flush/repair - restore chem feed. Reset flows to all columns. Note heavy algae growth in feed lines to AF-2 & AF-3 - needs tubing replacement & rotameter cleaning. Will address next week. Need resupply of Lovibond Cl2 reagents. Resupply 1.0 gal LAS.
7/30/2025	JM		0.59	0.07	0.96	0.53	1.1	50		
8/1/2025	JM		0.68	0.07	0.85	0.53	1.0	50		
8/4/2025	JM	0.084	0.70	0.07	1.09	0.52	1.1	50		
8/5/2025	KC							50		Cl2 reagents on order. Resupply 2.0 gals LAS. Replace **CF** on train A. Reset flows to train A.
8/6/2025	JM		0.70	0.03	1.05	0.51	1.1	50		C-1 Influent is not flowing, sampled from tubing before valve.
8/8/2025	JM		0.60	0.03	0.63	0.57	0.7	50		C-1 Inf flow restored by KC on 8/7 - flushed chem feed bypass valve - reset flow
8/11/2025	JM	0.057	0.40	0.03	0.55	0.55	0.7	50		
8/12/2025	TH		0.36	0.25	0.61	0.16	0.7	50		Resupplied 1 gal of LAS
8/13/2025	JM		0.58	0.03	0.69	0.45	0.8	50		
8/15/2025	JM		0.70	0.03	0.80	0.51	0.9	50		
8/18/2025	JM	0.080	0.70	0.04	0.84	0.43	0.9	50		8/19/25: collect PFAS/TOC/SDS samples
8/20/2025	JM							50		Cl2 data not collected due to chem tank installation
8/20/2025	KC							50		Set up new 15 gal chem storage tank; remount chem pump; batch 8 gals LAS; readjust flows
8/22/2025	JM		0.80	0.10	0.94	0.44	0.9	50		
8/25/2025	JM	0.100	0.50	0.05	0.74	0.45	0.8	50		
8/27/2025	JM		0.50	0.03	0.49	0.48	0.6	50		
8/28/2025	KC							50		BW A-1 & A-2. Air 30 secs/60% exp. for 20+ mins. Flow/pressure restored. Re-set all flows.
8/29/2025	JM		0.60	0.05	0.90	0.44	1.0	50		
9/2/2025	KC		0.49	0.08	0.76	0.36	0.8	50		Resupply 4 gals LAS. Flush chem bypass valve and reset bypass flow. Adjust flow on AF3. Need NH3 reagent.
9/3/2025	JM	0.082	0.50	0.05	1.09	0.37	1.3	50		
9/5/2025	JM		0.40	0.06	1.06	0.29	1.2	50		
9/8/2025	JM	0.073	0.70	0.08	1.12	0.21	1.4	50		
9/10/2025	JM		0.50	0.05	1.08	0.85	1.5	50		
9/12/2025	JM		0.80	0.06	1.06	0.65	1.4	50		
9/15/2025	JB	0.067	0.59	0.05	0.80	0.44	1.0	50		
9/16/2025	KC		0.60	0.09			1.1	50		Resupply 4 gals LAS. Flush chem bypass valve again and reset flow. No mono-cl/NH3 readings today - forgot to bring NH3 reagent to site.
9/19/2025	JM		0.53	0.05	0.78	0.68	1.0	50		
9/22/2025	JM	0.065	0.77	0.05	0.97	0.77	1.1	50		
9/23/2025	KC		0.72	0.05	0.80	0.55	1.2	50		Collect & deliver PFAS/TOC/SDS samples. Flush chem bypass valve. Replace CF on train C - reset flow.
9/24/2025	JM		0.69	0.07	1.00	0.62	1.2	50		
9/26/2025	JM		0.54	0.07	0.80	0.62	1.1	50		
9/29/2025	JM	0.062	0.70	0.05	1.01	0.79	1.2	50		
10/1/2025	JM		0.64	0.07	1.23	0.68	1.5	50		
10/3/2025	JM		0.61	0.05	1.24	0.75	1.5	50		
10/6/2025	JM	0.064	0.53	0.04	1.28	0.76	1.4	50		
10/8/2025	KC		0.92	0.08	1.19	0.55	1.3	50		Resupply 2 gals LAS. Re-set flow on AF-1. Flush chem bypass valve.
10/10/2025	JM		0.70	0.09	1.02	0.64	1.3	50		
10/10/2025	KC									Pilot feed pump bearing going bad. Replaced pump. Restart system - adjust flows. Evaluate ops after restart - system looks good/back to normal. Log flow & pressure data.
10/13/2025	JB	0.076	0.60	0.04	1.05	0.85	1.2	50		
10/16/2025	JM		0.60	0.04	1.08	0.71	1.2	50		
10/17/2025	JM		0.70	0.05	1.06	0.66	1.2	50		
10/20/2025	JM	0.074	0.60	0.05	1.07	0.66	1.3	50		
10/21/2025	KC							50		Collect PFAS/TOC/Cl/SO4 samples & deliver to lab. Resupply 2.0 gals LAS.
10/22/2025	JM		0.90	0.04	1.17	0.80	1.4	50		
10/24/2025	JM		0.70	0.04	0.94	0.66	1.1	50		
10/27/2025	JM	0.085	0.60	0.04	0.87	0.45	1.1	50		
10/28/2025	KC							50		Resupply 2.0 gals LAS. Assist Rich G. with Mn/corrosion analyses. **SGWASA plant shut down due to failed ferric pump. Plant to be offline for approx. 5-6 hrs. Shutdown pilot feed pump at 12:45pm. Plant staff will re-start pump once plant is back online.
										Check pilot to make sure everything is good after the shutdown yesterday. Everything looks good. Flush chem bypass valve and reset flow. Rich G. wrapping up analyses this morning.

Appendix F – SGWASA Raw Data

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Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
CFE	10/14/2024	10/19/2024 18:17	EPA 300.0 F	Sulfate	Sulfate		47.1	mg/L	0.50	1.0
CFE	10/14/2024	10/19/2024 18:04	EPA 300.0 F	Sulfate	Sulfate		46.7	mg/L	0.50	1.0
CFE	10/14/2024	10/19/2024 17:25	EPA 300.0 F	Sulfate	Sulfate		46.3	mg/L	0.50	1.0
CFE	10/14/2024	10/19/2024 18:30	EPA 300.0 F	Sulfate	Sulfate		45.7	mg/L	0.50	1.0
CFE	10/14/2024	10/19/2024 18:43	EPA 300.0 F	Sulfate	Sulfate		45.4	mg/L	0.50	1.0
CFE	10/14/2024	10/19/2024 18:17	EPA 300.0 F	Chloride	Chloride		6.0	mg/L	0.60	1.0
CFE	10/14/2024	10/19/2024 18:30	EPA 300.0 F	Chloride	Chloride		6.0	mg/L	0.60	1.0
CFE	10/14/2024	10/19/2024 18:04	EPA 300.0 F	Chloride	Chloride		5.8	mg/L	0.60	1.0
CFE	10/14/2024	10/19/2024 18:43	EPA 300.0 F	Chloride	Chloride		5.8	mg/L	0.60	1.0
CFE	10/14/2024	10/19/2024 17:25	EPA 300.0 F	Chloride	Chloride		5.6	mg/L	0.60	1.0
CFE	10/14/2024	10/25/2024 12:28	EPA 200.8 F	Arsenic	Arsenic	<	5.0	ug/L	0.25	5.0
CFE	10/14/2024	10/25/2024 12:39	EPA 200.8 F	Arsenic	Arsenic	<	5.0	ug/L	0.25	5.0
CFE	10/14/2024	10/25/2024 12:42	EPA 200.8 F	Arsenic	Arsenic	<	5.0	ug/L	0.25	5.0
CFE	10/14/2024	10/25/2024 12:46	EPA 200.8 F	Arsenic	Arsenic	<	5.0	ug/L	0.25	5.0
CFE	10/14/2024	10/25/2024 12:50	EPA 200.8 F	Arsenic	Arsenic	<	5.0	ug/L	0.25	5.0
GAC	10/14/2024	10/25/2024 12:53	EPA 200.8 F	Arsenic	Arsenic		20.7	ug/L	0.25	5.0
GAC	10/14/2024	10/25/2024 13:04	EPA 200.8 F	Arsenic	Arsenic		7.9	ug/L	0.25	5.0
GAC	10/14/2024	10/25/2024 13:07	EPA 200.8 F	Arsenic	Arsenic	<	5.0	ug/L	0.25	5.0
GAC	10/14/2024	10/25/2024 13:11	EPA 200.8 F	Arsenic	Arsenic	<	5.0	ug/L	0.25	5.0
GAC	10/14/2024	10/25/2024 13:15	EPA 200.8 F	Arsenic	Arsenic	<	5.0	ug/L	0.25	5.0
IX-1	10/14/2024	10/19/2024 22:10	EPA 300.0 F	Sulfate	Sulfate		48.5	mg/L	0.50	1.0
IX-1	10/14/2024	10/19/2024 20:26	EPA 300.0 F	Chloride	Chloride		47.1	mg/L	0.60	1.0
IX-1	10/14/2024	10/19/2024 21:05	EPA 300.0 F	Chloride	Chloride		46.4	mg/L	0.60	1.0
IX-1	10/14/2024	10/19/2024 21:18	EPA 300.0 F	Chloride	Chloride		45.2	mg/L	0.60	1.0
IX-1	10/14/2024	10/19/2024 21:31	EPA 300.0 F	Chloride	Chloride		42.3	mg/L	0.60	1.0
IX-1	10/14/2024	10/19/2024 22:10	EPA 300.0 F	Chloride	Chloride		6.4	mg/L	0.60	1.0
IX-1	10/14/2024	10/19/2024 20:26	EPA 300.0 F	Sulfate	Sulfate	<	1.0	mg/L	0.50	1.0
IX-1	10/14/2024	10/19/2024 21:05	EPA 300.0 F	Sulfate	Sulfate	<	1.0	mg/L	0.50	1.0
IX-1	10/14/2024	10/19/2024 21:18	EPA 300.0 F	Sulfate	Sulfate	<	1.0	mg/L	0.50	1.0
IX-1	10/14/2024	10/19/2024 21:31	EPA 300.0 F	Sulfate	Sulfate	<	1.0	mg/L	0.50	1.0
NS	10/14/2024	10/19/2024 20:00	EPA 300.0 F	Sulfate	Sulfate		45.9	mg/L	0.50	1.0
NS	10/14/2024	10/19/2024 20:13	EPA 300.0 F	Sulfate	Sulfate		45.7	mg/L	0.50	1.0
NS	10/14/2024	10/19/2024 19:47	EPA 300.0 F	Sulfate	Sulfate		42.3	mg/L	0.50	1.0
NS	10/14/2024	10/19/2024 18:55	EPA 300.0 F	Chloride	Chloride		35.6	mg/L	0.60	1.0
NS	10/14/2024	10/19/2024 19:34	EPA 300.0 F	Sulfate	Sulfate		32.0	mg/L	0.50	1.0
NS	10/14/2024	10/19/2024 19:34	EPA 300.0 F	Chloride	Chloride		19.1	mg/L	0.60	1.0
NS	10/14/2024	10/19/2024 19:47	EPA 300.0 F	Chloride	Chloride		11.3	mg/L	0.60	1.0
NS	10/14/2024	10/19/2024 18:55	EPA 300.0 F	Sulfate	Sulfate		8.6	mg/L	0.50	1.0
NS	10/14/2024	10/19/2024 20:00	EPA 300.0 F	Chloride	Chloride		6.7	mg/L	0.60	1.0
NS	10/14/2024	10/19/2024 20:13	EPA 300.0 F	Chloride	Chloride		6.2	mg/L	0.60	1.0
CFE	10/29/2024	11/11/2024 17:32	533	Perfluorooctanesulfonic acid	PFOS		12	ng/L	0.67	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Perfluorobutanoic acid	PFBA		6.4	ng/L	0.60	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Perfluorooctanoic acid	PFOA		5.4	ng/L	0.52	1.8
CFE	10/29/2024	11/5/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		2.5	mg/L	0.50	1.0
CFE	10/29/2024	11/11/2024 17:32	533	Perfluorobutanesulfonic acid	PFBS	J	1.7	ng/L	0.56	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Perfluoroheptanoic acid	PFHpA	J	1.6	ng/L	0.52	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Perfluorohexanesulfonic acid	PFHxS	J	1.1	ng/L	0.64	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Perfluorohexanoic acid	PFHxA	J	0.72	ng/L	0.59	1.8
CFE	10/29/2024	10/31/2024 09:24	SM 2540D-2	Total Suspended Solids	Total Suspended Solids	<	2.5	mg/L	2.5	2.5
CFE	10/29/2024	11/11/2024 17:32	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.69	1.8
CFE	10/29/2024	11/11/2024 17:32	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.51	1.8
CFE	10/29/2024	11/11/2024 17:32	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.48	1.8
CFE	10/29/2024	11/11/2024 17:32	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.4	1.8
CFE	10/29/2024	11/11/2024 17:32	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.60	1.8
CFE	10/29/2024	11/11/2024 17:32	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.71	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.94	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.65	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.55	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.53	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.63	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.78	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.64	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.94	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.62	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.54	1.8
CFE	10/29/2024	11/11/2024 17:32	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.66	1.8
GAC	10/29/2024	11/6/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	<	1.0	mg/L	0.50	1.0
GAC	10/29/2024	11/11/2024 17:40	533	Perfluorooctanesulfonic acid	PFOS	J	1.0	ng/L	0.63	1.7
GAC	10/29/2024	11/11/2024 17:40	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.65	1.7
GAC	10/29/2024	11/11/2024 17:40	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.48	1.7
GAC	10/29/2024	11/11/2024 17:40	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.46	1.7
GAC	10/29/2024	11/11/2024 17:40	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.3	1.7
GAC	10/29/2024	11/11/2024 17:40	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.57	1.7
GAC	10/29/2024	11/11/2024 17:40	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.67	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.88	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.61	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.52	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.50	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.46	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Perfluorobutanoic acid	PFBA	<	1.7	ng/L	0.57	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.59	1.7

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
GAC	10/29/2024	11/11/2024 17:40	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.73	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.61	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Perfluoroheptanoic acid	PFHpA	<	1.7	ng/L	0.49	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.56	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.58	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.51	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.62	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.52	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.89	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.60	1.7
GAC	10/29/2024	11/11/2024 17:40	533	Perfluorooctanoic acid	PFOA	<	1.7	ng/L	0.49	1.7
IX-1	10/29/2024	11/6/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	<	1.0	mg/L	0.50	1.0
IX-1	10/29/2024	11/11/2024 17:47	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.66	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.48	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.46	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.3	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.57	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.67	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.89	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.61	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.52	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.50	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.46	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluorobutanoic acid	PFBA	<	1.7	ng/L	0.57	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.59	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.73	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.61	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluoroheptanoic acid	PFHpA	<	1.7	ng/L	0.49	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.56	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.58	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.51	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.62	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluorooctanesulfonic acid	PFOS	<	1.7	ng/L	0.63	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluorooctanoic acid	PFOA	<	1.7	ng/L	0.49	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.52	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.61	1.7
IX-1	10/29/2024	11/11/2024 17:47	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.89	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluorobutanoic acid	PFBA		2.1	ng/L	0.57	1.7
IX-2	10/29/2024	11/6/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.6	mg/L	0.50	1.0
IX-2	10/29/2024	11/11/2024 18:01	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.65	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.48	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.46	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.3	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.57	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.67	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.88	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.61	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.52	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.50	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.46	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.59	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.73	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.61	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluoroheptanoic acid	PFHpA	<	1.7	ng/L	0.49	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.56	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.58	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.51	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.62	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluorooctanesulfonic acid	PFOS	<	1.7	ng/L	0.63	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluorooctanoic acid	PFOA	<	1.7	ng/L	0.49	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.52	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.61	1.7
IX-2	10/29/2024	11/11/2024 18:01	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.89	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluorobutanoic acid	PFBA		6.6	ng/L	0.56	1.7
NS	10/29/2024	11/6/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		2.4	mg/L	0.50	1.0
NS	10/29/2024	11/12/2024 09:00	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.65	1.7
NS	10/29/2024	11/12/2024 09:00	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.47	1.7
NS	10/29/2024	11/12/2024 09:00	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.45	1.7
NS	10/29/2024	11/12/2024 09:00	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.3	1.7
NS	10/29/2024	11/12/2024 09:00	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.56	1.7
NS	10/29/2024	11/12/2024 09:00	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.66	1.7
NS	10/29/2024	11/12/2024 09:00	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.88	1.7
NS	10/29/2024	11/12/2024 09:00	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.61	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.52	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.50	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.46	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.59	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.73	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.60	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluoroheptanoic acid	PFHpA	<	1.7	ng/L	0.48	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.56	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.58	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.51	1.7

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
NS	10/29/2024	11/12/2024 09:00	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.61	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluorooctanesulfonic acid	PFOS	<	1.7	ng/L	0.63	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluorooctanoic acid	PFOA	<	1.7	ng/L	0.49	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.52	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.60	1.7
NS	10/29/2024	11/12/2024 09:00	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.88	1.7
RW	10/29/2024	11/11/2024 17:25	533	Perfluorooctanesulfonic acid	PFOS		20	ng/L	0.66	1.8
RW	10/29/2024	11/5/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		9.2	mg/L	0.50	1.0
RW	10/29/2024	11/11/2024 17:25	533	Perfluorooctanoic acid	PFOA		6.5	ng/L	0.51	1.8
RW	10/29/2024	11/11/2024 17:25	533	Perfluorobutanoic acid	PFBA		5.3	ng/L	0.59	1.8
RW	10/29/2024	11/11/2024 17:25	533	Perfluorobutanesulfonic acid	PFBS	J	1.6	ng/L	0.55	1.8
RW	10/29/2024	11/11/2024 17:25	533	Perfluorohexanesulfonic acid	PFHxS	J	1.2	ng/L	0.63	1.8
RW	10/29/2024	11/11/2024 17:25	533	Perfluorohexanoic acid	PFHxA	J	0.89	ng/L	0.58	1.8
RW	10/29/2024	11/11/2024 17:25	533	Perfluoroheptanoic acid	PFHpA	J	0.86	ng/L	0.51	1.8
RW	10/29/2024	11/11/2024 17:25	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.68	1.8
RW	10/29/2024	11/11/2024 17:25	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.50	1.8
RW	10/29/2024	11/11/2024 17:25	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.47	1.8
RW	10/29/2024	11/11/2024 17:25	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.3	1.8
RW	10/29/2024	11/11/2024 17:25	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.59	1.8
RW	10/29/2024	11/11/2024 17:25	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.69	1.8
RW	10/29/2024	11/11/2024 17:25	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.92	1.8
RW	10/29/2024	11/11/2024 17:25	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.64	1.8
RW	10/29/2024	11/11/2024 17:25	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.54	1.8
RW	10/29/2024	11/11/2024 17:25	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.52	1.8
RW	10/29/2024	11/11/2024 17:25	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.48	1.8
RW	10/29/2024	11/11/2024 17:25	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.62	1.8
RW	10/29/2024	11/11/2024 17:25	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.76	1.8
RW	10/29/2024	11/11/2024 17:25	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.63	1.8
RW	10/29/2024	11/11/2024 17:25	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.61	1.8
RW	10/29/2024	11/11/2024 17:25	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.53	1.8
RW	10/29/2024	11/11/2024 17:25	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.65	1.8
RW	10/29/2024	11/11/2024 17:25	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.92	1.8
CFE	11/14/2024	11/25/2024 12:03	ASTM D517	Total Uranium	Total Uranium		0.038 ± 0.0	ug/L		
CFE	11/14/2024	11/21/2024 14:30	EPA 200.7 F	Sodium	Sodium		16600	ug/L	123	5000
CFE	11/14/2024	11/21/2024 14:30	EPA 200.7 F	Calcium	Calcium		3020	ug/L	14.7	100
CFE	11/14/2024	11/24/2024 17:35	EPA 200.7 F	Magnesium	Magnesium		1310	ug/L	13.7	100
CFE	11/14/2024	11/21/2024 14:30	EPA 200.7 F	Potassium	Potassium	<	5000	ug/L	55.1	5000
CFE	11/14/2024	11/21/2024 11:16	SM 2540C-2	Total Dissolved Solids	Total Dissolved Solids		93.0	mg/L	25.0	25.0
CFE	11/14/2024	11/21/2024 14:30	EPA 200.7 F	Iron	Iron		50.8	ug/L	8.9	50.0
CFE	11/14/2024	11/21/2024 14:30	EPA 200.7 F	Strontium	Strontium		23.2	ug/L	0.66	5.0
CFE	11/14/2024	11/20/2024 18:18	EPA 300.1	Chlorate	Chlorate		0.102	mg/L	0.0317	0.0500
CFE	11/14/2024	11/21/2024 14:30	EPA 200.7 F	Manganese	Manganese		11.0	ug/L	0.86	5.0
CFE	11/14/2024	11/21/2024 14:30	EPA 200.7 F	Aluminum	Aluminum	<	100	ug/L	10.3	100
CFE	11/14/2024	11/24/2024 17:35	EPA 200.7 F	Copper	Copper	<	5.0	ug/L	0.62	5.0
CFE	11/14/2024	11/21/2024 14:30	EPA 200.7 F	Chromium	Chromium	<	5.0	ug/L	0.63	5.0
CFE	11/14/2024	11/16/2024 10:21	EPA 300.0	Nitrate-Nitrite (as N)	Nitrate-Nitrite (as N)	<	1.0	mg/L	0.050	1.0
CFE	11/14/2024	11/16/2024 10:21	EPA 300.0	Fluoride	Fluoride		0.075	mg/L	0.015	0.050
CFE	11/14/2024	11/16/2024 10:21	EPA 300.0	Nitrate as N	Nitrate as N		0.057	mg/L	0.025	0.050
CFE	11/14/2024	12/04/2024 06:34	EPA 351.2 F	Nitrogen, Kjeldahl, Total	Nitrogen, Kjeldahl, Total	<	0.50	mg/L	0.25	0.50
CFE	11/14/2024	12/03/2024 18:28	EPA 350.1 F	Nitrogen, Ammonia	Nitrogen, Ammonia	<	0.10	mg/L	0.031	0.10
CFE	11/14/2024	11/16/2024 10:21	EPA 300.0	Orthophosphate as P	Orthophosphate as P	<	0.10	mg/L	0.085	0.10
CFE	11/14/2024	11/16/2024 10:21	EPA 300.0	Nitrite as N	Nitrite as N	<	0.050	mg/L	0.025	0.050
CFE	11/14/2024	11/15/2024 11:43	EPA 7196A	Chromium, Hexavalent	Chromium, Hexavalent	<	0.010	mg/L	0.0037	0.010
CFE	11/14/2024	11/22/2024 04:17	EPA 314.0	Perchlorate	Perchlorate	<	0.00400	mg/L	0.00080(	0.00400
GAC	11/14/2024	11/21/2024 14:27	EPA 200.7 F	Strontium	Strontium		24.6	ug/L	0.66	5.0
GAC	11/14/2024	11/21/2024 14:27	EPA 200.7 F	Manganese	Manganese		8.7	ug/L	0.86	5.0
GAC	11/14/2024	11/21/2024 14:27	EPA 200.7 F	Chromium	Chromium	<	5.0	ug/L	0.63	5.0
GAC	11/14/2024	11/20/2024 18:35	EPA 300.1	Chlorate	Chlorate		0.141	mg/L	0.0317	0.0500
GAC	11/14/2024	11/15/2024 11:43	EPA 7196A	Chromium, Hexavalent	Chromium, Hexavalent	<	0.010	mg/L	0.0037	0.010
RW	11/14/2024	11/21/2024 14:24	EPA 200.7 F	Manganese	Manganese		155	ug/L	0.86	5.0
RW	11/14/2024	11/21/2024 14:24	EPA 200.7 F	Strontium	Strontium		26.7	ug/L	0.66	5.0
RW	11/14/2024	11/21/2024 14:24	EPA 200.7 F	Chromium	Chromium	<	5.0	ug/L	0.63	5.0
RW	11/14/2024	11/20/2024 18:01	EPA 300.1	Chlorate	Chlorate	<	0.0500	mg/L	0.0317	0.0500
RW	11/14/2024	11/15/2024 11:40	EPA 7196A	Chromium, Hexavalent	Chromium, Hexavalent	<	0.010	mg/L	0.0037	0.010
CFE	11/18/2024	12/05/2024 18:42	533	Perfluorooctanesulfonic acid	PFOS		8.9	ng/L	0.65	1.8
CFE	11/18/2024	12/05/2024 18:42	533	Perfluorooctanoic acid	PFOA		4.9	ng/L	0.51	1.8
CFE	11/18/2024	12/3/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		3.1	mg/L	0.50	1.0
CFE	11/18/2024	12/05/2024 18:42	533	Perfluorobutanesulfonic acid	PFBS	J	1.4	ng/L	0.54	1.8
CFE	11/18/2024	12/05/2024 18:42	533	Perfluoroheptanoic acid	PFHpA	J	1.3	ng/L	0.50	1.8
CFE	11/18/2024	12/05/2024 18:42	533	Perfluorohexanesulfonic acid	PFHxS	J	1.0	ng/L	0.62	1.8
CFE	11/18/2024	12/05/2024 18:42	533	Perfluorohexanoic acid	PFHxA	J	0.90	ng/L	0.57	1.8
CFE	11/18/2024	11/19/2024 15:22	SM 2540D-2	Total Suspended Solids	Total Suspended Solids	<	2.5	mg/L	2.5	2.5
CFE	11/18/2024	12/05/2024 18:42	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.91	1.8
CFE	11/18/2024	12/05/2024 18:42	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.67	1.8
CFE	11/18/2024	12/05/2024 18:42	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.49	1.8
CFE	11/18/2024	12/05/2024 18:42	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.47	1.8
CFE	11/18/2024	12/05/2024 18:42	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.3	1.8
CFE	11/18/2024	12/05/2024 18:42	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.58	1.8
CFE	11/18/2024	12/05/2024 18:42	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.68	1.8
CFE	11/18/2024	12/05/2024 18:42	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.91	1.8
CFE	11/18/2024	12/05/2024 18:42	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.63	1.8
CFE	11/18/2024	12/05/2024 18:42	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.53	1.8
CFE	11/18/2024	12/05/2024 18:42	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.52	1.8

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
CFE	11/18/2024	12/05/2024 18:42	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.47	1.8
CFE	11/18/2024	12/05/2024 18:42	533	Perfluorobutanoic acid	PFBA	<	1.8	ng/L	0.58	1.8
CFE	11/18/2024	12/05/2024 18:42	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.61	1.8
CFE	11/18/2024	12/05/2024 18:42	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.75	1.8
CFE	11/18/2024	12/05/2024 18:42	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.62	1.8
CFE	11/18/2024	12/05/2024 18:42	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.60	1.8
CFE	11/18/2024	12/05/2024 18:42	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.53	1.8
CFE	11/18/2024	12/05/2024 18:42	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.64	1.8
GAC	11/18/2024	12/3/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		2.1	mg/L	0.50	1.0
GAC	11/18/2024	12/05/2024 18:49	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.52	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.60	1.7
GAC	11/18/2024	12/05/2024 18:49	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.65	1.7
GAC	11/18/2024	12/05/2024 18:49	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.47	1.7
GAC	11/18/2024	12/05/2024 18:49	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.45	1.7
GAC	11/18/2024	12/05/2024 18:49	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.3	1.7
GAC	11/18/2024	12/05/2024 18:49	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.56	1.7
GAC	11/18/2024	12/05/2024 18:49	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.66	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.87	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.60	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.51	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.50	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.45	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluorobutanoic acid	PFBA	<	1.7	ng/L	0.56	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.59	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.72	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.60	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluoroheptanoic acid	PFHpA	<	1.7	ng/L	0.48	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.55	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluorooctanesulfonic acid	PFOS	<	1.7	ng/L	0.62	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.57	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.51	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.61	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.88	1.7
GAC	11/18/2024	12/05/2024 18:49	533	Perfluorooctanoic acid	PFOA	<	1.7	ng/L	0.49	1.7
IX-1	11/18/2024	12/3/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	<	1.0	mg/L	0.50	1.0
IX-1	11/18/2024	12/06/2024 12:02	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.65	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.48	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.45	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.3	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.56	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.66	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.88	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.61	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.52	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.50	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.46	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluorobutanoic acid	PFBA	<	1.7	ng/L	0.56	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.59	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.73	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.60	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluoroheptanoic acid	PFHpA	<	1.7	ng/L	0.49	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.56	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.58	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.51	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.62	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluorooctanesulfonic acid	PFOS	<	1.7	ng/L	0.63	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluorooctanoic acid	PFOA	<	1.7	ng/L	0.49	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.52	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.88	1.7
IX-1	11/18/2024	12/06/2024 12:02	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.60	1.7
IX-2	11/18/2024	12/3/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.8	mg/L	0.50	1.0
IX-2	11/18/2024	12/05/2024 19:11	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.67	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.49	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.47	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.3	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.58	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.69	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.91	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.63	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.53	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.52	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.47	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluorobutanoic acid	PFBA	<	1.8	ng/L	0.58	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.61	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.75	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.62	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.50	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.58	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.60	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.53	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.64	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.65	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluorooctanoic acid	PFOA	<	1.8	ng/L	0.51	1.8

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.54	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.62	1.8
IX-2	11/18/2024	12/05/2024 19:11	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.91	1.8
NS	11/18/2024	12/05/2024 19:04	533	Perfluorobutanoic acid	PFBA		3.5	ng/L	0.56	1.7
NS	11/18/2024	12/3/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		2.1	mg/L	0.50	1.0
NS	11/18/2024	12/05/2024 19:04	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.65	1.7
NS	11/18/2024	12/05/2024 19:04	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.48	1.7
NS	11/18/2024	12/05/2024 19:04	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.45	1.7
NS	11/18/2024	12/05/2024 19:04	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.3	1.7
NS	11/18/2024	12/05/2024 19:04	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.56	1.7
NS	11/18/2024	12/05/2024 19:04	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.66	1.7
NS	11/18/2024	12/05/2024 19:04	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.88	1.7
NS	11/18/2024	12/05/2024 19:04	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.61	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.52	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.50	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.46	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.59	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.73	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.60	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluoroheptanoic acid	PFHpA	<	1.7	ng/L	0.49	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.56	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.58	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.51	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.62	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluorooctanesulfonic acid	PFOS	<	1.7	ng/L	0.63	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluorooctanoic acid	PFOA	<	1.7	ng/L	0.49	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.52	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.60	1.7
NS	11/18/2024	12/05/2024 19:04	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.88	1.7
RW	11/18/2024	12/05/2024 18:34	533	Perfluorooctanesulfonic acid	PFOS		18	ng/L	0.66	1.8
RW	11/18/2024	12/3/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		10	mg/L	0.50	1.0
RW	11/18/2024	12/05/2024 18:34	533	Perfluorooctanoic acid	PFOA		6.6	ng/L	0.52	1.8
RW	11/18/2024	12/05/2024 18:34	533	Perfluorobutanoic acid	PFBA		5.3	ng/L	0.59	1.8
RW	11/18/2024	12/05/2024 18:34	533	Perfluorobutanesulfonic acid	PFBS	J	1.7	ng/L	0.55	1.8
RW	11/18/2024	12/05/2024 18:34	533	Perfluorohexanesulfonic acid	PFHxS	J	1.7	ng/L	0.64	1.8
RW	11/18/2024	12/05/2024 18:34	533	Perfluoroheptanoic acid	PFHpA	J	1.1	ng/L	0.51	1.8
RW	11/18/2024	12/05/2024 18:34	533	Perfluorohexanoic acid	PFHxA	J	1.1	ng/L	0.59	1.8
RW	11/18/2024	12/05/2024 18:34	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.69	1.8
RW	11/18/2024	12/05/2024 18:34	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.50	1.8
RW	11/18/2024	12/05/2024 18:34	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.48	1.8
RW	11/18/2024	12/05/2024 18:34	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.3	1.8
RW	11/18/2024	12/05/2024 18:34	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.59	1.8
RW	11/18/2024	12/05/2024 18:34	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.70	1.8
RW	11/18/2024	12/05/2024 18:34	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.93	1.8
RW	11/18/2024	12/05/2024 18:34	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.64	1.8
RW	11/18/2024	12/05/2024 18:34	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.54	1.8
RW	11/18/2024	12/05/2024 18:34	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.53	1.8
RW	11/18/2024	12/05/2024 18:34	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.48	1.8
RW	11/18/2024	12/05/2024 18:34	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.62	1.8
RW	11/18/2024	12/05/2024 18:34	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.77	1.8
RW	11/18/2024	12/05/2024 18:34	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.64	1.8
RW	11/18/2024	12/05/2024 18:34	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.61	1.8
RW	11/18/2024	12/05/2024 18:34	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.54	1.8
RW	11/18/2024	12/05/2024 18:34	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.65	1.8
RW	11/18/2024	12/05/2024 18:34	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.93	1.8
CFE	12/17/2024	12/31/2024 09:56	533	Perfluorooctanesulfonic acid	PFOS		8.8	ng/L	0.68	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Perfluorobutanoic acid	PFBA		6.1	ng/L	0.61	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Perfluorooctanoic acid	PFOA		5.2	ng/L	0.53	1.9
CFE	12/17/2024	12/30/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.5	mg/L	0.50	1.0
CFE	12/17/2024	12/31/2024 09:56	533	Perfluorobutanesulfonic acid	PFBS	J	1.4	ng/L	0.57	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Perfluoroheptanoic acid	PFHpA	J	1.4	ng/L	0.53	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Perfluorohexanesulfonic acid	PFHxS	J	0.90	ng/L	0.65	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Perfluorohexanoic acid	PFHxA	J	0.88	ng/L	0.60	1.9
CFE	12/17/2024	12/22/2024 15:55	SM 2540D-2	Total Suspended Solids	Total Suspended Solids	<	2.5	mg/L	2.5	2.5
CFE	12/17/2024	12/31/2024 09:56	533	Perfluorononanoic acid	PFNA	<	1.9	ng/L	0.96	1.9
CFE	12/17/2024	12/31/2024 09:56	533	11Cl-PF3OUdS	F53B Major	<	1.9	ng/L	0.71	1.9
CFE	12/17/2024	12/31/2024 09:56	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.9	ng/L	0.52	1.9
CFE	12/17/2024	12/31/2024 09:56	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.9	ng/L	0.49	1.9
CFE	12/17/2024	12/31/2024 09:56	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.9	ng/L	1.4	1.9
CFE	12/17/2024	12/31/2024 09:56	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.9	ng/L	0.61	1.9
CFE	12/17/2024	12/31/2024 09:56	533	9Cl-PF3ONS	F53B Minor	<	1.9	ng/L	0.72	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.9	ng/L	0.95	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.9	ng/L	0.66	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.9	ng/L	0.56	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.9	ng/L	0.54	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.9	ng/L	0.50	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Perfluorodecanoic acid	PFDA	<	1.9	ng/L	0.64	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Perfluorododecanoic acid	PFDoA	<	1.9	ng/L	0.79	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.9	ng/L	0.66	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Perfluoropentanesulfonic acid	PFPeS	<	1.9	ng/L	0.63	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Perfluoropentanoic acid	PFPeA	<	1.9	ng/L	0.55	1.9
CFE	12/17/2024	12/31/2024 09:56	533	Perfluoroundecanoic acid	PFUnA	<	1.9	ng/L	0.67	1.9
GAC	12/17/2024	12/31/2024 10:03	533	Perfluorooctanoic acid	PFOA		2.5	ng/L	0.52	1.8

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
GAC	12/17/2024	12/31/2024 10:03	533	Perfluorobutanoic acid	PFBA		2.2	ng/L	0.60	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Perfluorooctanesulfonic acid	PFOS	J	1.1	ng/L	0.67	1.8
GAC	12/17/2024	12/30/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	<	1.0	mg/L	0.50	1.0
GAC	12/17/2024	12/31/2024 10:03	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.56	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.65	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.95	1.8
GAC	12/17/2024	12/31/2024 10:03	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.70	1.8
GAC	12/17/2024	12/31/2024 10:03	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.51	1.8
GAC	12/17/2024	12/31/2024 10:03	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.49	1.8
GAC	12/17/2024	12/31/2024 10:03	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.4	1.8
GAC	12/17/2024	12/31/2024 10:03	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.60	1.8
GAC	12/17/2024	12/31/2024 10:03	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.71	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.94	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.65	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.55	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.53	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.63	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.78	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.65	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.52	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.60	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.62	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.55	1.8
GAC	12/17/2024	12/31/2024 10:03	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.66	1.8
IX-1	12/17/2024	12/30/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	<	1.0	mg/L	0.50	1.0
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluorobutanesulfonic acid	PFBS	<	1.9	ng/L	0.57	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	11Cl-PF3OUdS	F53B Major	<	1.9	ng/L	0.71	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.9	ng/L	0.52	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.9	ng/L	0.49	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.9	ng/L	1.4	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.9	ng/L	0.61	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	9Cl-PF3ONS	F53B Minor	<	1.9	ng/L	0.72	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.9	ng/L	0.95	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.9	ng/L	0.66	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.9	ng/L	0.56	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.9	ng/L	0.54	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.9	ng/L	0.50	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluorobutanoic acid	PFBA	<	1.9	ng/L	0.61	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluorodecanoic acid	PFDA	<	1.9	ng/L	0.64	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluorododecanoic acid	PFDoA	<	1.9	ng/L	0.79	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.9	ng/L	0.65	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluoroheptanoic acid	PFHpA	<	1.9	ng/L	0.53	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluorohexanoic acid	PFHxA	<	1.9	ng/L	0.60	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluorooctanesulfonic acid	PFOS	<	1.9	ng/L	0.68	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluorooctanoic acid	PFOA	<	1.9	ng/L	0.53	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluoropentanesulfonic acid	PFPeS	<	1.9	ng/L	0.63	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluoropentanoic acid	PFPeA	<	1.9	ng/L	0.55	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluoroundecanoic acid	PFUnA	<	1.9	ng/L	0.67	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluorohexanesulfonic acid	PFHxS	<	1.9	ng/L	0.65	1.9
IX-1	12/17/2024	12/31/2024 10:10	533	Perfluorononanoic acid	PFNA	<	1.9	ng/L	0.96	1.9
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluorobutanoic acid	PFBA		4.4	ng/L	0.60	1.8
IX-2	12/17/2024	12/31/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.4	mg/L	0.50	1.0
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluoropentanoic acid	PFPeA	J	1.1	ng/L	0.55	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.70	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.51	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.49	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.4	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.61	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.71	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.94	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.65	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.55	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.54	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.63	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.78	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.65	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.52	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.60	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.68	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.62	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.66	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.56	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluorooctanoic acid	PFOA	<	1.8	ng/L	0.53	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.65	1.8
IX-2	12/17/2024	12/31/2024 10:25	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.95	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluorobutanoic acid	PFBA		2.9	ng/L	0.58	1.8
NS	12/17/2024	12/30/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.5	mg/L	0.50	1.0
NS	12/17/2024	12/31/2024 10:18	533	Perfluorooctanoic acid	PFOA	J	0.81	ng/L	0.51	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluorohexanoic acid	PFHxA	J	0.57	ng/L	0.57	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluoroheptanoic acid	PFHpA	J	0.50	ng/L	0.50	1.8
NS	12/17/2024	12/31/2024 10:18	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.67	1.8

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
NS	12/17/2024	12/31/2024 10:18	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.49	1.8
NS	12/17/2024	12/31/2024 10:18	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.47	1.8
NS	12/17/2024	12/31/2024 10:18	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.3	1.8
NS	12/17/2024	12/31/2024 10:18	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.58	1.8
NS	12/17/2024	12/31/2024 10:18	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.68	1.8
NS	12/17/2024	12/31/2024 10:18	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.91	1.8
NS	12/17/2024	12/31/2024 10:18	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.63	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.53	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.52	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.47	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.61	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.75	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.62	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.65	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.60	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.53	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.64	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.54	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.62	1.8
NS	12/17/2024	12/31/2024 10:18	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.91	1.8
RW	12/17/2024	12/31/2024 10:32	533	Perfluorooctanesulfonic acid	PFOS		20	ng/L	0.69	1.9
RW	12/17/2024	12/31/2024	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		8.1	mg/L	0.50	1.0
RW	12/17/2024	12/31/2024 10:32	533	Perfluorooctanoic acid	PFOA		8.0	ng/L	0.54	1.9
RW	12/17/2024	12/31/2024 10:32	533	Perfluorobutanesulfonic acid	PFBS		2.0	ng/L	0.57	1.9
RW	12/17/2024	12/31/2024 10:32	533	Perfluorohexanesulfonic acid	PFHxS	J	1.7	ng/L	0.66	1.9
RW	12/17/2024	12/31/2024 10:32	533	Perfluoroheptanoic acid	PFHpA	J	1.4	ng/L	0.53	1.9
RW	12/17/2024	12/31/2024 10:32	533	11Cl-PF3OUdS	F53B Major	<	1.9	ng/L	0.71	1.9
RW	12/17/2024	12/31/2024 10:32	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.9	ng/L	0.52	1.9
RW	12/17/2024	12/31/2024 10:32	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.9	ng/L	0.50	1.9
RW	12/17/2024	12/31/2024 10:32	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.9	ng/L	1.4	1.9
RW	12/17/2024	12/31/2024 10:32	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.9	ng/L	0.62	1.9
RW	12/17/2024	12/31/2024 10:32	533	9Cl-PF3ONS	F53B Minor	<	1.9	ng/L	0.73	1.9
RW	12/17/2024	12/31/2024 10:32	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.9	ng/L	0.96	1.9
RW	12/17/2024	12/31/2024 10:32	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.9	ng/L	0.67	1.9
RW	12/17/2024	12/31/2024 10:32	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.9	ng/L	0.57	1.9
RW	12/17/2024	12/31/2024 10:32	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.9	ng/L	0.55	1.9
RW	12/17/2024	12/31/2024 10:32	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.9	ng/L	0.50	1.9
RW	12/17/2024	12/31/2024 10:32	533	Perfluorobutanoic acid	PFBA	<	1.9	ng/L	0.62	1.9
RW	12/17/2024	12/31/2024 10:32	533	Perfluorodecanoic acid	PFDA	<	1.9	ng/L	0.65	1.9
RW	12/17/2024	12/31/2024 10:32	533	Perfluorododecanoic acid	PFDoA	<	1.9	ng/L	0.80	1.9
RW	12/17/2024	12/31/2024 10:32	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.9	ng/L	0.66	1.9
RW	12/17/2024	12/31/2024 10:32	533	Perfluorohexanoic acid	PFHxA	<	1.9	ng/L	0.61	1.9
RW	12/17/2024	12/31/2024 10:32	533	Perfluoropentanesulfonic acid	PFPeS	<	1.9	ng/L	0.63	1.9
RW	12/17/2024	12/31/2024 10:32	533	Perfluoropentanoic acid	PFPeA	<	1.9	ng/L	0.56	1.9
RW	12/17/2024	12/31/2024 10:32	533	Perfluoroundecanoic acid	PFUnA	<	1.9	ng/L	0.67	1.9
RW	12/17/2024	12/31/2024 10:32	533	Perfluorononanoic acid	PFNA	<	1.9	ng/L	0.97	1.9
CFE	1/14/2025	1/22/2025 16:04	533	Perfluorooctanesulfonic acid	PFOS		7.3	ng/L	0.66	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Perfluorobutanoic acid	PFBA		5.7	ng/L	0.59	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Perfluorooctanoic acid	PFOA		4.5	ng/L	0.52	1.8
CFE	1/14/2025	1/24/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.7	mg/L	0.50	1.0
CFE	1/14/2025	1/22/2025 16:04	533	Perfluorobutanesulfonic acid	PFBS	J	1.3	ng/L	0.55	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Perfluorohexanesulfonic acid	PFHxS	J	1.1	ng/L	0.63	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Perfluoroheptanoic acid	PFHpA	J	0.89	ng/L	0.51	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.93	1.8
CFE	1/14/2025	1/22/2025 16:04	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.69	1.8
CFE	1/14/2025	1/22/2025 16:04	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.5	1.8
CFE	1/14/2025	1/22/2025 16:04	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.48	1.8
CFE	1/14/2025	1/22/2025 16:04	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.3	1.8
CFE	1/14/2025	1/22/2025 16:04	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.59	1.8
CFE	1/14/2025	1/22/2025 16:04	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.7	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.93	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.64	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.54	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.53	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.48	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.62	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.77	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.64	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.59	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.61	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.54	1.8
CFE	1/14/2025	1/22/2025 16:04	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.65	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluorobutanoic acid	PFBA		3.8	ng/L	0.6	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluorooctanoic acid	PFOA		2.3	ng/L	0.52	1.8
GAC	1/14/2025	1/24/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.0	mg/L	0.50	1.0
GAC	1/14/2025	1/22/2025 16:11	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.56	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.65	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.95	1.8
GAC	1/14/2025	1/22/2025 16:11	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.7	1.8
GAC	1/14/2025	1/22/2025 16:11	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.51	1.8
GAC	1/14/2025	1/22/2025 16:11	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.49	1.8
GAC	1/14/2025	1/22/2025 16:11	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.4	1.8
GAC	1/14/2025	1/22/2025 16:11	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.6	1.8

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
GAC	1/14/2025	1/22/2025 16:11	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.71	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.94	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.65	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.55	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.53	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.63	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.78	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.65	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.52	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.6	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluorooctanesulfonic acid	PFOS		1.8	ng/L	0.67	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.62	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.55	1.8
GAC	1/14/2025	1/22/2025 16:11	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.66	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluorobutanoic acid	PFBA		4	ng/L	0.6	1.8
IX-1	1/14/2025	1/24/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	J	0.70	mg/L	0.50	1.0
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.56	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.64	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.94	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.69	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.51	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.48	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.4	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.6	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.71	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.94	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.65	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.55	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.53	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.63	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.78	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.64	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.52	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.59	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.67	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluorooctanoic acid	PFOA	<	1.8	ng/L	0.52	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.62	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.54	1.8
IX-1	1/14/2025	1/22/2025 16:18	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.66	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluorobutanoic acid	PFBA		7.7	ng/L	0.6	1.8
IX-2	1/14/2025	1/24/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.4	mg/L	0.50	1.0
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.56	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.64	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.94	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.69	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.51	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.48	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.4	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.6	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.71	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.80	ng/L	0.94	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.65	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.55	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.53	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.63	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.78	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.64	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.52	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.59	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.67	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluorooctanoic acid	PFOA	<	1.8	ng/L	0.52	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.62	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.54	1.8
IX-2	1/14/2025	1/22/2025 16:32	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.66	1.8
NS	1/14/2025	1/22/2025 16:25	533	Perfluorobutanoic acid	PFBA		6	ng/L	0.57	1.7
NS	1/14/2025	1/22/2025 16:25	533	Perfluorooctanoic acid	PFOA		1.9	ng/L	0.49	1.7
NS	1/14/2025	1/24/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.5	mg/L	0.50	1.0
NS	1/14/2025	1/22/2025 16:25	533	Perfluoroheptanoic acid	PFHpA	J	0.81	ng/L	0.49	1.7
NS	1/14/2025	1/22/2025 16:25	533	Perfluorohexanoic acid	PFHxA	J	0.59	ng/L	0.56	1.7
NS	1/14/2025	1/22/2025 16:25	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.65	1.7
NS	1/14/2025	1/22/2025 16:25	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.48	1.7
NS	1/14/2025	1/22/2025 16:25	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.46	1.7
NS	1/14/2025	1/22/2025 16:25	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.3	1.7
NS	1/14/2025	1/22/2025 16:25	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.57	1.7
NS	1/14/2025	1/22/2025 16:25	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.67	1.7
NS	1/14/2025	1/22/2025 16:25	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.88	1.7
NS	1/14/2025	1/22/2025 16:25	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.61	1.7
NS	1/14/2025	1/22/2025 16:25	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.52	1.7
NS	1/14/2025	1/22/2025 16:25	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.5	1.7
NS	1/14/2025	1/22/2025 16:25	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.46	1.7

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
NS	1/14/2025	1/22/2025 16:25	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.59	1.7
NS	1/14/2025	1/22/2025 16:25	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.73	1.7
NS	1/14/2025	1/22/2025 16:25	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.61	1.7
NS	1/14/2025	1/22/2025 16:25	533	Perfluorooctanesulfonic acid	PFOS	<	1.7	ng/L	0.63	1.7
NS	1/14/2025	1/22/2025 16:25	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.58	1.7
NS	1/14/2025	1/22/2025 16:25	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.51	1.7
NS	1/14/2025	1/22/2025 16:25	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.62	1.7
NS	1/14/2025	1/22/2025 16:25	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.52	1.7
NS	1/14/2025	1/22/2025 16:25	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.61	1.7
NS	1/14/2025	1/22/2025 16:25	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.89	1.7
RW	1/14/2025	1/22/2025 15:56	533	Perfluorooctanesulfonic acid	PFOS		15	ng/L	0.71	1.9
RW	1/14/2025	1/24/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		7.2	mg/L	0.50	1.0
RW	1/14/2025	1/22/2025 15:56	533	Perfluorooctanoic acid	PFOA		6.4	ng/L	0.55	1.9
RW	1/14/2025	1/22/2025 15:56	533	Perfluorobutanoic acid	PFBA		4.6	ng/L	0.63	1.9
RW	1/14/2025	1/22/2025 15:56	533	Perfluorohexanesulfonic acid	PFHxS		2.1	ng/L	0.68	1.9
RW	1/14/2025	1/22/2025 15:56	533	Perfluorobutanesulfonic acid	PFBS	J	1.4	ng/L	0.58	1.9
RW	1/14/2025	1/22/2025 15:56	533	Perfluoroheptanoic acid	PFHpA	J	1	ng/L	0.54	1.9
RW	1/14/2025	1/22/2025 15:56	533	Perfluorohexanoic acid	PFHxA	J	0.79	ng/L	0.62	1.9
RW	1/14/2025	1/22/2025 15:56	533	11Cl-PF3OUdS	F53B Major	<	1.9	ng/L	0.73	1.9
RW	1/14/2025	1/22/2025 15:56	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.9	ng/L	0.53	1.9
RW	1/14/2025	1/22/2025 15:56	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.9	ng/L	0.51	1.9
RW	1/14/2025	1/22/2025 15:56	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.9	ng/L	1.4	1.9
RW	1/14/2025	1/22/2025 15:56	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.9	ng/L	0.63	1.9
RW	1/14/2025	1/22/2025 15:56	533	9Cl-PF3ONS	F53B Minor	<	1.9	ng/L	0.74	1.9
RW	1/14/2025	1/22/2025 15:56	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.9	ng/L	0.99	1.9
RW	1/14/2025	1/22/2025 15:56	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.9	ng/L	0.68	1.9
RW	1/14/2025	1/22/2025 15:56	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.9	ng/L	0.58	1.9
RW	1/14/2025	1/22/2025 15:56	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.9	ng/L	0.56	1.9
RW	1/14/2025	1/22/2025 15:56	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.9	ng/L	0.51	1.9
RW	1/14/2025	1/22/2025 15:56	533	Perfluorodecanoic acid	PFDA	<	1.9	ng/L	0.66	1.9
RW	1/14/2025	1/22/2025 15:56	533	Perfluorododecanoic acid	PFDoA	<	1.9	ng/L	0.82	1.9
RW	1/14/2025	1/22/2025 15:56	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.9	ng/L	0.68	1.9
RW	1/14/2025	1/22/2025 15:56	533	Perfluoropentanesulfonic acid	PFPeS	<	1.9	ng/L	0.65	1.9
RW	1/14/2025	1/22/2025 15:56	533	Perfluoropentanoic acid	PFPeA	<	1.9	ng/L	0.57	1.9
RW	1/14/2025	1/22/2025 15:56	533	Perfluoroundecanoic acid	PFUnA	<	1.9	ng/L	0.69	1.9
RW	1/14/2025	1/22/2025 15:56	533	Perfluorononanoic acid	PFNA	<	1.9	ng/L	0.99	1.9
CFE	2/18/2025	2/27/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.5	mg/L	0.50	1.0
GAC	2/18/2025	2/27/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	J	0.89	mg/L	0.50	1.0
IX-1	2/18/2025	2/27/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	J	0.68	mg/L	0.50	1.0
IX-2	2/18/2025	2/27/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.4	mg/L	0.50	1.0
NS	2/18/2025	2/27/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.4	mg/L	0.50	1.0
RW	2/18/2025	2/27/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		5.8	mg/L	0.50	1.0
CFE	2/25/2025	2/28/2025 10:19	533	Perfluorooctanesulfonic acid	PFOS		8	ng/L	0.65	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluorooctanoic acid	PFOA		4.8	ng/L	0.51	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluoroheptanoic acid	PFHpA	J	1.2	ng/L	0.5	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluorobutanesulfonic acid	PFBS	J	1.2	ng/L	0.54	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluorobutanoic acid	PFBA	J	1.1	ng/L	0.58	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluorohexanesulfonic acid	PFHxS	J	1	ng/L	0.63	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluorohexanoic acid	PFHxA	J	0.93	ng/L	0.58	1.8
CFE	2/25/2025	2/28/2025 10:19	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.68	1.8
CFE	2/25/2025	2/28/2025 10:19	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.49	1.8
CFE	2/25/2025	2/28/2025 10:19	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.47	1.8
CFE	2/25/2025	2/28/2025 10:19	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.3	1.8
CFE	2/25/2025	2/28/2025 10:19	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.59	1.8
CFE	2/25/2025	2/28/2025 10:19	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.69	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.91	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.63	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.54	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.52	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.47	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.61	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.76	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.63	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.6	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.53	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.64	1.8
CFE	2/25/2025	2/28/2025 10:19	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.92	1.8
GAC	2/25/2025	2/28/2025 10:33	533	Perfluorooctanoic acid	PFOA		2.5	ng/L	0.48	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Perfluorooctanesulfonic acid	PFOS		2.3	ng/L	0.62	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Perfluorobutanoic acid	PFBA	J	0.7	ng/L	0.56	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Perfluoroheptanoic acid	PFHpA	J	0.6	ng/L	0.48	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Perfluorobutanesulfonic acid	PFBS	J	0.59	ng/L	0.51	1.7
GAC	2/25/2025	2/28/2025 10:33	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.64	1.7
GAC	2/25/2025	2/28/2025 10:33	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.47	1.7
GAC	2/25/2025	2/28/2025 10:33	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.45	1.7
GAC	2/25/2025	2/28/2025 10:33	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.3	1.7
GAC	2/25/2025	2/28/2025 10:33	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.56	1.7
GAC	2/25/2025	2/28/2025 10:33	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.65	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.87	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.6	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.51	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.49	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.45	1.7

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
GAC	2/25/2025	2/28/2025 10:33	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.58	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.72	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.6	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.55	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.57	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.5	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.61	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.59	1.7
GAC	2/25/2025	2/28/2025 10:33	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.87	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.52	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.65	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.47	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.45	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.3	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.56	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.66	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.88	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.61	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.51	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.5	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.46	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluorobutanoic acid	PFBA	<	1.7	ng/L	0.56	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.59	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.73	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.6	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluoroheptanoic acid	PFHpA	<	1.7	ng/L	0.48	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.55	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluorooctanesulfonic acid	PFOS	<	1.7	ng/L	0.63	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluorooctanoic acid	PFOA	<	1.7	ng/L	0.49	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.58	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.51	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.61	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.6	1.7
IX-1	2/25/2025	2/28/2025 10:40	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.88	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluorobutanoic acid	PFBA	J	1.5	ng/L	0.56	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.65	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.48	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.45	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.3	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.56	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.66	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.88	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.61	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.52	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.5	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.46	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.59	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.73	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.6	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluoroheptanoic acid	PFHpA	<	1.7	ng/L	0.49	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.56	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.58	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.51	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.62	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluorooctanesulfonic acid	PFOS	<	1.7	ng/L	0.63	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluorooctanoic acid	PFOA	<	1.7	ng/L	0.49	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.52	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.6	1.7
IX-2	2/25/2025	2/28/2025 11:02	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.88	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluorooctanoic acid	PFOA		1.9	ng/L	0.49	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluorobutanoic acid	PFBA	J	0.95	ng/L	0.56	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluoroheptanoic acid	PFHpA	J	0.93	ng/L	0.48	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluorohexanoic acid	PFHxA	J	0.87	ng/L	0.56	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.52	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.6	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.88	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluorooctanesulfonic acid	PFOS	<	1.7	ng/L	0.63	1.7
NS	2/25/2025	2/28/2025 10:55	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.65	1.7
NS	2/25/2025	2/28/2025 10:55	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.48	1.7
NS	2/25/2025	2/28/2025 10:55	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.45	1.7
NS	2/25/2025	2/28/2025 10:55	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.3	1.7
NS	2/25/2025	2/28/2025 10:55	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.56	1.7
NS	2/25/2025	2/28/2025 10:55	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.66	1.7
NS	2/25/2025	2/28/2025 10:55	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.88	1.7
NS	2/25/2025	2/28/2025 10:55	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.61	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.52	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.5	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.46	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.59	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.73	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.6	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.58	1.7
NS	2/25/2025	2/28/2025 10:55	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.51	1.7

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
NS	2/25/2025	2/28/2025 10:55	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.62	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluorooctanesulfonic acid	PFOS		16	ng/L	0.63	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluorooctanoic acid	PFOA		6.9	ng/L	0.49	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluorohexanesulfonic acid	PFHxS		2.4	ng/L	0.61	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluorobutanesulfonic acid	PFBS		2	ng/L	0.53	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluorobutanoic acid	PFBA	J	1.4	ng/L	0.57	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluoroheptanoic acid	PFHpA	J	1.2	ng/L	0.49	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluoropentanesulfonic acid	PFPeS	J	0.62	ng/L	0.58	1.7
RW	2/25/2025	2/28/2025 10:11	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.66	1.7
RW	2/25/2025	2/28/2025 10:11	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.48	1.7
RW	2/25/2025	2/28/2025 10:11	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.46	1.7
RW	2/25/2025	2/28/2025 10:11	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.3	1.7
RW	2/25/2025	2/28/2025 10:11	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.57	1.7
RW	2/25/2025	2/28/2025 10:11	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.67	1.7
RW	2/25/2025	2/28/2025 10:11	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.89	1.7
RW	2/25/2025	2/28/2025 10:11	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.61	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.52	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.5	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.46	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.6	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.74	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.61	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.56	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.89	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.51	1.7
RW	2/25/2025	2/28/2025 10:11	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.62	1.7
CFE	2/26/2025	03/10/2025 15:53	EPA 200.7	Sodium	Sodium		13100	ug/L	540	2000
CFE	2/26/2025	03/10/2025 15:53	EPA 200.7	Calcium	Calcium		3700	ug/L	190	500
CFE	2/26/2025	03/10/2025 15:53	EPA 200.7	Magnesium	Magnesium		1450	ug/L	84.0	500
CFE	2/26/2025	03/10/2025 15:53	EPA 200.7	Potassium	Potassium		1410	ug/L	270	1000
CFE	2/26/2025	03/09/2025 09:41	EPA 300.1	Dichloroacetate (S)	Dichloroacetate (S)		103	%		
CFE	2/26/2025	02/28/2025 11:49	SM 2540C-2	Total Dissolved Solids	Total Dissolved Solids		74.0	mg/L	25.0	25.0
CFE	2/26/2025	03/10/2025 15:53	EPA 200.7	Iron	Iron	J	39.6	ug/L	25.0	40.0
CFE	2/26/2025	03/09/2025 09:41	EPA 300.1	Chlorate	Chlorate		28.1	ug/L	1.5	2.0
CFE	2/26/2025	03/10/2025 15:53	EPA 200.7	Strontium	Strontium		28.0	ug/L	2.1	10.0
CFE	2/26/2025	03/10/2025 15:53	EPA 200.7	Manganese	Manganese		11.4	ug/L	1.1	5.0
CFE	2/26/2025	03/10/2025 15:53	EPA 200.7	Aluminum	Aluminum	<	100	ug/L	30.7	100
CFE	2/26/2025	03/10/2025 15:53	EPA 200.7	Copper	Copper	<	5.0	ug/L	2.6	5.0
CFE	2/26/2025	03/10/2025 15:53	EPA 200.7	Chromium	Chromium	<	5.0	ug/L	1.7	5.0
CFE	2/26/2025	02/27/2025 11:47	EPA 300.0 R	Nitrate as N	Nitrate as N		0.26	mg/L	0.0060	0.020
CFE	2/26/2025	03/10/2025 13:39	EPA 200.8	Uranium	Uranium	<	1.0	ug/L	0.22	1.0
CFE	2/26/2025	02/27/2025 11:47	EPA 300.0 R	Fluoride	Fluoride	J	0.073	mg/L	0.050	0.10
CFE	2/26/2025	03/08/2025 04:53	EPA 351.2 R	Nitrogen, Kjeldahl, Total	Nitrogen, Kjeldahl, Total	<	0.50	mg/L	0.25	0.50
CFE	2/26/2025	02/28/2025 05:15	SM 4500-P	Orthophosphate as P	Orthophosphate as P	J	0.015	mg/L	0.012	0.050
CFE	2/26/2025	03/04/2025 20:10	EPA 350.1 R	Nitrogen, Ammonia	Nitrogen, Ammonia	<	0.10	mg/L	0.031	0.10
CFE	2/26/2025	02/27/2025 11:47	EPA 300.0 R	Nitrite as N	Nitrite as N	<	0.020	mg/L	0.0066	0.020
CFE	2/26/2025	03/04/2025 12:28	EPA 7196A	Chromium, Hexavalent	Chromium, Hexavalent	<	0.010	mg/L	0.0037	0.010
CFE	2/26/2025	03/03/2025 12:52	EPA 314.0	Perchlorate	Perchlorate	<	0.00400	mg/L	0.00080(	0.00400
GAC	2/26/2025	03/09/2025 10:22	EPA 300.1	Dichloroacetate (S)	Dichloroacetate (S)		102	%		
GAC	2/26/2025	03/11/2025 13:28	EPA 200.7	Strontium	Strontium		33.1	ug/L	2.1	10.0
GAC	2/26/2025	03/11/2025 13:28	EPA 200.7	Manganese	Manganese		17.0	ug/L	1.1	5.0
GAC	2/26/2025	03/11/2025 13:28	EPA 200.7	Chromium	Chromium	<	5.0	ug/L	1.7	5.0
GAC	2/26/2025	03/09/2025 10:22	EPA 300.1	Chlorate	Chlorate		38.1	ug/L	1.5	2.0
GAC	2/26/2025	03/04/2025 12:29	EPA 7196A	Chromium, Hexavalent	Chromium, Hexavalent	<	0.010	mg/L	0.0037	0.010
RW	2/26/2025	03/11/2025 13:24	EPA 200.7	Manganese	Manganese		130	ug/L	1.1	5.0
RW	2/26/2025	03/09/2025 09:00	EPA 300.1	Dichloroacetate (S)	Dichloroacetate (S)		103	%		
RW	2/26/2025	03/11/2025 13:24	EPA 200.7	Strontium	Strontium		32.4	ug/L	2.1	10.0
RW	2/26/2025	03/11/2025 13:24	EPA 200.7	Chromium	Chromium	<	5.0	ug/L	1.7	5.0
RW	2/26/2025	03/09/2025 09:00	EPA 300.1	Chlorate	Chlorate	<	2.0	ug/L	1.5	2.0
RW	2/26/2025	03/04/2025 12:26	EPA 7196A	Chromium, Hexavalent	Chromium, Hexavalent	<	0.010	mg/L	0.0037	0.010
CFE	3/11/2025	03/20/2025 18:16	533	Perfluorooctanesulfonic acid	PFOS		11	ng/L	0.47	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Perfluorooctanoic acid	PFOA		6.6	ng/L	0.68	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Perfluorobutanoic acid	PFBA		5.6	ng/L	0.47	1.8
CFE	3/11/2025	03/20/2025 18:16	533	6:2 Fluorotelomersulfonic acid	6:2FTS A		3.1	ng/L	1.7	1.8
CFE	3/11/2025	03/20/2025 18:16	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.67	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Perfluorobutanesulfonic acid	PFBS	J	1.5	ng/L	0.45	1.8
CFE	3/11/2025	3/19/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.6	mg/L	0.50	1.0
CFE	3/11/2025	03/20/2025 18:16	533	Perfluoroheptanoic acid	PFHpA	J	1.4	ng/L	0.55	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Perfluorohexanesulfonic acid	PFHxS	J	1.2	ng/L	0.41	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Perfluorohexanoic acid	PFHxA	J	0.96	ng/L	0.46	1.8
CFE	3/11/2025	03/20/2025 18:16	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.31	1.8
CFE	3/11/2025	03/20/2025 18:16	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.31	1.8
CFE	3/11/2025	03/20/2025 18:16	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.35	1.8
CFE	3/11/2025	03/20/2025 18:16	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.46	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.86	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.54	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.53	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.49	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.50	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.58	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.70	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.58	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.66	1.8

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
CFE	3/11/2025	03/20/2025 18:16	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.48	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.40	1.8
CFE	3/11/2025	03/20/2025 18:16	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.64	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluorobutanoic acid	PFBA		3.3	ng/L	0.47	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluorooctanoic acid	PFOA		2.7	ng/L	0.69	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluorooctanesulfonic acid	PFOS		2.4	ng/L	0.47	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluoroheptanoic acid	PFHpA	J	0.85	ng/L	0.55	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluorobutanesulfonic acid	PFBS	J	0.71	ng/L	0.46	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluorohexanesulfonic acid	PFHxS	J	0.43	ng/L	0.42	1.8
GAC	3/11/2025	03/20/2025 18:23	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.68	1.8
GAC	3/11/2025	03/20/2025 18:23	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.32	1.8
GAC	3/11/2025	03/20/2025 18:23	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.31	1.8
GAC	3/11/2025	03/20/2025 18:23	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.7	1.8
GAC	3/11/2025	03/20/2025 18:23	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.35	1.8
GAC	3/11/2025	03/20/2025 18:23	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.47	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.86	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.55	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.54	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.49	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.50	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.58	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.70	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.58	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.46	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.67	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.49	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.40	1.8
GAC	3/11/2025	03/20/2025 18:23	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.65	1.8
GAC	3/11/2025	3/19/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.1	mg/L	0.50	1.0
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluorobutanoic acid	PFBA		2.3	ng/L	0.47	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.68	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.32	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.31	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.7	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.35	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.47	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.87	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.55	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.54	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.50	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.51	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.46	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.59	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.71	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.59	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.56	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.42	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.47	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.67	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.47	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluorooctanoic acid	PFOA	<	1.8	ng/L	0.69	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.49	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.40	1.8
IX-1	3/11/2025	03/20/2025 18:30	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.65	1.8
IX-1	3/11/2025	3/19/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	J	0.81	mg/L	0.50	1.0
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluorobutanoic acid	PFBA		5.6	ng/L	0.46	1.8
IX-2	3/11/2025	3/19/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.4	mg/L	0.50	1.0
IX-2	3/11/2025	03/20/2025 18:44	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.67	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.31	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.30	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.6	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.35	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.46	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.85	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.54	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.53	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.49	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.45	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.57	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.69	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.57	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.54	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.41	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.46	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.66	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.46	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluorooctanoic acid	PFOA	<	1.8	ng/L	0.67	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.48	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.39	1.8
IX-2	3/11/2025	03/20/2025 18:44	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.64	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluorobutanoic acid	PFBA		2.6	ng/L	0.47	1.8
NS	3/11/2025	3/19/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.5	mg/L	0.50	1.0

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
NS	3/11/2025	03/20/2025 18:37	533	Perfluoroheptanoic acid	PFHpA	J	1.1	ng/L	0.55	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluorobutanesulfonic acid	PFBS	J	0.64	ng/L	0.46	1.8
NS	3/11/2025	03/20/2025 18:37	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.67	1.8
NS	3/11/2025	03/20/2025 18:37	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.31	1.8
NS	3/11/2025	03/20/2025 18:37	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.31	1.8
NS	3/11/2025	03/20/2025 18:37	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.7	1.8
NS	3/11/2025	03/20/2025 18:37	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.35	1.8
NS	3/11/2025	03/20/2025 18:37	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.47	1.8
NS	3/11/2025	03/20/2025 18:37	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.86	1.8
NS	3/11/2025	03/20/2025 18:37	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.54	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.53	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.49	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.50	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.58	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.70	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.58	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.42	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.46	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.66	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.47	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluorooctanoic acid	PFOA		1.8	ng/L	0.68	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.48	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.40	1.8
NS	3/11/2025	03/20/2025 18:37	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.65	1.8
RW	3/11/2025	03/20/2025 18:08	533	Perfluorooctanesulfonic acid	PFOS		20	ng/L	0.48	1.9
RW	3/11/2025	03/20/2025 18:08	533	6:2 Fluorotelomersulfonic acid	6:2FTS A		7.9	ng/L	1.7	1.9
RW	3/11/2025	03/20/2025 18:08	533	Perfluorooctanoic acid	PFOA		7.6	ng/L	0.70	1.9
RW	3/11/2025	3/18/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		6.4	mg/L	0.50	1.0
RW	3/11/2025	03/20/2025 18:08	533	Perfluorobutanoic acid	PFBA		4.7	ng/L	0.48	1.9
RW	3/11/2025	03/20/2025 18:08	533	Perfluorohexanesulfonic acid	PFHxS		2.0	ng/L	0.43	1.9
RW	3/11/2025	03/20/2025 18:08	533	Perfluorobutanesulfonic acid	PFBS	J	1.7	ng/L	0.47	1.9
RW	3/11/2025	03/20/2025 18:08	533	Perfluoroheptanoic acid	PFHpA	J	1.1	ng/L	0.57	1.9
RW	3/11/2025	03/20/2025 18:08	533	11Cl-PF3OUdS	F53B Major	<	1.9	ng/L	0.69	1.9
RW	3/11/2025	03/20/2025 18:08	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.9	ng/L	0.32	1.9
RW	3/11/2025	03/20/2025 18:08	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.9	ng/L	0.32	1.9
RW	3/11/2025	03/20/2025 18:08	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.9	ng/L	0.36	1.9
RW	3/11/2025	03/20/2025 18:08	533	9Cl-PF3ONS	F53B Minor	<	1.9	ng/L	0.48	1.9
RW	3/11/2025	03/20/2025 18:08	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.9	ng/L	0.88	1.9
RW	3/11/2025	03/20/2025 18:08	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.9	ng/L	0.56	1.9
RW	3/11/2025	03/20/2025 18:08	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.9	ng/L	0.55	1.9
RW	3/11/2025	03/20/2025 18:08	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.9	ng/L	0.50	1.9
RW	3/11/2025	03/20/2025 18:08	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.9	ng/L	0.51	1.9
RW	3/11/2025	03/20/2025 18:08	533	Perfluorodecanoic acid	PFDA	<	1.9	ng/L	0.60	1.9
RW	3/11/2025	03/20/2025 18:08	533	Perfluorododecanoic acid	PFDoA	<	1.9	ng/L	0.72	1.9
RW	3/11/2025	03/20/2025 18:08	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.9	ng/L	0.60	1.9
RW	3/11/2025	03/20/2025 18:08	533	Perfluorohexanoic acid	PFHxA	<	1.9	ng/L	0.47	1.9
RW	3/11/2025	03/20/2025 18:08	533	Perfluorononanoic acid	PFNA	<	1.9	ng/L	0.68	1.9
RW	3/11/2025	03/20/2025 18:08	533	Perfluoropentanesulfonic acid	PFPeS	<	1.9	ng/L	0.50	1.9
RW	3/11/2025	03/20/2025 18:08	533	Perfluoropentanoic acid	PFPeA	<	1.9	ng/L	0.41	1.9
RW	3/11/2025	03/20/2025 18:08	533	Perfluoroundecanoic acid	PFUnA	<	1.9	ng/L	0.66	1.9
CFE	4/8/2025	04/16/2025 16:54	533	Perfluorooctanesulfonic acid	PFOS		12	ng/L	0.44	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Perfluorooctanoic acid	PFOA		8.7	ng/L	0.65	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Perfluorobutanesulfonic acid	PFBS		2.1	ng/L	0.43	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Perfluoroheptanoic acid	PFHpA		1.9	ng/L	0.52	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Perfluorohexanesulfonic acid	PFHxS		1.8	ng/L	0.39	1.7
CFE	4/8/2025	4/11/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.5	mg/L	0.50	1.0
CFE	4/8/2025	04/16/2025 16:54	533	Perfluoropentanoic acid	PFPeA	J	1.3	ng/L	0.38	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Perfluorohexanoic acid	PFHxA	J	1	ng/L	0.44	1.7
CFE	4/8/2025	4/16/2025	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.64	1.7
CFE	4/8/2025	4/16/2025	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.3	1.7
CFE	4/8/2025	4/16/2025	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.29	1.7
CFE	4/8/2025	4/16/2025	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.6	1.7
CFE	4/8/2025	4/16/2025	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.33	1.7
CFE	4/8/2025	4/16/2025	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.44	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.82	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.52	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.51	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.47	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.48	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Perfluorobutanoic acid	PFBA	<	1.7	ng/L	0.44	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.55	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.66	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.55	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.63	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.46	1.7
CFE	4/8/2025	04/16/2025 16:54	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.61	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluorooctanoic acid	PFOA		2.5	ng/L	0.64	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluorooctanesulfonic acid	PFOS	J	1.3	ng/L	0.44	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluorobutanesulfonic acid	PFBS	J	1	ng/L	0.43	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluorobutanoic acid	PFBA	J	0.86	ng/L	0.44	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluoroheptanoic acid	PFHpA	J	0.72	ng/L	0.52	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluorohexanoic acid	PFHxA	J	0.6	ng/L	0.43	1.7
GAC	4/8/2025	04/16/2025 17:08	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.63	1.7

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
GAC	4/8/2025	04/16/2025 17:08	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.29	1.7
GAC	4/8/2025	04/16/2025 17:08	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.29	1.7
GAC	4/8/2025	04/16/2025 17:08	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.6	1.7
GAC	4/8/2025	04/16/2025 17:08	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.33	1.7
GAC	4/8/2025	04/16/2025 17:08	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.44	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.8	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.51	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.5	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.46	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.47	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.54	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.65	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.54	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.39	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.62	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.45	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.37	1.7
GAC	4/8/2025	04/16/2025 17:08	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.6	1.7
GAC	4/8/2025	4/11/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	J	0.93	mg/L	0.50	1.0
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluoropentanoic acid	PFPeA	J	0.67	ng/L	0.38	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluorobutanoic acid	PFBA	J	0.51	ng/L	0.45	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.65	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.3	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.3	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.6	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.34	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.45	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.83	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.52	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.52	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.47	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.48	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.44	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.56	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.67	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.56	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.53	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.4	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.45	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.64	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.45	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluorooctanoic acid	PFOA	<	1.8	ng/L	0.66	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.47	1.8
IX-1	4/8/2025	04/16/2025 17:15	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.62	1.8
IX-1	4/8/2025	4/11/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	J	0.68	mg/L	0.50	1.0
IX-2	4/8/2025	4/11/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.3	mg/L	0.50	1.0
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluorobutanoic acid	PFBA	J	1.3	ng/L	0.45	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluoropentanoic acid	PFPeA	J	1.3	ng/L	0.38	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.64	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.3	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.29	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.6	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.33	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.44	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.82	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.52	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.51	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.47	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.48	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.43	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.55	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.67	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.55	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluoroheptanoic acid	PFHpA	<	1.7	ng/L	0.52	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.4	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.44	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.63	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluorooctanesulfonic acid	PFOS	<	1.7	ng/L	0.45	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluorooctanoic acid	PFOA	<	1.7	ng/L	0.65	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.46	1.7
IX-2	4/8/2025	04/16/2025 17:30	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.62	1.7
NS	4/8/2025	4/11/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.4	mg/L	0.50	1.0
NS	4/8/2025	04/16/2025 17:22	533	Perfluorobutanoic acid	PFBA	J	0.75	ng/L	0.46	1.8
NS	4/8/2025	04/16/2025 17:22	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.66	1.8
NS	4/8/2025	04/16/2025 17:22	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.31	1.8
NS	4/8/2025	04/16/2025 17:22	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.3	1.8
NS	4/8/2025	04/16/2025 17:22	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.6	1.8
NS	4/8/2025	04/16/2025 17:22	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.34	1.8
NS	4/8/2025	04/16/2025 17:22	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.45	1.8
NS	4/8/2025	04/16/2025 17:22	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.84	1.8
NS	4/8/2025	04/16/2025 17:22	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.53	1.8
NS	4/8/2025	04/16/2025 17:22	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.52	1.8
NS	4/8/2025	04/16/2025 17:22	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.48	1.8

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
NS	4/8/2025	04/16/2025 17:22	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
NS	4/8/2025	04/16/2025 17:22	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.44	1.8
NS	4/8/2025	04/16/2025 17:22	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.57	1.8
NS	4/8/2025	04/16/2025 17:22	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.68	1.8
NS	4/8/2025	04/16/2025 17:22	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.57	1.8
NS	4/8/2025	04/16/2025 17:22	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.54	1.8
NS	4/8/2025	04/16/2025 17:22	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.4	1.8
NS	4/8/2025	04/16/2025 17:22	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.45	1.8
NS	4/8/2025	04/16/2025 17:22	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.65	1.8
NS	4/8/2025	04/16/2025 17:22	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.46	1.8
NS	4/8/2025	04/16/2025 17:22	533	Perfluorooctanoic acid	PFOA	<	1.8	ng/L	0.67	1.8
NS	4/8/2025	04/16/2025 17:22	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.47	1.8
NS	4/8/2025	04/16/2025 17:22	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.39	1.8
NS	4/8/2025	04/16/2025 17:22	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.63	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluorooctanesulfonic acid	PFOS		22	ng/L	0.46	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluorooctanoic acid	PFOA		12	ng/L	0.67	1.8
RW	4/8/2025	4/11/2025	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		5.7	mg/L	0.50	1.0
RW	4/8/2025	04/16/2025 16:46	533	Perfluorohexanesulfonic acid	PFHxS		3.1	ng/L	0.41	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluoroheptanoic acid	PFHpA		2.4	ng/L	0.54	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluorobutanesulfonic acid	PFBS		2.3	ng/L	0.45	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluorohexanoic acid	PFHxA	J	1.2	ng/L	0.45	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluoropentanesulfonic acid	PFPeS	J	0.91	ng/L	0.47	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluoroheptanesulfonic acid	PFHpS	J	0.61	ng/L	0.57	1.8
RW	4/8/2025	04/16/2025 16:46	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.66	1.8
RW	4/8/2025	04/16/2025 16:46	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.31	1.8
RW	4/8/2025	04/16/2025 16:46	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.3	1.8
RW	4/8/2025	04/16/2025 16:46	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.6	1.8
RW	4/8/2025	04/16/2025 16:46	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.34	1.8
RW	4/8/2025	04/16/2025 16:46	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.46	1.8
RW	4/8/2025	04/16/2025 16:46	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.84	1.8
RW	4/8/2025	04/16/2025 16:46	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.53	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.52	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.48	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluorobutanoic acid	PFBA	<	1.8	ng/L	0.46	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.57	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.68	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.65	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.39	1.8
RW	4/8/2025	04/16/2025 16:46	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.63	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluorooctanesulfonic acid	PFOS		12	ng/L	0.46	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluorooctanoic acid	PFOA		7.0	ng/L	0.67	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluorohexanesulfonic acid	PFHxS		1.9	ng/L	0.41	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluorohexanoic acid	PFHxA	J	0.92	ng/L	0.45	1.8
CFE	5/6/2025	05/23/2025 19:10	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.66	1.8
CFE	5/6/2025	05/23/2025 19:10	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.43	1.8
CFE	5/6/2025	05/23/2025 19:10	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.32	1.8
CFE	5/6/2025	05/23/2025 19:10	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.6	1.8
CFE	5/6/2025	05/23/2025 19:10	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.34	1.8
CFE	5/6/2025	05/23/2025 19:10	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.46	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.85	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.53	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.53	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.48	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluorobutanesulfonic acid	PFBS		1.8	ng/L	0.45	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluorobutanoic acid	PFBA	<	1.8	ng/L	0.46	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.57	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.69	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.57	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluoroheptanoic acid	PFHpA		1.8	ng/L	0.54	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.65	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.48	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.39	1.8
CFE	5/6/2025	05/23/2025 19:10	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.64	1.8
CFE	5/6/2025	05/08/2025 22:41	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.5	mg/L	0.50	1.0
GAC	5/6/2025	05/23/2025 19:18	533	Perfluorooctanoic acid	PFOA		1.9	ng/L	0.66	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Perfluorobutanesulfonic acid	PFBS	J	0.73	ng/L	0.44	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Perfluorooctanesulfonic acid	PFOS	J	0.64	ng/L	0.46	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Perfluoroheptanoic acid	PFHpA	J	0.59	ng/L	0.54	1.8
GAC	5/6/2025	05/23/2025 19:18	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.65	1.8
GAC	5/6/2025	05/23/2025 19:18	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.43	1.8
GAC	5/6/2025	05/23/2025 19:18	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.32	1.8
GAC	5/6/2025	05/23/2025 19:18	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.6	1.8
GAC	5/6/2025	05/23/2025 19:18	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.34	1.8
GAC	5/6/2025	05/23/2025 19:18	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.45	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.84	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.53	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.52	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.48	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Perfluorobutanoic acid	PFBA	<	1.8	ng/L	0.45	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.56	1.8

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
GAC	5/6/2025	05/23/2025 19:18	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.68	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.56	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.40	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.45	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.64	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.47	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.39	1.8
GAC	5/6/2025	05/23/2025 19:18	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.63	1.8
GAC	5/6/2025	05/08/2025 22:58	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	J	0.97	mg/L	0.50	1.0
IX-1	5/6/2025	05/23/2025 19:25	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.67	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.44	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.33	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.7	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.35	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.47	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.86	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.54	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.53	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.49	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.50	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.45	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluorobutanoic acid	PFBA	<	1.8	ng/L	0.47	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.58	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.70	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.58	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.55	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.41	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.46	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.66	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.47	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluorooctanoic acid	PFOA	<	1.8	ng/L	0.68	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.48	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.40	1.8
IX-1	5/6/2025	05/23/2025 19:25	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.64	1.8
IX-1	5/6/2025	05/08/2025 23:47	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	J	0.77	mg/L	0.50	1.0
IX-2	5/6/2025	05/23/2025 19:39	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.66	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.43	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.32	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.6	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.34	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.46	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.84	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.53	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.53	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.48	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.45	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluorobutanoic acid	PFBA	<	1.8	ng/L	0.46	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.57	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.69	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.57	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.54	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.41	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.45	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.65	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.46	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluorooctanoic acid	PFOA	<	1.8	ng/L	0.67	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.48	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.39	1.8
IX-2	5/6/2025	05/23/2025 19:39	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.63	1.8
IX-2	5/6/2025	05/09/2025 00:20	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.3	mg/L	0.50	1.0
NS	5/6/2025	05/23/2025 19:32	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.66	1.8
NS	5/6/2025	05/23/2025 19:32	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.43	1.8
NS	5/6/2025	05/23/2025 19:32	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.32	1.8
NS	5/6/2025	05/23/2025 19:32	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.6	1.8
NS	5/6/2025	05/23/2025 19:32	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.34	1.8
NS	5/6/2025	05/23/2025 19:32	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.46	1.8
NS	5/6/2025	05/23/2025 19:32	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.85	1.8
NS	5/6/2025	05/23/2025 19:32	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.53	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.53	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.48	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.45	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluorobutanoic acid	PFBA	<	1.8	ng/L	0.46	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.57	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.69	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.57	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.54	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.41	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.45	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.65	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.46	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluorooctanoic acid	PFOA	<	1.8	ng/L	0.67	1.8

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
NS	5/6/2025	05/23/2025 19:32	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.48	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.39	1.8
NS	5/6/2025	05/23/2025 19:32	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.64	1.8
NS	5/6/2025	05/09/2025 00:02	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.4	mg/L	0.50	1.0
RW	5/6/2025	05/23/2025 19:03	533	Perfluorooctanesulfonic acid	PFOS		27	ng/L	0.47	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluorooctanoic acid	PFOA		12	ng/L	0.68	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluorohexanesulfonic acid	PFHxS		3.0	ng/L	0.41	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluorobutanesulfonic acid	PFBS		2.8	ng/L	0.45	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluoropentanesulfonic acid	PFPeS	J	1.2	ng/L	0.48	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluoroheptanesulfonic acid	PFHpS	J	0.80	ng/L	0.58	1.8
RW	5/6/2025	05/23/2025 19:03	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.67	1.8
RW	5/6/2025	05/23/2025 19:03	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.44	1.8
RW	5/6/2025	05/23/2025 19:03	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.32	1.8
RW	5/6/2025	05/23/2025 19:03	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.7	1.8
RW	5/6/2025	05/23/2025 19:03	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.35	1.8
RW	5/6/2025	05/23/2025 19:03	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.46	1.8
RW	5/6/2025	05/23/2025 19:03	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.86	1.8
RW	5/6/2025	05/23/2025 19:03	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.54	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.53	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.49	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.50	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluorobutanoic acid	PFBA	<	1.8	ng/L	0.47	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.58	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.70	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.46	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.66	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.40	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.64	1.8
RW	5/6/2025	05/23/2025 19:03	533	Perfluoroheptanoic acid	PFHpA		1.8	ng/L	0.55	1.8
RW	5/6/2025	05/08/2025 22:23	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		5.6	mg/L	0.50	1.0
CFE	6/3/2025	06/13/2025 13:10	533	Perfluorooctanesulfonic acid	PFOS		11	ng/L	0.46	1.8
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluorooctanesulfonic acid	PFOS		10	ng/L	0.36	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluorobutanoic acid	PFBA		8.6	ng/L	0.72	5.8
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluorooctanoic acid	PFOA		7.5	ng/L	0.38	1.4
CFE	6/3/2025	06/13/2025 13:10	533	Perfluorobutanoic acid	PFBA		6.9	ng/L	0.46	1.8
CFE	6/3/2025	06/13/2025 13:10	533	Perfluorooctanoic acid	PFOA		6.3	ng/L	0.67	1.8
CFE	6/3/2025	06/18/2025 19:22	1633	2H,2H,3H,3H-Perfluorooctanoic acid	FPePA (5:3FTCA)	<	36	ng/L	6.3	36
CFE	6/3/2025	06/18/2025 19:22	1633	3-Perfluoroheptyl propanoic acid	FHpPA (7:3FTCA)	<	36	ng/L	8.1	36
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluorobutanesulfonic acid	PFBS		1.7	ng/L	0.31	1.4
CFE	6/3/2025	06/13/2025 13:10	533	Perfluorobutanesulfonic acid	PFBS	J	1.6	ng/L	0.45	1.8
CFE	6/3/2025	06/13/2025 13:10	533	Perfluorohexanesulfonic acid	PFHxS	J	1.6	ng/L	0.41	1.8
CFE	6/3/2025	06/13/2025 13:10	533	Perfluoroheptanoic acid	PFHpA	J	1.5	ng/L	0.54	1.8
CFE	6/3/2025	06/18/2025 19:22	1633	N-ethylperfluorooctanesulfonamidoethanol	NEtFOSE	<	14	ng/L	1.5	14
CFE	6/3/2025	06/18/2025 19:22	1633	N-methylperfluorooctanesulfonamidoethanol	NMeFOSE	<	14	ng/L	1.2	14
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluoroheptanoic acid	PFHpA	J	1.3	ng/L	0.25	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluorohexanoic acid	PFHxA	J	0.96	ng/L	0.25	1.4
CFE	6/3/2025	06/13/2025 13:10	533	Perfluorohexanoic acid	PFHxA	J	0.85	ng/L	0.45	1.8
CFE	6/3/2025	06/18/2025 19:22	1633	3-Perfluoropropyl propanoic acid	FPrPA (3:3FTCA)	<	7.2	ng/L	2.0	7.2
CFE	6/3/2025	06/18/2025 19:22	1633	11Cl-PF3OUdS	F53B Major	<	5.8	ng/L	1.5	5.8
CFE	6/3/2025	06/18/2025 19:22	1633	1H,1H,2H,2H-Perfluorodecane sulfonic acid	8:2FTS	<	5.8	ng/L	3.0	5.8
CFE	6/3/2025	06/18/2025 19:22	1633	1H,1H,2H,2H-Perfluorohexane sulfonic acid	4:2FTS	<	5.8	ng/L	1.2	5.8
CFE	6/3/2025	06/18/2025 19:22	1633	1H,1H,2H,2H-Perfluorooctane sulfonic acid	6:2FTS	<	5.8	ng/L	2.7	5.8
CFE	6/3/2025	06/18/2025 19:22	1633	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	5.8	ng/L	0.76	5.8
CFE	6/3/2025	06/18/2025 19:22	1633	9Cl-PF3ONS	F53B Minor	<	5.8	ng/L	0.84	5.8
CFE	6/3/2025	06/18/2025 19:22	1633	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	5.8	ng/L	1.4	5.8
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluoropentanesulfonic acid	PFPeS	J	0.45	ng/L	0.42	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	2.9	ng/L	1.9	2.9
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	2.9	ng/L	0.51	2.9
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluoro-3-methoxypropanoic acid	PFMPA	<	2.9	ng/L	0.41	2.9
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluoro-4-methoxybutanoic acid	PFMBA	<	2.9	ng/L	0.39	2.9
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluoropentanoic acid	PFPeA	<	2.9	ng/L	0.40	2.9
CFE	6/3/2025	06/13/2025 13:10	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.66	1.8
CFE	6/3/2025	06/13/2025 13:10	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.43	1.8
CFE	6/3/2025	06/13/2025 13:10	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.32	1.8
CFE	6/3/2025	06/13/2025 13:10	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.6	1.8
CFE	6/3/2025	06/13/2025 13:10	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.34	1.8
CFE	6/3/2025	06/13/2025 13:10	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.46	1.8
CFE	6/3/2025	06/13/2025 13:10	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.85	1.8
CFE	6/3/2025	06/13/2025 13:10	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.53	1.8
CFE	6/3/2025	06/13/2025 13:10	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.53	1.8
CFE	6/3/2025	06/13/2025 13:10	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.48	1.8
CFE	6/3/2025	06/13/2025 13:10	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
CFE	6/3/2025	06/13/2025 13:10	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.57	1.8
CFE	6/3/2025	06/13/2025 13:10	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.69	1.8
CFE	6/3/2025	06/13/2025 13:10	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.57	1.8
CFE	6/3/2025	06/13/2025 13:10	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.65	1.8
CFE	6/3/2025	06/13/2025 13:10	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.48	1.8
CFE	6/3/2025	06/13/2025 13:10	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.39	1.8
CFE	6/3/2025	06/13/2025 13:10	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.64	1.8
CFE	6/3/2025	06/18/2025 19:22	1633	N-EtFOSAA	NEtFOSAA	<	1.4	ng/L	0.58	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	N-ethyl perfluorooctanesulfonamide	NEtFOSA	<	1.4	ng/L	0.30	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	N-MeFOSAA	NMeFOSAA	<	1.4	ng/L	1.4	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	N-methyl perfluoroocatnesulfonamide	NMeFOSA	<	1.4	ng/L	0.25	1.4

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluorodecanesulfonic acid	PFDS	<	1.4	ng/L	0.46	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluorodecanoic acid	PFDA	<	1.4	ng/L	0.35	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluorododecanesulfonic acid	PFDoS	<	1.4	ng/L	0.65	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluorododecanoic acid	PFDoA	<	1.4	ng/L	0.31	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluoroheptanesulfonic acid	PFHpS	<	1.4	ng/L	0.76	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluorohexanesulfonic acid	PFHxS	J	1.4	ng/L	0.56	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluorononanesulfonic acid	PFNS	<	1.4	ng/L	0.42	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluorononanoic acid	PFNA	<	1.4	ng/L	0.59	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluorooctanesulfonamide	PFOSA	<	1.4	ng/L	0.50	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluorotetradecanoic acid	PFTeDA	<	1.4	ng/L	0.14	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluorotridecanoic acid	PFTrDA	<	1.4	ng/L	0.43	1.4
CFE	6/3/2025	06/18/2025 19:22	1633	Perfluoroundecanoic acid	PFUnA	<	1.4	ng/L	0.46	1.4
CFE	6/3/2025	06/14/2025 02:56	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.6	mg/L	0.50	1.0
GAC	6/3/2025	06/13/2025 13:17	533	Perfluorobutanoic acid	PFBA		4.5	ng/L	0.47	1.8
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluorobutanoic acid	PFBA	J	3.8	ng/L	0.75	6.0
GAC	6/3/2025	06/18/2025 19:31	1633	2H,2H,3H,3H-Perfluorooctanoic acid	FPePA (5:3FTCA)	<	37	ng/L	6.5	37
GAC	6/3/2025	06/18/2025 19:31	1633	3-Perfluoroheptyl propanoic acid	FHpPA (7:3FTCA)	<	37	ng/L	8.4	37
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluorooctanoic acid	PFOA		2.5	ng/L	0.39	1.5
GAC	6/3/2025	06/13/2025 13:17	533	Perfluorooctanoic acid	PFOA		2.2	ng/L	0.69	1.8
GAC	6/3/2025	06/18/2025 19:31	1633	N-ethylperfluorooctanesulfonamidoethanol	NEtFOSE	<	15	ng/L	1.5	15
GAC	6/3/2025	06/18/2025 19:31	1633	N-methylperfluorooctanesulfonamidoethanol	NMeFOSE	<	15	ng/L	1.2	15
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluorooctanesulfonic acid	PFOS	J	1.2	ng/L	0.37	1.5
GAC	6/3/2025	06/13/2025 13:17	533	Perfluorooctanesulfonic acid	PFOS	J	1.1	ng/L	0.47	1.8
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluorobutanesulfonic acid	PFBS	J	1.1	ng/L	0.32	1.5
GAC	6/3/2025	06/13/2025 13:17	533	Perfluorobutanesulfonic acid	PFBS	J	0.80	ng/L	0.46	1.8
GAC	6/3/2025	06/18/2025 19:31	1633	3-Perfluoropropyl propanoic acid	FPrPA (3:3FTCA)	<	7.5	ng/L	2.1	7.5
GAC	6/3/2025	06/13/2025 13:17	533	Perfluoroheptanoic acid	PFHpA	J	0.74	ng/L	0.55	1.8
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluorohexanoic acid	PFHxA	J	0.63	ng/L	0.26	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	11Cl-PF3OUdS	F53B Major	<	6.0	ng/L	1.6	6.0
GAC	6/3/2025	06/18/2025 19:31	1633	1H,1H,2H,2H-Perfluorodecane sulfonic acid	8:2FTS	<	6.0	ng/L	3.1	6.0
GAC	6/3/2025	06/18/2025 19:31	1633	1H,1H,2H,2H-Perfluorohexane sulfonic acid	4:2FTS	<	6.0	ng/L	1.2	6.0
GAC	6/3/2025	06/18/2025 19:31	1633	1H,1H,2H,2H-Perfluorooctane sulfonic acid	6:2FTS	<	6.0	ng/L	2.8	6.0
GAC	6/3/2025	06/18/2025 19:31	1633	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	6.0	ng/L	0.79	6.0
GAC	6/3/2025	06/18/2025 19:31	1633	9Cl-PF3ONS	F53B Minor	<	6.0	ng/L	0.87	6.0
GAC	6/3/2025	06/18/2025 19:31	1633	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	6.0	ng/L	1.4	6.0
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluoroheptanoic acid	PFHpA	J	0.59	ng/L	0.26	1.5
GAC	6/3/2025	06/13/2025 13:17	533	Perfluorohexanoic acid	PFHxA	J	0.55	ng/L	0.46	1.8
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluoropentanoic acid	PFPeA	J	0.48	ng/L	0.42	3.0
GAC	6/3/2025	06/13/2025 13:17	533	Perfluorohexanesulfonic acid	PFHxS	J	0.43	ng/L	0.42	1.8
GAC	6/3/2025	06/18/2025 19:31	1633	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	3.0	ng/L	2.0	3.0
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	3.0	ng/L	0.53	3.0
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluoro-3-methoxypropanoic acid	PFMPA	<	3.0	ng/L	0.43	3.0
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluoro-4-methoxybutanoic acid	PFMBA	<	3.0	ng/L	0.40	3.0
GAC	6/3/2025	06/13/2025 13:17	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.68	1.8
GAC	6/3/2025	06/13/2025 13:17	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.44	1.8
GAC	6/3/2025	06/13/2025 13:17	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.33	1.8
GAC	6/3/2025	06/13/2025 13:17	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.7	1.8
GAC	6/3/2025	06/13/2025 13:17	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.35	1.8
GAC	6/3/2025	06/13/2025 13:17	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.47	1.8
GAC	6/3/2025	06/13/2025 13:17	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.86	1.8
GAC	6/3/2025	06/13/2025 13:17	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.54	1.8
GAC	6/3/2025	06/13/2025 13:17	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.54	1.8
GAC	6/3/2025	06/13/2025 13:17	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.49	1.8
GAC	6/3/2025	06/13/2025 13:17	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.50	1.8
GAC	6/3/2025	06/13/2025 13:17	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.58	1.8
GAC	6/3/2025	06/13/2025 13:17	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.70	1.8
GAC	6/3/2025	06/13/2025 13:17	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.58	1.8
GAC	6/3/2025	06/13/2025 13:17	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.67	1.8
GAC	6/3/2025	06/13/2025 13:17	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.49	1.8
GAC	6/3/2025	06/13/2025 13:17	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.40	1.8
GAC	6/3/2025	06/13/2025 13:17	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.65	1.8
GAC	6/3/2025	06/18/2025 19:31	1633	N-EtFOSAA	NEtFOSAA	<	1.5	ng/L	0.60	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	N-ethyl perfluorooctanesulfonamide	NEtFOSA	<	1.5	ng/L	0.31	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	N-MeFOSAA	NMeFOSAA	<	1.5	ng/L	1.4	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	N-methyl perfluoroocatnesulfonamide	NMeFOSA	<	1.5	ng/L	0.26	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluorodecanesulfonic acid	PFDS	<	1.5	ng/L	0.47	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluorodecanoic acid	PFDA	<	1.5	ng/L	0.36	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluorododecanesulfonic acid	PFDoS	<	1.5	ng/L	0.67	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluorododecanoic acid	PFDoA	<	1.5	ng/L	0.33	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluoroheptanesulfonic acid	PFHpS	<	1.5	ng/L	0.79	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluorohexanesulfonic acid	PFHxS	<	1.5	ng/L	0.58	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluorononanesulfonic acid	PFNS	<	1.5	ng/L	0.43	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluorononanoic acid	PFNA	<	1.5	ng/L	0.61	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluorooctanesulfonamide	PFOSA	<	1.5	ng/L	0.52	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluoropentanesulfonic acid	PFPeS	<	1.5	ng/L	0.44	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluorotetradecanoic acid	PFTeDA	<	1.5	ng/L	0.14	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluorotridecanoic acid	PFTrDA	<	1.5	ng/L	0.45	1.5
GAC	6/3/2025	06/18/2025 19:31	1633	Perfluoroundecanoic acid	PFUnA	<	1.5	ng/L	0.48	1.5
GAC	6/3/2025	06/14/2025 03:59	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.1	mg/L	0.50	1.0
IX-1	6/3/2025	06/18/2025 19:41	1633	2H,2H,3H,3H-Perfluorooctanoic acid	FPePA (5:3FTCA)	<	37	ng/L	6.5	37
IX-1	6/3/2025	06/18/2025 19:41	1633	3-Perfluoroheptyl propanoic acid	FHpPA (7:3FTCA)	<	37	ng/L	8.3	37
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluorobutanoic acid	PFBA		2.7	ng/L	0.44	1.7
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluorobutanoic acid	PFBA	J	2.5	ng/L	0.74	5.9

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
IX-1	6/3/2025	06/18/2025 19:41	1633	N-ethylperfluorooctanesulfonamidoethanol	NEtFOSE	<	15	ng/L	1.5	15
IX-1	6/3/2025	06/18/2025 19:41	1633	N-methylperfluorooctanesulfonamidoethanol	NMeFOSE	<	15	ng/L	1.2	15
IX-1	6/3/2025	06/18/2025 19:41	1633	3-Perfluoropropyl propanoic acid	FPrPA (3:3FTCA)	<	7.4	ng/L	2.1	7.4
IX-1	6/3/2025	06/18/2025 19:41	1633	11Cl-PF3OUdS	F53B Major	<	5.9	ng/L	1.6	5.9
IX-1	6/3/2025	06/18/2025 19:41	1633	1H,1H,2H,2H-Perfluorodecane sulfonic acid	8:2FTS	<	5.9	ng/L	3.1	5.9
IX-1	6/3/2025	06/18/2025 19:41	1633	1H,1H,2H,2H-Perfluorohexane sulfonic acid	4:2FTS	<	5.9	ng/L	1.2	5.9
IX-1	6/3/2025	06/18/2025 19:41	1633	1H,1H,2H,2H-Perfluorooctane sulfonic acid	6:2FTS	<	5.9	ng/L	2.8	5.9
IX-1	6/3/2025	06/18/2025 19:41	1633	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	5.9	ng/L	0.79	5.9
IX-1	6/3/2025	06/18/2025 19:41	1633	9Cl-PF3ONS	F53B Minor	<	5.9	ng/L	0.87	5.9
IX-1	6/3/2025	06/18/2025 19:41	1633	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	5.9	ng/L	1.4	5.9
IX-1	6/3/2025	06/18/2025 19:41	1633	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	3.0	ng/L	2.0	3.0
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	3.0	ng/L	0.53	3.0
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluoro-3-methoxypropanoic acid	PFMPA	<	3.0	ng/L	0.43	3.0
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluoro-4-methoxybutanoic acid	PFMBA	<	3.0	ng/L	0.40	3.0
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluoropentanoic acid	PFPeA	<	3.0	ng/L	0.41	3.0
IX-1	6/3/2025	06/13/2025 13:24	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.64	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.41	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.31	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.6	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.33	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.44	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.81	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.51	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.51	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.47	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.47	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.43	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.55	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.66	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.55	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluoroheptanoic acid	PFHpA	<	1.7	ng/L	0.52	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.39	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.44	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.63	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluorooctanesulfonic acid	PFOS	<	1.7	ng/L	0.44	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluorooctanoic acid	PFOA	<	1.7	ng/L	0.65	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.46	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.38	1.7
IX-1	6/3/2025	06/13/2025 13:24	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.61	1.7
IX-1	6/3/2025	06/18/2025 19:41	1633	N-EtFOSAA	NEtFOSAA	<	1.5	ng/L	0.60	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	N-ethyl perfluorooctanesulfonamide	NEtFOSA	<	1.5	ng/L	0.31	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	N-MeFOSAA	NMeFOSAA	<	1.5	ng/L	1.4	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	N-methyl perfluoroocatnesulfonamide	NMeFOSA	<	1.5	ng/L	0.25	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluorobutanesulfonic acid	PFBS	<	1.5	ng/L	0.32	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluorodecanesulfonic acid	PFDS	<	1.5	ng/L	0.47	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluorodecanoic acid	PFDA	<	1.5	ng/L	0.36	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluorododecanesulfonic acid	PFDoS	<	1.5	ng/L	0.67	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluorododecanoic acid	PFDoA	<	1.5	ng/L	0.32	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluoroheptanesulfonic acid	PFHpS	<	1.5	ng/L	0.79	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluoroheptanoic acid	PFHpA	<	1.5	ng/L	0.26	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluorohexanesulfonic acid	PFHxS	<	1.5	ng/L	0.57	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluorohexanoic acid	PFHxA	<	1.5	ng/L	0.26	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluorononanesulfonic acid	PFNS	<	1.5	ng/L	0.43	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluorononanoic acid	PFNA	<	1.5	ng/L	0.61	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluorooctanesulfonamide	PFOSA	<	1.5	ng/L	0.52	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluorooctanesulfonic acid	PFOS	<	1.5	ng/L	0.37	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluorooctanoic acid	PFOA	<	1.5	ng/L	0.39	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluoropentanesulfonic acid	PFPeS	<	1.5	ng/L	0.43	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluorotetradecanoic acid	PFTeDA	<	1.5	ng/L	0.14	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluorotridecanoic acid	PFTrDA	<	1.5	ng/L	0.45	1.5
IX-1	6/3/2025	06/18/2025 19:41	1633	Perfluoroundecanoic acid	PFUnA	<	1.5	ng/L	0.47	1.5
IX-1	6/3/2025	06/14/2025 04:19	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	J	0.84	mg/L	0.50	1.0
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluorobutanoic acid	PFBA	J	5.5	ng/L	0.74	5.9
IX-2	6/3/2025	06/18/2025 19:59	1633	2H,2H,3H,3H-Perfluorooctanoic acid	FPePA (5:3FTCA)	<	37	ng/L	6.5	37
IX-2	6/3/2025	06/18/2025 19:59	1633	3-Perfluoroheptyl propanoic acid	FHpPA (7:3FTCA)	<	37	ng/L	8.3	37
IX-2	6/3/2025	06/18/2025 19:59	1633	N-ethylperfluorooctanesulfonamidoethanol	NEtFOSE	<	15	ng/L	1.5	15
IX-2	6/3/2025	06/18/2025 19:59	1633	N-methylperfluorooctanesulfonamidoethanol	NMeFOSE	<	15	ng/L	1.2	15
IX-2	6/3/2025	06/18/2025 19:59	1633	3-Perfluoropropyl propanoic acid	FPrPA (3:3FTCA)	<	7.4	ng/L	2.1	7.4
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluorohexanoic acid	PFHxA	J	0.65	ng/L	0.26	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	11Cl-PF3OUdS	F53B Major	<	5.9	ng/L	1.6	5.9
IX-2	6/3/2025	06/18/2025 19:59	1633	1H,1H,2H,2H-Perfluorodecane sulfonic acid	8:2FTS	<	5.9	ng/L	3.0	5.9
IX-2	6/3/2025	06/18/2025 19:59	1633	1H,1H,2H,2H-Perfluorohexane sulfonic acid	4:2FTS	<	5.9	ng/L	1.2	5.9
IX-2	6/3/2025	06/18/2025 19:59	1633	1H,1H,2H,2H-Perfluorooctane sulfonic acid	6:2FTS	<	5.9	ng/L	2.8	5.9
IX-2	6/3/2025	06/18/2025 19:59	1633	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	5.9	ng/L	0.79	5.9
IX-2	6/3/2025	06/18/2025 19:59	1633	9Cl-PF3ONS	F53B Minor	<	5.9	ng/L	0.87	5.9
IX-2	6/3/2025	06/18/2025 19:59	1633	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	5.9	ng/L	1.4	5.9
IX-2	6/3/2025	06/18/2025 19:59	1633	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	3.0	ng/L	2.0	3.0
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	3.0	ng/L	0.53	3.0
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluoro-3-methoxypropanoic acid	PFMPA	<	3.0	ng/L	0.43	3.0
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluoro-4-methoxybutanoic acid	PFMBA	<	3.0	ng/L	0.40	3.0
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluoropentanoic acid	PFPeA	<	3.0	ng/L	0.41	3.0
IX-2	6/3/2025	06/13/2025 13:39	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.66	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.43	1.8

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
IX-2	6/3/2025	06/13/2025 13:39	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.32	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.6	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.35	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.46	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.85	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.53	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.53	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.48	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.45	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluorobutanoic acid	PFBA	<	1.8	ng/L	0.46	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.57	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.69	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.57	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.54	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.41	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.45	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.65	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.46	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluorooctanoic acid	PFOA	<	1.8	ng/L	0.67	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.48	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.39	1.8
IX-2	6/3/2025	06/13/2025 13:39	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.64	1.8
IX-2	6/3/2025	06/18/2025 19:59	1633	N-EtFOSAA	NEtFOSAA	<	1.5	ng/L	0.60	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	N-ethyl perfluorooctanesulfonamide	NEtFOSA	<	1.5	ng/L	0.31	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	N-MeFOSAA	NMeFOSAA	<	1.5	ng/L	1.4	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	N-methyl perfluorooocatnesulfonamide	NMeFOSA	<	1.5	ng/L	0.25	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluorobutanesulfonic acid	PFBS	<	1.5	ng/L	0.32	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluorodecanesulfonic acid	PFDS	<	1.5	ng/L	0.47	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluorodecanoic acid	PFDA	<	1.5	ng/L	0.36	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluorododecanesulfonic acid	PFDoS	<	1.5	ng/L	0.67	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluorododecanoic acid	PFDoA	<	1.5	ng/L	0.32	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluoroheptanesulfonic acid	PFHpS	<	1.5	ng/L	0.78	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluoroheptanoic acid	PFHpA	<	1.5	ng/L	0.26	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluorohexanesulfonic acid	PFHxS	<	1.5	ng/L	0.57	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluorononanesulfonic acid	PFNS	<	1.5	ng/L	0.43	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluorononanoic acid	PFNA	<	1.5	ng/L	0.60	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluorooctanesulfonamide	PFOSA	<	1.5	ng/L	0.52	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluorooctanesulfonic acid	PFOS	<	1.5	ng/L	0.37	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluorooctanoic acid	PFOA	<	1.5	ng/L	0.39	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluoropentanesulfonic acid	PFPeS	<	1.5	ng/L	0.43	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluorotetradecanoic acid	PFTeDA	<	1.5	ng/L	0.14	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluorotridecanoic acid	PFTrDA	<	1.5	ng/L	0.45	1.5
IX-2	6/3/2025	06/18/2025 19:59	1633	Perfluoroundecanoic acid	PFUnA	<	1.5	ng/L	0.47	1.5
IX-2	6/3/2025	06/14/2025 04:59	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.3	mg/L	0.50	1.0
NS	6/3/2025	06/18/2025 19:50	1633	Perfluorobutanoic acid	PFBA		7.9	ng/L	0.73	5.8
NS	6/3/2025	06/18/2025 19:50	1633	2H,2H,3H,3H-Perfluorooctanoic acid	FPePA (5:3FTCA)	<	36	ng/L	6.4	36
NS	6/3/2025	06/18/2025 19:50	1633	3-Perfluoroheptyl propanoic acid	FHpPA (7:3FTCA)	<	36	ng/L	8.2	36
NS	6/3/2025	06/18/2025 19:50	1633	N-ethylperfluorooctanesulfonamidoethanol	NEtFOSE	<	15	ng/L	1.5	15
NS	6/3/2025	06/18/2025 19:50	1633	N-methylperfluorooctanesulfonamidoethanol	NMeFOSE	<	15	ng/L	1.2	15
NS	6/3/2025	06/18/2025 19:50	1633	3-Perfluoropropyl propanoic acid	FPrPA (3:3FTCA)	<	7.3	ng/L	2.0	7.3
NS	6/3/2025	06/18/2025 19:50	1633	11Cl-PF3OUdS	F53B Major	<	5.8	ng/L	1.5	5.8
NS	6/3/2025	06/18/2025 19:50	1633	1H,1H,2H,2H-Perfluorodecane sulfonic acid	8:2FTS	<	5.8	ng/L	3.0	5.8
NS	6/3/2025	06/18/2025 19:50	1633	1H,1H,2H,2H-Perfluorohexane sulfonic acid	4:2FTS	<	5.8	ng/L	1.2	5.8
NS	6/3/2025	06/18/2025 19:50	1633	1H,1H,2H,2H-Perfluorooctane sulfonic acid	6:2FTS	<	5.8	ng/L	2.7	5.8
NS	6/3/2025	06/18/2025 19:50	1633	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	5.8	ng/L	0.77	5.8
NS	6/3/2025	06/18/2025 19:50	1633	9Cl-PF3ONS	F53B Minor	<	5.8	ng/L	0.85	5.8
NS	6/3/2025	06/18/2025 19:50	1633	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	5.8	ng/L	1.4	5.8
NS	6/3/2025	06/18/2025 19:50	1633	Perfluoropentanoic acid	PFPeA	J	0.49	ng/L	0.41	2.9
NS	6/3/2025	06/18/2025 19:50	1633	Perfluorohexanoic acid	PFHxA	J	0.35	ng/L	0.25	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	2.9	ng/L	2.0	2.9
NS	6/3/2025	06/18/2025 19:50	1633	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	2.9	ng/L	0.52	2.9
NS	6/3/2025	06/18/2025 19:50	1633	Perfluoro-3-methoxypropanoic acid	PFMPA	<	2.9	ng/L	0.42	2.9
NS	6/3/2025	06/18/2025 19:50	1633	Perfluoro-4-methoxybutanoic acid	PFMBA	<	2.9	ng/L	0.39	2.9
NS	6/3/2025	06/13/2025 13:32	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.67	1.8
NS	6/3/2025	06/13/2025 13:32	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.44	1.8
NS	6/3/2025	06/13/2025 13:32	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.32	1.8
NS	6/3/2025	06/13/2025 13:32	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.7	1.8
NS	6/3/2025	06/13/2025 13:32	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.35	1.8
NS	6/3/2025	06/13/2025 13:32	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.46	1.8
NS	6/3/2025	06/13/2025 13:32	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.85	1.8
NS	6/3/2025	06/13/2025 13:32	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.54	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.53	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.49	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.50	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.45	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluorobutanoic acid	PFBA	<	1.8	ng/L	0.47	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.58	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.69	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.58	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.55	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.41	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.46	1.8

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
NS	6/3/2025	06/13/2025 13:32	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.66	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.47	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluorooctanoic acid	PFOA	<	1.8	ng/L	0.68	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.48	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.40	1.8
NS	6/3/2025	06/13/2025 13:32	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.64	1.8
NS	6/3/2025	06/18/2025 19:50	1633	N-EtFOSAA	NEtFOSAA	<	1.5	ng/L	0.59	1.5
NS	6/3/2025	06/18/2025 19:50	1633	N-ethyl perfluorooctanesulfonamide	NEtFOSA	<	1.5	ng/L	0.30	1.5
NS	6/3/2025	06/18/2025 19:50	1633	N-MeFOSAA	NMeFOSAA	<	1.5	ng/L	1.4	1.5
NS	6/3/2025	06/18/2025 19:50	1633	N-methyl perfluorooctanesulfonamide	NMeFOSA	<	1.5	ng/L	0.25	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluorobutanesulfonic acid	PFBS	<	1.5	ng/L	0.31	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluorodecanesulfonic acid	PFDS	<	1.5	ng/L	0.46	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluorodecanoic acid	PFDA	<	1.5	ng/L	0.35	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluorododecanesulfonic acid	PFDoS	<	1.5	ng/L	0.66	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluorododecanoic acid	PFDoA	<	1.5	ng/L	0.32	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluoroheptanesulfonic acid	PFHpS	<	1.5	ng/L	0.77	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluoroheptanoic acid	PFHpA	<	1.5	ng/L	0.26	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluorohexanesulfonic acid	PFHxS	<	1.5	ng/L	0.56	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluorononanesulfonic acid	PFNS	<	1.5	ng/L	0.42	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluorononanoic acid	PFNA	<	1.5	ng/L	0.59	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluorooctanesulfonamide	PFOSA	<	1.5	ng/L	0.51	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluorooctanesulfonic acid	PFOS	<	1.5	ng/L	0.36	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluorooctanoic acid	PFOA	<	1.5	ng/L	0.38	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluoropentanesulfonic acid	PFPeS	<	1.5	ng/L	0.43	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluorotetradecanoic acid	PFTeDA	<	1.5	ng/L	0.14	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluorotridecanoic acid	PFTrDA	<	1.5	ng/L	0.44	1.5
NS	6/3/2025	06/18/2025 19:50	1633	Perfluoroundecanoic acid	PFUnA	<	1.5	ng/L	0.47	1.5
NS	6/3/2025	06/14/2025 04:39	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.4	mg/L	0.50	1.0
RW	6/3/2025	06/18/2025 17:15	533	Perfluorooctanesulfonic acid	PFOS		19	ng/L	0.47	1.8
RW	6/3/2025	06/18/2025 19:13	1633	Perfluorooctanesulfonic acid	PFOS		18	ng/L	0.37	1.5
RW	6/3/2025	06/18/2025 19:13	1633	Perfluorooctanoic acid	PFOA		10	ng/L	0.39	1.5
RW	6/3/2025	06/18/2025 17:15	533	Perfluorooctanoic acid	PFOA		9.1	ng/L	0.69	1.8
RW	6/3/2025	06/18/2025 19:13	1633	Perfluorobutanoic acid	PFBA		7.2	ng/L	0.74	5.9
RW	6/3/2025	06/18/2025 19:13	1633	2H,2H,3H,3H-Perfluorooctanoic acid	FPePA (5:3FTCA)	<	37	ng/L	6.5	37
RW	6/3/2025	06/18/2025 19:13	1633	3-Perfluoroheptyl propanoic acid	FHpPA (7:3FTCA)	<	37	ng/L	8.3	37
RW	6/3/2025	06/18/2025 17:15	533	Perfluorohexanesulfonic acid	PFHxS		2.9	ng/L	0.42	1.8
RW	6/3/2025	06/18/2025 19:13	1633	Perfluorohexanesulfonic acid	PFHxS		2.3	ng/L	0.58	1.5
RW	6/3/2025	06/18/2025 17:15	533	Perfluoroheptanoic acid	PFHpA		2.2	ng/L	0.55	1.8
RW	6/3/2025	06/18/2025 17:15	533	Perfluorobutanesulfonic acid	PFBS		2.1	ng/L	0.46	1.8
RW	6/3/2025	06/18/2025 19:13	1633	Perfluorobutanesulfonic acid	PFBS		2.1	ng/L	0.32	1.5
RW	6/3/2025	06/18/2025 19:13	1633	Perfluoroheptanoic acid	PFHpA		1.7	ng/L	0.26	1.5
RW	6/3/2025	06/18/2025 19:13	1633	N-ethylperfluorooctanesulfonamidoethanol	NEtFOSE	<	15	ng/L	1.5	15
RW	6/3/2025	06/18/2025 19:13	1633	N-methylperfluorooctanesulfonamidoethanol	NMeFOSE	<	15	ng/L	1.2	15
RW	6/3/2025	06/18/2025 19:13	1633	Perfluorohexanoic acid	PFHxA	J	1.2	ng/L	0.26	1.5
RW	6/3/2025	06/18/2025 17:15	533	Perfluorohexanoic acid	PFHxA	J	0.88	ng/L	0.46	1.8
RW	6/3/2025	06/18/2025 17:15	533	Perfluoropentanesulfonic acid	PFPeS	J	0.83	ng/L	0.49	1.8
RW	6/3/2025	06/18/2025 19:13	1633	3-Perfluoropropyl propanoic acid	FPrPA (3:3FTCA)	<	7.4	ng/L	2.1	7.4
RW	6/3/2025	06/18/2025 19:13	1633	Perfluoropentanesulfonic acid	PFPeS	J	0.71	ng/L	0.43	1.5
RW	6/3/2025	06/18/2025 19:13	1633	Perfluorononanoic acid	PFNA	J	0.66	ng/L	0.61	1.5
RW	6/3/2025	06/18/2025 17:15	533	Perfluoroheptanesulfonic acid	PFHpS	J	0.61	ng/L	0.58	1.8
RW	6/3/2025	06/18/2025 19:13	1633	11Cl-PF3OUdS	F53B Major	<	5.9	ng/L	1.6	5.9
RW	6/3/2025	06/18/2025 19:13	1633	1H,1H,2H,2H-Perfluorodecane sulfonic acid	8:2FTS	<	5.9	ng/L	3.1	5.9
RW	6/3/2025	06/18/2025 19:13	1633	1H,1H,2H,2H-Perfluorohexane sulfonic acid	4:2FTS	<	5.9	ng/L	1.2	5.9
RW	6/3/2025	06/18/2025 19:13	1633	1H,1H,2H,2H-Perfluorooctane sulfonic acid	6:2FTS	<	5.9	ng/L	2.8	5.9
RW	6/3/2025	06/18/2025 19:13	1633	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	5.9	ng/L	0.79	5.9
RW	6/3/2025	06/18/2025 19:13	1633	9Cl-PF3ONS	F53B Minor	<	5.9	ng/L	0.87	5.9
RW	6/3/2025	06/18/2025 19:13	1633	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	5.9	ng/L	1.4	5.9
RW	6/3/2025	06/18/2025 19:13	1633	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	3.0	ng/L	2.0	3.0
RW	6/3/2025	06/18/2025 19:13	1633	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	3.0	ng/L	0.53	3.0
RW	6/3/2025	06/18/2025 19:13	1633	Perfluoro-3-methoxypropanoic acid	PFMPA	<	3.0	ng/L	0.43	3.0
RW	6/3/2025	06/18/2025 19:13	1633	Perfluoro-4-methoxybutanoic acid	PFMBA	<	3.0	ng/L	0.40	3.0
RW	6/3/2025	06/18/2025 19:13	1633	Perfluoropentanoic acid	PFPeA	<	3.0	ng/L	0.41	3.0
RW	6/3/2025	06/18/2025 17:15	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.68	1.8
RW	6/3/2025	06/18/2025 17:15	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.44	1.8
RW	6/3/2025	06/18/2025 17:15	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.33	1.8
RW	6/3/2025	06/18/2025 17:15	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.7	1.8
RW	6/3/2025	06/18/2025 17:15	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.35	1.8
RW	6/3/2025	06/18/2025 17:15	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.47	1.8
RW	6/3/2025	06/18/2025 17:15	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.86	1.8
RW	6/3/2025	06/18/2025 17:15	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.55	1.8
RW	6/3/2025	06/18/2025 17:15	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.54	1.8
RW	6/3/2025	06/18/2025 17:15	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.49	1.8
RW	6/3/2025	06/18/2025 17:15	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.50	1.8
RW	6/3/2025	06/18/2025 17:15	533	Perfluorobutanoic acid	PFBA	<	1.8	ng/L	0.47	1.8
RW	6/3/2025	06/18/2025 17:15	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.58	1.8
RW	6/3/2025	06/18/2025 17:15	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.70	1.8
RW	6/3/2025	06/18/2025 17:15	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.67	1.8
RW	6/3/2025	06/18/2025 17:15	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.40	1.8
RW	6/3/2025	06/18/2025 17:15	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.65	1.8
RW	6/3/2025	06/18/2025 19:13	1633	N-EtFOSAA	NEtFOSAA	<	1.5	ng/L	0.60	1.5
RW	6/3/2025	06/18/2025 19:13	1633	N-ethyl perfluorooctanesulfonamide	NEtFOSA	<	1.5	ng/L	0.31	1.5
RW	6/3/2025	06/18/2025 19:13	1633	N-MeFOSAA	NMeFOSAA	<	1.5	ng/L	1.4	1.5
RW	6/3/2025	06/18/2025 19:13	1633	N-methyl perfluorooctanesulfonamide	NMeFOSA	<	1.5	ng/L	0.25	1.5

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
RW	6/3/2025	06/18/2025 19:13	1633	Perfluorodecanesulfonic acid	PFDS	<	1.5	ng/L	0.47	1.5
RW	6/3/2025	06/18/2025 19:13	1633	Perfluorodecanoic acid	PFDA	<	1.5	ng/L	0.36	1.5
RW	6/3/2025	06/18/2025 19:13	1633	Perfluorododecanesulfonic acid	PFDoS	<	1.5	ng/L	0.67	1.5
RW	6/3/2025	06/18/2025 19:13	1633	Perfluorododecanoic acid	PFDoA	<	1.5	ng/L	0.32	1.5
RW	6/3/2025	06/18/2025 19:13	1633	Perfluoroheptanesulfonic acid	PFHpS	<	1.5	ng/L	0.79	1.5
RW	6/3/2025	06/18/2025 19:13	1633	Perfluorononanesulfonic acid	PFNS	<	1.5	ng/L	0.43	1.5
RW	6/3/2025	06/18/2025 19:13	1633	Perfluorooctanesulfonamide	PFOSA	<	1.5	ng/L	0.52	1.5
RW	6/3/2025	06/18/2025 19:13	1633	Perfluorotetradecanoic acid	PFTeDA	<	1.5	ng/L	0.14	1.5
RW	6/3/2025	06/18/2025 19:13	1633	Perfluorotridecanoic acid	PFTrDA	<	1.5	ng/L	0.45	1.5
RW	6/3/2025	06/18/2025 19:13	1633	Perfluoroundecanoic acid	PFUnA	<	1.5	ng/L	0.47	1.5
RW	6/3/2025	06/14/2025 01:51	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		5.3	mg/L	0.50	1.0
CFE	7/8/2025	07/21/2025 12:04	533	11Cl-PF3OUdS	F53B Major	<	1.6	ng/L	0.59	1.6
CFE	7/8/2025	07/21/2025 12:04	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.6	ng/L	0.38	1.6
CFE	7/8/2025	07/21/2025 12:04	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.6	ng/L	0.29	1.6
CFE	7/8/2025	07/21/2025 12:04	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.6	ng/L	1.5	1.6
CFE	7/8/2025	07/21/2025 12:04	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.6	ng/L	0.31	1.6
CFE	7/8/2025	07/21/2025 12:04	533	9Cl-PF3ONS	F53B Minor	<	1.6	ng/L	0.41	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.6	ng/L	0.75	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.6	ng/L	0.48	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.6	ng/L	0.47	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.6	ng/L	0.43	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.6	ng/L	0.44	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluorobutanesulfonic acid	PFBS		1.8	ng/L	0.40	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluorobutanoic acid	PFBA	<	1.6	ng/L	0.41	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluorodecanoic acid	PFDA	<	1.6	ng/L	0.51	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluorododecanoic acid	PFDoA	<	1.6	ng/L	0.61	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.6	ng/L	0.51	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluoroheptanoic acid	PFHpA		2.2	ng/L	0.48	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluorohexanesulfonic acid	PFHxS		2.4	ng/L	0.36	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluorohexanoic acid	PFHxA	<	1.6	ng/L	0.40	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluorononanoic acid	PFNA	<	1.6	ng/L	0.58	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluorooctanesulfonic acid	PFOS		15	ng/L	0.41	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluorooctanoic acid	PFOA		8.9	ng/L	0.60	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluoropentanesulfonic acid	PFPeS	<	1.6	ng/L	0.42	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluoropentanoic acid	PFPeA	<	1.6	ng/L	0.35	1.6
CFE	7/8/2025	07/21/2025 12:04	533	Perfluoroundecanoic acid	PFUnA	<	1.6	ng/L	0.57	1.6
CFE	7/8/2025	07/11/2025 02:20	SM 5310B-2014	Total Organic Carbon	Total Organic Carbon		1.1	mg/L	0.50	1.0
GAC	7/8/2025	07/21/2025 12:11	533	11Cl-PF3OUdS	F53B Major	<	1.6	ng/L	0.59	1.6
GAC	7/8/2025	07/21/2025 12:11	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.6	ng/L	0.39	1.6
GAC	7/8/2025	07/21/2025 12:11	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.6	ng/L	0.29	1.6
GAC	7/8/2025	07/21/2025 12:11	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.6	ng/L	1.5	1.6
GAC	7/8/2025	07/21/2025 12:11	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.6	ng/L	0.31	1.6
GAC	7/8/2025	07/21/2025 12:11	533	9Cl-PF3ONS	F53B Minor	<	1.6	ng/L	0.41	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.6	ng/L	0.76	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.6	ng/L	0.48	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.6	ng/L	0.47	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.6	ng/L	0.43	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.6	ng/L	0.44	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluorobutanesulfonic acid	PFBS	<	1.6	ng/L	0.40	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluorobutanoic acid	PFBA		5.4	ng/L	0.41	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluorodecanoic acid	PFDA	<	1.6	ng/L	0.51	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluorododecanoic acid	PFDoA	<	1.6	ng/L	0.62	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.6	ng/L	0.51	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluoroheptanoic acid	PFHpA	<	1.6	ng/L	0.49	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluorohexanesulfonic acid	PFHxS	<	1.6	ng/L	0.37	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluorohexanoic acid	PFHxA	<	1.6	ng/L	0.41	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluorononanoic acid	PFNA	<	1.6	ng/L	0.59	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluorooctanesulfonic acid	PFOS	<	1.6	ng/L	0.41	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluorooctanoic acid	PFOA		3.0	ng/L	0.60	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluoropentanesulfonic acid	PFPeS	<	1.6	ng/L	0.43	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluoropentanoic acid	PFPeA	<	1.6	ng/L	0.35	1.6
GAC	7/8/2025	07/21/2025 12:11	533	Perfluoroundecanoic acid	PFUnA	<	1.6	ng/L	0.57	1.6
GAC	7/8/2025	07/11/2025 02:40	SM 5310B-2014	Total Organic Carbon	Total Organic Carbon	J	0.71	mg/L	0.50	1.0
IX-1	7/8/2025	07/21/2025 12:33	533	11Cl-PF3OUdS	F53B Major	<	1.6	ng/L	0.58	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.6	ng/L	0.38	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.6	ng/L	0.28	1.6

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
IX-1	7/8/2025	07/21/2025 12:33	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.6	ng/L	1.4	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.6	ng/L	0.30	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	9Cl-PF3ONS	F53B Minor	<	1.6	ng/L	0.40	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.6	ng/L	0.74	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.6	ng/L	0.47	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.6	ng/L	0.46	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.6	ng/L	0.42	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.6	ng/L	0.43	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluorobutanesulfonic acid	PFBS	<	1.6	ng/L	0.39	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluorobutanoic acid	PFBA		3.1	ng/L	0.40	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluorodecanoic acid	PFDA	<	1.6	ng/L	0.50	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluorododecanoic acid	PFDoA	<	1.6	ng/L	0.60	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.6	ng/L	0.50	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluoroheptanoic acid	PFHpA	<	1.6	ng/L	0.47	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluorohexanesulfonic acid	PFHxS	<	1.6	ng/L	0.36	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluorohexanoic acid	PFHxA	<	1.6	ng/L	0.40	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluorononanoic acid	PFNA	<	1.6	ng/L	0.57	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluorooctanesulfonic acid	PFOS	<	1.6	ng/L	0.40	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluorooctanoic acid	PFOA	<	1.6	ng/L	0.59	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluoropentanesulfonic acid	PFPeS	<	1.6	ng/L	0.41	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluoropentanoic acid	PFPeA	<	1.6	ng/L	0.34	1.6
IX-1	7/8/2025	07/21/2025 12:33	533	Perfluoroundecanoic acid	PFUnA	<	1.6	ng/L	0.55	1.6
IX-1	7/8/2025	07/11/2025 03:42	SM 5310B-2014	Total Organic Carbon	Total Organic Carbon	J	0.52	mg/L	0.50	1.0
IX-2	7/8/2025	07/21/2025 12:26	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.61	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.40	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.30	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.5	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.32	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.42	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.78	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.49	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.49	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.45	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.46	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.41	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluorobutanoic acid	PFBA		6.4	ng/L	0.43	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.53	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.64	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.53	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluoroheptanoic acid	PFHpA	<	1.7	ng/L	0.50	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.38	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.42	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.60	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluorooctanesulfonic acid	PFOS	<	1.7	ng/L	0.43	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluorooctanoic acid	PFOA	<	1.7	ng/L	0.62	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.44	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.36	1.7
IX-2	7/8/2025	07/21/2025 12:26	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.59	1.7
IX-2	7/8/2025	07/11/2025 03:20	SM 5310B-2014	Total Organic Carbon	Total Organic Carbon		1.0	mg/L	0.50	1.0
NS	7/8/2025	07/21/2025 12:19	533	11Cl-PF3OUdS	F53B Major	<	1.5	ng/L	0.57	1.5
NS	7/8/2025	07/21/2025 12:19	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.5	ng/L	0.37	1.5
NS	7/8/2025	07/21/2025 12:19	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.5	ng/L	0.28	1.5
NS	7/8/2025	07/21/2025 12:19	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.5	ng/L	1.4	1.5
NS	7/8/2025	07/21/2025 12:19	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.5	ng/L	0.30	1.5
NS	7/8/2025	07/21/2025 12:19	533	9Cl-PF3ONS	F53B Minor	<	1.5	ng/L	0.39	1.5
NS	7/8/2025	07/21/2025 12:19	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.5	ng/L	0.73	1.5
NS	7/8/2025	07/21/2025 12:19	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.5	ng/L	0.46	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.5	ng/L	0.45	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.5	ng/L	0.41	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.5	ng/L	0.42	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluorobutanesulfonic acid	PFBS	<	1.5	ng/L	0.38	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluorobutanoic acid	PFBA		4.6	ng/L	0.40	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluorodecanoic acid	PFDA	<	1.5	ng/L	0.49	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluorododecanoic acid	PFDoA	<	1.5	ng/L	0.59	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.5	ng/L	0.49	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluoroheptanoic acid	PFHpA	<	1.5	ng/L	0.46	1.5

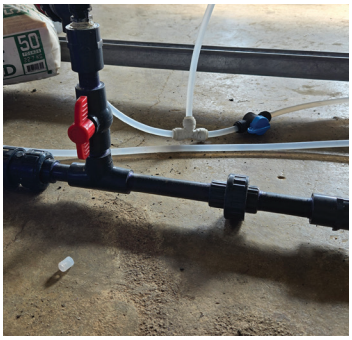
Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
NS	7/8/2025	07/21/2025 12:19	533	Perfluorohexanesulfonic acid	PFHxS	<	1.5	ng/L	0.35	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluorohexanoic acid	PFHxA	<	1.5	ng/L	0.39	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluorononanoic acid	PFNA	<	1.5	ng/L	0.56	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluorooctanesulfonic acid	PFOS	<	1.5	ng/L	0.40	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluorooctanoic acid	PFOA	<	1.5	ng/L	0.58	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluoropentanesulfonic acid	PFPeS	<	1.5	ng/L	0.41	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluoropentanoic acid	PFPeA	<	1.5	ng/L	0.34	1.5
NS	7/8/2025	07/21/2025 12:19	533	Perfluoroundecanoic acid	PFUnA	<	1.5	ng/L	0.55	1.5
NS	7/8/2025	07/11/2025 03:00	SM 5310B-2014	Total Organic Carbon	Total Organic Carbon		1.1	mg/L	0.50	1.0
RW	7/8/2025	07/21/2025 12:40	533	11Cl-PF3OUdS	F53B Major	<	1.6	ng/L	0.58	1.6
RW	7/8/2025	07/21/2025 12:40	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.6	ng/L	0.38	1.6
RW	7/8/2025	07/21/2025 12:40	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.6	ng/L	0.28	1.6
RW	7/8/2025	07/21/2025 12:40	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.6	ng/L	1.4	1.6
RW	7/8/2025	07/21/2025 12:40	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.6	ng/L	0.30	1.6
RW	7/8/2025	07/21/2025 12:40	533	9Cl-PF3ONS	F53B Minor	<	1.6	ng/L	0.40	1.6
RW	7/8/2025	07/21/2025 12:40	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.6	ng/L	0.74	1.6
RW	7/8/2025	07/21/2025 12:40	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.6	ng/L	0.46	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.6	ng/L	0.46	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.6	ng/L	0.42	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.6	ng/L	0.43	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluorobutanesulfonic acid	PFBS		3.1	ng/L	0.39	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluorobutanoic acid	PFBA		9.8	ng/L	0.40	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluorodecanoic acid	PFDA	<	1.6	ng/L	0.50	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluorododecanoic acid	PFDoA	<	1.6	ng/L	0.60	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.6	ng/L	0.50	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluoroheptanoic acid	PFHpA		2.5	ng/L	0.47	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluorohexanesulfonic acid	PFHxS		3.9	ng/L	0.36	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluorohexanoic acid	PFHxA	<	1.6	ng/L	0.39	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluorononanoic acid	PFNA	<	1.6	ng/L	0.57	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluorooctanesulfonic acid	PFOS		28	ng/L	0.40	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluorooctanoic acid	PFOA		13	ng/L	0.58	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluoropentanesulfonic acid	PFPeS	<	1.6	ng/L	0.41	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluoropentanoic acid	PFPeA	<	1.6	ng/L	0.34	1.6
RW	7/8/2025	07/21/2025 12:40	533	Perfluoroundecanoic acid	PFUnA	<	1.6	ng/L	0.55	1.6
RW	7/8/2025	07/11/2025 04:06	SM 5310B-	Total Organic Carbon	Total Organic Carbon		5.0	mg/L	0.50	1.0
CFE	8/19/2025	08/29/2025 09:24	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.64	1.7
CFE	8/19/2025	08/29/2025 09:24	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.42	1.7
CFE	8/19/2025	08/29/2025 09:24	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.31	1.7
CFE	8/19/2025	08/29/2025 09:24	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.6	1.7
CFE	8/19/2025	08/29/2025 09:24	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.33	1.7
CFE	8/19/2025	08/29/2025 09:24	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.45	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.82	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.52	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.51	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.47	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.48	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluorobutanesulfonic acid	PFBS	J	1.5	ng/L	0.43	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluorobutanoic acid	PFBA		5.8	ng/L	0.45	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.55	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.67	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.55	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluoroheptanoic acid	PFHpA		2.0	ng/L	0.53	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluorohexanesulfonic acid	PFHxS		1.7	ng/L	0.40	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluorohexanoic acid	PFHxA	J	1.1	ng/L	0.44	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.63	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluorooctanesulfonic acid	PFOS		11	ng/L	0.45	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluorooctanoic acid	PFOA		8.5	ng/L	0.65	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluoropentanesulfonic acid	PFPeS	J	0.68	ng/L	0.46	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.38	1.7
CFE	8/19/2025	08/29/2025 09:24	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.62	1.7
CFE	8/19/2025	8/26/2025 6:58	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.5	mg/L	0.5	1
GAC	8/19/2025	08/29/2025 09:31	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.65	1.8
GAC	8/19/2025	08/29/2025 09:31	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.42	1.8
GAC	8/19/2025	08/29/2025 09:31	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.32	1.8
GAC	8/19/2025	08/29/2025 09:31	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.6	1.8
GAC	8/19/2025	08/29/2025 09:31	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.34	1.8
GAC	8/19/2025	08/29/2025 09:31	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.45	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.83	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.52	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.52	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.47	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.48	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluorobutanesulfonic acid	PFBS	J	1.1	ng/L	0.44	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluorobutanoic acid	PFBA		4.2	ng/L	0.45	1.8

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
GAC	8/19/2025	08/29/2025 09:31	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.56	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.68	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.56	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluoroheptanoic acid	PFHpA	J	1.1	ng/L	0.53	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.40	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluorohexanoic acid	PFHxA	J	0.82	ng/L	0.45	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.64	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluorooctanesulfonic acid	PFOS	J	0.51	ng/L	0.45	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluorooctanoic acid	PFOA		3.0	ng/L	0.66	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.47	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluoropentanoic acid	PFPeA	J	0.40	ng/L	0.38	1.8
GAC	8/19/2025	08/29/2025 09:31	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.62	1.8
GAC	8/19/2025	8/26/2025 7:18	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	J	0.88	mg/L	0.5	1
IX-1	8/19/2025	08/29/2025 09:38	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.64	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.42	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.31	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.6	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.33	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.44	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.82	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.52	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.51	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.47	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.48	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.43	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluorobutanoic acid	PFBA		3.2	ng/L	0.45	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.55	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.66	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.55	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluoroheptanoic acid	PFHpA	<	1.7	ng/L	0.52	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.40	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.44	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.63	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluorooctanesulfonic acid	PFOS	<	1.7	ng/L	0.45	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluorooctanoic acid	PFOA	<	1.7	ng/L	0.65	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.46	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluoropentanoic acid	PFPeA	<	1.7	ng/L	0.38	1.7
IX-1	8/19/2025	08/29/2025 09:38	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.61	1.7
IX-1	8/19/2025	8/26/2025 7:40	SM 5310B-2	Total Organic Carbon	Total Organic Carbon	J	0.69	mg/L	0.5	1
IX-2	8/19/2025	08/29/2025 09:53	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.65	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.42	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.31	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.6	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.34	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.45	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.83	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.52	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.52	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.47	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.48	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluorobutanesulfonic acid	PFBS	<	1.8	ng/L	0.44	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluorobutanoic acid	PFBA		5.7	ng/L	0.45	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.56	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.67	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.8	ng/L	0.56	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluoroheptanoic acid	PFHpA	<	1.8	ng/L	0.53	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluorohexanesulfonic acid	PFHxS	<	1.8	ng/L	0.40	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluorohexanoic acid	PFHxA	<	1.8	ng/L	0.44	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.64	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluorooctanesulfonic acid	PFOS	<	1.8	ng/L	0.45	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluorooctanoic acid	PFOA	<	1.8	ng/L	0.66	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluoropentanesulfonic acid	PFPeS	<	1.8	ng/L	0.47	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluoropentanoic acid	PFPeA	<	1.8	ng/L	0.38	1.8
IX-2	8/19/2025	08/29/2025 09:53	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.62	1.8
IX-2	8/19/2025	8/26/2025 13:39	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.4	mg/L	0.5	1
NS	8/19/2025	08/29/2025 09:45	533	11Cl-PF3OUdS	F53B Major	<	1.7	ng/L	0.64	1.7
NS	8/19/2025	08/29/2025 09:45	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.7	ng/L	0.42	1.7
NS	8/19/2025	08/29/2025 09:45	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.7	ng/L	0.31	1.7
NS	8/19/2025	08/29/2025 09:45	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.7	ng/L	1.6	1.7
NS	8/19/2025	08/29/2025 09:45	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.7	ng/L	0.33	1.7
NS	8/19/2025	08/29/2025 09:45	533	9Cl-PF3ONS	F53B Minor	<	1.7	ng/L	0.44	1.7
NS	8/19/2025	08/29/2025 09:45	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.7	ng/L	0.82	1.7
NS	8/19/2025	08/29/2025 09:45	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.7	ng/L	0.52	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.7	ng/L	0.51	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.7	ng/L	0.47	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.7	ng/L	0.48	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluorobutanesulfonic acid	PFBS	<	1.7	ng/L	0.43	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluorobutanoic acid	PFBA		4.7	ng/L	0.44	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluorodecanoic acid	PFDA	<	1.7	ng/L	0.55	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluorododecanoic acid	PFDoA	<	1.7	ng/L	0.66	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluoroheptanesulfonic acid	PFHpS	<	1.7	ng/L	0.55	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluoroheptanoic acid	PFHpA	<	1.7	ng/L	0.52	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluorohexanesulfonic acid	PFHxS	<	1.7	ng/L	0.39	1.7

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
NS	8/19/2025	08/29/2025 09:45	533	Perfluorohexanoic acid	PFHxA	<	1.7	ng/L	0.44	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluorononanoic acid	PFNA	<	1.7	ng/L	0.63	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluorooctanesulfonic acid	PFOS	<	1.7	ng/L	0.44	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluorooctanoic acid	PFOA	<	1.7	ng/L	0.65	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluoropentanesulfonic acid	PFPeS	<	1.7	ng/L	0.46	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluoropentanoic acid	PFPeA	J	0.42	ng/L	0.38	1.7
NS	8/19/2025	08/29/2025 09:45	533	Perfluoroundecanoic acid	PFUnA	<	1.7	ng/L	0.61	1.7
NS	8/19/2025	8/26/2025 13:10	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		1.6	mg/L	0.5	1
RW	8/19/2025	08/29/2025 09:17	533	11Cl-PF3OUdS	F53B Major	<	1.8	ng/L	0.65	1.8
RW	8/19/2025	08/29/2025 09:17	533	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	<	1.8	ng/L	0.43	1.8
RW	8/19/2025	08/29/2025 09:17	533	4:2 Fluorotelomersulfonic acid	4:2FTS A	<	1.8	ng/L	0.32	1.8
RW	8/19/2025	08/29/2025 09:17	533	6:2 Fluorotelomersulfonic acid	6:2FTS A	<	1.8	ng/L	1.6	1.8
RW	8/19/2025	08/29/2025 09:17	533	8:2 Fluorotelomersulfonic acid	8:2FTS A	<	1.8	ng/L	0.34	1.8
RW	8/19/2025	08/29/2025 09:17	533	9Cl-PF3ONS	F53B Minor	<	1.8	ng/L	0.45	1.8
RW	8/19/2025	08/29/2025 09:17	533	Hexafluoropropylene oxide dimer acid	HFPO-DA	<	1.8	ng/L	0.83	1.8
RW	8/19/2025	08/29/2025 09:17	533	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	<	1.8	ng/L	0.53	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	<	1.8	ng/L	0.52	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluoro-4-oxapentanoic acid	PFMPA	<	1.8	ng/L	0.48	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluoro-5-oxahexanoic acid	PFMBA	<	1.8	ng/L	0.49	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluorobutanesulfonic acid	PFBS		1.8	ng/L	0.44	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluorobutanoic acid	PFBA		2.4	ng/L	0.45	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluorodecanoic acid	PFDA	<	1.8	ng/L	0.56	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluorododecanoic acid	PFDoA	<	1.8	ng/L	0.68	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluoroheptanesulfonic acid	PFHpS	J	0.72	ng/L	0.56	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluoroheptanoic acid	PFHpA		2.8	ng/L	0.53	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluorohexanesulfonic acid	PFHxS		2.3	ng/L	0.40	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluorohexanoic acid	PFHxA	J	0.94	ng/L	0.45	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluorononanoic acid	PFNA	<	1.8	ng/L	0.64	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluorooctanesulfonic acid	PFOS		22	ng/L	0.45	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluorooctanoic acid	PFOA		11	ng/L	0.66	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluoropentanesulfonic acid	PFPeS	J	0.74	ng/L	0.47	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluoropentanoic acid	PFPeA		8.4	ng/L	0.39	1.8
RW	8/19/2025	08/29/2025 09:17	533	Perfluoroundecanoic acid	PFUnA	<	1.8	ng/L	0.63	1.8
RW	8/19/2025	8/26/2025 6:33	SM 5310B-2	Total Organic Carbon	Total Organic Carbon		6.6	mg/L	0.5	1
CFE	9/2/2025	09/04/2025 20:48	EPA 524.2	Bromoform	Bromoform	<	0.0010	mg/L	0.00041	0.0010
CFE	9/2/2025	09/04/2025 20:48	EPA 524.2	Total Trihalomethanes (Calc.)	Total Trihalomethanes ((		0.040	mg/L	0.0010	0.0010
CFE	9/2/2025	09/04/2025 20:48	EPA 524.2	4-Bromofluorobenzene (S)	4-Bromofluorobenzene (		105	%		
CFE	9/2/2025	09/08/2025 19:03	EPA 552.2	Monochloroacetic Acid	Monochloroacetic Acid	<	0.0020	mg/L	0.0011	0.0020
CFE	9/2/2025	09/04/2025 20:48	EPA 524.2	Chloroform	Chloroform		0.034	mg/L	0.00029	0.0010
CFE	9/2/2025	09/04/2025 20:48	EPA 524.2	Bromodichloromethane	Bromodichloromethane		0.0055	mg/L	0.00020	0.0010
CFE	9/2/2025	09/08/2025 19:03	EPA 552.2	Dibromoacetic Acid	Dibromoacetic Acid	<	0.0010	mg/L	0.00050	0.0010
CFE	9/2/2025	09/04/2025 20:48	EPA 524.2	1,2-Dichlorobenzene-d4 (S)	1,2-Dichlorobenzene-d4		106	%		
CFE	9/2/2025	09/08/2025 19:03	EPA 552.2	Monobromoacetic Acid	Monobromoacetic Acid	<	0.0010	mg/L	0.00046	0.0010
CFE	9/2/2025	09/08/2025 19:03	EPA 552.2	Haloacetic Acids (Total)	Haloacetic Acids (Total)		0.030	mg/L	0.0010	0.0010
CFE	9/2/2025	09/08/2025 19:03	EPA 552.2	Dichloroacetic Acid	Dichloroacetic Acid		0.018	mg/L	0.00038	0.0010
CFE	9/2/2025	09/04/2025 20:48	EPA 524.2	Dibromochloromethane	Dibromochloromethane	J	0.00058	mg/L	0.00024	0.0010
CFE	9/2/2025	09/08/2025 19:03	EPA 552.2	Trichloroacetic Acid	Trichloroacetic Acid		0.012	mg/L	0.00044	0.0010
CFE	9/2/2025	09/08/2025 19:03	EPA 552.2	2,3-Dibromopropanoic Acid (S)	2,3-Dibromopropanoic A		81	%		
GAC	9/2/2025	09/04/2025 21:14	EPA 524.2	Total Trihalomethanes (Calc.)	Total Trihalomethanes ((		0.039	mg/L	0.0010	0.0010
GAC	9/2/2025	09/08/2025 18:06	EPA 552.2	Dichloroacetic Acid	Dichloroacetic Acid		0.0070	mg/L	0.00038	0.0010
GAC	9/2/2025	09/04/2025 21:14	EPA 524.2	Bromodichloromethane	Bromodichloromethane		0.0067	mg/L	0.00020	0.0010
GAC	9/2/2025	09/08/2025 18:06	EPA 552.2	Monochloroacetic Acid	Monochloroacetic Acid	<	0.0020	mg/L	0.0011	0.0020
GAC	9/2/2025	09/08/2025 18:06	EPA 552.2	2,3-Dibromopropanoic Acid (S)	2,3-Dibromopropanoic A		90	%		
GAC	9/2/2025	09/04/2025 21:14	EPA 524.2	Chloroform	Chloroform		0.031	mg/L	0.00029	0.0010
GAC	9/2/2025	09/08/2025 18:06	EPA 552.2	Trichloroacetic Acid	Trichloroacetic Acid		0.0073	mg/L	0.00044	0.0010
GAC	9/2/2025	09/04/2025 21:14	EPA 524.2	Dibromochloromethane	Dibromochloromethane	J	0.00061	mg/L	0.00024	0.0010
GAC	9/2/2025	09/08/2025 18:06	EPA 552.2	Dibromoacetic Acid	Dibromoacetic Acid	<	0.0010	mg/L	0.00050	0.0010
GAC	9/2/2025	09/04/2025 21:14	EPA 524.2	Bromoform	Bromoform	<	0.0010	mg/L	0.00041	0.0010
GAC	9/2/2025	09/08/2025 18:06	EPA 552.2	Monobromoacetic Acid	Monobromoacetic Acid	<	0.0010	mg/L	0.00046	0.0010
GAC	9/2/2025	09/08/2025 18:06	EPA 552.2	Haloacetic Acids (Total)	Haloacetic Acids (Total)		0.014	mg/L	0.0010	0.0010
GAC	9/2/2025	09/04/2025 21:14	EPA 524.2	4-Bromofluorobenzene (S)	4-Bromofluorobenzene (		103	%		
GAC	9/2/2025	09/04/2025 21:14	EPA 524.2	1,2-Dichlorobenzene-d4 (S)	1,2-Dichlorobenzene-d4		103	%		
IX-1	9/2/2025	09/04/2025 21:41	EPA 524.2	4-Bromofluorobenzene (S)	4-Bromofluorobenzene (		103	%		
IX-1	9/2/2025	09/08/2025 18:25	EPA 552.2	Haloacetic Acids (Total)	Haloacetic Acids (Total)		0.0030	mg/L	0.0010	0.0010
IX-1	9/2/2025	09/08/2025 18:25	EPA 552.2	Monobromoacetic Acid	Monobromoacetic Acid	<	0.0010	mg/L	0.00046	0.0010
IX-1	9/2/2025	09/04/2025 21:41	EPA 524.2	Chloroform	Chloroform		0.020	mg/L	0.00029	0.0010
IX-1	9/2/2025	09/08/2025 18:25	EPA 552.2	Monochloroacetic Acid	Monochloroacetic Acid	<	0.0020	mg/L	0.0011	0.0020
IX-1	9/2/2025	09/08/2025 18:25	EPA 552.2	2,3-Dibromopropanoic Acid (S)	2,3-Dibromopropanoic A		88	%		
IX-1	9/2/2025	09/08/2025 18:25	EPA 552.2	Dichloroacetic Acid	Dichloroacetic Acid		0.0023	mg/L	0.00038	0.0010
IX-1	9/2/2025	09/04/2025 21:41	EPA 524.2	Dibromochloromethane	Dibromochloromethane		0.0014	mg/L	0.00024	0.0010
IX-1	9/2/2025	09/04/2025 21:41	EPA 524.2	1,2-Dichlorobenzene-d4 (S)	1,2-Dichlorobenzene-d4		105	%		
IX-1	9/2/2025	09/08/2025 18:25	EPA 552.2	Trichloroacetic Acid	Trichloroacetic Acid	J	0.00072	mg/L	0.00044	0.0010
IX-1	9/2/2025	09/04/2025 21:41	EPA 524.2	Bromodichloromethane	Bromodichloromethane		0.0055	mg/L	0.00020	0.0010
IX-1	9/2/2025	09/04/2025 21:41	EPA 524.2	Bromoform	Bromoform	<	0.0010	mg/L	0.00041	0.0010
IX-1	9/2/2025	09/08/2025 18:25	EPA 552.2	Dibromoacetic Acid	Dibromoacetic Acid	<	0.0010	mg/L	0.00050	0.0010
IX-1	9/2/2025	09/04/2025 21:41	EPA 524.2	Total Trihalomethanes (Calc.)	Total Trihalomethanes ((		0.026	mg/L	0.0010	0.0010
IX-2	9/2/2025	09/04/2025 22:33	EPA 524.2	1,2-Dichlorobenzene-d4 (S)	1,2-Dichlorobenzene-d4		103	%		
IX-2	9/2/2025	09/08/2025 20:19	EPA 552.2	Dichloroacetic Acid	Dichloroacetic Acid		0.017	mg/L	0.00038	0.0010
IX-2	9/2/2025	09/04/2025 22:33	EPA 524.2	Bromoform	Bromoform	<	0.0010	mg/L	0.00041	0.0010
IX-2	9/2/2025	09/08/2025 20:19	EPA 552.2	Dibromoacetic Acid	Dibromoacetic Acid	<	0.0010	mg/L	0.00050	0.0010
IX-2	9/2/2025	09/04/2025 22:33	EPA 524.2	Dibromochloromethane	Dibromochloromethane	J	0.00047	mg/L	0.00024	0.0010
IX-2	9/2/2025	09/08/2025 20:19	EPA 552.2	Monochloroacetic Acid	Monochloroacetic Acid	<	0.0020	mg/L	0.0011	0.0020
IX-2	9/2/2025	09/04/2025 22:33	EPA 524.2	Bromodichloromethane	Bromodichloromethane		0.0048	mg/L	0.00020	0.0010

Client_ID	Collected	Analyzed	Method	Analyte	Analyte_ShortTitle	Result_Flag	Result	Units	MDL	MRL
IX-2	9/2/2025	09/08/2025 20:19	EPA 552.2	Trichloroacetic Acid	Trichloroacetic Acid	J	0.00054	mg/L	0.00044	0.0010
IX-2	9/2/2025	09/08/2025 20:19	EPA 552.2	Haloacetic Acids (Total)	Haloacetic Acids (Total)		0.018	mg/L	0.0010	0.0010
IX-2	9/2/2025	09/08/2025 20:19	EPA 552.2	2,3-Dibromopropanoic Acid (S)	2,3-Dibromopropanoic A		86	%		
IX-2	9/2/2025	09/04/2025 22:33	EPA 524.2	4-Bromofluorobenzene (S)	4-Bromofluorobenzene (		106	%		
IX-2	9/2/2025	09/04/2025 22:33	EPA 524.2	Chloroform	Chloroform		0.025	mg/L	0.00029	0.0010
IX-2	9/2/2025	09/08/2025 20:19	EPA 552.2	Monobromoacetic Acid	Monobromoacetic Acid	<	0.0010	mg/L	0.00046	0.0010
IX-2	9/2/2025	09/04/2025 22:33	EPA 524.2	Total Trihalomethanes (Calc.)	Total Trihalomethanes (		0.030	mg/L	0.0010	0.0010
NS	9/2/2025	09/04/2025 22:07	EPA 524.2	4-Bromofluorobenzene (S)	4-Bromofluorobenzene (		111	%		
NS	9/2/2025	09/04/2025 22:07	EPA 524.2	Chloroform	Chloroform		0.048	mg/L	0.00029	0.0010
NS	9/2/2025	09/08/2025 20:00	EPA 552.2	Dibromoacetic Acid	Dibromoacetic Acid	<	0.0010	mg/L	0.00050	0.0010
NS	9/2/2025	09/04/2025 22:07	EPA 524.2	Bromoform	Bromoform	<	0.0010	mg/L	0.00041	0.0010
NS	9/2/2025	09/08/2025 20:00	EPA 552.2	Haloacetic Acids (Total)	Haloacetic Acids (Total)		0.025	mg/L	0.0010	0.0010
NS	9/2/2025	09/08/2025 20:00	EPA 552.2	Dichloroacetic Acid	Dichloroacetic Acid		0.021	mg/L	0.00038	0.0010
NS	9/2/2025	09/04/2025 22:07	EPA 524.2	Dibromochloromethane	Dibromochloromethane	J	0.00072	mg/L	0.00024	0.0010
NS	9/2/2025	09/08/2025 20:00	EPA 552.2	Trichloroacetic Acid	Trichloroacetic Acid		0.0044	mg/L	0.00044	0.0010
NS	9/2/2025	09/08/2025 20:00	EPA 552.2	Monochloroacetic Acid	Monochloroacetic Acid	<	0.0020	mg/L	0.0011	0.0020
NS	9/2/2025	09/04/2025 22:07	EPA 524.2	Bromodichloromethane	Bromodichloromethane		0.0069	mg/L	0.00020	0.0010
NS	9/2/2025	09/04/2025 22:07	EPA 524.2	Total Trihalomethanes (Calc.)	Total Trihalomethanes (		0.056	mg/L	0.0010	0.0010
NS	9/2/2025	09/08/2025 20:00	EPA 552.2	2,3-Dibromopropanoic Acid (S)	2,3-Dibromopropanoic A		83	%		
NS	9/2/2025	09/08/2025 20:00	EPA 552.2	Monobromoacetic Acid	Monobromoacetic Acid	<	0.0010	mg/L	0.00046	0.0010
NS	9/2/2025	09/04/2025 22:07	EPA 524.2	1,2-Dichlorobenzene-d4 (S)	1,2-Dichlorobenzene-d4		109	%		









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