

ATTACHMENT 63

City of Greensboro and NCDEQ Winston-Salem Regional Office
Special Order by Consent (SOC) Year Two: 6th Quarterly Meeting
Wednesday, September 14, 2022 11:00 am – 1:00 pm
NOTES [submitted 9-27-2022]

Participants:

NCDEQ WSRO: Lon Snider, Jenny Graznak (WSRO)

Mike Montebello, Keyes McGee, (Raleigh NPDES)

Greensboro: Elijah Williams, Alicia Goots, Amy Varinoski, Bill Burdick, Julie Greene, Kristine Williams, Bradley Flynt

Updates from NCDEQ

Updates from City of Greensboro

1. Information Items:
 - a. Greensboro SOC Year One Report Submitted to NCDEQ 6-13-22
 - b. NCDEQ Civil Penalty Demand Letter Received/City Paid \$1000 Penalty for 4-5-2022 Exceedance Event
2. SOC Sampling Plan Year Two Data Review: May 1, 2022 to July 31, 2022
 - a. SOC Sampling of SIUs in Year Two: 1st Quarter (May-July 2022)
 - i. 31 SIU sampling sites (one SIU closed)
 - ii. SIUs with concentration of 31.5 ug/l required to complete conduct Source Investigation, Evaluation, and Survey (May-July 2022)
 1. Shamrock-Patton Avenue (Transportation Equipment Cleaning facility) sample on 7/14/22 = 63.0ug/L. Source Investigation, Evaluation, and Survey due 9/4, submitted 9/2
 2. Express Container Services (Transportation Equipment Cleaning facility) sample on 8/3/22 = 42.5ug/L. Source Investigation, Evaluation, and Survey due 9/29/22
 3. Neither discharge appears to have impacted the POTW
 - b. Other Sites: Haw River Arm Jordan Lake, Receiving Streams, Pittsboro Water Plant
 1. Data attached
 - c. Surveillance Sampling (voluntary)
 - i. Patton Trunkline
 1. Data attached
 2. No concerning results during SOC Y2Q1 (range <2ug/L – 3.58ug/L)
 - ii. Changes
 1. After reviewing the trunkline monitoring data and assessing staff workload, including Year Two SOC requirements, we will only collect continuous 24/7 samples from the Bryan Park manhole (below Shamrock - Brown Summit) and Patton Avenue trunkline (below Lanxess).
 2. The Airport trunkline is a part of the Patton line. All of the industries identified to have 1,4-Dioxane (Chemol, Evonik 02) on the Arlington trunkline are collecting daily samples and holding until we receive weekly effluent results.
3. April 5, 2022 Exceedance Event Update
 - a. Lanxess has ceased manufacturing the two products at the Greensboro facility until further notice
 - b. NOV and Civil Penalty in progress to Lanxess for April 5, 2022 Event
 - i. Civil Penalty will recoup the City's penalty from NCDEQ for exceedance of its compliance value

- c. Note – City IWS has been notified that the facility will be acquired by Hallstar chemical manufacturing company. Letter of Intent is scheduled to be signed 10/3/2022 to transfer ownership. Corporate EHS has contacted the IWS – there will be no changes to manufacturing processes, raw materials, final products. Therefore they will request a transfer of the existing SIU Permit. They will assume responsibility for required 1,4-dioxane sampling& analysis and will NOT manufacturing the two products of concern.
- 4. Public Outreach
 - a. City Website Updates
 - i. All 1,4-dioxane data from NCDEQ emails
 - ii. eDMRs beginning with January 2021
 - iii. 5th Quarterly Meeting Notes/documents
 - iv. First meeting with GTN on 9/28/2022 for public awareness campaign
 - 1. Our goal is to have three different advertisements. One for commercial users, one for industrial users and one for domestic users.
 - b. Greensboro giving 1,4-dioxane presentation at NC Pretreatment Consortium Annual Conference on September 19.
 - c. Economic Development Information updated on website document to include 1,4-dioxane language.
 - d. CEC LPAD updated with tiers for Year 2 Compliance Value of 31.5 ug/l and Year 3 Compliance Value of 23 ug/l.
- 5. Other Items of Discussion
 - a. Economic Development updates
 - 1. Received preliminary permit application from Toyota. Based on their data from a sister facility, no 1,4-Dioxane is present. Supposed to have full application and 1,4-Dioxane data by mid-October.

Questions and Wrap-Up

Scheduled Dates for SOC Year Two Quarterly Meetings between NCDEQ WSRO and GSO

- Meeting #7 Wednesday, November 16, 2022
- Meeting #8 Wednesday, February 15, 2023

ATTACHMENT 64



Semi-Annual Progress Report on 1,4 dioxane in the Cape Fear River Basin

EMC Water Quality Committee Meeting, January 11, 2023

Jenny Graznak, Assistant Regional Supervisor, Winston Salem Regional Office

Michael Montebello, Chief, NPDES Program Branch, Division of Water Resources



Semi-Annual 1,4 Dioxane Progress Report

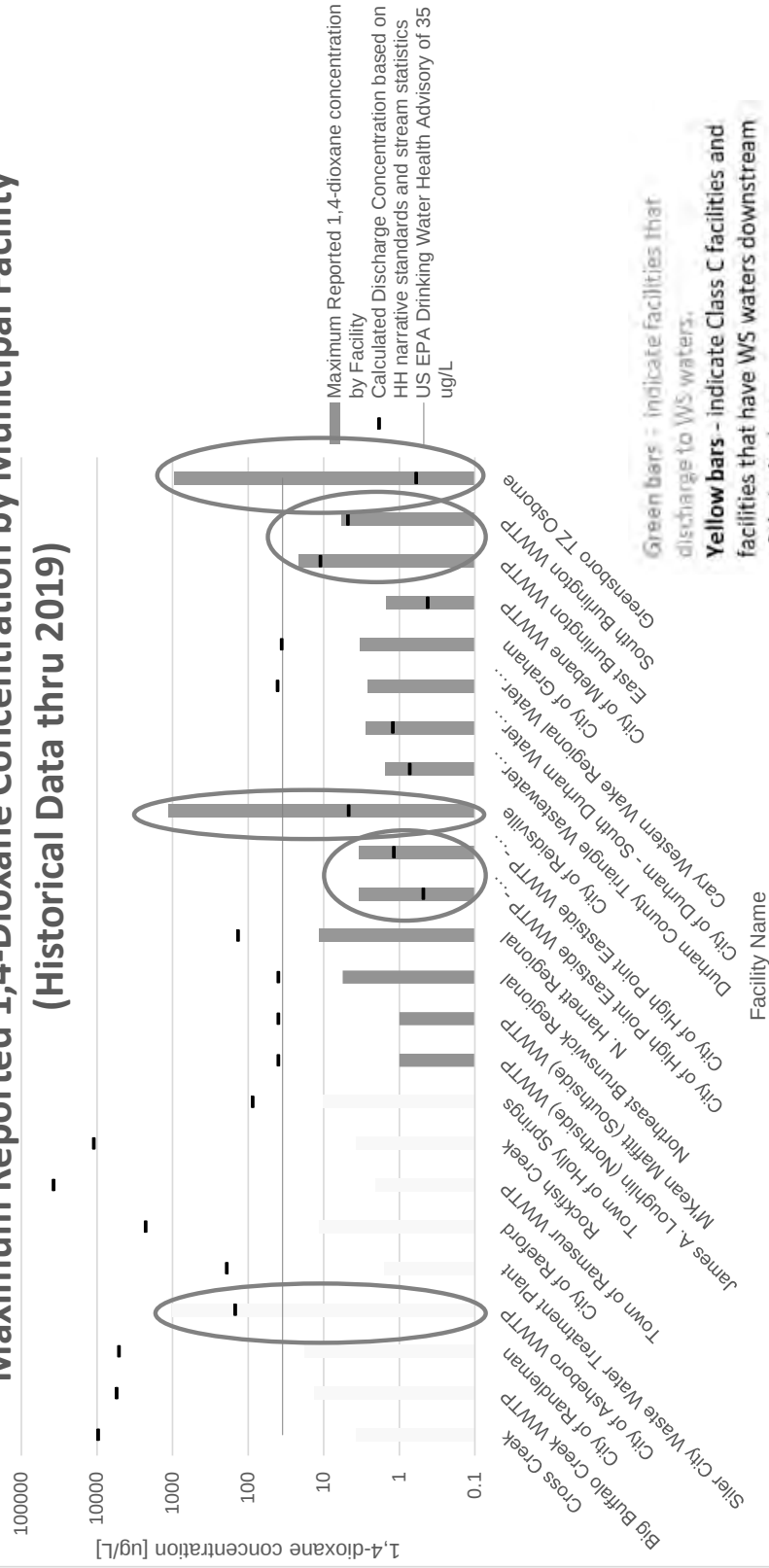
- Ongoing and planned surface water and discharge sampling efforts, including results (Jenny Graznak)
- Identification of point sources dischargers of 1,4-dioxane in the Cape Fear River Basin upstream of any drinking water intake (Michael Montebello)
- Update on the actions DEQ is taking to reduce 1,4-dioxane concentrations in the Basin, including incorporation of limits into NPDES permits, an explanation of DEQ's reasoning, and an expected time for completion (Michael Montebello)



DWR 1,4-dioxane DWR Sampling and POTW Discharge Sampling Efforts



Maximum Reported 1,4-Dioxane Concentration by Municipal Facility (Historical Data thru 2019)



28 requests, all submitted data

23 POTWs showing data on chart

(High Point Eastside has two outfalls)

1- no discharge (Columbus)

4- POTWs ND (<400-1000)



DWR 1,4-dioxane Surface Water Sampling

- **2023 surface water monitoring plan for 1,4-dioxane:** Monthly monitoring will continue in the Cape Fear, Neuse, and Yadkin River basins. 2022 data will be added to the online dashboard for viewing and downloading. The 30 RAMS stations monitored in 2021-2022 will be deactivated and 30 new randomly-selected stations will be activated statewide.

Cape Fear River Basin 1,4-Dioxane (µg/L) results, November 2017 – December 2021.

Year	# Stations	# Results	# Nondetects	% Detects	Minimum	Median	Maximum
2017	9	9	0	100	<1	5.7	1000
2018	52	251	111	56	<1	1.4	210
2019	22	183	82	55	<1	1.1	170
2020	26	188	132	30	<1	<1	900
2021	28	262	181	31	<1	<1	150

¹DWR laboratory practical quantitation limit (PQL) for 1,4-dioxane is 1 µg/L.

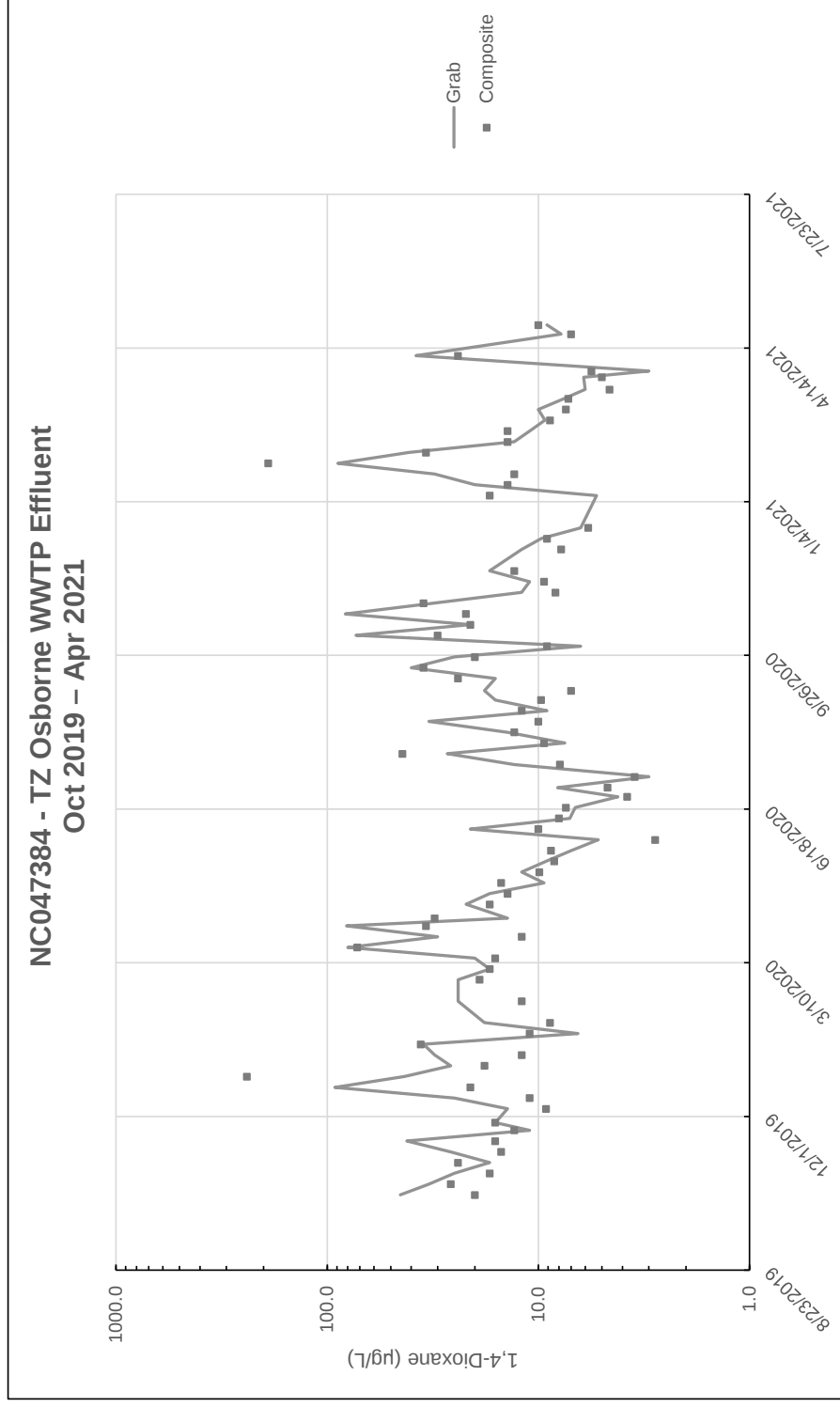


DWR 1,4-dioxane Discharge Sampling

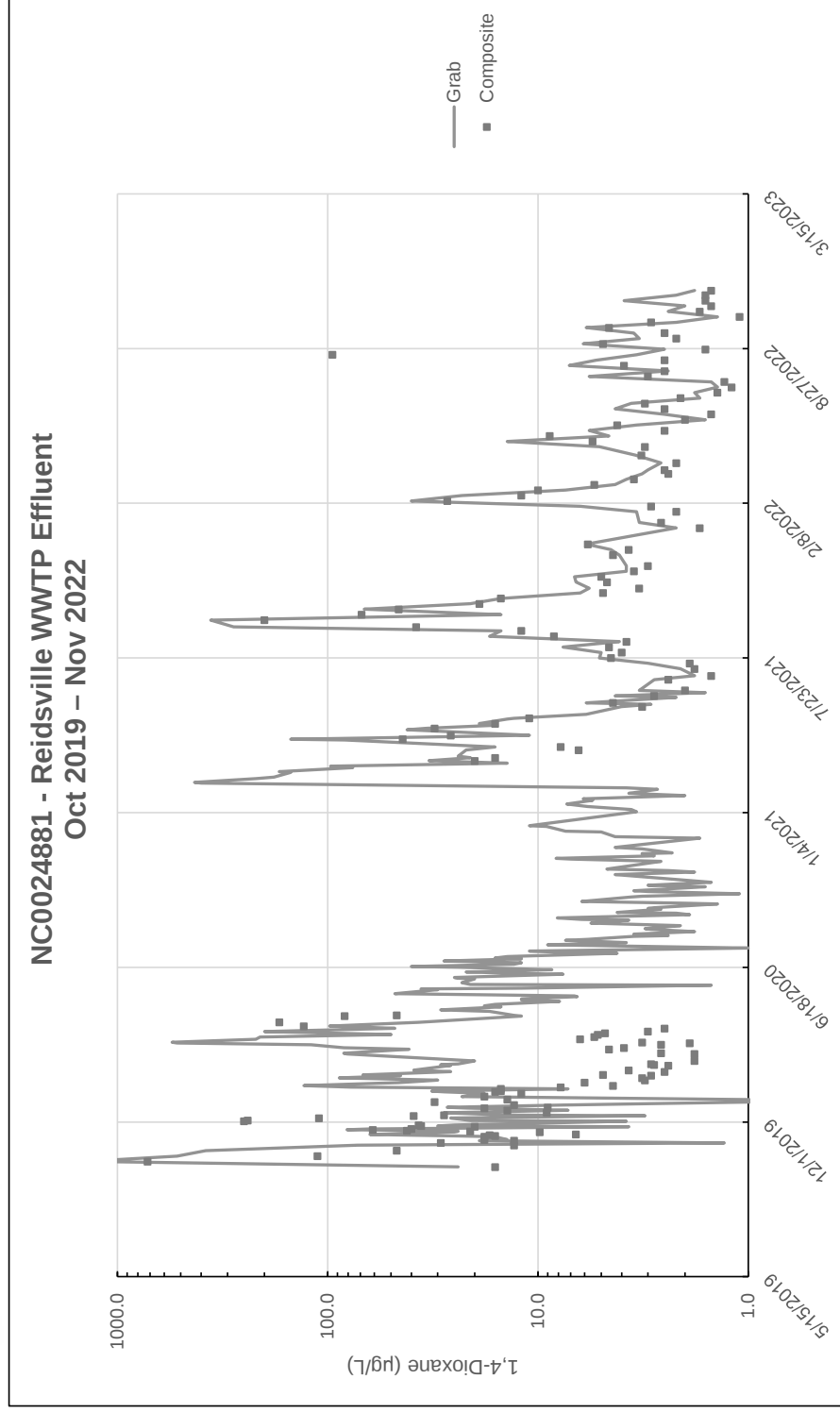
- WSRO collects/collected weekly grab & composite samples at:
 - Greensboro TZ Osborne WWTP
 - October 2019 through April 2021 (when original SOC became effective)
 - Reidsville WWTP
 - October 2019 through Present
 - Burlington East WWTP
 - November 2019 through April 2020 (when City entered agreement with Haw River Assembly that included routine sampling)
 - Asheboro WWTP
 - July 2021 through Present
 - High Point Eastside WWTP
 - June 2022 through Present



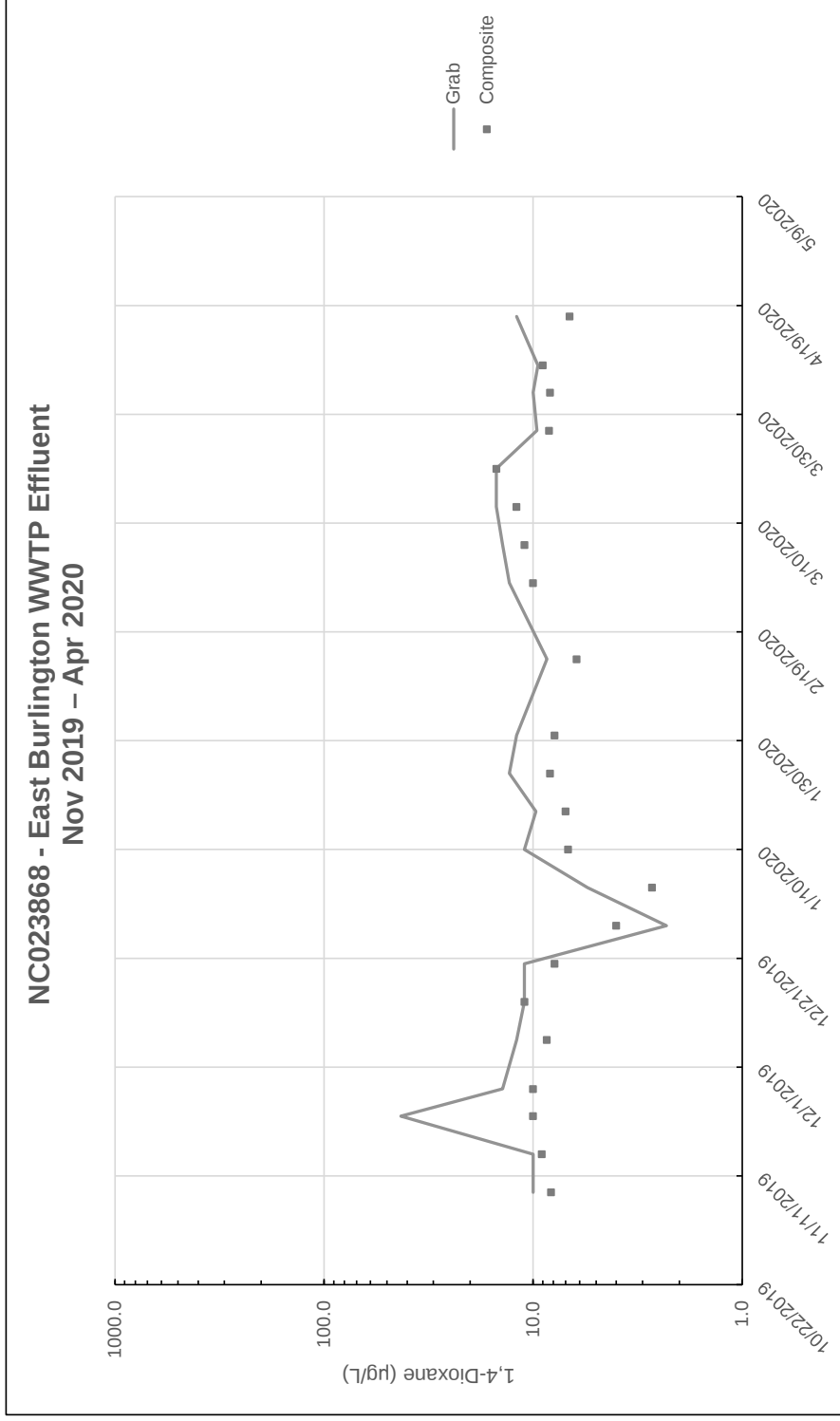
DWR 1,4-dioxane Sampling Data – Greensboro



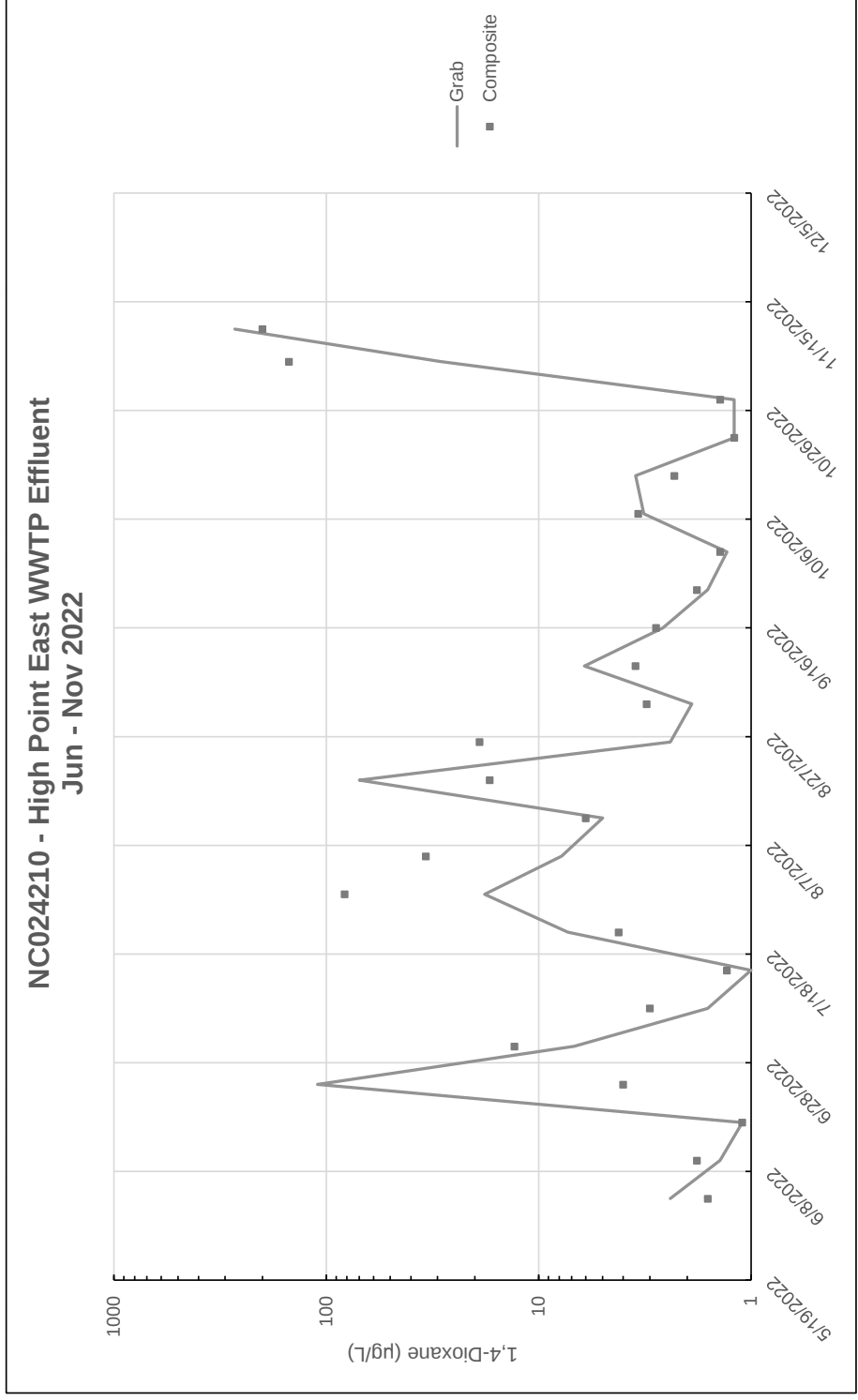
DWR 1,4-dioxane Sampling Data – Reidsville



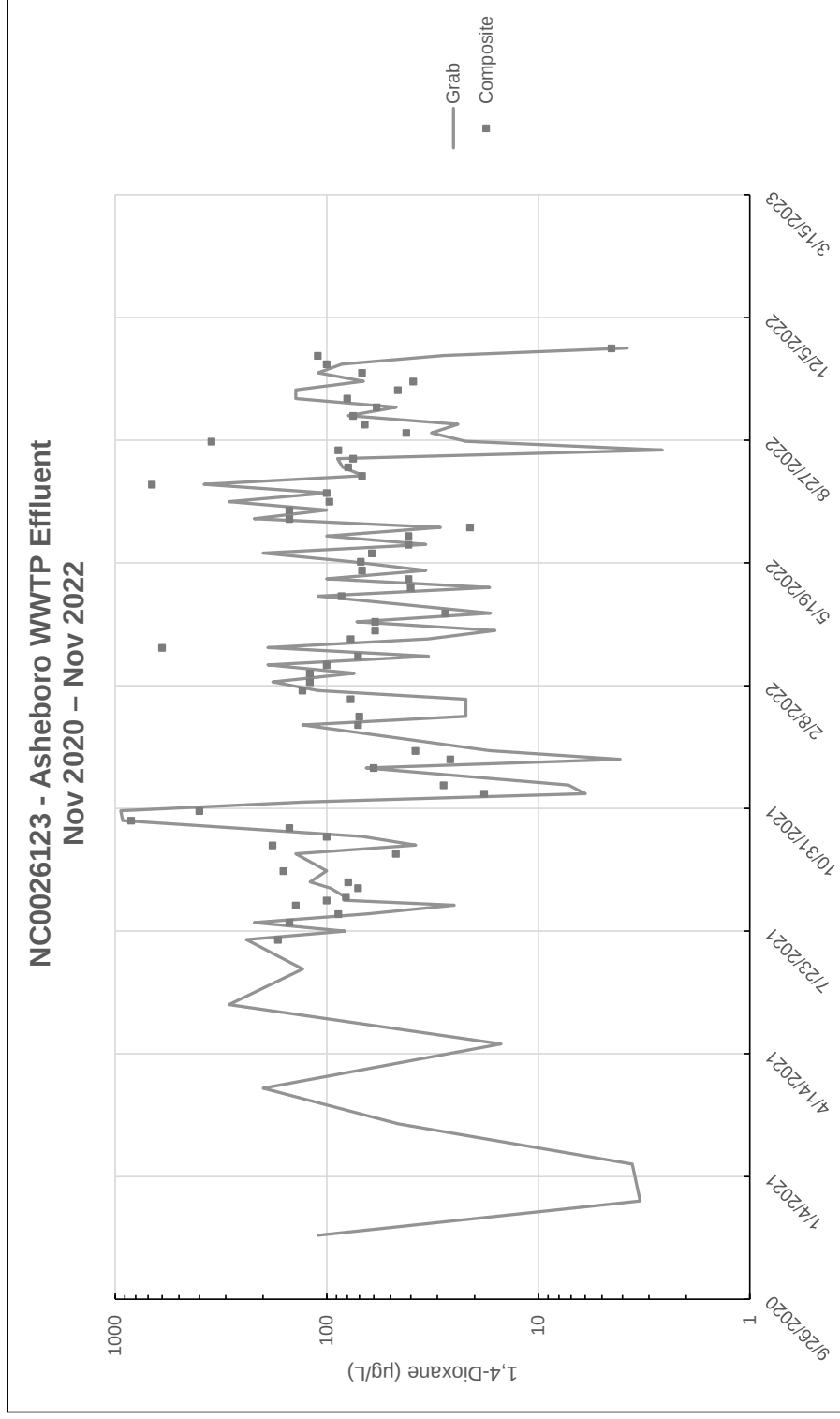
DWR 1,4-dioxane Sampling Data – Burlington



DWR 1,4-dioxane Sampling Data – High Point



DWR 1,4-dioxane Sampling Data – Asheboro



Brief Update on Greensboro Special Order by Consent: Current status and recent actions



Greensboro SOC for 1,4-dioxane

- Original SOC approved by EMC in March 2021, with an effective date of May 1, 2021
 - Two Year SOC with Compliance Values: Year One: 45 ug/l, Year Two: 33 ug/l
- Fayetteville Public Works Commission and Haw River Assembly filed legal petition against SOC in April 2021
- Due to settlement negotiations, an amended SOC was approved by EMC in November 2021, with an effective date of December 1, 2021
 - Three Year SOC with lower Compliance Values:
 - Year One: 35 ug/l, Year Two: 31.5 ug/l, Year Three: 23 ug/l
- Part of that settlement included the requirement for these semi-annual progress reports to the WQC on DEQ 1,4-dioxane actions



Greensboro's Ongoing Monitoring for 1,4-dioxane

- City's amended SOC monitoring plan has 58 sampling sites (includes addition of all Significant Industrial User (SIU) discharges as well as Pittsboro raw water intake)
- "Rush" laboratory analysis on weekly effluent 1,4-dioxane samples to allow notification to downstream users if necessary
- Composite samplers remain 24/7 at 4 trunklines within City's collection system
 - Samples collected/samplers maintained twice per week



Additional Monitoring: Direct Sampling of SIUs

- As part of SOC Settlement Agreement, City conducts 1,4-dioxane composite sampling and analyses for each of 32 SIU discharges once in two consecutive quarters in all 3 years of SOC
 - All SIUs on Patton trunkline with concentrations >15 ug/l are required to collect and retain daily and weekly composite samples
- In Year One, any SIU with 1,4-dioxane discharge concentration of >100 ug/l was required to investigate and report back to City
 - City Identified 9 SIUs with discharge >100 ug/l
 - SIUs >31.5 ug/l in Year Two
 - SIUs >23 ug/l in Year Three



Hallstar (formerly Lanxess): Organic Chemical Manufacturer

- Results from this SIU indicate they were definitively the source of the 1,4 dioxane April 2022 exceedance:
 - They identified a product that generated 1,4-dioxane as an unintended reaction by-product during the production process
 - SDS review of raw materials in this product did not indicate 1,4-dioxane presence
 - They typically only produced this product once per year
 - They also identified a sister product is manufactured only 1-2 times per year that may also generate 1,4-dioxane as an unintended byproduct
- **Manufacture of the suspected products at the Greensboro facility was halted until further notice, however...**



City investigation of slightly elevated effluent 1,4 dioxane grab result – October 2022

- City received 1,4-dioxane result of **8.4 ug/L** for effluent grab sample collected on 10/25/22
 - Not an exceedance of Year Two SOC compliance value of 31.5 ug/L, but slightly higher than normal
- Patton Surveillance sample result from 10/21-24 was 27.3 ug/L
 - That is more elevated concentration than usually seen there
- City required the previously identified Patton trunkline SIUs to submit weekly composite samples for the week of 10/16-22 for analysis
 - Hallstar (new owner of former Lanxess) reported significantly higher than normal daily & weekly composite results during same time period
- Lanxess was sold to new company Hallstar in October 2022
- Hallstar attempted to manufacture one of the halted products and capture all resulting wastewater, but some was ultimately released to collection system

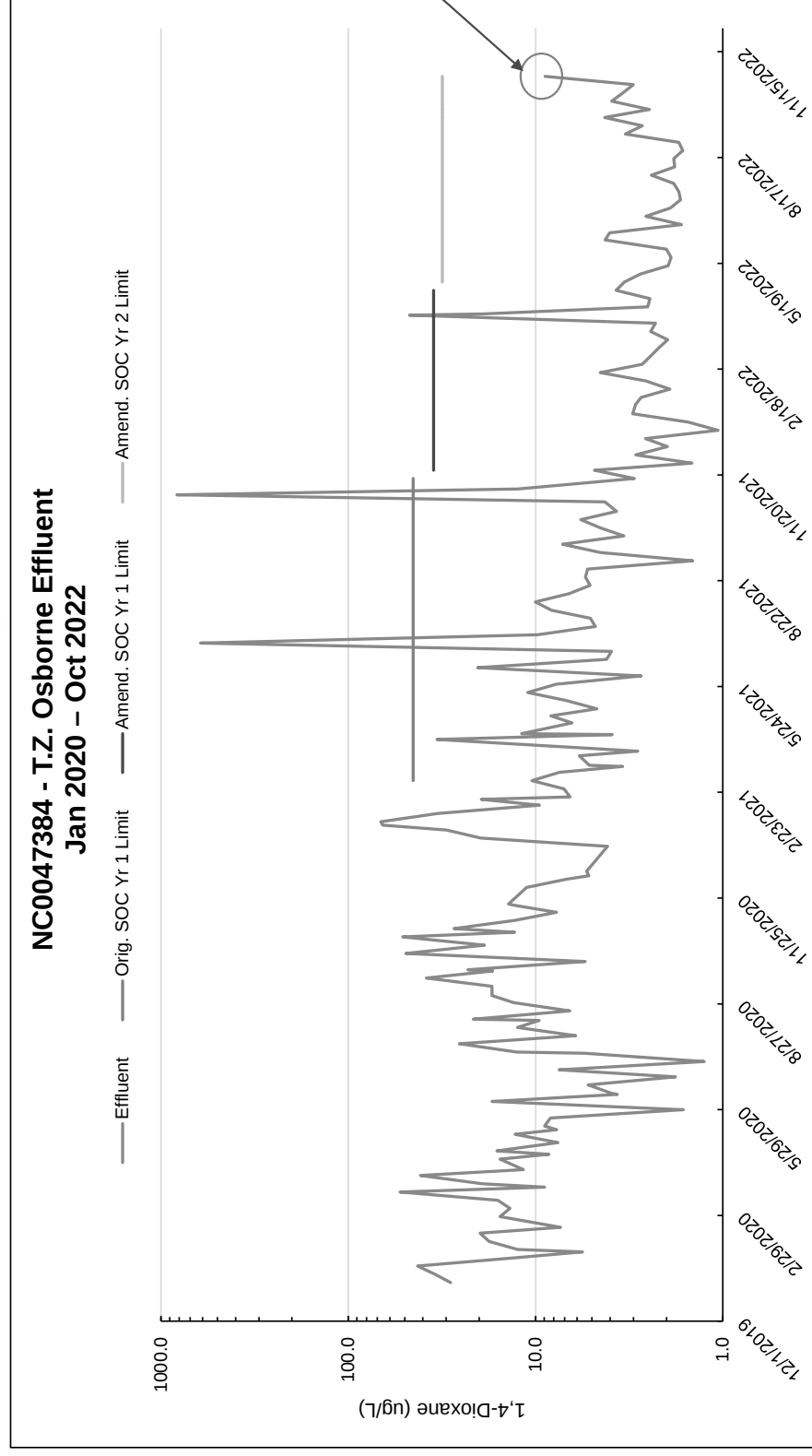


City's Investigation of slightly elevated effluent 1,4 dioxane grab result – October 2022

- City has a Local Pollutant Allocation for Hallstar
 - According to daily composite sample, they exceeded that on 10/20/22
 - City is currently pursuing enforcement action based on this exceedance
 - DWR will provide an update to WQC on these actions in next report
- City's voluntary investigation of the slightly elevated effluent sample resulted in discovery
 - Combined effluent data, collection system surveillance sampling, and SIU sampling to determine from where the elevated concentration originated
- Based on this information, the SOC process and other voluntary efforts by the City are working



eDMR Effluent 1,4-Dioxane concentrations with SOC compliance value (Jan 2020 – October 2022)



Identification of Point Source Dischargers of 1,4-dioxane in the Cape Fear River Basin



NPDES Permitting- 1,4 Dioxane Permitting Update January 2023

NPDES Permits issued with 1,4-Dioxane requirements/conditions

- Nokia of America Corp. (NC0080853), issued 1/2/2018, effective 2/1/2018
 - o 1,4-Dioxane – quarterly monitoring
 - o Permit expires 6/30/2023, renewal application not yet received
- Stepan Company (Invista S-A-R-L LLC) (NC0001112), issued 2/23/2018, effective 4/1/2018
 - o 1,4-Dioxane – quarterly monitoring
 - o Permit expires 3/31/2023, renewal application received 9/27/2022
- Radiator Specialty Co. (NC0088838), issued 5/23/2018, effective 7/1/2018
 - o 1,4-Dioxane – 80 ug/L limit with monthly monitoring
 - o Facility reported no flow since August 2020
 - o Permit expires 3/31/2023, renewal application received 10/4/2022
- DAK Americas LLC – Cedar Creek Site (NC0003719), issued 6/18/2018, effective 8/1/2018
 - o 1,4-Dioxane – monthly monitoring
 - o Permit expired 10/31/2022, renewal application received 5/5/2022
- Tar River Regional WWTP (NC0030317), issued 2/21/2022, effective 4/1/2022
 - o 1,4-Dioxane – monthly monitoring
- Graham WWTP (NC0021211), issued 3/1/2022, effective 4/1/2022
 - o 1,4-Dioxane – monthly monitoring



NPDES Permitting- 1,4 Dioxane Permitting Update January 2023

NPDES Permits issued with 1,4-Dioxane requirements/conditions

- Moncure Holdings West LLC WWTP (NC001899), issued 3/18/2022, effective 5/1/2022
 - o 1,4-Dioxane – included in Closure Requirements parameter list
- Ramseur WWTP (NC0026565), issued 4/6/2022, effective 5/1/2022
 - o 1,4-Dioxane – quarterly monitoring
- Triangle WWTP (NC0026051), issued 8/1/2022, effective 9/1/2022
 - o 1,4-Dioxane – monthly monitoring
- Siler City WWTP (NC002664), issued 9/28/2022, effective 11/1/2022
 - o 1,4-Dioxane – monthly monitoring
- Fayetteville – Rockfish Cr WRF (NC0050105), issued 9/29/2022, effective 11/1/2022
 - o 1,4-Dioxane – monthly monitoring
- South Durham WRF (NC0047597), issued 12/12/2022, effective 1/1/2023
 - o 1,4-Dioxane – monthly monitoring



NPDES Permitting- 1,4 Dioxane Permitting Update January 2023



Permits **public noticed** with 1,4-Dioxane requirements or conditions

- Brenntag Mid-South, Inc – Greensboro GW Remediation Site (NC0078000), PN 7/27/2021
 - o 1,4-Dioxane – monthly monitoring
- Daikin Applied Americas Inc. – *HeatCraft* Site (NC0083658), PN 5/3/2022
 - o 1,4-Dioxane – quarterly monitoring
- Sanford – Big Buffalo WWTP (NC0024147), PN 9/22/2022
 - o 1,4-Dioxane – monthly monitoring
 - o Public Hearing requested & being scheduled for early 2023
- Dutchman WWTP (NC0024191, PN 10/18/2022
 - o 1,4-Dioxane – quarterly monitoring
- Asheboro WWTP (NC0026123) – Public noticed on 12/6/2022, comments requested by 1/13/2023
 - o 1,4-Dioxane – Phased limits with weekly monitoring
 - Phase I interim = 55.7 µg/L monthly avg, 127.6 µg/L daily max
 - Phase II interim = 35.0 µg/L monthly avg, 80.2 µg/L daily max
 - Final = 21.6 µg/L monthly avg, 49.4 µg/L daily max
 - Instream monitoring 2/month



NPDES Permitting- 1,4 Dioxane Permitting Update January 2023

Permits being prepared by staff with proposed 1,4-Dioxane requirements or monitoring conditions

- Reidsville WWTP (NC0024881)
 - o 1,4-Dioxane – proposed final limits with a phased schedule
- High Point – Eastside WWTP (NC0024210)
 - o 1,4-Dioxane – proposed final limits with a phased schedule
 - Outfall 001 – Richland Creek (emergency use)
 - Outfall 002 – Deep River (Randleman Lake)
- Greensboro – TZ Osborne WWTP (NC0047384)
 - o 1,4-Dioxane – proposed final limits with a phased schedule (post SOC)
 - Final = 0.54 µg/L monthly avg, 1.53 µg/L daily max
- East Burlington WWTP (NC0023868)
 - o 1,4-Dioxane – proposed final limits with a phased schedule
- Albemarle – Long Creek WWTP (NC0024244)
 - o 1,4-Dioxane – monthly monitoring
- Mebane WWTP (NC0024174)
 - o 1,4-Dioxane – quarterly monitoring



Update on DEQ actions to reduce 1,4-dioxane concentrations in the Cape Fear River Basin



NPDES Permitting- 1,4 Dioxane Permitting Update January 2023

Permits public noticed with final limits

- City of Asheboro, comment period ends 1/13/2023
 - Proposed 1,4-Dioxane effluent limit – weekly monitoring
 - Phased compliance schedule for 5 years
 - Phase I interim = 55.7 µg/L monthly avg, 127.6 µg/L daily max
 - Phase II interim = 35.0 µg/L monthly avg, 80.2 µg/L daily max
 - Final = 21.6 µg/L monthly avg, 49.4 µg/L daily max
 - Instream monitoring 2/month

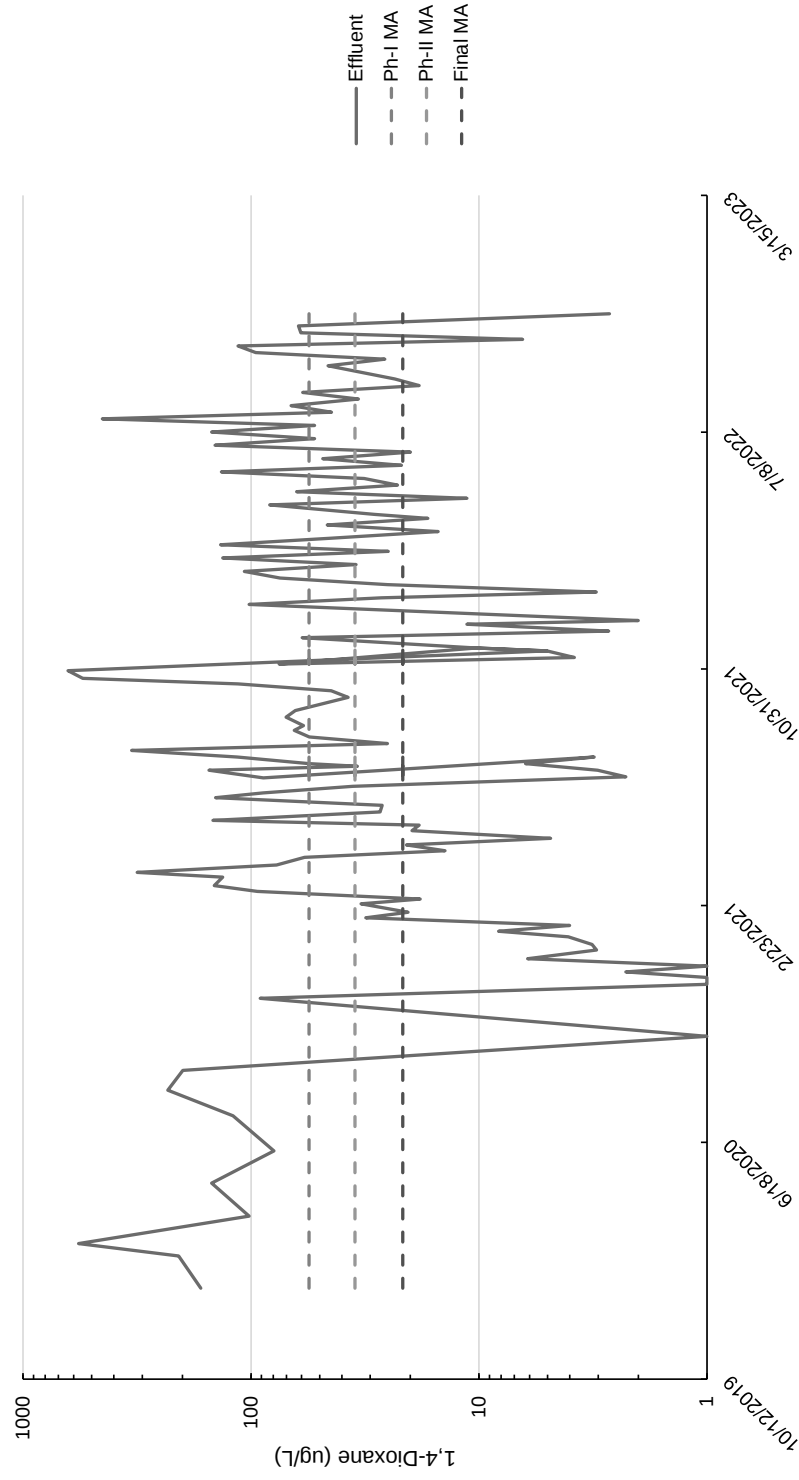


Asheboro WWTP 1,4-dioxane eDMR

Effluent Sampling Data



NC0026123 - Asheboro WWTP
Jan 2020 - Oct 2022



Update on recent actions – January 2023

- 1,4-dioxane permitting strategy-updated
- Emerging compounds website and related information



Additional NPDES point sources

- Addressing the next group of NPDES permits that would be expected to include effluent limitations for 1,4-Dioxane
- Taking NPDES permits in a step-wise approach
- Prioritizing permits based on both sampling results and discharge location
- Reviewing Chemical Addendum information being provided with NPDES permit applications



A Brief Explanation of DEQ's Actions, Reasoning, and the Expected Time for Completion



POTW	NPDES Permit #	Permitted Flow [MGD]	Stream Classification	Permit expires	Drafting Status
Greensboro TZ Osborne	NC0047384	56	WS-V,NSW	6/30/2019	Draft shared with permittee
City of High Point Eastside WWTP - Richland Creek/Deep River (2 outfalls)	NC0024210	26	WS-IV (Lake Randleman)	12/31/2018	Staff drafting
City of High Point Eastside WWTP	NC0024211	32 (proposed expansion) 7.5 (with proposed reduced flow 5.5 MGD)	WS-IV (Lake Randleman)	same	Reviewing modeling
City of Reidsville	NC0024881		WS-IV,NSW	4/30/2016	Staff drafting
Burlington-South Burlington WWTP	NC0023878	12	WS-V, NSW	6/30/2019	Staff drafting
Burlington- East Burlington WWTP	NC0023868	12	WS-V,NSW	6/30/2019	Staff drafting

Estimated Time for Actions in 2023

- Draft permits for Cities of Burlington, High Point (including their proposed expansion) and Reidsville will be discussed with each permittee
- Summary of discussion will be included with next semi-annual WQC report in 2023
- Process will be similar to Greensboro and Asheboro NPDES permitting



Additional steps needed & future challenges

- Assessment of treatment technologies for permittees with NPDES permit limits that may require something equivalent to BAT
- Working with SIUs to assess alternatives like product substitution or relocation of specific manufacturing products
- Future challenges in permitting:
 - Emerging compounds that must be addressed: PFAS, new EPA guidance December 5, 2022





July 2023 – 3rd semi-annual progress report to WQC

Questions?



Extra Slides with POTW eDMR Effluent Sampling Data

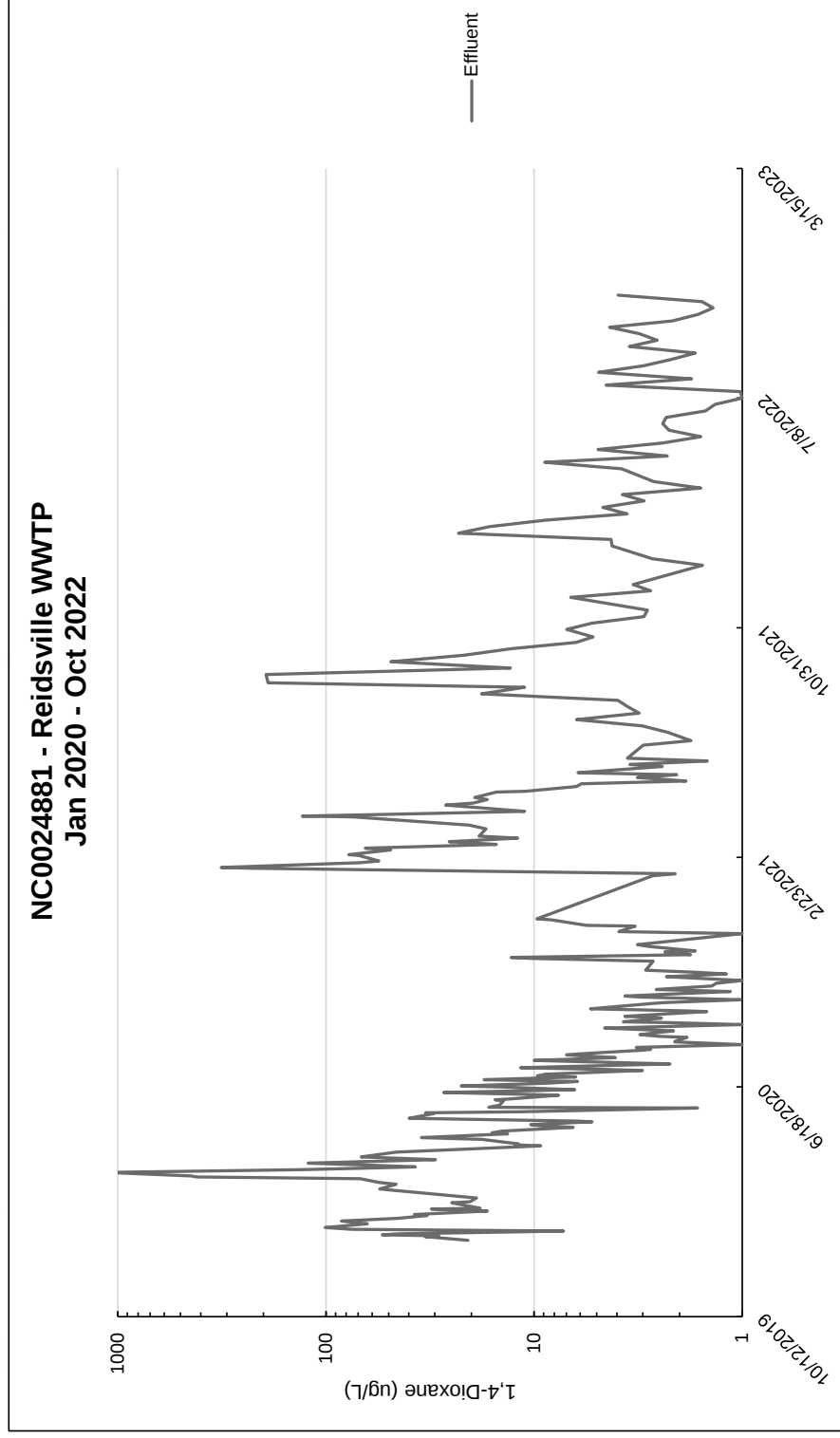


POTW 1,4-dioxane eDMR Effluent Discharge Sampling

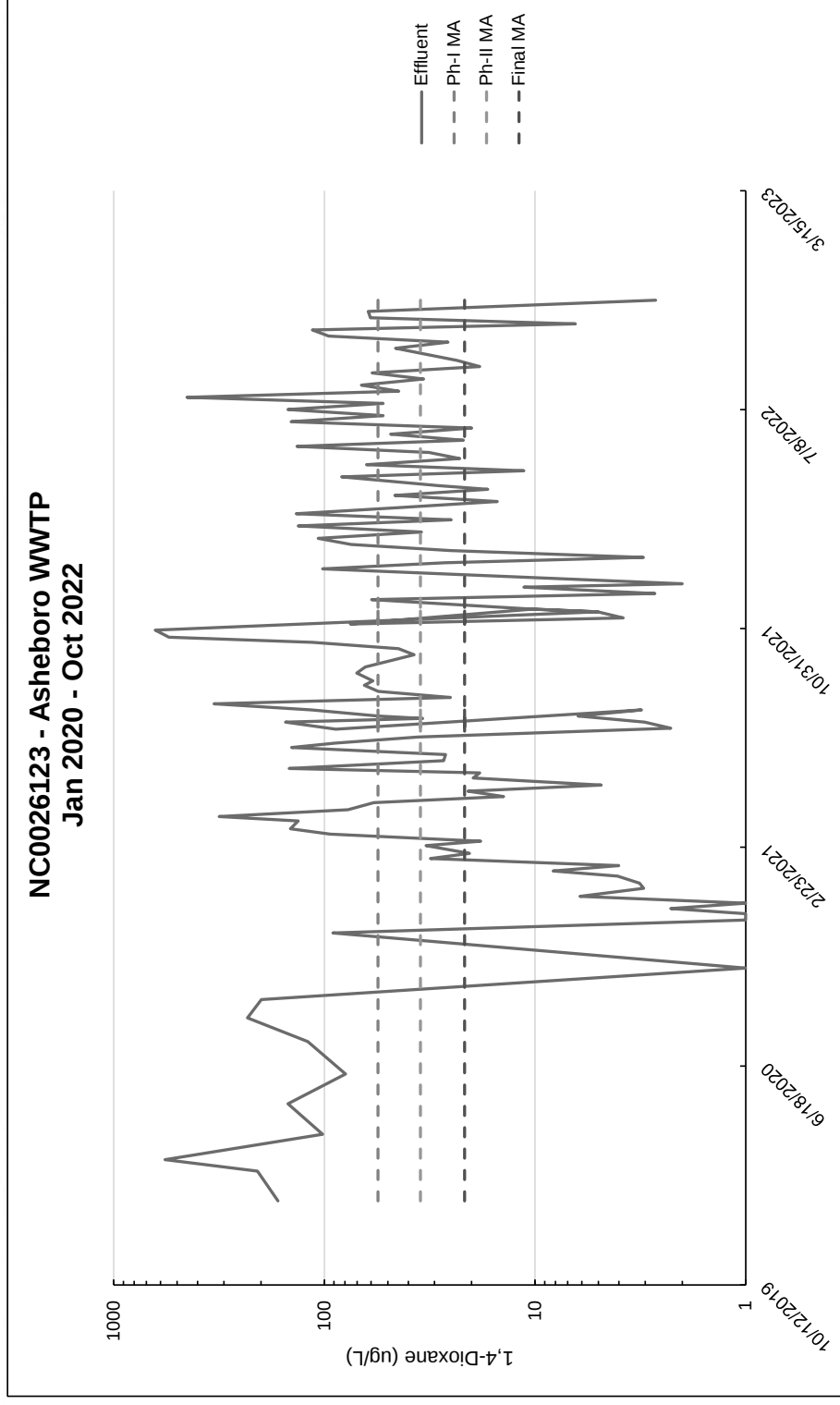
- Reidsville WWTP (proposed 5.5 & existing 7.5 MGD)
- Asheboro WWTP (9 MGD- on public notice thru 1/13/2023)
- High Point Eastside WWTP (existing 26 MGD and proposed expansion to 32 MGD)
- Greensboro TZ Osborne WWTF (56 MGD with existing SOC)



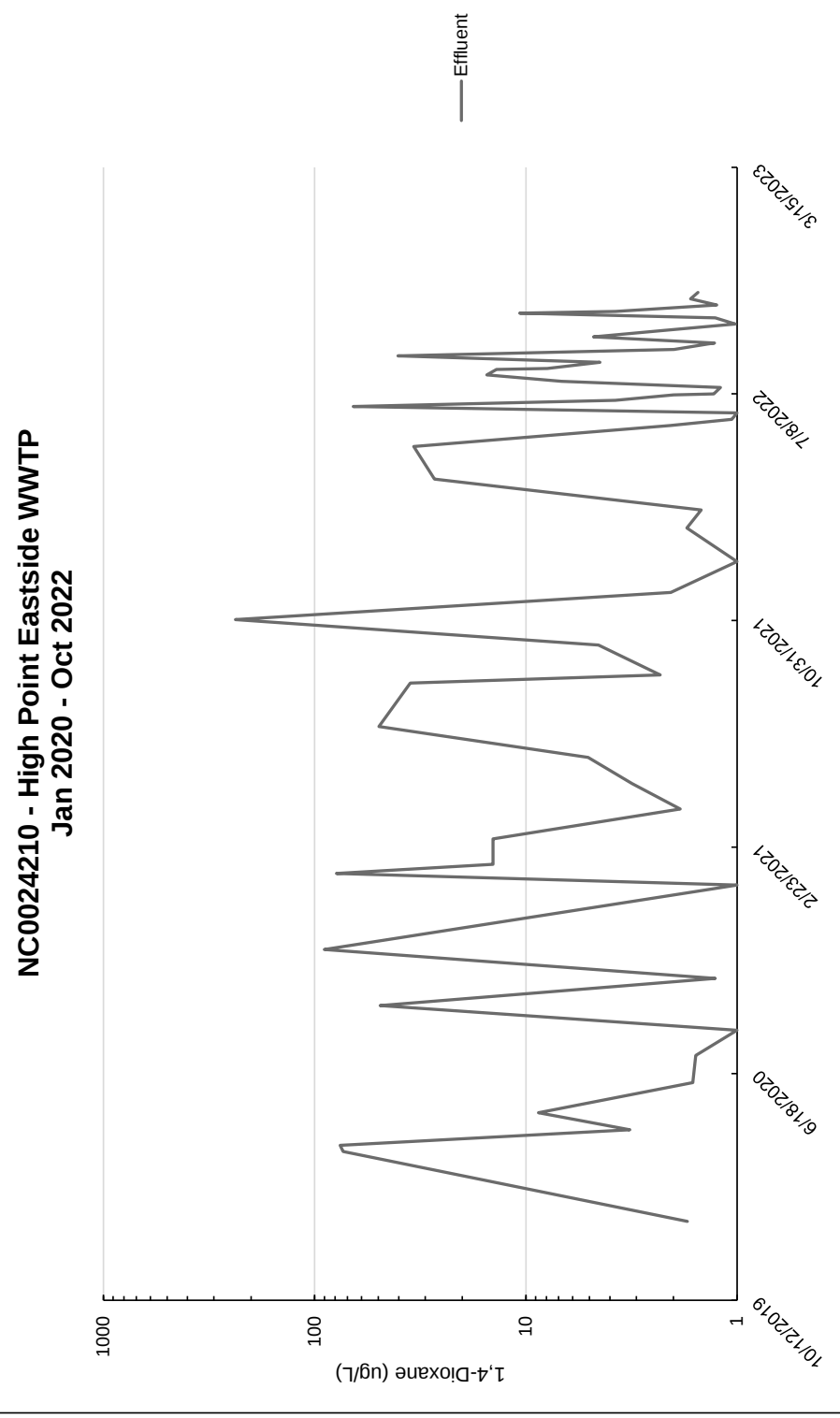
Reidsville 1,4-dioxane eDMR Effluent Sampling Data



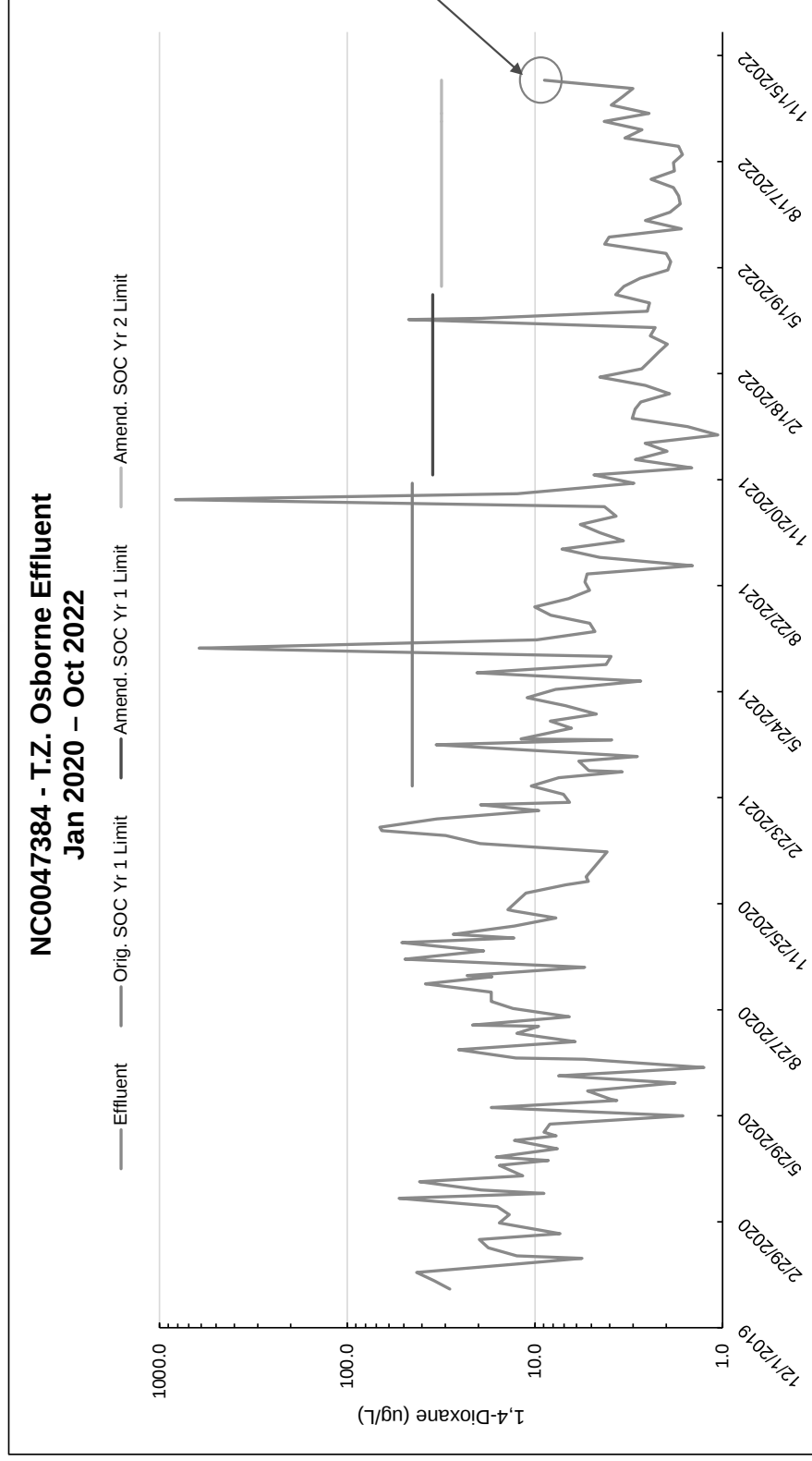
Asheboro 1,4-dioxane eDMR Effluent Sampling Data



High Point 1,4-dioxane eDMR Effluent Sampling Data



Greensboro 1,4-Dioxane eDMR Effluent concentrations with SOC compliance value (Jan 2020 – October 2022)



ATTACHMENT 65

**City of Greensboro and NCDEQ Winston-Salem Regional Office
Special Order by Consent (SOC) Year Two: 8th Quarterly Meeting NOTES
Wednesday, February 15, 2023 10 am – 11 am (Virtual)**

Participants:

NCDEQ: Lon Snider, Jenny Graznak (WSRO)
Mike Montebello, Keyes McGee, (Raleigh NPDES)

Greensboro: Elijah Williams, Alicia Goots, Amy Varinoski, Bill Burdick,
Julie Greene, Ben Goforth

Updates from NCDEQ

Nothing to report or share

Updates from City of Greensboro

- Information Items:
 - a. TZO eDMR data summary since beginning of SOC (May 1, 2021)
 - Average value = 19.9 ug/l
 - Average = 4.09 ug/l without 3 exceedance values - calculated on 2-14-2023
- SOC Sampling Plan Year Two Data Review:
 - a. Patton Avenue Surveillance Sampling (voluntary)
 - 1/6-9/2023 = 2.32 ug/l
 - 1/13-17/2023 = 3.5 ug/l
 - 1/20-28/2023 = 3.82 ug/l
 - 1/27-30/2023 = 4.58 ug/l
 - **AVERAGE = 3.56 ug/l**
 - b. All other SOC Year Two data is provided to NCDEQ via email and posted on City website
- Update re: TZO Effluent on October 25, 2022 (NOTE: no exceedance of SOC Compliance Value)
 - NOV for Hallstar issued 2/14/2023
 - DEQ reiterated EMC's concern about this exceedance.
 - We have letter from Hallstar stating they will no longer make these PEG chemicals in Greensboro.
 - Specified industries are required to collect and retain daily composite samples. They are required to pour up a representative weekly composite from their retained daily samples and submit one weekly composite, of their choosing, per month to send for analysis and submit the results to the IWS. The industries receive a 1,4-dioxane email update based on the City's update email sent to the State and downstream utilities. The industries' update email indicates which retained samples they can dispose of based on City data.

Questions and Wrap-Up

Potential Dates for SOC Year Three Quarterly Meetings between NCDEQ WSRO and GSO

- Meeting #9 Wednesday May 10, 2023
- Meeting #10 August 9 or August 16, 2023 (both are Wednesdays)

ATTACHMENT 66

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

LINDA CULPEPPER
Director



NORTH CAROLINA
Environmental Quality

April 30, 2019

«PT_Contacts_Formal_Name»
«PT_Contacts_Title»
«WWTP_Name»
«PT_Contacts_B1_Addr_1»
City, NC «PT_Contacts_B1_Zip»

Dear «PT_Contacts_Formal_Name»,

Several emerging compounds have been found in North Carolina waters, specifically, 1,4-dioxane and a group of chemicals known as perfluoroalkyl and polyfluoroalkyl substances (PFAS, also referred to as PFCs). Data reviewed as part of the UCMR (Unregulated Contaminant Monitoring Rule) has indicated elevated concentrations for these compounds in the Cape Fear River Basin. In addition, ambient monitoring performed by DWR's Water Sciences Section have confirmed the presence of these compounds in the Cape Fear River Basin (<https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/1-4-dioxane>).

Background

1,4-dioxane is a clear liquid that is highly miscible in water. It has historically been used as a solvent stabilizer and is currently used for a wide variety of industrial and manufacturing purposes. The compound can be found in industrial solvents, paint strippers, and varnishes and is often produced as a by-product of chemical processes to manufacture soaps, plastics, and other consumer products.

The U.S. EPA has not established a maximum contaminant level for 1,4-dioxane in drinking water but has characterized it as "likely to be carcinogenic to humans" and has established a drinking water health advisory of 35 ug/L. North Carolina has a calculated human health surface water criterion with an associated estimated lifetime cancer risk of one in one million at a concentration for 1,4-dioxane of 0.35 ug/L in water supplies and 80 ug/L in all other waterbodies (15A NCAC 02B .0208).

PFAS compounds are most often associated with nonstick coatings, plating operations, firefighting foams, and stain- and water-resistant treatments for clothing, furniture and carpeting.

PFAS has been found to have adverse effects in laboratory animals and humans when ingested. To provide Americans with a margin of protection from a lifetime of exposure to PFAS from drinking water, EPA has established the health advisory levels of 70 ng/L individually and combined for two of the most common PFAS compounds: PFOA (perfluorooctanoic acid) and PFOS (perfluorooctane sulfonate).

Required Actions

To assess the levels of these compounds throughout the Cape Fear and to assist DWR in developing a Management Strategy to address and reduce levels of these emerging compounds, POTWs with approved Pretreatment Programs are hereby required to perform investigative monitoring at the treatment plant influent for 1,4-dioxane and total PFAS monthly for three consecutive months starting in July 2019. Such investigative actions can be required under 15A NCAC 02B .0508 (b)(2) and G.S. 143-215.66.



North Carolina Department of Environmental Quality | Division of Water Resources
512 North Salisbury Street | 1617 Mail Service Center | Raleigh, North Carolina 27699-1617
919.707.9000

Samples collected should be representative of the typical wastewater flow to your facility. Sufficiently sensitive test methods shall be used.

- To locate a lab capable of performing the PFAS analysis, please visit <https://www.denix.osd.mil/edqw/accreditation/creditedlabs/> and search by method “PFAS by LCMSMS Compliant with Table B-15 of QSM 5.1 or Latest Version”.
 - Grab samples are required to avoid cross-contamination and ensure consistency.
 - Please refer to Attachment B for the analyte list. Each facility shall provide results for as many of the PFAS compounds as possible, specifically including PFOA and PFOS.
- To locate a lab certified to perform 1,4-dioxane analysis using EPA Method 624.1, please visit <https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/certified-laboratory-listings>. Be sure to specify 1,4-dioxane by EPA method 624.1 when contacting the labs.
- All sample results shall be submitted to PERCS by October 31, 2019 and shall be sent to the following email address (please include the lab sheets with the test results): Pretreatment.Results@ncdenr.gov. Please include your NPDES permit number in your subject heading.

Attachment A outlines recommended actions on how to assess potential sources, monitor, and work with your industries to reduce potential sources of these compounds. You are not required to implement these actions until you have received notification from the Division to do so. However, if your influent samples exceed the human health surface water criteria for 1,4-dioxane pertaining to your receiving stream classification, contact your DWR Pretreatment Program coordinator to discuss your facility’s allowable discharge concentration. If your influent levels exceed your facility’s allowable discharge concentration, you should take proactive steps to begin reducing or eliminating 1,4-dioxane discharges to your facility.

The PFAS drinking water health advisory of 70 ng/L is the target concentration for the sum of sample results for PFOA and PFOS. Therefore, actions to reduce these compounds will be required for facilities with influent levels greater than a total PFAS value of 70 ng/L if there are water supply intakes downstream of your facility’s discharge. Again, you are not required to implement actions in Attachment A until you have received notification from the Division to do so. Please be aware that criteria are being developed for PFAS compounds and are likely to be lower than the current drinking water advisory level. Results for PFAS that do not currently require action may trigger reduction activities in the future.

More Information

DWR will be holding a technical informational session on May 21, 2019 from 10 am to 3 pm at the Herbert C. Young Community Center, 101 Wilkinson Ave., Cary, NC. At this time registration for this workshop is limited to approved Pretreatment Program POTW staff due to space limitations. Please register at <http://tinyurl.com/NCECTIS>.

The Department looks forward to working closely with you on this important public health issue. Data from the UCMR and other sources will continue to be evaluated to determine next steps to reduce the discharge of 1,4-dioxane and PFAS throughout the State.

Please contact the appropriate PERCS staff member if you have any questions or concerns: Deborah Gore 919-707-3624, Monti Hassan 919-707-3626 or Vivien Zhong 919-707-3627 or via email (firstname.lastname@ncdenr.gov).

Sincerely,

Linda Culpepper, Director
Division of Water Resources, NCDEQ

Cc: Dana Satterwhite, WSS

Attachment A

<due dates for activities will be added on a case-by-case basis>

1. **Conduct Initial Screening:** Conduct a review of your industrial users to identify industrial users that may be potential significant sources of 1,4-dioxane and/or PFAS. The following types of industrial users may be potential significant sources for these chemicals:

Potential Sources of PFOA & PFOS for POTWs:

- Platers/Metal Finishers
- Paper and Packaging Manufacturers
- Tanneries and Leather/Fabric/Carpet Treaters
- Manufacturers of Parts with PTFE (polytetrafluoroethylene, Teflon type) Coatings (i.e., Bearings)
- Landfill Leachate
- Centralized Waste Treaters
- Contaminated Sites
- Firefighting Foam
- Any other known or suspected sources of PFAS

Potential Sources of 1,4-dioxane for POTWs:

- Paints, Varnishes and Lacquers Manufacturers
- Cosmetics, Deodorants, Cleaning and Detergent Manufacturers
- Pharmaceutical Manufacturers
- Organic and Inorganic Chemical Manufacturers
- Plastics manufacturers or recyclers
- Rubber Manufacturers
- Centralized Waste Treaters
- Photographic Film, Paper and Plate Manufacturers, Commercial Printing
- Electroplating/ Polishing, Semiconductors and Electronic Components Manufacturers
- Pesticide and Agriculture Manufacturers
- Solid Waste Combustors and Incinerators
- Cement Manufacturers
- Abrasive Product Manufacturers
- Roofing, Siding, and Insulation Material Merchant Wholesalers
- Scintillating Fluids Manufacturers
- Dyes and Fiber Manufacturers
- Any other known or suspected sources of 1,4-dioxane

2. **Develop a Monitoring Plan:** Once you have developed a list of *potential* 1,4-dioxane and PFAS sources, you will need to evaluate each one to determine whether it is a *probable* source of 1,4-dioxane or PFAS and develop a strategy for sampling these probable sources. You will likely need to review records and interview your contacts to find out which sources use/have used or accept/have accepted 1,4-dioxane or PFAS containing materials or wastes.

Once you have a list of probable sources, develop a plan to monitor them. Your plan will most likely include your commitment to monitor all your probable sources, when and where you will sample, how you will conduct sampling, transport your samples and analyze them at your chosen laboratory. You may be able to eliminate several probable sources located near one another with one downstream collection system sample. If you have many probable sources, you may also need more time to

conduct monitoring. No pre-approval of your plan is required. You should submit your plan to PERCS by DATE.

3. **Perform Source Monitoring:** Sample the discharge from each probable source identified in your monitoring plan for 1,4-dioxane or PFAS depending on your identification as a probable source following the sampling procedures your chosen labs recommended. Begin this sampling no later than DATE.
4. **Reduce/Eliminate Sources:** If significant sources of 1,4-dioxane or PFAS are found through source monitoring, you are required to follow-up with the source(s) to reduce and/or eliminate 1,4-dioxane or PFAS in their effluent. Source reduction and elimination efforts may include product substitution, operational controls, pretreatment and clean-up of historical contamination.
5. **Submit an Interim Report:** Summarize the list of potential sources and your determination regarding whether they are a probable source, sampling data collected, and evaluation conducted to-date for items 1 – 4 above to the PERCS Unit by DATE.
6. **Evaluate Impacts:** If you find sources discharging 1,4-dioxane or PFAS to your WWTP from this monitoring, you are required to monitor your WWTP influent and effluent for the chemicals detected at the sources for three consecutive months beginning DATE. If effluent results are found to be greater than the applicable criterion you are required to continue working with those sources to achieve further reductions.
7. **Submit a Summary Report:** Submit the results of any additional monitoring data (WWTP influent, effluent, or source monitoring) and summary of 1,4-dioxane and PFAS source reduction and/or elimination effort to DWR/PERCS by DATE. Staff will review the information reported and will contact you about any required follow-up actions.

Attachment B

To locate a lab capable of performing the PFAS analysis, please visit <https://www.denix.osd.mil/edqw/accreditation/creditedlabs/> and search by method “PFAS by LCMSMS Compliant with Table B-15 of QSM 5.1 or Latest Version”. Grab samples are required to avoid cross-contamination and ensure consistency.

It is the Division’s understanding that this test method is capable of providing results for the listed PFAS compounds listed below. The Division recognizes that there may be variations from lab to lab. Each facility shall provide results for PFOA, PFOS, and shall include as many of the following PFAS compounds as possible:

Analyte Name	Acronym	Fluorinated Carbon Chain Length	Molecular Formula	CAS Number
Perfluorotetradecanoic acid	PFTeA	C ₁₄	C ₁₃ F ₂₇ COOH	376-06-7
Perfluorotridecanoic acid	PFTriA	C ₁₃	C ₁₂ F ₂₅ COOH	72629-94-8
Perfluorododecanoic acid	PFDoA	C ₁₂	C ₁₁ F ₂₃ COOH	307-55-1
Perfluoroundecanoic acid	PFUnA	C ₁₁	C ₁₀ F ₂₁ COOH	2058-94-8
Perfluorodecanoic acid	PFDA	C ₁₀	C ₉ F ₁₉ COOH	335-76-2
Perfluorononanoic acid	PFNA	C ₉	C ₈ F ₁₇ COOH	375-95-1
Perfluorooctanoic acid	PFOA	C ₈	C ₇ F ₁₅ COOH	335-67-1
Perfluoroheptanoic acid	PFHpA	C ₇	C ₆ F ₁₃ COOH	375-85-9
Perfluorohexanoic acid	PFHxA	C ₆	C ₅ F ₁₁ COOH	307-24-4
Perfluoropentanoic acid	PFPeA	C ₅	C ₄ F ₉ COOH	2706-90-3
Perfluorobutanoic acid	PFBA	C ₄	C ₃ F ₇ COOH	375-22-4
Perfluorodecanesulfonic acid	PFDS	C ₁₀	C ₁₀ F ₂₁ SO ₃ H	335-77-3
Perfluorononanesulfonic acid	PFNS	C ₉	C ₉ F ₁₉ SO ₃ H	68259-12-1
Perfluorooctanesulfonic acid	PFOS	C ₈	C ₈ F ₁₇ SO ₃ H	1763-23-1
Perfluoroheptanesulfonic acid	PFHpS	C ₇	C ₇ F ₁₅ SO ₃ H	375-92-8
Perfluorohexanesulfonic acid	PFHxS	C ₆	C ₆ F ₁₃ SO ₃ H	355-46-4
Perfluoropentanesulfonic acid	PFPeS	C ₅	C ₅ F ₁₁ SO ₃ H	2706-91-4
Perfluorobutanesulfonic acid	PFBS	C ₄ OMG	C ₄ F ₉ SO ₃ H	375-73-5
Perfluorooctanesulfonamide	PFOSA	C ₈	C ₈ F ₁₇ SO ₂ NH ₂	754-91-6
2-(N-Ethylperfluorooctanesulfonamido) acetic acid	N-EtFOSAA	C ₈	C ₈ F ₁₇ SO ₂ N(C ₂ H ₅)CH ₂ COOH	2991-50-6
2-(N-Methylperfluorooctanesulfonamido) acetic acid	N-MeFOSAA	C ₈	C ₈ F ₁₇ SO ₂ N(CH ₃)CH ₂ COOH	2355-31-9

ATTACHMENT 67

April 29, 2022

Georgia ruling signals new concerns for PFAS users and wastewater treatment systems

Catherine Masingill

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On September 20, 2021, Judge Amy Totenberg, a senior judge on the U.S. District Court for the Northern District of Georgia, issued what she termed an “odyssey” of an Order, totaling 180 pages, in response to 12 motions to dismiss in a per- and polyfluoroalkyl substances, or PFAS, lawsuit, *Jarrold Johnson v. 3M, et al.*, 4:20-cv-00008-AT (N.D. Ga.).

On September 20, 2021, Judge Amy Totenberg, a senior judge on the U.S. District Court for the Northern District of Georgia, issued what she termed an “odyssey” of an Order, totaling 180 pages, in response to 12 motions to dismiss in a per- and polyfluoroalkyl substances, or PFAS, lawsuit, *Jarrold Johnson v. 3M, et al.*, 4:20-cv-00008-AT (N.D. Ga.).

Rate payers and water subscribers in the Rome, Georgia, area filed the suit, alleging that an upstream 9,800-acre land application system (LAS) has polluted, and continues to pollute, their drinking water with the PFAS compounds used by the carpet manufacturing industry in Dalton, Georgia. The suit is one of many filed in Georgia alleging Clean Water Act violations, together with state and common law claims, against PFAS manufacturers and suppliers, carpet manufacturers, and in some cases, the City of Dalton’s water utility companies.

The court largely denied the defendants’ motions, the implications of which are twofold: (1) by casting doubt that LASs are not point sources under the Clean Water Act—an argument not yet addressed by the U.S. Court of Appeals for the Eleventh Circuit—the Order places Georgia’s existing LAS operators in a vulnerable position, operationally, financially, and with regulatory compliance; and (2) the Order indicates a shift toward a more expansive view of potential liability for PFAS exposure damages beyond just PFAS manufacturers.

PFAS and carpet manufacturing

Dalton, Georgia—often referred to as the Carpet Capital of the World—is located in northern Georgia and produces nearly 90 percent of the world’s carpet. PFAS are used throughout the carpet production process to impart stain resistance and durability to carpet fibers. Due to their oil-, water-, and heat-repellant properties, PFAS can persist in the environment with significant longevity.

Discarded PFAS-containing effluent from Dalton’s carpet manufacturers is transported to Dalton Utilities, where the wastewater is land-applied by Dalton’s LAS following certain wastewater treatment measures.

Plaintiffs argue that this land application contributes PFAS into the Conasauga River and its tributaries through hydrological connections, ultimately contaminating downstream communities’ drinking water.

Georgia ruling exposes added vulnerabilities to LAS operators

In its attempts to secure dismissal from the case and, specifically, the Clean Water Act claims, Dalton Utilities argued that its operations are properly permitted under all applicable state and federal regulatory frameworks. Judge Totenberg, however, was persuaded by plaintiffs’ argument that a separate National Pollutant Discharge Elimination System (NPDES) permit may be required for the LAS, as the LAS may be a point source of PFAS pollution.

Under the Clean Water Act, point source designation is a threshold determination for permitting. The typical point source is a discernible pipe discharging pollutants directly into a stream, or the “functional equivalent” of such a discharge, per the U.S. Supreme Court’s recent decision, *County of Maui v. Hawaii Wildlife Fund*, 140 S. Ct. 1462 (2020). LASs incorporate a network of spray nozzles, which irrigate using wastewater over land and, accordingly, do not fit so clearly within the conventional understanding of a point source.

According to Georgia case law, LASs are permitted as nonpoint sources, and many Georgia industries have relied on this conclusion. Consequently, Judge Totenberg’s ruling muddies the water for Georgia’s existing LAS permitting framework by casting doubt as to whether LASs require additional NPDES permitting. Faced with this uncertainty, many existing LASs may halt land application operations or be forced to turn to other less practical and more costly

wastewater treatment measures, at least while Georgia, Congress, or federal appellate courts further evaluate the issue.

In the meantime, one thing is clear: LAS operators are now—at least in the Northern District of Georgia—more vulnerable to regulatory actions and civil claims under theories that the systems require additional NPDES permits.

Ruling opens the door to reaching product manufacturers

The Order also provides a new focus in PFAS litigation directed at downstream commercial producers that use the chemicals, rather than solely holding PFAS manufacturers like 3M and DuPont accountable for PFAS environmental remediation claims. The Order specifically noted that plaintiffs “... failed to point to any authority from Georgia establishing a duty on the part of a chemical supplier to protect an unknown third-party, rather than its consumer, from harm resulting from the negligent use or disposal of the chemical.” Users such as Dalton’s sophisticated carpet producers, however, are deemed to know the risks of disposal.

Despite Judge Totenberg’s reliance on Georgia law, product manufacturers like Dalton’s carpet producers should heed the Order’s implications on national PFAS litigation and anticipate a heightened risk for liability exposure from litigants seeking remediation costs and damages for alleged PFAS pollution and exposure. It appears that the days of only large-scale PFAS manufacturers bearing the brunt of PFAS pollution and exposure costs may be a thing of the past.

ENTITY:

SECTION OF ENVIRONMENT, ENERGY, AND RESOURCES

TOPIC:

ENVIRONMENT

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/content/aba-cms-dotorg/en/groups/environment_energy_resources/publications/trends/2021-2022/may-june-2022/georgia-ruling-signals-new-concerns-for-pfas

ATTACHMENT 68

Project ID: 18-0142

Phase 1: Study of PFAS Compounds on the Chattooga River

Chattooga and Walker County, GA

Cherokee and Etowah County, AL

Project Date: April 24-25, 2018

Report Date: June 13, 2018

Project Leader: Derek Little, PE
Ecology Section
Field Services Branch
Science & Ecosystem Support Division
USEPA – Region 4
980 College Station Road
Athens, Georgia 30605-2720

The activities depicted in this report are accredited under the US EPA Region 4 Science and Ecosystem Support Division ISO/IEC 17025 accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation AT-1644.



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Table of Contents

1.0	Introduction	5
2.0	Study Area and Sampling Plan	5
3.0	Field Methods	5
4.0	Results	6
5.0	Discussion and Recommendations	6
6.0	References	7
7.0	Tables	7
8.0	Figures	13
9.0	Pictures	17
10.0	Full Lab Report	49
11.0	Field Logbook	78

Table of Tables

Table 1: PFAS Analytes	7
Table 2: Sample Locations.....	8
Table 3: Standard Operating Procedures Utilized	9
Table 4: in situ Measurements	9
Table 5: PFOA and PFAS Results	10
Table 6: PFBA Results (ng/L)	10
Table 7: PFBS Results (ng/L).....	10
Table 8: PFDA Results (ng/L)	11
Table 9: PFHpA Results (ng/L)	11
Table 10: PFHxA Results (ng/L)	11
Table 11: PFPeA Results (ng/L)	12

Table of Figures

Figure 1: Chattooga Stations Conceptual Flow Model	13
Figure 2: PFOA & PFOS Sample Results	14
Figure 3: Chattooga Watershed PFOA & PFOS Results.....	15
Figure 4: Weiss Lake and Coosa River PFOA & PFOS Results.....	16
Figure 5: GI00 Upstream View	17
Figure 6: GI00 Downstream View	18
Figure 7: CR02 Upstream View	19
Figure 8: CR02 Downstream View	20
Figure 9: OF02 Upstream View	21
Figure 10: OF02 Downstream View	22
Figure 11:OF01 Upstream View	23
Figure 12: OF01 Downstream View	24

Figure 13: CI00 Lake View	25
Figure 14: CT01 Upstream View.....	26
Figure 15: CT01 Downstream View.....	27
Figure 16: CT02 Upstream View.....	28
Figure 17: CT02 Downstream View.....	29
Figure 18: CT03 Upstream View.....	30
Figure 19: CT03 Downstream View.....	31
Figure 20: CT04 Upstream View.....	32
Figure 21: CT04 Downstream View.....	33
Figure 22: CT05 Upstream View.....	34
Figure 23: CT05 Downstream View.....	35
Figure 24: CT05 Upstream View.....	36
Figure 25: CT06 Downstream View.....	37
Figure 26: CT06 Unknown Pipe	38
Figure 27: CT07 Upstream View.....	39
Figure 28:CT07 Downstream View.....	40
Figure 29: CT08 Upstream View.....	41
Figure 30: CT08 Downstream View.....	42
Figure 31: CT09 Upstream View.....	43
Figure 32: CT09 Downstream View.....	44
Figure 33: CT10 Upstream View.....	45
Figure 34: CT10 Downstream View.....	46
Figure 35: CR01 Upstream View	47
Figure 36: CR01 Downstream View	48

1.0 Introduction

Region 4 Water Protection Division (WPD) through the Drinking Water Section of the Grants and Drinking Water Protection Branch requested the assistance of the Science and Ecosystem Support Division (SESD) to determine background levels of per and polyfluoroalkyl substances or PFAS along the Chattooga River, Weiss Lake, and the Coosa River. PFAS are man-made chemicals that do not occur naturally in the environment and are persistent in the environment and the human body. Extensive information on PFAS can be found at <https://www.epa.gov/pfas>. EPA has established a health advisory level of 70 parts per trillion or equivalently 70 ng/L for drinking water for Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonate (PFOS) combined, both a subset of PFAS. For this study PFAS will refer specifically to compounds analyzed by SESD Analytical Services Branch (ASB) listed in Table 1.

A total of sixteen surface water locations were sampled for this study on April 24th and April 25th of 2018; ten in the Chattooga River watershed, two at the outfall of Weiss Lake, one on Weiss Lake, and three on the Coosa River. At the request of the WPD, sampling was conducted under high flow conditions to capture any affects from land runoff.

None of the Chattooga River samples had detectable concentrations of PFOA. Four out of the ten Chattooga River watershed samples had detectable concentration of PFOS, with a mean concentration of 28 ng/L; CT01 at 20 ng/L, CT02 at 21 ng/L, CT03 at 26 ng/L, and CT06 at 83 ng/L.

The remaining six sites had a mean PFOS concentration of 56 ng/L, and all but CR02 had detectable concentrations of PFOA with a mean of 41 ng/L. Stations CT07 and CT10 were the only stations to have no detectable PFAS. Field and trip blanks had no detectable PFAS. A duplicate sample was collected at CT09, the only analyte that was detected was PFPeA and both results, 18 and 17 ng/L, were J,Q-2 flagged.

2.0 Study Area and Sampling Plan

The Chattooga River originates in Walker County Georgia and feeds into Weiss Lake near Gaylesville, Alabama. Weiss Lake is an impoundment of the Coosa River discharging into the Coosa River in Leesburg, Alabama. The Oostanaula River, a tributary to the Coosa, has historically tested positive for the presence of PFAS.

The Chattooga sampling sites began in Gaylesville, AL and ended upstream La Fayette, GA. Two of the Coosa River sample locations coincided with regularly sample sites by Alabama Department of Environmental Management (ADEM) downstream of Weiss Lake. A third Coosa River sample was collected upstream of Weiss Lake in Georgia. Sampling activities were conducted in accordance with methods outlined in Phase 1: Study of PFAS Compounds on the Chattooga River Sample and Analysis Plan (SESDSAP-180142, 2018). Detailed locations and descriptions of the sample sites are provided in Table 2. A conceptual flow model for the Chattooga River samples is provided in Figure 1.

3.0 Field Methods

Grab samples were collected at each site and were analyzed by ASB for PFAS listed in Table 1. A two-person clean hands/dirty hands protocol was used. One member of the sampling team was designated clean hands and another as dirty hands. All operations involving contact with the sample container and sample media was conducted by the clean hands team member. All other preparations for sampling was performed by the dirty hands team member. At each station, two 15 ml extraction vials were filled to

approximately 5 ml. Samples were collected facing upstream for wadeable locations and upwind of the motor for the boating location. The clean hands member opened the vial 3 to 6 inches underwater to collect the sample. If overfilled, the sample was decanted to 5 ml. Samples were double bagged with Whirl-paks® and placed on ice.

After the sample collection at a station, *in situ* measurements of dissolved oxygen, pH, specific conductivity, and temperature were collected via a multiparameter data sonde. Turbidity was measured on a grab sample using a LaMotte portable turbidimeter. Sample locations were measured with a handheld GPS. Upstream and downstream pictures were also taken at each location where applicable. No flow measurements were possible due to high flows from recent rains. Standard operating procedures utilized are summarized in Table 3. Trip blanks, field blanks, and a duplicate were utilized for quality assurance purposes.

During sampling at station CT06, a pipe was observed actively discharging into the Chattooga River (Figure 26). The pipe, located on the southern side of the river, is most likely for storm drainage.

4.0 Results

All samples were analyzed by ASB using ASBPROC-800-R0, *Determination of Per- and Polyfluoroalkyl Substances in Water, Influent, Effluent and Wastewater by Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS)*.

PFOS was detected at sites CI00, GI00, CR01, CR02, CT01, CT02, CT03, CT06, OF01, and OF02. PFOA was detected at sites CR01, CI00, GI00, OF01, and OF02. Combined PFOA and PFOS concentrations were above the health advisory of 70 ppt at stations CI00, CR01, CT06, OF01, and OF02. Station GI00 total concentration of PFOA and PFOS was below the advisory at 64 ppt. The greatest total PFOA and PFOS concentrations was seen at CR01, 156 ng/L. PFOS and PFOA results are summarized in Table 5. Additionally, Figure 2 through Figure 4 provide maps of stations with PFOA and PFOS concentrations.

The U qualifier on the tables and maps denotes that the analyte was not detected at or above the reporting limit. The J qualifier in the results tables denotes the identification of the analyte is acceptable; the reported value is an estimate. An accompanying Q-2 qualifier denotes that the result was greater than MDL but less than MRL, hence the estimate qualification.

Concentrations of other PFAS compounds are summarized in Table 6 through Table 11. No PFAS compounds were detected at CT07 or CT10. No PFAS compounds were detected in field or trip blanks. FB2 was misclassified as an air blank within Scribe but is a water field blank. Sample CT09-D was a duplicate sample of CT09. Perfluoropentanoic acid (PFPeA) was the only PFAS analyte detected in samples CT09 and CT09-D at an estimated 18 ng/L and 17 ng/L, respectively.

Field *in situ* measurements are summarized in Table 4 along with sample dates and times.

5.0 Discussion and Recommendations

Within the Chattooga watershed, no PFOA was detected during sampling. PFOS was detected at three of the Chattooga watershed sample locations with the furthest upstream at CT06. PFOS was not detected downstream from CT06 until CT03. Dilution from high flows may have resulted in non-detects of PFOA and PFOS at CT04 and CT05.

Further clarification of PFOS sources in the Chattooga watershed would be informed by a low flow sampling with additional sample locations between CT03 and CT06 on the mainstem of the Chattooga River and its tributaries. Tributaries of interest include Chappell Creek near CT06 and Taliaferro Creek between CT03 and CT04. Additionally, if the pipe at CT06 is discharging under dry conditions, sampling would be warranted.

6.0 References

SESDSAP-180142. (2018). *18-0142 Phase 1: Study of PFASs Compounds on the Chattooga River*. Athens, GA: U.S. EPA Region 4.

7.0 Tables

Table 1: PFAS Analytes

Analyte Name	CASRN	Acronym
Perfluorotridecanoic acid	72629-94-8	PFTTrA
Perfluorododecanoic acid	307-55-1	PFDoA
Perfluoroundecanoic acid	2058-94-8	PFUdA
Perfluorodecanoic acid	335-76-2	PFDA
Perfluorononanoic acid	375-95-1	PFNA
Perfluorooctanoic acid	335-67-1	PFOA
Perfluoroheptanoic acid	375-85-9	PFHpA
Perfluorohexanoic acid	307-24-4	PFHxA
Perfluoropentanoic acid	2706-90-3	PFPeA
Perfluorobutyric acid	375-22-4	PFBa
Perfluorodecanesulfonate	335-77-3	PFDS
Perfluorononanesulfonate	68259-12-1	PFNS
Perfluorooctanesulfonate	1763-23-1	PFOS
Perfluoroheptanesulfonate	375-92-8	PFHpS
Perfluorohexanesulfonate	355-46-4	PFHxS
Perfluoropentansulfonate	2706-91-4	PFPeS
Perfluorobutanesulfonate	375-73-5	PFBS
Perfluorooctanesulfonamide	754-91-6	FOSA
Fluorotelomer sulfonate 8:2	39108-34-4	8:2FTS
Fluorotelomer sulfonate 6:2	27619-97-2	6:2FTS
Fluorotelomer sulfonate 4:2	757124-72-4	4:2FTS
N-(Heptadecafluorooctylsulfonyl)-N-methylglycine	2355-31-9	N-MeFOSAA
Propanoic acid, 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-	13252-13-6	HFPO-DA

Table 2: Sample Locations

	Station ID	Description	State	Latitude	Longitude
1	CI00	Weiss Lake	AL	Redacted	
2	CR01	Coosa Sample	GA	34.25175	-85.3805
3	CR02	NEE-13, Coosa River	AL	34.1127	-85.8557
4	CT01	Canyon Road	AL	34.2636	-85.5602
5	CT02	Cherokee County 97	AL	34.29009	-85.5091
6	CT03	Holland Chattoogaville	GA	34.33582	-85.4459
7	CT04	Lyerly Dam	GA	34.40199	-85.396
8	CT05	USGS Station, GA-1	GA	34.4676	-85.3349
9	CT06	Martha Berry	GA	34.53954	-85.3009
10	CT07	Club Drive	GA	34.56087	-85.3107
11	CT08	Tate Rd	GA	34.56239	-85.3336
12	CT09	Shattuck Blvd	GA	34.67876	-85.2936
13	CT10	W Villanow St	GA	34.70597	-85.2868
14	GI00	Gadsden	AL	Redacted	
15	OF01	Outfall 1	AL	34.16915	-85.7509
16	OF02	Power Outfall	AL	34.13101	-85.7932

Table 3: Standard Operating Procedures Utilized

Field Measurement Procedures	SESDPROC-	Revision
Field pH Measurement	100	R4
Field Specific Conductance Measurement	101	R6
Field Temperature Measurement	102	R5
Field Turbidity Measurement	103	R4
Field Measurement of Dissolved Oxygen	106	R4
Global Positioning System	110	R4
In-Situ Water Quality Monitoring	111	R3
Field Sampling Procedures	SESDPROC-	Revision
Surface Water Sampling	201	R4
Divisional Quality Systems Documents	SESDPROC-	Revision
Logbooks	1002	R0
Quality System Procedures	SESDPROC-	Revision
Sample and Evidence Management	005	R3
Field Sampling Quality Control	011	R5

Table 4: in situ Measurements

Station	Date	Time	Dissolved Oxygen (mg/L)	pH	Temperature (°C)	Specific Conductivity (µS/cm)	Turbidity (NTU)
GI00	4/24/2018	12:40	8.60	6.97	17.70	151.0	10.0
CR02	4/24/2018	13:20	8.91	7.67	17.54	149.5	13.0
OF02	4/24/2018	14:15	8.95	7.86	17.76	151.0	11.0
OF01	4/24/2018	14:40	9.76	8.03	18.50	152.0	19.0
CI00	4/24/2018	15:15	9.56	8.14	18.23	155.0	7.8
CT01	4/24/2018	16:05	8.62	7.95	15.80	132.0	58.1
CT02	4/24/2018	16:30	8.97	7.84	15.57	124.5	70.1
CT03	4/25/2018	09:30	8.59	7.70	15.70	141.0	36.0
CT04	4/25/2018	09:55	9.01	7.82	15.61	149.4	27.0
CT05	4/25/2018	10:20	9.36	7.80	15.48	151.0	22.0
CT06	4/25/2018	10:45	8.77	7.85	15.30	183.0	15.0
CT07	4/25/2018	11:10	9.26	8.07	15.07	115.2	15.0
CT08	4/25/2018	11:30	9.07	8.16	15.30	126.8	23.0
CT09	4/25/2018	12:00	8.85	7.85	16.87	171.8	15.0
CT10	4/25/2018	12:15	8.80	7.94	15.53	230.8	6.6
CR01	4/25/2018	13:30	8.10	7.93	16.09	105.0	55.0

<i>Table 5: PFOA and PFAS Results</i>										
(ng/L)	GI00	CI00	CR02	OF01	OF02	CT01	CT02	CT03	CT06	CR01
PFOA	32 [†]	40	U	38 [†]	35 [†]	U	U	U	U	61
PFOS	32 [†]	37 [†]	46	55	73	20 [†]	21 [†]	26 [†]	83	95
Total:	64	77	46	93	108	20	21	26	83	156

[†]Result qualifier of J The identification of the analyte is acceptable; the reported value is an estimate and
Q-2 Result greater than MDL but less than MRL.

<i>Table 6: PFBA Results (ng/L)</i>			
Station	Result	Qualifier	Reporting Limit
CI00	18	J,Q-2	41
GI00	19	J,Q-2	41
OF02	20	J,Q-2	42
CT03	18	J,Q-2	39
CT04	18	J,Q-2	38
CT05	20	J,Q-2	38
CT08	18	J,Q-2	39
CR01	25	J,Q-2	41

Average 20

<i>Table 7: PFBS Results (ng/L)</i>			
Station	Result	Q	Reporting Limit
CI00	130		41
GI00	120		41
OF01	110		41
OF02	120		42
CR02	120		38
CT01	27	J,Q-2	39
CT02	23	J,Q-2	41
CT03	29	J,Q-2	39
CT04	22	J,Q-2	38
CT05	22	J,Q-2	38
CT08	28	J,Q-2	39
CR01	210		41

Average 80

Table 8: PFDA Results (ng/L)

Station	Result	Q	Reporting Limit
OF02	43	J,Q-2,QS-3	83

Table 9: PFHpA Results (ng/L)

Station	Result	Q	Reporting Limit
GI00	16	J,Q-2	41
CI00	21	J,Q-2	41
CR02	17	J,Q-2	38
OF01	19	J,Q-2	41
OF02	20	J,Q-2	42
CT03	15	J,Q-2	39
CT04	20	J,Q-2	38
CT05	18	J,Q-2	38
CR01	20	J,Q-2	41

Average 18

Table 10: PFHxA Results (ng/L)

Station	Result	Q	Reporting Limit
GI00	51		41
CI00	33	J,Q-2	41
CR02	47		38
OF01	42		41
OF02	47		42
CT01	100		39
CT02	68		41
CT03	91		39
CT04	66		38
CT05	78		38
CT08	63		39
CR01	59		41

Average 62

Table 11: PFPeA Results (ng/L)

Station	Result	Q	Reporting Limit
GI00	68		41
CI00	71		41
CR02	72		38
OF01	70		41
OF02	75		42
CT01	130		39
CT02	120		41
CT03	110		39
CT04	160		38
CT05	170		38
CT06	30	J,Q-2	41
CT08	130		39
CT09	18	J,Q-2	39
CT09	17	J,Q-2	39
CR01	80		41
Average	88		

8.0 Figures

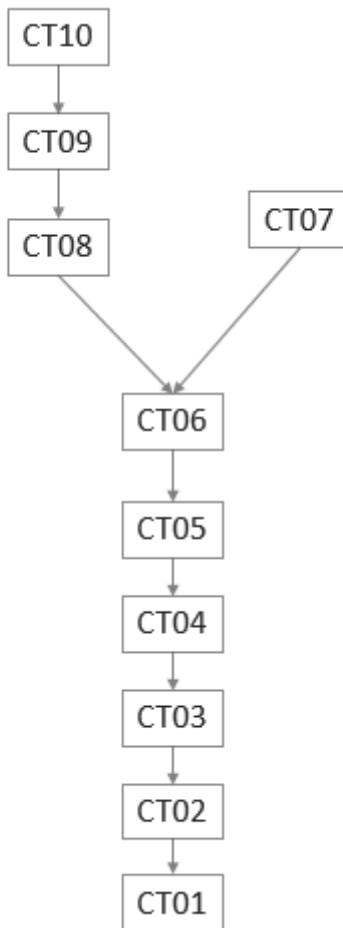


Figure 1: Chattooga Stations Conceptual Flow Model

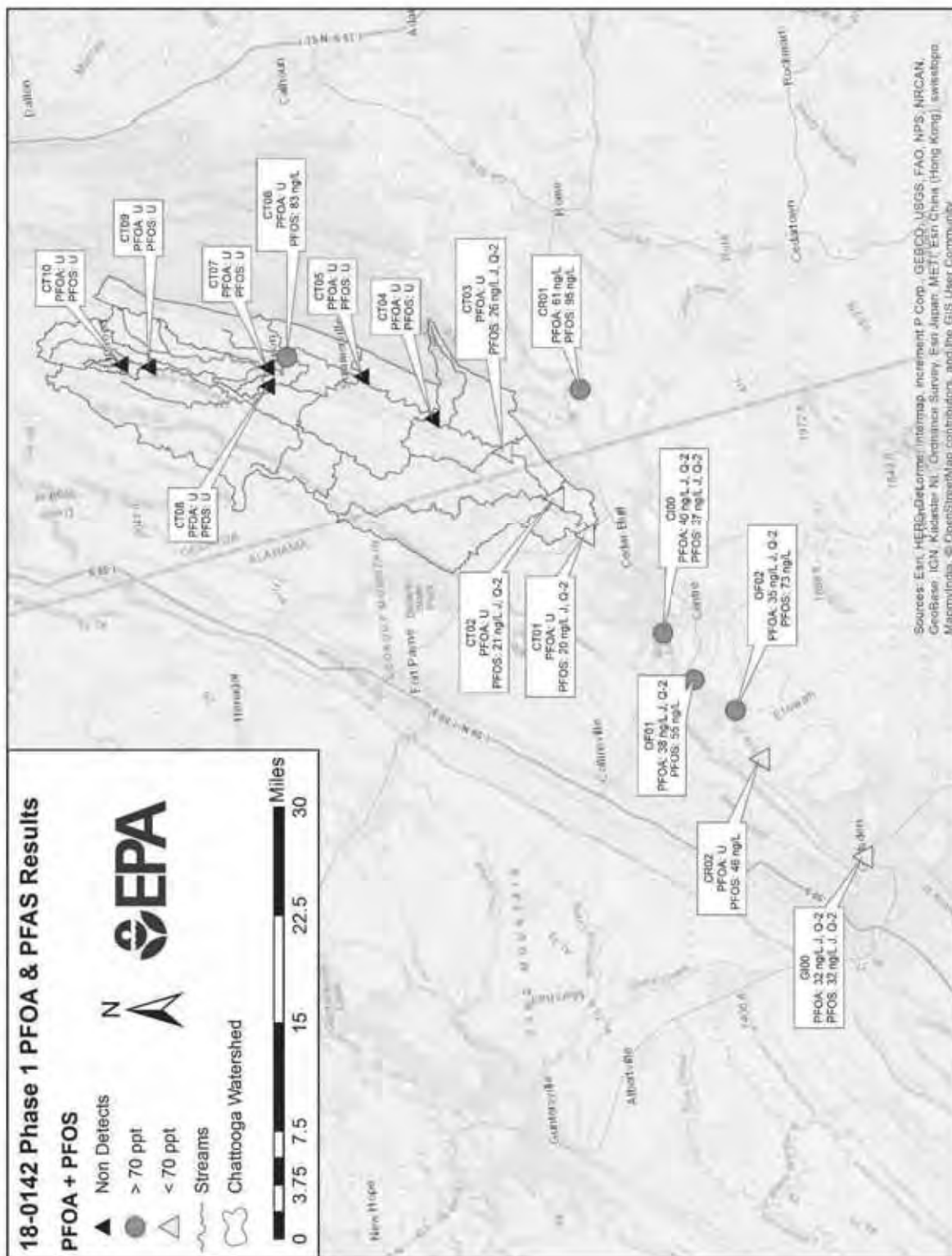


Figure 2: PFOA & PFOS Sample Results

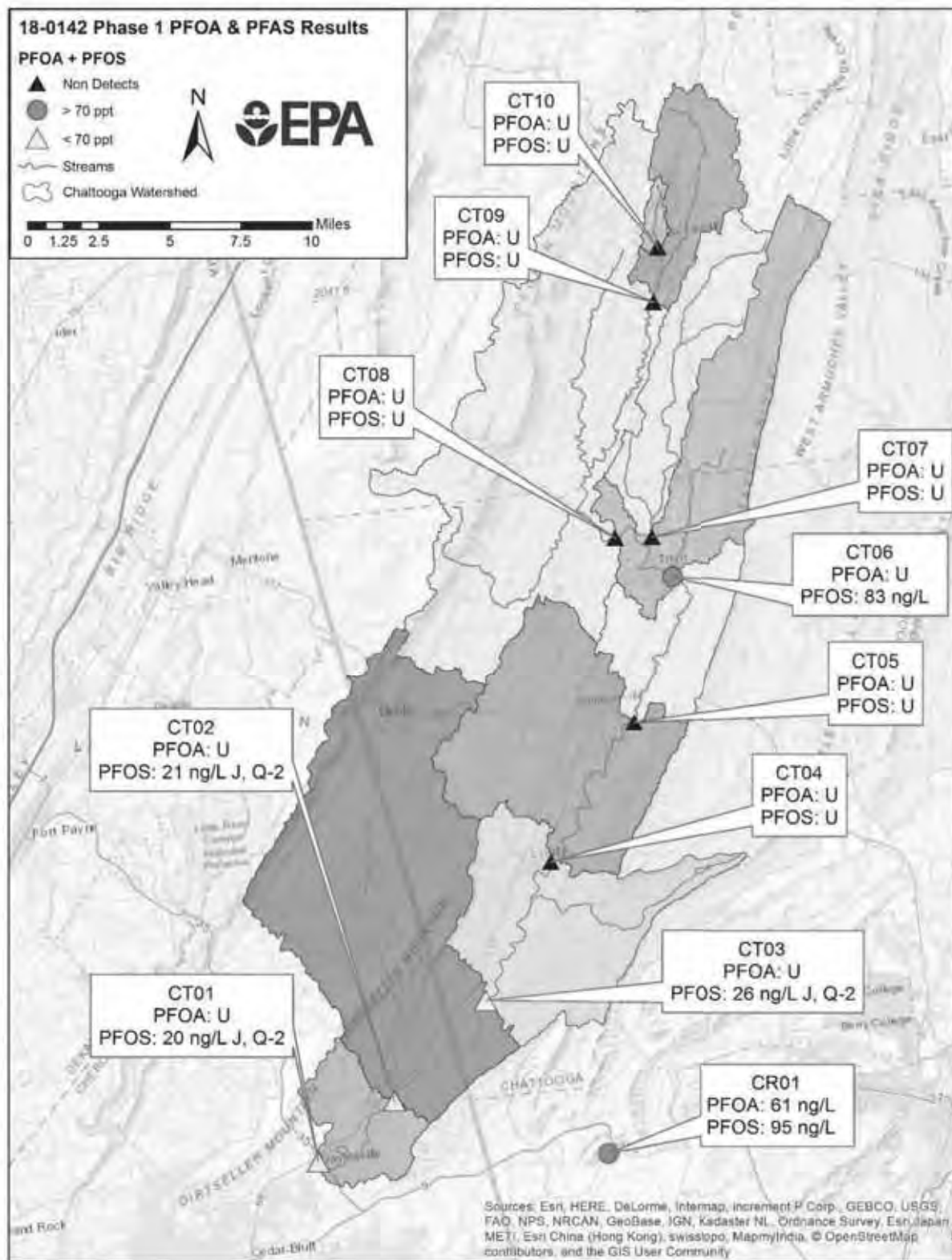


Figure 3: Chattooga Watershed PFOA & PFOS Results

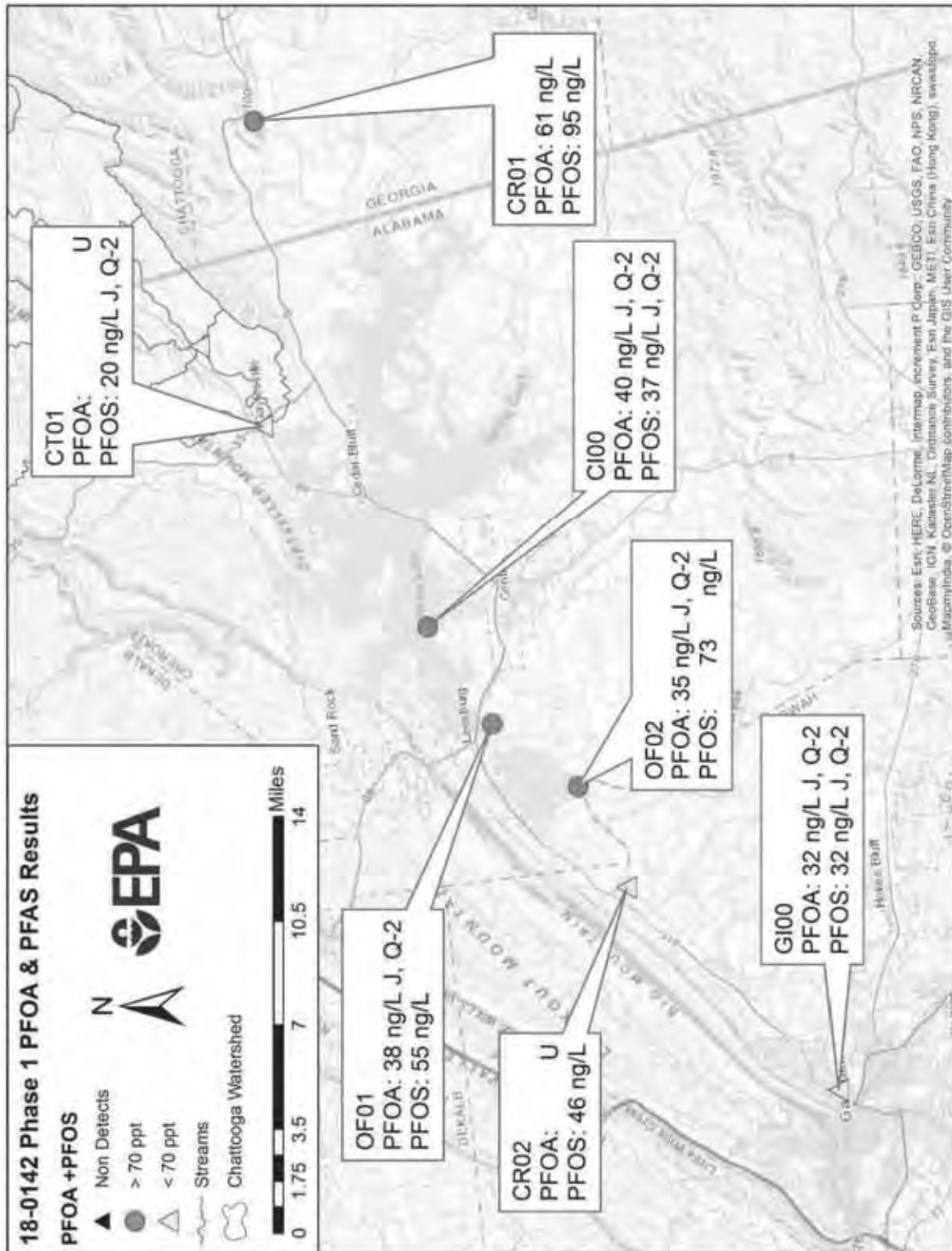


Figure 4: Weiss Lake and Coosa River PFOA & PFOS Results

9.0 Pictures



Figure 5: GI00 Upstream View

Note: Camera dates on photos are one day ahead.



Figure 6: GI00 Downstream View



Figure 7: CR02 Upstream View



Figure 8: CR02 Downstream View



Figure 9: OF02 Upstream View



Figure 10: OF02 Downstream View



Figure 11:OF01 Upstream View



Figure 12: OF01 Downstream View



Figure 13: CI00 Lake View



Figure 14: CT01 Upstream View



Figure 15: CT01 Downstream View



Figure 16: CT02 Upstream View



Figure 17: CT02 Downstream View



Figure 18: CT03 Upstream View



Figure 19: CT03 Downstream View



Figure 20: CT04 Upstream View



Figure 21: CT04 Downstream View



Figure 22: CT05 Upstream View



Figure 23: CT05 Downstream View



Figure 24: CT05 Upstream View



Figure 25: CT06 Downstream View



Figure 26: CT06 Unknown Pipe



Figure 27: CT07 Upstream View



Figure 28:CT07 Downstream View



Figure 29: CT08 Upstream View



Figure 30: CT08 Downstream View



Figure 31: CT09 Upstream View



Figure 32: CT09 Downstream View



Figure 33: CT10 Upstream View



Figure 34: CT10 Downstream View



Figure 35: CR01 Upstream View



Figure 36: CR01 Downstream View

10.0 Full Lab Report



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
11 A.R.T. 18-0142
Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

May 29, 2018

4SESD-ASB

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 18-0142, Phase 1 PFASs Chattooga River
Surface Water Protection

FROM: Diana Burdette
OCS Analyst

THRU: Floyd Wellborn, Chief
ASB Organic Chemistry Section

TO: Derek Little

Attached are the final results for the analytical groups listed below. These analyses were performed in accordance with the Analytical Support Branch's (ASB) Laboratory Operations and Quality Assurance Manual (ASB LOQAM) found at www.epa.gov/region4/sesd/asbsop. Any unique project data quality objectives specified in writing by the data requestor have also been incorporated into the data unless otherwise noted in the Report Narrative. Chemistry data have been verified based on the ASB LOQAM specifications and have been qualified by this laboratory if the applicable quality control criteria were not met. Verification is defined in Section 5.2 of the ASB LOQAM. For a listing of specific data qualifiers and explanations, please refer to the Data Qualifier Definitions included in this report. The reported results are accurate within the limits of the method(s) and are representative only of the samples as received by the laboratory.

Analyses Included in this report:	Method Used:	Accreditation:
Semi Volatile Organics (SVOA) PFAS	ASD.1008 (Water)	



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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D A R T Id: 18-0142

Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Sample Disposal Policy

Due to limited space for long term sample storage, ASB's policy is to dispose of samples on a periodic schedule. Air samples collected in summa canisters will be disposed of 30 days following the issuance of this report. All other sample media including original samples, sample extracts and/or digestates will be disposed of, in accordance with applicable regulations, 60 days from the date of this report.

This sample disposal policy does not apply to criminal samples which are held until the laboratory is notified by the criminal investigators that case development and litigation are complete.

These samples may be held in the laboratory's custody for a longer period of time. If samples require storage beyond the 60-day period, please contact the Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Science and Ecosystem Support Division
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D.A.R.T. ID: 18-0142

Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

SAMPLES INCLUDED IN THIS REPORT

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
0418-FB1	E181703-01	Field Blank	4/24/18 15:10	4/26/18 8:45
0418-FB2	E181703-02	Field Blank Air	4/25/18 10:15	4/26/18 8:45
QA-T0	E181703-03	Trip Blank - Water	4/18/18 15:00	4/26/18 8:45
CT00-0418	E181703-04	Surface Water	4/24/18 15:15	4/26/18 8:45
CT01-0418	E181703-05	Surface Water	4/25/18 13:30	4/26/18 8:45
CT02-0418	E181703-06	Surface Water	4/24/18 13:20	4/26/18 8:45
CT01-0418	E181703-07	Surface Water	4/24/18 16:05	4/26/18 8:45
CT02-0418	E181703-08	Surface Water	4/24/18 16:30	4/26/18 8:45
CT03-0418	E181703-09	Surface Water	4/25/18 09:30	4/26/18 8:45
CT04-0418	E181703-10	Surface Water	4/25/18 09:55	4/26/18 8:45
CT05-0418	E181703-11	Surface Water	4/25/18 10:20	4/26/18 8:45
CT06-0418	E181703-12	Surface Water	4/25/18 10:45	4/26/18 8:45
CT07-0418	E181703-13	Surface Water	4/25/18 11:10	4/26/18 8:45
CT08-0418	E181703-14	Surface Water	4/25/18 11:30	4/26/18 8:45
CT09-0418	E181703-15	Surface Water	4/25/18 12:00	4/26/18 8:45
CT09-0418-D	E181703-16	Surface Water	4/25/18 12:05	4/26/18 8:45
CT10-0418	E181703-17	Surface Water	4/25/18 12:15	4/26/18 8:45
GB00-0418	E181703-18	Surface Water	4/24/18 12:40	4/26/18 8:45
OF01-0418	E181703-19	Surface Water	4/24/18 14:40	4/26/18 8:45
OF02-0418	E181703-20	Surface Water	4/24/18 14:15	4/26/18 8:45



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D.A.R.T. Id: 18-0142

Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

DATA QUALIFIER DEFINITIONS

U	The analyte was not detected at or above the reporting limit.
H-6	Sample originally analyzed within holding time, some QC requirements not met. The reported result is from a second analysis performed for confirmation which occurred after the holding time expired.
J	The identification of the analyte is acceptable; the reported value is an estimate.
O-2	Result greater than MDL, but less than MRL.
QC-5	Calibration check standard less than method control limits.
QL-1	Laboratory Control Spike Recovery less than method control limits.
QM-3	Matrix Spike Precision outside method control limits.
QS-3	Surrogate recovery is lower than established control limits.

ACRONYMS AND ABBREVIATIONS

CAS	Chemical Abstracts Service Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA ID as assigned by the EPA Substance Registry System (www.epa.gov/osr), or beginning with "R4-", a unique identifier assigned by the EPA Region-4 laboratory.
MDL	Method Detection Limit - The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.
MRL	Minimum Reporting Limit - Analyte concentration that corresponds to the lowest demonstrated level of acceptable quantitation. The MRL is sample-specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments.
TIC	Tentatively Identified Compound - An analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound's identification or the estimated concentration reported.

ACCREDITATIONS:

ISO	ASB is accredited by ISO/IEC 17025, including an amplification for forensic accreditation through ANSI-ASQ National Accreditation Board. Refer to the certificate and scope of accreditation AT-1644 at: http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-mesd
NR	The EPA Region-4 Laboratory has not requested accreditation for this test.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 18-0142

Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: 0418-FB1

Lab ID: E181703-01

Station ID:

Matrix: Field Blank

Date Collected: 4/24/18 15:10

Sample ID	Compound	Concentration	Unit	Method	LOD	LOQ	Reporting Limit
757124-72-4	4,2-DTS	40	U	ug/L	40	5000	5-15-18 23-23
276156-97-2	6,2-DTS	160	U	ug/L	160	5000	5-15-18 23-23
39108-14-4	8,2-DTS	40	U	ug/L	40	5000	5-15-18 23-23
754-91-6	FOXA	40	U	ug/L	40	5000	5-15-18 23-23
14253-13-6	HOPO-DX	40	U	ug/L	40	5000	5-15-18 23-23
2355-31-9	N ₂ MdFOXA	40	U	ug/L	40	5000	5-15-18 23-23
175-22-4	PFDA	40	U	ug/L	40	5000	5-15-18 23-23
375-75-5	PFHx	40	U	ug/L	40	5000	5-15-18 23-23
335-76-2	PFDA	80	U	ug/L	80	5000	5-15-18 23-23
107-55-1	PFDA	40	U, 1, 1, 1, 1, 1, 1, 1, 1	ug/L	40	5000	5-15-18 23-23
335-77-3	PFDA	160	U	ug/L	160	5000	5-15-18 23-23
375-85-9	PFHpA	40	U	ug/L	40	5000	5-15-18 23-23
375-92-8	PFHpA	40	U	ug/L	40	5000	5-15-18 23-23
107-24-4	PFDA	40	U	ug/L	40	5000	5-15-18 23-23
335-46-4	PFDA	40	U	ug/L	40	5000	5-15-18 23-23
375-95-1	PFNA	40	U	ug/L	40	5000	5-15-18 23-23
69256-12-1	PFNS	40	U	ug/L	40	5000	5-15-18 23-23
335-67-1	PFDA	40	U	ug/L	40	5000	5-15-18 23-23
1763-23-1	PFDA	40	U	ug/L	40	5000	5-15-18 23-23
2706-90-3	PFDA	40	U	ug/L	40	5000	5-15-18 23-23
2706-91-4	PFDA	40	U	ug/L	40	5000	5-15-18 23-23
72629-94-8	PFDA	160	U, 1, 1, 1, 1, 1, 1, 1, 1	ug/L	160	5000	5-15-18 23-23
2058-94-8	PFDA	40	U	ug/L	40	5000	5-15-18 23-23



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700

D A R File 18-0142

Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: 9418-FB2

Lab ID: E181703-02

Station ID:

Matrix: Field Blank Air

Date Collected: 4/25/18 10:15

Compound	Concentration (ng/L)	Concentration (ug/L)	Concentration (ug/L)	Concentration (ug/L)	Concentration (ug/L)	Concentration (ug/L)
757124-72-4	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
276156-97-2	160 U	ng/L	160	5/15/18 23.46	5/15/18 23.46	ASD 1000
19108-14-4	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
754-91-6	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
13283-13-6	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
2355-31-9	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
175-22-4	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
175-73-3	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
335-76-2	82 U	ng/L	82	5/15/18 23.46	5/15/18 23.46	ASD 1000
107-55-1	41 U, J, H-G, Q1-1	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
195-77-3	160 U	ng/L	160	5/15/18 23.46	5/15/18 23.46	ASD 1000
175-85-9	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
175-92-8	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
107-24-4	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
355-46-4	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
175-95-1	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
19259-12-1	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
335-67-1	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
1763-23-1	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
2706-90-3	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
2706-91-4	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000
72629-94-8	160 U, J, H-G, QC-5	ng/L	160	5/15/18 23.46	5/15/18 23.46	ASD 1000
2058-94-8	41 U	ng/L	41	5/15/18 23.46	5/15/18 23.46	ASD 1000



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Science and Ecosystem Support Division
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D A R File 18-0142

Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: C100-0418

Lab ID: E181703-04

Station ID: C100

Matrix: Surface Water

Date Collected: 4/24/18 15:15

Sample	Concentration	Unit	Method	Result	LOD	LOQ	ASD
757124-72-4	8.21 TS	41	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
276156-97-2	6.21 TS	160	ng/L	160	5/16/18 0.10	5/16/18 0.10	ASD 1000
19108-14-4	8.21 TS	41	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
754-91-6	FOBA	41	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
13283-13-6	HOPO-DX	41	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
2355-31-9	N ₂ MeFOVA	41	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
175-22-4	PFDA	160	ng/L	160	5/16/18 0.10	5/16/18 0.10	ASD 1000
375-73-3	PFDS	130	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
335-76-2	PFDA	81	ng/L	81	5/16/18 0.10	5/16/18 0.10	ASD 1000
107-55-1	PFDoA	41	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
195-77-3	PFDS	160	ng/L	160	5/16/18 0.10	5/16/18 0.10	ASD 1000
175-85-9	PFHpA	21	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
175-92-8	PFHpA	41	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
107-24-4	PFHxA	33	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
355-46-4	PFHxS	41	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
175-95-1	PFNA	41	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
19259-12-1	PFNS	41	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
335-67-1	PFOA	40	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
1763-23-1	PFOS	37	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
2706-90-3	PFPeA	71	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
2706-91-4	PFPeS	41	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
72629-94-8	PFTtDA	160	ng/L	160	5/16/18 0.10	5/16/18 0.10	ASD 1000
2058-94-8	PFCtDA	41	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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D A R File 18-0142

Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: CR01-0418

Lab ID: E181703-05

Station ID: CR01

Matrix: Surface Water

Date Collected: 4/25/18 13:30

Method	Compound	Concentration	Unit	Volume	Concentration	Unit	Volume
757124-72-4	8-2,3,5	41	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
276156-97-2	6-2,3,5	160 U	ng/L	160	5/16/18 0.18	5/16/18 0.18	ASD 1000
19108-14-4	8-2,3,5	41	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
754-91-6	FOBA	41 U	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
13283-13-6	HOPO-DX	41 U	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
2355-31-9	N ₂ MeFOVA	41 U	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
175-22-4	PFDA	29 1,1,1,2	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
175-73-3	PFDS	210	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
335-76-2	PFDA	82 U	ng/L	82	5/16/18 0.18	5/16/18 0.18	ASD 1000
107-55-1	PFDoA	41 U, 1,1,1,6, Q1-1	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
195-77-3	PFDS	160 U	ng/L	160	5/16/18 0.18	5/16/18 0.18	ASD 1000
175-85-9	PFHpA	20 1,1,1,2	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
175-92-8	PFHpS	41 U	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
107-24-4	PFHxA	59	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
355-46-4	PFHxS	41 U	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
175-95-1	PFNA	41 U	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
13259-12-1	PFNS	41 U	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
335-67-1	PFOA	61	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
1763-23-1	PFOS	45	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
2706-90-3	PFPeA	80	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
2706-91-4	PFPeS	41 U	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000
72629-94-8	PFTrDA	160 U, 1,1,1,6, QC-3	ng/L	160	5/16/18 0.18	5/16/18 0.18	ASD 1000
2058-94-8	PFCdA	41 U	ng/L	41	5/16/18 0.18	5/16/18 0.18	ASD 1000



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700

D A R File 18-0142

Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: CR02-0418

Lab ID: E181703-06

Station ID: CR02

Matrix: Surface Water

Date Collected: 4/24/18 13:20

Method	Parameter	Result	Unit	Conc	Conc	Conc	Conc
757124-72-4	8-2-TS	38	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
276156-97-2	6-2-TS	150	ug/L	150	5/16/18 9/16	5/16/18 1/16	ASB 1000
19108-14-4	8-2-TS	38	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
754-91-6	FOBA	38	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
13283-13-6	HOPO-DA	38	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
2355-31-9	N-MeFOVAA	38	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
175-22-4	PFDA	38	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
175-73-3	PFDS	120	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
335-76-2	PFDA	77	ug/L	77	5/16/18 9/16	5/16/18 1/16	ASB 1000
107-55-1	PFDoA	38	ug/L, OL-1	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
195-77-3	PFDS	150	ug/L	150	5/16/18 9/16	5/16/18 1/16	ASB 1000
175-85-9	PFHpA	17	ug/L, Q-2	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
175-92-8	PFHpS	38	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
107-24-4	PFHxA	47	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
355-46-4	PFHxS	38	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
175-95-1	PFNA	38	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
13259-12-1	PFNS	38	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
335-67-1	PFOA	38	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
1763-23-1	PFOS	46	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
2706-90-3	PFPeA	72	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
2706-91-4	PFPeS	38	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000
72629-94-8	PFTDA	150	ug/L, Q-2	150	5/16/18 9/16	5/16/18 1/16	ASB 1000
2038-94-8	PFLDA	38	ug/L	38	5/16/18 9/16	5/16/18 1/16	ASB 1000



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0142
Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: CT01-0418

Lab ID: E181703-07

Station ID: CT01

Matrix: Surface Water

Date Collected: 4/24/18 16:05

Method	Parameter	Unit	Result	Method	Parameter	Unit	Result
757124-72-4	4,2-DTS	ng/L	39	757124-72-4	4,2-DTS	ng/L	39
276156-07-2	6,2-DTS	ng/L	150	276156-07-2	6,2-DTS	ng/L	150
39108-14-4	8,2-DTS	ng/L	39	39108-14-4	8,2-DTS	ng/L	39
754-91-6	H2NA	ng/L	39	754-91-6	H2NA	ng/L	39
14253-13-6	H2PO4X	ng/L	39	14253-13-6	H2PO4X	ng/L	39
2355-31-9	N2MeFO9AA	ng/L	39	2355-31-9	N2MeFO9AA	ng/L	39
175-22-4	PFDA	ng/L	39	175-22-4	PFDA	ng/L	39
375-75-5	PFHx	ng/L	27	375-75-5	PFHx	ng/L	27
335-76-2	PFDA	ng/L	77	335-76-2	PFDA	ng/L	77
107-55-1	PFDA	ng/L	39	107-55-1	PFDA	ng/L	39
335-77-3	PFDA	ng/L	150	335-77-3	PFDA	ng/L	150
375-85-9	PFHpA	ng/L	39	375-85-9	PFHpA	ng/L	39
375-92-8	PFHpA	ng/L	39	375-92-8	PFHpA	ng/L	39
107-24-4	PFDA	ng/L	100	107-24-4	PFDA	ng/L	100
335-46-4	PFDA	ng/L	39	335-46-4	PFDA	ng/L	39
375-95-1	PFNA	ng/L	39	375-95-1	PFNA	ng/L	39
60256-12-1	PFNS	ng/L	39	60256-12-1	PFNS	ng/L	39
335-67-1	PFDA	ng/L	39	335-67-1	PFDA	ng/L	39
1763-23-1	PFDA	ng/L	20	1763-23-1	PFDA	ng/L	20
2706-90-3	PFDA	ng/L	130	2706-90-3	PFDA	ng/L	130
2706-91-4	PFDA	ng/L	39	2706-91-4	PFDA	ng/L	39
72629-94-8	PFDA	ng/L	150	72629-94-8	PFDA	ng/L	150
2058-94-9	PFDA	ng/L	39	2058-94-9	PFDA	ng/L	39



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0142
Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: CT02-0418

Lab ID: E181703-08

Station ID: CT02

Matrix: Surface Water

Date Collected: 4/24/18 16:30

Sample ID	Compound	Concentration	Unit	Method	LOD	LOQ	ASD
757124-72-4	4,2,7,TS	41	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
276156-97-2	6,2,7,TS	160	ng/L	160	5/10/18 2.01	5/10/18 2.01	ASD 1000
39108-14-4	8,2,7,TS	41	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
754-91-6	HONA	41	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
14253-13-6	HPODA	41	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
2355-31-9	N ₂ MeFOAA	41	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
175-22-4	PFDA	41	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
375-75-5	PFHx	23	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
335-76-2	PFDA	81	ng/L	81	5/10/18 2.01	5/10/18 2.01	ASD 1000
107-55-1	PFDA	41	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
335-77-3	PFDA	160	ng/L	160	5/10/18 2.01	5/10/18 2.01	ASD 1000
375-85-9	PFHpA	41	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
375-92-8	PFHpA	41	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
107-24-4	PFDA	68	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
335-46-4	PFDA	41	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
375-95-1	PFNA	41	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
69256-12-1	PFNS	41	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
335-67-1	PFDA	41	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
1763-23-1	PFOS	21	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
2706-90-3	PFNA	120	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
2706-91-4	PFDA	41	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000
72629-94-8	PFTrDA	160	ng/L	160	5/10/18 2.01	5/10/18 2.01	ASD 1000
2058-94-8	PFDA	41	ng/L	41	5/10/18 2.01	5/10/18 2.01	ASD 1000



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0142
Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: CT04-0418

Lab ID: E181703-10

Station ID: CT04

Matrix: Surface Water

Date Collected: 4/25/18 9:55

Method	Compound	Concentration	Unit	Result	Method	Concentration	Unit	Result
757124-72-4	4,2-DTS	38 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000
276156-07-2	6,2-DTS	150 U	ng/L	150	800/18	8/16/18	± 40	ASD 1000
39108-34-4	8,2-DTS	38 U ± 20 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000
754-91-6	HOBA	38 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000
14253-13-6	HUPOA	38 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000
2355-31-9	N ₂ MdFOVAA	38 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000
175-22-4	PFDA	14 U ± 1 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000
375-75-5	PFHx	22 U ± 2 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000
335-76-2	PFDA	77 U	ng/L	77	800/18	8/16/18	± 40	ASD 1000
107-55-1	PFDA	38 U ± 1 U ± 1 U, QL=1	ng/L	38	800/18	8/16/18	± 40	ASD 1000
335-77-3	PFDA	150 U	ng/L	150	800/18	8/16/18	± 40	ASD 1000
375-85-9	PFHpA	20 U ± 2 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000
375-92-8	PFHpA	38 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000
107-24-4	PFDA	66	ng/L	38	800/18	8/16/18	± 40	ASD 1000
335-46-4	PFDA	38 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000
375-95-1	PFNA	38 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000
60296-12-1	PFNS	38 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000
335-67-1	PFDA	38 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000
1763-23-1	PFDA	38 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000
2706-90-3	PFDA	160	ng/L	38	800/18	8/16/18	± 40	ASD 1000
2706-91-4	PFDA	38 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000
72629-94-8	PFDA	150 U ± 1 U ± 1 U, QL=3, OM=3	ng/L	150	800/18	8/16/18	± 40	ASD 1000
2096-94-8	PFDA	38 U	ng/L	38	800/18	8/16/18	± 40	ASD 1000



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 18-0142

Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: CT05-0418

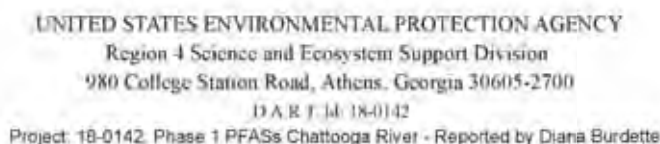
Lab ID: E181703-11

Station ID: CT05

Matrix: Surface Water

Date Collected: 4/25/18 10:20

Sample ID	Compound Name	Concentration (ug/L)	Concentration (ug/L)	Concentration (ug/L)	Concentration (ug/L)	Concentration (ug/L)	Concentration (ug/L)
757124-72-4	4,2,7,15	38	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
276156-07-2	6,2,7,15	150	ug/L	150	5/16/18 3.16	5/16/18 3.16	ASD 1000
39108-14-4	8,2,7,15	38	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
754-91-6	HOXA	38	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
14252-13-6	HOPODIX	38	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
2355-31-9	N ₂ MdFOVAA	38	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
175-22-4	PFDA	20	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
375-73-3	PFHx	22	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
335-76-2	PFDA	76	ug/L	76	5/16/18 3.16	5/16/18 3.16	ASD 1000
107-55-1	PFDA	38	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
335-77-3	PFDA	150	ug/L	150	5/16/18 3.16	5/16/18 3.16	ASD 1000
375-85-9	PFDA	18	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
375-92-8	PFDA	38	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
107-24-4	PFDA	78	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
335-46-4	PFDA	38	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
375-95-1	PFNA	38	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
64256-12-1	PFNS	38	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
335-67-1	PFDA	38	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
1763-23-1	PFDA	38	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
2706-90-3	PFDA	170	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
2706-91-4	PFDA	38	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000
72629-94-8	PFDA	150	ug/L	150	5/16/18 3.16	5/16/18 3.16	ASD 1000
2038-94-8	PFDA	38	ug/L	38	5/16/18 3.16	5/16/18 3.16	ASD 1000



Project: 18-0142, Phase 1 PFASs Chattooga River

Lab ID: E181703-12

Matrix: Surface Water

Date Collected: 4/25/18 10:45

Page 16 of 30

E181703.SVOA.FINAL.05.29.18.0928

529/18 9.28



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700

D A R File 18-0142

Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: CT07-0418

Lab ID: E181703-13

Station ID: CT07

Matrix: Surface Water

Date Collected: 4/25/18 11:10

Compound	Concentration	Unit	Method	Result	LOD	LOQ	Comment
757124-72-4	4.21 TS	ng/L	41	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
276156-97-2	6.21 TS	ng/L	160 U	160	5/16/18 3.54	5/16/18 3.54	ASB 1000
19108-34-4	8.21 TS	ng/L	41	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
754-91-6	FOBA	ng/L	41 U	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
13283-13-6	HOPO-DA	ng/L	41 U	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
2355-31-9	N ₂ MeFOVAA	ng/L	41 U, J, L26-3	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
175-22-4	PFDA	ng/L	41 U	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
375-73-3	PFDS	ng/L	41 U	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
335-76-2	PFDa	ng/L	82 U	82	5/16/18 3.54	5/16/18 3.54	ASB 1000
107-55-1	PFDaA	ng/L	41 U, J, L26, Q1-3	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
335-77-3	PFDs	ng/L	160 U	160	5/16/18 3.54	5/16/18 3.54	ASB 1000
375-85-9	PFHpA	ng/L	41 U	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
375-92-8	PFHpS	ng/L	41 U	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
107-24-4	PFHxA	ng/L	41 U	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
355-46-4	PFHxS	ng/L	41 U	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
375-95-1	PFNA	ng/L	41 U	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
13259-32-1	PFNS	ng/L	41 U	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
335-67-1	PFOA	ng/L	41 U	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
1763-23-1	PFOS	ng/L	41 U	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
2706-90-3	PFPeA	ng/L	41 U	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
2706-91-4	PFPeS	ng/L	41 U	41	5/16/18 3.54	5/16/18 3.54	ASB 1000
72629-94-8	PFTtDA	ng/L	160 U, J, L26, QC-3	160	5/16/18 3.54	5/16/18 3.54	ASB 1000
2058-94-8	PFTtDA	ng/L	41 U, J, L26-3	41	5/16/18 3.54	5/16/18 3.54	ASB 1000



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D A R File 18-0142
Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: CT08-0418

Lab ID: E181703-14

Station ID: CT08

Matrix: Surface Water

Date Collected: 4/25/18 11:30

Compound Name	Concentration (ug/L)	Unit	Concentration (ug/L)	Concentration (ug/L)	Concentration (ug/L)
757124-72-4	4.21 TS	39	ug/L	39	5/16/18 4.16
276156-97-2	6.2E15	160 U	ug/L	160	5/16/18 4.16
19108-14-4	8.21 TS	39 U	ug/L	39	5/16/18 4.16
754-91-6	FOBA	39 U	ug/L	39	5/16/18 4.16
13253-13-6	HUPO-DX	39 U	ug/L	39	5/16/18 4.16
2355-31-9	N-MeFOVAA	39 U	ug/L	39	5/16/18 4.16
175-22-4	PFDA	14.3 U-2	ug/L	39	5/16/18 4.16
375-73-3	PFDS	28 U QC-2	ug/L	39	5/16/18 4.16
335-76-2	PFDA	78 U	ug/L	78	5/16/18 4.16
107-55-1	PFDoA	39 U, 1.1b6, Q1-1	ug/L	39	5/16/18 4.16
195-77-3	PFDS	160 U	ug/L	160	5/16/18 4.16
175-85-9	PFHpA	39 U	ug/L	39	5/16/18 4.16
175-92-8	PFHpS	39 U	ug/L	39	5/16/18 4.16
107-24-4	PFHxA	63	ug/L	39	5/16/18 4.16
355-46-4	PFHxS	39 U	ug/L	39	5/16/18 4.16
175-95-1	PFNA	39 U	ug/L	39	5/16/18 4.16
13259-12-1	PFNS	39 U	ug/L	39	5/16/18 4.16
335-67-1	PFOA	39 U	ug/L	39	5/16/18 4.16
1763-23-1	PFOS	39 U	ug/L	39	5/16/18 4.16
2706-90-3	PFPeA	130	ug/L	39	5/16/18 4.16
2706-91-4	PFPeS	39 U	ug/L	39	5/16/18 4.16
72629-94-8	PFTtDA	160 U, 2 QC-5 11-6	ug/L	160	5/16/18 4.16
2058-94-8	PFCtDA	39 U	ug/L	39	5/16/18 4.16



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D A R File 18-0142
Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: CT09-0418

Lab ID: E181703-15

Station ID: CT09

Matrix: Surface Water

Date Collected: 4/25/18 12:00

Compound	Concentration	Unit	Concentration	Unit	Concentration	Unit	Concentration	Unit
757124-72-4	4.21 TS	39 U	ng/L	39	5/16/18 4.12	5/16/18 4.12	ASD 1000	
276156-97-2	6.2E15	150 U	ng/L	150	5/16/18 4.32	5/16/18 4.32	ASD 1000	
19108-14-4	8.21 TS	39 U	ng/L	39	5/16/18 4.12	5/16/18 4.12	ASD 1000	
754-91-6	FDBA	39 U	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
13253-13-6	HUPO-DX	39 U	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
2355-31-9	N ₂ MeFOVA	39 U	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
175-22-4	PFDA	39 U	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
175-73-3	PFDS	39 U	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
335-76-2	PFDA	77 U	ng/L	77	5/16/18 4.30	5/16/18 4.30	ASD 1000	
107-55-1	PFDoA	39 U, 1.1 to 6, Q1=1	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
195-77-3	PFDS	150 U	ng/L	150	5/16/18 4.30	5/16/18 4.30	ASD 1000	
175-85-9	PFHpA	39 U	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
175-92-8	PFHpS	39 U	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
107-24-4	PFHxA	39 U	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
355-46-4	PFHxS	39 U	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
175-95-1	PFNA	39 U	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
19259-12-1	PFNS	39 U	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
335-67-1	PFOA	39 U	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
1763-23-1	PFOS	39 U	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
2706-90-3	PFPeA	18 U, Q-2	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
2706-91-4	PFPeS	39 U	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	
72629-94-8	PFTtDA	150 U, 1.1 to 6, QC=3	ng/L	150	5/16/18 4.30	5/16/18 4.30	ASD 1000	
2058-94-8	PFCdA	39 U	ng/L	39	5/16/18 4.30	5/16/18 4.30	ASD 1000	



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D A R File 18-0142
Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: CT09-0418-D

Lab ID: E181703-16

Station ID: CT09

Matrix: Surface Water

Date Collected: 4/25/18 12:05

Compound	Concentration (ug/L)	Concentration (ug/L)	Concentration (ug/L)	Concentration (ug/L)	Concentration (ug/L)	Concentration (ug/L)
757124-72-4	4.21 TS	39	ug/L	39	5/16/18 +0.1	ASD 1000
276156-97-2	6.2E15	160 U	ug/L	160	5/16/18 +0.1	ASD 1000
19108-14-4	8.21 TS	39 U (1.12E-1)	ug/L	39	5/16/18 +0.1	ASD 1000
754-91-6	FOXA	39 U	ug/L	39	5/16/18 +0.1	ASD 1000
13283-13-6	HUPO-DXA	39 U	ug/L	39	5/16/18 +0.1	ASD 1000
2355-31-9	N-MeFOXA	39 U	ug/L	39	5/16/18 +0.1	ASD 1000
175-22-4	PFDA	39 U	ug/L	39	5/16/18 +0.1	ASD 1000
375-73-3	PFDS	39 U	ug/L	39	5/16/18 +0.1	ASD 1000
335-76-2	PFDa	78 U	ug/L	78	5/16/18 +0.1	ASD 1000
107-55-1	PFDaA	39 U, 1.1E-6, Q1=1	ug/L	39	5/16/18 +0.1	ASD 1000
195-77-3	PFDs	160 U	ug/L	160	5/16/18 +0.1	ASD 1000
175-85-9	PFHpA	39 U	ug/L	39	5/16/18 +0.1	ASD 1000
175-92-8	PFHpS	39 U	ug/L	39	5/16/18 +0.1	ASD 1000
107-24-4	PFHxA	39 U	ug/L	39	5/16/18 +0.1	ASD 1000
344-46-4	PFHxS	39 U	ug/L	39	5/16/18 +0.1	ASD 1000
175-95-1	PFNA	39 U	ug/L	39	5/16/18 +0.1	ASD 1000
13259-12-1	PFNS	39 U	ug/L	39	5/16/18 +0.1	ASD 1000
335-67-1	PFOA	39 U	ug/L	39	5/16/18 +0.1	ASD 1000
1763-23-1	PFOS	39 U	ug/L	39	5/16/18 +0.1	ASD 1000
2706-90-3	PFPeA	17 U, Q=2	ug/L	39	5/16/18 +0.1	ASD 1000
2706-91-4	PFPeS	39 U	ug/L	39	5/16/18 +0.1	ASD 1000
72629-94-8	PFTtDA	160 U, 1.1E-6, QC=3	ug/L	160	5/16/18 +0.1	ASD 1000
2058-94-8	PFCdA	39 U	ug/L	39	5/16/18 +0.1	ASD 1000



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700

D A R File 18-0142

Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: CT10-0418

Lab ID: E181703-17

Station ID: CT10

Matrix: Surface Water

Date Collected: 4/25/18 12:15

Compound	Concentration	Unit	Method	Result	LOD	LOQ	ASD
757124-72-4	4.21 TS	39	ng/L	39	5/16/18 4.21	5/16/18 4.21	ASD 1000
276156-97-2	6.21 TS	160 U	ng/L	160	5/16/18 9.24	5/16/18 9.24	ASD 1000
19108-14-4	8.21 TS	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
754-91-6	FOXA	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
13283-13-6	HOPO-DA	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
2355-31-9	N ₂ MeFOVAA	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
175-22-4	PFDA	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
175-73-3	PFDS	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
335-76-2	PFDA	78 U	ng/L	78	5/16/18 9.24	5/16/18 9.24	ASD 1000
107-55-1	PFDoA	39 U, J. OL-1.11-0	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
195-77-3	PFDS	160 U	ng/L	160	5/16/18 9.24	5/16/18 9.24	ASD 1000
175-85-9	PFHpA	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
175-92-8	PFHpS	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
107-24-4	PFHxA	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
344-46-4	PFHxS	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
175-95-1	PFNA	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
13259-12-1	PFNS	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
335-67-1	PFOA	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
1763-23-1	PFOS	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
2706-90-3	PFPeA	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
2706-91-4	PFPeS	39 U	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000
72629-94-8	PFTtDA	160 U, J. OL-1.11-0 QC-3	ng/L	160	5/16/18 9.24	5/16/18 9.24	ASD 1000
2058-94-8	PFTtDA	39 U, J. OL-1.11-0	ng/L	39	5/16/18 9.24	5/16/18 9.24	ASD 1000



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D A R File 18-0142
Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: G100-0418

Lab ID: E181703-18

Station ID: G100

Matrix: Surface Water

Date Collected: 4/24/18 12:40

Method	Concentration	Unit	Volume	Concentration	Unit	Volume	Concentration	Unit	Volume
757124-72-4	4.21 TS	ng/L	41	5/16/18	5.47	ASB 1000			
276156-97-2	6.21 TS	ng/L	160	5/16/18	5.47	ASB 1000			
19108-14-4	8.21 TS	ng/L	41	5/16/18	5.47	ASB 1000			
754-91-6	FOXA	ng/L	41	5/16/18	5.47	ASB 1000			
13283-13-6	HOPO-DA	ng/L	41	5/16/18	5.47	ASB 1000			
2355-31-9	N-MeFOXA	ng/L	41	5/16/18	5.47	ASB 1000			
175-22-4	PFDA	ng/L	41	5/16/18	5.47	ASB 1000			
375-73-3	PFDS	ng/L	41	5/16/18	5.47	ASB 1000			
335-76-2	PFDA	ng/L	82	5/16/18	5.47	ASB 1000			
107-55-1	PFDoA	ng/L	41	5/16/18	5.47	ASB 1000			
195-77-3	PFDS	ng/L	160	5/16/18	5.47	ASB 1000			
175-85-9	PFHpA	ng/L	41	5/16/18	5.47	ASB 1000			
175-92-8	PFHpA	ng/L	41	5/16/18	5.47	ASB 1000			
107-24-4	PFHxA	ng/L	41	5/16/18	5.47	ASB 1000			
344-46-4	PFHxS	ng/L	41	5/16/18	5.47	ASB 1000			
175-95-1	PFNA	ng/L	41	5/16/18	5.47	ASB 1000			
19259-12-1	PFNS	ng/L	41	5/16/18	5.47	ASB 1000			
335-67-1	PFOA	ng/L	41	5/16/18	5.47	ASB 1000			
1763-23-1	PFOS	ng/L	41	5/16/18	5.47	ASB 1000			
2706-90-3	PFPeA	ng/L	41	5/16/18	5.47	ASB 1000			
2706-91-4	PFPeS	ng/L	41	5/16/18	5.47	ASB 1000			
72629-94-8	PFTtDA	ng/L	160	5/16/18	5.47	ASB 1000			
2058-94-8	PFTtDA	ng/L	41	5/16/18	5.47	ASB 1000			



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700

D A R File 18-0142

Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: OF01-0418

Lab ID: E181703-19

Station ID: OF01

Matrix: Surface Water

Date Collected: 4/24/18 14:40

Method	Parameter	Unit	Result	Method	Parameter	Unit	Result
757124-72-4	8-21 TS	41	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
276156-97-2	6-21 TS	160 U	ng/L	160	5/16/18 0.10	5/16/18 0.10	ASD 1000
19108-14-4	8-21 TS	41	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
754-91-6	FOBA	41 U	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
13283-13-6	HOPO-DX	41 U	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
2355-31-9	N ₂ MeFOVAA	41 U	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
175-22-4	PFDA	41	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
375-73-3	PFDS	110	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
335-76-2	PFDA	82 U, Q-2	ng/L	82	5/16/18 0.10	5/16/18 0.10	ASD 1000
107-55-1	PFDoA	41 U, Q-1, Q-2, Q-3	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
335-77-3	PFDS	160 U	ng/L	160	5/16/18 0.10	5/16/18 0.10	ASD 1000
175-85-9	PFHpA	19 U, Q-2	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
375-92-8	PFHpS	41 U	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
107-24-4	PFHxA	42	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
344-46-4	PFHxS	41 U	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
375-95-1	PFNA	41 U	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
13259-12-1	PFNS	41 U	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
335-67-1	PFOA	38 U, Q-2	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
1763-23-1	PFOS	55	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
2706-90-3	PFPeA	70	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
2706-91-4	PFPeS	41 U	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000
72629-94-8	PFTtDA	160 U, Q-1, Q-2, Q-3	ng/L	160	5/16/18 0.10	5/16/18 0.10	ASD 1000
2058-94-8	PFTtDA	41 U, Q-2, Q-3	ng/L	41	5/16/18 0.10	5/16/18 0.10	ASD 1000



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 18-0142

Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0142, Phase 1 PFASs Chattooga River

Sample ID: OF02-0418

Lab ID: E181703-20

Station ID: OF02

Matrix: Surface Water

Date Collected: 4/24/18 14:15

Sample ID	Compound	Concentration (ug/L)	Unit	Method	LOD (ug/L)	LOQ (ug/L)	Reporting Limit (ug/L)
757134-72-4	4,2-DTTS	42	ug/L	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
276156-07-2	6,2-DTTS	170	ug/L	170	5/16/18 0.18	5/16/18 0.32	ASD 1000
39108-14-4	8,2-DTTS	42	ug/L	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
754-91-6	H2BA	42	ug/L	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
14253-13-6	H2PO4X	42	ug/L	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
2355-31-9	N2MeFOVAA	42	ug/L, 1, 2, 3	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
175-22-4	PFDA	20	ug/L, 2	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
375-75-5	PFHx	120	ug/L	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
335-76-2	PFDA	43	ug/L, 2, 3, 4	83	5/16/18 0.18	5/16/18 0.32	ASD 1000
107-55-1	PFDA	42	ug/L, 1, 2, 3, 4, 5	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
335-77-3	PFDA	170	ug/L	170	5/16/18 0.18	5/16/18 0.32	ASD 1000
375-85-9	PFHpA	20	ug/L, 2	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
375-92-8	PFHpA	42	ug/L	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
107-24-4	PFDA	47	ug/L	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
335-46-4	PFDA	42	ug/L	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
375-95-1	PFNA	42	ug/L	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
60256-12-1	PFNS	42	ug/L	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
335-67-1	PFDA	35	ug/L, 2	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
1763-23-1	PFDA	73	ug/L	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
2706-90-3	PFDA	75	ug/L	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
2706-91-4	PFDA	42	ug/L	42	5/16/18 0.18	5/16/18 0.32	ASD 1000
72629-94-8	PFDA	170	ug/L, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	170	5/16/18 0.18	5/16/18 0.32	ASD 1000
2038-94-8	PFDA	42	ug/L, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	42	5/16/18 0.18	5/16/18 0.32	ASD 1000



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 18-0142

Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SEDS

Analysis	Result	Reporting Limit	Units	Spill Level	Source Result	%REC	%REC Limit	RPD	RPD Limit	Status
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Batch 1805038 - S PFC

Blank (1805038-BLK1)

Prepared & Analyzed: 05/15/18

ASB 100S

4-2FT3	0	40	ug/L							U
6-2FT3	0	100	"							U
8-2FT3	0	40	"							U
P1SA	0	40	"							U
HPPO-DA	0	40	"							U
hexachlorocyclohexane	0	40	"							U
PFBA	0	40	"							U
PFBS	0	40	"							U
PFDA	0	40	"							U
PFDoA	0	40	"							U
										QC-L QC-R QL-L QL-R U
PFOS	0	100	"							U
PFHpA	0	40	"							U
PFHpS	0	40	"							U
PFDA	0	40	"							U
PFHxS	0	40	"							U
PFNA	0	40	"							U
PFNS	0	40	"							U
PFDA	0	40	"							U
PFOS	0	40	"							U
PFHxA	0	40	"							U
PFHxS	0	40	"							U
PFDoA	0	100	"							QC-L QC-R U
PFUdA	0	40	"							U

Blank (1805038-BLK2)

Prepared & Analyzed: 05/15/18

ASB 100S

4-2FT3	0	40	ug/L							U
6-2FT3	0	100	"							U
8-2FT3	0	40	"							U
P1SA	0	40	"							U
HPPO-DA	0	40	"							U
hexachlorocyclohexane	0	40	"							U
PFBA	0	40	"							U
PFBS	0	40	"							U
PFDA	0	40	"							U



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0142
Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, SEDS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Batch 1805038 - S PFC										
Blank (1805038-BLK2)										
Prepared & Analyzed: 05/15/18										
PFDA	0	40	ng/L							QC-L QC-S QL-L, S
PFDB	0	100	"							EL
PFHpA	0	40	"							EL
PFHpB	0	40	"							EL
PFHxA	0	40	"							EL
PFHxB	0	40	"							EL
PFNA	0	40	"							EL
PFNB	0	40	"							EL
PFDA	0	40	"							EL
PFDB	0	40	"							EL
PFHpA	0	40	"							EL
PFHpB	0	40	"							EL
PFHxA	0	40	"							QC-L QC-S, S
PFHxB	0	40	"							EL
LCS (1805038-BL1)										
Prepared & Analyzed: 05/15/18										
ASB 100S										
4-2P12	349	40	ng/L	372.31		91.6	70-120			
4-2P15	364	100	"	371.49		90.1	70-140			
4-2P19	437	40	"	382.97		111	70-160			
6GSA	368	40	"	389.44		97.3	70-180			
10FBO-GA	401	40	"	398.47		101	70-180			
5-5-6PBOA	303	40	"	398.41		76.0	70-180			
PFDA	361	40	"	398.41		90.7	70-180			
PFDB	350	40	"	352.99		91.7	70-180			
PFDA	383	40	"	398.41		96.2	70-180			
PFDBA	368	40	"	398.41		92.3	70-180			QC-L QC-S QL-L
PFDB	409	100	"	394.86		130	70-180			QC-S
PFHpA	388	40	"	388.47		97.8	70-180			
PFHpB	380	40	"	378.49		103	70-180			
PFHxA	341	40	"	396.47		86.6	70-180			
PFHxB	333	40	"	363.16		91.8	70-180			
PFNA	356	40	"	396.41		89.2	70-180			
PFNB	343	40	"	382.47		89.6	70-180			
PFHxA	378	40	"	398.41		94.9	70-180			
PFHxB	346	40	"	368.73		94.3	70-180			



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Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SEDS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Status
Batch 1805038 - S PFC										
LCS (1805038-BS1)				Prepared & Analyzed: 05/15/18						
PTTol	360	40	ng/L	368.41		90.4	75-100			QC1 - QC5
PTTol	333	40	"	332.10		94.4	75-100			
PTTolA	333	100	"	338.41		100	80-130			
PTTolA	403	40	"	394.41		101	75-100			
Matrix Spike (1805038-MS1)				Source: E181703-10		Prepared: 05/09/18 Analyzed: 05/25/18				
ASB 100S										
4-2FT3	323	30	ng/L	340.04	U	93.3	70-100			QC1 - QC5
6-2FT3	324	30	"	352.50	U	92.0	80-100			
8-2FT3	304	30	"	356.22	U	93.2	70-100			
PFOS	309	10	"	371.06	U	83.3	70-100			
PFPO-DA	356	30	"	371.06	U	95.9	70-100			QC1 - QC5
Non-HPOBAA	377	0.0	"	371.06	U	100	70-100			
PFBA	363	30	"	371.06	10.2	94.0	70-100			
PFHx	290	30	"	328.30	U	91.2	80-100			
PFDA	377	30	"	371.06	U	100	70-100			QC1 - QC5
PTTolA	357	30	"	371.06	U	96.3	70-100			
PFIS	253	20	"	358.07	U	81.5	70-100			
PFHpA	373	30	"	371.06	20.3	94.0	70-100			
PFHpS	351	30	"	352.50	U	94.0	70-100			QC1 - QC5
PFHxA	403	10	"	371.06	08.7	91.4	70-100			
PFHxS	314	30	"	338.40	U	94.1	70-100			
PFNA	408	30	"	371.06	U	92.9	70-100			
PFNA	243	30	"	336.22	U	79.3	70-100			QC1 - QC5
PFNA	355	30	"	371.06	U	95.7	70-100			
PFOS	312	10	"	343.41	U	90.9	70-100			
PFPeA	530	30	"	371.06	15.1	98.3	80-100			
PTTol	342	0.0	"	348.79	U	98.2	70-100			QC1 - QC5
PTTolA	282	30	"	371.06	U	76.1	70-100			
PTTolA	328	10	"	371.06	U	97.7	70-100			



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Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SEDS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limit	RPD	RPD Limit	Status
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Batch 1805038 - S PFC

Matrix Spike Dup (1805038 MSD1) Source: E181703-10 Prepared: 05/09/18 Analyzed: 05/25/18

ASB 100S

4-2FT3	316	30	ng/L	353.50	U	89.3	70-130	2.91	20	
6-2FT3	307	30	"	339.17	U	102	70-130	12.5	20	
8-2FT3	336	30	"	362.94	U	103	70-130	21.2	20	QAA
FOXA	305	30	"	378.07	U	80.9	70-130	10.6	20	
HFPO-DA	461	30	"	378.07	U	98.3	70-130	4.48	20	
NAMFOXA	304	0.7	"	378.07	U	103	70-130	3.94	20	
PFBA	368	30	"	378.07	18.2	92.4	70-130	6.162	20	
PFDB	341	30	"	334.68	U	102	70-130	33.9	20	
PFDA	411	30	"	378.07	U	100	70-130	4.67	20	
PFDA-A	370	30	"	378.07	U	87.7	70-130	4.30	20	
PFDB	269	30	"	664.64	U	77.7	70-130	4.40	20	
PFHpA	305	30	"	378.07	20.3	80.2	70-130	3.88	20	
PFHpB	341	30	"	339.17	U	85.0	70-130	2.02	20	
PFHxA	433	30	"	378.07	65.7	97.0	70-130	6.62	20	
PFHxH	428	30	"	544.80	U	88.1	70-130	3.17	20	
PFNA	339	30	"	378.07	U	80.7	70-130	9.71	20	
PFNS	330	30	"	462.95	U	92.7	70-130	17.1	20	
PFnGA	362	30	"	378.07	U	162	70-130	7.85	20	
PFnH	371	30	"	340.91	U	100	70-130	51.8	20	
PFnPA	378	30	"	378.07	133	88.3	70-130	0.704	20	
PFnS	338	0.3	"	339.17	U	85.2	70-130	1.18	20	
PFnDA	418	30	"	378.07	U	111	70-130	38.6	20	QAA-5
PFnGA	378	30	"	378.07	U	100	70-130	15.0	20	QAA-5

MRL Verification (1805038 P81)

Prepared & Analyzed: 05/15/18

ASB 100S

4-2FT3	20.7	40	ng/L	37.25		88	80-130			1
6-2FT3	48.3	40	"	18.24		110	80-130			3,MDL-2
FOXA	36.1	40	"	30.64		83.6	80-130			Q-2
HFPO-DA	46.1	40	"	10.64		116	80-130			MDL-2
NAMFOXA	32.7	40	"	30.64		82.0	80-130			Q-2
PFBA	34.2	40	"	10.64		88.9	80-130			1



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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 D.A.R.T. ID: 18-0142
 Project: 18-0142, Phase 1 PFASs Chattooga River - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control
 US-EPA, Region 4, SEDS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Batch 1805038 - S PFC										
MRL Verification (1805038-PS1)										
Prepared & Analyzed: 05/15/18										
PFOS	36.6	40	ng/L	35.230		104	50-150			L MRL-2 Q-2
PFDA	47.4	80	"	30.641		159	30-150			L MRL-2 Q-2
PFUnA	44.4	40	"	30.641		111	30-150			L MRL-2 Q-2
PFHpA	39.0	40	"	30.641		100	30-150			L MRL-2 Q-2
PFHpA	41.1	40	"	37.640		109	30-150			L MRL-2 Q-2
PFHxA	46.8	40	"	30.641		117	30-150			L MRL-2 Q-2
PFHxH	35.2	40	"	30.335		90.7	30-150			L MRL-2 Q-2
PFNA	40.2	40	"	39.640		101	30-150			L MRL-2 Q-2
PFDB	32.7	40	"	38.247		81.6	30-150			L MRL-2 Q-2
PFDA	30.4	40	"	39.641		76	30-150			L MRL-2 Q-2
PFDB	27.3	40	"	30.471		68.3	30-150			L MRL-2 Q-2
PFUnA	39.1	40	"	30.641		98.1	30-150			L MRL-2 Q-2
PFHxH	37.7	40	"	37.499		94.3	30-150			L MRL-2 Q-2
PFUnA	42.0	40	"	30.641		105	30-150			L MRL-2 Q-2
MRL Verification (1805038-PS2)										
Prepared & Analyzed: 05/15/18										
ASB 100S										
PFOS	116	100	ng/L	111.09		76.5	30-150			L MRL-2 Q-2
PFOS	64.4	100	"	153.78		54.9	30-150			L MRL-2 Q-2
PFHxA	103	100	"	110.16		102	30-150			L MRL-2 Q-2



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D.A.R.T. Id: 18-0142

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Notes and Definitions for QC Samples

U	The analyte was not detected at or above the reporting limit.
h	The identification of the analyte is acceptable; the reported value is an estimate.
MRL-2	MRL verification for Non-Potable Water matrix.
Q-2	Result greater than MDL, but less than MRL.
QC-1	Analyte concentration low in continuing calibration verification standard.
QC-2	Analyte concentration high in continuing calibration verification standard.
QC-3	Calibration check standard less than method control limits.
QL-1	Laboratory Control Spike Recovery less than method control limits.
QM-3	Matrix Spike Precision outside method control limits.
QS-3	Surrogate recovery is lower than established control limits.

11.0 Field Logbook

Initial and Date: _____

United States Environmental Protection Agency
Region 4
Science and Ecosystem Support Division
980 College Station Road
Athens, Georgia 30605-2720



Project Name: Study of PFASs Compounds on the Chattooga River
Project Location: Chattooga County GA, Cherokee and Etowah County AL
Project ID: 18-0142
Project Leader: Derek Little

Sampling

Book 1 of 1
Inclusive Dates: 4/24/18 - 4/26/18

List of personnel:

Name	Initials	Duties	Organization
DEREK LITTLE	<i>DL</i>	PROJECT LEADER	SESD
JERRY ACKERMAN	<i>JA</i>	SAMPLER	SESD
NATE BARLET	<i>NB</i>	SAMPLER	SESD

18-0142

Page 1 of 27

Initial and Date: DL 4/19/18

18-0142

Page 2 of 27

Initial and Date:

De 4/24/18

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18-0142

Page 3 of 27

Initial and Date:

DL 4/24/18

Standard Operating Procedures to be used, unless otherwise stated.

Field Measurement Procedures	SESDPROC-	Revision
Field pH Measurement	100	R4
Field Specific Conductance Measurement	101	R6
Field Temperature Measurement	102	R5
Field Turbidity Measurement	103	R4
Field Measurement of Dissolved Oxygen	106	R4
Global Positioning System	110	R4
In-Situ Water Quality Monitoring	111	R3
Field Sampling Procedures	SESDPROC-	Revision
Surface Water Sampling	201	R4
Ecology Section Field Sampling Procedures	SESDPROC-	Revision
Hydrological Studies	501	R4
Divisional Quality Systems Documents	SESDPROC-	Revision
Logbooks	1002	R0
Quality System Procedures	SESDPROC-	Revision
Sample and Evidence Management	Q05	R3
Field Sampling Quality Control	Q11	R5

Field Equipment Used:

Equipment Description	Identification Number
1. SmartPhone	549609
2. LogMate	3489-2102
3. GPS - 4006	5156769
4. Nikon CoolPix	549545
5.	
6.	
7.	

Station information:

Station ID	Description	State	Longitude	Latitude
CI00	Weiss Lake	AL		
CR01	Coosa Sample	GA	-85.3805	34.2515
CR02	NEE-13, Coosa River	AL	-85.8540	34.1127
CT01	Canyon Road	AL	-85.5607	34.2637
CT02	Cherokee County 97	AL	-85.5092	34.2902
CT03	Holland/Chattoogaville	GA	-85.4456	34.3357
CT04	Lyerly Dam	GA	-85.3959	34.4021
CT05	USGS Station, GA-1	GA	-85.3349	34.4677
CT06	Martha Berry	GA	-85.3008	34.5395
CT07	Club Drive	GA	-85.3106	34.5608
CT08	Tate Rd	GA	-85.3355	34.5624
CT09	Shattuck Blvd	GA	-85.2935	34.6787
CT10	Villanow ST	GA	-85.2867	34.7058
GI00	Gadsden	AL		
OF01	Outfall 1	AL	-85.7529	34.1712
OF02	Power Outfall	AL	-85.7938	34.1312

18-0142

Page 4 of 27

Initial and Date:

DL 4/24/18

Station ID:	GIØØ
Sample Date:	4-24-18
Sample Time:	1240

Sampling

Clean hands:	JWA
Dirty hands:	DMC
# Containers:	2

GPS

Latitude:	
Longitude:	
Operator:	DMC ± 18ft

Flow

Total Q:	NA
Operator:	NA

In Situ WQ

Operator:	NTB
DO (mg/L):	8.60
pH:	6.97
Temperature (C):	17.7
Sp. Cond. (µS/cm):	151
Turbidity (NTU):	10

Photo Log

Photographer:	DMC
Upstream Photo:	1163
Downstream Photo:	1164

Notes/Observations/Drawings:

ADEN collection w/ Van Dorn sampler to level of intake.
EPA Sampled from tank
All times EST

Initial and Date: 4-24-18 DL

Station ID:	C102
Sample Date:	4-24-18
Sample Time:	1320
Sampling	
Clean hands:	DNL
Dirty hands:	NTB
# Containers:	2
GPS	
Latitude:	DL
Longitude:	34.1127 520'
Operator:	85.85567
Flow	
Total Q:	NA
Operator:	NA

In Situ WQ

Operator:	NTB
DO (mg/L):	8.91
pH:	7.67
Temperature (C):	17.54
Sp. Cond. (µS/cm):	149.5
Turbidity (NTU):	13

Photo Log

Photographer:	DL
Upstream Photo:	1165
Downstream Photo:	1166

Notes/Observations/Drawings:

Sampled from AD EMB Boat

18-0142

Page 6 of 27

Initial and Date: DL 4-24-18

Station ID:	OFO2
Sample Date:	4-24-18
Sample Time:	1415

Sampling

Clean hands:	DML
Dirty hands:	NTB
# Containers:	2

GPS

Latitude:	34.13101 ± 14'
Longitude:	85.79318
Operator:	DML

Flow

Total Q:	NA
Operator:	NA

In Situ WQ

Operator:	JWA
DO (mg/L):	8.95
pH:	7.86
Temperature (C):	17.76
Sp. Cond. (µS/cm):	151
Turbidity (NTU):	11

Photo Log

Photographer:	DL
Upstream Photo:	1167
Downstream Photo:	1168

Notes/Observations/Drawings:

Initial and Date: DL 4-24-18

Station ID:	DF01
Sample Date:	4-24-18
Sample Time:	1440

Sampling

Clean hands:	DML
Dirty hands:	NTB
# Containers:	2

GPS

Latitude:	34.16915	8 14'
Longitude:	85.75091	
Operator:		

Flow

Total Q:	NA
Operator:	NA

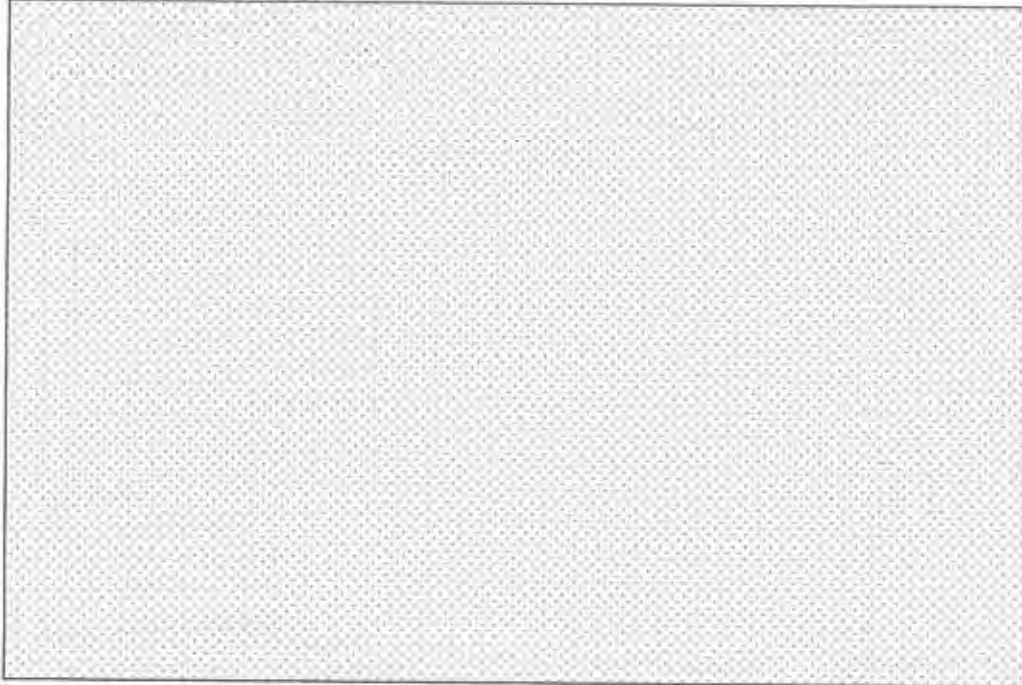
In Situ WQ

Operator:	JWA
DO (mg/L):	9.76
pH:	8.03
Temperature (C):	18.5
Sp. Cond. (μS/cm):	152
Turbidity (NTU):	19

Photo Log

Photographer:	DHL
Upstream Photo:	1169
Downstream Photo:	1170

Notes/Observations/Drawings:



18-0142

Page 8 of 27

Initial and Date: DL 4-24-18

Station ID:	C100
Sample Date:	4/24/18
Sample Time:	15:15

Sampling

Clean hands:	DL
Dirty hands:	NTB
# Containers:	2

GPS

Latitude:	
Longitude:	
Operator:	DL

Flow

Total Q:	NA
Operator:	

In Situ WQ

Operator:	SWA
DO (mg/L):	9.56
pH:	8.14
Temperature (C):	16.23
Sp. Cond. (µS/cm):	155
Turbidity (NTU):	7.8

Photo Log

Photographer:	DL
Upstream Photo:	Lake: 1171
Downstream Photo:	NA

Notes/Observations/Drawings:

04/18 - FBI collected @ 1510

Initial and Date: 4-24-18

Station ID:	CT01
Sample Date:	4-24-18
Sample Time:	1605

Sampling

Clean hands:	NTS
Dirty hands:	JWA
# Containers:	2

GPS

Latitude:	34.24360 ±18
Longitude:	85.56017
Operator:	JWA

Flow

Total Q:	NA
Operator:	NA

In Situ WQ

Operator:	JWA
DO (mg/L):	8.62
pH:	7.95
Temperature (C):	15.8
Sp. Cond. (µS/cm):	132
Turbidity (NTU):	58.1

Photo Log

Photographer:	JWA
Upstream Photo:	1172
Downstream Photo:	1173

Notes/Observations/Drawings:

Stage too high for flow measurements

Initial and Date: DL 4-24-18

Station ID:	CT02
Sample Date:	4-24-18
Sample Time:	1630

Sampling

Clean hands:	SWA
Dirty hands:	NTB
# Containers:	2

GPS

Latitude:	34.29009 ±19'
Longitude:	85.50909
Operator:	NTB

Flow

Total Q:	NA
Operator:	Nt

In Situ WQ

Operator:	DL
DO (mg/L):	8.97
pH:	7.84
Temperature (C):	15.57
Sp. Cond. (µS/cm):	124.5
Turbidity (NTU):	70.1

Photo Log

Photographer:	NTB
Upstream Photo:	1174
Downstream Photo:	1175

Notes/Observations/Drawings:

Flow too high to Wade

Initial and Date: 4/25/18 DL

Station ID:	CT03
Sample Date:	4-25-18
Sample Time:	0930

Sampling

Clean hands:	JWA
Dirty hands:	NTB
# Containers:	2

GPS

Latitude:	34.33582 ±16
Longitude:	85.44585
Operator:	NTB

Flow

Total Q:	NA
Operator:	NA

In Situ WQ

Operator:	JWA
DO (mg/L):	8.59
pH:	7.7
Temperature (C):	15.7
Sp. Cond. (µS/cm):	141
Turbidity (NTU):	36

Photo Log

Photographer:	NTB
Upstream Photo:	1176
Downstream Photo:	1178 DL

1177 4-25-18

Notes/Observations/Drawings:

Flow too high to measure safely

GA ERD observing Jeremy Smith

Canoe launch

- Runners possibly TREX material
- Possible source unknown?

Initial and Date: DL 4-25-18

Station ID:	CT04
Sample Date:	4-25-18
Sample Time:	0955

Sampling

Clean hands:	NTB
Dirty hands:	JWA
# Containers:	4

GPS

Latitude:	34.40199 517
Longitude:	85.39602
Operator:	NTB

Flow

Total Q:	NA
Operator:	NA

In Situ WQ

Operator:	DL
DO (mg/L):	9.01
pH:	7.82
Temperature (C):	15.61
Sp. Cond. (µS/cm):	149.4
Turbidity (NTU):	27

Photo Log

Photographer:	NTB
Upstream Photo:	1178
Downstream Photo:	1179

Notes/Observations/Drawings:

Flow too high to measure..

Canoe Launch @ site also , same material as CT03

Initial and Date: DL 4-25-18

Station ID:	CT05
Sample Date:	4-25-18
Sample Time:	1020
Sampling	
Clean hands:	NTB
Dirty hands:	JWA
# Containers:	2
GPS	
Latitude:	34.46760 ±20
Longitude:	85.33490
Operator:	NTB
Flow	
Total Q:	NA
Operator:	NA

In Situ WQ

Operator:	JWA
DO (mg/L):	9.36
pH:	7.80
Temperature (C):	15.48
Sp. Cond. (µS/cm):	151.0
Turbidity (NTU):	22

Photo Log

Photographer:	NTB
Upstream Photo:	1180
Downstream Photo:	1181

Notes/Observations/Drawings:

04/10 F02 @ 1015
Flow too High, GS gauge

DL 4/25/18

Initial and Date:

DL 4/25/18

Station ID:	CT07
Sample Date:	4-25-18
Sample Time:	1110

Sampling

Clean hands:	NTB
Dirty hands:	SWA
# Containers:	2

GPS

Latitude:	34.56087 ±21
Longitude:	85.31665
Operator:	NTB

Flow

Total Q:	NA
Operator:	NA

In Situ WQ

Operator:	DL
DO (mg/L):	9.24
pH:	8.07
Temperature (C):	15.07
Sp. Cond: (µS/cm):	115.2
Turbidity (NTU):	15

Photo Log

Photographer:	NTB
Upstream Photo:	1185
Downstream Photo:	1186

Notes/Observations/Drawings:

Stage too high for flow

N 34.56087

18-0142

Page 16 of 27

Initial and Date:

4/25/18 *DL*

Station ID:	CT08
Sample Date:	4-25-18
Sample Time:	1136

Sampling

Clean hands:	NTB
Dirty hands:	JWA
# Containers:	2

GPS

Latitude:	34.56239
Longitude:	85.33356 ⁵²²
Operator:	NTB

Flow

Total Q:	NA
Operator:	NA

In Situ WQ

Operator:	<i>DL</i>
DO (mg/L):	9.07
pH:	8.14
Temperature (C):	15.30
Sp. Cond. (µS/cm):	126.8
Turbidity (NTU):	23

Photo Log

Photographer:	NTB
Upstream Photo:	1187
Downstream Photo:	1188

Notes/Observations/Drawings:

18-0142

Page 17 of 27

Initial and Date: 4/25/18 DZ

Station ID:	CT09
Sample Date:	4-25-18
Sample Time:	1200
Sampling	
Clean hands:	NTB
Dirty hands:	JWA
# Containers:	2
GPS	
Latitude:	34.67876
Longitude:	85.29358
Operator:	NTB ± 21'
Flow	
Total Q:	NA
Operator:	NA

In Situ WQ

Operator:	TML
DO (mg/L):	8.85
pH:	7.85
Temperature (C):	16.87
Sp. Cond. (µS/cm):	171.8
Turbidity (NTU):	15

Photo Log

Photographer:	NTB
Upstream Photo:	1189
Downstream Photo:	1190

Notes/Observations/Drawings:

CT09-04/18 D @ 1205 / 2 containers

Poison Ivy present

Initial and Date: 4/25/19 DL

Station ID:	CT10
Sample Date:	4-25-18
Sample Time:	1215

Sampling

Clean hands:	NTB
Dirty hands:	JWA
# Containers:	2

GPS

Latitude:	34.70597
Longitude:	85.28675
Operator:	NTB E 15'

Flow

Total Q:	NA
Operator:	NA

In Situ WQ

Operator:	DMC
DO (mg/L):	8.80
pH:	7.94
Temperature (C):	15.53
Sp. Cond. (µS/cm):	230.8
Turbidity (NTU):	6.6

Photo Log

Photographer:	NTB
Upstream Photo:	1171
Downstream Photo:	1192

Notes/Observations/Drawings:

--

Initial and Date: DC 4/25/18

Station ID:	CRO1
Sample Date:	4-25-18
Sample Time:	1330

Sampling

Clean hands:	NTB
Dirty hands:	JWA
# Containers:	2

GPS

Latitude:	34.25175
Longitude:	85.38053
Operator:	DMC 521

Flow

Total Q:	NA
Operator:	NA

In Situ WQ

Operator:	DMC
DO (mg/L):	8.10
pH:	7.93
Temperature (C):	16.09
Sp. Cond. (μS/cm):	105.2
Turbidity (NTU):	55

Photo Log

Photographer:	DMC
Upstream Photo:	1193
Downstream Photo:	1194

Notes/Observations/Drawings:

Sample from dock, floating dock

Initial and Date: _____

Station ID:	
Sample Date:	
Sample Time:	

Sampling

Clean hands:	
Dirty hands:	
# Containers:	

GPS

Latitude:	
Longitude:	
Operator:	

Flow

Total Q:	
Operator:	

In Situ WQ

Operator:	
DO (mg/L):	
pH:	
Temperature (C):	
Sp. Cond. ($\mu\text{S}/\text{cm}$):	
Turbidity (NTU):	

Photo Log

Photographer:	
Upstream Photo:	
Downstream Photo:	

4/26/18

Notes/Observations/Drawings:

--

Initial and Date:

Data Sonde Calibration Form

Sonde#: 549609			Model: SMARTROLL			
DATE/TIME	Begin	4/20/18 1300	4/23/18 1315	4/24/18 1100	1	1
	End	4/23/18 1315	4/24/18 1900	4/24/18 1440	1	1
CONDUCTIVITY 12,500 (µS/cm)	Pre-Cal	12886.1	12600.3	12485.4		
	Post-Cal	12506.2	12502.6	12504.5		
	End Check	12600.3	12485.9	12299		
pH 7	Pre-Cal	7.16	7.00	7.11		
	Post-Cal	6.78	7.00	6.96		
	End Check	7.00	7.11	6.90		
pH 4	Pre-Cal	4.18	3.96	4.08		
	Post-Cal	4.00	4.00	4.00		
	End Check	3.96	4.08	4.01		
pH 10 (Read Only)	Read Only	10.13	10.08	9.99		
	End Check	10.08	10.18	9.96		
BAROMETRIC PRESSURE (mmHg)	Begin	750	742	756		
	End	742	736	740		
TEMPERATURE Thermistor / NIST	Begin	20.9 / 121.1	21.68 / 121.8	19.45 / 117.9	1	1
	End	1	19.45 / 119.9	21.7 / 121.6	1	1
Dissolved Oxygen (mg/L) (Compare to Chart)	Pre-Cal	8.94	8.58	8.83		
	Post-Cal	8.83	8.60	8.90		
	Chart Value	8.81	8.58	8.10		
	End Check	8.59	8.83	8.69		
	Chart Value	8.58	8.90	8.67		
DISSOLVED OXYGEN %	Pre-Cal	101.2	99.9	99.2		
	Post-Cal	100.1	100.1	100.0		
	End Check	99.9	99.2	100.0		
BATTERY (Volts)	Begin	NA				
	End	NA				
OPERATOR	Begin	DL	DL	DL		
	End	DL	DL	JMK		

Standard	Manufacturer	Lot	Expiration
Conductivity	Myron L	121470CA	028MAR19
pH 4	Fisher	177238	10/2019
pH 7	Fisher	177435	10/2019
pH 10	Fisher	176507	9/2019
1.0 NTU	Amco	7987	2/2019
10.0 NTU	Amco	800171	2/2019
100.0 NTU	Amco	18023351	2/2019
NIST	Fisher	335	9/26/2018

18-0142

Page 22 of 27

Initial and Date:

DL 4/26/18

Data Sonde Calibration Form

Sonde#:		Model:				
DATE/TIME	Begin	4-20-18 / 1300	4-25-18 / 1345	1	1	1
	End	4-25-18 / 1345	1	1	1	1
CONDUCTIVITY 12,500 (µS/cm)	Pre-Cal	13038.1	12498.3			
	Post-Cal	12497.4	12499.5			
	End Check	12498.3				
pH 7	Pre-Cal	7.13	7.00			
	Post-Cal	7.02	6.98			
	End Check	7.00				
pH 4	Pre-Cal	4.14	3.98			
	Post-Cal	4.00	4.00			
	End Check	3.98				
pH 10 (Read Only)	Read Only	10.05	10.13			
	End Check	10.05				
BAROMETRIC PRESSURE (mmHg)	Begin	750	742			
	End	742				
TEMPERATURE Thermistor / NIST	Begin	20.90 / 21.1	21.68 / 22.0	1	1	1
	End	21.68 / 22.0	1	1	1	1
Dissolved Oxygen (mg/L) (Compare to Chart)	Pre-Cal	8.85	8.58			
	Post-Cal	8.83	8.57			
	Chart Value	8.81	8.58			
	End Check	8.58				
	Chart Value	8.58				
DISSOLVED OXYGEN %	Pre-Cal	100.3	99.8			
	Post-Cal	100.0	99.8			
	End Check	99.8				
BATTERY (Volts)	Begin	NA				
	End	NA				
OPERATOR	Begin	DL	DL			
	End	DL				

Initial and Date: DL 4/26/18

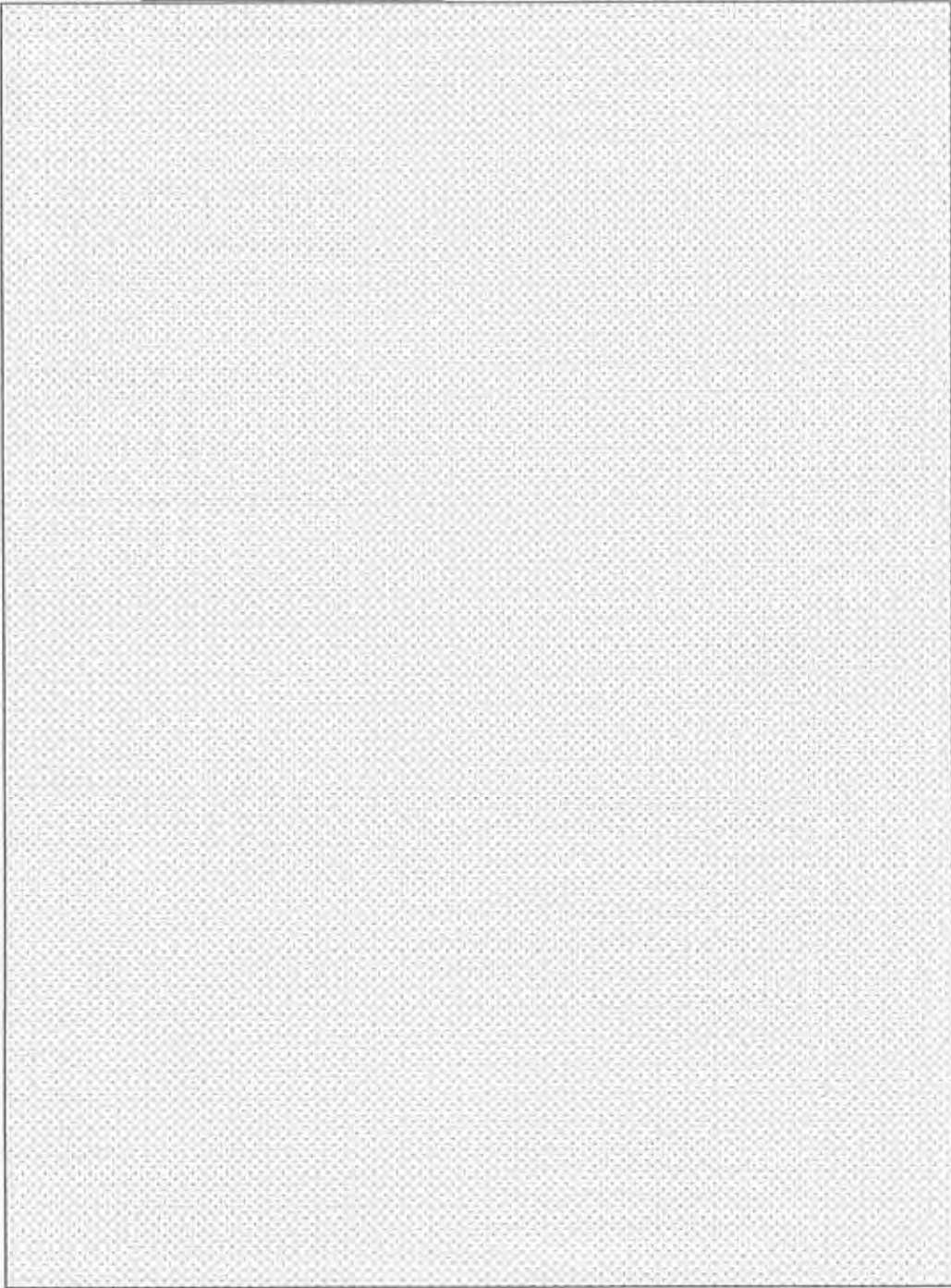
LaMotte Calibrations						
Date/Time	Begin	4/24/18 1250	4/25/18 720			
	End	4/24/18 1935	4/26/18 1450			
0 (NTU)	Pre-Cal	0	0			
	Post-Cal	0	0			
	End Check	0	0			
100 (NTU)	Pre-Cal	100	100			
	Post-Cal	100	100			
	End Check	100	100			
Operator	Begin	DL	DL			
	End	DL	DL			

End of Logbook

DL 4/26/18

18-0142

Initial and Date:



18-0142

Page 25 of 27

Initial and Date:

Page 26 of 27

Initial and Date: _____

END OF LOGBOOK

18-0142

Page 27 of 27

END OF REPORT

ATTACHMENT 69

LSASD Project ID: 19-0457

Final Report

Assessment of Resuspended Sediments as a Source of PFAS to the Upper Coosa River Basin

Conasauga, Oostanaula, & Coosa Rivers

Georgia

Project Dates: September 16th – September 18th, 2019

Final Report Approval Date: December 5th, 2019

Project Leader: Nathan Barlet
Environmental Sampling Section
Applied Science Branch
Laboratory Services & Applied Science Division
USEPA – Region 4
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Athens, Georgia 30605-2720

The activities depicted in this Final Report are accredited under the US EPA Region 4 Laboratory Services & Applied Science Division ISO/IEC 17025 accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation AT-1644.



LABORATORY SERVICES & APPLIED SCIENCE DIVISION

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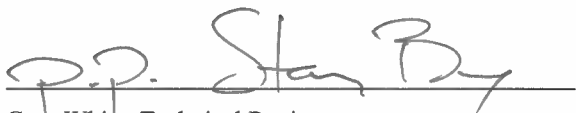
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Approvals:**LSASD Project Leader:**

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Environmental Sampling Section
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12-5-2019

Date

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Greg White, Technical Reviewer
Environmental Sampling Section
Applied Science Branch

12/5/19

Date



Stacey Box, Chief
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12/5/19

Date

Table of Contents

SECTION A: Report Distribution & Project Participants.....	6
A1. Distribution List	6
A2. Project Personnel.....	6
SECTION B: Project Overview & Design.....	7
B1. Introduction	7
B2. Methodology.....	8
Study Area:	8
Surface Water Sample Collection:	9
Sediment Sample Collection:	9
<i>In-Situ</i> Water Quality Field Measurements:	10
Stream Flow Data & Mass Loading:	10
SECTION C: Results & Discussion.....	11
C1: Analytical Data	11
Per- and Poly-Fluoroalkyl Substances (PFAS) in Surface Waters:.....	11
Per- and Poly-Fluoroalkyl Substances (PFAS) in Sediments:.....	12
Analysis of Solids (TOC and TSS):	14
C2. Field Measurements	15
<i>In-Situ</i> Water Quality:	15
C3. Computations & Analyses	15
Mass Loading Rates:	15
PFAS Class and Functional Groups in Sediment and Surface Water	16
C4. Data Quality	18
Equipment Decontamination & Preparation:	18
Field Sampling Quality Controls:.....	18
<i>In-Situ</i> Water Quality Calibration & Verification:	19
USGS Stream Gage Data:.....	20
C5. Conclusions	20
References.....	21
Summary Tables	24
Table 1: Site Coordinates and Descriptions.....	25

Table 2: PFAS Target Analyte List	26
Table 3: Inorganics Target Analyte List	27
Table 4: Sample Collection, Preservation and Holding Times	27
Table 5: <i>In-Situ</i> Water Quality Parameters	27
Table 6: Detected PFAS – Surface Water	28
Table 7: PFAS Recovery of Filtered Surface Water Samples	29
Table 8: Detected PFAS in Sediment	30
Table 9: TOC & TSS – Surface Water	31
Table 10: TOC & % Solids - Sediment	31
Table 11: <i>In-Situ</i> Water Quality Measurements	32
Table 12: PFAS Mass Loading Rates in Surface Water	33
Table 13: PFAS Classifications and Functional Groups	34
Table 14: Relative Percent Difference for CRI Duplicate	35
Summary Figures	36
Figure 1: Site Map	37
Figure 2: Composition of PFAS Detected in Surface Water	38
Figure 3: PFAS Class and Functional Groups Detected in Surface Water	39
Figure 4: Distribution and Mass Loading of PFAS in Surface Water	40
Figure 5: PFOA and PFOS in Surface Water	41
Figure 6: Distribution of PFAS in Sediments	42
Figure 7: Composition of Detected PFAS in Sediment	43
Figure 8: PFAS Class and Functional Groups Detected in Sediment	44
Figure 9: Sediment TOC and PFAS Retention (CONA4 Included)	45
Figure 10: Sediment TOC and PFAS Retention (CONA4 Excluded)	46
Figure 11: PFOA and PFOS Detected in Sediments	47
Figure 12: Organic Carbon Partition Coefficients (K_{oc}) of Detected PFAS	48
Appendix A – Surface Water PFAS Analytical Results	49
Appendix B – Sediment PFAS Analytical Results	114
Appendix C – Solids Analytical Results	142
Appendix D – Generic RSL Calculations	174
Appendix E – Site Specific RSL Calculations	183

SECTION A: Report Distribution & Project Participants

A1. Distribution List

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A2. Project Personnel

Team Members ¹	Organization	Responsibilities
Nathan Barlet	EPA/R4/LSASD	Project Leader
Greg White	EPA/R4/LSASD	Safety Officer/Sampler
Jerry Ackerman	EPA/R4/LSASD	Sampler

¹ Project Leader and all Task Leaders assisting with this project have been deemed competent by LSASD management, under ISO 17025 accreditation, to conduct the tasks required to fulfill the prescribed goals.

SECTION B: Project Overview & Design

B1. Introduction

The headwaters of the Coosa River Basin begin in Tennessee and the North Georgia Mountains as the Conasauga, Coosawattee, and Etowah Rivers. The confluence of the Conasauga and the Coosawattee Rivers form the Oostanaula River south of Dalton Georgia before converging with the Etowah River forming the Coosa River in Rome Georgia. The Coosa River flows west across the Alabama-Georgia state line and is then impounded in Leesburg Alabama to form Weiss Lake.

The Conasauga, Oostanaula, and Coosa Rivers have historically tested positive for the presence of per- and polyfluoroalkyl substances (PFAS) via monitoring studies conducted by the Georgia Environmental Protection Division (GAEPD). PFAS have also been detected in the receiving waters of Alabama on the Coosa River and Weiss Lake by the Alabama Department of Environmental Management (ADEM), and the U.S. EPA Region 4's Laboratory Services & Applied Science Division (LSASD).

PFAS are man-made chemicals that do not occur in nature and have been found to be persistent and accumulate in both the environment and the human body via exposure pathways such as consumption of contaminated food and drinking water. PFAS have been extensively used in industry, manufacturing of commercial products, and as a component in aqueous film forming foams (AFFF) used for firefighting. There is evidence that suggests exposure to PFAS can lead to adverse health effects and are an emerging concern to public health. PFAS is a generic nomenclature encompassing a broader array of chemicals, with the most studied being perfluorooctanoic acid (PFOA) and perfluorooctanesulfonate (PFOS). The U.S. EPA has issued a Recommended Health Advisory for drinking water of 70 ng/L (ppt) for combined concentrations of PFOA and PFOS compounds. Extensive information regarding PFAS can be found at <http://www.epa.gov/pfas>.

Exceedances of the U.S. EPA's Recommended Health Advisory for PFOA and PFOS have been observed at both the drinking water intakes for the City of Centre Alabama in Weiss Lake and further downstream on the Coosa River in the City of Gadsden Alabama. Data collected by ADEM from 2016 through 2019 observed elevated detections of both PFOA and PFOS in Weiss Lake and on the Coosa River (both downstream and upstream of the lake). In 2012 and 2016, elevated levels of PFOA and PFOS were detected in the receiving waters of the Oostanaula and Coosa Rivers in studies conducted by GAEPD.

The Looper's Bend land application site (LAS) operated by Dalton Utilities is located along the main stem of the Conasauga River in Dalton Georgia. Surface water samples collected by GAEPD in both 2012 and 2016 in the Conasauga River and associated tributaries draining the Looper's Bend LAS contained elevated concentrations of both PFOA and PFOS. In 2009, an analytical data report was submitted to the U.S. EPA by Dalton Utilities showing elevated levels of PFOA, PFOS, and other PFAS related compounds in groundwater, wastewater effluent, soil, and compost samples collected at the Looper's Bend LAS (MPI, 2009). Research indicates some PFAS compounds may adsorb to soils and sediments and is influenced by the presence of solid organic

carbon, and that the sorption potential tends to increase with carbon chain length and is elevated for PFOS relative to PFOA (ITRC, 2018; Anderson et al., 2016; CONCAWE, 2016). Furthermore, the adsorption of certain PFAS such as perfluoroalkyl carboxylic acids (PFCAs) (e.g. PFOA) and perfluoroalkyl sulphonic acids (PFSAs) (e.g. PFOS) to positively charged suspended particles may be an important transport pathway in surface water (CONCAWE, 2016). Background concentrations of PFAS in sediments in the Coosa River Basin downstream of Looper's Bend LAS and the potential of sediment as a source of PFOA and PFOS via resuspension and transport to receiving waters is currently unknown. The purpose of this study was to observe background concentrations and composition of PFAS in sediments and co-located surface water samples collected at spatially stratified scales in the Upper Coosa River Basin stemming from the Conasauga at Looper's Bend LAS.

B2. Methodology

Unless noted otherwise, all field activities described below were conducted in accordance with the approved Assessment of Resuspended Sediments as a Source of PFAS to the Upper Coosa River Basin Sample and Analysis Plan (SAP) (USEPA, 2019a), standard operating procedures and policies outlined in the Applied Science Branch Quality Assurance Project Plan (USEPA, 2018a), and LSASD's ISO/IEC 17025 accreditation issued by the ANSI-ASQ National Accreditation Board.

Study Area:

The study area for this project included the main stem of the Conasauga River adjacent to the Looper's Bend LAS in Dalton Georgia, the Oostanaula River from Resaca to Rome Georgia, and the receiving waters of the Coosa River from Rome Georgia to the Alabama – Georgia state line (Figure 1). A total of eight sites were assessed, which included four sites on the Conasauga River, three sites on the Oostanaula River, and one site on the Coosa River near the Alabama – Georgia state line. See Table 1 for a description and coordinates of all sites sampled in this study.

Surface water and sediment samples were collected at CRI, OOST3, and OOST2 on Monday September 16th, 2019. The remaining sites (OOST1, CONA1, CONA2, CONA3, and CONA4) were sampled on Tuesday September 17th, 2019. A new location relative to the SAP (USEPA, 2019a) was substituted for CONA2 due to limited access and extremely low water depths causing significant portions of the Conasauga River to be unnavigable by boat during the time of the study. The alternative location for CONA2 was sampled after significant effort by the field personnel to reach the proposed sampling location for this site at Looper's Bridge Road by boating in from downstream. The alternative sampling location for CONA2 was located approximately 6.7 river miles downstream of Looper's Bridge Road and 3.7 miles upstream from CONA3. All references to CONA2 in this report refer to the alternative location listed in Table 1.

Surface Water Sample Collection:

Surface water samples were collected at all sites in 15 mL polypropylene vials and analyzed for the 25 PFAS analytes listed in Table 2. Additional surface water samples were collected in 1-liter polyethylene containers at CONA1, CONA3, OOST3, and CRI and analyzed for total organic carbon (TOC) and total suspended solids (TSS) (Table 3). The sample container, preservation, and holding time requirements for all analytes are listed in Table 4. All surface water analyses were conducted at the Region 4 LSASD Laboratory in Athens Georgia.

An additional surface water sample was also collected at CONA1, CONA3, OOST3, and CRI and filtered through a 1.2 μm GF/C glass micro-fiber filter loaded into a polypropylene gravimetric filter to remove suspended particulate matter and analyzed for the dissolved fraction of PFAS analytes listed in Table 2. *This experimental procedure was performed outside of LSASD's ISO/IEC 17025 accreditation to provide preliminary insight into the downstream transport of PFAS associated with suspended particles and the resulting data should be used for screening purposes only.*

All surface water samples were collected in accordance with LSASD's Standard Operating Procedure for Surface Water Sampling (USEPA, 2016). Surface water samples collected at CONA1, CONA3, OOST1, OOST3, and CRI were collected via stainless-steel buckets lowered over the bridge crossings at each site, mid-stream, to a depth approximately 6-inches below the water surface and samples were then transferred into the appropriate containers for the corresponding analyses listed in Table 4. Surface water samples collected at both CONA2 and OOST2 were collected directly into the containers approximately 6-inches below the water surface from the edge of the boat while anchored at the coordinates listed in Table 1. At CONA4, the surface water sample was collected directly into the container at a depth approximately 6-inches below the water surface by wading in along the streambank facing upstream into the flow. Deviations between sampling methods conducted at the sites were due to both access and safety considerations for field personnel.

Sediment Sample Collection:

Sediment samples were collected at all sites in 50 mL polypropylene vials and analyzed for the 25 PFAS analytes listed in Table 2. Additional sediment samples were also collected in 8-oz glass containers at all sites and analyzed for total organic carbon (TOC) (Table 3). The sample container, preservation, and holding time requirements for all analytes are listed in Table 4. All sediment analyses were conducted at the Region 4 LSASD Laboratory in Athens, Georgia.

All sediment samples were collected in accordance with LSASD's Standard Operating Procedure for Sediment Sampling (USEPA, 2014). Sediment samples collected at CONA1, CONA3, OOST1, OOST3, and CRI were first collected via stainless-steel petite Ponar sediment grabs lowered over the bridge crossings at each site. Sediment samples collected at CONA2 and OOST2 were retrieved via stainless-steel petite Ponar sediment grabs from the side of a boat while anchored at the coordinates listed in Table 1. The sediment sample for CONA4 was collected by

hand with a stainless-steel spoon due to the significant presence of bedrock formations and unsafe traffic conditions on the bridge overhead. All sediment samples consisted of a composite of 3 separate grabs or a spoon full that were first homogenized in a stainless-steel bowl with a stainless-steel spoon before being transferred into the appropriate containers for the corresponding analyses listed in Table 4.

In-Situ Water Quality Field Measurements:

Surface water quality measurements of temperature, dissolved oxygen, specific conductance, turbidity, and pH were collected *in-situ* via YSI EXO1 multi-parameter data sondes at each site in accordance with LSASD's Standard Operating Procedure for *In-Situ* Water Quality Monitoring (USEPA, 2018b). See Table 5 for a detailed list of *in-situ* water quality parameters. Multi-parameter data sondes used to collect in-situ water quality measurements were maintained, calibrated, and verified in accordance with the LSASD Standard Operating Procedures for *In-Situ* Water Quality Monitoring (USEPA, 2018b).

Stream Flow Data & Mass Loading:

This study targeted near base-flow conditions. The maximum threshold for approximate base-flow conditions was defined as the 30-year monthly mean flow for September computed from USGS stream gage data on the Coosa River (USGS 02397000), Oostanaula River (USGS 02388500) and the Conasauga River (USGS 02387000). These threshold values were 3,145 ft³/s, 1,447 ft³/s, and 562 ft³/s for the Coosa, Oostanaula, and Conasauga Rivers, respectively. These gages were monitored before and during the study to ensure flows were below the computed thresholds during sample collection.

Streamflow data was retrieved from 4 USGS gages located at or within relative proximity to CONA3 (USGS 02387000), OOST1 (USGS 02387500), OOST3 (USGS 02388500), and CRI (USGS 02397000) during the time of sample collection. USGS streamflow data associated with the sampling time was used in conjunction with detected PFAS concentrations in surface water samples collected at these 4 sites to compute instantaneous mass loading rates in units of grams per day.

SECTION C: Results & Discussion

C1: Analytical Data

Per- and Poly-Fluoroalkyl Substances (PFAS) in Surface Waters:

Surface water samples were collected at all sites listed in Table 1 and analyzed for the 25 PFAS target analytes listed in Table 2. A summary of detected PFAS in surface water samples are listed in Table 6. A total of 9 distinct PFAS compounds were detected in surface water samples collected throughout the watershed. The 9 compounds detected in surface waters in this study belong to 3 separate classes which include perfluoroalkyl carboxylic acids (PFCAs), perfluoroalkane sulfonic acids (PFSAs), and fluorotelomer sulfonates (FTS). The PFCAs detected in surface waters included the following compounds in decreasing order of carbon chain length; perfluorooctanoic acid (PFOA, C8), perfluoroheptanoic acid (PFHpA, C7), perfluorohexanoic acid (PFHxA, C6), perfluoropentanoic acid (PFPeA, C5), and perfluorobutyric acid (PFBA, C4). The PFSAs detected in surface water samples included perfluorooctanesulfonate (PFOS, C8), perfluorohexanesulfonate (PFHxS, C6) and perfluorobutanesulfonate (PFBS, C4). Additionally, the 8 carbon fluorotelomer sulfonate 6:2 FTS was detected in surface water collected on the Conasauga River at CONA3. 6:2 FTS is a transient environmental degradation product and precursor compound known to undergo aerobic biotransformation into shorter carbon chain PFCAs, primarily in the form of PFHxA and PFPeA (ITRC, 2018; Buck *et al.*, 2011). Long-chain compounds of both PFCAs and PFSAs are considered public health priorities due to their increased residence times in humans and wildlife (CONCAWE, 2016). Both PFCAs and PFSAs have been used by industry as wetting, dispersing, emulsifying, and foaming agents to produce industrial and consumer products ranging from protective coatings for fabrics, carpets, textiles, and paper; as well as formulations of insecticides and surfactants (Wang *et al.*, 2017). The composition and classifications of PFAS detected in surface water samples are outlined in Figures 2 and 3.

There are currently no maximum contaminant levels (MCLs) established for PFAS nationally or for the state of Georgia. The U.S. EPA has issued a Lifetime Health Advisory (LHA) level of 70 ng/L or parts-per-trillion (ppt) for combined and chemical-specific concentrations of the long-chain compounds PFOA and PFOS in drinking water. Combined concentrations of PFOA and PFOS were detected in surface waters at significantly elevated levels 3 times greater than the LHA at sites located downstream of the Looper's Bend land application site on the Conasauga River (CONA1, CONA2, and CONA3) ranging from 250 – 280 ng/L. Residual combined concentrations of PFOA and PFOS above the LHA were also observed downstream in surface waters along the Oostanula River (OOST1, OOST2, and OOST3) ranging from 72 – 153 ng/L. Neither PFOA or PFOS were detected at or above the minimum reporting limit (MRL) upstream of Looper's Bend on the Conasauga River (CONA1) or in the receiving waters of the Coosa River (CRI) near the Alabama-Georgia state line during the time of this study. The distribution and concentrations of PFOA and PFOS relative to the LHA in surface water samples are shown in Figures 4 and 5.

Surface water samples on the Conasauga River downstream of Looper's Bend (CONA2, CONA3, and CONA4) had the highest diversity of detected compounds with 8 distinct PFAS observed at

each site and Σ PFAS concentrations ranging from 931 – 1,110 ng/L. The diversity of PFAS compounds was also high in the Oostanaula River with 6 distinct PFAS detected at each site and Σ PFAS ranging from 361 – 463 ng/L. The short-chain compounds PFBS and PFPeA were the most prevalent PFAS detected throughout the watershed and were the only two compounds detected on the Conasauga River upstream of Looper’s Bend (CONA1) and on the Coosa River (CRI). The prevalence of PFBS and PFPeA was also observed in a previous investigation of the receiving waters of Weiss Lake in Alabama (USEPA, 2019b). PFBS and PFPeA are short-chain replacements of PFOS and PFOA, respectively.

Surface water samples filtered through a 1.2 μ m GF/C glass microfiber filter in order to remove suspended sediments are summarized in Table 7. The percent recoveries of long-chain PFCAs, PFSA, FTSS, and FASAs were significantly low after passing through the GF/C glass microfiber filter with an average loss of Σ PFAS of approximately 37%. This observation is consistent with recently published research from Söregård *et al* (*in press*) which analyzed the effects of multiple filter materials on the recoveries of the 21 PFAS analyzed in their study. Due to the low recoveries and high variability between pre- and post-filter PFAS concentrations the results were deemed inconclusive. Thus, the contribution of PFAS transport associated with resuspended sediment was not quantified at this time. The filter analysis is being duplicated by LSASD personnel in order to verify the percent recoveries of PFAS analytes observed.

The “U” qualifier on tables and figures denotes that the analyte was not detected at or above the reporting limit. The “J” qualifier on tables and figures denotes that the identification of the analyte was deemed acceptable by the laboratory, but the reported value is an estimate. An accompanying “Q-2” qualifier denotes that the result was greater than the Minimum Detection Limit (MDL) but less than the MRL. The complete analytical results, MRLs, and associated qualifiers for all analyses of PFAS in surface water samples are listed in Appendix A of this report.

Per- and Poly-Fluoroalkyl Substances (PFAS) in Sediments:

Sediment samples were collected at all sites listed in Table 1 and analyzed for the 25 PFAS target analytes listed in Table 2. A summary of detected PFAS in sediment samples are listed in Table 8 and shown in Figure 6. A total of 16 distinct PFAS were detected in sediment samples collected throughout the watershed. The 16 compounds detected in sediments belong to 3 separate classes which include perfluoroalkyl carboxylic acids (PFCAs), perfluoroalkane sulfonic acids (PFSAs), and perfluoroalkane sulfonamides (FASAs). The PFCAs detected in sediments included the following compounds in decreasing order of carbon chain length; perfluorotetradecanoic acid (PFTeDA, C14), perfluorotridecanoic acid (PFTrDA, C13), perfluorododecanoic acid (PFDoA, C12), perfluoroundecanoic acid (PFUDA, C11), perfluorodecanoic acid (PFDA, C10), perfluorononanoic acid (PFNA, C9), perfluorooctanoic acid (PFOA, C8), perfluoroheptanoic acid (PFHpA, C7), perfluorohexanoic acid (PFHxA, C6), perfluoropentanoic acid (PFPeA, C5), and perfluorobutyric acid (PFBA, C4). The PFSAs detected in sediment samples included perfluorooctanesulfonate (PFOS, C8) and perfluorobutanesulfonate (PFBS, C4). Additionally, 3 FASAs were detected in sediment samples collected throughout the watershed which included perfluorooctanesulfonamide (FOSA), N-methyl perfluorooctane sulfonamido acetic acid (N-

MeFOSAA), and N-ethyl perfluorooctane sulfonamido acetic acid (N-EtFOSAA). FOSA, N-MeFOSAA, and N-EtFOSAA are transient biotransformation products of perfluorooctane sulfonamido ethanols (e.g. N-MeFOSE and N-EtFOSE) used in the production of surfactants and surface treatment products (ITRC, 2018), which have been shown to be potential precursors of both PFOS (Rhoads *et al.*, 2008) and PFOA (Plumlee *et al.*, 2009) depending on the transformation pathway. The composition and distribution of PFAS detected in sediment samples are outlined in Figures 7 and 8.

The concentrations of PFAS detected in sediment samples are summarized in Table 8. PFOS was detected at elevated levels in all sediment samples ranging from 410 – 15,000 ng/kg (dry). PFOA was detected in sediments collected on the Conasauga River (CONA1, CONA2, CONA3, and CONA4) and the Oostanaula River (OOST1, OOST2, and OOST3) ranging from 91 – 1,100 ng/kg (dry). PFOA was not detected at or above the MRL in sediments collected on the Coosa River (CRI). There are currently no federal standards or criteria established for PFAS in sediments or in the state of Georgia. In April of 2019, the U.S. EPA issued draft interim recommendations for public comment to address groundwater contamination from PFOA and PFOS (USEPA, 2019c). The U.S. EPA's draft interim recommendations propose that a target hazard quotient (THQ) of 0.1 and target cancer risk (TR) of one-in-a-million be used to calculate Regional Screening Levels (RSLs) for soil protective of groundwater yielding values of 40 ppt for each compound (USEPA, 2019c). In order to determine a potential risk posed by contaminated sediments to the overlying surface waters, generic RSLs for soil protective of groundwater of 3.78E-02 µg/kg for PFOS and 1.72E-02 µg/kg for PFOA were derived from the U.S. EPA's RSL calculator (https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search) using the proposed HQ=0.1 and TR=1.00E-06 (Appendix D). In general, the combined concentration of PFOA and PFOS as well as $\sum$ PFAS increased with the presence of total organic carbon (TOC) outlined in Figures 9 and 10 and discussed in further detail in the following section of this report. Thus, RSLs were standardized by the site-specific fraction of organic carbon content based on the total organic carbon concentration measured in the sediment at each site in units of grams organic carbon per grams sediment (dry) (Appendix E). The concentrations of PFOA and PFOS detected in sediments with respect to both the generic and site-specific RSLs are outlined in Table 8 and Figure 11. All sediment samples with detected concentrations of PFOA were between 2 – 13 times greater than the site-specific RSLs and 5 – 64 times greater than the generic RSLs computed for this study. All sediments samples had concentrations of PFOS between 6 – 33 times greater than the site-specific RSLs and 11 – 397 times greater than the generic RSLs computed for this study. The RSLs presented in this report were calculated with the purpose of placing measured PFAS concentrations detected in sediments within a theoretical context for this study only. These RSLs are not enforceable and do not represent official policy of the U.S. EPA at the time this report was generated. The concentrations of PFOA and PFOS relative to both the generic and site-specific RSLs in sediment samples are shown in Figure 11.

Sediments collected on the Conasauga River had a diversity of detected PFAS ranging from 14 – 15 distinct compounds with a $\sum$ PFAS ranging from 3,386 – 34,770 ng/kg (dry). The significantly elevated levels of PFAS detected at CONA4 relative to the other sites can be attributed to a substantial presence of TOC in the sample and the sediment sampling approach used at CONA4

which differed from the other sites in this study. Due to the prevalence of in-stream bedrock outcroppings and unsafe sampling conditions on the nearby bridge, sediment grabs were collected by hand with a stainless-steel spoon in areas of noticeable deposition. This method inherently biased the composite sample towards finer particles compared to the Ponar grabs used to collect sediment samples at all other sites. The diversity of PFAS detected on the Oostanaula River ranged from 12 – 15 distinct compounds with Σ PFAS ranging from 2,840 – 4,260 ng/kg (dry). A slight decrease in both the diversity of PFAS (ranging 8 – 9 distinct compounds) and Σ PFAS (ranging 1,067 – 2,020 ng/kg (dry)) was observed in sediment samples collected on the Coosa River. With the exception of CONA4, the average concentration of Σ PFAS in sediments on the Conasauga River was approximately 3,605 ng/kg (dry), only slightly higher than the average Σ PFAS of sediments collected downstream on the Oostanaula River (average Σ PFAS = 3,363 ng/kg (dry)). Generally, PFOS was the most abundant compound detected in sediments followed by the long-chain perfluorinated carboxylic acid PFDoA (C12), as seen in Figure 7.

The “U” qualifier on tables and figures denotes that the analyte was not detected at or above the reporting limit. The “J” qualifier on tables and figures denotes that the identification of the analyte was deemed acceptable by the laboratory, but the reported value is an estimate. An accompanying “Q-2” qualifier denotes that the result was greater than the Minimum Detection Limit (MDL) but less than the MRL. The “QR-2” qualifier indicates that MRL verification recovery was greater than upper control limits. The “Y-2” qualifier should accompany all data for N-EtFOSAA and PFTeDA as these analytes should be used for screening purposes only. The complete analytical results, MRLs, and associated qualifiers for all analyses of PFAS in sediment samples are listed in Appendix B of this report.

Analysis of Solids (TOC and TSS):

Sediment samples were collected at all sites and analyzed for TOC (Tables 1 and 3). A summary of solids in both surface water and sediment samples are listed in Tables 9 and 10. Sediment TOC ranged from 2,200 – 30,000 mg/kg (dry) across all sites. The resulting TOC concentrations at CONA4 were significantly higher than the rest of the samples due to a difference in sampling techniques. Sediment grabs were collected at CONA4 using a stainless-steel spoon in depositional areas causing the composite sample to be biased towards finer particulates and detritus. With the exclusion of CONA4, the computed average TOC for the Conasauga, Oostanaula, and Coosa Rivers were 4,200 mg/kg (dry), 6,133 mg/kg (dry), and 3,550 mg/kg (dry), respectively. An increase in combined concentrations of PFOA and PFOS as well as Σ PFAS in sediments with respect to the presence of TOC was observed both with and without the treatment of CONA4 as an outlier (Figures 9 and 10). The presence of organic carbon has been indicated as a significant factor in the retention of PFAS in both sediment and soil with increasing effects for long-chain PFCAs and PFSAAs (ITRC, 2018; CONCAWE, 2016) and should be considered when comparing concentrations of PFAS in sediment across sites.

Additional surface water samples were collected at CONA1, CONA3, OOST3, and CRI and analyzed for both TOC and TSS (Table 9). The concentration of TOC in surface water samples

remained relatively consistent throughout the watershed, ranging from 1.5 – 2.8 mg/L across all sites. The concentration of TSS ranged from 9.1 – 29 mg/L throughout the watershed. On average, a slight increase in TSS was observed moving downstream (Table 9). Significant variability in TSS concentrations was observed on the Coosa River between duplicate samples, which is discussed in Section C4. – Data Quality.

The “J” qualifier on tables and figures denotes that the identification of the analyte was deemed acceptable by the laboratory, but the reported value is an estimate. An accompanying “Q-2” qualifier denotes that the result was greater than the MDL, but less than the MRL. The “QR-2” qualifier indicates that MRL verification recovery was greater than upper control limits. The complete analytical results, MRLs, and associated qualifiers for all analyses of solids in sediment and surface water samples are listed in Appendix C of this report.

C2. Field Measurements

In-Situ Water Quality:

Instantaneous measurements of temperature, pH, specific conductance, dissolved oxygen, and turbidity were collected *in-situ* at all sites and are summarized in Table 11. Water temperature ranged from 24.2 – 28.4°C across all sites depending on the time of day in which the measurement was collected. The pH of surface waters was observed to be relatively consistent throughout the watershed during the study period, ranging from 7.37 – 7.89 S.U. In general, the average specific conductance was higher on the Conasauga River (~246 µS/cm) compared to the receiving waters of the Oostanaula (~122 µS/cm) and Coosa River (~203 µS/cm). The measured values of dissolved oxygen ranged from 6.64 – 8.43 mg/L across all sites and was dependent on the time of day in which the measurement was collected. The lowest values of dissolved oxygen were observed in the early mornings with the highest values observed in the mid to late afternoon, consistent with diurnal cycles of photosynthesis and respiration. On average, a slight decrease in turbidity was observed between the Conasauga (~18 FNU), Oostanaula (~13 FNU), and Coosa Rivers (~9.3 FNU). No exceedances of ambient surface water quality criteria were observed during the period of study.

C3. Computations & Analyses

Mass Loading Rates:

Instantaneous mass loading rates were calculated in grams per day for all PFAS detected in surface water (6:2 FTS, PFBS, PFHpA, PFHxA, PFHxS, PFOA, PFOS, PFPeA), combined concentrations of PFOA and PFOS, and Σ PFAS for sites near USGS stream gages (CONA3, OOST1, OOST3, and CRI). Computed mass loading rates and associated surface water concentrations of PFAS are

summarized in Table 12 and Figure 4. Stream flow conditions were well below the base-flow thresholds set for this study and were approaching the 7-day/10-year low-flow (7Q10) for the stream gages on the Conasauga River (USGS 02387000) and the upper Oostanaula River (USGS 02387500) due to drought-like conditions experienced during the weeks prior to the study. The low-flow conditions limit PFAS inputs to groundwater intrusion, dissolution of PFAS adsorbed to sediments, transformation of precursor compounds within the sediment and surface waters, air deposition, and point-source discharges.

The highest concentrations of PFAS in surface water were observed on the Conasauga River (Table 6 and Figure 4). The Conasauga River at CONA3 accounted for approximately 74% of the combined PFOA and PFOS, and 49% of the Σ PFAS mass loading calculated for the headwaters of the Oostanaula River at OOST1 with a flow contribution of approximately 19%. Except for the short-chain PFBS, concentrations of all other PFAS compounds flowing from the Conasauga River were diluted after the confluence with the Coosawattee River (Figure 2). The flowrate of the Oostanaula increased by approximately 13% from the headwaters at OOST1 in Resaca Georgia and OOST3, upstream of the confluence with the Etowah River in Rome Georgia. Mass loadings calculated at OOST3 are largely attributed to upstream PFAS inputs with mass loadings at OOST1 accounting for approximately 61% and 71% of combined PFOA and PFOS, and Σ PFAS flux at OOST3, respectively. An increase in concentrations of both short and long-chain PFAS between OOST1 and OOST3 was observed. A significant increase in the concentration of PFOS was also observed at OOST2 downstream of Calhoun Georgia. The mass loading loss observed between OOST3 on the Oostanaula River and CRI on the Coosa River can be attributed to dilution of the PFAS compounds below the MDL making a mass balance difficult to attain.

PFAS Class and Functional Groups in Sediment and Surface Water

PFAS detected in sediment and surface waters were classified by both the functional group (*i.e.* PFCAs, PFSA, FTSs, or FASAs) and carbon chain-length class (*i.e.* short-chain or long-chain) as defined in ITRC (2018) classifications are summarized in Table 13 and results are shown in Figures 3 and 8. In general, surface water samples were mainly comprised of both short-chain PFCAs (ranging 22 – 38%) and short-chain PFSA (ranging 30 – 68%) throughout the watershed. Moderate levels of long-chain PFCAs (ranging 9 – 15%) and long-chain PFSA (ranging 9 – 24%) were also detected on the Conasauga River below Loopers Bend (CONA2, CONA3, and CONA4) and along the Oostanaula River (OOST1, OOST2, and OOST3). No long-chain PFAS were detected in the water column upstream of Looper's Bend (CONA1) or in the receiving waters of the Coosa River (CRI). The fluorotelomer 6:2 FTS was also detected at CONA3 comprising only 3% of the total PFAS composition. 6:2 FTS is a potential precursor of short-chain PFCAs, primarily in the form of PFHxA and PFPeA (ITRC, 2018; Buck *et al.*, 2011).

Conversely, sediment samples were primarily dominated by both long-chain PFCAs (ranging 41 – 56%) and long-chain PFSA (ranging 13 – 40%) across all sites. Moderate levels of both short-chain PFCAs (ranging 2 – 25%) and short-chain PFSA (ranging 3 – 7%) were also detected in all sediment samples except for the Coosa River (CRI) in which no short-chain PFAS were observed. Furthermore, moderate levels of FASAs were also detected in all sediment samples collected

downstream of Looper's Bend (ranging 8 – 22%) with a minor composition of FASAs of approximately 1% observed upstream of Looper's Bend at CONA1. FASAs such as FOSA, N-MeFOSAA, and N-EtFOSAA have been shown to be potential precursors of both PFOS (ITRC, 2018; Rhoads *et al*, 2008) and PFOA (Plumlee *et al*, 2009).

The partitioning of long-chain PFAS to sediments and short-chain PFAS to the water column supports both theoretical expectations outlined in guidance documents (ITRC, 2018; CONCAWE, 2016) and environmental observations made in previous watershed-scale studies (Zhao *et al*, 2016). The partitioning of long-chain compounds to the solid phase was observed in this study in which the most downstream site on the Coosa River (CRI) had sediment completely devoid of short-chain PFAS while the overlying surface water was solely comprised of short-chain compounds. A study conducted by Zhao *et al*. (2016) on the Yellow River in China, observed further significant partitioning of long-chain PFAS in the water column to suspended particulate matter indicating the transport of suspended sediments as a major transport mechanism for long-chain PFAS to receiving waters. The contribution of resuspended sediments to the transport of long-chain PFAS was not quantified in this study due to low percent recoveries of PFAS target analytes and high variability of PFAS filtrate data discussed in section C1: Analytical Data of this report, and may warrant further investigation.

ITRC (2018) and CONCAWE (2016) also suggest that PFASs tend to undergo greater partitioning to the sediment compared to PFCAs of the same carbon chain-length. In this study, an opposite effect was observed in which PFCAs were generally more abundant than PFASs of a similar class in sediments and the composition of PFASs were similar or greater than PFCAs in surface water. Thus, an organic carbon partition coefficient was calculated for each PFAS analyte with detectable concentrations in co-located sediment and surface water samples using the following equation:

$$K_{oc} = \frac{(C_s/C_w)}{f_{oc}}$$

Where:

K_{oc} = Organic Carbon Partition Coefficient

C_s = Concentration of PFAS analyte detected in sediment [ng/kg (dry)]

C_w = Concentration of PFAS analyte detected in surface water [ng/L]

f_{oc} = Fraction of Organic Carbon in Sediment [g Organic Carbon/g sediment]

The logarithm of K_{oc} was calculated for PFBS, PFPeA, PFHxA, PFHpA, PFOA, and PFOS and plotted with respect to the carbon chain-length for each analyte shown in Figure 12. Figure 12 shows that the potential for sediment partitioning for the PFASs (PFBS and PFOS) increased with carbon chain-length and that PFOS (C8, PFSA) did indeed have a higher sediment partitioning

distribution than PFOA (C8, PFCA) of the same carbon chain-length. In conditions of steady-state equilibrium an increase in the log K_{oc} as carbon chain-length increased would also be expected for the PFCAs (PFPeA, PFHxA, PFHpA, and PFOA). The non-linear relationship between the organic carbon partition coefficients for the PFCAs may in part be due to the transformation of precursors that include short-chain PFCAs as a terminal endpoint in the degradation pathway, such as 6:2 FTS which was detected at CONA3. More information is needed regarding the composition of PFAS sources throughout the watershed in order to determine the availability of PFASs with respect to PFCAs and potential precursors of either functional group in order to further understand the distributions observed in the environment.

C4. Data Quality

Equipment Decontamination & Preparation:

All sampling containers were certified and managed in accordance with the LSASD Standard Operating Procedure for Equipment Inventory and Management (USEPA, 2017a). Equipment used for collecting samples to be analyzed for PFAS (i.e. polypropylene gravity filters, stainless-steel forceps, buckets, spoons, bowls, and petite Ponars) were washed using Luminex® in warm tap water, rinsed with PFAS-free water, air-dried on clean plastic sheets and sealed in clean plastic in preparation for field use. Personnel were required to wear clean nitrile gloves during all processes of cleaning, handling, and packaging equipment. PFAS-free water was certified to be PFAS target analyte free and supplied by the LSASD laboratory in a clean HDPE container. Equipment rinse blank quality control samples were collected after the decontamination process for each type of equipment and for each lot of nitrile gloves used for sampling and submitted to the LSASD laboratory for analysis of PFAS target analytes for verification before field use. No PFAS target analytes were detected at or above the MRLs for any equipment rinse blank quality control samples and were therefore deemed acceptable within the scope of this study (Appendix A).

Field Sampling Quality Controls:

Surface water and sediment samples collected for PFAS analysis were sampled via a trace level sampling technique to avoid cross-contamination of PFAS surface water samples due to sample collection and handling. This process required two field personnel for PFAS sample collection. A designated sampler handled the sample media and sample container only. A second designee operated sampling equipment and assisted with sample container packaging and labeling. Sampling equipment known or suspected to contain PFAS was avoided during sampling activities. Quality control samples which included field equipment rinse blanks, field blanks, and trip blanks were collected to account for the potential of cross-contamination. Additional quality control samples such as temperature blanks, field duplicates and matrix spike/matrix spike duplicates were

collected in accordance with the LSASD Standard Operating Procedure for Field Sampling Quality Control (USEPA, 2017b).

Field equipment rinse blank quality control samples were collected by rinsing equipment (i.e. polypropylene gravity filters, stainless-steel forceps, buckets, spoons, bowls, and petite Ponars) with PFAS-free water in the field, to evaluate PFAS inputs due to equipment decontamination and reuse in the field following the decontamination procedure outlined in the previous section. Field blank quality control samples were also collected by transferring PFAS-free water into 15mL polypropylene vials in the field to evaluate the trace level sampling technique used for PFAS sample collection. Additionally, a trip blank quality control sample containing PFAS-free water provided by the LSASD laboratory was stored in the sample cooler containing samples collected for PFAS analysis, to account for PFAS inputs during sample storage and transport. No PFAS target analytes were detected at or above the MRLs for any field quality control samples and were therefore deemed acceptable for the scope of this study (Appendix A).

Temperature blanks were placed inside each sample cooler and measured upon arrival to the LSASD laboratory. Temperature blanks accompanying equipment rinse blank samples collected before the commencement of field activities received by the lab on September 11, 2019 were recorded at 3.5°C. The temperature blank stored with the field samples submitted to the lab on September 18, 2019 was recorded at 1.2°C. Both temperature blanks were below the 4.0°C threshold and deemed acceptable by the LSASD laboratory.

A duplicate sample was collected on the Coosa River (CRI) and submitted to the LSASD laboratory for analysis of all analytes targeted for this study (Tables 2 and 3). The duplicate results for all detected analytes along with the calculated relative percent differences (RPDs) are listed in Table 13.

An additional field quality control sample containing PFAS-free water spiked with approximately 400 – 450 ng/L of each PFAS target analyte listed in Table 2 was provided by the LSASD laboratory in a 50 mL polypropylene tube. This sample was filtered through a 1.2 µm GF/C glass microfiber filter placed in a polypropylene gravity filter apparatus to determine the percent recovery of PFAS analytes associated with the filtration technique used to collect filtered samples. A filter blank sample was also collected by rinsing a clean GF/C glass microfiber filter and polypropylene gravity filter apparatus with PFAS-free water supplied by the LSASD laboratory. No PFAS target analytes were detected in the filter blank sample at or above the MRLs. The percent recoveries of PFAS target analytes associated with the spiked field quality control sample are summarized in Table 7.

In-Situ Water Quality Calibration & Verification:

The multi-parameter data sonde used to collect *in-situ* water quality measurements was maintained, calibrated, and verified in accordance with the LSASD Standard Operating Procedures for *In-Situ* Water Quality Monitoring (USEPA, 2018b). Calibrations and end-check verifications performed on all parameters measured for the duration of the study were within the acceptable

ranges in accordance with LSASD's Calibration and End-Check Acceptance Criteria (SESDFORM-060-R0).

USGS Stream Gage Data:

Streamflow data measured, stored, and managed by the U.S. Geological Survey (USGS) was used to calculate instantaneous mass loadings of PFAS analytes summarized in Table 12. Stream gage IDs and the dates and times of the streamflow measurement corresponding to sample collection (± 15 min) are listed in Table 12. All streamflow data was retrieved at www.waterdata.usgs.gov. USGS streamflow data was classified as provisional at the time of retrieval and calculations are subject to revision until they have been thoroughly reviewed and receive final approval in accordance with USGS quality assurance policies and procedures.

C5. Conclusions

A total of 9-distinct compounds of PFAS were positively identified in surface water samples collected from 8 sites located throughout the Conasauga, Oostanaula, and Coosa River watersheds. Sites located along the Conasauga River downstream of Looper's Bend LAS had both the highest diversity of compounds and Σ PFAS concentrations. The composition of PFAS in surface waters was generally dominated by short-chain compounds with PFBS and PFPeA being the most prevalent in liquid phase throughout the watershed. Both PFBS and PFPeA were also found in a previous study to be the most prevalent compounds in the receiving waters of Weiss Lake in Alabama. The diversity of PFAS was found to be greater in sediment samples collected from the same 8 sites containing a total of 16-distinct compounds. The diversity and concentration of Σ PFAS observed in sediments was found to be relatively consistent along the Conasauga and Oostanaula Rivers. In general, sediments consisted primarily of long-chain compounds with sediments collected from the most downstream site on the Coosa River being solely comprised of long-chain PFAS and sulfonamide precursors. The retention of PFAS compounds in sediment was found to be significantly affected by the presence of total organic carbon, carbon chain-length of PFAS analytes, and functional group classification (*i.e.* PFSA vs PFCA). Thus, these parameters should be considered when evaluating the distribution of PFAS at the watershed scale.

Combined concentrations of PFOA and PFOS (ranging from 250 – 280 ng/L) were detected in surface water samples at levels 3 times greater than the EPA's lifetime health advisory (LHA) of 70 ng/L on the Conasauga River below Looper's Bend LAS. Residual combined concentrations of PFOA and PFOS (ranging from 72 – 153 ng/L) were also detected at or above the LHA of 70 ng/L at all sites along the Oostanaula River. Neither PFOA or PFOS were detected at or above the MRL on the Conasauga River upstream of Looper's Bend or in the receiving waters of the Coosa River during the study period. All sediment samples collected throughout the watershed contained PFOS concentrations (ranging from 410 – 15,000 ng/kg (dry)) above the generic and organic carbon corrected RSLs calculated for this study. Similarly, all sites except for the Coosa River, had

sediments with PFOA concentrations (91 – 1100 ng/kg (dry)) above both the generic and organic carbon corrected RSLs. Sediments collected on the Coosa river did not contain detectable levels of PFOA.

The Conasauga River contributed the majority of instantaneous mass loadings of combined PFOA and PFOS (~74%) as well as Σ PFAS (~49%) to the headwaters of the Oostanaula River comprising only 19% of the total streamflow. An increase in about 13% of the total streamflow was observed along the Oostanaula River from Resaca to Rome, Georgia. Despite the increase in flow, the residual PFAS concentrations in the Oostanaula headwaters accounted for approximately 61% and 71% of the downstream mass loadings of combined PFOA and PFOS, and Σ PFAS, respectively. A loss in mass was observed on the Coosa River due to the dilution of PFAS analytes below detectable levels. Low flows and drought-like conditions preceding the study limits PFAS sources to groundwater intrusion, contaminated sediments, transformation of undetected precursors, air deposition, and point-source discharges throughout the watershed, with a significant proportion originating from the Conasauga River. This study has found that the transport of both surface water and sediments contaminated with PFAS from the Coosa River Basin present significant inputs into the receiving waters of Weiss Lake. Background concentrations of PFAS associated with Weiss Lake sediments are currently unknown. The presence of long-chain PFAS, particularly PFOS, in Weiss Lake sediments is probable.

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Summary Tables

Table 1: Site Coordinates and Descriptions

Station ID	Water Body	Approximate Coordinates (DD.ddddd)		Site Description
		Latitude	Longitude	
CONA1*	Conasauga River	34.70872	-84.86403	Conasauga River at Airport Rd in Dalton, GA
CONA2	Conasauga River	34.67950	-84.90906	Conasauga River downstream of Looper's Bend LAS
CONA3*	Conasauga River	34.66705	-84.92823	Conasauga River at Tilton Bridge Rd in Dalton, GA
CONA4	Conasauga River	34.59325	-84.93432	Conasauga River at Hwy 136 near Resaca, GA
OOST1	Oostanaula River	34.57750	-84.94177	Oostanaula River at Hwy 3 in Resaca, GA
OOST2	Oostanaula River	34.47481	-85.02025	Oostanaula River at Hwy 156 near Calhoun, GA
OOST3*	Oostanaula River	34.28716	-85.16331	Oostanaula River at Armuchee Connector near Rome, GA
CRI*	Coosa River	34.24871	-85.35548	Coosa River at Hwy 100 near AL-GA State Line

*Additional surface water samples were collected at these sites to assess PFAS associated with the suspended sediment fraction.

Table 2: PFAS Target Analytes

Region IV Laboratory Per - and Polyfluoroalkyl Substances (PFAS) Target Analyte List Minimum Detection Limits (MDLs) & Minimum Reporting Limits (MRLs) for Surface Water & Sediments				
Analyte ¹	Water ² µg/L (ppb)		Soil/Sediment ³ µg/kg (ppb)	
	MDL	MRL	MDL	MRL
Perfluorotetradecanoic acid (PFTeDA)*	NA	NA	0.04	0.4
Perfluorotridecanoic acid (PFTrDA)	0.039	0.04	0.04	0.1
Perfluorododecanoic acid (PFDoA)	0.029	0.04	0.04	0.1
Perfluoroundecanoic acid (PFUDA)	0.021	0.04	0.04	0.1
Perfluorodecanoic acid (PFDA)	0.096	0.16	0.04	0.1
Perfluorononanoic acid (PFNA)	0.016	0.04	0.04	0.1
Perfluorooctanoic acid (PFOA)	0.026	0.04	0.04	0.1
Perfluoroheptanoic acid (PFHpA)	0.014	0.04	0.04	0.1
Perfluorohexanoic acid (PFHxA)	0.031	0.04	0.04	0.1
Perfluoropentanoic acid (PFPeA)	0.018	0.04	0.04	0.1
Perfluorobutyric acid (PFBA)	0.022	0.04	0.04	0.1
Perfluorodecanesulfonate (PFDS)	0.032	0.039	0.04	0.096
Perfluorononanesulfonate (PFNS)	0.015	0.038	0.04	0.096
Perfluorooctanesulfonate (PFOS)	0.017	0.037	0.04	0.092
Perfluoroheptanesulfonate (PFHpS)	0.017	0.038	0.04	0.095
Perfluorohexanesulfonate (PFHxS)	0.017	0.036	0.04	0.091
Perfluoropentanesulfonate (PFPeS)	0.013	0.038	0.04	0.094
Perfluorobutanesulfonate (PFBS)	0.023	0.035	0.04	0.088
Perfluorooctanesulfonamide (FOSA)	0.031	0.04	0.04	0.1
Fluorotelomer sulfonate 8:02 (8:2 FTS)	0.034	0.038	0.04	0.096
Fluorotelomer sulfonate 6:02 (6:2 FTS)	0.029	0.038	0.04	0.095
Fluorotelomer sulfonate 4:02 (4:2 FTS)	0.021	0.037	0.04	0.094
N-ethyl-N-((heptadecafluorooctyl)sulfonyl)glycine (N-EtFOSAA)*	NA	NA	0.04	0.1
N-(Heptadecafluorooctylsulfonyl)-N-methylglycine (N-MeFOSAA)	0.11	0.16	0.04	0.1
Hexafluoropropylene oxide–dimer acid (HFPO-DA)	0.026	0.04	0.04	0.1

* Surface water samples results for N-EtFOSAA and PFTeDA will be reported as estimates and should be used for screening purposes only.

¹PFAS analytes for both surface water and sediment/soil matrices are analyzed via the method outlined in LSBPROC-800-R1.

²PFAS analytes in surface water are analyzed using ASTM standard D7979-17.

³PFAS analytes in solids (e.g. soil, sediment, and waste) are analyzed using ASTM standard D7968-17a.

Table 3: Inorganics Target Analyte List

Region IV Laboratory Classical Inorganics Target Analyte List Minimum Reporting Limits (MRLs) for Surface Water			
Analyte	Method	Water mg/L (ppm)	Soil/Sediment mg/kg (ppm)
Total Suspended Solids (TSS)	USGS I-3765-85	4.0	NA
Total Organic Carbon (TOC)	SM5310/LSB 107C	1.0	12,000

Table 4: Sample Collection, Preservation and Holding Times

Analyses	Media	Container	Preservation	Holding Time
PFAS	Surface Water	2 x 15mL Polypropylene Vial	Ice ($\leq 4^{\circ}\text{C}$)	42 days
	Sediment	50mL Polypropylene	Ice ($\leq 4^{\circ}\text{C}$)	42 days
Total Organic Carbon (TOC)	Surface Water	500mL Polyethylene	H ₂ SO ₄ (pH < 2), Ice ($\leq 4^{\circ}\text{C}$)	28 days
	Sediment	8oz Glass	Ice ($\leq 4^{\circ}\text{C}$)	NA
Total Suspended Solids (TSS)	Surface Water	1-liter Polyethylene	Ice ($\leq 4^{\circ}\text{C}$)	7 days

Table 5: In-Situ Water Quality Parameters

Parameter	Units	Measurement Technology	Measurement Uncertainty
pH	SU	Glass electrode	± 0.2 SU
Dissolved Oxygen	mg/L	Luminescent DO probe	± 0.2 mg/L
Temperature	$^{\circ}\text{C}$	LDO Thermistor	± 0.2 $^{\circ}\text{C}$
Specific Conductance	$\mu\text{S}/\text{cm}$	Nickel electrode cell	$\pm 0.5\%$ of reading
Turbidity	FNU	Optical Probe	$\pm 5\%$ of reading

Table 6: Detected PFAS - Surface Water

Analyte	Units	Sampling Stations								
		CONA1	CONA2	CONA3	CONA4	OOST1	OOST2	OOST3	CRI	CRI (DUP)
6:2FTS	ng/L	U	U	29 J,Q-2	U	U	U	U	U	U
PFBA		U	63	U	74	U	U	U	U	U
PFBS		58	360	250	400	190	210	210	39	41
PFHpA		U	53	57	59	18 J,Q-2	18 J,Q-2	21 J,Q-2	U	U
PFHxA		U	110	110	110	36 J,Q-2	35 J,Q-2	46	U	U
PFHxS		U	24 J,Q-2	25 J,Q-2	27 J,Q-2	U	U	U	U	U
PFOA		U	120	140	140	41	43	53	U	U
PFOS		U	130	140	130	31 J,Q-2	110	48	U	U
PFPeA		27 J,Q-2	170	180	170	45	47	61	22 J,Q-2	23 J,Q-2
PFOA+PFOS		U	250	280	270	72	153	101	U	U
Total		85	1030	931	1110	361	463	439	61	64

Qualifier: **Description:**

- U** The analyte was not detected at or above the reporting limit.
- J** The identification of the analyte is acceptable; the reported value is an estimate.
- Q-2** Result greater than the MDL but less than the MRL.

* Values in red are above LHA for combined PFOA and PFOS (70 ng/L).

Table 7: PFAS Recovery of Filtered Surface Water Samples

Analyte	Units	Standard			CONA1		CONA3		OOST3		CRI		CRI (DUP)		
		Pre-filter	Post-filter	Recovery (%)	Pre-filter	Post-filter	Pre-filter	Post-filter	Pre-filter	Post-filter	Pre-filter	Post-filter	Pre-filter	Post-filter	
4:2FTS	ng/L	~450	410 J,Y-2	91	U	U	U	U	U	U	U	U	U	U	
6:2FTS			420 J,Y-2	93	U	29 J,Q-2	U	U	U	U	U	U	U	U	
8:2FTS			250 J,Y-2	56	U	U	U	U	U	U	U	U	U	U	U
FOSA			150 J,Y-2	33	U	U	U	U	U	U	U	U	U	U	U
HFPO-DA			360 J,Y-2	80	U	U	U	U	U	U	U	U	U	U	U
N-EtFOSAA			66 J,CR,Y-2	15	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2
N-MeFOSAA			110 J,CR,Y-2	24	U	U	U	U	U	U	U	U	U	U	U
PFBA			430 J,Y-2	96	U	U	U	42 J,QS-3	U	U	U	U	U	U	U
PFBS			370 J,Y-2	82	58	68	250	330	210	100 J,QS-3	39	41	41	35	35
PFDA			300 J,Y-2	67	U	U	U	U	U	U	U	U	U	U	U
PFDoA			44 J,Y-2	10	U	U	U	U	U	U	U	U	U	U	U
PFDS			80 J,Y-2	18	U	U	U	U	U	U	U	U	U	U	U
PFHpA			430 J,Y-2	96	U	U	57	53	21 J,Q-2	20 J,Q-2	U	U	U	U	U
PFHpS			400 J,Y-2	89	U	U	U	U	U	U	U	U	U	U	U
PFHxA			440 J,Y-2	98	U	U	110	100	46	35 J,Q-2	U	U	U	U	U
PFHxS			410 J,Y-2	91	U	U	25 J,Q-2	19 J,Q-2	U	U	U	U	U	U	U
PFNA			400 J,Y-2	89	U	U	U	U	U	U	U	U	U	U	U
PFNS			180 J,Y-2	40	U	U	U	U	U	U	U	U	U	U	U
PFOA			450 J,Y-2	100	U	U	140	120	53	48	U	U	U	U	U
PFOS			330 J,Y-2	73	U	U	140	100	48	42	U	U	U	U	U
PFPeA			430 J,Y-2	96	27 J,Q-2	27 J,Q-2	180	160	61	53	22 J,Q-2	25 J,Q-2	23 J,Q-2	26 J,Q-2	26 J,Q-2
PFPeS			410 J,Y-2	91	U	U	U	U	U	U	U	U	U	U	U
PFTeDA			69 J,Y-2	15	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2	U,Y-2
PFTrDA			29 J,Q-2,Y-2	6	U	U	U	U	U	U	U	U	U	U	U
PFUdA			140 J,Y-2	31	U	U	U	U	U	U	U	U	U	U	U

Qualifier: Description:

- U** The analyte was not detected at or above the reporting limit.
- J** The identification of the analyte is acceptable; the reported value is an estimate.
- Q-2** Result greater than the minimum detection limit (MDL) but less than the minimum reporting limit (MRL).
- QS-3** Surrogate recovery is lower than established control limits.
- Y-2** Data should be limited to screening purposes only.

Table 8: Detected PFAS in Sediment

Analyte	Units	Sampling Stations								
		CONA1	CONA2	CONA3	CONA4	OOST1	OOST2	OOST3	CRI	CRI (DUP)
FOSA	ng/kg (dry)	U	200	180	2200	200	180	110 J,Q-2	74 J,Q-2	160
N-EtFOSAA		44 J,Q-2,Y-2	91 J,Q-2,Y-2	170 J,Y-2	1500 J,Y-2	120 J,Q-2,Y-2	56 J,Q-2,Y-2	29 J,Q-2,Y-2	43 J,Q-2,Y-2	84 J,Q-2,Y-2
N-MeFOSAA		U	160	240	860	220	220	130	120 J,Q-2	170
PFBA		140	U	U	U	U	100 J,Q-2	110 J,Q-2	U	U
PFBS		220	140	280	1100	130	300	230	U	U
PFDA		360	240	230	3900	320	300	160	91 J,Q-2	200
PFDoA		590	520	770	4600	560	710	400	170	260
PFHpA		120 J,Q-2	56 J,Q-2	63 J,Q-2	210 J,Q-2	U	150	120 J,Q-2	U	U
PFHxA		290	140	150	350	U	270	230	U	U
PFNA		65 J,Q-2	U	U	400	U	U	U	U	U
PFOA		280	190	200	1100	91 J,Q-2	440	360	U	U
PFOS		630	1100	920	15000	710	620	430	410	890
PFPeA		420	220	220	560	59 J,Q-2	350	320	U	U
PFTeDA		300 J,Q-2,Y-2	280 J,Q-2,Y-2	540 J,Y-2	1500 J,Y-2	290 J,Q-2,Y-2	400 J,Q-2,Y-2	260 J,Q-2,Y-2	U,Y-2	270 J,Q-2,Y-2
PFTrDA	200 J,QR-2	190 J,QR-2	290 J,QR-2	990 J,QR-2	200 J,QR-2	270 J,QR-2	180 J,QR-2	120 J,Q-2,QR-2	160 J,QR-2	
PFUdA	240	230	330	3500	350	350	210	82 J,Q-2	180	
PFOA+PFOS	910	1290	1120	16100	801	1060	790	410	890	
Total	3555	3386	3873	34770	2840	4260	2990	1067	2020	
Site Specific RSLs Corrected for Organic Carbon Fraction										
PFOA	ng/kg (dry)	22.3	26.9	32.9	146	40.8	38.9	29.2	18.2	30.6
PFOS		54.3	69.2	88.6	456	114	108	76.7	40.8	81.1

Qualifier:

U The analyte was not detected at or above the reporting limit.

J The identification of the analyte is acceptable; the reported value is an estimate.

Q-2 Result greater than the minimum detection limit (MDL) but less than the minimum reporting limit (MRL).

QR-2 MRL verification recovery greater than upper control limits.

Y-2 Data for N-EtFOSAA and PFTeDA should be limited to screening purposes only, and were not included in the calculation of Total PFAS.

* Values highlighted in red are above the generic RSLs protective of groundwater for PFOA (17.2 ng/kg) and PFOS (37.8 ng/kg) calculated via the EPA RSL calculator. Concentrations of PFOA and PFOS detected in sediments were also above site specific RSLs which were corrected for the total organic carbon fraction of the sediment samples reported in Table 10 and converted to units g/g.

Table 9: TOC & TSS - Surface Water

Analyte	Units	Sampling Stations			
		CONA1	CONA3	OOST3	CRI (DUP)
Total Organic Carbon	mg/L	1.5	2.7	1.9	2
Total Suspended Solids	mg/L	9.1	9.7	14	29
					8.3

Table 10: TOC & % Solids - Sediment

Analyte	Units	Sampling Stations							
		CONA1	CONA2	CONA3	CONA4	OOST1	OOST2	OOST3	CRI (DUP)
Total Organic Carbon	mg/kg (dry)	3100 J,Q-2	4100 J,Q-2	5400 J,Q-2	30000	7100 J,Q-2	6700 J,Q-2	4600 J,Q-2	4900 J,Q-2
Percent Solids	%	76	76	74	28	65	69	74	68
								71	

Qualifier:**J****Description:**

The identification of the analyte is acceptable; the reported value is an estimate.

Q-2

Result greater than the minimum detection limit (MDL) but less than the minimum reporting limit (MRL).

Table 11: *In-Situ* Water Quality Measurements

Station ID	Date (m/dd/yyyy)	Time (hh:mm)	Temperature (°C)	pH (S.U.)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (FNU)
CONA1	9/17/2019	10:20	24.2	7.68	240	6.65	9.0
CONA2	9/17/2019	17:55	28.0	7.89	247	8.43	20
CONA3	9/17/2019	12:55	27.6	7.78	248	7.48	22
CONA4	9/17/2019	14:30	28.4	7.89	249	7.86	20
OOST1	9/17/2019	9:03	25.6	7.37	103	6.64	13
OOST2	9/16/2019	16:46	28.2	7.69	110	8.20	11
OOST3	9/16/2019	14:50	28.3	7.88	154	8.33	14
CRI	9/16/2019	12:30	27.9	7.60	203	7.65	9.3

Table 12: PFAS Mass Loading Rates in Surface Water

Parameter	Units	Sampling Stations				
		CONA3	OOST1	OOST3	CRI	CRI (DUP)
6:2FTS	ng/L	29 J,Q-2	U	U	U	U
PFBS		250	190	210	39	41
PFHpA		57	18 J,Q-2	21 J,Q-2	U	U
PFHxA		110	36 J,Q-2	46	U	U
PFHxS		25 J,Q-2	U	U	U	U
PFOA		140	41	53	U	U
PFOS		140	31 J,Q-2	48	U	U
PFPeA		180	45	61	22 J,Q-2	23 J,Q-2
PFOA+PFOS		280	72	101	U	U
Total		931	361	439	61	64
Sample Date	m/dd/yyyy	9/17/2019	9/17/2019	9/16/2019	9/16/2019	9/16/2019
Sample Time	hh:mm	13:00	9:00	15:00	12:45	13:00
Gage ID	USGS #####	USGS 02387000	USGS 02387500	USGS 02388500	USGS 02397000	USGS 02397000
Discharge	ft ³ /s	94	490	566	1010	1010
Mass Loading						
6:2FTS	g/day	7	NA	NA	NA	NA
PFBS		57	228	291	96	101
PFHpA		13	22	29	NA	NA
PFHxA		25	43	64	NA	NA
PFHxS		6	NA	NA	NA	NA
PFOA		32	49	73	NA	NA
PFOS		32	37	66	NA	NA
PFPeA		41	54	84	54	57
PFOA+PFOS		64	86	140	NA	NA
Total		214	433	608	151	158

Qualifier: **Description:**

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q-2	Result greater than the minimum detection limit (MDL) but less than the minimum reporting limit (MRL).
NA	Mass loading rate was not calculated due to undetected analyte.

Table 13: PFAS Classifications and Functional Groups

Carbon Chain Length	PFAS Analyte	Class	Functional Group
14	PFTeDA	Short Chain	PFCAs
13	PFTrDA		
12	PFDoA		
11	PFUDA		
10	PFDA		
9	PFNA		
8	PFOA		
7	PFHpA	Long Chain	
6	PFHxA		
5	PFPeA		
4	PFBA		
10	PFDS	Short Chain	PFSAs
9	PFNS		
8	PFOS		
7	PFHpS		
6	PFHxS		
5	PFPeS	Long Chain	
4	PFBS		
10	8:2 FTS	Precursor	Fluorotelomers
8	6:2 FTS		
6	4:2 FTS		
10	N-EtFOSAA	Precursor	Sulfonamides
9	N-MeFOSAA		
8	FOSA		

Based on classifications defined in ITRC (2018).

Table 14: Relative Percent Difference for CRI Duplicate

Analyte	Units	CRI	CRI (dup)	RPD (%)
Surface Water				
6:2FTS	ng/L	U	U	0.0
PFBA	ng/L	U	U	0.0
PFBS	ng/L	39	41	5.0
PFHpA	ng/L	U	U	0.0
PFHxA	ng/L	U	U	0.0
PFHxS	ng/L	U	U	0.0
PFOA	ng/L	U	U	0.0
PFOS	ng/L	U	U	0.0
PFPeA	ng/L	22 J,Q-2	23 J,Q-2	4.4
TOC	mg/L	2	2.8	33.3
TSS	mg/L	29	8.3	111.0
Sediment				
FOSA	ng/kg (dry)	74 J,Q-2	160	73.5
N-EtFOSAA	ng/kg (dry)	43 J,Q-2,Y-2	84 J,Q-2,Y-2	64.6
N-MeFOSAA	ng/kg (dry)	120 J,Q-2	170	34.5
PFBA	ng/kg (dry)	U	U	0.0
PFBS	ng/kg (dry)	U	U	0.0
PFDA	ng/kg (dry)	91 J,Q-2	200	74.9
PFDoA	ng/kg (dry)	170	260	34.6
PFHpA	ng/kg (dry)	U	U	0.0
PFHxA	ng/kg (dry)	U	U	0.0
PFNA	ng/kg (dry)	U	U	0.0
PFOA	ng/kg (dry)	U	U	0.0
PFOS	ng/kg (dry)	410	890	73.8
PFPeA	ng/kg (dry)	U	U	0.0
PFTeDA	ng/kg (dry)	U,Y-2	270 J,Q-2,Y-2	200.0
PFTTrDA	ng/kg (dry)	120 J,Q-2,QR-2	160 J,QR-2	28.6
PFUdA	ng/kg (dry)	82 J,Q-2	180	74.8
TOC	mg/kg (dry)	2200 J,Q-2	4900 J,Q-2	76.1
% Solids	%	71	68	4.3

Qualifier:**U****J****Q-2****QR-2****Y-2****Description:**

The analyte was not detected at or above the reporting limit.

The identification of the analyte is acceptable; the reported value is an estimate.

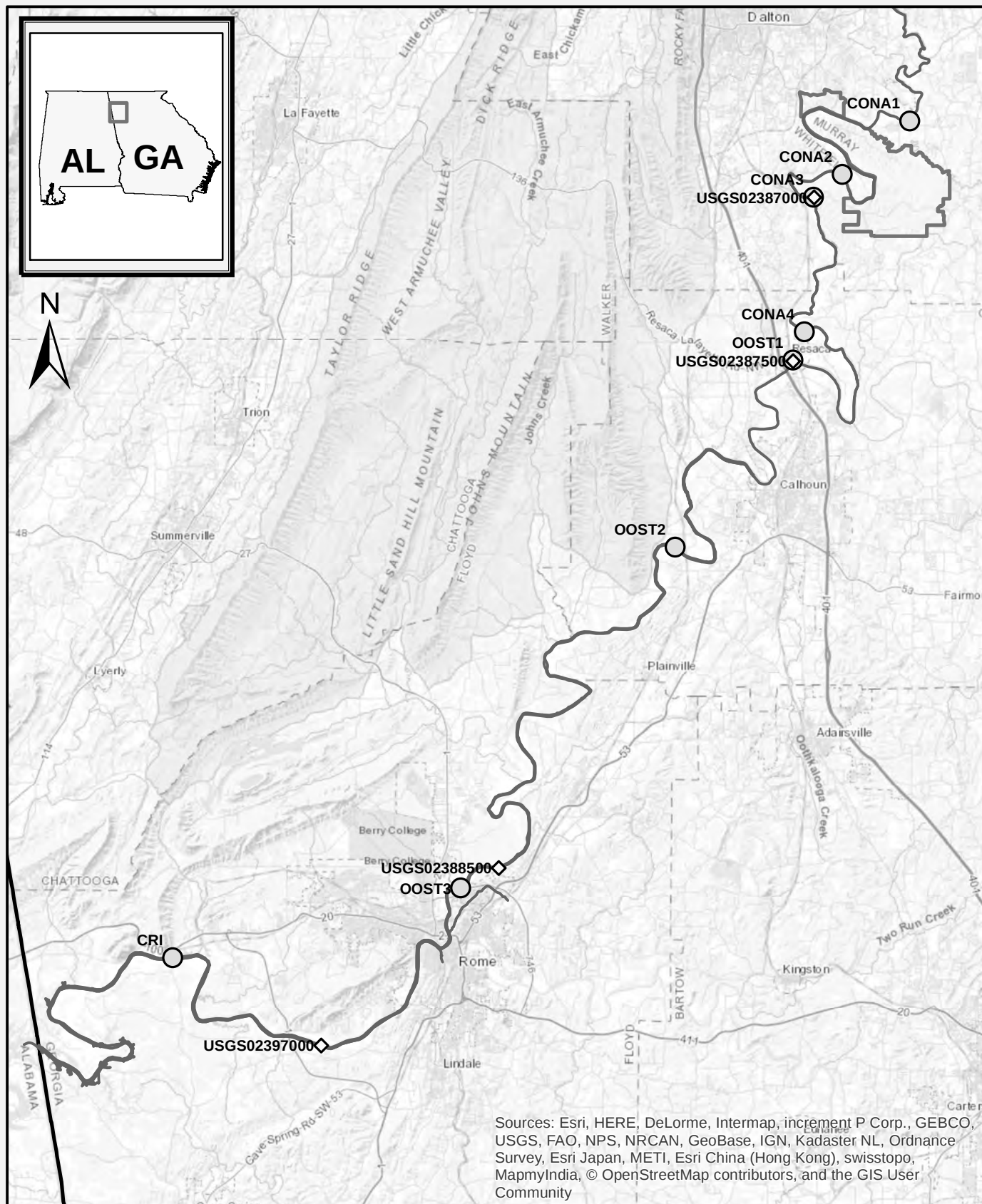
Result greater than the MDL but less than the minimum reporting limit MRL.

MRL verification recovery greater than upper control limits.

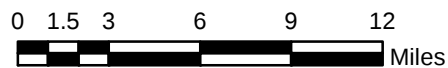
Data for N-EtFOSAA and PFTeDA should be limited to screening purposes only.

Summary Figures

Figure 1: Site Map

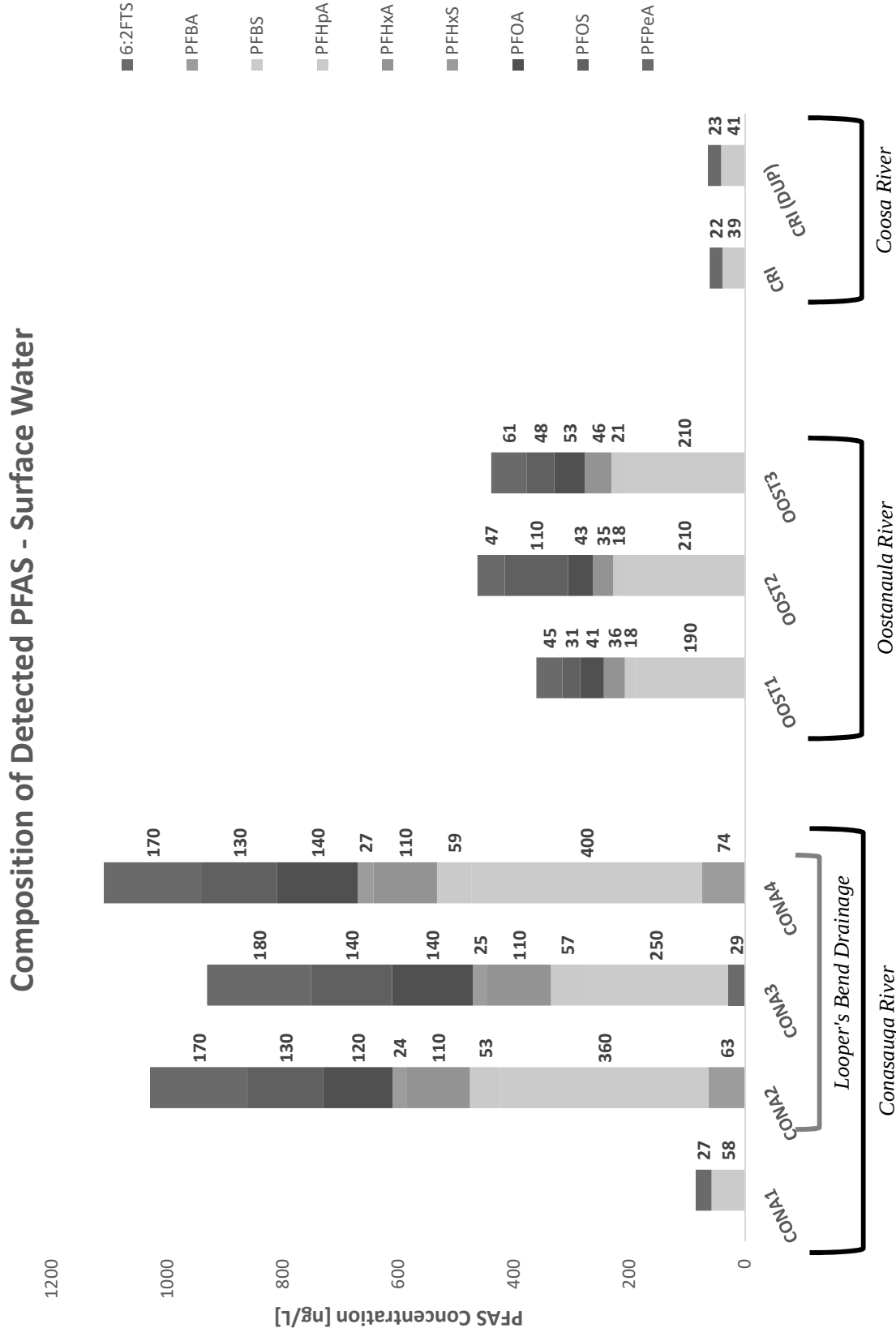


PFAS Sediment Screening:
Upper Coosa River Basin



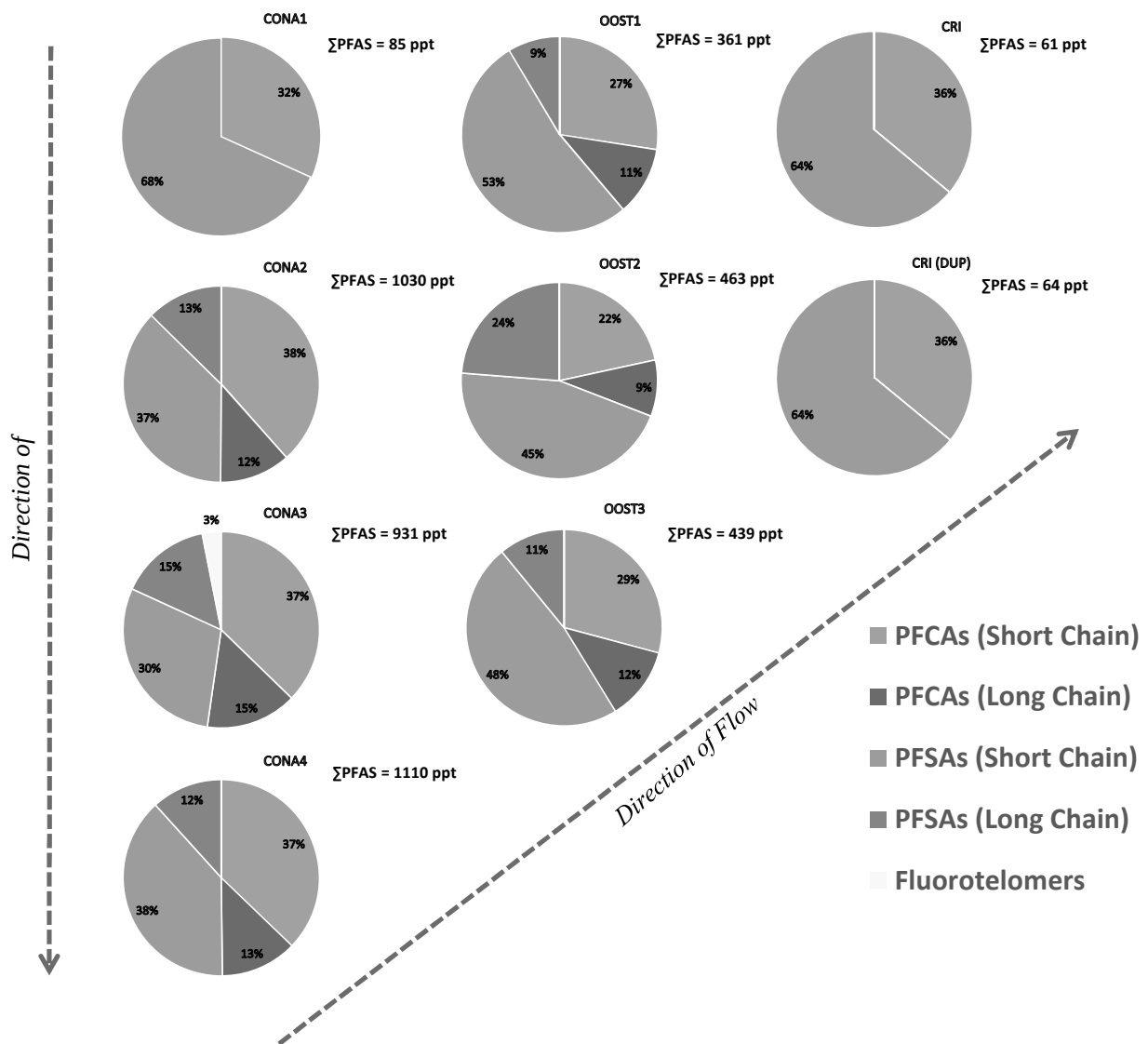
- ◆ USGS Gages
- Sampling Stations
- Rivers
- Looper's Bend LAS Boundary

Figure 2: Composition of PFAS Detected in Surface Water



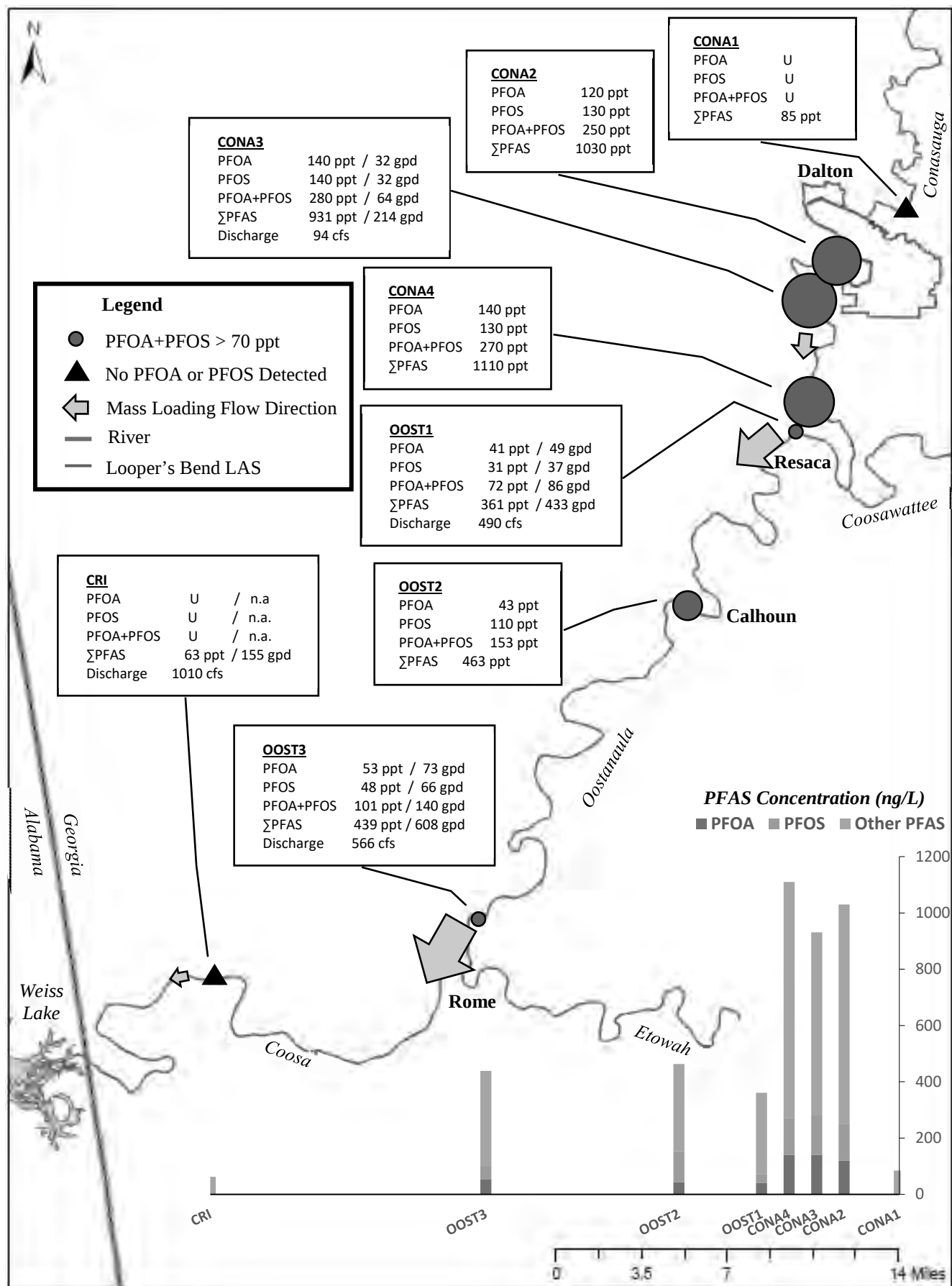
Samples collected on the Conasauga River downstream of Looper's Bend LAS had the highest diversity of PFAS followed by samples collected on the Oostanaula River.

Figure 3: PFAS Class and Functional Groups Detected in Surface Water



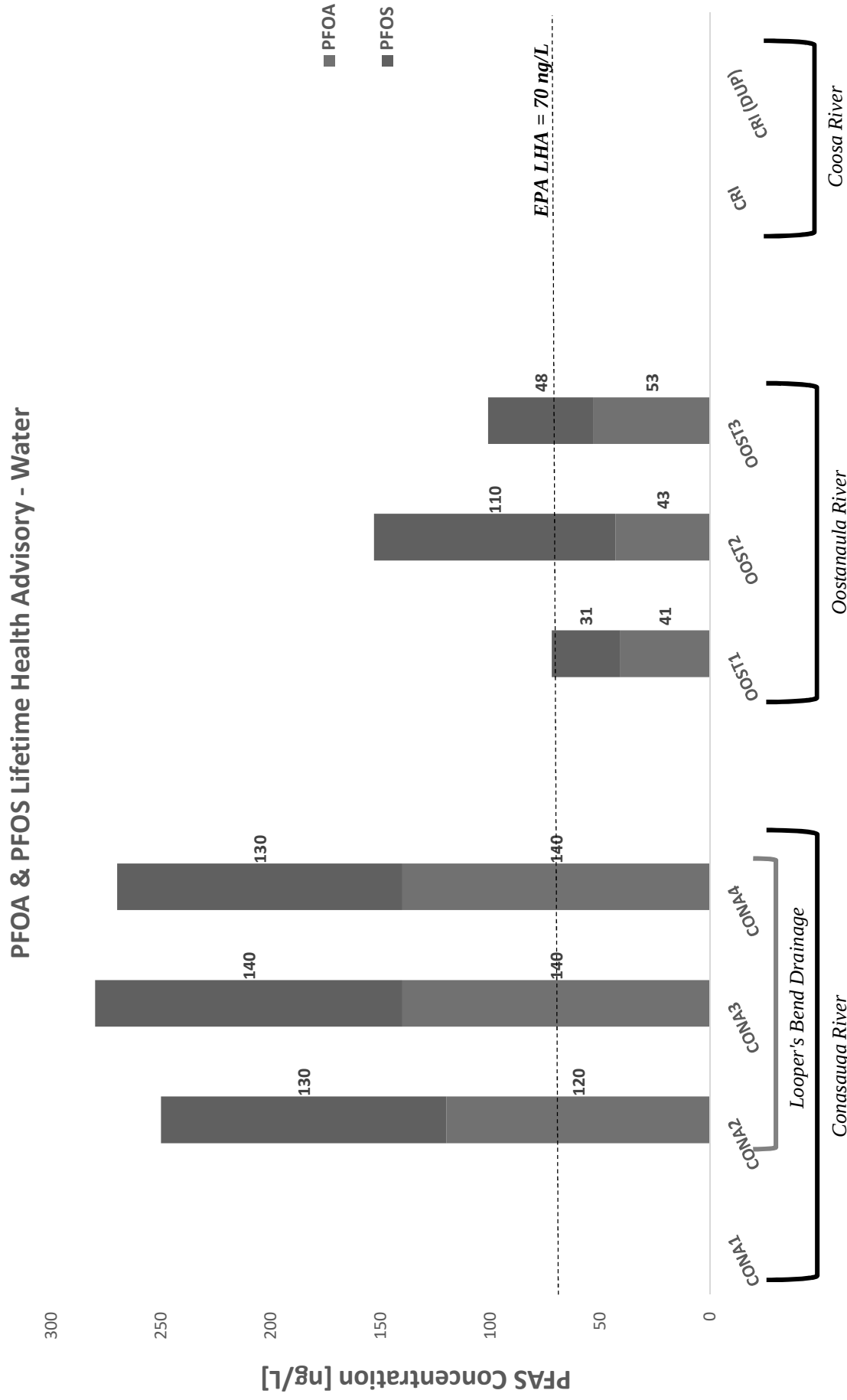
Surface water samples were predominately composed of short-chain PFAS with a moderate presence of long-chain compounds found in the Conasauga and Oostanula Rivers, downstream of Looper's Bend LAS. The fluorotelomer 6:2 FTS was also detected at CONA3 which is known to be a precursor to short-chain PFCAs.

Figure 4: Distribution and Mass Loading of PFAS in Surface Water



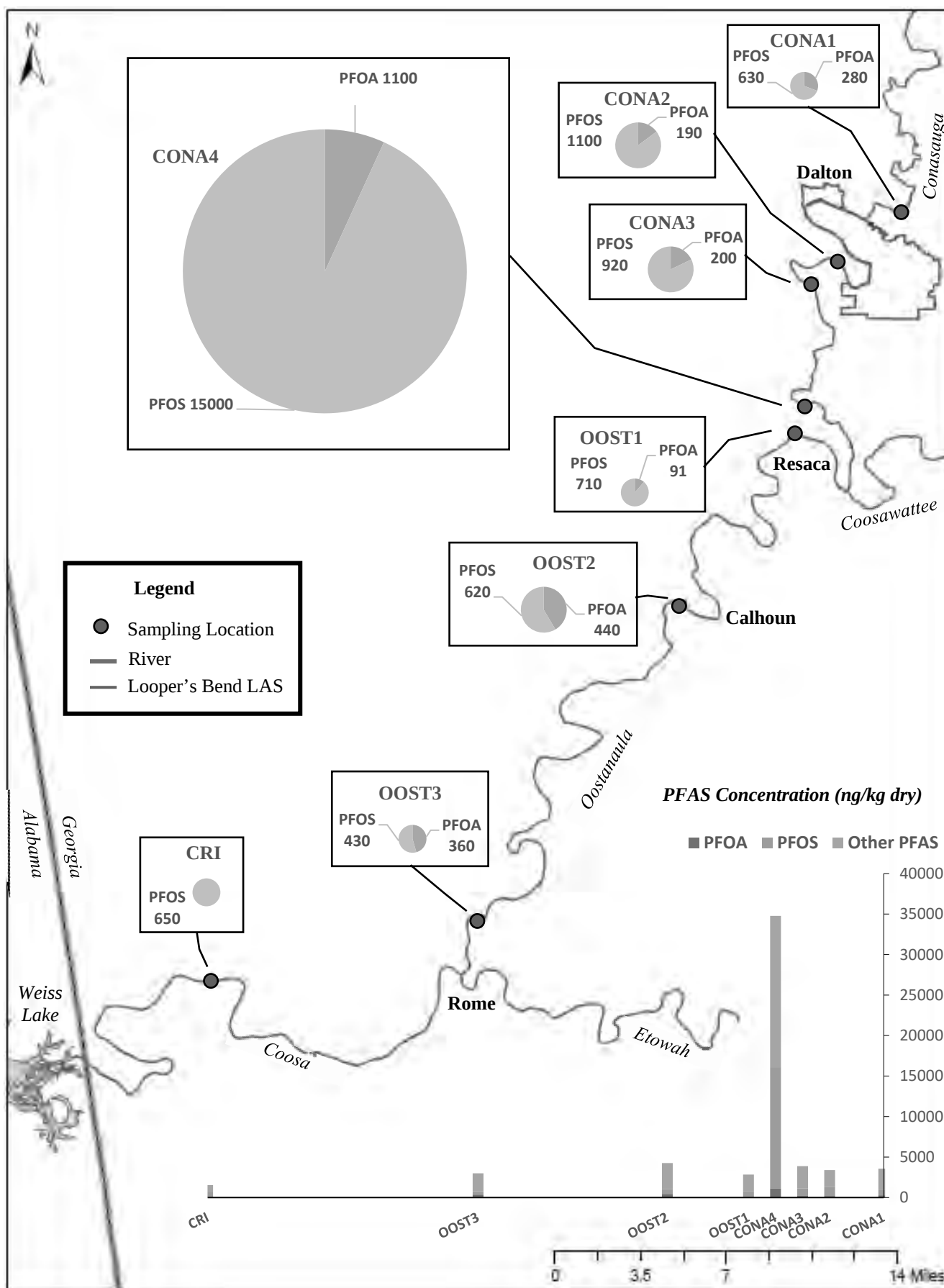
PFAS concentrations are in ng/L (ppt) and mass loading rates are in grams per day (gpd). Flow directional arrows and sampling locations are shown in relative proportion based on total PFAS loading and PFOA+PFOS, respectively.

Figure 5: PFOA and PFOS in Surface Water



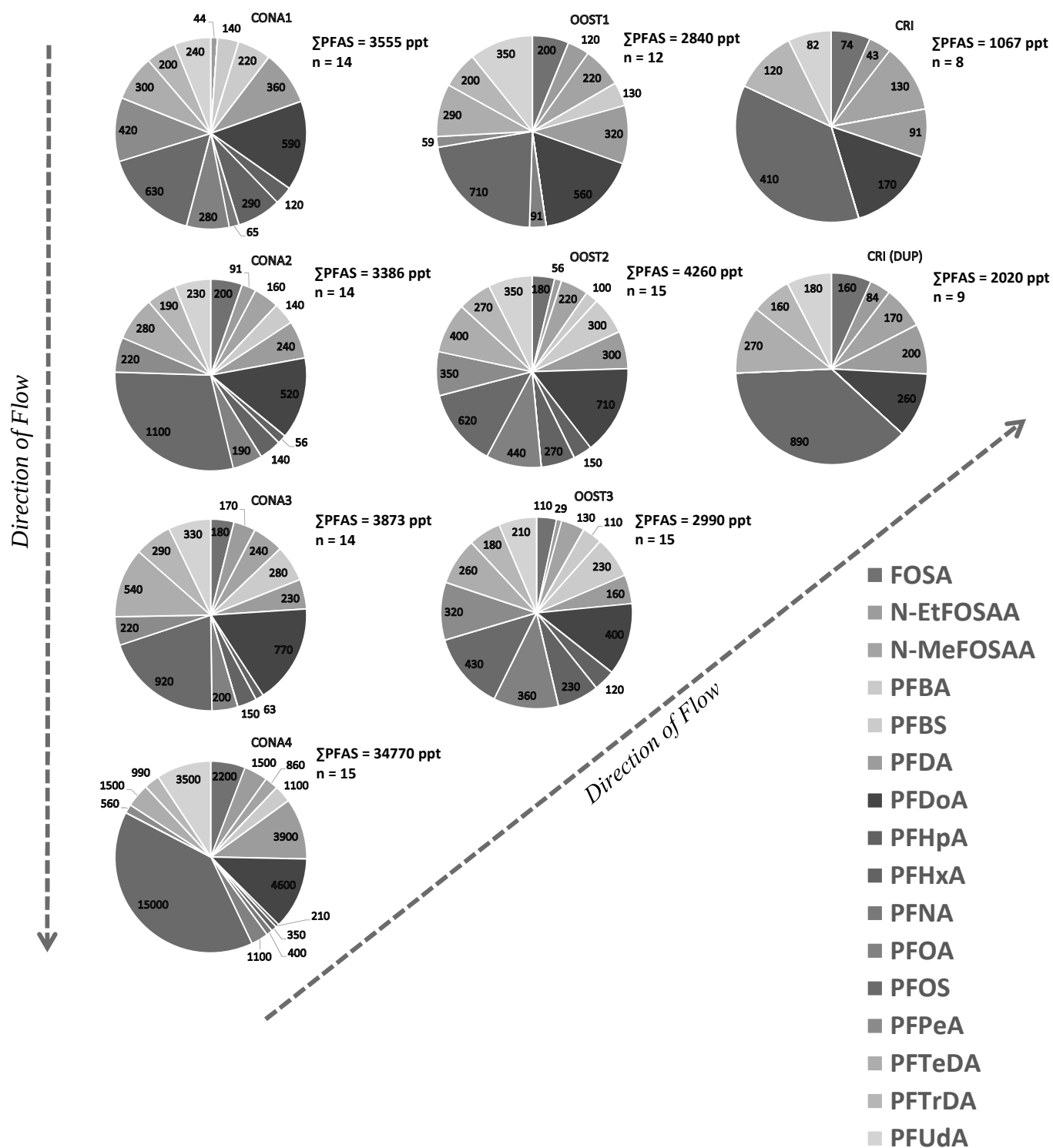
Combined PFOA and PFOS concentrations were approximately 3 times greater than the EPA's lifetime health advisory (LHA) of 70 ppt on the Conasauga River downstream of Looper's Bend LAS with residual concentrations detected at or above the LHA on the Oostanaula River.

Figure 6: Distribution of PFAS in Sediments



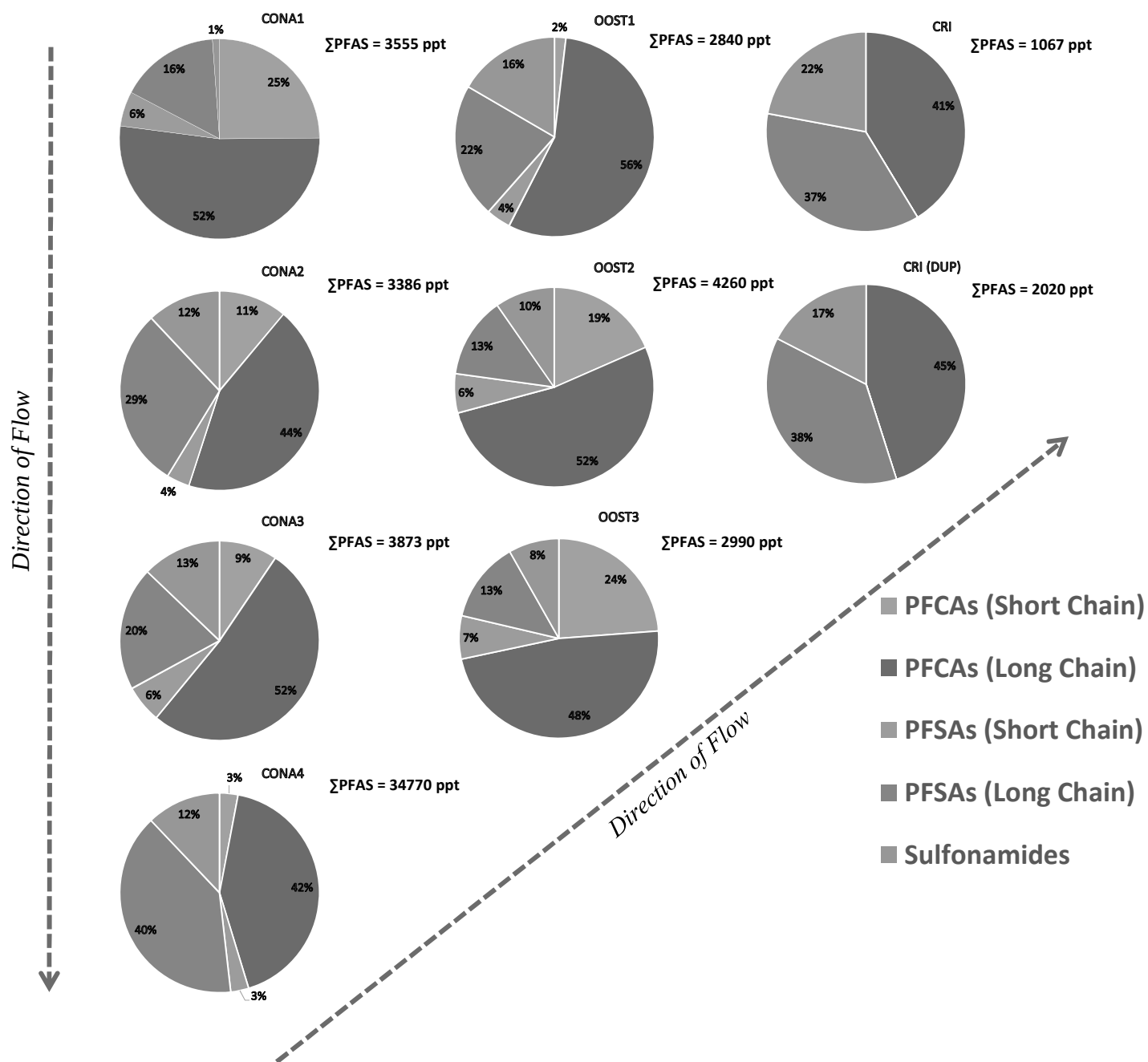
All PFAS concentrations are in ng/kg dry (ppt). Pie charts are shown in relative proportions based on combined PFOA and PFOS.

Figure 7: Composition of Detected PFAS in Sediments



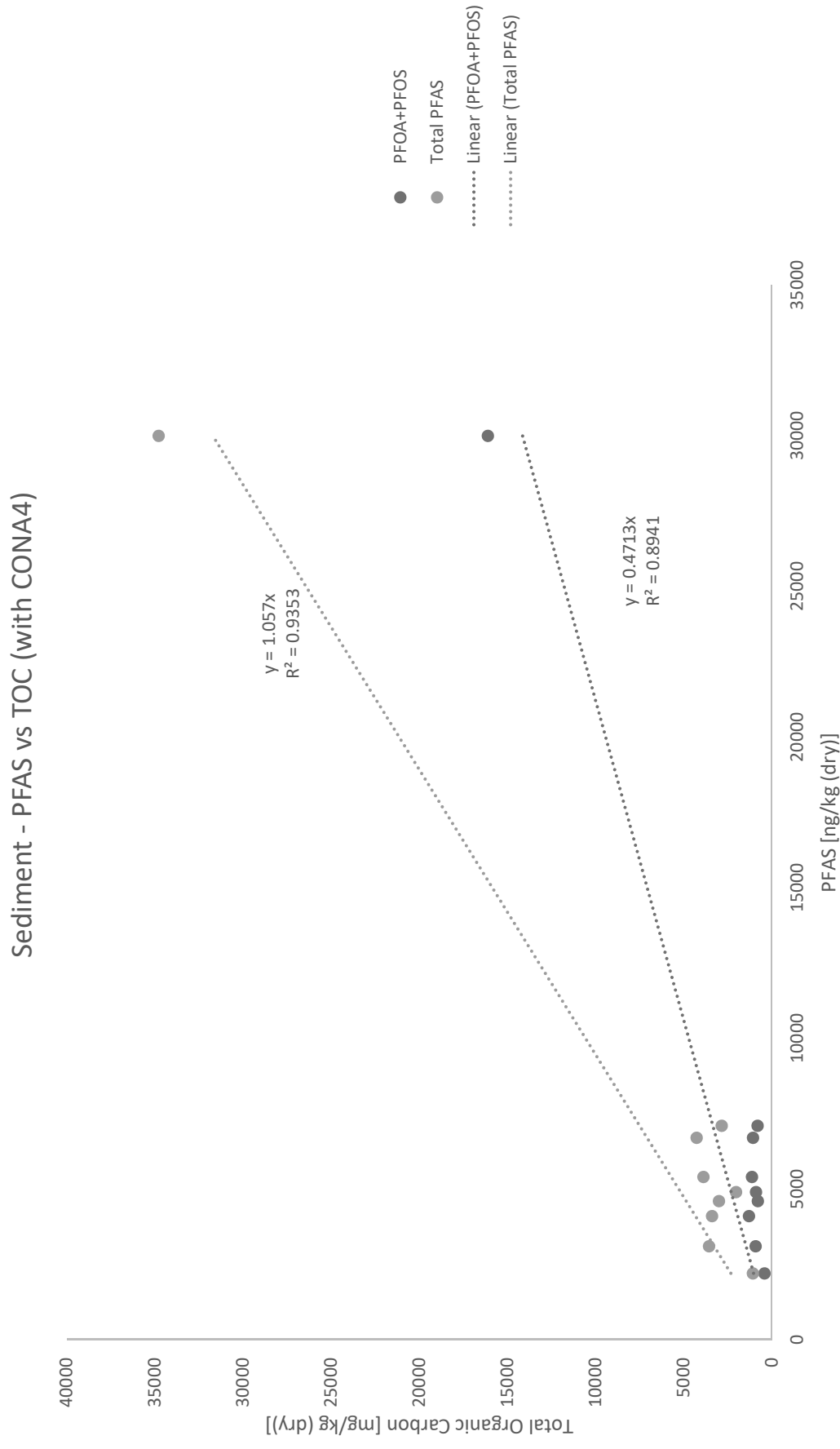
Concentrations of PFAS detected in sediment samples are shown on pie charts in units of ng/kg *dry* (ppt). All sediment samples were relatively diverse in the composition of detected PFAS compounds throughout the watershed.

Figure 8: PFAS Class and Functional Groups Detected in Sediment



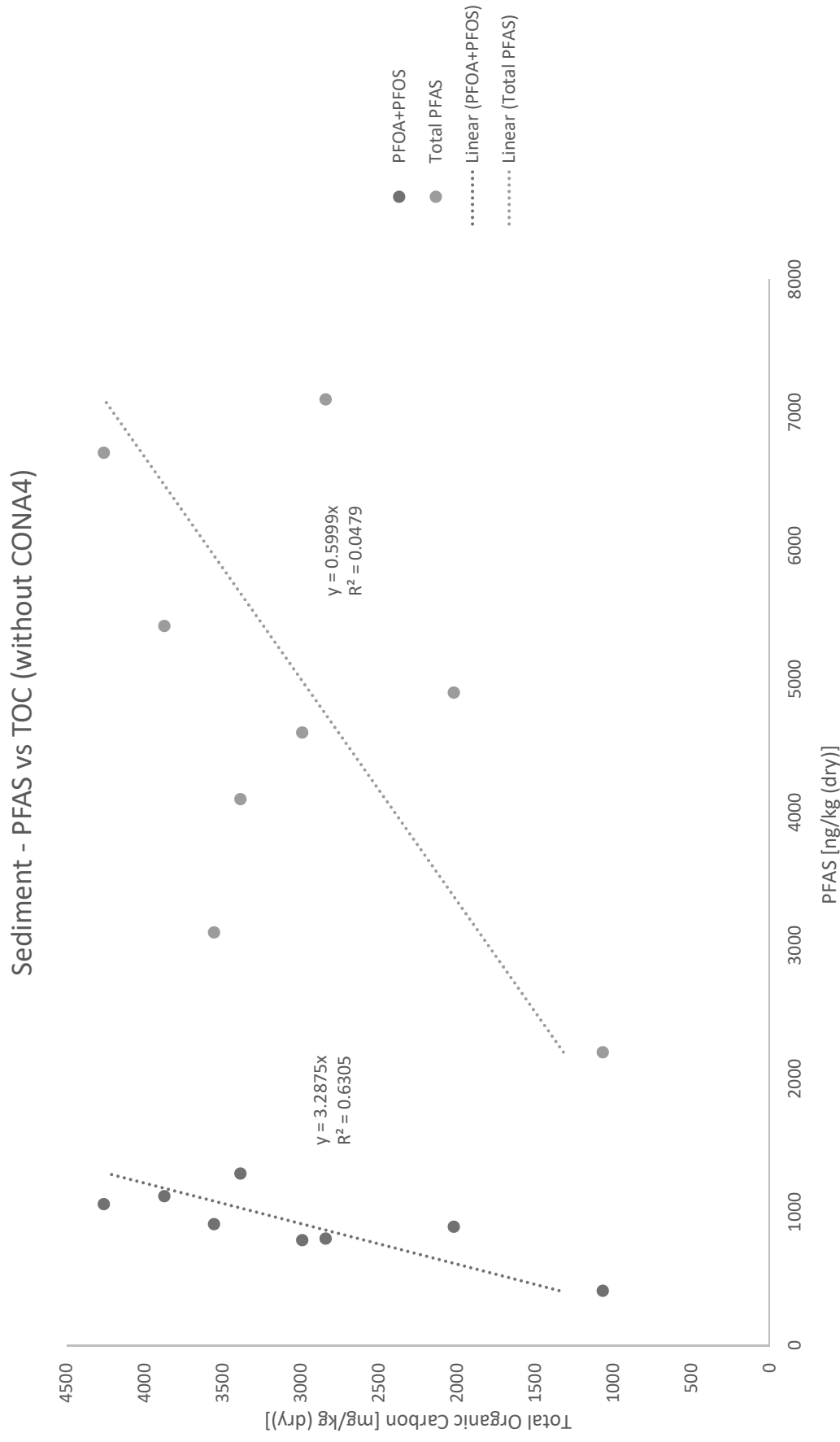
Sediments were predominately composed of long-chain PFAS. Sulfonamides were detected throughout the watershed which are known to be precursors to both PFOS and PFOA.

Figure 9: Sediment TOC and PFAS Retention (CONA4 Included)



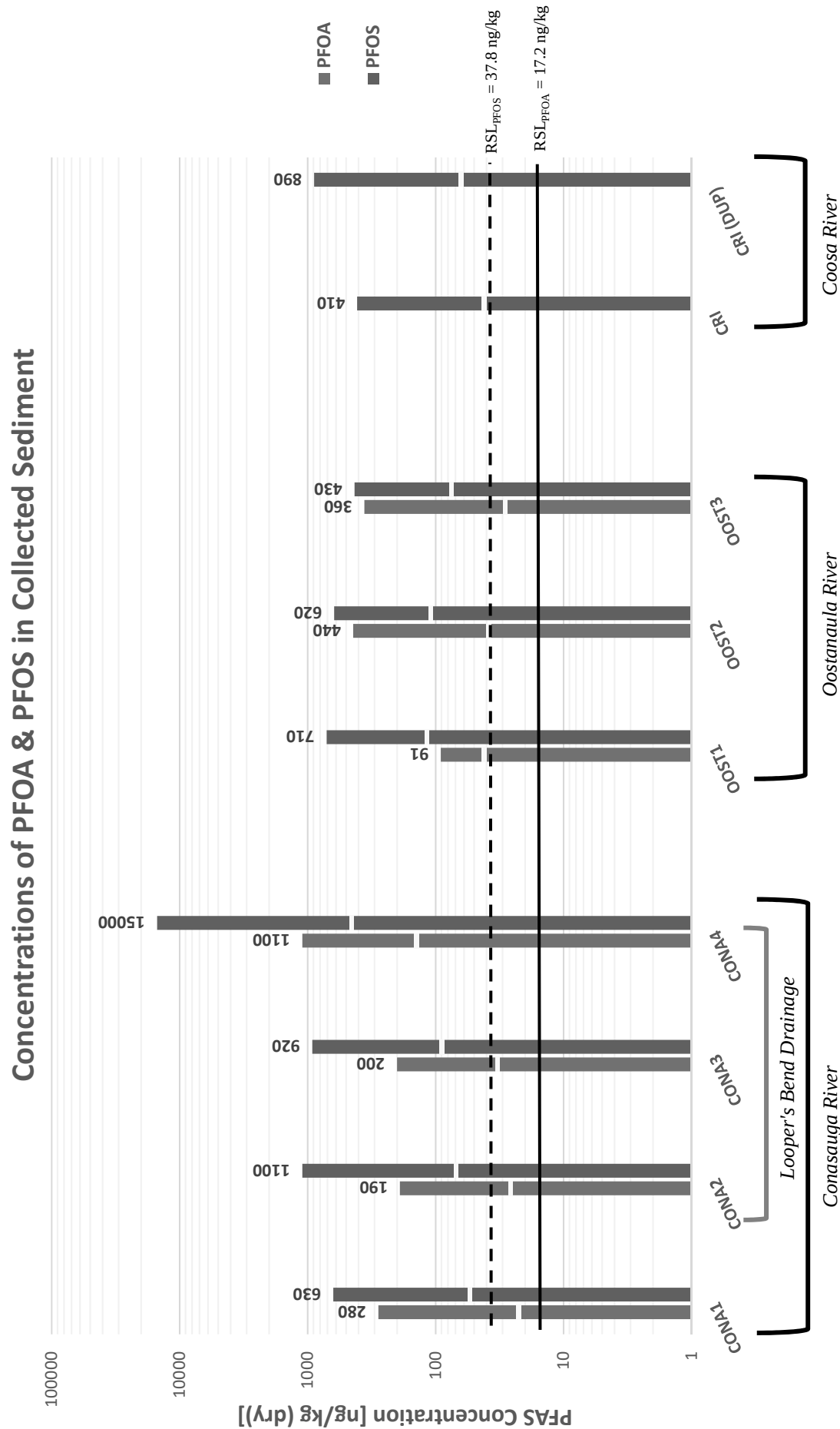
Concentrations of PFAS detected in sediments collected at CONA4 on the Conasauga River were found to be orders of magnitude above concentrations observed at all other sites. This was found to be mainly driven by the presence of total organic carbon at similarly high concentrations in the sediment sample collected at CONA4.

Figure 10: Sediment TOC and PFAS Retention (CONA4 Excluded)



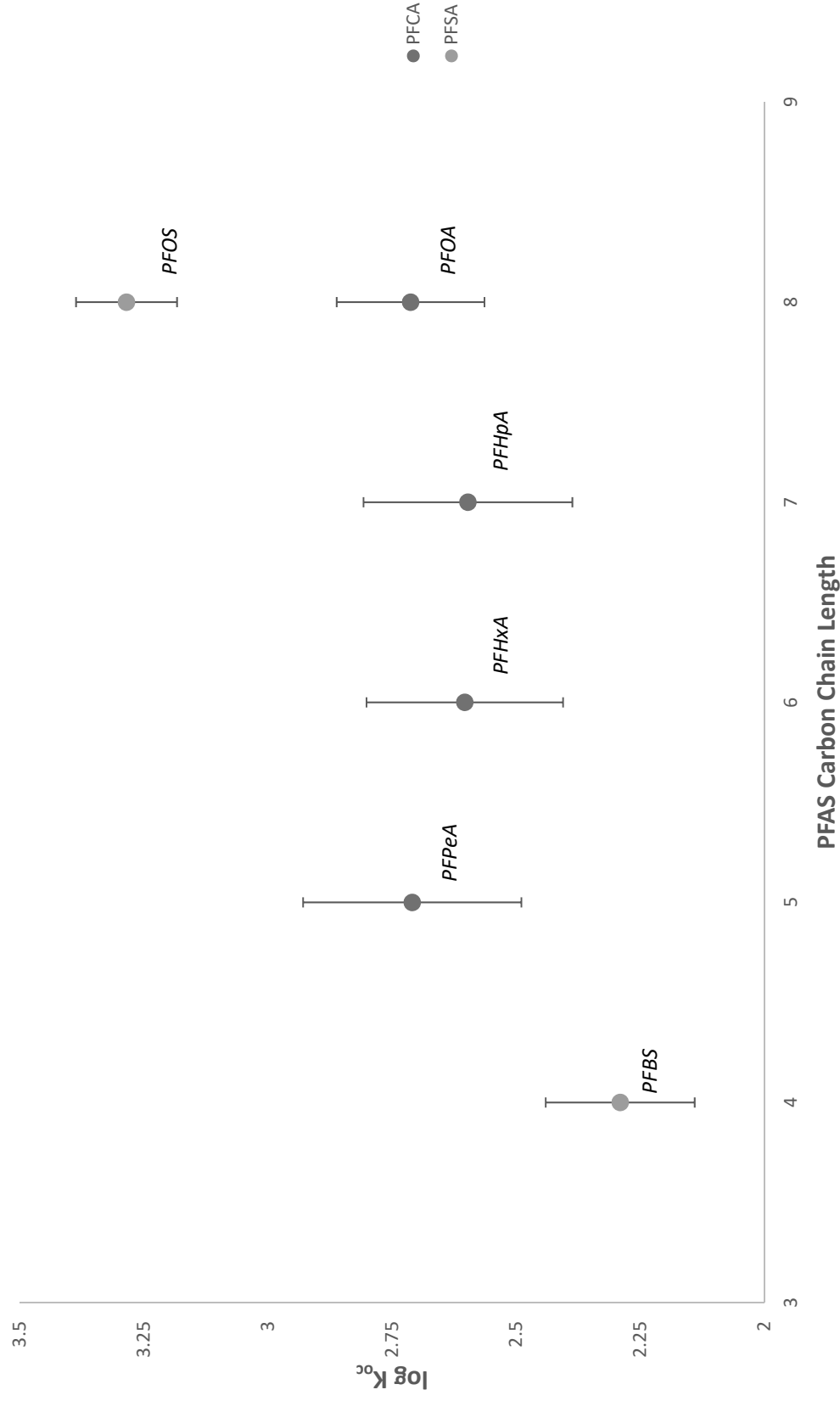
With CONA4 removed as an outlier, combined concentrations of PFOA and PFOS detected in the sediments are still generally influenced by the presence of total organic carbon. The relationship between Total PFAS concentrations and total organic carbon is inconclusive due to differing effects of organic carbon on the retention of PFAS compounds depending on the carbon chain length and functional group as seen in Figure 12.

Figure 11: PFOA and PFOS Detected in Sediments



PFOA and PFOS were detected at concentrations above both generic and site-specific risk screening levels (RSLs) corrected for total organic carbon throughout the watershed. PFOA was not detected at or above the MRL on the Coosa River. Generic RSLs are represented by the solid and dashed lines for PFOA and PFOS, respectively. Yellow lines depict the site-specific RSLs corrected for the organic carbon fraction at each site.

Figure 12: Organic Carbon Partition Coefficients (K_{oc}) of Detected PFAS



The effect of organic carbon and the retention of PFAS in sediments is dependent on both the chain length and functional group. PFAS retention in sediments generally increases with increasing chain length and PFSAAs (e.g. PFOS) are more likely to be retained compared to PFCAs (e.g. PFOA) of the same chain length.

Appendix A – Surface Water PFAS Analytical Results

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

4LSASD-LSB

Page 50 of 220

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sebyvec and Asspied Svienve Diyicion

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

SAMPLES INCLUDED IN THIS REPORT

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
19-0253-e/ fis-ap-1-0916	E19hl 05-01	E/ fisJ enr Rince Hp4n'	9/16/19 11:00	9/11/19 1h:h7
19-0253-e/ fis-ap-7-0916	E19hl 05-07	E/ fisJ enr Rince Hp4n'	9/13/19 10:00	9/11/19 1h:h7
19-0253-niepl-ap-1-0916	E19hl 05-0h	Fiepl Hp4n'	9/16/19 15:00	9/11/19 1h:h7
19-0253-niepl-ap-7-0916	E19hl 05-02	Fiepl Hp4n'	9/13/19 16:00	9/11/19 1h:h7
19-0253-niepl-ap-1-0916	E19hl 05-05	Or, eb	9/11/19 17:10	9/11/19 1h:h7
19-0253-niepl-ap-1-0916	E19hl 05-06	This Hp4n' - q 4reb	9/16/19 15:00	9/11/19 1h:h7
19-0253-CONA1-0916	E19hl 05-03	Sf4n4ve q 4reb	9/13/19 10:00	9/11/19 1h:h7
19-0253-CONA1-F-0916	E19hl 05-0l	Sf4n4ve q 4reb	9/13/19 10:00	9/11/19 1h:h7
19-0253-CONA7-0916	E19hl 05-10	Sf4n4ve q 4reb	9/13/19 11:00	9/11/19 1h:h7
19-0253-CONA8-0916	E19hl 05-17	Sf4n4ve q 4reb	9/13/19 1h:00	9/11/19 1h:h7
19-0253-CONA8-F-0916	E19hl 05-1h	Sf4n4ve q 4reb	9/13/19 1h:00	9/11/19 1h:h7
19-0253-CONA2-0916	E19hl 05-15	Sf4n4ve q 4reb	9/13/19 12:00	9/11/19 1h:h7
19-0253-CRI-0916	E19hl 05-13	Sf4n4ve q 4reb	9/16/19 17:25	9/11/19 1h:h7
19-0253-CRI-DUP-0916	E19hl 05-1l	Sf4n4ve q 4reb	9/16/19 1h:00	9/11/19 1h:h7
19-0253-CRI-F-0916	E19hl 05-19	Sf4n4ve q 4reb	9/16/19 17:25	9/11/19 1h:h7
19-0253-CRI-F-DUP-0916	E19hl 05-70	Sf4n4ve q 4reb	9/16/19 1h:00	9/11/19 1h:h7
19-0253-OOST1-0916	E19hl 05-7h	Sf4n4ve q 4reb	9/13/19 09:00	9/11/19 1h:h7
19-0253-OOST7-0916	E19hl 05-75	Sf4n4ve q 4reb	9/16/19 16:25	9/11/19 1h:h7
19-0253-OOSTh-0916	E19hl 05-73	Sf4n4ve q 4reb	9/16/19 15:00	9/11/19 1h:h7
19-0253-OOSTh-F-0916	E19hl 05-7l	Sf4n4ve q 4reb	9/16/19 15:00	9/11/19 1h:h7



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Seelye and Associates Division

910 Cottage Station Road, Encinitas, CA 92037-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

DATA QUALIFIER DEFINITIONS

U	T, e 4n4p re u 4c nor derevred 4r ob4aoye r, e bes obring pJ ir.
CR	Lecc r, 4n MDL 4nd MRL8D4r4 ct creJ cer ro dics pht r, e vonvenrb4rion om4 ' nou n csi' ed c4J spe
CR4	Lecc r, 4n MDL 4nd MRL8D4r4 ct creJ cer ro dics pht r, e vonvenrb4rion om4 ' nou n csi' ed c4J spe.
B	T, e idenriniv4rion omr, e 4n4p re ic 4vvesr4ape@, e bes obred y4pf e ic 4n ecriJ 4re.
' -7	Recfpr gbe4rebr, 4n MDL afr pcc r, 4n MRL.
' S-h	Sfbog4re bevoyelt ic pou ebr, 4n ecr4apic, ed vonrboppiJ irc.
' S-5	Sfbog4re bevoyelt ic, ig, ebr, 4n ecr4apic, ed vonrboppiJ irc
Y-7	D4r4 c, of pl ae pJ ired ro cvteening s fbs ocec onpt

ACRONYMS AND ABBREVIATIONS

CAS	C, eJ iv4pAacrb4vrc Seelye Note: An4p rec u ir, ' nou n CAS idenrinibc, 4ye aeen 4ccigned vobec aeginning u ir, ;E; 8r, e EPA ID 4c 4ccigned at r, e EPA Sfacr4nve Regicrt St creJ Qu u .es4.goy)cb(8obaeginning u ir, ;R2-; 84 fni/ fe idenrinib4ccigned at r, e EPA Region 2 p4ob4robt .
MDL	Mer, od Derevriou LiJ ir - T, e J iniJ fJ vonvenrb4rion om4 cfacr4nve Qn 4n4p re(r, 4r v4n ae J e4cfbed 4nd besobred u ir, 4 99% vonridenve r, 4r r, e 4n4p re vonvenrb4rion ic gbe4rebr, 4n zebo.
MRL	MiniJ fJ Res obring LiJ ir - An4p re vonvenrb4rion r, 4r volbcs ondc ro r, e pou ecr deJ oncrb4red pcyepom4vvesr4ape / f4nir4rion. T, e MRL ic c4J spe-cs eviniv 4nd 4vvof nrc mbs bes 4b4rion u eig, rc 4nd yopfJ ec8dif rionc84nd J oicrf be vonrenr oncoipcediJ enr.
TIC	Tenr4riyep Idenrinied CoJ sofnd - An 4n4p re idenrinied a4ced on 4 J 4rv, u ir, r, e incrbfJ enr comu 4bex J 4cc cs evrb4ppiab4t . A v4piab4rion cr4nd4bd, 4c nor aeen 4n4p zed ro vonribJ r, e voJ sofndxc idenriniv4rion obr, e ecriJ 4red vonvenrb4rion bes obred.

ACCREDITATIONS:

ISO	ASH ic 4vvbedired at ISO)IEC 130758invf ding 4n 4J spiniv4rion mbmbenciv 4vvbedir4rion r, bofg, ANSI-AS' N4rion4pAvvbedir4rion Ho4bd. Rembro r, e vebriiv4re 4nd cvose om4vvbedir4rion AT-1622 4r: , ms:))u u .es4.goy)4aof res 4)4aof r-begion-2c-cvienve-4nd-evocet creJ -cf s s obr-diyicion-ceed
NR	T, e EPA Region 2 L4aob4robt , 4c nor be/ fecred 4vvbedir4rion mbr, ic recr.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assigned Service Division

910 Corporate Square Road, Atlanta, Georgia 30305-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-equip-blk-1-0916Lab ID: E193805-01

Station ID:

Matrix: Equipment Rinse Blank

Date Collected: 9/16/19 18:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
73619-93-7	6:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
h910l-h2-2	1:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
h35-3h-5	PFHS	h5	U	ng/L	h5	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
hh5-33-h	PFDS	h9	U	ng/L	h9	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
h35-15-9	PFk sA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
h35-97-1	PFk sS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
h03-72-2	PFk wA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
h55-26-2	PFk wS	h6	U	ng/L	h6	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
61759-17-1	PFNS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
hh5-63-1	PFOA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS
136h-7h-1	PFOS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 70:51	ASHPROC-1 00PF AS



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Region 2 Laboratory, Sevier and Aspie Division

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-equip-blk-1-0916Lab ID: E193805-01

Station ID:

Matrix: Equipment Rinse Blank

Date Collected: 9/16/19 18:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 70:51	ASHPROC-100PFAS
7306-91-2	PFPeS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 70:51	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/01/19 70:51	ASHPROC-100PFAS
37679-92-1	PFTtDA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 70:51	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 70:51	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square Road, Atlanta, Georgia 30303-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-equip-blk-2-0916Lab ID: E193805-02

Station ID:

Matrix: Equipment Rinse Blank

Date Collected: 9/17/19 10:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
73619-93-7	6:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
h9101-h2-2	1:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
h35-3h-5	PFHS	h5	U	ng/L	h5	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
hh5-33-h	PFDS	h9	U	ng/L	h9	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
h35-15-9	PFk sA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
h35-97-1	PFk sS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
h03-72-2	PFk wA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
h55-26-2	PFk wS	h6	U	ng/L	h6	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
61759-17-1	PFNS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
hh5-63-1	PFOA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
136h-7h-1	PFOS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sebyvec 4nd Asspied Svienve Diyicion

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-equip-blk-2-0916Lab ID: E193805-02

Station ID:

Matrix: Equipment Rinse Blank

Date Collected: 9/17/19 10:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
7306-91-2	PFPeS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
37679-92-1	PFTtDA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:11	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square, Room 408, Atlanta, Georgia 30309-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-field-blk-1-0916Lab ID: E193805-03

Station ID:

Matrix: Field Blank

Date Collected: 9/16/19 15:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
73619-93-7	6:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
h9101-h2-2	1:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
h35-3h-5	PFHS	h5	U	ng/L	h5	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
hh5-33-h	PFDS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
h35-15-9	PFk sA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
h35-97-1	PFk sS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
h03-72-2	PFk wA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
h55-26-2	PFk wS	h6	U	ng/L	h6	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
61759-17-1	PFNS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
hh5-63-1	PFOA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
136h-7h-1	PFOS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-field-blk-1-0916Lab ID: E193805-03

Station ID:

Matrix: Field Blank

Date Collected: 9/16/19 15:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
7306-91-2	PFPeS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
37679-92-1	PFTtDA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:1h	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square Road, Atlanta, Georgia 30303-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-field-blk-2-0916Lab ID: E193805-04

Station ID:

Matrix: Field Blank

Date Collected: 9/17/19 16:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
73619-93-7	6:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
h9101-h2-2	1:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
h35-3h-5	PFHS	h5	U	ng/L	h5	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
hh5-33-h	PFDS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
h35-15-9	PFk sA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
h35-97-1	PFk sS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
h03-72-2	PFk wA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
h55-26-2	PFk wS	h6	U	ng/L	h6	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
61759-17-1	PFNS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
hh5-63-1	PFOA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
136h-7h-1	PFOS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square, 8th Floor, Atlanta, Georgia 30303-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-field-blk-2-0916Lab ID: E193805-04

Station ID:

Matrix: Field Blank

Date Collected: 9/17/19 16:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
7306-91-2	PFPeS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
37679-92-1	PFTtDA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 71:51	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square Road, Atlanta, Georgia 30303-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-filter-spike-0916Lab ID: E193805-05

Station ID:

Matrix: Other

Date Collected: 9/18/19 12:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	210	BY-7	ng/L	h3	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
73619-93-7	6:7FTS	270	BY-7	ng/L	h3	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
h9101-h2-2	1:7FTS	750	BY-7	ng/L	h3	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
352-91-6	FOSA	150	BY-7	ng/L	h9	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
1h757-1h-6	k FPO-DA	h60	BY-7	ng/L	h9	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
7991-50-6	N-ErFOSAA	66	BCR8Y-7	ng/L	67	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
7h55-h1-9	N-MeFOSAA	110	BCR8Y-7	ng/L	52	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
h35-77-2	PFHA	2h0	BY-7	ng/L	h9	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
h35-3h-5	PFHS	h30	BY-7	ng/L	h5	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
hh5-36-7	PFDA	h00	BY-7	ng/L	160	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
h03-55-1	PFD0A	22	BY-7	ng/L	h9	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
hh5-33-h	PFDS	10	BY-7	ng/L	h1	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
h35-15-9	PFk sA	2h0	BY-7	ng/L	h9	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
h35-97-1	PFk sS	200	BY-7	ng/L	h3	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
h03-72-2	PFk wA	220	BY-7	ng/L	h9	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
h55-26-2	PFk wS	210	BY-7	ng/L	h6	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
h35-95-1	PFNA	200	BY-7	ng/L	h9	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
61759-17-1	PFNS	110	BY-7	ng/L	h3	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
hh5-63-1	PFOA	250	BY-7	ng/L	h9	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
136h-7h-1	PFOS	hh0	BY-7	ng/L	h6	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sevierville and Associated Division

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-filter-spike-0916Lab ID: E193805-05

Station ID:

Matrix: Other

Date Collected: 9/18/19 12:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	2h0	BY-7	ng/L	h9	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
7306-91-2	PFPeS	210	BY-7	ng/L	h3	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
h36-06-3	PFTeDA	69	BCR48' S-58 Y-7	ng/L	59	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
37679-92-1	PFTeDA	79	B' -78Y-7	ng/L	h9	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS
7051-92-1	PFUdA	120	BY-7	ng/L	h9	10/01/19 10:5h	10/01/19 77:11	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assigned Service Division

910 Corporate Square Road, Atlanta, Georgia 30305-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-trip-blk-1-0916Lab ID: E193805-06

Station ID:

Matrix: Trip Blank - Water

Date Collected: 9/16/19 15:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
73619-93-7	6:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
h910l-h2-2	1:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
h35-3h-5	PFHS	h5	U	ng/L	h5	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
hh5-33-h	PFDS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
h35-15-9	PFk sA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
h35-97-1	PFk sS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
h03-72-2	PFk wA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
h55-26-2	PFk wS	h6	U	ng/L	h6	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
61759-17-1	PFNS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
hh5-63-1	PFOA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS
136h-7h-1	PFOS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-1 00PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sevierville and Associated Division

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-trip-blk-1-0916Lab ID: E193805-06

Station ID:

Matrix: Trip Blank - Water

Date Collected: 9/16/19 15:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-100PFAS
7306-91-2	PFPeS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-100PFAS
37679-92-1	PFTtDA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:h1	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assigned Service Division

910 Corporate Square Road, Atlanta, Georgia 30303-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA1-0916Lab ID: E193805-07Station ID: CONA1

Matrix: Surface Water

Date Collected: 9/17/19 10:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
73619-93-7	6:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
h9101-h2-2	1:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
h35-3h-5	PFHS	51		ng/L	h5	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
hh5-33-h	PFDS	h9	U	ng/L	h9	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
h35-15-9	PFk sA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
h35-97-1	PFk sS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
h03-72-2	PFk wA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
h55-26-2	PFk wS	h6	U	ng/L	h6	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
61759-17-1	PFNS	h1	U	ng/L	h1	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
hh5-63-1	PFOA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
136h-7h-1	PFOS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sebyvec 4nd Asspied Svienve Diyicion

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA1-0916Lab ID: E193805-07Station ID: CONA1

Matrix: Surface Water

Date Collected: 9/17/19 10:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	73	B' -7	ng/L	20	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
7306-91-2	PFPeS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
37679-92-1	PFTtDA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 77:51	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square Road, Atlanta, Georgia 30303-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA1-F-0916Lab ID: E193805-08Station ID: CONA1

Matrix: Surface Water

Date Collected: 9/17/19 10:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
73619-93-7	6:7FTS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
h910l-h2-2	1:7FTS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
h35-3h-5	PFHS	6l		ng/L	h5	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
hh5-33-h	PFDS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
h35-15-9	PFk sA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
h35-97-1	PFk sS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
h03-72-2	PFk wA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
h55-26-2	PFk wS	h6	U	ng/L	h6	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
6l759-17-1	PFNS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
hh5-63-1	PFOA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
136h-7h-1	PFOS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sebyvec 4nd Asspied Svienve Diyicion

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA1-F-0916Lab ID: E193805-08Station ID: CONA1

Matrix: Surface Water

Date Collected: 9/17/19 10:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	73	B' -7	ng/L	20	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
7306-91-2	PFPeS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
37679-92-1	PFTtDA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:11	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square, Room 408, Atlanta, Georgia 30309-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA2-0916Lab ID: E193805-10Station ID: CONA2

Matrix: Surface Water

Date Collected: 9/17/19 18:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
73619-93-7	6:7FTS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
h910l-h2-2	1:7FTS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
h35-77-2	PFHA	6h		ng/L	20	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
h35-3h-5	PFHS	h60		ng/L	h5	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
hh5-33-h	PFDS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
h35-15-9	PFk sA	5h		ng/L	20	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
h35-97-1	PFk sS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
h03-72-2	PFk wA	110		ng/L	20	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
h55-26-2	PFk wS	72	h' -7	ng/L	h6	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
6l 759-17-1	PFNS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
hh5-63-1	PFOA	170		ng/L	20	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS
136h-7h-1	PFOS	1h0		ng/L	h3	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-1 00PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sevierville and Associated Division

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA2-0916Lab ID: E193805-10Station ID: CONA2

Matrix: Surface Water

Date Collected: 9/17/19 18:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	130		ng/L	20	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-100PFAS
7306-91-2	PFPeS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-100PFAS
37679-92-1	PFTeDA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:1	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Applied Science Division

910 Corporate Square Road, Atlanta, Georgia 30303-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA3-0916Lab ID: E193805-12Station ID: CONA3

Matrix: Surface Water

Date Collected: 9/17/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
73619-93-7	6:7FTS	79	B' -7	ng/L	hl	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
h910l-h2-2	1:7FTS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
7991-50-6	N-ErFOSAA	160	U 8BY-7	ng/L	160	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
h35-3h-5	PFHS	750		ng/L	h5	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
hh5-33-h	PFDS	h9	U	ng/L	h9	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
h35-15-9	PFk sA	53		ng/L	20	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
h35-97-1	PFk sS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
h03-72-2	PFk wA	110		ng/L	20	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
h55-26-2	PFk wS	75	B' -7	ng/L	h6	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
61759-17-1	PFNS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
hh5-63-1	PFOA	120		ng/L	20	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
136h-7h-1	PFOS	120		ng/L	h3	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sevierville and Associated Division

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA3-0916Lab ID: E193805-12Station ID: CONA3

Matrix: Surface Water

Date Collected: 9/17/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	110		ng/L	20	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
7306-91-2	PFPeS	hl	U	ng/L	hl	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
37679-92-1	PFTtDA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/01/19 7h:51	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square Road, Atlanta, Georgia 30305-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA3-F-0916Lab ID: E193805-13Station ID: CONA3

Matrix: Surface Water

Date Collected: 9/17/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
73619-93-7	6:7FTS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
h910l-h2-2	1:7FTS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
h35-77-2	PFHA	27	U	ng/L	20	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
h35-3h-5	PFHS	hh0		ng/L	h5	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
hh5-33-h	PFDS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
h35-15-9	PFk sA	5h		ng/L	20	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
h35-97-1	PFk sS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
h03-72-2	PFk wA	100		ng/L	20	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
h55-26-2	PFk wS	19	U	ng/L	h6	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
61759-17-1	PFNS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
hh5-63-1	PFOA	170		ng/L	20	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
136h-7h-1	PFOS	100		ng/L	h3	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sevierville and Associated Division

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA3-F-0916Lab ID: E193805-13Station ID: CONA3

Matrix: Surface Water

Date Collected: 9/17/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	160		ng/L	20	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
7306-91-2	PFPeS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
37679-92-1	PFTeDA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 0:51	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA4-0916Lab ID: E193805-15Station ID: CONA4

Matrix: Surface Water

Date Collected: 9/17/19 14:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
73619-93-7	6:7FTS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
h910l-h2-2	1:7FTS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
h35-77-2	PFHA	32		ng/L	20	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
h35-3h-5	PFHS	200		ng/L	h5	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
hh5-33-h	PFDS	h9	U	ng/L	h9	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
h35-15-9	PFk sA	59		ng/L	20	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
h35-97-1	PFk sS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
h03-72-2	PFk wA	110		ng/L	20	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
h55-26-2	PFk wS	73	h7	ng/L	h6	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
61759-17-1	PFNS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
hh5-63-1	PFOA	120		ng/L	20	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
136h-7h-1	PFOS	1h0		ng/L	h3	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sebyvec 4nd Asspied Svienve Diyicion

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA4-0916Lab ID: E193805-15Station ID: CONA4

Matrix: Surface Water

Date Collected: 9/17/19 14:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	130		ng/L	20	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
7306-91-2	PFPeS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
37679-92-1	PFTtDA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:11	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square, Room 408, Atlanta, Georgia 30309-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-0916Lab ID: E193805-17Station ID: CRI

Matrix: Surface Water

Date Collected: 9/16/19 12:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
73619-93-7	6:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
h9101-h2-2	1:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
h35-3h-5	PFHS	h9		ng/L	h5	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
hh5-33-h	PFDS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
h35-15-9	PFk sA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
h35-97-1	PFk sS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
h03-72-2	PFk wA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
h55-26-2	PFk wS	h6	U	ng/L	h6	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
61759-17-1	PFNS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
hh5-63-1	PFOA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
136h-7h-1	PFOS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sevierville and Associated Division

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-0916Lab ID: E193805-17Station ID: CRI

Matrix: Surface Water

Date Collected: 9/16/19 12:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	77	B' -7	ng/L	20	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
7306-91-2	PFPeS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
37679-92-1	PFTtDA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:1h	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assigned Service Division

910 Corporate Square Road, Atlanta, Georgia 30303-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-DUP-0916Lab ID: E193805-18Station ID: CRI

Matrix: Surface Water

Date Collected: 9/16/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
73619-93-7	6:7FTS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
h910l-h2-2	1:7FTS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
h35-3h-5	PFHS	21		ng/L	h5	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
hh5-33-h	PFDS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
h35-15-9	PFk sA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
h35-97-1	PFk sS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
h03-72-2	PFk wA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
h55-26-2	PFk wS	h6	U	ng/L	h6	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
61759-17-1	PFNS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
hh5-63-1	PFOA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
136h-7h-1	PFOS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sevierville and Associated Division

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-DUP-0916Lab ID: E193805-18Station ID: CRI

Matrix: Surface Water

Date Collected: 9/16/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	7h	B' -7	ng/L	20	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
7306-91-2	PFPeS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
37679-92-1	PFTeDA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 1:51	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square, Room 408, Atlanta, Georgia 30309-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-F-0916Lab ID: E193805-19Station ID: CRI

Matrix: Surface Water

Date Collected: 9/16/19 12:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
73619-93-7	6:7FTS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
h910l-h2-2	1:7FTS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
h35-3h-5	PFHS	21		ng/L	h5	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
hh5-33-h	PFDS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
h35-15-9	PFk sA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
h35-97-1	PFk sS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
h03-72-2	PFk wA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
h55-26-2	PFk wS	h6	U	ng/L	h6	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
61759-17-1	PFNS	hl	U	ng/L	hl	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
hh5-63-1	PFOA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
136h-7h-1	PFOS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sebyvec 4nd Asspied Svienve Diyicion

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-F-0916Lab ID: E193805-19Station ID: CRI

Matrix: Surface Water

Date Collected: 9/16/19 12:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	75	B' -7	ng/L	20	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
7306-91-2	PFPeS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
37679-92-1	PFTtDA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:11	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assigned Division

910 Corporate Square Road, Atlanta, Georgia 30305-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-F-DUP-0916Lab ID: E193805-20Station ID: CRI

Matrix: Surface Water

Date Collected: 9/16/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
73619-93-7	6:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
h9101-h2-2	1:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
h35-3h-5	PFHS	h5		ng/L	h5	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
hh5-33-h	PFDS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
h35-15-9	PFk sA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
h35-97-1	PFk sS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
h03-72-2	PFk wA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
h55-26-2	PFk wS	h6	U	ng/L	h6	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
61759-17-1	PFNS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
hh5-63-1	PFOA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS
136h-7h-1	PFOS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 7:1h	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sebyvec 4nd Asspied Svienvi Diyicion

910 Coppege Sr4rion Ro4d8Ar, enc8Geolgi4 h0605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-F-DUP-0916Lab ID: E193805-20Station ID: CRI

Matrix: Surface Water

Date Collected: 9/16/19 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	76	B' -7	ng/L	20	10/01/19 10:5h	10/09/19 7:31	ASHPROC-100PFAS
7306-91-2	PFPeS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 7:31	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/09/19 7:31	ASHPROC-100PFAS
37679-92-1	PFTtDA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:31	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:31	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST1-0916Lab ID: E193805-23Station ID: OOST1

Matrix: Surface Water

Date Collected: 9/17/19 9:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
73619-93-7	6:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
h9101-h2-2	1:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
h35-3h-5	PFHS	190		ng/L	h5	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
hh5-33-h	PFDS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
h35-15-9	PFk sA	11	B' -7	ng/L	20	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
h35-97-1	PFk sS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
h03-72-2	PFk wA	h6	B' -7	ng/L	20	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
h55-26-2	PFk wS	h6	U	ng/L	h6	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
61759-17-1	PFNS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
hh5-63-1	PFOA	21		ng/L	20	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
136h-7h-1	PFOS	h1	B' -7	ng/L	h3	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sevierville and Associated Division

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST1-0916Lab ID: E193805-23Station ID: OOST1

Matrix: Surface Water

Date Collected: 9/17/19 9:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	25		ng/L	20	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
7306-91-2	PFPeS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
37679-92-1	PFTeDA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 7:51	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square Road, Atlanta, Georgia 30303-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST2-0916Lab ID: E193805-25Station ID: OOST2

Matrix: Surface Water

Date Collected: 9/16/19 16:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
73619-93-7	6:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
h910l-h2-2	1:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
h35-3h-5	PFHS	710		ng/L	h5	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
hh5-33-h	PFDS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
h35-15-9	PFk sA	11	B' -7	ng/L	20	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
h35-97-1	PFk sS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
h03-72-2	PFk wA	h5	B' -7	ng/L	20	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
h55-26-2	PFk wS	h6	U	ng/L	h6	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
61759-17-1	PFNS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
hh5-63-1	PFOA	2h		ng/L	20	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
136h-7h-1	PFOS	110		ng/L	h3	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sebyvec 4nd Asspied Svienvi Diyicion

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST2-0916Lab ID: E193805-25Station ID: OOST2

Matrix: Surface Water

Date Collected: 9/16/19 16:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	23		ng/L	20	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
7306-91-2	PFPeS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
37679-92-1	PFTtDA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:11	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square Road, Atlanta, Georgia 30305-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST3-0916Lab ID: E193805-27Station ID: OOST3

Matrix: Surface Water

Date Collected: 9/16/19 15:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
73619-93-7	6:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
h9101-h2-2	1:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
h35-3h-5	PFHS	710		ng/L	h5	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
hh5-33-h	PFDS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
h35-15-9	PFk sA	71	BB' -7	ng/L	20	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
h35-97-1	PFk sS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
h03-72-2	PFk wA	26		ng/L	20	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
h55-26-2	PFk wS	h6	U	ng/L	h6	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
61759-17-1	PFNS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
hh5-63-1	PFOA	5h		ng/L	20	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS
136h-7h-1	PFOS	21		ng/L	h3	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-1 00PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sebyvec 4nd Asspied Svienve Diyicion

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST3-0916Lab ID: E193805-27Station ID: OOST3

Matrix: Surface Water

Date Collected: 9/16/19 15:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	61		ng/L	20	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-100PFAS
7306-91-2	PFPeS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-100PFAS
37679-92-1	PFTtDA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:h1	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST3-F-0916Lab ID: E193805-28Station ID: OOST3

Matrix: Surface Water

Date Collected: 9/16/19 15:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
73619-93-7	6:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
h9101-h2-2	1:7FTS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
352-91-6	FOSA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
1h757-1h-6	k FPO-DA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
h35-77-2	PFHA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
h35-3h-5	PFHS	100	U	ng/L	h5	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
hh5-36-7	PFDA	160	U	ng/L	160	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
h03-55-1	PFDaA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
hh5-33-h	PFDS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
h35-15-9	PFk sA	70	U	ng/L	20	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
h35-97-1	PFk sS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
h03-72-2	PFk wA	h5	U	ng/L	20	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
h55-26-2	PFk wS	h6	U	ng/L	h6	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
h35-95-1	PFNA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
61759-17-1	PFNS	h1	U	ng/L	h1	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
hh5-63-1	PFOA	21	U	ng/L	20	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS
136h-7h-1	PFOS	27	U	ng/L	h3	10/01/19 10:5h	10/09/19 h:51	ASHPROC-1 00PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sebyvec 4nd Asspied Svienva Diyicion

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST3-F-0916Lab ID: E193805-28Station ID: OOST3

Matrix: Surface Water

Date Collected: 9/16/19 15:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	5h		ng/L	20	10/01/19 10:5h	10/09/19 h:51	ASHPROC-100PFAS
7306-91-2	PFPeS	h3	U	ng/L	h3	10/01/19 10:5h	10/09/19 h:51	ASHPROC-100PFAS
h36-06-3	PFTeDA	160	U8B' S-58Y-7	ng/L	160	10/01/19 10:5h	10/09/19 h:51	ASHPROC-100PFAS
37679-92-1	PFTeDA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:51	ASHPROC-100PFAS
7051-92-1	PFUdA	20	U	ng/L	20	10/01/19 10:5h	10/09/19 h:51	ASHPROC-100PFAS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Commerce Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, LSASD

Analysis	Reference	Resolving Limit	Uncertainty	Site Level	Software Reference	%REC	%REC Limit	RPD	RPD Limit	Notes
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Batch 1910004 - S PFC

Blank (1910004-BLK1)

Prepared: 10/01/19 Analyzed: 10/01/19

ASBPROC-800PFAS

2:7FTS	U	h3	ng/L							U
6:7FTS	U	hl	;							U
1:7FTS	U	hl	;							U
FOSA	U	20	;							U
k FPO-DA	U	20	;							U
N-EtFOSAA	U	160	;							Y-78U
N-MeFOSAA	U	160	;							U
PFHA	U	20	;							U
PFHS	U	h5	;							U
PFDA	U	160	;							U
PFDoA	U	20	;							U
PFDS	U	h9	;							U
PFksA	U	20	;							U
PFksS	U	hl	;							U
PFkwA	U	20	;							U
PFkwS	U	h6	;							U
PFNA	U	20	;							U
PFNS	U	hl	;							U
PFOA	U	20	;							U
PFOS	U	h3	;							U
PFPeA	U	20	;							U
PFPeS	U	hl	;							U
PFTeDA	U	160	;							Y-78U
PFTeDA	U	20	;							U
PFUDa	U	20	;							U

LCS (1910004-BS1)

Prepared: 10/01/19 Analyzed: 10/01/19

ASBPROC-800PFAS

2:7FTS	hl h	h3	ng/L	h32.00	107	63.1-175	
6:7FTS	251	hl	;	hl 0.00	119	29.7-1h2	
1:7FTS	25h	hl	;	hl 2.00	111	56.2-1h6	
FOSA	27h	20	;	200.00	106	53.3-121	
k FPO-DA	h15	20	;	200.00	31.1	51.1-173	
N-EtFOSAA	276	160	;	200.00	106	23.7-115.h	Y-7
N-MeFOSAA	h99	160	;	200.00	99.9	2h.7-131	
PFHA	hl1	20	;	200.00	93.0	63.9-111	
PFHS	h16	h5	;	h52.00	19.2	61.7-111	
PFDA	211	160	;	200.00	10h	23.2-167	
PFDoA	221	20	;	200.00	110	56.5-155	



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square, Room 408, Atlanta, Georgia 30305-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, LSASD

Analyte	Recovery	Resolving LiJir	Unrec	Spiked Level	Soft Recovery	%REC	%REC LiJir	RPD	RPD LiJir	Norec
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Batch 1910004 - S PFC

LCS (1910004-BS1)

Pbs4bed: 10)01)19 An4pt zed: 10)01)19

PFDS	hl 5	h9	ng)L	hl 6.00		99.1	h5.1-161			
PFk sA	h61	20	;	200.00		97.0	37.1-116			
PFk sS	h66	hl	;	hl 0.00		96.h	59.3-1h0			
PFk wA	h62	20	;	200.00		91.0	67.6-173			
PFk wS	h20	h6	;	h62.10		9h.h	69.5-113			
PFNA	hl 0	20	;	200.00		95.1	62.1-171.2			
PFNS	hh1	hl	;	hl 2.00		13.9	6h.h-176			
PFOA	hl 9	20	;	200.00		93.h	66.3-177			
PFOS	h50	h3	;	h30.70		92.6	30.2-177			
PFPeA	h33	20	;	200.00		92.7	37-115			
PFPeS	h25	hl	;	h36.00		91.6	69-113			
PFTeDA	2h6	160	;	200.00		109	27.9-139			Y-7
PFTbDA	505	20	;	200.00		176	h7.7-715			
PFUDa	215	20	;	200.00		102	65.1-127			

Matrix Spike (1910004-MS1)

Source: E193805-07

Pbs4bed: 10)01)19 An4pt zed: 10)09)19

ASBPROC-800PFAS

2:7FTS	h53	h3	ng)L	hh3.55	U	106	30-1hh			
6:7FTS	hl 2	hl	;	h27.96	U	117	51-12h			
1:7FTS	h29	hl	;	h26.53	U	101	66-176			
FOSA	hl 7	20	;	h61.01	U	106	61-1hl			
k FPO-DA	hl1	20	;	h61.01	U	11.1	25-179			
N-ErFOSAA	h91	160	;	h61.01	U	101	50-161			Y-7
N-MeFOSAA	h63	160	;	h61.01	U	107	23-169			
PFHA	h31	20	;	h61.01	U	10h	60-121			
PFHS	203	h5	;	h19.29	51.0	109	67-1h5			
PFDA	hl 5	160	;	h61.01	U	103	5h-156			
PFDoA	h52	20	;	h61.01	U	93.9	h0-137			
PFDS	h61	hl	;	h21.h1	U	102	22-151			
PFk sA	h33	20	;	h61.01	U	102	35-177			
PFk sS	h63	hl	;	h27.96	U	103	66-1h7			
PFk wA	h97	20	;	h61.01	U	109	62-1hl			
PFk wS	h51	h6	;	h79.72	U	103	37-172			
PFNA	h39	20	;	h61.01	U	105	37-179			
PFNS	h79	hl	;	h26.53	U	95.1	61-176			
PFOA	207	20	;	h61.01	U	111	32-173			
PFOS	h51	h3	;	hh2.17	U	105	61-1h7			
PFPeA	hl 9	20	;	h61.01	76.9	100	35-177			
PFPeS	h76	h3	;	hh9.h5	U	96.1	37-177			
PFTeDA	79h	160	;	h61.01	U	11.1	10-192			Y-7



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D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, LSASD

Analyte	Reference	Resolving LiJir	Unire	Site Leyep	Software Refpr	%REC	%REC LiJir	RPD	RPD LiJir	Norec
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Batch 1910004 - S PFC

Matrix Spike (1910004-MS1)

Source: E193805-07

Phase 4 bed: 10)01)19 Analyzed: 10)09)19

PFTDA	h53	20	ng/L	h61.01	U	99.0	10-19h			
PFUDA	h37	20	;	h61.01	U	10h	22-162			

Matrix Spike Dup (1910004-MSD1)

Source: E193805-07

Phase 4 bed: 10)01)19 Analyzed: 10)09)19

ASBPROC-800PFAS

2:7FTS	h2h	h3	ng/L	h16.21	U	101	30-1hh	2.19	h2	
6:7FTS	h57	hl	;	h71.29	U	110	51-12h	1.5h	25	
1:7FTS	h29	hl	;	h72.13	U	103	66-176	0.7h7	56	
FOSA	h36	20	;	hhl.21	U	111	61-1hl	1.23	h9	
k FPO-DA	h17	20	;	hhl.21	U	97.7	25-179	1.12	53	
N-ErFOSAA	hlh	160	;	hhl.21	U	11h	50-161	1.99	5h	Y-7
N-MeFOSAA	h92	160	;	hhl.21	U	113	23-169	3.11	65	
PFHA	h35	20	;	hhl.21	U	111	60-121	1.15	h3	
PFHS	21h	h5	;	799.29	51.0	111	67-1h5	1.27	h7	
PFDA	h36	160	;	hhl.21	U	111	5h-156	7.h2	53	
PFDoA	hl1	20	;	hhl.21	U	11h	h0-137	3.57	56	
PFDS	hl2	h9	;	h76.53	U	111	22-151	6.72	66	
PFksA	hl1	20	;	hhl.21	U	11h	35-177	0.911	76	
PFksS	h52	hl	;	h71.29	U	110	66-1h7	h.6h	71	
PFk wA	hl2	20	;	hhl.21	U	112	62-1hl	1.96	27	
PFk wS	h20	h6	;	h01.6h	U	110	37-172	h.h6	h7	
PFNA	h30	20	;	hhl.21	U	109	37-179	7.h3	h1	
PFNS	h27	hl	;	h72.13	U	105	61-176	h.62	h5	
PFOA	hl3	20	;	hhl.21	U	112	32-173	h.31	h7	
PFOS	h25	h3	;	h1h.70	U	110	61-1h7	1.35	h3	
PFPeA	h91	20	;	hhl.21	76.9	101	35-177	0.5h9	73	
PFPeS	h21	hl	;	h11.10	U	109	37-177	6.57	79	
PFTeDA	h63	160	;	hhl.21	U	101	10-192	77.5	111	Y-7
PFTDA	200	20	;	hhl.21	U	111	10-19h	11.1	106	
PFUDA	h31	20	;	hhl.21	U	110	22-162	0.0590	21	



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Commerce Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, LSASD

Analysis	Recovery	Resolving Limit	Uncertainty	Size Exclusion	Soft Recovery	%REC	%REC Limit	RPD	RPD Limit	Notes
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Batch 1910004 - S PFC

MRL Verification (1910004-PS1)

Phase 4 bed: 10/01/19 Analysis date: 10/01/19

ASBPROC-800PFAS

2:7FTS	h6.3	h3	ng/L	h3.200		91.1	23.1-125			MRL-78 ' -78B
6:7FTS	29.1	hl	;	hl .000		179	79.7-152			MRL-7
1:7FTS	27.0	hl	;	hl .200		109	h6.2-156			MRL-7
FOSA	25.0	20	;	20.000		117	h3.3-161			MRL-7
k FPO-DA	2h.0	20	;	20.000		101	h1.h-123			MRL-7
PFHA	hl .9	20	;	20.000		93.h	23.9-1hl			MRL-78 ' -78B
PFHS	21.3	h5	;	h5.200		111	21.7-1hl			MRL-7
PFDoA	23.6	20	;	20.000		119	h6.5-135			MRL-7
PFDS	23.0	h9	;	hl .600		177	15.1-111			MRL-7
PFk sA	50.7	20	;	20.000		176	57.1-1h6			MRL-7
PFk sS	23.h	hl	;	hl .000		175	h9.3-150			MRL-7
PFk wA	23.h	20	;	20.000		111	27.6-123			MRL-7
PFk wS	2h.6	h6	;	h6.210		170	29.5-1hl			MRL-7
PFNA	23.0	20	;	20.000		111	22.1-121			MRL-7
PFNS	22.h	hl	;	hl .200		115	2h.h-126			MRL-7
PFOA	25.2	20	;	20.000		11h	26.3-127			MRL-7
PFOS	22.3	h3	;	h3.070		171	50.2-127			MRL-7
PFPeA	23.0	20	;	20.000		113	57-1h5			MRL-7
PFPeS	25.3	hl	;	h3.600		171	29-1h3			MRL-7
PFTDA	67.9	20	;	20.000		153	17.7-7h5			MRL-7
PFUDa	25.5	20	;	20.000		112	25.1-167			MRL-7

MRL Verification (1910004-PS2)

Phase 4 bed: 10/01/19 Analysis date: 10/01/19

ASBPROC-800PFAS

N-ErFOSAA	157	160	ng/L	160.00		95.0	73.7-705			MRL-78 ' -78Y-78 B
N-MeFOSAA	156	160	;	160.00		93.3	7h.7-191			MRL-78 ' -78B
PFDA	151	160	;	160.00		91.1	73.2-117			MRL-78 ' -78B
PFTeDA	710	160	;	160.00		1hl	77.9-199			MRL-78 Y-7



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Notes and Definitions for QC Samples

- U T, e 4n4p re u 4c nor derevred 4r ob4aoye r, e bes obing piJ ir.
- B T, e idenrini4nion onr, e 4n4p re ic 4vves r4ap@, e bes obred y4pfe ic 4n ecniJ 4re.
- MRL-7 MRL yebini4nion mb Non-Por4ap q 4rebJ 4rtiw
- ' -7 Recf pr gbe4rebr, 4n MDL af r pecc r, 4n MRL.
- Y-7 D4r4 c, of pl ae piJ ired ro cvteening sfbs ocec onpt

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

October 18, 2019

MEMORANDUM

SUBJECT: FINAL An4p riv4pRes obr

Projekti: 19-02538PFAS SediJ eni Svæening - Con4c4fg4 R

FROM: ~~Herbert~~ ~~Herbert~~ mendep

LSk Obg4niv C, eJ icrbt Sevrion C, ieB

THRU: S4ndb4 Aueb8C, ieB

L4aob4robt Sebyivec k b4nv,

TO: N4r, 4n k 4bper

Anr4v, ed 4be r, e Bn4pbeccfpc Bbr, e 4n4pt riv4pgbofsc picred aepw. T, ic bes obr c, 4ppnor ae bes bodfved exvesr in Bppwir, ofr 4ssboy4poBr, e Region 2 p4aob4robt . T, eee 4n4pt cec webe sebbj ed in 4vvobd4nve wir, r, e L4aob4robt Sebyivec k b4nv, 'c L4aob4robt Osebrionc 4nd Qf 4prt Accfb4nve M4nf 4p(LSk LOQAM) Bofnd 4r www.es4.goy/region2/cecd/4cacos. Ant fniqfe sbojevrd4r4 qf 4prt oajevriyec cseviBed in whiring at r, e d4r4 beqfecrob, 4ye 4pro aeen invols ob4red inro r, e d4r4 fnpecc or, ebwice nored in r, e Resobr N4bb4riye. C, eJ icrt d4r4, 4ye aeen yebiBed a4ced on r, e LSk LOQAM cseviBv4rionc 4nd, 4ye aeen qf 4piBed at r, ic p4aob4robt iB r, e 4sspiv4ape qf 4prt vonrtopbvirebi4 webe nor J er. VebiBv4rion ic deBned in C, 4sreb5 oBr, e LSk LOQAM. Fob 4picing oBcseviBv d4r4 qf 4piBebc 4nd exsp4n4rionc8s p4ce beBbro r, e D4r4 Qf 4piBeb DeBnirionc invpf ded in r, ic bes obr. T, e bes obred becfpc 4be 4vvfb4re wir, in r, e piJ irc oBr, e J er, od(c) 4nd 4be besbecenr4riye onpt oBr, e c4J spc 4c beveiyed at r, e p4aob4robt .

An4pt cec Invpf ded in r, ic bes obr:

Mer, od Uced:

Avvbedir4rionc:

Semi Volatile Organics (SVOA)

PFAS

ASk PROC-1 00PFAS (W4reb)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sebyvec and Asspied Svienve Diyicion

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

Sample Disposal Policy

Due to the increased use of PFAS in various applications, it is important to ensure that these substances are properly managed and disposed of. The EPA has established a national policy for the management and disposal of PFAS, which requires that all PFAS-containing materials be properly labeled, stored, and disposed of in accordance with the relevant regulations. This policy applies to all PFAS-containing materials, regardless of their source or use.

The EPA's national policy for the management and disposal of PFAS is based on the principle of "polluter pays." This means that the party responsible for the release of PFAS into the environment is also responsible for the costs of managing and disposing of these substances. This policy is designed to ensure that the costs of PFAS management and disposal are borne by the party responsible for the release, rather than by the general public.

The EPA's national policy for the management and disposal of PFAS is also based on the principle of "prevention." This means that the EPA is committed to preventing the release of PFAS into the environment in the first place. This is done through a variety of measures, including the development of new technologies and processes that reduce the use of PFAS, and the implementation of strict regulations that limit the release of PFAS from various sources.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sebyivec 4nd Ass pried Svienve Diyicion

910 Coppe Sr4rion Ro4d8Ar, enc8Geolgi4 h0605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

SAMPLES INCLUDED IN THIS REPORT

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
19-0253-afvu-apu-0911	E19h30h-01	EqfisJ enr Rince k p4nu	9/11/19 12:hl	9/11/19 16:51
19-0253-Bpreb-apu-0911	E19h30h-07	EqfisJ enr Rince k p4nu	9/11/19 16:10	9/11/19 16:51
19-0253-son4b-apu-0911	E19h30h-0h	EqfisJ enr Rince k p4nu	9/11/19 12:25	9/11/19 16:51



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Seelye and Associates Division

910 Cottage Station Road, Encinitas, CA 92036-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

DATA QUALIFIER DEFINITIONS

U	T, e 4n4pt re w4c nor derevred 4r ob4aoye r, e bes obring pJ ir.
H	T, e idenriBv4rion obr, e 4n4pt re ic 4vvesr4ape, e bes obred y4pf e ic 4n ecriJ 4re.
QC-1	An4pt re vonvenrb4rion pow in vonrinfig v4piab4rion yehiBv4rion cr4nd4bd
QC-h	An4pt re v4piab4rion vbrehi4 nor J er
QC-5	C4piab4rion v, evu cr4nd4bd pecc r, 4n J er, od vonitoppiJ irc.
Y-7	D4r4 c, of pl ae pJ ired ro cvbeening s fls ocec onpt

ACRONYMS AND ABBREVIATIONS

CAS	C, eJ iv4pAacr4vrc Seelye Note: An4pt rec wir, no unown CAS idenriBeb, 4ye aeen 4ccigned vobec aeginning wir, ;E;8r, e EPA ID 4c 4ccigned at r, e EPA Sfacr4nve Regicrt St creJ (www.es4.gov/cb)8obaeginning wir, ;R2-;84 fniqf e idenriBeb4ccigned at r, e EPA Region 2 p4aob4roht.
MDL	Mer, od Derevriou LiJ ir - T, e J iniJ fJ vonvenrb4rion oB4 cfacr4nve (4n 4n4pt re) r, 4r v4n ae J e4cfbed 4nd besobred wir, 4 99% vonBdenve r, 4r r, e 4n4pt re vonvenrb4rion ic gbe4rebr, 4n zebo.
MRL	MiniJ fJ Resobring LiJ ir - An4pt re vonvenrb4rion r, 4r volbcs ondc ro r, e powecr deJ oncrb4red pcyepoB4vvesr4ape qf 4nri4rion. T, e MRL ic c4J spe-cs eviBv 4nd 4vvofnrc Bbsbes4b4rion weig, re 4nd yopfJ ec8dipfionc84nd J oicrfbe vonrenr oBcoipcediJ enr.
TIC	Tenr4riyep IdenriBed CoJ sofnd - An 4n4pt re idenriBed a4ced on 4 J 4rv, wir, r, e incrbfJ enr coBw4be'c J 4cc cs evrb4piab4ht. A v4piab4rion cr4nd4bd, 4c nor aeen 4n4pt zed ro vonBbJ r, e voJ sofnd'c idenriBv4rion obr, e ecriJ 4red vonvenrb4rion besobred.

ACCREDITATIONS:

ISO	Ask ic 4vvbedired at ISO/IEC 130758invpf ding 4n 4J spibv4rion BbBbenciv 4vvbedir4rion r, bofg, ANSI-ASQ N4rion4pAvvbedir4rion k o4bd. ReBbro r, e vebriBv4re 4nd cvose oB4vvbedir4rion AT-1622 4r: , ns://www.es4.gov/4aofres/4aofr-region-2c-cvienve-4nd-evocet creJ -cfs s obr-diyicion-ceed
NR	T, e EPA Region 2 L4aob4roht, 4c nor beqfecred 4vvbedir4rion Bbr, ic recr.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square, Room 408, Atlanta, Georgia 30309-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-buck-blk-0911Lab ID: E193703-01

Station ID:

Matrix: Equipment Rinse Blank

Date Collected: 9/11/19 14:38

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	h3	U	ng/L	h3	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
73619-93-7	6:7FTS	h1	U	ng/L	h1	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
h910l-h2-2	1:7FTS	h1	U	ng/L	h1	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
352-91-6	FOSA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
1h757-1h-6	mFPO-DA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	9/1h/19 16:25	9/7h/19 13:51	ASK PROC-1 00PF AS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
h35-77-2	PFk A	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
h35-3h-5	PFk S	h5	U	ng/L	h5	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
hh5-36-7	PFDA	160	U	ng/L	160	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
h03-55-1	PFDoA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
hh5-33-h	PFDS	h1	U	ng/L	h1	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
h35-15-9	PFms A	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
h35-97-1	PFms S	h1	U	ng/L	h1	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
h03-72-2	PFmx A	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
h55-26-2	PFmx S	h6	U	ng/L	h6	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
h35-95-1	PFNA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
61759-17-1	PFNS	h1	U	ng/L	h1	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
hh5-63-1	PFOA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
136h-7h-1	PFOS	h3	U	ng/L	h3	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sebyvec 4nd Asspied Svienve Diyicion

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-buck-blk-0911Lab ID: E193703-01

Station ID:

Matrix: Equipment Rinse Blank

Date Collected: 9/11/19 14:38

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
7306-91-2	PFPeS	h3	U	ng/L	h3	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
h36-06-3	PFTeDA	160	U8h8QC-18 QC-h8QC-58 Y-7	ng/L	160	9/1h/19 16:25	9/7h/19 13:51	ASK PROC-1 00PF AS
37679-92-1	PFTeDA	20	U8h8QC-h	ng/L	20	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS
7051-92-1	PFUdA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:12	ASK PROC-1 00PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square, Room 408, Atlanta, Georgia 30305-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-filter-blk-0911Lab ID: E193703-02

Station ID:

Matrix: Equipment Rinse Blank

Date Collected: 9/11/19 16:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	hl	U	ng/L	hl	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
73619-93-7	6:7FTS	hl	U	ng/L	hl	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
h910l-h2-2	1:7FTS	h9	U	ng/L	h9	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
352-91-6	FOSA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
1h757-1h-6	mFPO-DA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	9/1h/19 16:25	9/70/19 77:5h	ASK PROC-1 00PF AS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
h35-77-2	PFk A	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
h35-3h-5	PFk S	h6	U	ng/L	h6	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
hh5-36-7	PFDA	160	U	ng/L	160	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
h03-55-1	PFDaA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
hh5-33-h	PFDS	h9	U	ng/L	h9	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
h35-15-9	PFms A	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
h35-97-1	PFms S	hl	U	ng/L	hl	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
h03-72-2	PFmx A	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
h55-26-2	PFmx S	h3	U	ng/L	h3	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
h35-95-1	PFNA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
61759-17-1	PFNS	h9	U	ng/L	h9	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
hh5-63-1	PFOA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
136h-7h-1	PFOS	h3	U	ng/L	h3	9/1h/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sevierville and Associated Division

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-filter-blk-0911Lab ID: E193703-02

Station ID:

Matrix: Equipment Rinse Blank

Date Collected: 9/11/19 16:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	20	U	ng/L	20	9/11/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
7306-91-2	PFPeS	hl	U	ng/L	hl	9/11/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
h36-06-3	PFTeDA	160	U8HQC-18 QC-h8Y-7	ng/L	160	9/11/19 16:25	9/70/19 77:5h	ASK PROC-1 00PF AS
37679-92-1	PFTeDA	20	U8HQC-h	ng/L	20	9/11/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS
7051-92-1	PFUdA	20	U	ng/L	20	9/11/19 16:25	9/19/19 1:h2	ASK PROC-1 00PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square, Room 408, Atlanta, Georgia 30305-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-ponar-blk-0911Lab ID: E193703-03

Station ID:

Matrix: Equipment Rinse Blank

Date Collected: 9/11/19 14:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
353172-37-2	2:7FTS	hl	U	ng/L	hl	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
73619-93-7	6:7FTS	hl	U	ng/L	hl	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
h910l-h2-2	1:7FTS	h9	U	ng/L	h9	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
352-91-6	FOSA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
1h757-1h-6	mFPO-DA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
7991-50-6	N-ErFOSAA	160	U	ng/L	160	9/1h/19 16:25	9/70/19 7h:1h	ASk PROC-1 00PF AS
7h55-h1-9	N-MeFOSAA	160	U	ng/L	160	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
h35-77-2	PFk A	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
h35-3h-5	PFk S	h6	U	ng/L	h6	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
hh5-36-7	PFDA	160	U	ng/L	160	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
h03-55-1	PFD0A	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
hh5-33-h	PFDS	h9	U	ng/L	h9	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
h35-15-9	PFms A	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
h35-97-1	PFms S	hl	U	ng/L	hl	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
h03-72-2	PFmx A	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
h55-26-2	PFmx S	h3	U	ng/L	h3	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
h35-95-1	PFNA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
61759-17-1	PFNS	h9	U	ng/L	h9	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
hh5-63-1	PFOA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS
136h-7h-1	PFOS	h3	U	ng/L	h3	9/1h/19 16:25	9/19/19 1:52	ASk PROC-1 00PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory, Sebyvec 4nd Asspied Svienve Diyicion

910 College Station Road, Athens, Georgia 30605-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-ponar-blk-0911Lab ID: E193703-03

Station ID:

Matrix: Equipment Rinse Blank

Date Collected: 9/11/19 14:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7306-90-h	PFPeA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:52	ASK PROC-1 00PF AS
7306-91-2	PFPeS	hl	U	ng/L	hl	9/1h/19 16:25	9/19/19 1:52	ASK PROC-1 00PF AS
h36-06-3	PFTeDA	160	U8BY-78 QC-18QC-h	ng/L	160	9/1h/19 16:25	9/70/19 7h:1h	ASK PROC-1 00PF AS
37679-92-1	PFTeDA	20	U8BY-78 QC-18QC-h	ng/L	20	9/1h/19 16:25	9/19/19 1:52	ASK PROC-1 00PF AS
7051-92-1	PFUdA	20	U	ng/L	20	9/1h/19 16:25	9/19/19 1:52	ASK PROC-1 00PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square, Room 408, Atlanta, Georgia 30308-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, LSASD

Analysis	Recovery	Resolving	Unrec	Issue	Software	%REC	%REC	RPD	RPD	Norec
Analysis	Recovery	LiJ	Unrec	Leyep	Recovery	%REC	LiJ	RPD	LiJ	Norec

Batch 1909026 - S PFC

Blank (1909026-BLK1)

Plotted: 09/11/19 Analyzed: 09/11/19

ASBPROC-800PFAS

2:7FTS	U	h3	ng/L							U
6:7FTS	U	hl	;							U
1:7FTS	U	hl	;							U
FOSA	U	20	;							U
mFPO-DA	U	20	;							U
N-ErFOSAA	U	160	;							Y-78U
N-MeFOSAA	U	160	;							U
PFk A	U	20	;							U
PFk S	U	h5	;							U
PFDA	U	160	;							U
PFDoA	U	20	;							U
PFDS	U	h9	;							U
PFms A	U	20	;							U
PFms S	U	hl	;							U
PFmx A	U	20	;							U
PFmx S	U	h6	;							U
PFNA	U	20	;							U
PFNS	U	hl	;							U
PFOA	U	20	;							U
PFOS	U	h3	;							U
PFPeA	U	20	;							U
PFPeS	U	hl	;							U
PFTeDA	U	160	;							QC-18
										QC-h8
										Y-78U
PFTDA	U	20	;							QC-h8U
PFUDa	U	20	;							U

LCS (1909026-BS1)

Plotted: 09/11/19 Analyzed: 09/11/19

ASBPROC-800PFAS

2:7FTS	263	h3	ng/L	h32.00	175	63.1-175	
6:7FTS	253	hl	;	hl 0.00	170	29.7-1h2	
1:7FTS	212	hl	;	hl 2.00	101	56.2-1h6	
FOSA	277	20	;	200.00	105	53.3-121	
mFPO-DA	h66	20	;	200.00	91.2	51.1-173	
N-ErFOSAA	25h	160	;	200.00	11h	23.7-115h	Y-7
N-MeFOSAA	276	160	;	200.00	103	2h.7-131	
PFk A	251	20	;	200.00	11h	63.9-111	
PFk S	212	h5	;	h52.00	113	61.7-111	



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square, Room 408, Atlanta, Georgia 30309-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, LSASD

Analyte	Recovery	Recovery LiJir	Unrec	Issue Leyep	Software Recovery	%REC	%REC LiJir	RPD	RPD LiJir	Norec
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Batch 1909026 - S PFC

LCS (1909026-BS1)

Pbs4bed: 09/1h/19 Analyzed: 09/11/19

PFDA	256	160	ng/L	200.00	112	23.2-167				
PFDoA	227	20	;	200.00	110	56.5-155				
PFDS	225	h9	;	hl 6.00	115	h5.1-161				
PFmsA	261	20	;	200.00	115	37.1-116				
PFmsS	221	hl	;	hl 0.00	116	59.3-1h0				
PFmxA	212	20	;	200.00	171	67.6-173				
PFmxS	2h3	h6	;	h62.10	170	69.5-113				QL-7
PFNA	260	20	;	200.00	115	62.1-171.2				
PFNS	207	hl	;	hl 2.00	105	6h.h-176				
PFOA	253	20	;	200.00	112	66.3-177				
PFOS	212	h3	;	h30.70	117	30.2-177				
PFPeA	259	20	;	200.00	115	37-115				
PFPeS	2h2	hl	;	h36.00	115	69-113				
PFTeDA	212	160	;	200.00	171	27.9-139				QC-18 QC-h8 Y-7 QC-h
PFTbDA	215	20	;	200.00	171	h7.7-715				
PFUdA	233	20	;	200.00	119	65.1-127				

Matrix Spike (1909026-MS1)

Source: E193701-01

Pbs4bed: 09/1h/19 Analyzed: 09/19/19

ASBPROC-800PFAS

2:7FTS	256	hl	ng/L	hl 7.21	U	119	30-1hh			
6:7FTS	232	hl	;	hl 1.55	U	177	51-12h			
1:7FTS	2hl	h9	;	h97.62	U	117	66-176			
FOSA	251	20	;	209.00	U	117	61-1hl			
mFPO-DA	919	20	;	209.00	529	90.h	25-179			
N-MeFOSAA	291	160	;	209.00	U	170	23-169			
PFkA	261	20	;	209.00	U	11h	60-121			
PFkS	217	h6	;	h61.96	U	112	67-1h5			
PFDA	29h	160	;	209.00	U	171	5h-156			
PFDoA	266	20	;	209.00	U	112	h0-137			
PFDS	263	h9	;	h92.61	U	111	22-151			
PFmsA	295	20	;	209.00	11.1	113	35-177			
PFmsS	252	hl	;	hl 1.55	U	113	66-1h7			
PFmxA	501	20	;	209.00	U	17h	62-1hl			
PFmxS	252	h3	;	h3h.01	U	177	37-172			
PFNA	213	20	;	209.00	U	119	37-179			
PFNS	209	h9	;	h97.62	U	102	61-176			
PFOA	291	20	;	209.00	U	177	32-173			
PFOS	22h	h3	;	h31.5h	U	113	61-1h7			



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square, Room 408, Atlanta, Georgia 30305-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, LSASD

Analysis	Reference	Resolving LiJ ir	Unire	Issue Leyep	Software Refpr	%REC	%REC LiJ ir	RPD	RPD LiJ ir	Norec
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Batch 1909026 - S PFC

Matrix Spike (1909026-MS1)

Source: E193701-01

Pbs4bed: 09/1h/19 An4pt zed: 09/19/19

PFPeA	501	20	ng/L	209.00	h0.2	113	35-177			
PFPeS	227	hl	;	hl 2.26	U	115	37-177			
PFTbDA	571	20	;	209.00	U	179	10-19h			QC-h
PFUdA	216	20	;	209.00	U	119	22-162			

Matrix Spike Dup (1909026-MSD1)

Source: E193701-01

Pbs4bed: 09/1h/19 An4pt zed: 09/19/19

ASBPROC-800PFAS

2:7FTS	255	h3	ng/L	h32.35	U	171	30-1hh	0.h10	h2	
6:7FTS	501	hl	;	hl 0.36	U	1hh	51-12h	6.12	25	
1:7FTS	2h1	hl	;	hl 2.33	U	117	66-176	1.35	56	
FOSA	251	20	;	200.10	U	117	61-1hl	1.61	h9	
mFPO-DA	199	20	;	200.10	529	13.7	25-179	7.19	53	
N-MeFOSAA	290	160	;	200.10	U	177	23-169	0.716	65	
PFkA	263	20	;	200.10	U	113	60-121	1.72	h3	
PFkS	272	h5	;	h52.31	U	170	67-1h5	7.11	h7	
PFDA	261	160	;	200.10	U	113	5h-156	5.h7	53	
PFDoA	239	20	;	200.10	U	170	h0-137	7.36	56	
PFDS	253	h9	;	hl 6.33	U	111	22-151	7.0h	66	
PFmsA	297	20	;	200.10	11.1	111	35-177	0.377	76	
PFmsS	25h	hl	;	hl 0.36	U	119	66-1h7	0.721	71	
PFmxA	290	20	;	200.10	U	177	62-1hl	7.71	27	
PFmxS	221	h3	;	h65.5h	U	171	37-172	7.13	h7	
PFNA	213	20	;	200.10	U	171	37-179	0.0103	h1	
PFNS	207	hl	;	hl 2.33	U	102	61-176	1.17	h5	
PFOA	219	20	;	200.10	U	177	32-173	1.93	h7	
PFOS	221	h3	;	h30.92	U	119	61-1h7	0.h35	h3	
PFPeA	291	20	;	200.10	h0.2	113	35-177	1.96	73	
PFPeS	226	hl	;	h36.35	U	111	37-177	0.132	79	
PFTbDA	509	20	;	200.10	U	173	10-19h	h.69	106	QC-h
PFUdA	503	20	;	200.10	U	176	22-162	2.12	21	



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Corporate Square, Room 408, Atlanta, Georgia 30308-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, LSASD

Analysis	Reference	Resolving Limit	Unit	Sample Level	Software Reference	%REC	%REC Limit	RPD	RPD Limit	Notes
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Batch 1909026 - S PFC

MRL Verification (1909026-PS1)

Plotted: 09/11/19 Analyzed: 09/11/19

ASBPROC-800PFAS

2:7FTS	22.2	h3	ng/L	h3.200		119	23.1-125			MRL-7
6:7FTS	27.5	hl	;	hl .000		117	79.7-152			MRL-7
1:7FTS	h3.0	hl	;	hl .200		96.h	h6.2-156			MRL-78 Q-78H
FOSA	h3.1	20	;	20.000		92.5	h3.3-161			MRL-78 Q-78H
mFPO-DA	76.1	20	;	20.000		65.h	h1.h-123			MRL-78 Q-78H
PFk A	2h.2	20	;	20.000		10l	23.9-1hl			MRL-7
PFk S	h6.2	h5	;	h5.200		10h	21.7-1hl			MRL-7
PFDoA	h3.6	20	;	20.000		92.0	h6.5-135			MRL-78 Q-78H
PFDS	h9.1	h9	;	hl .600		10h	15.1-111			MRL-7
PFms A	27.5	20	;	20.000		106	57.1-1h6			MRL-7
PFms S	h9.h	hl	;	hl .000		10h	h9.3-150			MRL-7
PFmx A	25.9	20	;	20.000		115	27.6-123			MRL-7
PFmx S	22.9	h6	;	h6.210		17h	29.5-1hl			MRL-7
PFNA	20.5	20	;	20.000		101	22.1-121			MRL-7
PFNS	21.7	hl	;	hl .200		103	2h.h-126			MRL-7
PFOA	27.7	20	;	20.000		106	26.3-127			MRL-7
PFOS	2h.h	h3	;	h3.070		113	50.2-127			MRL-7
PFPeA	20.9	20	;	20.000		107	57-1h5			MRL-7
PFPeS	h6.7	hl	;	h3.600		96.2	29-1h3			MRL-78 Q-78H
PFTeDA	2h.1	20	;	20.000		109	17.7-7h5			MRL-78 QC-h
PFUdA	hl .9	20	;	20.000		93.7	25.1-167			MRL-78 Q-78H

MRL Verification (1909026-PS2)

Plotted: 09/11/19 Analyzed: 09/10/19

ASBPROC-800PFAS

N-ErFOSAA	1hh	160	ng/L	160.00		1 h.0	73.7-705			MRL-78 Q-78Y-78 H
N-MeFOSAA	150	160	;	160.00		9h.6	7h.7-191			MRL-78 Q-78H
PFDA	162	160	;	160.00		10h	73.2-117			MRL-7
PFTeDA	90.9	160	;	160.00		56.1	77.9-199			MRL-78 Q-78 QC-18 QC-h8H Y-7



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 2 Laboratory Services and Assessment Division

910 Capital Square, Room 408, Atlanta, Georgia 30333-7300

D.A.R.T. Id: 19-0253

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Jeffrey Hendel

Notes and Definitions for QC Samples

U	Upper limit of detection for a given compound.
H	Half of the detection limit for a given compound.
MRL-7	MRL for a given compound based on a 7-day exposure.
Q-7	Quality control sample for a given compound.
QC-1	Quality control sample for a given compound.
QC-h	Quality control sample for a given compound.
QL-7	Lower limit of detection for a given compound.
Y-7	Yield of a given compound.

Appendix B – Sediment PFAS Analytical Results



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

October 18, 2019

4LSASD-LSB

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 19-0457, PFAS Sediment Screening - Conasauga R

FROM: Diana Burdette
OCS Analyst

THRU: Jeffrey Hendel, Chief
LSB Organic Chemistry Section

TO: Nathan Barlet

Attached are the final results for the analytical groups listed below. This report shall not be reproduced except in full without approval of the Region 4 laboratory. These analyses were performed in accordance with the Laboratory Services Branch's Laboratory Operations and Quality Assurance Manual (LSB LOQAM) found at www.epa.gov/region4/sesd/asbsop. Any unique project data quality objectives specified in writing by the data requestor have also been incorporated into the data unless otherwise noted in the Report Narrative. Chemistry data have been verified based on the LSB LOQAM specifications and have been qualified by this laboratory if the applicable quality control criteria were not met. Verification is defined in Chapter 5 of the LSB LOQAM. For a listing of specific data qualifiers and explanations, please refer to the Data Qualifier Definitions included in this report. The reported results are accurate within the limits of the method(s) and are representative only of the samples as received by the laboratory.

Analyses Included in this report:

Method Used:

Accreditations:

Semi Volatile Organics (SVOA)

PFAS

ASBPROC-800PFAS (Soil)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Sample Disposal Policy

Due to limited space for long term sample storage, LSB's policy is to dispose of samples on a periodic schedule. Air samples collected in summa canisters will be disposed of 30 days following the issuance of this report. All other sample media including original samples, sample extracts and or digestates will be disposed of, in accordance with applicable regulations, 60 days from the date of this report.

This sample disposal policy does not apply to criminal samples which are held until the laboratory is notified by the criminal investigators that case development and litigation are complete.

These samples may be held in the laboratory's custody for a longer period of time. If samples require storage beyond the 60-day period, please contact the Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

SAMPLES INCLUDED IN THIS REPORT

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
19-0457-CONA1-S-0916	E193805-09	Sediment	9/17/19 11:00	9/18/19 13:32
19-0457-CONA2-S-0916	E193805-11	Sediment	9/17/19 18:20	9/18/19 13:32
19-0457-CONA3-S-0916	E193805-14	Sediment	9/17/19 13:15	9/18/19 13:32
19-0457-CONA4-S-0916	E193805-16	Sediment	9/17/19 14:50	9/18/19 13:32
19-0457-CRI-S-0916	E193805-21	Sediment	9/16/19 13:30	9/18/19 13:32
19-0457-CRI-S-DUP-0916	E193805-22	Sediment	9/16/19 14:00	9/18/19 13:32
19-0457-OOST1-S-0916	E193805-24	Sediment	9/17/19 09:20	9/18/19 13:32
19-0457-OOST2-S-0916	E193805-26	Sediment	9/16/19 17:00	9/18/19 13:32
19-0457-OOST3-S-0916	E193805-29	Sediment	9/16/19 15:15	9/18/19 13:32



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

DATA QUALIFIER DEFINITIONS

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q-2	Result greater than MDL but less than MRL.
QC-3	Analyte calibration criteria not met
QR-2	MRL verification recovery greater than upper control limits.
QS-5	Surrogate recovery is higher than established control limits
Y-2	Data should be limited to screening purposes only

ACRONYMS AND ABBREVIATIONS

CAS	Chemical Abstracts Service Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA ID as assigned by the EPA Substance Registry System (www.epa.gov/srs), or beginning with "R4-", a unique identifier assigned by the EPA Region 4 laboratory.
MDL	Method Detection Limit - The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.
MRL	Minimum Reporting Limit - Analyte concentration that corresponds to the lowest demonstrated level of acceptable quantitation. The MRL is sample-specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments.
TIC	Tentatively Identified Compound - An analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound's identification or the estimated concentration reported.

ACCREDITATIONS:

ISO	ASB is accredited by ISO/IEC 17025, including an amplification for forensic accreditation through ANSI-ASQ National Accreditation Board. Refer to the certificate and scope of accreditation AT-1644 at: http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-sesd
NR	The EPA Region 4 Laboratory has not requested accreditation for this test.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA1-S-0916Lab ID: E193805-09Station ID: CONA1

Matrix: Sediment

Date Collected: 9/17/19 11:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
27619-97-2	6:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
39108-34-4	8:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
754-91-6	FOSA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
13252-13-6	HFPO-DA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
2991-50-6	N-EtFOSAA	44	J, Q-2, Y-2	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
2355-31-9	N-MeFOSAA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
375-22-4	PFBA	140		ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
375-73-5	PFBS	220		ng/kg dry	120	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
335-76-2	PFDA	360		ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
307-55-1	PFDaA	590		ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
335-77-3	PFDS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
375-85-9	PFHpA	120	J, Q-2	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
375-92-8	PFHpS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
307-24-4	PFHxA	290		ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
355-46-4	PFHxS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
375-95-1	PFNA	65	J, Q-2	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
68259-12-1	PFNS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
335-67-1	PFOA	280		ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
1763-23-1	PFOS	630		ng/kg dry	120	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CONA1-S-0916**Lab ID:** E193805-09**Station ID:** CONA1**Matrix:** Sediment**Date Collected:** 9/17/19 11:00

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
2706-90-3	PFPeA	420		ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
2706-91-4	PFPeS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
376-06-7	PFTeDA	300	J, Q-2, QC-3, QR-2, QS-5, Y-2	ng/kg dry	530	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
72629-94-8	PFTTrDA	200	J, QR-2	ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS
2058-94-8	PFUdA	240		ng/kg dry	130	9/25/19 10:35	10/01/19 17:38	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA2-S-0916Lab ID: E193805-11Station ID: CONA2

Matrix: Sediment

Date Collected: 9/17/19 18:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
27619-97-2	6:2FTS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
39108-34-4	8:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
754-91-6	FOSA	200		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
13252-13-6	HFPO-DA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
2991-50-6	N-EtFOSAA	91	J, Y-2, Q-2	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
2355-31-9	N-MeFOSAA	160		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
375-22-4	PFBA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
375-73-5	PFBS	140		ng/kg dry	120	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
335-76-2	PFDA	240		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
307-55-1	PFDaA	520		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
335-77-3	PFDS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
375-85-9	PFHpA	56	J, Q-2	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
375-92-8	PFHpS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
307-24-4	PFHxA	140		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
355-46-4	PFHxS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
375-95-1	PFNA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
68259-12-1	PFNS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
335-67-1	PFOA	190		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
1763-23-1	PFOS	1100		ng/kg dry	120	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CONA2-S-0916**Lab ID:** E193805-11**Station ID:** CONA2**Matrix:** Sediment**Date Collected:** 9/17/19 18:20

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
2706-90-3	PFPeA	220		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
2706-91-4	PFPeS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
376-06-7	PFTeDA	280	J, Q-2, QC-3, QR-2, QS-5, Y-2	ng/kg dry	520	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
72629-94-8	PFTTrDA	190	J, QR-2	ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS
2058-94-8	PFUdA	230		ng/kg dry	130	9/25/19 10:35	10/01/19 17:58	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA3-S-0916Lab ID: E193805-14Station ID: CONA3

Matrix: Sediment

Date Collected: 9/17/19 13:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
27619-97-2	6:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
39108-34-4	8:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
754-91-6	FOSA	180		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
13252-13-6	HFPO-DA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
2991-50-6	N-EtFOSAA	170	J, Y-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
2355-31-9	N-MeFOSAA	240		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
375-22-4	PFBA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
375-73-5	PFBS	280		ng/kg dry	120	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
335-76-2	PFDA	230		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
307-55-1	PFDaA	770		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
335-77-3	PFDS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
375-85-9	PFHpA	63	J, Q-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
375-92-8	PFHpS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
307-24-4	PFHxA	150		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
355-46-4	PFHxS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
375-95-1	PFNA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
68259-12-1	PFNS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
335-67-1	PFOA	200		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
1763-23-1	PFOS	920		ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CONA3-S-0916**Lab ID:** E193805-14**Station ID:** CONA3**Matrix:** Sediment**Date Collected:** 9/17/19 13:15

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
2706-90-3	PFPeA	220		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
2706-91-4	PFPeS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
376-06-7	PFTeDA	540	J, QC-3, QR-2, QS-5, Y-2	ng/kg dry	540	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
72629-94-8	PFTTrDA	290	J, QR-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS
2058-94-8	PFUdA	330		ng/kg dry	140	9/25/19 10:35	10/01/19 18:17	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA4-S-0916Lab ID: E193805-16Station ID: CONA4

Matrix: Sediment

Date Collected: 9/17/19 14:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	330	U	ng/kg dry	330	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
27619-97-2	6:2FTS	330	U	ng/kg dry	330	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
39108-34-4	8:2FTS	340	U	ng/kg dry	340	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
754-91-6	FOSA	2200		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
13252-13-6	HFPO-DA	350	U	ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
2991-50-6	N-EtFOSAA	1500	J, Y-2	ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
2355-31-9	N-MeFOSAA	860		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
375-22-4	PFBA	350	U	ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
375-73-5	PFBS	1100		ng/kg dry	310	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
335-76-2	PFDA	3900		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
307-55-1	PFDaA	4600		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
335-77-3	PFDS	340	U	ng/kg dry	340	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
375-85-9	PFHpA	210	J, Q-2	ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
375-92-8	PFHpS	330	U	ng/kg dry	330	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
307-24-4	PFHxA	350		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
355-46-4	PFHxS	320	U	ng/kg dry	320	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
375-95-1	PFNA	400		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
68259-12-1	PFNS	340	U	ng/kg dry	340	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
335-67-1	PFOA	1100		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
1763-23-1	PFOS	15000		ng/kg dry	320	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CONA4-S-0916**Lab ID:** E193805-16**Station ID:** CONA4**Matrix:** Sediment**Date Collected:** 9/17/19 14:50

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
2706-90-3	PFPeA	560		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
2706-91-4	PFPeS	330	U	ng/kg dry	330	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
376-06-7	PFTeDA	1500	J, QC-3, QR-2, QS-5, Y-2	ng/kg dry	1400	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
72629-94-8	PFTTrDA	990	J, QR-2	ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS
2058-94-8	PFUdA	3500		ng/kg dry	350	9/25/19 10:35	10/01/19 18:37	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

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D.A.R.T. Id: 19-0457

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-S-0916Lab ID: E193805-21Station ID: CRI

Matrix: Sediment

Date Collected: 9/16/19 13:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
27619-97-2	6:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
39108-34-4	8:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
754-91-6	FOSA	74	J, Q-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
13252-13-6	HFPO-DA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
2991-50-6	N-EtFOSAA	43	J, Q-2, Y-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
2355-31-9	N-MeFOSAA	120	J, Q-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
375-22-4	PFBA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
375-73-5	PFBS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
335-76-2	PFDA	91	J, Q-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
307-55-1	PFDaA	170		ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
335-77-3	PFDS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
375-85-9	PFHpA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
375-92-8	PFHpS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
307-24-4	PFHxA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
355-46-4	PFHxS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
375-95-1	PFNA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
68259-12-1	PFNS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
335-67-1	PFOA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
1763-23-1	PFOS	410		ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CRI-S-0916**Lab ID:** E193805-21**Station ID:** CRI**Matrix:** Sediment**Date Collected:** 9/16/19 13:30

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
2706-90-3	PFPeA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
2706-91-4	PFPeS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
376-06-7	PFTeDA	540	U, J, QC-3, Y-2	ng/kg dry	540	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
72629-94-8	PFTrDA	120	J, Q-2, QR-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS
2058-94-8	PFUdA	82	J, Q-2	ng/kg dry	140	9/25/19 10:35	10/01/19 18:57	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

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D.A.R.T. Id: 19-0457

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Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-S-DUP-0916Lab ID: E193805-22Station ID: CRI

Matrix: Sediment

Date Collected: 9/16/19 14:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
27619-97-2	6:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
39108-34-4	8:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
754-91-6	FOSA	160		ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
13252-13-6	HFPO-DA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
2991-50-6	N-EtFOSAA	84	J, Q-2, Y-2	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
2355-31-9	N-MeFOSAA	170		ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
375-22-4	PFBA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
375-73-5	PFBS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
335-76-2	PFDA	200		ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
307-55-1	PFDaA	260		ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
335-77-3	PFDS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
375-85-9	PFHpA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
375-92-8	PFHpS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
307-24-4	PFHxA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
355-46-4	PFHxS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
375-95-1	PFNA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
68259-12-1	PFNS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
335-67-1	PFOA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
1763-23-1	PFOS	890		ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CRI-S-DUP-0916**Lab ID:** E193805-22**Station ID:** CRI**Matrix:** Sediment**Date Collected:** 9/16/19 14:00

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
2706-90-3	PFPeA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
2706-91-4	PFPeS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
376-06-7	PFTeDA	270	J, Q-2, QC-3, QR-2, QS-5, Y-2	ng/kg dry	590	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
72629-94-8	PFTTrDA	160	J, QR-2	ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS
2058-94-8	PFUdA	180		ng/kg dry	150	9/25/19 10:35	10/01/19 19:17	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST1-S-0916Lab ID: E193805-24Station ID: OOST1

Matrix: Sediment

Date Collected: 9/17/19 9:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
27619-97-2	6:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
39108-34-4	8:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
754-91-6	FOSA	200		ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
13252-13-6	HFPO-DA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
2991-50-6	N-EtFOSAA	120	J, Q-2, Y-2	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
2355-31-9	N-MeFOSAA	220		ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
375-22-4	PFBA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
375-73-5	PFBS	130		ng/kg dry	130	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
335-76-2	PFDA	320		ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
307-55-1	PFDaA	560		ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
335-77-3	PFDS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
375-85-9	PFHpA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
375-92-8	PFHpS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
307-24-4	PFHxA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
355-46-4	PFHxS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
375-95-1	PFNA	150	U	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
68259-12-1	PFNS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
335-67-1	PFOA	91	J, Q-2	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
1763-23-1	PFOS	710		ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-OOST1-S-0916**Lab ID:** E193805-24**Station ID:** OOST1**Matrix:** Sediment**Date Collected:** 9/17/19 9:20

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
2706-90-3	PFPeA	59	J, Q-2	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
2706-91-4	PFPeS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
376-06-7	PFTeDA	290	J, Q-2, QC-3, QR-2, QS-5, Y-2	ng/kg dry	600	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
72629-94-8	PFTTrDA	200	J, QR-2	ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS
2058-94-8	PFUdA	350		ng/kg dry	150	9/25/19 10:35	10/01/19 19:37	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST2-S-0916Lab ID: E193805-26Station ID: OOST2

Matrix: Sediment

Date Collected: 9/16/19 17:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
27619-97-2	6:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
39108-34-4	8:2FTS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
754-91-6	FOSA	180		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
13252-13-6	HFPO-DA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
2991-50-6	N-EtFOSAA	56	J, Q-2, Y-2	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
2355-31-9	N-MeFOSAA	220		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
375-22-4	PFBA	100	J, Q-2	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
375-73-5	PFBS	300		ng/kg dry	130	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
335-76-2	PFDA	300		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
307-55-1	PFDaA	710		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
335-77-3	PFDS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
375-85-9	PFHpA	150		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
375-92-8	PFHpS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
307-24-4	PFHxA	270		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
355-46-4	PFHxS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
375-95-1	PFNA	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
68259-12-1	PFNS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
335-67-1	PFOA	440		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
1763-23-1	PFOS	620		ng/kg dry	130	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-OOST2-S-0916**Lab ID:** E193805-26**Station ID:** OOST2**Matrix:** Sediment**Date Collected:** 9/16/19 17:00

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
2706-90-3	PFPeA	350		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
2706-91-4	PFPeS	140	U	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
376-06-7	PFTeDA	400	J, Q-2, QC-3, QR-2, QS-5, Y-2	ng/kg dry	580	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
72629-94-8	PFTTrDA	270	J, QR-2	ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS
2058-94-8	PFUdA	350		ng/kg dry	140	9/25/19 10:35	10/01/19 19:57	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST3-S-0916Lab ID: E193805-29Station ID: OOST3

Matrix: Sediment

Date Collected: 9/16/19 15:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
27619-97-2	6:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
39108-34-4	8:2FTS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
754-91-6	FOSA	110	J, Q-2	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
13252-13-6	HFPO-DA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
2991-50-6	N-EtFOSAA	29	J, Q-2, Y-2	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
2355-31-9	N-MeFOSAA	130		ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
375-22-4	PFBA	110	J, Q-2	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
375-73-5	PFBS	230		ng/kg dry	120	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
335-76-2	PFDA	160		ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
307-55-1	PFDaA	400		ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
335-77-3	PFDS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
375-85-9	PFHpA	120	J, Q-2	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
375-92-8	PFHpS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
307-24-4	PFHxA	230		ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
355-46-4	PFHxS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
375-95-1	PFNA	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
68259-12-1	PFNS	130	U	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
335-67-1	PFOA	360		ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
1763-23-1	PFOS	430		ng/kg dry	120	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-OOST3-S-0916**Lab ID:** E193805-29**Station ID:** OOST3**Matrix:** Sediment**Date Collected:** 9/16/19 15:15

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
2706-90-3	PFPeA	320		ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
2706-91-4	PFPeS	120	U	ng/kg dry	120	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
376-06-7	PFTeDA	260	J, Q-2, QC-3, QR-2, QS-5, Y-2	ng/kg dry	530	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
72629-94-8	PFTTrDA	180	J, QR-2	ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS
2058-94-8	PFUdA	210		ng/kg dry	130	9/25/19 10:35	10/01/19 20:17	ASBPROC-800PF AS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1909053 - S PFC

Blank (1909053-BLK1)

Prepared: 09/25/19 Analyzed: 10/01/19

ASBPROC-800PFAS

4:2FTS	U	94	ng/kg dry							U
6:2FTS	U	95	"							U
8:2FTS	U	96	"							U
FOSA	U	100	"							U
HFPO-DA	U	100	"							U
N-EtFOSAA	U	100	"							U, Y-2
N-MeFOSAA	U	100	"							U
PFBA	U	100	"							U
PFBS	U	88	"							U
PFDA	U	100	"							U
PFDoA	U	100	"							U
PFDS	U	96	"							U
PFHpA	U	100	"							U
PFHpS	U	95	"							U
PFHxA	U	100	"							U
PFHxS	U	91	"							U
PFNA	U	100	"							U
PFNS	U	96	"							U
PFOA	U	100	"							U
PFOS	U	93	"							U
PFPeA	U	100	"							U
PFPeS	U	94	"							U
PFTeDA	U	400	"							U, QC-3, Y-2
PFTTrDA	U	100	"							U
PFUdA	U	100	"							U

LCS (1909053-BS1)

Prepared: 09/25/19 Analyzed: 10/01/19

ASBPROC-800PFAS

4:2FTS	1050	94	ng/kg dry	935.00	112	70-130	
6:2FTS	1060	95	"	950.00	112	70-130	
8:2FTS	933	96	"	960.00	97.2	70-130	
FOSA	1110	100	"	1000.0	111	70-130	
HFPO-DA	877	100	"	1000.0	87.7	70-130	
N-EtFOSAA	1210	100	"	1000.0	121	70-130	Y-2
N-MeFOSAA	1100	100	"	1000.0	110	70-130	
PFBA	1050	100	"	1000.0	105	70-130	
PFBS	926	88	"	885.00	105	70-130	
PFDA	1080	100	"	1000.0	108	70-130	



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Laboratory Services and Applied Science Division
980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control**US-EPA, Region 4, LSASD**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1909053 - S PFC**LCS (1909053-BS1)**

Prepared: 09/25/19 Analyzed: 10/01/19

PFD _o A	1140	100	ng/kg dry	1000.0		114	70-130			
PFDS	1060	96	"	965.00		110	70-130			
PFHpA	1050	100	"	1000.0		105	70-130			
PFHpS	1020	95	"	950.00		107	70-130			
PFHxA	1100	100	"	1000.0		110	70-130			
PFHxS	1020	91	"	912.00		111	70-130			
PFNA	1090	100	"	1000.0		109	70-130			
PFNS	977	96	"	960.00		102	70-130			
PFOA	1060	100	"	1000.0		106	70-130			
PFOS	955	93	"	925.50		103	70-130			
PFPeA	1050	100	"	1000.0		105	70-130			
PFPeS	931	94	"	940.00		99.1	70-130			
PFTeDA	1160	400	"	1000.0		116	70-130			QC-3, Y-2
PFTTrDA	1190	100	"	1000.0		119	70-130			
PFUdA	1120	100	"	1000.0		112	70-130			

Matrix Spike (1909053-MS1)

Source: E193805-09

Prepared: 09/25/19 Analyzed: 10/01/19

ASBPROC-800PFAS

4:2FTS	1390	120	ng/kg dry	1230.3	U	113	70-133			
6:2FTS	1440	120	"	1250.0	U	116	58-143			
8:2FTS	1240	130	"	1263.2	U	98.0	66-126			
FOSA	1410	130	"	1315.8	U	107	61-138			
HFPO-DA	1030	130	"	1315.8	U	78.0	45-129			
N-EtFOSAA	1300	130	"	1315.8	44.3	95.6	50-168			Y-2
N-MeFOSAA	1280	130	"	1315.8	U	97.3	47-169			
PFBA	1390	130	"	1315.8	140	94.7	60-141			
PFBS	1390	120	"	1164.5	223	100	62-135			
PFDA	1580	130	"	1315.8	363	92.6	53-156			
PFD _o A	1740	130	"	1315.8	594	87.4	30-172			
PFDS	1160	130	"	1269.7	U	91.4	44-151			
PFHpA	1410	130	"	1315.8	121	97.6	75-122			
PFHpS	1190	120	"	1250.0	U	95.1	66-132			
PFHxA	1590	130	"	1315.8	286	99.1	64-138			
PFHxS	1230	120	"	1200.0	U	102	70-130			
PFNA	1310	130	"	1315.8	64.6	94.3	72-129			
PFNS	1120	130	"	1263.2	U	88.9	61-126			
PFOA	1590	130	"	1315.8	278	99.9	74-127			
PFOS	1830	120	"	1217.8	627	98.9	68-132			
PFPeA	1670	130	"	1315.8	415	95.4	75-122			



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 Region 4 Laboratory Services and Applied Science Division
 980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control**US-EPA, Region 4, LSASD**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1909053 - S PFC**Matrix Spike (1909053-MS1)****Source: E193805-09**

Prepared: 09/25/19 Analyzed: 10/01/19

PFPeS	1170	120	ng/kg dry	1236.8	U	94.6	72-122			
PFTeDA	1340	530	"	1315.8	305	78.8	70-130			QC-3, Y-2
PFTTrDA	1360	130	"	1315.8	202	88.3	10-193			
PFUDa	1480	130	"	1315.8	240	93.9	44-164			

Matrix Spike Dup (1909053-MSD1)**Source: E193805-09**

Prepared: 09/25/19 Analyzed: 10/01/19

ASBPROC-800PFAS

4:2FTS	1260	120	ng/kg dry	1198.7	U	105	70-133	9.93	34	
6:2FTS	1310	120	"	1217.9	U	108	58-143	9.56	45	
8:2FTS	1210	120	"	1230.8	U	98.6	66-126	2.03	56	
FOSA	1460	130	"	1282.1	U	114	61-138	3.34	39	
HFPO-DA	1030	130	"	1282.1	U	80.0	45-129	0.0570	57	
N-EtFOSAA	1360	130	"	1282.1	44.3	102	50-168	4.14	53	Y-2
N-MeFOSAA	1350	130	"	1282.1	U	106	47-169	5.60	65	
PFBA	1360	130	"	1282.1	140	95.4	60-141	1.71	37	
PFBS	1390	110	"	1134.6	223	103	62-135	0.264	32	
PFDA	1610	130	"	1282.1	363	97.2	53-156	1.68	57	
PFDoA	1740	130	"	1282.1	594	89.3	30-172	0.314	56	
PFDS	1260	120	"	1237.2	U	102	44-151	8.35	66	
PFHpA	1370	130	"	1282.1	121	97.3	75-122	2.63	26	
PFHpS	1220	120	"	1217.9	U	99.8	66-132	2.20	28	
PFHxA	1570	130	"	1282.1	286	99.9	64-138	1.47	42	
PFHxS	1190	120	"	1169.2	U	102	70-130	3.15	20	
PFNA	1310	130	"	1282.1	64.6	96.9	72-129	0.126	31	
PFNS	1140	120	"	1230.8	U	92.6	61-126	1.54	35	
PFOA	1500	130	"	1282.1	278	95.1	74-127	6.20	32	
PFOS	1870	120	"	1186.5	627	105	68-132	1.90	37	
PFPeA	1640	130	"	1282.1	415	95.7	75-122	1.72	27	
PFPeS	1150	120	"	1205.1	U	95.3	72-122	1.82	29	
PFTeDA	1570	510	"	1282.1	305	98.4	70-130	15.5	30	QC-3, Y-2
PFTTrDA	1420	130	"	1282.1	202	95.1	10-193	4.07	106	
PFUDa	1480	130	"	1282.1	240	96.8	44-164	0.403	48	



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Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1909053 - S PFC

MRL Verification (1909053-PS1)

Prepared: 09/25/19 Analyzed: 10/01/19

ASBPROC-800PFAS

4:2FTS	112	94	ng/kg dry	93.500		119	50-150			MRL-3
6:2FTS	116	95	"	95.000		122	50-150			MRL-3
8:2FTS	86.3	96	"	96.000		89.9	50-150			J, MRL-3, Q-2
FOSA	116	100	"	100.00		116	50-150			MRL-3
HFPO-DA	92.4	100	"	100.00		92.4	50-150			J, MRL-3, Q-2
N-EtFOSAA	113	100	"	100.00		113	50-150			MRL-3, Y-2
N-MeFOSAA	119	100	"	100.00		119	50-150			MRL-3
PFBA	111	100	"	100.00		111	50-150			MRL-3
PFBS	101	88	"	88.500		115	50-150			MRL-3
PFDA	113	100	"	100.00		113	50-150			MRL-3
PFDoA	127	100	"	100.00		127	50-150			MRL-3
PFDS	126	96	"	96.500		131	50-150			MRL-3
PFHpA	102	100	"	100.00		102	50-150			MRL-3
PFHpS	102	95	"	95.000		107	50-150			MRL-3
PFHxA	119	100	"	100.00		119	50-150			MRL-3
PFHxS	103	91	"	91.200		113	50-150			MRL-3
PFNA	97.4	100	"	100.00		97.4	50-150			J, MRL-3, Q-2
PFNS	97.1	96	"	96.000		101	50-150			MRL-3
PFOA	102	100	"	100.00		102	50-150			MRL-3
PFOS	91.8	93	"	92.550		99.1	50-150			J, MRL-3, Q-2
PFPeA	112	100	"	100.00		112	50-150			MRL-3
PFPeS	92.8	94	"	94.000		98.8	50-150			J, MRL-3, Q-2
PFTeDA	210	400	"	100.00		210	50-150			J, MRL-3, Q-2, QC-3, QR-2, Y-2
PFTTrDA	156	100	"	100.00		156	50-150			MRL-3, QR-2
PFUdA	107	100	"	100.00		107	50-150			MRL-3



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Diana Burdette

Notes and Definitions for QC Samples

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
MRL-3	MRL verification for Soil matrix
Q-2	Result greater than MDL but less than MRL.
QC-3	Analyte calibration criteria not met
QR-2	MRL verification recovery greater than upper control limits.
Y-2	Data should be limited to screening purposes only

Appendix C – Solids Analytical Results



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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D.A.R.T. Id: 19-0457

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October 22, 2019

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 19-0457, PFAS Sediment Screening - Conasauga R

FROM: Floyd Wellborn
LSB Inorganic Chemistry Section Chief

THRU: Sandra Aker, Chief
Laboratory Services Branch

TO: Nathan Barlet

Attached are the final results for the analytical groups listed below. This report shall not be reproduced except in full without approval of the Region 4 laboratory. These analyses were performed in accordance with the Laboratory Services Branch's Laboratory Operations and Quality Assurance Manual (LSB LOQAM) found at www.epa.gov/region4/sesd/asbsop. Any unique project data quality objectives specified in writing by the data requestor have also been incorporated into the data unless otherwise noted in the Report Narrative. Chemistry data have been verified based on the LSB LOQAM specifications and have been qualified by this laboratory if the applicable quality control criteria were not met. Verification is defined in Chapter 5 of the LSB LOQAM. For a listing of specific data qualifiers and explanations, please refer to the Data Qualifier Definitions included in this report. The reported results are accurate within the limits of the method(s) and are representative only of the samples as received by the laboratory.

Analyses Included in this report:	Method Used:	Accreditations:
Classical/Nutrient Analyses (CNA)		
Classical/Nutrients	ASB 107C (Soil)	ISO
Classical/Nutrients	SM 5310B (Water)	ISO
Solids	USGS I-3765-85 (Water)	ISO
Physical Properties (PHYSP)		
Physical Properties	EPA 200.2 (Soil)	ISO



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Report Narrative for Work Order: E193805 Analysis: CNA

10/21/19 FW: These results are re-reported at the request of the project leader to include estimated results for TOC in soil down to the MDL. No other results were changed. This report replaces E193805 CNA PHYSP FINAL 10 10 19 1452.

Sample Disposal Policy

Due to limited space for long term sample storage, LSB's policy is to dispose of samples on a periodic schedule. Air samples collected in summa canisters will be disposed of 30 days following the issuance of this report. All other sample media including original samples, sample extracts and or digestates will be disposed of, in accordance with applicable regulations, 60 days from the date of this report.

This sample disposal policy does not apply to criminal samples which are held until the laboratory is notified by the criminal investigators that case development and litigation are complete.

These samples may be held in the laboratory's custody for a longer period of time. If samples require storage beyond the 60-day period, please contact the Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

SAMPLES INCLUDED IN THIS REPORT

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
19-0457-CONA1-0916	E193805-07	Surface Water	9/17/19 10:40	9/18/19 13:32
19-0457-CONA1-S-0916	E193805-09	Sediment	9/17/19 11:00	9/18/19 13:32
19-0457-CONA2-S-0916	E193805-11	Sediment	9/17/19 18:20	9/18/19 13:32
19-0457-CONA3-0916	E193805-12	Surface Water	9/17/19 13:00	9/18/19 13:32
19-0457-CONA3-S-0916	E193805-14	Sediment	9/17/19 13:15	9/18/19 13:32
19-0457-CONA4-S-0916	E193805-16	Sediment	9/17/19 14:50	9/18/19 13:32
19-0457-CRI-0916	E193805-17	Surface Water	9/16/19 12:45	9/18/19 13:32
19-0457-CRI-DUP-0916	E193805-18	Surface Water	9/16/19 13:00	9/18/19 13:32
19-0457-CRI-S-0916	E193805-21	Sediment	9/16/19 13:30	9/18/19 13:32
19-0457-CRI-S-DUP-0916	E193805-22	Sediment	9/16/19 14:00	9/18/19 13:32
19-0457-OOST1-S-0916	E193805-24	Sediment	9/17/19 09:20	9/18/19 13:32
19-0457-OOST2-S-0916	E193805-26	Sediment	9/16/19 17:00	9/18/19 13:32
19-0457-OOST3-0916	E193805-27	Surface Water	9/16/19 15:00	9/18/19 13:32
19-0457-OOST3-S-0916	E193805-29	Sediment	9/16/19 15:15	9/18/19 13:32



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

DATA QUALIFIER DEFINITIONS

- J** The identification of the analyte is acceptable; the reported value is an estimate.
- Q-2** Result greater than MDL but less than MRL.

ACRONYMS AND ABBREVIATIONS

- CAS** Chemical Abstracts Service
- Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA ID as assigned by the EPA Substance Registry System (www.epa.gov/srs), or beginning with "R4-", a unique identifier assigned by the EPA Region 4 laboratory.
- MDL** Method Detection Limit - The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.
- MRL** Minimum Reporting Limit - Analyte concentration that corresponds to the lowest demonstrated level of acceptable quantitation. The MRL is sample-specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments.
- TIC** Tentatively Identified Compound - An analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound's identification or the estimated concentration reported.

ACCREDITATIONS:

- ISO** ASB is accredited by ISO/IEC 17025, including an amplification for forensic accreditation through ANSI-ASQ National Accreditation Board.
- Refer to the certificate and scope of accreditation AT-1644 at:
<http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-sesd>
- NR** The EPA Region 4 Laboratory has not requested accreditation for this test.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Classical/Nutrient Analyses**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CONA1-0916**Lab ID:** E193805-07**Station ID:** CONA1**Matrix:** Surface Water**Date Collected:** 9/17/19 10:40

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
E701250	Total Organic Carbon	1.5		mg/L	1.0	10/07/19 9:47	10/07/19 13:05	SM 5310B
E1642818	Total Suspended Solids	9.1		mg/L	5.0	9/20/19 16:15	9/23/19 8:15	USGS I-3765-85



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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980 College Station Road, Athens, Georgia 30605-2700

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Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Classical/Nutrient Analyses**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CONA1-S-0916**Lab ID:** E193805-09**Station ID:** CONA1**Matrix:** Sediment**Date Collected:** 9/17/19 11:00

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
E701250	Total Organic Carbon	3100	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 14:04	ASB 107C



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA1-S-0916Lab ID: E193805-09Station ID: CONA1

Matrix: Sediment

Date Collected: 9/17/19 11:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	76		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Classical/Nutrient Analyses**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CONA2-S-0916**Lab ID:** E193805-11**Station ID:** CONA2**Matrix:** Sediment**Date Collected:** 9/17/19 18:20

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
E701250	Total Organic Carbon	4100	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 14:37	ASB 107C



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA2-S-0916Lab ID: E193805-11Station ID: CONA2

Matrix: Sediment

Date Collected: 9/17/19 18:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	76		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Classical/Nutrient Analyses**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CONA3-0916**Lab ID:** E193805-12**Station ID:** CONA3**Matrix:** Surface Water**Date Collected:** 9/17/19 13:00

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
E701250	Total Organic Carbon	2.7		mg/L	1.0	10/07/19 9:47	10/07/19 14:15	SM 5310B
E1642818	Total Suspended Solids	9.7		mg/L	5.0	9/20/19 16:15	9/23/19 8:15	USGS I-3765-85



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Classical/Nutrient Analyses**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CONA3-S-0916**Lab ID:** E193805-14**Station ID:** CONA3**Matrix:** Sediment**Date Collected:** 9/17/19 13:15

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
E701250	Total Organic Carbon	5400	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 14:46	ASB 107C



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA3-S-0916Lab ID: E193805-14Station ID: CONA3

Matrix: Sediment

Date Collected: 9/17/19 13:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	74		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Classical/Nutrient Analyses**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CONA4-S-0916**Lab ID:** E193805-16**Station ID:** CONA4**Matrix:** Sediment**Date Collected:** 9/17/19 14:50

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
E701250	Total Organic Carbon	30000		mg/kg dry	12000	10/07/19 16:22	10/09/19 14:59	ASB 107C



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CONA4-S-0916Lab ID: E193805-16Station ID: CONA4

Matrix: Sediment

Date Collected: 9/17/19 14:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	28		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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Classical/Nutrient Analyses**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CRI-0916**Lab ID:** E193805-17**Station ID:** CRI**Matrix:** Surface Water**Date Collected:** 9/16/19 12:45

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
E701250	Total Organic Carbon	2.0		mg/L	1.0	10/07/19 9:47	10/07/19 14:40	SM 5310B
E1642818	Total Suspended Solids	29		mg/L	5.0	9/20/19 16:15	9/23/19 8:15	USGS I-3765-85



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Classical/Nutrient Analyses**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CRI-DUP-0916**Lab ID:** E193805-18**Station ID:** CRI**Matrix:** Surface Water**Date Collected:** 9/16/19 13:00

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
E701250	Total Organic Carbon	2.8		mg/L	1.0	10/07/19 9:47	10/07/19 14:59	SM 5310B
E1642818	Total Suspended Solids	8.3		mg/L	5.0	9/20/19 16:15	9/23/19 8:15	USGS I-3765-85



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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Classical/Nutrient Analyses**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CRI-S-0916**Lab ID:** E193805-21**Station ID:** CRI**Matrix:** Sediment**Date Collected:** 9/16/19 13:30

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
E701250	Total Organic Carbon	2200	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 15:11	ASB 107C



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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-S-0916Lab ID: E193805-21Station ID: CRI

Matrix: Sediment

Date Collected: 9/16/19 13:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	71		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2



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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Classical/Nutrient Analyses**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-CRI-S-DUP-0916**Lab ID:** E193805-22**Station ID:** CRI**Matrix:** Sediment**Date Collected:** 9/16/19 14:00

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
E701250	Total Organic Carbon	4900	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 15:20	ASB 107C



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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-CRI-S-DUP-0916Lab ID: E193805-22Station ID: CRI

Matrix: Sediment

Date Collected: 9/16/19 14:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	68		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2



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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Classical/Nutrient Analyses**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-OOST1-S-0916**Lab ID:** E193805-24**Station ID:** OOST1**Matrix:** Sediment**Date Collected:** 9/17/19 9:20

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
E701250	Total Organic Carbon	7100	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 15:29	ASB 107C



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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST1-S-0916Lab ID: E193805-24Station ID: OOST1

Matrix: Sediment

Date Collected: 9/17/19 9:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	65		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2



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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Classical/Nutrient Analyses**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-OOST2-S-0916**Lab ID:** E193805-26**Station ID:** OOST2**Matrix:** Sediment**Date Collected:** 9/16/19 17:00

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
E701250	Total Organic Carbon	6700	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 15:40	ASB 107C



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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST2-S-0916Lab ID: E193805-26Station ID: OOST2

Matrix: Sediment

Date Collected: 9/16/19 17:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	69		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2



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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Classical/Nutrient Analyses**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-OOST3-0916**Lab ID:** E193805-27**Station ID:** OOST3**Matrix:** Surface Water**Date Collected:** 9/16/19 15:00

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
E701250	Total Organic Carbon	1.9		mg/L	1.0	10/07/19 9:47	10/07/19 15:18	SM 5310B
E1642818	Total Suspended Solids	14		mg/L	5.0	9/20/19 16:15	9/23/19 8:15	USGS I-3765-85



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Region 4 Laboratory Services and Applied Science Division

980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Classical/Nutrient Analyses**Project: 19-0457, PFAS Sediment Screening - Conasauga R****Sample ID:** 19-0457-OOST3-S-0916**Lab ID:** E193805-29**Station ID:** OOST3**Matrix:** Sediment**Date Collected:** 9/16/19 15:15

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
E701250	Total Organic Carbon	4600	J, Q-2	mg/kg dry	12000	10/07/19 16:22	10/09/19 15:51	ASB 107C



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980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Physical Properties

Project: 19-0457, PFAS Sediment Screening - Conasauga R

Sample ID: 19-0457-OOST3-S-0916Lab ID: E193805-29Station ID: OOST3

Matrix: Sediment

Date Collected: 9/16/19 15:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	74		%	0.0	10/04/19 14:47	10/07/19 8:40	EPA 200.2



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Region 4 Laboratory Services and Applied Science Division

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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Classical/Nutrient Analyses (CNA) - Quality Control

US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1910005 - C 2540 Solids

Blank (1910005-BLK1)

Prepared: 09/20/19 Analyzed: 09/23/19

USGS I-3765-85

Total Suspended Solids

U

5.0

mg/L

U

LCS (1910005-BS1)

Prepared: 09/20/19 Analyzed: 09/23/19

USGS I-3765-85

Total Suspended Solids

90.000

5.0

mg/L

100.00

90.0

77.1-110

LCS Dup (1910005-BSD1)

Prepared: 09/20/19 Analyzed: 09/23/19

USGS I-3765-85

Total Suspended Solids

87.400

5.0

mg/L

100.00

87.4

77.1-110

2.93

10

Duplicate (1910005-DUP1)

Source: E193805-27

Prepared: 09/20/19 Analyzed: 09/23/19

USGS I-3765-85

Total Suspended Solids

15.400

5.0

mg/L

14.400

6.71

10

MRL Verification (1910005-PS1)

Prepared: 09/20/19 Analyzed: 09/23/19

USGS I-3765-85

Total Suspended Solids

4.5000

5.0

mg/L

5.0000

90.0

57.1-130

MRL-2,
U

Batch 1910021 - C 415 TOC Wtr

Blank (1910021-BLK1)

Prepared & Analyzed: 10/07/19

SM 5310B

Total Organic Carbon

U

1.0

mg/L

U

LCS (1910021-BS1)

Prepared & Analyzed: 10/07/19

SM 5310B

Total Organic Carbon

47.410

1.0

mg/L

50.000

94.8

90-110

LCS (1910021-BS2)

Prepared & Analyzed: 10/07/19

SM 5310B

Total Organic Carbon

5.0390

1.0

mg/L

5.0000

101

90-110

LCS Dup (1910021-BSD1)

Prepared & Analyzed: 10/07/19

SM 5310B

Total Organic Carbon

47.270

1.0

mg/L

50.000

94.5

90-110

0.296

10



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Classical/Nutrient Analyses (CNA) - Quality Control**US-EPA, Region 4, LSASD**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1910021 - C 415 TOC Wtr**Matrix Spike (1910021-MS1)****Source: E193805-07**

Prepared & Analyzed: 10/07/19

SM 5310B

Total Organic Carbon	48.560	1.0	mg/L	50.000	1.4830	94.2	90-110			
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Matrix Spike Dup (1910021-MSD1)**Source: E193805-07**

Prepared & Analyzed: 10/07/19

SM 5310B

Total Organic Carbon	47.900	1.0	mg/L	50.000	1.4830	92.8	90-110	1.37	10	
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MRL Verification (1910021-PS1)

Prepared & Analyzed: 10/07/19

SM 5310B

Total Organic Carbon	1.0800	1.0	mg/L	1.0000		108	70-130			MRL-2
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Batch 1910023 - C ASB107C TOC**Blank (1910023-BLK1)**

Prepared: 10/07/19 Analyzed: 10/09/19

ASB 107C

Total Organic Carbon	U	12000	mg/kg dry							U
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LCS (1910023-BS1)

Prepared: 10/07/19 Analyzed: 10/09/19

ASB 107C

Total Organic Carbon	40460	12000	mg/kg dry	40328		100	90-110			
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Matrix Spike (1910023-MS1)**Source: E193805-09**

Prepared: 10/07/19 Analyzed: 10/09/19

ASB 107C

Total Organic Carbon	42968	12000	mg/kg dry	39996	3136.9	99.6	90-110			
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Matrix Spike Dup (1910023-MSD1)**Source: E193805-09**

Prepared: 10/07/19 Analyzed: 10/09/19

ASB 107C

Total Organic Carbon	44938	12000	mg/kg dry	39776	3136.9	105	90-110	5.38	20	
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MRL Verification (1910023-PS1)

Prepared: 10/07/19 Analyzed: 10/09/19

ASB 107C

Total Organic Carbon	11700	12000	mg/kg dry	12000		97.5	85-115			MRL-3, J
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980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Physical Properties (PHYSP) - Quality Control

US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1910019 - M % Solids

Duplicate (1910019-DUP1)

Source: E193805-29

Prepared: 10/04/19 Analyzed: 10/07/19

EPA 200.2

% Solids	72.423	0.0	%		73.703			1.75	10	
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D.A.R.T. Id: 19-0457

Project: 19-0457, PFAS Sediment Screening - Conasauga R - Reported by Floyd Wellborn

Notes and Definitions for QC Samples

- U The analyte was not detected at or above the reporting limit.
- J The identification of the analyte is acceptable; the reported value is an estimate.
- MRL-2 MRL verification for Non-Potable Water matrix
- MRL-3 MRL verification for Soil matrix

Appendix D – Generic RSL Calculations

Default Equation Inputs for Soil to Groundwater

Variable	Value
THQ (target hazard quotient) unitless	0.1
TR (target risk) unitless	1E-06
LT (lifetime) years	70
K (volatilization factor of Andelman) L/m ³	0.5
L _c (apparent thickness of stratum corneum) cm	0.001
ED _{res} (exposure duration - resident) years	26
ED _{res,c} (exposure duration - child) years	6
ED _{res,a} (exposure duration - adult) years	20
ED _{n,j} (mutagenic exposure duration first phase) years	2
ED _{2,6} (mutagenic exposure duration second phase) years	4
ED ₆₋₁₆ (mutagenic exposure duration third phase) years	10
ED ₁₆₋₇₆ (mutagenic exposure duration fourth phase) years	10
EF _{res} (exposure frequency) days/year	350
EF _{res,c} (exposure frequency - child) days/year	350
EF _{res,a} (exposure frequency - adult) days/year	350
EF _{n,j} (mutagenic exposure frequency first phase) days/year	350
EF _{2,6} (mutagenic exposure frequency second phase) days/year	350
EF ₆₋₁₆ (mutagenic exposure frequency third phase) days/year	350
EF ₁₆₋₇₆ (mutagenic exposure frequency fourth phase) days/year	350
ET _{equivalent, res-a} (age-adjusted exposure time) hours/event	0.67077
ET _{equivalent, res-n,j} (mutagenic age-adjusted exposure time) hours/event	0.67077
ET _{res} (exposure time) hours/day	24
ET _{res,c} (dermal exposure time - child) hours/event	0.54
ET _{res,a} (dermal exposure time - adult) hours/event	0.71
ET _{res,c} (inhalation exposure time - child) hours/day	24
ET _{res,a} (inhalation exposure time - adult) hours/day	24
ET _{n,j} (mutagenic inhalation exposure time first phase) hours/day	24
ET _{2,6} (mutagenic inhalation exposure time second phase) hours/day	24
ET ₆₋₁₆ (mutagenic inhalation exposure time third phase) hours/day	24
ET ₁₆₋₇₆ (mutagenic inhalation exposure time fourth phase) hours/day	24
ET _{n,j} (mutagenic dermal exposure time first phase) hours/event	0.54
ET _{2,6} (mutagenic dermal exposure time second phase) hours/event	0.54
ET ₆₋₁₆ (mutagenic dermal exposure time third phase) hours/event	0.71

Default Equation Inputs for Soil to Groundwater

Variable	Value
ET _{16,76} (mutagenic dermal exposure time fourth phase) hours/event	0.71
BW _{rec-a} (body weight - adult) kg	80
BW _{rec-r} (body weight - child) kg	15
BW _{n,3} (mutagenic body weight) kg	15
BW _{3,6} (mutagenic body weight) kg	15
BW _{6,16} (mutagenic body weight) kg	80
BW _{16,76} (mutagenic body weight) kg	80
IFW _{rec-a,41} (adjusted intake factor) L/kg	327.95
IFW _{rec-a,41} (adjusted intake factor) L/kg	327.95
IFWM _{rec-a,41} (mutagenic adjusted intake factor) L/kg	1019.9
IFWM _{rec-a,41} (mutagenic adjusted intake factor) L/kg	1019.9
IRW _{rec-r} (water intake rate - child) L/day	0.78
IRW _{rec-a} (water intake rate - adult) L/day	2.5
IRW _{n,3} (mutagenic water intake rate) L/day	0.78
IRW _{3,6} (mutagenic water intake rate) L/day	0.78
IRW _{6,16} (mutagenic water intake rate) L/day	2.5
IRW _{16,76} (mutagenic water intake rate) L/day	2.5
EV _{rec-a} (events - adult) per day	1
EV _{rec-r} (events - child) per day	1
EV _{n,3} (mutagenic events) per day	1
EV _{3,6} (mutagenic events) per day	1
EV _{6,16} (mutagenic events) per day	1
EV _{16,76} (mutagenic events) per day	1
DFW _{rec-a,41} (age-adjusted dermal factor) cm ² -event/kg	2610650
DFWM _{rec-a,41} (mutagenic age-adjusted dermal factor) cm ² -event/kg	8191633
SA _{rec-r} (skin surface area - child) cm ²	6365
SA _{rec-a} (skin surface area - adult) cm ²	19652
SA _{n,3} (mutagenic skin surface area) cm ²	6365
SA _{3,6} (mutagenic skin surface area) cm ²	6365
SA _{6,16} (mutagenic skin surface area) cm ²	19652
SA _{16,76} (mutagenic skin surface area) cm ²	19652
DAF (dilution attenuation factor) unitless	1
DAF (dilution attenuation factor) unitless	1

Default Equation Inputs for Soil to Groundwater

Variable	Value
Theta _w (water-filled soil porosity) L_{water}/L_{cnl}	0.3
Theta _a (air-filled soil porosity) L_{air}/L_{cnl}	0.134
n (soil porosity) L_{pore}/L_{cnl}	0.434
p _n (dry soil bulk density) kg/L	1.5
I (infiltration rate) m/yr	0.18
ED _{res} (exposure duration) yr	70
t _{res} (time - resident) yr	26
foc (fraction organic carbon in soil) g/g	0.002
p _e (soil particle density) kg/L	2.65
T _w (groundwater temperature) Celsius	25

Default

Risk-Based Regional Screening Levels (RSL) for Soil to Groundwater

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = CalEPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Sub-chronic toxicity values will be used where available. RfC and RfD references followed by 's' indicates subchronic value; RfC and RfD references followed by 'c' indicates chronic value.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF (mg/kg-day) ⁻¹ Ref	SF ^o Ref	IUR (ug/m ³) ⁻¹ Ref	IUR Ref	RfD (mg/kg-day) Ref	RfC (mg/m ³) Ref	RfC GIABS Ref	ABS (mg/L)	S (mg/L)	K _d (cm ³ /g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-	-	-	-	2.00E-05 /Chronic	-	1	0.1	680	7.43E-01
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	D	-	-	2.00E-05 /Chronic	-	1	0.1	9500	2.30E-01

K _{oc} (cm ³ /g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m ³ /mole)	Henry's Law Constant (unitless)	H ⁺ and HLC Ref	Normal Boiling Point BP (K)	Critical Temperature TC (K)	Noncarcinogenic SL		Noncarcinogenic SL		Carcinogenic SL	Water Concentration (Adult) (mg/L)
							Adult THI=0.1 (ug/L)	TC Ref	Child THI=0.1 (ug/L)	TR=1E-06 (ug/L)		
3.72E+02	1	-	-	-	532.15	-	6.67E-02	PHYSPROP	4.01E-02	-	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	ATSDR Draft Profile	465.55	-	6.67E-02	PHYSPROP	4.01E-02	1.11E+00	-	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	Noncarcinogenic Adult SL		Noncarcinogenic Child SL		Carcinogenic SL	Risk-Based SL
				THI=0.1 (mg/kg)	MCL-based SL (mg/kg)	THI=0.1 (mg/kg)	THI=0.1 (mg/kg)		
4.01E-05	-	-	-	6.29E-05	-	3.78E-05	3.78E-05	-	3.78E-05
4.01E-05	1.11E-03	-	-	2.87E-05	-	1.72E-05	1.72E-05	4.78E-04	1.72E-05

Inhalation Unit Risk Toxicity Metadata

5

Chemical		CASNUM	Chemical Type	Inhalation Unit Risk (µg/m ³) ⁻¹	Toxicity Source	EPA Cancer Classification	Inhalation Unit Risk Tumor Type
Perfluorooctane sulfonic acid (PFOS)		1763-23-1	Organics				
Perfluorooctanoic acid (PFOA)		335-67-1	Organics				

Inhalation Unit Risk Target Organ	Inhalation Unit Risk Species	Inhalation Unit Risk Method	Inhalation Unit Risk Route	Inhalation Unit Risk Treatment Duration	Inhalation Unit Risk Study Reference	Inhalation Unit Risk Notes

Oral Slope Factor Toxicity Metadata

6

Chemical	CASNUM	Chemical Type	Oral Slope Factor (mg/kg-day) ⁻¹	Toxicity Source	EPA Cancer Classification	Oral Slope Factor Tumor Type	Oral Slope Factor Target Organ	Oral Slope Factor Species	Oral Slope Factor Method	Oral Slope Factor Route	Oral Slope Factor Treatment Duration	Oral Slope Factor Study Reference	Oral Slope Factor Notes
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Organics											
Perfluorooctanoic acid (PFOA)	335-67-1	Organics	7.00E-02	DWSHA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Oral Sub-Chronic Toxicity Metadata

Chemical		CASNUM	Chemical Type	Subchronic Oral Reference Dose (mg/kg-day)	Toxicity Source	Oral Subchronic Reference Dose Basis	Oral Subchronic Reference Dose Confidence Level	Oral Subchronic Reference Dose Critical Effect
Perfluorooctane sulfonic acid (PFOS)		1763-23-1	Organics	-	-			
Perfluorooctanoic acid (PFOA)		335-67-1	Organics	-	-			

Oral Subchronic Reference Dose Target Organ	Oral Subchronic Reference Dose Modifying Factor	Oral Subchronic Reference Dose Uncertainty Factor	Oral Subchronic Reference Dose Species	Oral Subchronic Reference Dose Route	Oral Subchronic Reference Dose Study Duration	Oral Subchronic Reference Dose Study Reference	Oral Subchronic Reference Dose Notes

Inhalation Sub-Chronic Toxicity Metadata

8

Chemical		CASNUM	Chemical Type	Subchronic Inhalation Reference Concentration (mg/m ³)	Toxicity Source	Inhalation Subchronic Reference Concentration Basis	Inhalation Subchronic Reference Concentration Confidence Level	Inhalation Subchronic Reference Concentration Critical Effect	Inhalation Subchronic Reference Concentration Target Organ
Perfluorooctane sulfonic acid (PFOS)		1763-23-1	Organics	-	-				
Perfluorooctanoic acid (PFOA)		335-67-1	Organics	-	-				

Inhalation Subchronic Reference Concentration Modifying Factor	Inhalation Subchronic Reference Concentration Uncertainty Factor	Inhalation Subchronic Reference Concentration Species	Inhalation Subchronic Reference Concentration Route	Inhalation Subchronic Reference Concentration Study Duration	Inhalation Subchronic Reference Concentration Study Reference	Inhalation Subchronic Reference Concentration Notes

Appendix E – Site Specific RSL Calculations

Site-specific

Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW _{n,j} (mutagenic body weight) kg	15	15
BW _{3,6} (mutagenic body weight) kg	15	15
BW _{6,16} (mutagenic body weight) kg	80	80
BW _{16,26} (mutagenic body weight) kg	80	80
BW _{rec,j} (body weight - adult) kg	80	80
BW _{rec,j} (body weight - child) kg	15	15
DFW _{rec,adj} (age-adjusted dermal factor) cm ² -event/kg	2610650	2610650
DFWM _{rec,adj} (mutagenic age-adjusted dermal factor) cm ² -event/kg	8191633	8191633
ED _{rec} (exposure duration - resident) years	26	26
ED _{n,j} (mutagenic exposure duration first phase) years	2	2
ED _{3,6} (mutagenic exposure duration second phase) years	4	4
ED _{6,16} (mutagenic exposure duration third phase) years	10	10
ED _{16,26} (mutagenic exposure duration fourth phase) years	10	10
ED _{rec,3} (exposure duration - adult) years	20	20
ED _{rec,j} (exposure duration - child) years	6	6
EF _{rec,j} (exposure frequency) days/year	350	350
EF _{rec} (mutagenic exposure frequency first phase) days/year	350	350
EF _{n,j} (mutagenic exposure frequency second phase) days/year	350	350
EF _{3,6} (mutagenic exposure frequency third phase) days/year	350	350
EF _{6,16} (mutagenic exposure frequency fourth phase) days/year	350	350
EF _{16,26} (exposure frequency - adult) days/year	350	350
EF _{rec,3} (exposure frequency - child) days/year	350	350
ET _{rec,j} (exposure time) hours/day	24	24
ET _{adj,rec,adj} (age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{adj,rec,rec,adj} (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{n,j} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET _{3,6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET _{6,16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET _{16,26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable		Default Value	Form-input Value
ET _{rec-s}	(dermal exposure time - adult) hours/event	0.71	0.71
ET _{rec-r}	(dermal exposure time - child) hours/event	0.54	0.54
ET _{0.2}	(mutagenic inhalation exposure time first phase) hours/day	24	24
ET _{2.6}	(mutagenic inhalation exposure time second phase) hours/day	24	24
ET _{6.16}	(mutagenic inhalation exposure time third phase) hours/day	24	24
ET _{16.26}	(mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET _{rec-s}	(inhalation exposure time - adult) hours/day	24	24
ET _{rec-r}	(inhalation exposure time - child) hours/day	24	24
EV _{0.2}	(mutagenic events) per day	1	1
EV _{2.6}	(mutagenic events) per day	1	1
EV _{6.16}	(mutagenic events) per day	1	1
EV _{16.26}	(mutagenic events) per day	1	1
EV _{rec-s}	(events - adult) per day	1	1
EV _{rec-r}	(events - child) per day	1	1
THQ (target hazard quotient)	unitless	0.1	0.1
IFW _{rec-s,eff}	(adjusted intake factor) L/kg	327.95	327.95
IFWM _{rec-s,eff}	(mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW _{0.2}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{2.6}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{6.16}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{16.26}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{rec-s}	(water intake rate - adult) L/day	2.5	2.5
IRW _{rec-r}	(water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman)	L/m ³	0.5	0.5
LT (lifetime)	years	70	70
SA _{0.2}	(mutagenic skin surface area) cm ²	6365	6365
SA _{2.6}	(mutagenic skin surface area) cm ²	6365	6365
SA _{6.16}	(mutagenic skin surface area) cm ²	19652	19652
SA _{16.26}	(mutagenic skin surface area) cm ²	19652	19652
SA _{rec-s}	(skin surface area - adult) cm ²	19652	19652
SA _{rec-r}	(skin surface area - child) cm ²	6365	6365

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
I_{sc} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Site-specific

4

Regional Screening Levels (RSL) for Soil to Groundwater

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF _o (mg/kg-day) ⁻¹	SF _o Ref (ug/m ³) ⁻¹	IUR	IUR Ref (mg/kg-day)	RfD	RfD Ref (mg/m ³)	RfC	RfC Ref	GIABS	ABS (mg/L)	S	K _d (cm ³ /g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-	-	-	2.00E-05	U	-	-	-	1	0.1	680	1.15E+00
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-	2.00E-05	U	-	-	-	1	0.1	9500	3.57E-01

K _{oc} (cm ³ /g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m ³ /mole)	Henry's Law Constant (unitless)	H [*] and HLC Ref	Normal Boiling Point BP (K)	Critical Temperature TC (K)	Noncarcinogenic			Carcinogenic			Water Concentration (Adult) (mg/L)
							SL Adult THI=0.1 (ug/L)	SL Child THI=0.1 (ug/L)	SL Ref	TR=1E-06 (ug/L)	RfC	RfC Ref	
3.72E+02	1	-	-	-	532.15	-	6.67E-02	4.01E-02	-	-	-	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	-	6.67E-02	4.01E-02	-	1.11E+00	-	-	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	Noncarcinogenic			MCL-based SL (mg/kg)	Carcinogenic			Risk-Based SL (mg/kg)
				Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	SL Ref		SL Adult THI=0.1 (mg/kg)	SL Child THI=0.1 (mg/kg)	SL Ref	
4.01E-05	-	-	-	9.03E-05	5.43E-05	-	-	5.43E-05	-	-	5.43E-05
4.01E-05	1.11E-03	-	-	3.71E-05	2.23E-05	-	-	2.23E-05	6.19E-04	-	2.23E-05

Site-specific

Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW _{n,2} (mutagenic body weight) kg	15	15
BW _{3,6} (mutagenic body weight) kg	15	15
BW _{6,16} (mutagenic body weight) kg	80	80
BW _{16,26} (mutagenic body weight) kg	80	80
BW _{rec,3} (body weight - adult) kg	80	80
BW _{rec,4} (body weight - child) kg	15	15
DFW _{rec,3,4,1} (age-adjusted dermal factor) cm ² -event/kg	2610650	2610650
DFWM _{rec,3,4,1} (mutagenic age-adjusted dermal factor) cm ² -event/kg	8191633	8191633
ED _{rec} (exposure duration - resident) years	26	26
ED _{n,2} (mutagenic exposure duration first phase) years	2	2
ED _{3,6} (mutagenic exposure duration second phase) years	4	4
ED _{6,16} (mutagenic exposure duration third phase) years	10	10
ED _{16,26} (mutagenic exposure duration fourth phase) years	10	10
ED _{rec,3} (exposure duration - adult) years	20	20
ED _{rec,4} (exposure duration - child) years	6	6
EF _{rec} (exposure frequency) days/year	350	350
EF _{n,2} (mutagenic exposure frequency first phase) days/year	350	350
EF _{3,6} (mutagenic exposure frequency second phase) days/year	350	350
EF _{6,16} (mutagenic exposure frequency third phase) days/year	350	350
EF _{16,26} (mutagenic exposure frequency fourth phase) days/year	350	350
EF _{rec,3} (exposure frequency - adult) days/year	350	350
EF _{rec,4} (exposure frequency - child) days/year	350	350
ET _{rec} (exposure time) hours/day	24	24
ET _{exponent,rec,3,4,1} (age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{exponent,rec,rec,3,4,1} (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{n,2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET _{3,6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET _{6,16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET _{16,26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable		Default Value	Form-input Value
ET _{rec-s}	(dermal exposure time - adult) hours/event	0.71	0.71
ET _{rec-r}	(dermal exposure time - child) hours/event	0.54	0.54
ET _{n,1}	(mutagenic inhalation exposure time first phase) hours/day	24	24
ET _{3,6}	(mutagenic inhalation exposure time second phase) hours/day	24	24
ET _{6,16}	(mutagenic inhalation exposure time third phase) hours/day	24	24
ET _{16,36}	(mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET _{rec-s}	(inhalation exposure time - adult) hours/day	24	24
ET _{rec-r}	(inhalation exposure time - child) hours/day	24	24
EV _{n,1}	(mutagenic events) per day	1	1
EV _{3,6}	(mutagenic events) per day	1	1
EV _{6,16}	(mutagenic events) per day	1	1
EV _{16,36}	(mutagenic events) per day	1	1
EV _{rec-s}	(events - adult) per day	1	1
EV _{rec-r}	(events - child) per day	1	1
THQ (target hazard quotient)	unitless	0.1	0.1
IFW _{rec-s,adj}	(adjusted intake factor) L/kg	327.95	327.95
IFWM _{rec-s,adj}	(mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW _{n,1}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{3,6}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{6,16}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{16,36}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{rec-s}	(water intake rate - adult) L/day	2.5	2.5
IRW _{rec-r}	(water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman)	L/m ³	0.5	0.5
LT (lifetime)	years	70	70
SA _{n,1}	(mutagenic skin surface area) cm ²	6365	6365
SA _{3,6}	(mutagenic skin surface area) cm ²	6365	6365
SA _{6,16}	(mutagenic skin surface area) cm ²	19652	19652
SA _{16,36}	(mutagenic skin surface area) cm ²	19652	19652
SA _{rec-s}	(skin surface area - adult) cm ²	19652	19652
SA _{rec-r}	(skin surface area - child) cm ²	6365	6365

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
I_{e} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Site-specific

Regional Screening Levels (RSL) for Soil to Groundwater

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF _o (mg/kg-day) ⁻¹	SF _o Ref (ug/m ³) ⁻¹	IUR	IUR Ref (mg/kg-day)	RfD	RfD Ref (mg/m ³)	RfC	RfC Ref	GIABS	ABS (mg/L)	S	K _d (cm ³ /g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-	-	-	2.00E-05	U	-	-	-	1	0.1	680	1.53E+00
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-	2.00E-05	U	-	-	-	1	0.1	9500	4.72E-01

K _{oc} (cm ³ /g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m ³ /mole)	Henry's Law Constant (unitless)	H [*] and HLC Ref	Normal Boiling Point (K)	Critical Temperature (K)	Noncarcinogenic			Noncarcinogenic			Carcinogenic SL TR=1E-06 (ug/L)	Water Concentration (Adult) (mg/L)
							SL Adult THI=0.1 (ug/L)	SL Child THI=0.1 (ug/L)	TC Ref	SL Adult THI=0.1 (ug/L)	SL Child THI=0.1 (ug/L)	RfD Ref (mg/kg-day)		
3.72E+02	1	-	-	532.15	U	-	6.67E-02	4.01E-02	-	6.67E-02	4.01E-02	-	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	U	6.67E-02	4.01E-02	-	6.67E-02	4.01E-02	-	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	Noncarcinogenic			MCL-based SL (mg/kg)	Noncarcinogenic			Carcinogenic SL (mg/kg)	Risk-Based SL (mg/kg)
				Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	TC Ref		Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	TC Ref		
4.01E-05	-	-	-	1.15E-04	6.92E-05	-	-	1.15E-04	6.92E-05	-	-	6.92E-05
4.01E-05	1.11E-03	-	-	4.48E-05	2.69E-05	-	-	4.48E-05	2.69E-05	-	7.47E-04	2.69E-05

Site-specific

Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW _{n,2} (mutagenic body weight) kg	15	15
BW _{3,6} (mutagenic body weight) kg	15	15
BW _{6,16} (mutagenic body weight) kg	80	80
BW _{16,26} (mutagenic body weight) kg	80	80
BW _{rec,3} (body weight - adult) kg	80	80
BW _{rec,7} (body weight - child) kg	15	15
DFW _{rec,3H1} (age-adjusted dermal factor) cm ² -event/kg	2610650	2610650
DFWM _{rec,3H1} (mutagenic age-adjusted dermal factor) cm ² -event/kg	8191633	8191633
ED _{rec} (exposure duration - resident) years	26	26
ED _{n,2} (mutagenic exposure duration first phase) years	2	2
ED _{3,6} (mutagenic exposure duration second phase) years	4	4
ED _{6,16} (mutagenic exposure duration third phase) years	10	10
ED _{16,26} (mutagenic exposure duration fourth phase) years	10	10
ED _{rec,3} (exposure duration - adult) years	20	20
ED _{rec,7} (exposure duration - child) years	6	6
EF _{rec} (exposure frequency) days/year	350	350
EF _{n,2} (mutagenic exposure frequency first phase) days/year	350	350
EF _{3,6} (mutagenic exposure frequency second phase) days/year	350	350
EF _{6,16} (mutagenic exposure frequency third phase) days/year	350	350
EF _{16,26} (mutagenic exposure frequency fourth phase) days/year	350	350
EF _{rec,3} (exposure frequency - adult) days/year	350	350
EF _{rec,7} (exposure frequency - child) days/year	350	350
ET _{rec} (exposure time) hours/day	24	24
ET _{exposed,rec,3H1} (age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{exposed,rec,3H1H1} (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{n,2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET _{3,6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET _{6,16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET _{16,26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable		Default Value	Form-input Value
ET _{rec-s}	(dermal exposure time - adult) hours/event	0.71	0.71
ET _{rec-r}	(dermal exposure time - child) hours/event	0.54	0.54
ET _{0.2}	(mutagenic inhalation exposure time first phase) hours/day	24	24
ET _{2.6}	(mutagenic inhalation exposure time second phase) hours/day	24	24
ET _{6.16}	(mutagenic inhalation exposure time third phase) hours/day	24	24
ET _{16.26}	(mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET _{rec-s}	(inhalation exposure time - adult) hours/day	24	24
ET _{rec-r}	(inhalation exposure time - child) hours/day	24	24
EV _{0.2}	(mutagenic events) per day	1	1
EV _{2.6}	(mutagenic events) per day	1	1
EV _{6.16}	(mutagenic events) per day	1	1
EV _{16.26}	(mutagenic events) per day	1	1
EV _{rec-s}	(events - adult) per day	1	1
EV _{rec-r}	(events - child) per day	1	1
THQ (target hazard quotient)	unitless	0.1	0.1
IFW _{rec-s,adj}	(adjusted intake factor) L/kg	327.95	327.95
IFWM _{rec-s,adj}	(mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW _{0.2}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{2.6}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{6.16}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{16.26}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{rec-s}	(water intake rate - adult) L/day	2.5	2.5
IRW _{rec-r}	(water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman)	L/m ³	0.5	0.5
LT (lifetime)	years	70	70
SA _{0.2}	(mutagenic skin surface area) cm ²	6365	6365
SA _{2.6}	(mutagenic skin surface area) cm ²	6365	6365
SA _{6.16}	(mutagenic skin surface area) cm ²	19652	19652
SA _{16.26}	(mutagenic skin surface area) cm ²	19652	19652
SA _{rec-s}	(skin surface area - adult) cm ²	19652	19652
SA _{rec-r}	(skin surface area - child) cm ²	6365	6365

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
I_{sc} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Site-specific

Regional Screening Levels (RSL) for Soil to Groundwater

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF _o (mg/kg-day) ⁻¹	SF _o Ref (ug/m ³) ⁻¹	IUR	IUR Ref (mg/kg-day)	RfD	RfD Ref (mg/m ³)	RfC	RfC Ref	GIABS	ABS (mg/L)	S	K _d (cm ³ /g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-	-	-	2.00E-05	U	-	-	-	1	0.1	680	2.01E+00
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-	2.00E-05	U	-	-	-	1	0.1	9500	6.21E-01

K _{oc} (cm ³ /g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m ³ /mole)	Henry's Law Constant (unitless)	H [*] and HLC Ref	Normal Boiling Point (K)	Critical Temperature (K)	Noncarcinogenic			Noncarcinogenic			Carcinogenic SL TR=1E-06 (ug/L)	Water Concentration (Adult) (mg/L)
							SL Adult THI=0.1 (ug/L)	SL Child THI=0.1 (ug/L)	TC Ref	SL Adult THI=0.1 (ug/L)	SL Child THI=0.1 (ug/L)	TC Ref		
3.72E+02	1	-	-	-	532.15	-	6.67E-02	4.01E-02	-	6.67E-02	4.01E-02	-	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	-	6.67E-02	4.01E-02	-	6.67E-02	4.01E-02	-	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	Noncarcinogenic			Noncarcinogenic			Carcinogenic SL (mg/kg)	Risk-Based SL (mg/kg)
				MCL-based SL (mg/kg)	Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	TC Ref		
4.01E-05	-	-	-	-	1.47E-04	8.86E-05	1.47E-04	8.86E-05	-	-	8.86E-05
4.01E-05	1.11E-03	-	-	-	5.48E-05	3.29E-05	5.48E-05	3.29E-05	-	9.14E-04	3.29E-05

Site-specific

Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW _{n,2} (mutagenic body weight) kg	15	15
BW _{3,6} (mutagenic body weight) kg	15	15
BW _{6,16} (mutagenic body weight) kg	80	80
BW _{16,26} (mutagenic body weight) kg	80	80
BW _{rec-3} (body weight - adult) kg	80	80
BW _{rec-7} (body weight - child) kg	15	15
DFW _{rec-3,41} (age-adjusted dermal factor) cm ² -event/kg	2610650	2610650
DFWM _{rec-3,41} (mutagenic age-adjusted dermal factor) cm ² -event/kg	8191633	8191633
ED _{rec-3} (exposure duration - resident) years	26	26
ED _{n,2} (mutagenic exposure duration first phase) years	2	2
ED _{3,6} (mutagenic exposure duration second phase) years	4	4
ED _{6,16} (mutagenic exposure duration third phase) years	10	10
ED _{16,26} (mutagenic exposure duration fourth phase) years	10	10
ED _{rec-3} (exposure duration - adult) years	20	20
ED _{rec-7} (exposure duration - child) years	6	6
EF _{rec-7} (exposure frequency) days/year	350	350
EF _{rec-3} (mutagenic exposure frequency first phase) days/year	350	350
EF _{n,2} (mutagenic exposure frequency second phase) days/year	350	350
EF _{3,6} (mutagenic exposure frequency third phase) days/year	350	350
EF _{6,16} (mutagenic exposure frequency fourth phase) days/year	350	350
EF _{16,26} (mutagenic exposure frequency fourth phase) days/year	350	350
EF _{rec-3} (exposure frequency - adult) days/year	350	350
EF _{rec-7} (exposure frequency - child) days/year	350	350
ET _{rec-3} (exposure time) hours/day	24	24
ET _{exposed,rec-3,41} (age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{exposed,rec-7,41} (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{n,2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET _{3,6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET _{6,16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET _{16,26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable		Default Value	Form-input Value
ET _{rec-s}	(dermal exposure time - adult) hours/event	0.71	0.71
ET _{rec-r}	(dermal exposure time - child) hours/event	0.54	0.54
ET _{n,1}	(mutagenic inhalation exposure time first phase) hours/day	24	24
ET _{3,6}	(mutagenic inhalation exposure time second phase) hours/day	24	24
ET _{6,16}	(mutagenic inhalation exposure time third phase) hours/day	24	24
ET _{16,36}	(mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET _{rec-s}	(inhalation exposure time - adult) hours/day	24	24
ET _{rec-r}	(inhalation exposure time - child) hours/day	24	24
EV _{n,1}	(mutagenic events) per day	1	1
EV _{3,6}	(mutagenic events) per day	1	1
EV _{6,16}	(mutagenic events) per day	1	1
EV _{16,36}	(mutagenic events) per day	1	1
EV _{rec-s}	(events - adult) per day	1	1
EV _{rec-r}	(events - child) per day	1	1
THQ (target hazard quotient)	unitless	0.1	0.1
IFW _{rec-s,eff}	(adjusted intake factor) L/kg	327.95	327.95
IFWM _{rec-s,eff}	(mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW _{n,1}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{3,6}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{6,16}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{16,36}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{rec-s}	(water intake rate - adult) L/day	2.5	2.5
IRW _{rec-r}	(water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman)	L/m ³	0.5	0.5
LT (lifetime)	years	70	70
SA _{n,1}	(mutagenic skin surface area) cm ²	6365	6365
SA _{3,6}	(mutagenic skin surface area) cm ²	6365	6365
SA _{6,16}	(mutagenic skin surface area) cm ²	19652	19652
SA _{16,36}	(mutagenic skin surface area) cm ²	19652	19652
SA _{rec-s}	(skin surface area - adult) cm ²	19652	19652
SA _{rec-r}	(skin surface area - child) cm ²	6365	6365

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
I_{sc} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Site-specific

Regional Screening Levels (RSL) for Soil to Groundwater

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF _o (mg/kg-day) ⁻¹	SF _o Ref (ug/m ³) ⁻¹	IUR	IUR Ref (mg/kg-day)	RfD	RfD Ref (mg/m ³)	RfC	RfC Ref	GIABS	ABS (mg/L)	S	K _d (cm ³ /g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-	-	-	2.00E-05	U	-	-	-	1	0.1	680	1.12E+01
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-	2.00E-05	U	-	-	-	1	0.1	9500	3.45E+00

K _{oc} (cm ³ /g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m ³ /mole)	Henry's Law Constant (unitless)	H [*] and HLC Ref	Normal Boiling Point (K)	Critical Temperature (K)	Noncarcinogenic			Noncarcinogenic			Carcinogenic SL TR=1E-06 (ug/L)	Water Concentration (Adult) (mg/L)
							SL Adult THI=0.1 (ug/L)	SL Child THI=0.1 (ug/L)	TC Ref	SL Adult THI=0.1 (ug/L)	SL Child THI=0.1 (ug/L)	TC Ref		
3.72E+02	1	-	-	-	532.15	-	6.67E-02	4.01E-02	-	6.67E-02	4.01E-02	-	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	-	6.67E-02	4.01E-02	-	6.67E-02	4.01E-02	-	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	Noncarcinogenic			Noncarcinogenic			Carcinogenic SL (mg/kg)	Risk-Based SL (mg/kg)
				MCL-based SL (mg/kg)	Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	TC Ref		
4.01E-05	-	-	-	-	7.58E-04	4.56E-04	7.58E-04	4.56E-04	-	4.56E-04	4.56E-04
4.01E-05	1.11E-03	-	-	-	2.44E-04	1.46E-04	2.44E-04	4.06E-03	-	1.46E-04	1.46E-04

Site-specific

Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW _{n,2} (mutagenic body weight) kg	15	15
BW _{3,6} (mutagenic body weight) kg	15	15
BW _{6,16} (mutagenic body weight) kg	80	80
BW _{16,26} (mutagenic body weight) kg	80	80
BW _{rec,3} (body weight - adult) kg	80	80
BW _{rec,7} (body weight - child) kg	15	15
DFW _{rec,30y1} (age-adjusted dermal factor) cm ² -event/kg	2610650	2610650
DFWM _{rec,30y1} (mutagenic age-adjusted dermal factor) cm ² -event/kg	8191633	8191633
ED _{rec} (exposure duration - resident) years	26	26
ED _{n,2} (mutagenic exposure duration first phase) years	2	2
ED _{3,6} (mutagenic exposure duration second phase) years	4	4
ED _{6,16} (mutagenic exposure duration third phase) years	10	10
ED _{16,26} (mutagenic exposure duration fourth phase) years	10	10
ED _{rec,3} (exposure duration - adult) years	20	20
ED _{rec,7} (exposure duration - child) years	6	6
EF _{rec} (exposure frequency) days/year	350	350
EF _{n,2} (mutagenic exposure frequency first phase) days/year	350	350
EF _{3,6} (mutagenic exposure frequency second phase) days/year	350	350
EF _{6,16} (mutagenic exposure frequency third phase) days/year	350	350
EF _{16,26} (mutagenic exposure frequency fourth phase) days/year	350	350
EF _{rec,3} (exposure frequency - adult) days/year	350	350
EF _{rec,7} (exposure frequency - child) days/year	350	350
ET _{rec} (exposure time) hours/day	24	24
ET _{exposed,rec,30y1} (age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{exposed,rec,30y1} (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{n,2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET _{3,6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET _{6,16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET _{16,26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable		Default Value	Form-input Value
ET _{rec-s}	(dermal exposure time - adult) hours/event	0.71	0.71
ET _{rec-r}	(dermal exposure time - child) hours/event	0.54	0.54
ET _{0.2}	(mutagenic inhalation exposure time first phase) hours/day	24	24
ET _{2.6}	(mutagenic inhalation exposure time second phase) hours/day	24	24
ET _{6.16}	(mutagenic inhalation exposure time third phase) hours/day	24	24
ET _{16.26}	(mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET _{rec-s}	(inhalation exposure time - adult) hours/day	24	24
ET _{rec-r}	(inhalation exposure time - child) hours/day	24	24
EV _{0.2}	(mutagenic events) per day	1	1
EV _{2.6}	(mutagenic events) per day	1	1
EV _{6.16}	(mutagenic events) per day	1	1
EV _{16.26}	(mutagenic events) per day	1	1
EV _{rec-s}	(events - adult) per day	1	1
EV _{rec-r}	(events - child) per day	1	1
THQ (target hazard quotient)	unitless	0.1	0.1
IFW _{rec-s,adj}	(adjusted intake factor) L/kg	327.95	327.95
IFWM _{rec-s,adj}	(mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW _{0.2}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{2.6}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{6.16}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{16.26}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{rec-s}	(water intake rate - adult) L/day	2.5	2.5
IRW _{rec-r}	(water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman)	L/m ³	0.5	0.5
LT (lifetime)	years	70	70
SA _{0.2}	(mutagenic skin surface area) cm ²	6365	6365
SA _{2.6}	(mutagenic skin surface area) cm ²	6365	6365
SA _{6.16}	(mutagenic skin surface area) cm ²	19652	19652
SA _{16.26}	(mutagenic skin surface area) cm ²	19652	19652
SA _{rec-s}	(skin surface area - adult) cm ²	19652	19652
SA _{rec-r}	(skin surface area - child) cm ²	6365	6365

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
I_{sc} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Site-specific

Regional Screening Levels (RSL) for Soil to Groundwater

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF _o (mg/kg-day) ⁻¹	SF _o Ref (ug/m ³) ⁻¹	IUR	IUR Ref (mg/kg-day)	RfD	RfD Ref (mg/m ³)	RfC	RfC Ref	GIABS	ABS (mg/L)	S	K _d (cm ³ /g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-	-	-	2.00E-05	U	-	-	-	1	0.1	680	2.64E+00
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-	2.00E-05	U	-	-	-	1	0.1	9500	8.17E-01

K _{oc} (cm ³ /g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m ³ /mole)	Henry's Law Constant (unitless)	H [*] and HLC Ref	Normal Boiling Point (K)	Critical Temperature (K)	Noncarcinogenic			Noncarcinogenic			Carcinogenic SL TR=1E-06 (ug/L)	Water Concentration (Adult) (mg/L)
							SL Adult THI=0.1 (ug/L)	SL Child THI=0.1 (ug/L)	TC Ref	SL Adult THI=0.1 (mg/kg)	SL Child THI=0.1 (mg/kg)	TC Ref		
3.72E+02	1	-	-	532.15	U	-	6.67E-02	4.01E-02	-	6.67E-02	4.01E-02	-	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	U	6.67E-02	4.01E-02	-	6.67E-02	4.01E-02	-	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	Noncarcinogenic			Noncarcinogenic			Carcinogenic SL (mg/kg)	Risk-Based SL (mg/kg)
				MCL-based SL (mg/kg)	Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	TC Ref		
4.01E-05	-	-	-	-	1.90E-04	1.14E-04	1.90E-04	1.14E-04	-	1.14E-04	-
4.01E-05	1.11E-03	-	-	-	6.78E-05	4.08E-05	6.78E-05	4.08E-05	-	1.13E-03	4.08E-05

Site-specific

Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW _{n,2} (mutagenic body weight) kg	15	15
BW _{3,6} (mutagenic body weight) kg	15	15
BW _{6,16} (mutagenic body weight) kg	80	80
BW _{16,26} (mutagenic body weight) kg	80	80
BW _{rec-3} (body weight - adult) kg	80	80
BW _{rec-4} (body weight - child) kg	15	15
DFW _{rec-3,4} (age-adjusted dermal factor) cm ² -event/kg	2610650	2610650
DFWM _{rec-3,4} (mutagenic age-adjusted dermal factor) cm ² -event/kg	8191633	8191633
ED _{rec} (exposure duration - resident) years	26	26
ED _{n,2} (mutagenic exposure duration first phase) years	2	2
ED _{3,6} (mutagenic exposure duration second phase) years	4	4
ED _{6,16} (mutagenic exposure duration third phase) years	10	10
ED _{16,26} (mutagenic exposure duration fourth phase) years	10	10
ED _{rec-3} (exposure duration - adult) years	20	20
ED _{rec-4} (exposure duration - child) years	6	6
EF _{rec} (exposure frequency) days/year	350	350
EF _{n,2} (mutagenic exposure frequency first phase) days/year	350	350
EF _{3,6} (mutagenic exposure frequency second phase) days/year	350	350
EF _{6,16} (mutagenic exposure frequency third phase) days/year	350	350
EF _{16,26} (mutagenic exposure frequency fourth phase) days/year	350	350
EF _{rec-3} (exposure frequency - adult) days/year	350	350
EF _{rec-4} (exposure frequency - child) days/year	350	350
ET _{rec} (exposure time) hours/day	24	24
ET _{exponent,rec-3,4} (age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{exponent,rec-3,4} (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{n,2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET _{3,6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET _{6,16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET _{16,26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable		Default Value	Form-input Value
ET _{rec-s}	(dermal exposure time - adult) hours/event	0.71	0.71
ET _{rec-r}	(dermal exposure time - child) hours/event	0.54	0.54
ET _{n,1}	(mutagenic inhalation exposure time first phase) hours/day	24	24
ET _{3,6}	(mutagenic inhalation exposure time second phase) hours/day	24	24
ET _{6,16}	(mutagenic inhalation exposure time third phase) hours/day	24	24
ET _{16,36}	(mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET _{rec-s}	(inhalation exposure time - adult) hours/day	24	24
ET _{rec-r}	(inhalation exposure time - child) hours/day	24	24
EV _{n,1}	(mutagenic events) per day	1	1
EV _{3,6}	(mutagenic events) per day	1	1
EV _{6,16}	(mutagenic events) per day	1	1
EV _{16,36}	(mutagenic events) per day	1	1
EV _{rec-s}	(events - adult) per day	1	1
EV _{rec-r}	(events - child) per day	1	1
THQ (target hazard quotient)	unitless	0.1	0.1
IFW _{rec-s,adj}	(adjusted intake factor) L/kg	327.95	327.95
IFWM _{rec-s,adj}	(mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW _{n,1}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{3,6}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{6,16}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{16,36}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{rec-s}	(water intake rate - adult) L/day	2.5	2.5
IRW _{rec-r}	(water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman)	L/m ³	0.5	0.5
LT (lifetime)	years	70	70
SA _{n,1}	(mutagenic skin surface area) cm ²	6365	6365
SA _{3,6}	(mutagenic skin surface area) cm ²	6365	6365
SA _{6,16}	(mutagenic skin surface area) cm ²	19652	19652
SA _{16,36}	(mutagenic skin surface area) cm ²	19652	19652
SA _{rec-s}	(skin surface area - adult) cm ²	19652	19652
SA _{rec-r}	(skin surface area - child) cm ²	6365	6365

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
I_{sc} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Site-specific

Regional Screening Levels (RSL) for Soil to Groundwater

4

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF _o (mg/kg-day) ⁻¹	SF _o Ref (ug/m ³) ⁻¹	IUR	IUR Ref (mg/kg-day)	RfD	RfD Ref (mg/m ³)	RfC	RfC Ref	GIABS	ABS (mg/L)	S	K _d (cm ³ /g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-	-	-	2.00E-05	U	-	-	-	1	0.1	680	2.49E+00
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-	2.00E-05	U	-	-	-	1	0.1	9500	7.71E-01

K _{oc} (cm ³ /g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m ³ /mole)	Henry's Law Constant (unitless)	H [*] and HLC Ref	Normal Boiling Point (K)	Critical Temperature (K)	Noncarcinogenic			Carcinogenic			Water Concentration (Adult) (mg/L)
							SL Adult THI=0.1 (ug/L)	SL Child THI=0.1 (ug/L)	TC Ref	SL Adult THI=0.1 (ug/L)	SL Child THI=0.1 (ug/L)	TR=1E-06 (ug/L)	
3.72E+02	1	-	-	-	532.15	U	6.67E-02	4.01E-02	-	6.67E-02	4.01E-02	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	U	6.67E-02	4.01E-02	-	6.67E-02	4.01E-02	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	Noncarcinogenic			Carcinogenic			Risk-Based SL (mg/kg)
				MCL-based SL (mg/kg)	Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	SL (mg/kg)	
4.01E-05	-	-	-	-	1.80E-04	1.08E-04	1.80E-04	1.08E-04	1.08E-04	-
4.01E-05	1.11E-03	-	-	-	6.48E-05	3.89E-05	6.48E-05	1.08E-03	3.89E-05	-

Site-specific

Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW _{n,2} (mutagenic body weight) kg	15	15
BW _{3,6} (mutagenic body weight) kg	15	15
BW _{6,16} (mutagenic body weight) kg	80	80
BW _{16,26} (mutagenic body weight) kg	80	80
BW _{rec,3} (body weight - adult) kg	80	80
BW _{rec,7} (body weight - child) kg	15	15
DFW _{rec,3,16} (age-adjusted dermal factor) cm ² -event/kg	2610650	2610650
DFWM _{rec,3,16} (mutagenic age-adjusted dermal factor) cm ² -event/kg	8191633	8191633
ED _{rec,6} (exposure duration - resident) years	26	26
ED _{n,2} (mutagenic exposure duration first phase) years	2	2
ED _{3,6} (mutagenic exposure duration second phase) years	4	4
ED _{6,16} (mutagenic exposure duration third phase) years	10	10
ED _{16,26} (mutagenic exposure duration fourth phase) years	10	10
ED _{rec,3} (exposure duration - adult) years	20	20
ED _{rec,7} (exposure duration - child) years	6	6
EF _{rec,7} (exposure frequency) days/year	350	350
EF _{rec,3} (mutagenic exposure frequency first phase) days/year	350	350
EF _{n,2} (mutagenic exposure frequency second phase) days/year	350	350
EF _{3,6} (mutagenic exposure frequency third phase) days/year	350	350
EF _{6,16} (mutagenic exposure frequency fourth phase) days/year	350	350
EF _{16,26} (exposure frequency - adult) days/year	350	350
EF _{rec,3} (exposure frequency - child) days/year	350	350
ET _{rec,7} (exposure time) hours/day	24	24
ET _{exponent,rec,3,16} (age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{exponent,rec,rec,3,16} (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{n,2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET _{3,6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET _{6,16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET _{16,26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Site-specific

Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable		Default Value	Form-input Value
ET _{rec-s}	(dermal exposure time - adult) hours/event	0.71	0.71
ET _{rec-r}	(dermal exposure time - child) hours/event	0.54	0.54
ET _{0.2}	(mutagenic inhalation exposure time first phase) hours/day	24	24
ET _{2.6}	(mutagenic inhalation exposure time second phase) hours/day	24	24
ET _{6.16}	(mutagenic inhalation exposure time third phase) hours/day	24	24
ET _{16.26}	(mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET _{rec-s}	(inhalation exposure time - adult) hours/day	24	24
ET _{rec-r}	(inhalation exposure time - child) hours/day	24	24
EV _{0.2}	(mutagenic events) per day	1	1
EV _{2.6}	(mutagenic events) per day	1	1
EV _{6.16}	(mutagenic events) per day	1	1
EV _{16.26}	(mutagenic events) per day	1	1
EV _{rec-s}	(events - adult) per day	1	1
EV _{rec-r}	(events - child) per day	1	1
THQ (target hazard quotient)	unitless	0.1	0.1
IFW _{rec-s,adj}	(adjusted intake factor) L/kg	327.95	327.95
IFWM _{rec-s,adj}	(mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW _{0.2}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{2.6}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{6.16}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{16.26}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{rec-s}	(water intake rate - adult) L/day	2.5	2.5
IRW _{rec-r}	(water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman)	L/m ³	0.5	0.5
LT (lifetime)	years	70	70
SA _{0.2}	(mutagenic skin surface area) cm ²	6365	6365
SA _{2.6}	(mutagenic skin surface area) cm ²	6365	6365
SA _{6.16}	(mutagenic skin surface area) cm ²	19652	19652
SA _{16.26}	(mutagenic skin surface area) cm ²	19652	19652
SA _{rec-s}	(skin surface area - adult) cm ²	19652	19652
SA _{rec-r}	(skin surface area - child) cm ²	6365	6365

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
I_{sc} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Site-specific

Regional Screening Levels (RSL) for Soil to Groundwater

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF _o (mg/kg-day) ⁻¹	SF _o Ref (ug/m ³) ⁻¹	IUR	IUR Ref (mg/kg-day)	RfD	RfD Ref (mg/m ³)	RfC	RfC Ref	GIABS	ABS (mg/L)	S	K _d (cm ³ /g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-	-	-	2.00E-05	U	-	-	-	1	0.1	680	1.71E+00
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-	2.00E-05	U	-	-	-	1	0.1	9500	5.29E-01

K _{oc} (cm ³ /g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m ³ /mole)	Henry's Law Constant (unitless)	H [*] and HLC Ref	Normal Boiling Point BP (K)	Critical Temperature TC (K)	Noncarcinogenic			Carcinogenic			Water Concentration (Adult) (mg/L)
							SL Adult THI=0.1 (ug/L)	SL Child THI=0.1 (ug/L)	SL Ref	SL Adult THI=0.1 (ug/L)	SL Child THI=0.1 (ug/L)	SL Ref	
3.72E+02	1	-	-	532.15	U	-	6.67E-02	4.01E-02	-	6.67E-02	4.01E-02	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	U	6.67E-02	4.01E-02	1.11E+00	6.67E-02	4.01E-02	1.11E+00	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	Noncarcinogenic			Carcinogenic			Risk-Based SL (mg/kg)
				MCL-based SL (mg/kg)	Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	SL (mg/kg)	
4.01E-05	-	-	-	-	1.28E-04	7.67E-05	1.28E-04	7.67E-05	-	7.67E-05
4.01E-05	1.11E-03	-	-	-	4.87E-05	2.92E-05	4.87E-05	8.11E-04	-	2.92E-05

Site-specific

Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW _{n,j} (mutagenic body weight) kg	15	15
BW _{3,6} (mutagenic body weight) kg	15	15
BW _{6,16} (mutagenic body weight) kg	80	80
BW _{16,26} (mutagenic body weight) kg	80	80
BW _{rec,j} (body weight - adult) kg	80	80
BW _{rec,j} (body weight - child) kg	15	15
DFW _{rec,adj} (age-adjusted dermal factor) cm ² -event/kg	2610650	2610650
DFWM _{rec,adj} (mutagenic age-adjusted dermal factor) cm ² -event/kg	8191633	8191633
ED _{rec} (exposure duration - resident) years	26	26
ED _{n,j} (mutagenic exposure duration first phase) years	2	2
ED _{3,6} (mutagenic exposure duration second phase) years	4	4
ED _{6,16} (mutagenic exposure duration third phase) years	10	10
ED _{16,26} (mutagenic exposure duration fourth phase) years	10	10
ED _{rec,3} (exposure duration - adult) years	20	20
ED _{rec,6} (exposure duration - child) years	6	6
EF _{rec} (exposure frequency) days/year	350	350
EF _{n,j} (mutagenic exposure frequency first phase) days/year	350	350
EF _{3,6} (mutagenic exposure frequency second phase) days/year	350	350
EF _{6,16} (mutagenic exposure frequency third phase) days/year	350	350
EF _{16,26} (mutagenic exposure frequency fourth phase) days/year	350	350
EF _{rec,3} (exposure frequency - adult) days/year	350	350
EF _{rec,6} (exposure frequency - child) days/year	350	350
ET _{rec} (exposure time) hours/day	24	24
ET _{adj,rec,3adj} (age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{adj,rec,6adj} (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{n,j} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET _{3,6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET _{6,16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET _{16,26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable		Default Value	Form-input Value
ET _{rec-s}	(dermal exposure time - adult) hours/event	0.71	0.71
ET _{rec-r}	(dermal exposure time - child) hours/event	0.54	0.54
ET _{0.2}	(mutagenic inhalation exposure time first phase) hours/day	24	24
ET _{2.6}	(mutagenic inhalation exposure time second phase) hours/day	24	24
ET _{6.16}	(mutagenic inhalation exposure time third phase) hours/day	24	24
ET _{16.26}	(mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET _{rec-s}	(inhalation exposure time - adult) hours/day	24	24
ET _{rec-r}	(inhalation exposure time - child) hours/day	24	24
EV _{0.2}	(mutagenic events) per day	1	1
EV _{2.6}	(mutagenic events) per day	1	1
EV _{6.16}	(mutagenic events) per day	1	1
EV _{16.26}	(mutagenic events) per day	1	1
EV _{rec-s}	(events - adult) per day	1	1
EV _{rec-r}	(events - child) per day	1	1
THQ (target hazard quotient)	unitless	0.1	0.1
IFW _{rec-s,adj}	(adjusted intake factor) L/kg	327.95	327.95
IFWM _{rec-s,adj}	(mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW _{0.2}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{2.6}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{6.16}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{16.26}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{rec-s}	(water intake rate - adult) L/day	2.5	2.5
IRW _{rec-r}	(water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman)	L/m ³	0.5	0.5
LT (lifetime)	years	70	70
SA _{0.2}	(mutagenic skin surface area) cm ²	6365	6365
SA _{2.6}	(mutagenic skin surface area) cm ²	6365	6365
SA _{6.16}	(mutagenic skin surface area) cm ²	19652	19652
SA _{16.26}	(mutagenic skin surface area) cm ²	19652	19652
SA _{rec-s}	(skin surface area - adult) cm ²	19652	19652
SA _{rec-r}	(skin surface area - child) cm ²	6365	6365

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
I_{e} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Site-specific

Regional Screening Levels (RSL) for Soil to Groundwater

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF ₀ (mg/kg-day) ⁻¹	SF ₀ Ref (ug/m ³) ⁻¹	IUR	IUR Ref (mg/kg-day)	RfD	RfC	RfC Ref (mg/m ³)	GIABS	ABS	S	K _d (cm ³ /g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-	-	-	2.00E-05	U	-	-	1	0.1	680	8.18E-01
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-	2.00E-05	U	-	-	1	0.1	9500	2.53E-01

K _{oc} (cm ³ /g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m ³ /mole)	Henry's Law Constant (unitless)	H ⁺ and HLC Ref	Normal Boiling Point BP (K)	Critical Temperature TC (K)	Noncarcinogenic			Carcinogenic			Water Concentration (Adult) (mg/L)
							SL Adult THI=0.1 (ug/L)	SL Child THI=0.1 (ug/L)	SL Ref	TR=1E-06 (ug/L)	RfC	GIABS	
3.72E+02	1	-	-	532.15	U	-	6.67E-02	4.01E-02	-	-	-	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	U	6.67E-02	4.01E-02	-	1.11E+00	-	-	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	Noncarcinogenic			MCL-based SL (mg/kg)	Noncarcinogenic			Carcinogenic SL (mg/kg)	Risk-Based SL (mg/kg)
				Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	TC Ref		Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	SL		
4.01E-05	-	-	-	6.80E-05	4.08E-05	-	-	6.80E-05	4.08E-05	4.08E-05	-	4.08E-05
4.01E-05	1.11E-03	-	-	3.02E-05	1.82E-05	-	-	3.02E-05	1.82E-05	5.04E-04	-	1.82E-05

Site-specific

Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
DAF (dilution attenuation factor) unitless	1	1
DAF (dilution attenuation factor) unitless	1	1
BW _{n,2} (mutagenic body weight) kg	15	15
BW _{3,6} (mutagenic body weight) kg	15	15
BW _{6,16} (mutagenic body weight) kg	80	80
BW _{16,26} (mutagenic body weight) kg	80	80
BW _{rec-3} (body weight - adult) kg	80	80
BW _{rec-4} (body weight - child) kg	15	15
DFW _{rec-3,4} (age-adjusted dermal factor) cm ² -event/kg	2610650	2610650
DFWM _{rec-3,4} (mutagenic age-adjusted dermal factor) cm ² -event/kg	8191633	8191633
ED _{rec-3} (exposure duration - resident) years	26	26
ED _{n,2} (mutagenic exposure duration first phase) years	2	2
ED _{3,6} (mutagenic exposure duration second phase) years	4	4
ED _{6,16} (mutagenic exposure duration third phase) years	10	10
ED _{16,26} (mutagenic exposure duration fourth phase) years	10	10
ED _{rec-3} (exposure duration - adult) years	20	20
ED _{rec-4} (exposure duration - child) years	6	6
EF _{rec-3} (exposure frequency) days/year	350	350
EF _{rec-4} (mutagenic exposure frequency first phase) days/year	350	350
EF _{n,2} (mutagenic exposure frequency second phase) days/year	350	350
EF _{3,6} (mutagenic exposure frequency third phase) days/year	350	350
EF _{6,16} (mutagenic exposure frequency fourth phase) days/year	350	350
EF _{16,26} (exposure frequency - adult) days/year	350	350
EF _{rec-3} (exposure frequency - child) days/year	350	350
ET _{rec-3} (exposure time) hours/day	24	24
ET _{exponent,rec-3,4} (age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{exponent,rec-3,4} (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{n,2} (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET _{3,6} (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET _{6,16} (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET _{16,26} (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71

Site-specific

Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable		Default Value	Form-input Value
ET _{rec-s}	(dermal exposure time - adult) hours/event	0.71	0.71
ET _{rec-r}	(dermal exposure time - child) hours/event	0.54	0.54
ET _{n,j}	(mutagenic inhalation exposure time first phase) hours/day	24	24
ET _{j,k}	(mutagenic inhalation exposure time second phase) hours/day	24	24
ET _{k,l}	(mutagenic inhalation exposure time third phase) hours/day	24	24
ET _{l,m}	(mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET _{rec-s}	(inhalation exposure time - adult) hours/day	24	24
ET _{rec-r}	(inhalation exposure time - child) hours/day	24	24
EV _{n,j}	(mutagenic events) per day	1	1
EV _{j,k}	(mutagenic events) per day	1	1
EV _{k,l}	(mutagenic events) per day	1	1
EV _{l,m}	(mutagenic events) per day	1	1
EV _{rec-s}	(events - adult) per day	1	1
EV _{rec-r}	(events - child) per day	1	1
THQ	(target hazard quotient) unitless	0.1	0.1
IFW _{rec-s,adj}	(adjusted intake factor) L/kg	327.95	327.95
IFWM _{rec-s,adj}	(mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW _{n,j}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{j,k}	(mutagenic water intake rate) L/day	0.78	0.78
IRW _{k,l}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{l,m}	(mutagenic water intake rate) L/day	2.5	2.5
IRW _{rec-s}	(water intake rate - adult) L/day	2.5	2.5
IRW _{rec-r}	(water intake rate - child) L/day	0.78	0.78
K	(volatilization factor of Andelman) L/m ³	0.5	0.5
LT	(lifetime) years	70	70
SA _{n,j}	(mutagenic skin surface area) cm ²	6365	6365
SA _{j,k}	(mutagenic skin surface area) cm ²	6365	6365
SA _{k,l}	(mutagenic skin surface area) cm ²	19652	19652
SA _{l,m}	(mutagenic skin surface area) cm ²	19652	19652
SA _{rec-s}	(skin surface area - adult) cm ²	19652	19652
SA _{rec-r}	(skin surface area - child) cm ²	6365	6365

Site-specific Equation Inputs for Soil to Groundwater

* Inputted values different from defaults are highlighted.

Variable	Default Value	Form-input Value
I_{cr} (apparent thickness of stratum corneum) cm	0.001	0.001
TR (target risk) unitless	1.0E-06	1.0E-06

Site-specific

Regional Screening Levels (RSL) for Soil to Groundwater

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; G = see user's guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Type	SF _o (mg/kg-day) ⁻¹	SF _o Ref (ug/m ³) ⁻¹	IUR	IUR Ref (mg/kg-day)	RfD	RfD Ref (mg/m ³)	RfC	RfC Ref	GIABS ABS (mg/L)	S	K _d (cm ³ /g)
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	No	No	Organics	-	-	-	2.00E-05	U	-	-	1	0.1	680	1.82E+00
Perfluorooctanoic acid (PFOA)	335-67-1	No	No	Organics	7.00E-02	U	-	2.00E-05	U	-	-	1	0.1	9500	5.64E-01

K _{oc} (cm ³ /g)	Dilution Attenuation Factor (DAF) (unitless)	HLC (atm-m ³ /mole)	Henry's Law Constant (unitless)	H [*] and HLC Ref	Normal Boiling Point BP (K)	Critical Temperature TC (K)	Noncarcinogenic			Carcinogenic			Water Concentration (Adult) (mg/L)
							SL Adult THI=0.1 (ug/L)	SL Child THI=0.1 (ug/L)	TC Ref	SL Adult THI=0.1 (ug/L)	SL Child THI=0.1 (ug/L)	RfC TR=1E-06 (ug/L)	
3.72E+02	1	-	-	532.15	U	-	6.67E-02	4.01E-02	-	-	-	-	6.67E-05
1.15E+02	1	4E-6	1.64E-04	U	465.15	U	6.67E-02	4.01E-02	-	1.11E+00	-	-	6.67E-05

Water Concentration (Child) (mg/L)	Water Concentration (Cancer) (mg/L)	Maximum Contaminant Level (MCL) (ug/L)	Water Concentration (MCL) (mg/L)	Noncarcinogenic			MCL-based SL (mg/kg)	Carcinogenic			Risk-Based SL (mg/kg)
				Adult SL THI=0.1 (mg/kg)	Child SL THI=0.1 (mg/kg)	TC Ref		SL Adult THI=0.1 (mg/kg)	SL Child THI=0.1 (mg/kg)	RfC TR=1E-06 (ug/L)	
4.01E-05	-	-	-	1.35E-04	8.11E-05	-	-	8.11E-05	-	-	8.11E-05
4.01E-05	1.11E-03	-	-	5.10E-05	3.06E-05	-	-	8.50E-04	-	1.11E+00	3.06E-05

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