NC Division of Water Resources
Water Sciences Section

April 1, 2019

Memorandum

To: Linda Culpepper – Water Resources Director

CC: Jim Gregson

From: Joseph Smith
Taryn Davis

Through: Eric Morris

Subject: Identification of Select Emerging Compounds in Public Water Supply Reservoirs in the Cape Fear, New, and Watauga River Basins.

Purpose: The objective of this reconnaissance study is to provide the NC Division of Water Resources information on per- and polyfluoroalkyl substances (PFAS); 1,4-dioxane; and bromide in public water supply (PWS) reservoirs in the Cape Fear, New and Watauga River Basins collected in conjunction with typical physical and chemical parameters.

Identification of Select Emerging Compounds in Public Water Supply Reservoirs in the Cape Fear, New and Watauga River Basins

HUC: 030300, 050500, 060101

North Carolina Department of Environmental Quality
Division of Water Resources
Water Sciences Section
Intensive Survey Unit
April 2019

Division of Water Resources

Identification of Select Emerging Compounds in Public Water Supply Reservoirs in the Cape Fear, New, and Watauga River Basins.

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Introduction

At the request of the Division, the Intensive Survey Branch (ISB) conducted a special study to characterize the presence and concentrations of select emerging compounds (EC) in untreated surface waters of the Cape Fear, New and Watauga River Basins from May to September 2018. Staff from the North Carolina Division of Water Resources (DWR) collected samples for 1,4-dioxane; bromide; and 23 different per- and polyfluoroalkyl substances (PFAS) at existing monitoring sites located near water intakes on public water supply (PWS) reservoirs. Due to limited analytical capacity, one sample (n= 1) for each parameter of concern was collected per site for this study. More extensive sampling for these compounds was also conducted in the Falls of the Neuse Reservoir and the B. Everett Jordan Reservoir and their surrounding watersheds. Results of those investigations are presented individually, in two separate reports released concurrently with this document. Analytical results of this study did not detect the presence of bromide in any basin during this sampling effort. Two detections of 1,4-dioxane were observed reservoirs located in the Cape Fear River basin; Randleman Reservoir (2.7 µg/L) and Buckhorn Reservoir (1.4 µg/L). Both values exceed the North Carolina Protective Values for Surface Waters of 0.35 µg/L for water supplies (WS I-V). Please note that North Carolina Protective Values for Surface Waters are health-based guidelines, not regulatory limits, and may be based on limited toxicological information. Two detections of PFAS were observed in Cane Creek Reservoir (76 ng/L) and Lake Brandt (68 ng/L), which are also located within the Cape Fear River Basin.

Background

As part of the Ambient Lake Monitoring Program[1] (ALMP), the Intensive Survey Branch (ISB) conducts sampling and monitoring for various chemical and physical parameters in reservoirs and lakes throughout North Carolina's seventeen major river basins on a rotating five-year cycle. Due to heightened concerns of EC's caused by recent downstream dischargers of a PFAS compound commonly known as "GenX", additional sampling parameters were added to PWS reservoirs at raw water intakes to compliment monitoring already conducted on finished drinking water at these facilities. It is important to note that all analytical data presented in this document reflect levels of target analytes detected in untreated surface waters, as opposed to finished drinking water.

The synthetic industrial organic compound 1,4-dioxane is completely miscible in water. It is persistent in the environment and is difficult to remove through standard water and wastewater treatment processes. It is used as an industrial solvent and is formed as a byproduct of some industrial processes. The compound has been characterized as "likely to be carcinogenic to humans"[2] and is identified in the Third Unregulated Contaminant Monitoring Rule (UCMR) as a potential compound of concern in public drinking water by the United States Environmental

Protection Agency (USEPA)[3]. The NC Protective Value for Surface Waters, Water Supply (class WS I-IV) is 0.35 µg/L[4] for 1,4-dioxane.

PFAS are man-made fluorinated organic compounds that are used in various consumer products including non-stick cookware, water-repellent clothing, stain resistant fabrics, cosmetics, food packaging materials, and fire-retardant foams. Although 23 PFAS compounds were the focus of this study, thousands of PFAS compounds exist. Of these compounds, PFOA and PFOS have been the most extensively produced and studied. The USEPA has stated that exposure to PFAS can lead to adverse health effects in humans[5]. Though many companies have significantly decreased or ceased use of PFOA and PFOS in manufacturing, other PFAS compounds are currently being used as replacements. The USEPA established health advisory levels for PFOA, PFOS, or combined PFOA and PFOS, is 70 ppt (ng/L)[6] in finished drinking water. Health Advisory levels identify the concentration of a compound in drinking water at which adverse health effects in the most sensitive populations are not anticipated to occur over specific exposure durations. A health advisory value is not a legally enforceable federal standard and is subject to change as additional information becomes available. The 23 PFAS compounds selected for this study are abbreviated throughout this document for better readability but are identified more fully in Appendix 1.

Bromide (Br^-) has no current established health advisory levels or guidelines due to its high human toxicity threshold and ecotoxicity observed only at high concentrations. Thus, the discharge of bromide has been left largely unregulated. While naturally occurring bromide poses low risk to humans, man-made brominated organic compounds can exhibit ecotoxicity when ingested. Incidental production of brominated organic compounds can occur in treating drinking water and persist in the finished water[7]. These brominated disinfection by-products (DBP) form when source waters contain bromide and are disinfected with chemical oxidants (e.g., chlorine, ozone). The Br-DBPs of concern are the bromine containing trihalomethanes (THMs) resulting from chlorine disinfection: bromodichloromethane ($CHCl_2Br$), dibromochloromethane ($CHClBr_2$), and bromoform ($CHBr_3$). These compounds are formed when hypochlorous (HClO) acid oxidizes the bromide ions present in water to form hypobromous acid (HBrO), which subsequently reacts with organic material to form the Br-THMs[7].

Bromide, PFAS and 1,4-dioxane were selected as compounds of interest for this study in response to the rising interest in the public health effects of consumption of these compounds in drinking water sources. Sites were selected from existing sampling locations listed as part of the ALMP, in as close approximation to the PWS raw water intake as possible. A complete list of sites, along with site descriptions and coordinates, is provided in Table 1. Maps depicting approximate sampling locations are provided below in Figures 1 & 2.

Station ID	Station Description	Latitude	Longitude
Cape Fear			
CPF138B	GLENVILLE LAKE AT DAM NEAR FAYETTEVILLE NC	35.06922	-78.89697
CPF126A6	HARRIS LAKE AT SR1915 NR CORINTH NC	35.56857	-78.96669
CPFBDL2	BUCKHORN DAM LAKE UPSTREAM OF DAM	35.54896	-79.02575
CPFUL6	UNIVERSITY LAKE AT DAM NR CHAPEL HILL NC	35.89652	-79.09234
CPFCCR6	CANE CREEK RESERVOIR AT DAM NR OAKS NC	35.94966	-79.24123
CPFGMR4	GRAHAM-MEBANE RESERVOIR AT DAM NEAR HAW RIVER NC	36.09900	-79.32983
CPFSCR4	STONY CREEK RESERVOIR AT DAM NR CAROLINA NC	36.12775	-79.40638
CPF113R	CARTHAGE CITY LAKE AT DAM NR CARTHAGE NC	35.33107	-79.40788
CPFTR01	TURNER RESERVOIR AT DAM	35.76320	-79.45652
CPF038N	LAKE MACKINTOSH AT DAM NR ALAMANCE NC	36.04034	-79.50429
CPF002A2	REIDSVILLE LAKE AT INTAKE AT DAM	36.28269	-79.66215
CPFSC1	SANDY CREEK RESERVOIR AT DAM NEAR RAMSEUR NC	35.74320	-79.67834
CPFLT8	LAKE TOWNSEND AT DAM NEAR GREENSBORO NC	36.18872	-79.73178
CPFRD4	RANDLEMAN LAKE AT WATER INTAKE	35.86333	-79.82750
CPF007B	LAKE BRANDT AT DAM NEAR HILLSDALE NC	36.17218	-79.83806
CPF089E4	HIGH POINT LAKE ABOVE DEEP RIVER	35.99580	-79.94537
CPF089D5	OAK HOLLOW LAKE AT DAM NR HIGH POINT	36.01204	-79.98665
New			
NEW006E	ASU LAKE AT DAM NEAR BOONE NC	36.23893	-81.67082
NEWBTP1	BLOWING ROCK TOWN POND NEAR INTAKE	36.14296	-81.67260
Watauga			
WATBL1	BUCKEYE LAKE NEAR DAM	36.21884	-81.90631

Table 1. *Station ID, description, and coordinates of sampled sites, 2018.*

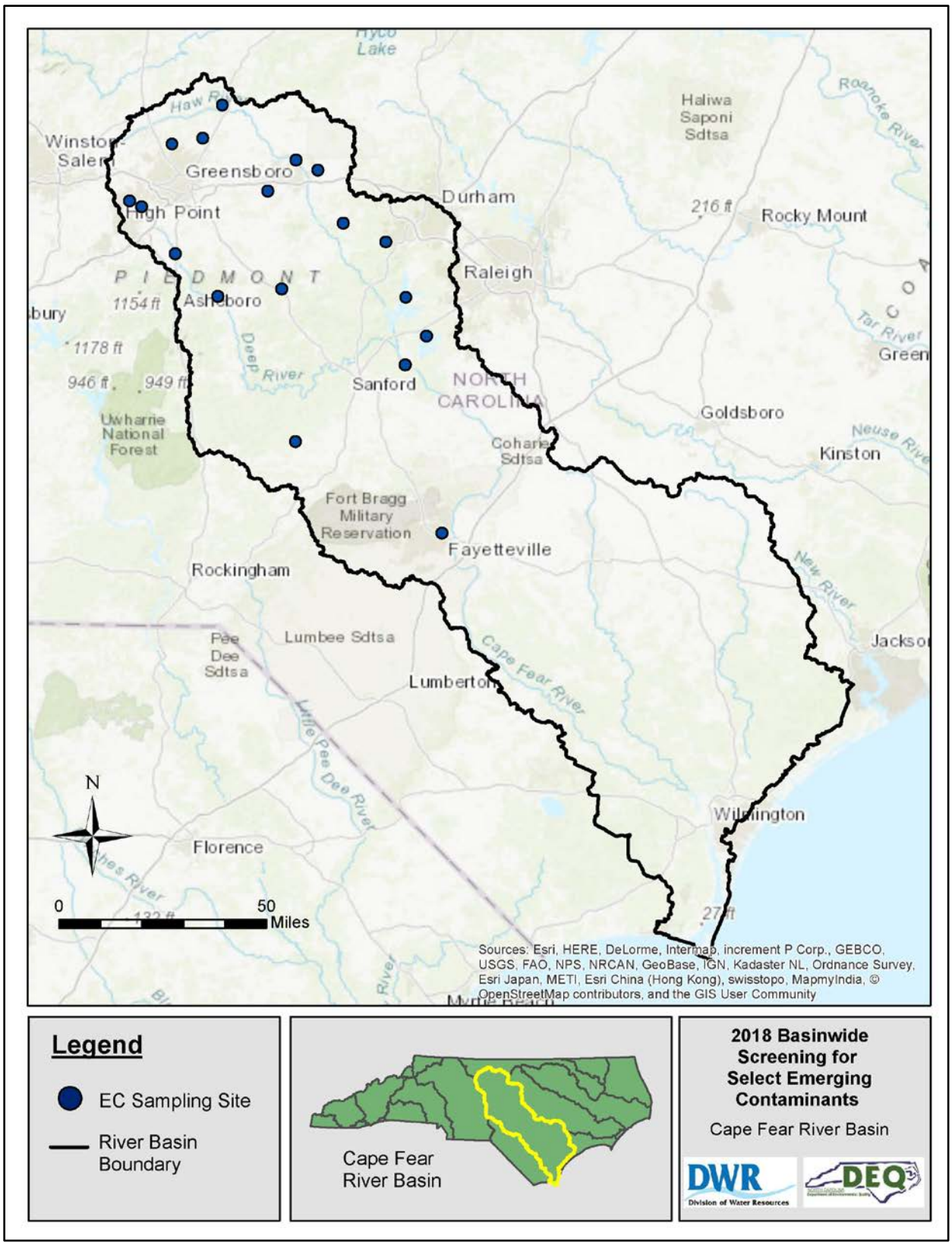

Figure 1. *Selected Sites in the Cape Fear River Basin*

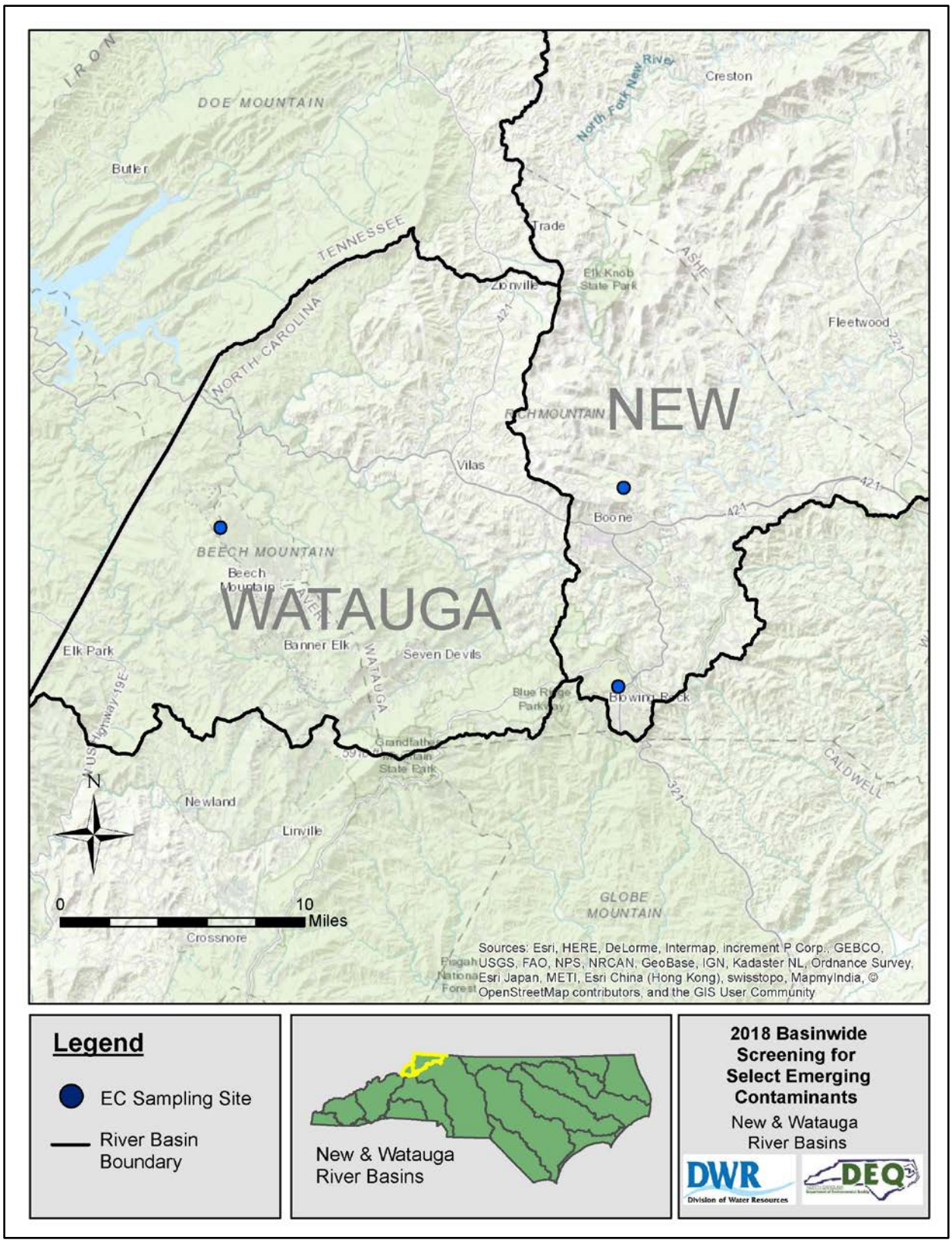

***Figure 2**. Selected sites in the New and Watauga River Basins*

Methods

Selected sites were sampled in conjunction with regularly scheduled sampling events as part of ALMP monitoring. Samples were collected in accordance with ISB's *Standard Operating Procedures Manual: Physical and Chemical Monitoring v2.1, Dec. 2014*[8] and *Ambient Lakes Quality Assurance Project Plan v2.0, March 2014*[9], as well as USEPA's *Standard Operating Procedures REV 1.0 Sampling for Per- and Polyfluoroalkyl Substances (PFAS) in Groundwater*[10]. Physical parameters were collected at surface (0.15 m) using an In-Situ multiparameter hydrosonde. Chemical samples were collected as surface grab samples. Due to the unique characteristics of PFAS and their relative novelty to sampling protocols, sampling methodology was drawn from various draft sources with additional guidance from USEPA Science and Ecosystem Support Division (SESD). PFAS samples, as well as relevant QA/QC samples collected by ISB staff, were analyzed by the SESD lab in Athens, GA. All PFAS samples were maintained under chain of custody documentation from the time of collection to the time of analysis. Bromide and 1,4- dioxane samples were analyzed by the DWR central laboratory in Raleigh, NC. Physical and chemical parameters collected are shown below in Table 2.

Physical Parameters	**Chemical Parameters** (ng/L unless otherwise noted)		
Temperature (°C)	4:2FTS	PFDA	PFNS
pH (s.u.)	6:2FTS	PFDoA	PFOA
Dissolved Oxygen (mg/L)	8:2FTS	PFDS	PFOS
Conductivity (µS/cm)	FOSA	PFHpA	PFPeA
Secchi Depth (m)	HFPO-DA	PFHpS	PFPeS
	N-MeFOSAA	PFHxA	PFTrDA
	PFBA	PFHxS	PFUdA
	PFBS	PFNA	1,4-Dioxane (µg/L)
			Bromide (mg/L)

Table 2. *Physical and chemical parameters collected. A list of unabbreviated PFAS analytes is provided in Appendix I.*

Results

Physical Results

No exceedances of state standards were observed at study sites for physical parameters during this study. A summary of ranges for physical parameters by site is shown below in Table 3. Physical conditions remained typical of those seen in previous years for their respective river basins, with higher temperature (°C), conductivity (µS/cm), pH (s.u.), and D.O. (mg/L) observed in the Cape Fear River basin than in the New or Watauga River basins. Most physical monitoring was completed prior to any impacts related to Hurricane Florence, which made landfall in NC on September 14th, 2018; however, three lakes in the Cape Fear River basin were sampled on September 20th after the storm passed: High Point Lake, Oak Hollow Lake, and Sandy Creek Reservoir. Decreases in conductivity and temperature indicate flushing from heavy rains may have occurred in September prior to the monthly site visit. All EC chemical parameter sampling was completed by August 2018; prior to the arrival of Hurricane Florence.

Station ID	Temp (°C)	pH (s.u.)	D.O. mg/L	Conductivity (µS/cm)	Secchi depth (m)
CAPE FEAR					
CPF138B	25.5- 29.5	6.5- 6.9	6.0- 8.6	29- 54	0.6- 0.9
CPF126A6	21.2- 28.0	7.3- 7.8	5.3- 9.9	172- 192	0.7- 1.3
CPFBDL2	17.8- 28.4	7.2- 8.3	8.1- 10.4	119- 202	0.5- 0.7
CPFUL6	23.5- 30.8	7.3- 8.3	6.4- 11.5	84- 112	0.6- 1.1
CPFCCR6	18.4- 30.0	6.9- 8.0	8.0- 11.5	73- 80	0.8- 1.7
CPFGMR4	25.7- 32.3	6.9- 8.6	7.2- 9.2	77- 85	0.5- 0.9
CPFSCR4	25.2-33.0	7.0- 7.7	6.8- 9.2	71- 103	0.5- 0.8
CPF113R	21.3- 30.5	6.2- 6.9	7.6- 8.5	38- 45	0.7- 1.2
CPFTR01	24.4- 27.7	6.8- 7.2	5.7- 10.7	77- 95	0.3- 0.6
CPF038N	21.4- 29.6	7.3- 8.1	7.2- 10.3	100- 120	0.8- 2.0
CPF002A2	28.1- 29.2	7.0- 8.1	4.8- 5.7	54- 82	0.2- 1.0
CPFSC1	24.7- 29.0	7.2- 8.2	6.3- 11.0	68- 126	0.4- 1.1
CPFLT8	27.6- 29.6	7.2- 8.4	7.1- 9.4	109- 116	1.5- 2.2
CPFRD4	26.1- 30.3	7.7- 8.7	7.0- 8.0	204- 217	1.0- 1.1
CPF007B	27.0- 29.2	7.1- 7.5	7.1- 7.5	121- 124	0.7- 0.8
CPF089E4	22.7- 29.6	7.3- 7.6	4.7- 7.6	84- 145	0.8- 1.2
CPF089D5	20.6- 28.4	7.3- 7.8	5.3- 8.3	74- 125	0.2- 1.1
NEW					
NEW006E	17.9- 24.4	6.5- 7.5	6.2- 7.9	53- 61	1.4- 3.5
NEWBTP1	21.9- 24.2	7.0- 7.8	7.7- 8.5	15- 16	1.5- 2.7
WATAUGA					
WATBL1	20.9- 23.2	6.8- 7.5	6.6- 8.1	26- 27	2.6- 3.4

Table 3. *Physical parameter ranges for the Cape Fear, New, and Watauga River Basins, May- September 2018*

Chemical Results

The organic compound 1,4-dioxane was detected at two sites in the Cape Fear River Basin: CPFBDL1 in Buckhorn Reservoir (1.4 µg/L), and CPFRD4 in Randleman Reservoir (2.7 µg/L). Both values exceed the North Carolina Protective Value for Surface Waters of 0.35 µg/L for water supplies. As noted earlier, North Carolina protective values are health-based guidelines, not regulatory limits, and may be based on limited toxicological information.

Only two PFAS results were above the minimum reporting limit (MRL), defined by EPA as the "analyte concentration that corresponds to the lowest demonstrated level of acceptable quantitation.".[11] Perfluoro-n-octanesulfonic acid (PFOS) was detected twice during this effort: once in Lake Brandt with an observed concentration of 68 ng/L, and once in Cane Creek Reservoir with a concentration of 76 ng/L. A summary of detected compounds is shown in Table 4.

Additionally, numerous other PFAS compounds were detected above their respective method detection limits (MDL), defined by EPA as "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"[11]. These compounds, as well as a complete list of sampling results by station, are provided in Appendix II.

Bromide was not detected above the practical quantitation limit (PQL) of 0.4 µg/L at any of the study sites during this effort. NCDWR defines the PQL as the lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions.

Station ID/ Analyte	CPFBDL1	CPFRD4	CPF007B	CPFCCR6
PFOS			7/12/2018 68 ng/L	5/3/2018 76 ng/L
1,4-Dioxane	5/1//2018 1.4 µg/L	7/10/2018 2.7 µg/L		

Table 4. Values of detected compounds and detection date for sites with values above PQLs.

Summary

Given this relatively small data set and sample frequency, it is impossible to draw conclusive statements about the prevalence of these select emerging compounds in the Cape Fear, New and Watauga River Basins; however, results do indicate that the analytes of interest are not omnipresent at water intakes on PWS reservoirs. Given that these compounds are considered ubiquitous in the environment, it is assumed that they can be found in nearly every watershed. A multitude of factors could influence detection rates during this study, chief among them, the dilution of compounds introduced upstream of water intakes. Precipitation events were not specifically targeted during this study, and no relationship between storm flows and presence or concentration of target analytes was evaluated. Concentrations of PFOS near or above the EPA's health-based threshold of 70 ng/L in Lake Brandt and Cane Creek Reservoir warrant additional study, as do detected concentrations of 1,4-dioxane found in excess of four times the NC Protective Value for Surface Waters in Buckhorn and Randleman Reservoirs. As noted earlier, all analytical data presented in this document reflect levels of target analytes detected in untreated surface waters, and do not represent contaminant concentrations in finished drinking water.

For any further questions or comments, please contact the ISB Supervisor Eric Morris at 919-743-8496 or eric.morris@ncdenr.gov.

References:

1. Intensive Survey Unit. 2016. *Ambient Lakes Monitoring.* https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/intensive-survey-branch/ambient-lakes-monitoring
2. USEPA. 2017. *Technical Fact Sheet – 1,4-Dioxane*. https://www.epa.gov/sites/production/files/2014-03/documents/ffrro_factsheet_contaminant_14-dioxane_january2014_final.pdf\
3. USEPA. 2012. *The Third Unregulated Contaminant Monitoring Rule.* https://www.epa.gov/sites/production/files/2015-10/documents/ucmr3_factsheet_general.pdf
4. NCDWR. 2017. *NC Surface Water Quality Standards Table.* https://deq.nc.gov/about/divisions/water-resources/planning/classification-standards/surface-water-standards#TriennialReviewInfo
5. USEPA. 2018. *Basic Information on PFAS.* https://www.epa.gov/pfas/basic-information-pfas#health
6. USEPA. 2016. *Fact Sheet: PFOA & PFOS Drinking Water Health Advisories.* https://www.epa.gov/ground-water-and-drinking-water/supporting-documents-drinking-water-health-advisories-pfoa-and-pfos
7. Good, K.D., VanBriesen, J.M. 2017. *Potential Drinking Water Effects of Bromide Discharges from Coal-Fired Electric Power Plants.* https://www3.epa.gov/region1/npdes/merrimackstation/pdfs/Comments2RevisedDraftPermit/VanBriesenReport.pdf
8. DWR-WSS. 2013. *Intensive Survey Branch Standard Operating Procedures Manual: Physical and Chemical Monitoring.* Raleigh: State of North Carolina. https://files.nc.gov/ncdeq/Water%20Quality/Environmental%20Sciences/ISU/ISB%20SOP%20Version2.1%20%20FINAL.pdf
9. NCDEQ. 2014. *Ambient Lakes Monitoring Program (ALMP) Quality Assurance Project Plan v2.0.* https://files.nc.gov/ncdeq/Water%20Quality/Environmental%20Sciences/ISU/2014LakesAll.pdf
10. USEPA. 2017. *Standard Operating Procedures REV 1.0 Sampling for Per- and Polyfluoroalkyl Substances (PFAS) in Groundwater.*
11. USEPA. 2018. *Analytical Services Branch Laboratory Operations and Quality Assurance Manual* https://www.epa.gov/sites/production/files/2018-06/documents/asb_loqam_042418.pdf

CASRN	Abbreviation	Chemical Name
72629-94-8	PFTrDA	Perfluoro-n-tridecanoic acid
307-55-1	PFDoA	Perfluoro-n-dodecanoic acid
2058-94-8	PFUdA	Perfluoro-n-undecanoic acid
335-76-2	PFDA	Perfluoro-n-decanoic acid
375-95-1	PFNA	Perfluoro-n-nonanoic acid
335-67-1	PFOA	Perfluoro-n-octanoic acid
375-85-9	PFHpA	Perfluoro-n-heptanoic acid
307-24-4	PFHxA	Perfluoro-n-hexanoic acid
2706-90-3	PFPeA	Perfluoro-n-pentanoic acid
375-22-4	PFBA	Perfluoro-n-butanoic acid
335-77-3	PFDS	Perfluoro-n-decanesulfonate
68259-12-1	PFNS	Perfluoro-n-nonanesulfonate
1763-23-1	PFOS	Perfluoro-n-octanesulfonate
375-92-8	PFHpS	Perfluoro-n-heptanesulfonate
355-46-4	PFHxS	Perfluoro-n-hexanesulfonate
2706-91-4	PFPeS	Perfluoro-n-pentansulfonate
375-73-5	PFBS	Perfluoro-n-butanesulfonate
754-91-6	FOSA	Perfluoro-n-octanesulfonamide
39108-34-4	8:2 FTS	8:2 Fluorotelomer sulfonate
27619-97-2	6:2 FTS	6:2 Fluorotelomer sulfonate
757124-72-4	4:2 FTS	4:2 Fluorotelomer sulfonate
2355-31-9	N-MeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
13252-13-6	HFPO-DA[1]	Propanoic acid, 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)
[1]The anion of the ammonium salt known as ”GenX”		

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: 18-0033
Project: 18-0406, NC Reservoirs PFAS - Reported by Floyd Wellborn

February 12, 2019

4SESD-ASB

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 18-0406, NC Reservoirs PFAS

FROM: Floyd Wellborn
ASB Organic Chemistry Section Chief

THRU: Sandra Aker, Chief
Analytical Services Branch

TO: Floyd Wellborn

This data report is being reissued. Some or all of these results were previously reported. Please substitute the corrected results for those results previously reported. Please refer to the Report Narrative for more details.

Attached are the final results for the analytical groups listed below. These analyses were performed in accordance with the Analytical Services 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:	Accreditations:
Semi Volatile Organics (SVOA)		
PFAS	ASBPROC-800 PFAS (Water)	

Report Narrative for Work Order: E181902 Analysis: SVOA

2/12/19 FW: HFPO-DA results were re-evaluated and determined to fail the identification criteria prescribed by the analysis method. Previously reported concentration of HFPO-DA greater than the MDL but less than the MRL in sample E181902-05 has been re-reported with the result of not detected at or above the minimum reporting limit. No other results were changed. This report replaces the previous report E181902 SVOA FINAL 06 11 18 1624.

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
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0033
Project: 18-0406, NC Reservoirs PFAS - Reported by Floyd Wellborn

SAMPLES INCLUDED IN THIS REPORT

Project: 18-0406, NC Reservoirs PFAS

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
CPFBDL1 Buckhorn Dam Lake Upstream of I	E181902-01	Water	5/1/18 13:00	5/8/18 10:15
CPF126A6 Harris Lake at SR1915 nr Corinth,	E181902-02	Water	5/1/18 11:25	5/8/18 10:15
CPFCCR6 Cane Creek Reservoir at Dam nr O	E181902-03	Water	5/3/18 13:40	5/8/18 10:15
CPFUL6 University Lake at Dam nr Chapel H	E181902-04	Water	5/3/18 15:20	5/8/18 10:15
Trip Blank 2	E181902-05	Trip Blank - Water	5/4/18 09:00	5/8/18 10:15
CPF038N Lake Mackintosh at Dam	E181902-06	Water	5/3/18 10:50	5/8/18 10:15
Trip Blank 1	E181902-07	Trip Blank - Water	5/4/18 09:00	5/8/18 10:15

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
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Project: 18-0406, NC Reservoirs PFAS - Reported by Floyd Wellborn

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-1	Analyte concentration low in continuing calibration verification standard
QC-3	Analyte calibration criteria not met
QC-5	Calibration check standard less than method control limits.
QL-1	Laboratory Control Spike Recovery less than method control limits
QL-3	Laboratory Control 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/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
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Project: 18-0406, NC Reservoirs PFAS - Reported by Floyd Wellborn

Semi Volatile Organics

Project: 18-0406, NC Reservoirs PFAS

Sample ID: CPFBDL1 Buckhorn Dam Lake Upstream of I **Lab ID:** E181902-01
Station ID: CPFBDL1 **Matrix:** Water

Date Collected: 5/1/18 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
27619-97-2	6:2FTS	79	U	ng/L	79	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
39108-34-4	8:2FTS	79	U, J, QC-5	ng/L	79	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
754-91-6	FOSA	39	U, J, QL-3	ng/L	39	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	39	U, J, QC-3, QL-3	ng/L	39	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
375-22-4	PFBA	79	U	ng/L	79	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
375-73-5	PFBS	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
335-76-2	PFDA	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
307-55-1	PFDoA	160	U	ng/L	160	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
335-77-3	PFDS	39	U, J, QC-3	ng/L	39	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
375-85-9	PFHpA	27	J, Q-2	ng/L	39	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
375-92-8	PFHpS	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
307-24-4	PFHxA	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
355-46-4	PFHxS	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
375-95-1	PFNA	160	U, J, QL-3	ng/L	160	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
68259-12-1	PFNS	160	U	ng/L	160	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
335-67-1	PFOA	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
1763-23-1	PFOS	18	J, Q-2	ng/L	39	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
2706-90-3	PFPeA	21	J, Q-2	ng/L	39	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0406, NC Reservoirs PFAS

Sample ID: CPFBDL1 Buckhorn Dam Lake Upstream of I **Lab ID:** E181902-01

Station ID: CPFBDL1 **Matrix:** Water

Date Collected: 5/1/18 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
72629-94-8	PFTrDA	79	U, J, QC-1, QC-5, QL-3	ng/L	79	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS
2058-94-8	PFUdA	79	U, J, QC-3, QL-1, QC-5	ng/L	79	5/22/18 15:20	6/05/18 16:27	ASBPROC-800 PFAS

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Project: 18-0406, NC Reservoirs PFAS

Sample ID: CPF126A6 Harris Lake at SR1915 nr Corinth, **Lab ID:** E181902-02
Station ID: CPF126A6 **Matrix:** Water

Date Collected: 5/1/18 11:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
27619-97-2	6:2FTS	79	U	ng/L	79	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
39108-34-4	8:2FTS	79	U, J, QC-5	ng/L	79	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
754-91-6	FOSA	39	U, J, QL-3	ng/L	39	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	39	U, J, QC-3, QL-3	ng/L	39	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
375-22-4	PFBA	79	U	ng/L	79	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
375-73-5	PFBS	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
335-76-2	PFDA	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
307-55-1	PFDoA	160	U	ng/L	160	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
335-77-3	PFDS	39	U, J, QC-3	ng/L	39	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
375-85-9	PFHpA	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
375-92-8	PFHpS	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
307-24-4	PFHxA	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
355-46-4	PFHxS	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
375-95-1	PFNA	160	U, J, QL-3	ng/L	160	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
68259-12-1	PFNS	160	U	ng/L	160	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
335-67-1	PFOA	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
1763-23-1	PFOS	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
2706-90-3	PFPeA	21	J, Q-2	ng/L	39	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS

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Project: 18-0406, NC Reservoirs PFAS

Sample ID: CPF126A6 Harris Lake at SR1915 nr Corinth, **Lab ID:** E181902-02

Station ID: CPF126A6 **Matrix:** Water

Date Collected: 5/1/18 11:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	39	U	ng/L	39	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
72629-94-8	PFTrDA	79	U, J, QC-1, QC-5, QL-3	ng/L	79	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS
2058-94-8	PFUdA	79	U, J, QC-3, QL-1, QC-5	ng/L	79	5/22/18 15:20	6/05/18 16:50	ASBPROC-800 PFAS

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Project: 18-0406, NC Reservoirs PFAS

Sample ID: CPFCCR6 Cane Creek Reservoir at Dam nr O **Lab ID:** E181902-03

Station ID: CPFCCR6 **Matrix:** Water

Date Collected: 5/3/18 13:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
27619-97-2	6:2FTS	80	U	ng/L	80	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
39108-34-4	8:2FTS	80	U, J, QC-5	ng/L	80	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
754-91-6	FOSA	40	U, J, QL-3	ng/L	40	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	40	U, J, QL-3, QC-3	ng/L	40	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
375-22-4	PFBA	80	U	ng/L	80	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
375-73-5	PFBS	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
335-76-2	PFDA	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
307-55-1	PFDoA	160	U	ng/L	160	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
335-77-3	PFDS	40	U, J, QC-3	ng/L	40	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
375-85-9	PFHpA	24	J, Q-2	ng/L	40	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
375-92-8	PFHpS	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
307-24-4	PFHxA	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
355-46-4	PFHxS	20	J, Q-2	ng/L	40	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
375-95-1	PFNA	160	U, J, QL-3	ng/L	160	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
68259-12-1	PFNS	160	U	ng/L	160	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
335-67-1	PFOA	37	J, Q-2	ng/L	40	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
1763-23-1	PFOS	76		ng/L	40	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
2706-90-3	PFPeA	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS

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Project: 18-0406, NC Reservoirs PFAS

Sample ID: CPFCCR6 Cane Creek Reservoir at Dam nr O **Lab ID:** E181902-03

Station ID: CPFCCR6 **Matrix:** Water

Date Collected: 5/3/18 13:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	8.2	J, Q-2	ng/L	40	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
72629-94-8	PFTrDA	80	U, J, QC-5, QL-3, QC-1	ng/L	80	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS
2058-94-8	PFUdA	80	U, J, QC-5, QL-1, QC-3	ng/L	80	5/22/18 15:20	6/05/18 17:12	ASBPROC-800 PFAS

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Project: 18-0406, NC Reservoirs PFAS

Sample ID: CPFUL6 University Lake at Dam nr Chapel H **Lab ID:** E181902-04

Station ID: CPFUL6 **Matrix:** Water

Date Collected: 5/3/18 15:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	41	U	ng/L	41	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
27619-97-2	6:2FTS	82	U	ng/L	82	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
39108-34-4	8:2FTS	82	U, J, QC-5	ng/L	82	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
754-91-6	FOSA	41	U, J, QL-3	ng/L	41	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	41	U	ng/L	41	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	41	U, J, QC-3, QL-3	ng/L	41	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
375-22-4	PFBA	82	U	ng/L	82	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
375-73-5	PFBS	41	U	ng/L	41	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
335-76-2	PFDA	41	U	ng/L	41	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
307-55-1	PFDoA	160	U, J, QS-3	ng/L	160	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
335-77-3	PFDS	41	U, J, QC-3	ng/L	41	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
375-85-9	PFHpA	41	U	ng/L	41	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
375-92-8	PFHpS	41	U	ng/L	41	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
307-24-4	PFHxA	41	U	ng/L	41	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
355-46-4	PFHxS	41	U	ng/L	41	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
375-95-1	PFNA	160	U, J, QL-3	ng/L	160	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
68259-12-1	PFNS	160	U	ng/L	160	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
335-67-1	PFOA	41	U	ng/L	41	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
1763-23-1	PFOS	41	U	ng/L	41	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
2706-90-3	PFPeA	41	U	ng/L	41	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS

Semi Volatile Organics

Project: 18-0406, NC Reservoirs PFAS

Sample ID: CPFUL6 University Lake at Dam nr Chapel H **Lab ID:** E181902-04

Station ID: CPFUL6 **Matrix:** Water

Date Collected: 5/3/18 15:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	41	U	ng/L	41	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
72629-94-8	PFTrDA	82	U, J, QC-1, QS-3, QC-5, QL-3	ng/L	82	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS
2058-94-8	PFUdA	82	U, J, QC-3, QC-5, QL-1	ng/L	82	5/22/18 15:20	6/05/18 17:35	ASBPROC-800 PFAS

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Project: 18-0406, NC Reservoirs PFAS

Sample ID: Trip Blank 2 **Lab ID:** E181902-05

Station ID: **Matrix:** Trip Blank - Water

Date Collected: 5/4/18 9:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
27619-97-2	6:2FTS	80	U	ng/L	80	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
39108-34-4	8:2FTS	80	U, J, QC-5	ng/L	80	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
754-91-6	FOSA	40	U, J, QL-3	ng/L	40	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	40	U, J, QC-3, QL-3	ng/L	40	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
375-22-4	PFBA	80	U	ng/L	80	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
375-73-5	PFBS	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
335-76-2	PFDA	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
307-55-1	PFDoA	160	U	ng/L	160	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
335-77-3	PFDS	40	U, J, QC-3	ng/L	40	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
375-85-9	PFHpA	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
375-92-8	PFHpS	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
307-24-4	PFHxA	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
355-46-4	PFHxS	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
375-95-1	PFNA	160	U, J, QL-3	ng/L	160	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
68259-12-1	PFNS	160	U	ng/L	160	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
335-67-1	PFOA	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
1763-23-1	PFOS	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
2706-90-3	PFPeA	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS

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Project: 18-0406, NC Reservoirs PFAS

Sample ID: Trip Blank 2 **Lab ID:** E181902-05

Station ID: **Matrix:** Trip Blank - Water

Date Collected: 5/4/18 9:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	40	U	ng/L	40	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
72629-94-8	PFTrDA	80	U, J, QC-1, QC-5, QL-3	ng/L	80	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS
2058-94-8	PFUdA	80	U, J, QC-3, QC-5, QL-1	ng/L	80	5/22/18 15:20	6/05/18 17:57	ASBPROC-800 PFAS

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Project: 18-0406, NC Reservoirs PFAS

Sample ID: CPF038N Lake Mackintosh at Dam **Lab ID:** E181902-06
Station ID: CPF038N **Matrix:** Water

Date Collected: 5/3/18 10:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	38	U	ng/L	38	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
27619-97-2	6:2FTS	76	U	ng/L	76	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
39108-34-4	8:2FTS	76	U, J, QC-5	ng/L	76	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
754-91-6	FOSA	38	U, J, QL-3	ng/L	38	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	38	U	ng/L	38	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	38	U, J, QC-3, QL-3	ng/L	38	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
375-22-4	PFBA	76	U	ng/L	76	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
375-73-5	PFBS	38	U	ng/L	38	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
335-76-2	PFDA	38	U	ng/L	38	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
307-55-1	PFDoA	150	U	ng/L	150	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
335-77-3	PFDS	38	U, J, QC-3	ng/L	38	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
375-85-9	PFHpA	38	U	ng/L	38	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
375-92-8	PFHpS	38	U	ng/L	38	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
307-24-4	PFHxA	38	U	ng/L	38	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
355-46-4	PFHxS	38	U	ng/L	38	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
375-95-1	PFNA	150	U, J, QL-3	ng/L	150	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
68259-12-1	PFNS	150	U	ng/L	150	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
335-67-1	PFOA	38	U	ng/L	38	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
1763-23-1	PFOS	38	U	ng/L	38	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
2706-90-3	PFPeA	38	U	ng/L	38	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS

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: 18-0033
Project: 18-0406, NC Reservoirs PFAS - Reported by Floyd Wellborn

Semi Volatile Organics

Project: 18-0406, NC Reservoirs PFAS

Sample ID: CPF038N Lake Mackintosh at Dam **Lab ID:** E181902-06

Station ID: CPF038N **Matrix:** Water

Date Collected: 5/3/18 10:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	38	U	ng/L	38	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
72629-94-8	PFTrDA	76	U, J, QC-1, QC-5, QL-3	ng/L	76	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS
2058-94-8	PFUdA	76	U, J, QC-3, QL-1, QC-5	ng/L	76	5/22/18 15:20	6/05/18 18:20	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0406, NC Reservoirs PFAS

Sample ID: Trip Blank 1 **Lab ID:** E181902-07

Station ID: **Matrix:** Trip Blank - Water

Date Collected: 5/4/18 9:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40	U	ng/L	40	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
27619-97-2	6:2FTS	80	U	ng/L	80	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
39108-34-4	8:2FTS	80	U, J, QC-5	ng/L	80	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
754-91-6	FOSA	40	U, J, QL-3	ng/L	40	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	40	U, J, QC-3, QL-3	ng/L	40	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
375-22-4	PFBA	80	U	ng/L	80	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
375-73-5	PFBS	40	U	ng/L	40	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
335-76-2	PFDA	40	U	ng/L	40	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
307-55-1	PFDoA	160	U	ng/L	160	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
335-77-3	PFDS	40	U, J, QC-3	ng/L	40	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
375-85-9	PFHpA	40	U	ng/L	40	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
375-92-8	PFHpS	40	U	ng/L	40	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
307-24-4	PFHxA	40	U	ng/L	40	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
355-46-4	PFHxS	40	U	ng/L	40	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
375-95-1	PFNA	160	U, J, QL-3	ng/L	160	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
68259-12-1	PFNS	160	U	ng/L	160	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
335-67-1	PFOA	40	U	ng/L	40	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
1763-23-1	PFOS	40	U	ng/L	40	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
2706-90-3	PFPeA	40	U	ng/L	40	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS

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D.A.R.T. Id: 18-0033
Project: 18-0406, NC Reservoirs PFAS - Reported by Floyd Wellborn

Semi Volatile Organics

Project: 18-0406, NC Reservoirs PFAS

Sample ID: Trip Blank 1 **Lab ID:** E181902-07

Station ID: **Matrix:** Trip Blank - Water

Date Collected: 5/4/18 9:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	40	U	ng/L	40	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
72629-94-8	PFTrDA	80	U, J, QC-1, QC-5, QL-3	ng/L	80	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS
2058-94-8	PFUdA	80	U, J, QC-3, QC-5, QL-1	ng/L	80	5/22/18 15:20	6/05/18 18:43	ASBPROC-800 PFAS

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1805079 - S PFC										
Blank (1805079-BLK1)				Prepared & Analyzed: 06/05/18						
ASBPROC-800 PFAS										
4:2FTS	U	40	ng/L							U
6:2FTS	U	80	"							U
8:2FTS	U	80	"							QC-5, U
FOSA	U	40	"							QL-3, U
HFPO-DA	U	40	"							U
N-MeFOSAA	U	40	"							QC-3, QL-3, U
PFBA	U	80	"							U
PFBS	U	40	"							U
PFDA	U	40	"							U
PFDoA	U	160	"							U
PFDS	U	40	"							QC-3, U
PFHpA	U	40	"							U
PFHpS	U	40	"							U
PFHxA	U	40	"							U
PFHxS	U	40	"							U
PFNA	U	160	"							QL-3, U
PFNS	U	160	"							U
PFOA	U	40	"							U
PFOS	U	40	"							U
PFPeA	U	40	"							U
PFPeS	U	40	"							U
PFTrDA	U	80	"							QC-1, QC-5, QL-3, U
PFUdA	U	80	"							QC-3, QC-5, QL-1, U
Blank (1805079-BLK2)				Prepared & Analyzed: 06/05/18						
ASBPROC-800 PFAS										
4:2FTS	U	40	ng/L							U
6:2FTS	U	80	"							U
8:2FTS	U	80	"							QC-5, U
FOSA	U	40	"							QS-3, QL-3, U
HFPO-DA	U	40	"							U
N-MeFOSAA	U	40	"							QC-3, QL-3, U
PFBA	U	80	"							U
PFBS	U	40	"							U

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1805079 - S PFC										
Blank (1805079-BLK2)				Prepared & Analyzed: 06/05/18						
PFDA	U	40	ng/L							U
PFDoA	U	160	"							U
PFDS	U	40	"							QC-3, U
PFHpA	U	40	"							U
PFHpS	U	40	"							U
PFHxA	U	40	"							U
PFHxS	U	40	"							U
PFNA	U	160	"							QL-3, U
PFNS	U	160	"							U
PFOA	U	40	"							U
PFOS	U	40	"							U
PFPeA	U	40	"							U
PFPeS	U	40	"							U
PFTrDA	U	80	"							QC-1, QC-5, QL-3, U
PFUdA	U	80	"							QC-3, QC-5, QL-1, U
LCS (1805079-BS1)				Prepared & Analyzed: 06/05/18						
ASBPROC-800 PFAS										
4:2FTS	349	40	ng/L	373.25		93.4	70-130			
6:2FTS	325	80	"	379.24		85.6	70-130			
8:2FTS	352	80	"	383.23		91.8	70-130			QC-5
FOSA	607	40	"	399.20		152	70-130			QL-2, QL-3
HFPO-DA	348	40	"	399.20		87.1	70-130			
N-MeFOSAA	286	40	"	399.20		71.7	70-130			QL-3, QC-3
PFBA	345	80	"	399.20		86.5	70-130			
PFBS	301	40	"	353.29		85.2	70-130			
PFDA	365	40	"	399.20		91.5	70-130			
PFDoA	335	160	"	399.20		83.9	70-130			
PFDS	338	40	"	385.23		87.9	70-130			QC-3
PFHpA	376	40	"	399.20		94.2	70-130			
PFHpS	353	40	"	379.24		93.1	70-130			
PFHxA	346	40	"	399.20		86.8	70-130			
PFHxS	306	40	"	364.07		84.2	70-130			
PFNA	329	160	"	399.20		82.4	70-130			QL-3
PFNS	287	160	"	383.23		75.0	70-130			QC-6
PFOA	369	40	"	399.20		92.4	70-130			

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1805079 - S PFC										
LCS (1805079-BS1)				Prepared & Analyzed: 06/05/18						
PFOS	344	40	ng/L	369.46		93.2	70-130			
PFPeA	358	40	"	399.20		89.8	70-130			
PFPeS	347	40	"	375.25		92.4	70-130			
PFTrDA	406	80	"	399.20		102	70-130			QC-5, QL-3, QC-1
PFUdA	259	80	"	399.20		64.8	70-130			QC-5, QL-1, QC-3
LCS Dup (1805079-BSD1)				Prepared & Analyzed: 06/05/18						
ASBPROC-800 PFAS										
4:2FTS	341	40	ng/L	373.25		91.2	70-130	2.38	30	
6:2FTS	390	80	"	379.24		103	70-130	18.3	30	
8:2FTS	348	80	"	383.23		90.9	70-130	0.944	30	QC-5
FOSA	301	40	"	399.20		75.3	70-130	67.4	30	QL-3
HFPO-DA	389	40	"	399.20		97.4	70-130	11.2	30	
N-MeFOSAA	607	40	"	399.20		152	70-130	71.8	30	QC-3, QL-2, QL-3
PFBA	353	80	"	399.20		88.5	70-130	2.21	30	
PFBS	305	40	"	353.29		86.5	70-130	1.50	30	
PFDA	428	40	"	399.20		107	70-130	15.8	30	
PFDoA	386	160	"	399.20		96.6	70-130	14.1	30	
PFDS	342	40	"	385.23		88.8	70-130	1.06	30	QC-3
PFHpA	374	40	"	399.20		93.6	70-130	0.663	30	
PFHpS	330	40	"	379.24		86.9	70-130	6.83	30	
PFHxA	334	40	"	399.20		83.6	70-130	3.70	30	
PFHxS	346	40	"	364.07		95.0	70-130	12.1	30	
PFNA	507	160	"	399.20		127	70-130	42.6	30	QL-3
PFNS	331	160	"	383.23		86.4	70-130	14.1	30	QC-6
PFOA	378	40	"	399.20		94.7	70-130	2.38	30	
PFOS	388	40	"	369.46		105	70-130	11.8	30	
PFPeA	366	40	"	399.20		91.8	70-130	2.21	30	
PFPeS	363	40	"	375.25		96.9	70-130	4.73	30	
PFTrDA	725	80	"	399.20		182	70-130	56.5	30	QC-1, QL-2, QC-5, QL-3
PFUdA	283	80	"	399.20		71.0	70-130	9.13	30	QC-3, QC-5

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1805079 - S PFC										
MRL Verification (1805079-PS1)				Prepared & Analyzed: 06/05/18						
ASBPROC-800 PFAS										
4:2FTS	23.3	40	ng/L	37.251		62.4	50-150			Q-2, MRL-2, J
6:2FTS	45.4	80	"	37.849		120	50-150			Q-2, J, MRL-2
FOSA	54.6	40	"	39.841		137	50-150			MRL-2
HFPO-DA	34.3	40	"	39.841		86.2	50-150			J, Q-2, MRL-2
N-MeFOSAA	52.3	40	"	39.841		131	50-150			MRL-2, QC-3
PFBS	36.2	40	"	35.259		103	50-150			J, Q-2, MRL-2
PFDA	49.1	40	"	39.841		123	50-150			MRL-2
PFDS	50.6	40	"	38.446		132	50-150			MRL-2, QC-3
PFHpA	36.9	40	"	39.841		92.5	50-150			J, Q-2, MRL-2
PFHpS	32.5	40	"	37.849		85.9	50-150			J, MRL-2, Q-2
PFHxA	49.9	40	"	39.841		125	50-150			MRL-2
PFHxS	22.3	40	"	36.335		61.3	50-150			J, MRL-2, Q-2
PFNS	32.6	160	"	38.247		85.2	50-150			J, QC-6, MRL-2, Q-2
PFOA	32.6	40	"	39.841		81.8	50-150			J, Q-2, MRL-2
PFOS	48.8	40	"	36.873		132	50-150			MRL-2
PFPeA	45.2	40	"	39.841		113	50-150			MRL-2
PFPeS	32.3	40	"	37.450		86.3	50-150			J, Q-2, MRL-2
MRL Verification (1805079-PS2)				Prepared & Analyzed: 06/05/18						
ASBPROC-800 PFAS										
8:2FTS	90.4	80	ng/L	153.60		58.9	50-150			QC-5, MRL-2
PFBA	141	80	"	160.00		87.8	50-150			MRL-2
PFDoA	226	160	"	160.00		141	50-150			MRL-2
PFNA	116	160	"	160.00		72.4	50-150			MRL-2, J, Q-2
PFTrDA	119	80	"	160.00		74.4	50-150			MRL-2, QC-1, QC-5

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1805079 - S PFC										
MRL Verification (1805079-PS2)				Prepared & Analyzed: 06/05/18						
PFUdA	115	80	ng/L	160.00		71.9	50-150			MRL-2, QC-3, QC-5

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
Q-2	Result greater than MDL but less than MRL.
QC-1	Analyte concentration low in continuing calibration verification standard
QC-3	Analyte calibration criteria not met
QC-5	Calibration check standard less than method control limits.
QC-6	Calibration check standard greater than method control limits.
QL-1	Laboratory Control Spike Recovery less than method control limits
QL-2	Laboratory Control Spike Recovery greater than method control limits
QL-3	Laboratory Control Spike Precision outside method control limits
QS-3	Surrogate recovery is lower than established control limits.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0033
Project: 18-0476, NC Reservoirs PFAS - Reported by Floyd Wellborn

July 24, 2018

4SESD-ASB

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 18-0476, NC Reservoirs PFAS
Drinking Water

FROM: Floyd Wellborn
ASB Organic Chemistry Section Chief

THRU: Danny France, Chief
Analytical Support Branch

TO: Floyd Wellborn

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:	Accreditations:
Semi Volatile Organics (SVOA)		
PFAS	ASBPROC-800 PFAS (Water)	

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.

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Project: 18-0476, NC Reservoirs PFAS - Reported by Floyd Wellborn

SAMPLES INCLUDED IN THIS REPORT

Project: 18-0476, NC Reservoirs PFAS

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
Trip Blank	E182414-01	Trip Blank - Water	6/6/18 07:15	6/14/18 11:05
Glenville Lake at Dam NR Fayetteville, NC	E182414-02	Water	6/6/18 10:05	6/14/18 11:05
CPF113R Carthage City Lake at Dam NR Car	E182414-03	Water	6/6/18 13:20	6/14/18 11:05
CPFGMR4 Graham Mebane Reservoir at Dan	E182414-04	Water	6/7/18 09:40	6/14/18 11:05

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Project: 18-0476, NC Reservoirs PFAS - Reported by Floyd Wellborn

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.
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/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
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D.A.R.T. Id: 18-0033
Project: 18-0476, NC Reservoirs PFAS - Reported by Floyd Wellborn

Semi Volatile Organics

Project: 18-0476, NC Reservoirs PFAS

Sample ID: Trip Blank **Lab ID:** E182414-01

Station ID: **Matrix:** Trip Blank - Water

Date Collected: 6/6/18 7:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
27619-97-2	6:2FTS	79	U	ng/L	79	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
39108-34-4	8:2FTS	79	U	ng/L	79	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
754-91-6	FOSA	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	79	U	ng/L	79	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
375-22-4	PFBA	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
375-73-5	PFBS	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
335-76-2	PFDA	160	U	ng/L	160	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
307-55-1	PFDoA	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
335-77-3	PFDS	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
375-85-9	PFHpA	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
375-92-8	PFHpS	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
307-24-4	PFHxA	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
355-46-4	PFHxS	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
375-95-1	PFNA	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
68259-12-1	PFNS	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
335-67-1	PFOA	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
1763-23-1	PFOS	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
2706-90-3	PFPeA	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS

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: 18-0033
Project: 18-0476, NC Reservoirs PFAS - Reported by Floyd Wellborn

Semi Volatile Organics

Project: 18-0476, NC Reservoirs PFAS

Sample ID: Trip Blank **Lab ID:** E182414-01

Station ID: **Matrix:** Trip Blank - Water

Date Collected: 6/6/18 7:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS
2058-94-8	PFUdA	40	U	ng/L	40	7/03/18 15:38	7/11/18 22:32	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0476, NC Reservoirs PFAS

Sample ID: Glenville Lake at Dam NR Fayetteville, NC **Lab ID:** E182414-02
Station ID: GLENVILLE LAKE AT DAM NR FAYETTE **Matrix:** Water

Date Collected: 6/6/18 10:05

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
27619-97-2	6:2FTS	78	U	ng/L	78	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
39108-34-4	8:2FTS	78	U	ng/L	78	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
754-91-6	FOSA	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	78	U	ng/L	78	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
375-22-4	PFBA	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
375-73-5	PFBS	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
335-76-2	PFDA	160	U	ng/L	160	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
307-55-1	PFDoA	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
335-77-3	PFDS	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
375-85-9	PFHpA	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
375-92-8	PFHpS	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
307-24-4	PFHxA	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
355-46-4	PFHxS	23	J, Q-2	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
375-95-1	PFNA	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
68259-12-1	PFNS	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
335-67-1	PFOA	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
1763-23-1	PFOS	31	J, Q-2	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
2706-90-3	PFPeA	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0476, NC Reservoirs PFAS

Sample ID: Glenville Lake at Dam NR Fayetteville, NC **Lab ID:** E182414-02
Station ID: GLENVILLE LAKE AT DAM NR FAYETTE **Matrix:** Water

Date Collected: 6/6/18 10:05

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
72629-94-8	PFTrDA	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS
2058-94-8	PFUdA	39	U	ng/L	39	7/03/18 15:38	7/11/18 22:52	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0476, NC Reservoirs PFAS

Sample ID: CPF113R Carthage City Lake at Dam NR Car **Lab ID:** E182414-03
Station ID: CPF113R **Matrix:** Water

Date Collected: 6/6/18 13:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
27619-97-2	6:2FTS	79	U	ng/L	79	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
39108-34-4	8:2FTS	79	U, J, QS-3	ng/L	79	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
754-91-6	FOSA	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	79	U	ng/L	79	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
375-22-4	PFBA	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
375-73-5	PFBS	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
335-76-2	PFDA	160	U	ng/L	160	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
307-55-1	PFDoA	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
335-77-3	PFDS	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
375-85-9	PFHpA	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
375-92-8	PFHpS	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
307-24-4	PFHxA	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
355-46-4	PFHxS	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
375-95-1	PFNA	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
68259-12-1	PFNS	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
335-67-1	PFOA	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
1763-23-1	PFOS	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
2706-90-3	PFPeA	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS

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D.A.R.T. Id: 18-0033
Project: 18-0476, NC Reservoirs PFAS - Reported by Floyd Wellborn

Semi Volatile Organics

Project: 18-0476, NC Reservoirs PFAS

Sample ID: CPF113R Carthage City Lake at Dam NR Car **Lab ID:** E182414-03

Station ID: CPF113R **Matrix:** Water

Date Collected: 6/6/18 13:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
72629-94-8	PFTrDA	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS
2058-94-8	PFUdA	40	U	ng/L	40	7/03/18 15:38	7/11/18 23:12	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0476, NC Reservoirs PFAS

Sample ID: CPFGMR4 Graham Mebane Reservoir at Dan **Lab ID:** E182414-04

Station ID: CPFGMR4 **Matrix:** Water

Date Collected: 6/7/18 9:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
27619-97-2	6:2FTS	77	U	ng/L	77	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
39108-34-4	8:2FTS	77	U	ng/L	77	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
754-91-6	FOSA	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	77	U	ng/L	77	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
375-22-4	PFBA	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
375-73-5	PFBS	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
335-76-2	PFDA	150	U	ng/L	150	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
307-55-1	PFDoA	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
335-77-3	PFDS	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
375-85-9	PFHpA	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
375-92-8	PFHpS	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
307-24-4	PFHxA	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
355-46-4	PFHxS	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
375-95-1	PFNA	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
68259-12-1	PFNS	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
335-67-1	PFOA	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
1763-23-1	PFOS	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
2706-90-3	PFPeA	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS

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D.A.R.T. Id: 18-0033
Project: 18-0476, NC Reservoirs PFAS - Reported by Floyd Wellborn

Semi Volatile Organics

Project: 18-0476, NC Reservoirs PFAS

Sample ID: CPFGMR4 Graham Mebane Reservoir at Dan **Lab ID:** E182414-04

Station ID: CPFGMR4 **Matrix:** Water

Date Collected: 6/7/18 9:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
72629-94-8	PFTrDA	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS
2058-94-8	PFUdA	39	U	ng/L	39	7/03/18 15:38	7/11/18 23:32	ASBPROC-800 PFAS

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1807023 - S PFC										
Blank (1807023-BLK1)				Prepared & Analyzed: 07/11/18						
ASBPROC-800 PFAS										
4:2FTS	U	40	ng/L							U
6:2FTS	U	80	"							U
8:2FTS	U	80	"							U
FOSA	U	40	"							U
HFPO-DA	U	40	"							U
N-MeFOSAA	U	80	"							U
PFBA	U	40	"							U
PFBS	U	40	"							U
PFDA	U	160	"							U
PFDoA	U	40	"							U
PFDS	U	40	"							U
PFHpA	U	40	"							U
PFHpS	U	40	"							U
PFHxA	U	40	"							U
PFHxS	U	40	"							U
PFNA	U	40	"							U
PFNS	U	40	"							U
PFOA	U	40	"							U
PFOS	U	40	"							U
PFPeA	U	40	"							U
PFPeS	U	40	"							U
PFTrDA	U	40	"							U
PFUdA	U	40	"							U
Blank (1807023-BLK2)				Prepared & Analyzed: 07/11/18						
ASBPROC-800 PFAS										
4:2FTS	U	40	ng/L							U
6:2FTS	U	80	"							U
8:2FTS	U	80	"							U
FOSA	U	40	"							U
HFPO-DA	U	40	"							U
N-MeFOSAA	U	80	"							U
PFBA	U	40	"							U
PFBS	U	40	"							U
PFDA	U	160	"							U
PFDoA	U	40	"							U
PFDS	U	40	"							U
PFHpA	U	40	"							U
PFHpS	U	40	"							U

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1807023 - S PFC										
Blank (1807023-BLK2)				Prepared & Analyzed: 07/11/18						
PFHxA	U	40	ng/L							U
PFHxS	U	40	"							U
PFNA	U	40	"							U
PFNS	U	40	"							U
PFOA	U	40	"							U
PFOS	U	40	"							U
PFPeA	U	40	"							U
PFPeS	U	40	"							U
PFTrDA	U	40	"							U
PFUdA	U	40	"							U
LCS (1807023-BS1)				Prepared & Analyzed: 07/11/18						
ASBPROC-800 PFAS										
4:2FTS	367	40	ng/L	374.00		98.1	70-130			
6:2FTS	360	80	"	380.00		94.6	70-130			
8:2FTS	374	80	"	384.00		97.4	70-130			
FOSA	371	40	"	400.00		92.8	70-130			
HFPO-DA	411	40	"	400.00		103	70-130			
N-MeFOSAA	409	80	"	400.00		102	70-130			
PFBA	367	40	"	400.00		91.8	70-130			
PFBS	381	40	"	354.00		108	70-130			
PFDA	441	160	"	400.00		110	70-130			
PFDoA	416	40	"	400.00		104	70-130			
PFDS	369	40	"	386.00		95.5	70-130			
PFHpA	389	40	"	400.00		97.2	70-130			
PFHpS	345	40	"	380.00		90.9	70-130			
PFHxA	416	40	"	400.00		104	70-130			
PFHxS	328	40	"	364.80		90.0	70-130			
PFNA	389	40	"	400.00		97.3	70-130			
PFNS	332	40	"	384.00		86.5	70-130			
PFOA	408	40	"	400.00		102	70-130			
PFOS	345	40	"	370.20		93.1	70-130			
PFPeA	391	40	"	400.00		97.7	70-130			
PFPeS	336	40	"	376.00		89.3	70-130			
PFTrDA	551	40	"	400.00		138	70-130			QL-2
PFUdA	407	40	"	400.00		102	70-130			

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1807023 - S PFC										
MRL Verification (1807023-PS1)				Prepared: 07/11/18 Analyzed: 07/17/18						
ASBPROC-800 PFAS										
4:2FTS	45.5	40	ng/L	37.400		122	50-150			MRL-2
FOSA	39.2	40	"	40.000		98.0	50-150			Q-2, MRL-2, J
HFPO-DA	37.6	40	"	40.000		94.1	50-150			Q-2, MRL-2, J
PFBA	59.1	40	"	40.000		148	50-150			MRL-2
PFBS	41.2	40	"	35.400		116	50-150			MRL-2
PFDoA	50.5	40	"	40.000		126	50-150			MRL-2
PFDS	40.1	40	"	38.600		104	50-150			MRL-2
PFHpA	43.6	40	"	40.000		109	50-150			MRL-2
PFHpS	37.9	40	"	38.000		99.7	50-150			Q-2, MRL-2, J
PFHxA	55.9	40	"	40.000		140	50-150			MRL-2
PFHxS	23.6	40	"	36.480		64.7	50-150			Q-2, MRL-2, J
PFNA	37.2	40	"	40.000		93.1	50-150			Q-2, MRL-2, J
PFNS	40.6	40	"	38.400		106	50-150			MRL-2
PFOA	45.2	40	"	40.000		113	50-150			MRL-2
PFOS	31.4	40	"	37.020		85.0	50-150			Q-2, MRL-2, J
PFPeA	39.5	40	"	40.000		98.8	50-150			Q-2, MRL-2, J
PFPeS	35.5	40	"	37.600		94.4	50-150			Q-2, MRL-2, J
PFTrDA	43.8	40	"	40.000		110	50-150			MRL-2
PFUdA	56.7	40	"	40.000		142	50-150			MRL-2
MRL Verification (1807023-PS2)				Prepared: 07/11/18 Analyzed: 07/17/18						
ASBPROC-800 PFAS										
6:2FTS	158	80	ng/L	152.00		104	50-150			MRL-2
8:2FTS	192	80	"	153.60		125	50-150			MRL-2
N-MeFOSAA	151	80	"	160.00		94.3	50-150			MRL-2
PFDA	182	160	"	160.00		114	50-150			MRL-2

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
Q-2	Result greater than MDL but less than MRL.
QL-2	Laboratory Control Spike Recovery greater than method control limits

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: 18-0033
Project: 18-0552, NC Reservoirs PFAS - Reported by Floyd Wellborn

August 16, 2018

4SESD-ASB

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 18-0552, NC Reservoirs PFAS
Drinking Water

FROM: Floyd Wellborn
ASB Organic Chemistry Section Chief

THRU: Danny France, Chief
Analytical Support Branch

TO: Floyd Wellborn

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:	Accreditations:
Semi Volatile Organics (SVOA)		
PFAS	ASBPROC-800 PFAS (Water)	

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
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0033
Project: 18-0552, NC Reservoirs PFAS - Reported by Floyd Wellborn

SAMPLES INCLUDED IN THIS REPORT

Project: 18-0552, NC Reservoirs PFAS

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
CPFRD4 Randleman Lake at Water Intake	E182909-01	Water	7/10/18 13:20	7/17/18 10:30
CPFLT8 Lake Townsend at Dam near Greensb	E182909-02	Water	7/12/18 10:23	7/17/18 10:30
CPF007B Lake Brandt at Dam near Hillsdale	E182909-03	Water	7/12/18 12:15	7/17/18 10:30
CPFTR02 Turner Reservoir at Lacy's Creek	E182909-04	Water	7/10/18 09:40	7/17/18 10:30
CPFSC4 Stony Creek Res at Dam	E182909-05	Water	7/10/18 10:25	7/17/18 10:30
CPF002A2 Reidsville Lake at Dam	E182909-06	Water	7/12/18 09:45	7/17/18 10:30
Trip Blank	E182909-07	Trip Blank - Water	7/9/18 08:00	7/17/18 10:30

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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.

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.

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Semi Volatile Organics

Project: 18-0552, NC Reservoirs PFAS

Sample ID: CPFRD4 Randleman Lake at Water Intake **Lab ID:** E182909-01
Station ID: CPFRD4 **Matrix:** Water

Date Collected: 7/10/18 13:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
27619-97-2	6:2FTS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
39108-34-4	8:2FTS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
754-91-6	FOSA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	81	U	ng/L	81	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
375-22-4	PFBA	81	U	ng/L	81	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
375-73-5	PFBS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
335-76-2	PFDA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
307-55-1	PFDoA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
335-77-3	PFDS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
375-85-9	PFHpA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
375-92-8	PFHpS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
307-24-4	PFHxA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
355-46-4	PFHxS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
375-95-1	PFNA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
68259-12-1	PFNS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
335-67-1	PFOA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
1763-23-1	PFOS	31	J, Q-2	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
2706-90-3	PFPeA	18	J, Q-2	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS

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Semi Volatile Organics

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Sample ID: CPFRD4 Randleman Lake at Water Intake **Lab ID:** E182909-01
Station ID: CPFRD4 **Matrix:** Water

Date Collected: 7/10/18 13:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
72629-94-8	PFTrDA	81	U	ng/L	81	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS
2058-94-8	PFUdA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:19	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0552, NC Reservoirs PFAS

Sample ID: CPFLT8 Lake Townsend at Dam near Greensb **Lab ID:** E182909-02

Station ID: CPFLT8 **Matrix:** Water

Date Collected: 7/12/18 10:23

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
27619-97-2	6:2FTS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
39108-34-4	8:2FTS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
754-91-6	FOSA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	80	U	ng/L	80	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
375-22-4	PFBA	80	U	ng/L	80	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
375-73-5	PFBS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
335-76-2	PFDA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
307-55-1	PFDoA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
335-77-3	PFDS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
375-85-9	PFHpA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
375-92-8	PFHpS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
307-24-4	PFHxA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
355-46-4	PFHxS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
375-95-1	PFNA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
68259-12-1	PFNS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
335-67-1	PFOA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
1763-23-1	PFOS	33	J, Q-2	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
2706-90-3	PFPeA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS

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Sample ID: CPFLT8 Lake Townsend at Dam near Greensb **Lab ID:** E182909-02

Station ID: CPFLT8 **Matrix:** Water

Date Collected: 7/12/18 10:23

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
72629-94-8	PFTrDA	80	U	ng/L	80	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS
2058-94-8	PFUdA	40	U	ng/L	40	8/06/18 11:58	8/07/18 23:40	ASBPROC-800 PFAS

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Project: 18-0552, NC Reservoirs PFAS

Sample ID: CPF007B Lake Brandt at Dam near Hillsdale **Lab ID:** E182909-03
Station ID: CPF007B **Matrix:** Water

Date Collected: 7/12/18 12:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
27619-97-2	6:2FTS	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
39108-34-4	8:2FTS	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
754-91-6	FOSA	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	78	U	ng/L	78	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
375-22-4	PFBA	78	U	ng/L	78	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
375-73-5	PFBS	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
335-76-2	PFDA	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
307-55-1	PFDoA	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
335-77-3	PFDS	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
375-85-9	PFHpA	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
375-92-8	PFHpS	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
307-24-4	PFHxA	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
355-46-4	PFHxS	24	J, Q-2	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
375-95-1	PFNA	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
68259-12-1	PFNS	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
335-67-1	PFOA	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
1763-23-1	PFOS	68		ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
2706-90-3	PFPeA	20	J, Q-2	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0552, NC Reservoirs PFAS

Sample ID: CPF007B Lake Brandt at Dam near Hillsdale **Lab ID:** E182909-03

Station ID: CPF007B **Matrix:** Water

Date Collected: 7/12/18 12:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
72629-94-8	PFTrDA	78	U	ng/L	78	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS
2058-94-8	PFUdA	39	U	ng/L	39	8/06/18 11:58	8/08/18 0:00	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0552, NC Reservoirs PFAS

Sample ID: CPFTR02 Turner Reservoir at Lacy's Creek **Lab ID:** E182909-04
Station ID: CPFTR02 **Matrix:** Water

Date Collected: 7/10/18 9:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
27619-97-2	6:2FTS	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
39108-34-4	8:2FTS	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
754-91-6	FOSA	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	74	U	ng/L	74	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
375-22-4	PFBA	74	U	ng/L	74	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
375-73-5	PFBS	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
335-76-2	PFDA	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
307-55-1	PFDoA	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
335-77-3	PFDS	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
375-85-9	PFHpA	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
375-92-8	PFHpS	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
307-24-4	PFHxA	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
355-46-4	PFHxS	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
375-95-1	PFNA	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
68259-12-1	PFNS	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
335-67-1	PFOA	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
1763-23-1	PFOS	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
2706-90-3	PFPeA	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0552, NC Reservoirs PFAS

Sample ID: CPFTR02 Turner Reservoir at Lacy's Creek **Lab ID:** E182909-04

Station ID: CPFTR02 **Matrix:** Water

Date Collected: 7/10/18 9:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
72629-94-8	PFTrDA	74	U	ng/L	74	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS
2058-94-8	PFUdA	37	U	ng/L	37	8/06/18 11:58	8/08/18 0:21	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0552, NC Reservoirs PFAS

Sample ID: CPFSC4 Stony Creek Res at Dam **Lab ID:** E182909-05
Station ID: CPFSC4 **Matrix:** Water

Date Collected: 7/10/18 10:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
27619-97-2	6:2FTS	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
39108-34-4	8:2FTS	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
754-91-6	FOSA	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	76	U	ng/L	76	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
375-22-4	PFBA	76	U	ng/L	76	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
375-73-5	PFBS	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
335-76-2	PFDA	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
307-55-1	PFDoA	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
335-77-3	PFDS	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
375-85-9	PFHpA	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
375-92-8	PFHpS	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
307-24-4	PFHxA	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
355-46-4	PFHxS	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
375-95-1	PFNA	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
68259-12-1	PFNS	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
335-67-1	PFOA	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
1763-23-1	PFOS	20	J, Q-2	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
2706-90-3	PFPeA	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0033
Project: 18-0552, NC Reservoirs PFAS - Reported by Floyd Wellborn

Semi Volatile Organics

Project: 18-0552, NC Reservoirs PFAS

Sample ID: CPFSC4 Stony Creek Res at Dam **Lab ID:** E182909-05
Station ID: CPFSC4 **Matrix:** Water

Date Collected: 7/10/18 10:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
72629-94-8	PFTrDA	76	U	ng/L	76	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS
2058-94-8	PFUdA	38	U	ng/L	38	8/06/18 11:58	8/08/18 0:41	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0552, NC Reservoirs PFAS

Sample ID: CPF002A2 Reidsville Lake at Dam **Lab ID:** E182909-06
Station ID: CPF002A2 **Matrix:** Water

Date Collected: 7/12/18 9:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
27619-97-2	6:2FTS	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
39108-34-4	8:2FTS	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
754-91-6	FOSA	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	79	U	ng/L	79	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
375-22-4	PFBA	79	U	ng/L	79	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
375-73-5	PFBS	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
335-76-2	PFDA	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
307-55-1	PFDoA	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
335-77-3	PFDS	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
375-85-9	PFHpA	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
375-92-8	PFHpS	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
307-24-4	PFHxA	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
355-46-4	PFHxS	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
375-95-1	PFNA	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
68259-12-1	PFNS	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
335-67-1	PFOA	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
1763-23-1	PFOS	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
2706-90-3	PFPeA	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0552, NC Reservoirs PFAS

Sample ID: CPF002A2 Reidsville Lake at Dam **Lab ID:** E182909-06

Station ID: CPF002A2 **Matrix:** Water

Date Collected: 7/12/18 9:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
72629-94-8	PFTrDA	79	U	ng/L	79	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS
2058-94-8	PFUdA	40	U	ng/L	40	8/06/18 11:58	8/08/18 1:02	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0552, NC Reservoirs PFAS

Sample ID: Trip Blank **Lab ID:** E182909-07

Station ID: **Matrix:** Trip Blank - Water

Date Collected: 7/9/18 8:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
27619-97-2	6:2FTS	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
39108-34-4	8:2FTS	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
754-91-6	FOSA	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	78	U	ng/L	78	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
375-22-4	PFBA	78	U	ng/L	78	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
375-73-5	PFBS	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
335-76-2	PFDA	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
307-55-1	PFDoA	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
335-77-3	PFDS	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
375-85-9	PFHpA	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
375-92-8	PFHpS	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
307-24-4	PFHxA	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
355-46-4	PFHxS	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
375-95-1	PFNA	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
68259-12-1	PFNS	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
335-67-1	PFOA	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
1763-23-1	PFOS	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
2706-90-3	PFPeA	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0552, NC Reservoirs PFAS

Sample ID: Trip Blank **Lab ID:** E182909-07

Station ID: **Matrix:** Trip Blank - Water

Date Collected: 7/9/18 8:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
72629-94-8	PFTrDA	78	U	ng/L	78	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS
2058-94-8	PFUdA	39	U	ng/L	39	8/06/18 11:58	8/08/18 1:22	ASBPROC-800 PFAS

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1807149 - S PFC										
Blank (1807149-BLK1)				Prepared & Analyzed: 08/07/18						
ASBPROC-800 PFAS										
4:2FTS	U	40	ng/L							U
6:2FTS	U	40	"							U
8:2FTS	U	40	"							QS-3, U
FOSA	U	40	"							U
HFPO-DA	U	40	"							U
N-MeFOSAA	U	80	"							U
PFBA	U	80	"							U
PFBS	U	40	"							U
PFDA	U	40	"							U
PFDoA	U	40	"							U
PFDS	U	40	"							U
PFHpA	U	40	"							U
PFHpS	U	40	"							U
PFHxA	U	40	"							U
PFHxS	U	40	"							U
PFNA	U	40	"							U
PFNS	U	40	"							U
PFOA	U	40	"							U
PFOS	U	40	"							U
PFPeA	U	40	"							U
PFPeS	U	40	"							U
PFTrDA	U	80	"							U
PFUdA	U	40	"							U
Blank (1807149-BLK2)				Prepared & Analyzed: 08/07/18						
ASBPROC-800 PFAS										
4:2FTS	U	40	ng/L							U
6:2FTS	U	40	"							U
8:2FTS	U	40	"							U
FOSA	U	40	"							U
HFPO-DA	U	40	"							U
N-MeFOSAA	U	80	"							U
PFBA	U	80	"							U
PFBS	U	40	"							U
PFDA	U	40	"							U
PFDoA	U	40	"							U
PFDS	U	40	"							U
PFHpA	U	40	"							U
PFHpS	U	40	"							U

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1807149 - S PFC										
Blank (1807149-BLK2)				Prepared & Analyzed: 08/07/18						
PFHxA	U	40	ng/L							U
PFHxS	U	40	"							U
PFNA	U	40	"							U
PFNS	U	40	"							U
PFOA	U	40	"							U
PFOS	U	40	"							U
PFPeA	U	40	"							U
PFPeS	U	40	"							U
PFTrDA	U	80	"							U
PFUdA	U	40	"							U
LCS (1807149-BS1)				Prepared & Analyzed: 08/07/18						
ASBPROC-800 PFAS										
4:2FTS	373	40	ng/L	374.00		99.8	70-130			
6:2FTS	409	40	"	380.00		108	70-130			QC-2
8:2FTS	333	40	"	384.00		86.8	70-130			
FOSA	453	40	"	400.00		113	70-130			
HFPO-DA	311	40	"	400.00		77.7	70-130			
N-MeFOSAA	418	80	"	400.00		104	70-130			
PFBA	356	80	"	400.00		88.9	70-130			
PFBS	355	40	"	354.00		100	70-130			
PFDA	390	40	"	400.00		97.6	70-130			
PFDoA	465	40	"	400.00		116	70-130			
PFDS	386	40	"	386.00		100	70-130			
PFHpA	386	40	"	400.00		96.6	70-130			
PFHpS	388	40	"	380.00		102	70-130			
PFHxA	397	40	"	400.00		99.4	70-130			
PFHxS	333	40	"	364.80		91.3	70-130			
PFNA	427	40	"	400.00		107	70-130			
PFNS	388	40	"	384.00		101	70-130			
PFOA	376	40	"	400.00		94.1	70-130			
PFOS	384	40	"	370.20		104	70-130			
PFPeA	368	40	"	400.00		92.1	70-130			
PFPeS	346	40	"	376.00		92.0	70-130			
PFTrDA	372	80	"	400.00		92.9	70-130			
PFUdA	426	40	"	400.00		106	70-130			

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1807149 - S PFC										
MRL Verification (1807149-PS1)				Prepared & Analyzed: 08/07/18						
ASBPROC-800 PFAS										
4:2FTS	27.1	40	ng/L	37.400		72.5	50-150			MRL-2, Q-2, J
6:2FTS	42.6	40	"	38.000		112	50-150			MRL-2, QC-2
8:2FTS	47.9	40	"	38.400		125	50-150			MRL-2
FOSA	41.1	40	"	40.000		103	50-150			MRL-2
HFPO-DA	31.7	40	"	40.000		79.3	50-150			MRL-2, Q-2, J
PFBS	24.4	40	"	35.400		68.8	50-150			MRL-2, Q-2, J
PFDA	50.0	40	"	40.000		125	50-150			MRL-2
PFDoA	55.4	40	"	40.000		139	50-150			MRL-2
PFDS	35.6	40	"	38.600		92.1	50-150			MRL-2, Q-2, J
PFHpA	41.6	40	"	40.000		104	50-150			MRL-2
PFHpS	40.5	40	"	38.000		107	50-150			MRL-2
PFHxA	40.1	40	"	40.000		100	50-150			MRL-2
PFHxS	32.8	40	"	36.480		89.8	50-150			MRL-2, Q-2, J
PFNA	44.2	40	"	40.000		111	50-150			MRL-2
PFNS	36.1	40	"	38.400		94.1	50-150			MRL-2, Q-2, J
PFOA	39.0	40	"	40.000		97.5	50-150			MRL-2, Q-2, J
PFOS	32.9	40	"	37.020		88.8	50-150			MRL-2, Q-2, J
PFPeA	38.2	40	"	40.000		95.4	50-150			MRL-2, Q-2, J
PFPeS	29.1	40	"	37.600		77.3	50-150			MRL-2, Q-2, J
PFUdA	39.1	40	"	40.000		97.8	50-150			MRL-2, Q-2, J
MRL Verification (1807149-PS2)				Prepared & Analyzed: 08/07/18						
ASBPROC-800 PFAS										
N-MeFOSAA	192	80	ng/L	160.00		120	50-150			MRL-2
PFBA	150	80	"	160.00		93.5	50-150			J, MRL-2
PFTrDA	145	80	"	160.00		90.3	50-150			MRL-2

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
Q-2	Result greater than MDL but less than MRL.
QC-2	Analyte concentration high in continuing calibration verification standard
QS-3	Surrogate recovery is lower than established control limits.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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February 12, 2019

4SESD-ASB

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 18-0593, NC Reservoirs PFAS

FROM: Floyd Wellborn
ASB Organic Chemistry Section Chief

THRU: Sandra Aker, Chief
Analytical Services Branch

TO: Floyd Wellborn

This data report is being reissued. Some or all of these results were previously reported. Please substitute the corrected results for those results previously reported. Please refer to the Report Narrative for more details.

Attached are the final results for the analytical groups listed below. These analyses were performed in accordance with the Analytical Services 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:	Accreditations:
Semi Volatile Organics (SVOA)		
PFAS	ASBPROC-800 PFAS (Water)	

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Report Narrative for Work Order: E183413 Analysis: SVOA

2/12/19 FW: HFPO-DA results were re-evaluated and some were determined to fail the identification criteria prescribed by the analysis method. The previously reported concentration of HFPO-DA greater than the MDL but less than the MRL in samples E183413-01 has been re-reported with the result of not detected at or above the minimum reporting limit. No other results were changed. This report replaces the previous report E183413 SVOA FINAL 11 26 18 1138.

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.

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SAMPLES INCLUDED IN THIS REPORT

Project: 18-0593, NC Reservoirs PFAS

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
NEW006F - Boone ASU Lake	E183413-01	Water	8/21/18 10:30	8/24/18 10:15
NEWBTP1 - Blowing Rock Town Pond	E183413-02	Water	8/21/18 09:30	8/24/18 10:15
WATBL1 - Buckeye Lake, Beech Mtn	E183413-03	Water	8/21/18 12:10	8/24/18 10:15
CPFSC1 - Ramseur Lake (Sandy Creek Res)	E183413-04	Water	8/22/18 09:40	8/24/18 10:15
CPF089D5 - Oak Hollow Lake, High Point	E183413-05	Water	8/22/18 11:50	8/24/18 10:15
CPF089E4 - City Lake, High Point	E183413-06	Water	8/22/18 13:25	8/24/18 10:15
Trip Blank	E183413-07	Trip Blank - Water	8/20/18 07:00	8/24/18 10:15

DATA QUALIFIER DEFINITIONS

U	The analyte was not detected at or above the reporting limit.
H-7	Recommended preparation holding time exceeded
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-5	Calibration check standard less than method 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/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.

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Semi Volatile Organics

Project: 18-0593, NC Reservoirs PFAS

Sample ID: NEW006F - Boone ASU Lake **Lab ID:** E183413-01
Station ID: NEW006F **Matrix:** Water

Date Collected: 8/21/18 10:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
27619-97-2	6:2FTS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
39108-34-4	8:2FTS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
754-91-6	FOSA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	41	U, J, H-7, QC-5	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	81	U, J, H-7, QC-5	ng/L	81	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
375-22-4	PFBA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
375-73-5	PFBS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
335-76-2	PFDA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
307-55-1	PFDoA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
335-77-3	PFDS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
375-85-9	PFHpA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
375-92-8	PFHpS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
307-24-4	PFHxA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
355-46-4	PFHxS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
375-95-1	PFNA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
68259-12-1	PFNS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
335-67-1	PFOA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
1763-23-1	PFOS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
2706-90-3	PFPeA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0593, NC Reservoirs PFAS

Sample ID: NEW006F - Boone ASU Lake **Lab ID:** E183413-01

Station ID: NEW006F **Matrix:** Water

Date Collected: 8/21/18 10:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
72629-94-8	PFTrDA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS
2058-94-8	PFUdA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:07	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0593, NC Reservoirs PFAS

Sample ID: NEWBTP1 - Blowing Rock Town Pond **Lab ID:** E183413-02
Station ID: NEWBTP1 **Matrix:** Water

Date Collected: 8/21/18 9:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
27619-97-2	6:2FTS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
39108-34-4	8:2FTS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
754-91-6	FOSA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	41	U, J, H-7, QC-5	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	82	U, J, H-7, QC-5	ng/L	82	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
375-22-4	PFBA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
375-73-5	PFBS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
335-76-2	PFDA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
307-55-1	PFDoA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
335-77-3	PFDS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
375-85-9	PFHpA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
375-92-8	PFHpS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
307-24-4	PFHxA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
355-46-4	PFHxS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
375-95-1	PFNA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
68259-12-1	PFNS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
335-67-1	PFOA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
1763-23-1	PFOS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
2706-90-3	PFPeA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0593, NC Reservoirs PFAS

Sample ID: NEWBTP1 - Blowing Rock Town Pond **Lab ID:** E183413-02

Station ID: NEWBTP1 **Matrix:** Water

Date Collected: 8/21/18 9:30

CAS Number	*Analyte*	*Results*	*Qualifiers*	*Units*	*MRL*	*Prepared*	*Analyzed*	*Method*
2706-91-4	PFPeS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
72629-94-8	PFTrDA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS
2058-94-8	PFUdA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 1:28	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0593, NC Reservoirs PFAS

Sample ID: WATBL1 - Buckeye Lake, Beech Mtn **Lab ID:** E183413-03
Station ID: WATBL1 **Matrix:** Water

Date Collected: 8/21/18 12:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
27619-97-2	6:2FTS	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
39108-34-4	8:2FTS	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
754-91-6	FOSA	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	38	U, J, H-7, QC-5	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	76	U, J, H-7, QC-5	ng/L	76	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
375-22-4	PFBA	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
375-73-5	PFBS	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
335-76-2	PFDA	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
307-55-1	PFDoA	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
335-77-3	PFDS	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
375-85-9	PFHpA	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
375-92-8	PFHpS	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
307-24-4	PFHxA	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
355-46-4	PFHxS	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
375-95-1	PFNA	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
68259-12-1	PFNS	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
335-67-1	PFOA	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
1763-23-1	PFOS	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
2706-90-3	PFPeA	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0593, NC Reservoirs PFAS

Sample ID: WATBL1 - Buckeye Lake, Beech Mtn **Lab ID:** E183413-03

Station ID: WATBL1 **Matrix:** Water

Date Collected: 8/21/18 12:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
72629-94-8	PFTrDA	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS
2058-94-8	PFUdA	38	U, J, H-7	ng/L	38	9/20/18 16:13	9/27/18 1:48	ASBPROC-800 PFAS

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Project: 18-0593, NC Reservoirs PFAS

Sample ID: CPFSC1 - Ramseur Lake (Sandy Creek Res) **Lab ID:** E183413-04
Station ID: CPFSC1 **Matrix:** Water

Date Collected: 8/22/18 9:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
27619-97-2	6:2FTS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
39108-34-4	8:2FTS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
754-91-6	FOSA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	40	U, J, H-7, QC-5	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	79	U, J, QC-5, H-7	ng/L	79	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
375-22-4	PFBA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
375-73-5	PFBS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
335-76-2	PFDA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
307-55-1	PFDoA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
335-77-3	PFDS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
375-85-9	PFHpA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
375-92-8	PFHpS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
307-24-4	PFHxA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
355-46-4	PFHxS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
375-95-1	PFNA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
68259-12-1	PFNS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
335-67-1	PFOA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
1763-23-1	PFOS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
2706-90-3	PFPeA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS

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Project: 18-0593, NC Reservoirs PFAS

Sample ID: CPFSC1 - Ramseur Lake (Sandy Creek Res) **Lab ID:** E183413-04

Station ID: CPFSC1 **Matrix:** Water

Date Collected: 8/22/18 9:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
72629-94-8	PFTrDA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS
2058-94-8	PFUdA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 2:08	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0593, NC Reservoirs PFAS

Sample ID: CPF089D5 - Oak Hollow Lake, High Point **Lab ID:** E183413-05
Station ID: CPF089D5 **Matrix:** Water

Date Collected: 8/22/18 11:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
27619-97-2	6:2FTS	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
39108-34-4	8:2FTS	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
754-91-6	FOSA	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	39	U, J, QC-5, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	78	U, J, QC-5, H-7	ng/L	78	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
375-22-4	PFBA	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
375-73-5	PFBS	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
335-76-2	PFDA	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
307-55-1	PFDoA	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
335-77-3	PFDS	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
375-85-9	PFHpA	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
375-92-8	PFHpS	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
307-24-4	PFHxA	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
355-46-4	PFHxS	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
375-95-1	PFNA	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
68259-12-1	PFNS	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
335-67-1	PFOA	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
1763-23-1	PFOS	22	J, H-7, Q-2	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
2706-90-3	PFPeA	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0593, NC Reservoirs PFAS

Sample ID: CPF089D5 - Oak Hollow Lake, High Point **Lab ID:** E183413-05

Station ID: CPF089D5 **Matrix:** Water

Date Collected: 8/22/18 11:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
72629-94-8	PFTrDA	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS
2058-94-8	PFUdA	39	U, J, H-7	ng/L	39	9/20/18 16:13	9/27/18 2:49	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0593, NC Reservoirs PFAS

Sample ID: CPF089E4 - City Lake, High Point **Lab ID:** E183413-06
Station ID: CPF089E4 **Matrix:** Water

Date Collected: 8/22/18 13:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
27619-97-2	6:2FTS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
39108-34-4	8:2FTS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
754-91-6	FOSA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	41	U, J, H-7, QC-5	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	82	U, J, H-7, QC-5	ng/L	82	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
375-22-4	PFBA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
375-73-5	PFBS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
335-76-2	PFDA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
307-55-1	PFDoA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
335-77-3	PFDS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
375-85-9	PFHpA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
375-92-8	PFHpS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
307-24-4	PFHxA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
355-46-4	PFHxS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
375-95-1	PFNA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
68259-12-1	PFNS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
335-67-1	PFOA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
1763-23-1	PFOS	24	J, Q-2, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
2706-90-3	PFPeA	18	J, H-7, Q-2	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS

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: 18-0033
Project: 18-0593, NC Reservoirs PFAS - Reported by Floyd Wellborn

Semi Volatile Organics

Project: 18-0593, NC Reservoirs PFAS

Sample ID: CPF089E4 - City Lake, High Point **Lab ID:** E183413-06

Station ID: CPF089E4 **Matrix:** Water

Date Collected: 8/22/18 13:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
72629-94-8	PFTrDA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS
2058-94-8	PFUdA	41	U, J, H-7	ng/L	41	9/20/18 16:13	9/27/18 3:10	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0593, NC Reservoirs PFAS

Sample ID: Trip Blank **Lab ID:** E183413-07
Station ID: **Matrix:** Trip Blank - Water

Date Collected: 8/20/18 7:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
27619-97-2	6:2FTS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
39108-34-4	8:2FTS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
754-91-6	FOSA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
13252-13-6	HFPO-DA	40	U, J, H-7, QC-5	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
2355-31-9	N-MeFOSAA	80	U, J, H-7, QC-5	ng/L	80	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
375-22-4	PFBA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
375-73-5	PFBS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
335-76-2	PFDA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
307-55-1	PFDoA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
335-77-3	PFDS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
375-85-9	PFHpA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
375-92-8	PFHpS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
307-24-4	PFHxA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
355-46-4	PFHxS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
375-95-1	PFNA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
68259-12-1	PFNS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
335-67-1	PFOA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
1763-23-1	PFOS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
2706-90-3	PFPeA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS

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Semi Volatile Organics

Project: 18-0593, NC Reservoirs PFAS

Sample ID: Trip Blank **Lab ID:** E183413-07

Station ID: **Matrix:** Trip Blank - Water

Date Collected: 8/20/18 7:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
2706-91-4	PFPeS	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
72629-94-8	PFTrDA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS
2058-94-8	PFUdA	40	U, J, H-7	ng/L	40	9/20/18 16:13	9/27/18 3:30	ASBPROC-800 PFAS

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1809025 - S PFC										
Blank (1809025-BLK1)				Prepared: 09/10/18 Analyzed: 09/26/18						
ASBPROC-800 PFAS										
4:2FTS	U	40	ng/L							U
6:2FTS	U	40	"							U
8:2FTS	U	40	"							U
FOSA	U	40	"							U
HFPO-DA	U	40	"							QC-5, U
N-MeFOSAA	U	80	"							QC-5, U
PFBA	U	40	"							U
PFBS	U	40	"							U
PFDA	U	40	"							U
PFDoA	U	40	"							U
PFDS	U	40	"							U
PFHpA	U	40	"							U
PFHpS	U	40	"							U
PFHxA	U	40	"							U
PFHxS	U	40	"							U
PFNA	U	40	"							U
PFNS	U	40	"							U
PFOA	U	40	"							U
PFOS	U	40	"							U
PFPeA	U	40	"							U
PFPeS	U	40	"							U
PFTrDA	U	40	"							U
PFUdA	U	40	"							U
Blank (1809025-BLK2)				Prepared: 09/10/18 Analyzed: 09/26/18						
ASBPROC-800 PFAS										
4:2FTS	U	40	ng/L							U
6:2FTS	U	40	"							U
8:2FTS	U	40	"							U
FOSA	U	40	"							U
HFPO-DA	U	40	"							QC-5, U
N-MeFOSAA	U	80	"							QC-5, U
PFBA	U	40	"							U
PFBS	U	40	"							U
PFDA	U	40	"							U
PFDoA	U	40	"							U
PFDS	U	40	"							U
PFHpA	U	40	"							U
PFHpS	U	40	"							U

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Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1809025 - S PFC										
Blank (1809025-BLK2)				Prepared: 09/10/18 Analyzed: 09/26/18						
PFHxA	U	40	ng/L							U
PFHxS	U	40	"							U
PFNA	U	40	"							U
PFNS	U	40	"							U
PFOA	U	40	"							U
PFOS	U	40	"							U
PFPeA	U	40	"							U
PFPeS	U	40	"							U
PFTrDA	U	40	"							U
PFUdA	U	40	"							U
LCS (1809025-BS1)				Prepared: 09/10/18 Analyzed: 09/27/18						
ASBPROC-800 PFAS										
4:2FTS	405	40	ng/L	374.00		108	67.1-125			
6:2FTS	439	40	"	380.00		116	49.2-134			
8:2FTS	418	40	"	384.00		109	56.4-136			
FOSA	454	40	"	400.00		113	57.7-148			
HFPO-DA	288	40	"	400.00		71.9	51.1-127			QC-5
N-MeFOSAA	510	80	"	400.00		127	43.2-178			QC-5
PFBA	405	40	"	400.00		101	67.9-118			
PFBS	384	40	"	354.00		108	68.2-118			
PFDA	469	40	"	400.00		117	47.4-162			
PFDoA	372	40	"	400.00		92.9	56.5-155			
PFDS	449	40	"	386.00		116	35.1-168			
PFHpA	393	40	"	400.00		98.3	72.8-116			
PFHpS	394	40	"	380.00		104	59.7-130			
PFHxA	421	40	"	400.00		105	62.6-127			
PFHxS	364	40	"	364.80		99.9	69.5-117			
PFNA	400	40	"	400.00		99.9	64.1-128.4			
PFNS	377	40	"	384.00		98.2	63.3-126			
PFOA	402	40	"	400.00		101	66.7-122			
PFOS	410	40	"	370.20		111	70.4-122			
PFPeA	415	40	"	400.00		104	72-115			
PFPeS	380	40	"	376.00		101	69-117			
PFTrDA	403	40	"	400.00		101	32.2-215			
PFUdA	424	40	"	400.00		106	65.8-142			

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1809025 - S PFC										
LCS Dup (1809025-BSD1)				Prepared: 09/10/18 Analyzed: 09/27/18						
ASBPROC-800 PFAS										
4:2FTS	424	40	ng/L	374.00		113	67.1-125	4.55	30	
6:2FTS	414	40	"	380.00		109	49.2-134	5.90	30	
8:2FTS	403	40	"	384.00		105	56.4-136	3.75	30	
FOSA	452	40	"	400.00		113	57.7-148	0.395	30	
HFPO-DA	269	40	"	400.00		67.2	51.1-127	6.75	30	QC-5
N-MeFOSAA	535	80	"	400.00		134	43.2-178	4.77	30	QC-5
PFBA	414	40	"	400.00		103	67.9-118	2.16	30	
PFBS	371	40	"	354.00		105	68.2-118	3.38	30	
PFDA	432	40	"	400.00		108	47.4-162	8.11	30	
PFDoA	447	40	"	400.00		112	56.5-155	18.4	30	
PFDS	414	40	"	386.00		107	35.1-168	8.23	30	
PFHpA	397	40	"	400.00		99.3	72.8-116	1.02	30	
PFHpS	400	40	"	380.00		105	59.7-130	1.29	30	
PFHxA	419	40	"	400.00		105	62.6-127	0.374	30	
PFHxS	407	40	"	364.80		112	69.5-117	11.0	30	
PFNA	445	40	"	400.00		111	64.1-128.4	10.6	30	
PFNS	390	40	"	384.00		101	63.3-126	3.29	30	
PFOA	414	40	"	400.00		103	66.7-122	2.80	30	
PFOS	409	40	"	370.20		110	70.4-122	0.373	30	
PFPeA	404	40	"	400.00		101	72-115	2.74	30	
PFPeS	389	40	"	376.00		103	69-117	2.29	30	
PFTrDA	381	40	"	400.00		95.3	32.2-215	5.55	30	
PFUdA	446	40	"	400.00		111	65.8-142	5.13	30	
Duplicate (1809025-DUP1)		**Source: E183413-04**		Prepared: 09/10/18 Analyzed: 09/27/18						
ASBPROC-800 PFAS										
4:2FTS	U	41	ng/L		U				200	H-7, J, U
6:2FTS	U	41	"		U				200	H-7, J, U
8:2FTS	U	41	"		U				200	H-7, J, U
FOSA	U	41	"		U				200	H-7, J, U
HFPO-DA	U	41	"		U				200	H-7, J, QC-5, U
N-MeFOSAA	U	81	"		U				200	H-7, J, QC-5, U
PFBA	U	41	"		U				200	H-7, J, U
PFBS	U	41	"		U				200	H-7, J, U
PFDA	U	41	"		U				200	H-7, J, U
PFDoA	U	41	"		U				200	H-7, J, U
PFDS	U	41	"		U				200	H-7, J, U

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1809025 - S PFC										
Duplicate (1809025-DUP1)		**Source: E183413-04**		Prepared: 09/10/18 Analyzed: 09/27/18						
PFHpA	U	41	ng/L		U				200	H-7, J, U
PFHpS	U	41	"		U				200	H-7, J, U
PFHxA	U	41	"		U				200	H-7, J, U
PFHxS	U	41	"		U				200	H-7, J, U
PFNA	U	41	"		U				200	H-7, J, U
PFNS	U	41	"		U				200	H-7, J, U
PFOA	U	41	"		U				200	H-7, J, U
PFOS	U	41	"		U				200	H-7, J, U
PFPeA	U	41	"		U				200	H-7, J, U
PFPeS	U	41	"		U				200	H-7, J, U
PFTrDA	U	41	"		U				200	H-7, J, U
PFUdA	U	41	"		U				200	H-7, J, U
MRL Verification (1809025-PS1)				Prepared: 09/10/18 Analyzed: 09/26/18						
ASBPROC-800 PFAS										
4:2FTS	36.7	40	ng/L	37.400		98.2	47.1-1465			MRL-2, Q-2, J
6:2FTS	47.9	40	"	38.000		126	29.2-154			MRL-2
8:2FTS	36.8	40	"	38.400		95.9	36.4-156			MRL-2, Q-2, J
FOSA	38.6	40	"	40.000		96.4	37.7-168			MRL-2, Q-2, J
HFPO-DA	24.8	40	"	40.000		61.9	31.3-147			MRL-2, Q-2, QC-5, J
N-MeFOSAA	63.7	80	"	40.000		159	23.2-198			MRL-2, QC-5, J
PFBA	51.9	40	"	40.000		130	47.9-138			MRL-2
PFBS	39.3	40	"	35.400		111	48.2-138			MRL-2, Q-2, J
PFDA	52.6	40	"	40.000		132	27.4-182			MRL-2
PFDoA	37.0	40	"	40.000		92.6	36.5-175			MRL-2, Q-2, J
PFDS	48.3	40	"	38.600		125	15.1-188			MRL-2
PFHpA	46.2	40	"	40.000		115	52.8-136			MRL-2
PFHpS	41.3	40	"	38.000		109	39.7-150			MRL-2
PFHxA	50.6	40	"	40.000		127	42.6-147			MRL-2
PFHxS	35.8	40	"	36.480		98.2	49.5-138			MRL-2, Q-2, J
PFNA	48.7	40	"	40.000		122	44.1-148			MRL-2
PFNS	39.4	40	"	38.400		103	43.3-146			MRL-2, J
PFOA	42.2	40	"	40.000		106	46.7-142			MRL-2
PFOS	42.1	40	"	37.020		114	50.4-142			MRL-2

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1809025 - S PFC										
MRL Verification (1809025-PS1)				Prepared: 09/10/18 Analyzed: 09/26/18						
PFPeA	38.6	40	ng/L	40.000		96.4	52-135			MRL-2, Q-2, J
PFPeS	40.4	40	"	37.600		107	49-137			MRL-2
PFTrDA	26.2	40	"	40.000		65.5	12.2-235			MRL-2, Q-2, J
PFUdA	40.4	40	"	40.000		101	45.8-162			MRL-2

Notes and Definitions for QC Samples

U	The analyte was not detected at or above the reporting limit.
H-7	Recommended preparation holding time exceeded
J	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-5	Calibration check standard less than method control limits.