Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

CAPE FEAR RIVER TABLE 3+ PFAS MASS LOADING ASSESSMENT - FIRST QUARTER 2020 REPORT

Chemours Fayetteville Works

Prepared for

The Chemours Company FC, LLC
22828 NC Highway 87
Fayetteville, NC 28306

Prepared by

Geosyntec Consultants of NC, PC
2501 Blue Ridge Road, Suite 430
Raleigh, NC 27607

Project Number TR0795

July 2020

NORTH CAROLINA LICENSED GEOLOGIST SEAL 1243 E. BEAUMONT HODGE

7/31/2020

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

CAP	Corrective Action Plan
CFPUA	Cape Fear Public Utility Authority
cfs	cubic feet per second
CO	Consent Order
CSM	Conceptual Site Model
DQO	Data Quality Objectives
DVM	Data Verification Module
EIM	Environmental Information Management
ft	feet
ft bgs	feet below ground surface
HDPE	high-density polyethylene
HFPO-DA	hexafluoropropylene oxide dimer acid
kg	kilograms
L/s	liters per second
L/min	liters per minute
L^3T^{-1}	volume per time
LCFWSA	Lower Cape Fear Water and Sewer Authority
m^3	million cubic meters
m^3/s	cubic meters per second
mg/s	milligrams per second
mL	milliliter
ML^{-1}	mass per unit volume
MLM	Mass Loading Model
MT^{-3}	mass per unit time
ng/L	nanograms per liter
NC DWR	North Carolina Division of Water Resources
NVHOS	perfluoroethoxysulfonic acid
PPA	Polymer Processing Aid
PFAS	per- and polyfluoroalkyl substances

PFHxA	perfluorohexanoic acid
PFMOAA	perfluoro-2-methoxyaceticacid
PFO2HxA	perfluoro(3,5-dioxahexanoic) acid
PFO3OA	perfluoro(3,5,7-trioxaoctanoic) acid
PPCP	pharmaceutical and personal care products
PMPA	perfluoromethoxypropyl carboxylic acid
PVF	polyvinyl fluoride
QA/QC	quality assurance/quality control
Q1 2020	first quarter 2020
RPD	relative percent difference
SOP	standard operating procedure
NCDEQ	North Carolina Department of Environmental Quality
µg/L	micrograms per liter
USGS	United States Geological Survey
WWTP	wastewater treatment plant

EXECUTIVE SUMMARY

This report has been prepared to comply with monitoring and reporting requirements of Paragraph 16 of the executed Consent Order (CO) dated 25 February 2019 among the North Carolina Department of Environmental Quality (NCDEQ), Cape Fear River Watch, and Chemours.

The report describes: (i) the approach to establish the total mass load to the Cape Fear River; (ii) the relative Table 3+ PFAS loadings from the nine potential transport pathways to the Cape Fear River using results from the Mass Loading Model sampling events in Quarter 1 2020 (Q1 2020); and (iii) it summarizes other sampling activities completed for this Q1 2020 reporting period.

Prior site investigations have identified potential pathways for Table 3+ PFAS originating from the Site that may reach the Cape Fear River (Corrective Action Plan, Geosyntec 2019g). These pathways represent compartments to model as part of the Table 3+ PFAS Mass Loading Model. The potential pathways are described in Section 6.2 and are shown on the conceptual diagram provided in Figure 3. Previously, the results of the Mass Loading Model provided 'snapshots' of the relative loadings per Table 3+ PFAS transport pathway to the Cape Fear River compared to measured downstream in-river concentrations at CFR-BLADEN. In Q1 2020, routine sampling at the CFR-TARHEEL began and this allows for total mass loading over time assessments.

An assessment of Table 3+ PFAS mass loading was presented in the "*Cape Fear River PFAS Mass Loading Model Assessment and Paragraph 11.1 Characterization of PFAS at Intakes*" report (Geosyntec, 2019b) submitted August 26, 2019. Subsequent assessments were reported in the *Corrective Action Plan* (Geosyntec, 2019g) and *Mass Loading Model Update – November 2019 Sampling Event* (Geosyntec, 2020a). These mass loading assessments evaluated samples collected from two wet and two dry sampling events: May 2019 (dry), June 2019 (wet), September 2019 (dry) and November 2019 (wet). For each assessment, the model-estimated total Table 3+ PFAS mass loading originating from the facility to the Cape Fear River was compared with empirically measured Table 3+ PFAS mass in the river at CFR-BLADEN, approximately 5 miles downstream from the southern edge of the Site.

The Mass Loading Model assessment presented in this report was conducted using a similar methodology with adjustments made to sampling, flow measurements, and mass loading calculations to provide an improved Mass Loading Model assessment framework. The methodology and results of the Mass Loading Model assessment are described in Section 6.

Four field sampling events were conducted in Q1 2020:

- The Table 3+ PFAS Mass Load Sampling program consisting of 12 parent composite samples collected at the Tar Heel Ferry Road Bridge. The analytical results of these samples were used to calculate the in-river Table 3+ PFAS mass loads in the Cape Fear River during the reporting period;
- The Q1 2020 Table 3+ PFAS Mass Loading Model Sampling program consisting of samples collected from Table 3+ PFAS transport pathways (seeps, creeks, Old Outfall, Outfall 002, groundwater and Cape Fear River) and paired water flow measurements and estimates. These data were used to assess the relative loadings per Table 3+ PFAS transport pathway to the Cape Fear River using the Table 3+ PFAS Mass Loading Model;
- Sampling and flow gauging of the Southwestern offsite seeps to complete initial characterization of these seeps and to assess the degree of loadings from these seeps; and
- A Cape Fear River Surface Water Sampling Program consisting of water samples from the Cape Fear, Deep, Haw and Little Rivers were collected to assess the potential presence of a range of inorganic compounds, organic compounds (e.g. 1,4-dioxane), PPCPs, and PFAS in the Cape Fear River.

Efforts to understand the analytical results have identified data quality issues with the analysis of R-PSDA [formerly Byproduct 4], Hydrolyzed PSDA [formerly Byproduct 5], and R-EVE). Laboratory QA/QC data and laboratory studies have identified that these compounds may be subject to routine over-recovery due to matrix interference effects (Matrix Interference Memorandum, Geosyntec 2020b). Consequently, in this report Total Table 3+ PFAS values are reported as both the sum of 17 and the sum of 20 compounds, where R-PSDA, Hydrolyzed PSDA and R-EVE are excluded from the sum of 17 compounds. Presenting the range of Total Table 3+ PFAS brackets the expected actual value of all 20 compounds since the sum of the 17 compounds is potentially an underestimate and the sum of all 20 compounds is an overestimate.

The Cape Fear River Table 3+ PFAS Mass Load assessment estimated the Total Table 3+ PFAS that were discharged to the Cape Fear River over the assessment period of March 28 to May 9, 2020. Over this period 46 to 59 kg of Total Table 3+ PFAS summed over 17 and 20 compounds, respectively reached the Cape Fear River.

The Cape Fear River Table 3+ Mass Loading Model assessment determined that onsite seeps and the Old Outfall were the largest contributors to Table 3+ PFAS mass in the Cape Fear River with contribution percentages of 35% to 57% and 17% to 28%, respectively. The next largest contributing pathway was onsite groundwater estimated to range between 5% to 42%. The large range of potential mass loading contribution for groundwater to the Cape Fear River is based on the sensitivity of this pathways' estimates to modifications in the selected hydraulic conductivity values. Minimum and geometric mean hydraulic conductivity values were selected for the Black Creek Aquifer to model the lower and upper bound estimates of onsite groundwater contributions to the Cape Fear River.

For the Total Table 3+ PFAS mass discharge summed over 20 compounds, the Mass Loading Model estimated the Total Table PFAS mass discharge in the Cape Fear River to be 16 to 26 mg/s. This range is within the measured mass discharge of 18 mg/s at CFR-TARHEEL. The mass discharge summed over 17 compounds was 15 to 25 mg/s which is greater than the mass discharge of 13.4 mg/s measured at CFR-TARHEEL.

The sampling of Southwestern offsite seeps indicated that seeps south of the extent of a planned groundwater remedy contribute approximately 0.02% of the discharge of Table 3+ PFAS to the Cape Fear River. The Lock and Dam Seep, which was estimated to contribute approximately 1% of the discharge of Table 3+ PFAS to the Cape Fear River, is downgradient of the planned groundwater remedy and, therefore, will be hydraulically reduced when a groundwater remedy is installed.

The Cape Fear River Surface Water Sampling program in January 2020 indicated that there was an additional fraction of upstream, non-Chemours previously unidentified PFAS in the Cape Fear River. These PFAS were detected using the TOP assay and were consistently seen upstream and downstream of the Site indicating they originated from before the Site. The sampling program also demonstrated that Table 3+ PFAS increase in concentration as the Cape Fear River passes by the Site consistent with past investigations. This program also found pharmaceuticals and personal care products (PPCPs) were present in the Cape Fear River. 1,4-Dioxane was also present throughout the sampled Cape Fear River above the NCDEQ in-stream target value of 350 ng/L at all locations.

1 INTRODUCTION AND OBJECTIVES

Geosyntec Consultants of NC, P.C. (Geosyntec) has prepared this Table 3+ PFAS Mass Loading Assessment report for The Chemours Company, FC, LLC (Chemours). Chemours operates the Fayetteville Works facility in Bladen County, North Carolina (the Site). The purpose of this report is to describe the first quarter 2020 (Q1 2020) PFAS Mass Loading Assessment of the Cape Fear River based on the findings of surface water, river water, and groundwater samples collected at and surrounding the Site. Data collected were used to assess mass loading of Total Table 3+ per- and polyfluoroalkyl substances (PFAS) to the Cape Fear River. Table 3+ PFAS is a term used to refer to PFAS detected in the environment, for which analytical methods exist, that originate from manufacturing at the Site (Table 1). Presently, the grouping of PFAS referred to as Table 3+ are analyzed by the Table 3+ standard operating procedure (SOP) analytical method. This report is intended to comply with monitoring and reporting requirements of Paragraph 16 of the executed Consent Order (CO) dated 25 February 2019 among the North Carolina Department of Environmental Quality (NCDEQ), Cape Fear River Watch.

There are three primary objectives for this report:

1. To assess and describe Table 3+ PFAS mass loads including loads in the Cape Fear River, loading reductions from implemented remedies, and the total mass load to the Cape Fear River;

2. To assess and describe the relative Table 3+ PFAS loadings from the different PFAS transport pathways to the Cape Fear River during the reporting period using the Mass Loading Model; and

3. To describe the results of other sampling activities conducted during the reporting period.

The first objective aims to evaluate the mass of Table 3+ PFAS present in the Cape Fear River (i.e., reached the river) during the reporting period. This assessment uses Table 3+ PFAS concentrations from samples of Cape Fear River water to estimate this load. This assessment also provides the framework to evaluate the Table 3+ PFAS load captured and prevented from reaching the Cape Fear River by remedies implemented by Chemours. Lastly, this assessment begins developing the total Table 3+ PFAS load in the Cape Fear River. Subsequent reports will continue to update the development of the totalTable 3+ PFAS mass load.

The second objective aims to evaluate the relative contributions of Table 3+ PFAS loadings to the Cape Fear River from the various Table 3+ PFAS transport pathways (listed in Section 2.5). These pathway-specific loading contributions are assessed using measurements and estimates of concentration and flow from the Table 3+ PFAS transport pathways to the Cape Fear River.

The last objective describes other sampling activities conducted in Q1 2020 that relate to understanding the presence of Table 3+ PFAS and other compounds in the Cape Fear River. Specifically, this objective describes sampling of the Southwestern offsite seeps conducted in March 2020 and the Cape Fear River Surface Water Sampling program conducted in January 2020 along the Cape Fear River and at the mouths of the Deep, Little and Haw rivers.

The remainder of this report is organized as follows:

- **Background** – This section presents relevant background information regarding Table 3+ PFAS loading from the Site to the Cape Fear River;
- **Scope and Methods** – This section describes the sampling programs performed in Q1 2020 and methods used in the sampling activities;
- **Sampling Results** – This section describes the results of the sampling activities;
- **Table 3+ PFAS Mass Load to Cape Fear River** – This section describes the assessments of Cape Fear River Table 3+ PFAS Mass Loads;
- **Cape Fear River Table 3+ PFAS Mass Loading Model** – This section describes the assessment of the relative mass loading from the various Table 3+ PFAS transport pathways;
- **Discussion of Other Q1 2020 Sampling Activities** – This section describes the findings from the other Q1 2020 sampling activities; and
- **Conclusions** – This section summarizes the purpose and findings of this report.

2 BACKGROUND

2.1 Site Background

The Site is located within a 2,177-acre property at 22828 NC Highway 87, approximately 20 miles southeast of the city of Fayetteville along the Bladen-Cumberland county line in North Carolina. Figure 1 presents an overview of the Site. The Site is bounded by NC Highway 87 to the west, Cape Fear River to the east, and on the north and south by undeveloped areas and farmland.

The Site property was originally purchased by E.I. du Pont de Nemours and Company (DuPont) in 1970 for production of nylon strapping and elastomeric tape. DuPont sold its Butacite® and SentryGlas® manufacturing units to Kuraray America Inc. (Kuraray) in June 2014 and subsequently separated its specialty chemicals business to Chemours in

July 2015. The manufacturing area is approximately 312 acres, and the remaining areas are grassy areas, forests and wetlands. Presently, the Site consists of five manufacturing areas (Figure 1): Chemours Monomers IXM (Area 1); Chemours Polymer Processing Aid (PPA; Area 2); Kuraray Butacite® (Area 3); Kuraray SentryGlas® (Area 4); and DuPont Company polyvinyl fluoride (PVF) resin manufacturing unit (Area 5). In addition to the manufacturing operations, Chemours operates two natural gas-fired boilers and a wastewater treatment plant (WWTP) for the treatment of sanitary wastewaters as well as process wastewaters from Kuraray and DuPont.

2.2 Site Geology and Hydrogeology

The Site is located in the Coastal Plain of North Carolina and is situated adjacent the Cape Fear River atop a bluff with a 100-foot elevation change to a floodplain area and the Cape Fear River. Willis Creek borders the Site to the north, which flows through an erosional channel and empties into the Cape Fear River. To the south is Georgia Branch Creek which also flows through erosional channels as it empties into the Cape Fear River. Onsite there are groundwater seeps where groundwater is expressed at the surface and flows to the Cape Fear River. The largest of these groundwater-fed seeps is the Old Outfall 002, along with four seeps, A, B, C and D, located on the bluff slope facing the Cape Fear River.

The geology at the Site consists of sands and clays. The geology and land use at the Site have influenced the hydrogeology of the Site. Prior studies have developed a series of geological cross sections (Geosyntec 2019g). The geological features at Site from surface downward include:

Perched Zone: The Perched Zone is a relatively thin, spatially limited layer of groundwater present in silty sands to a depth of about 20 feet (ft) below ground surface (ft bgs). Groundwater in the Perched Zone is recharged through precipitation onsite, and in the past, has received enhanced infiltration through unlined ditches and sedimentation ponds – the sedimentation ponds and the cooling water channel in the Monomers IXM Area have since been lined. Groundwater flows radially away from groundwater mounds in the Perched Zone. This leads to groundwater discharge to the east at seeps on the edge of the bluff, to the south toward the Old Outfall 002 and to the north and to the west downwards through the geological sequence towards the Surficial and Black Creek Aquifers.

Perched Clay Unit: The Perched Clay Unit gives rise to the Perched Zone as it presents a barrier to direct downward groundwater infiltration. The Perched Clay is spatially limited at the Site. To the north it pinches out. To the east and south, it outcrops along the bluff face. To the west, it terminates and becomes absent (In cross sections through the Site and observations of grain sizes and lithologic contact elevations from the boring logs, there suggests an erosional feature in the western portion of the geology underlying the manufacturing areas. This erosional surface, described below, is interpreted to have eroded the Perched Clay Unit enabling downward migration of groundwater off the western edge of the Perched Zone.

Surficial Aquifer: The Surficial Aquifer is an unconfined silty sand aquifer above the Black Creek Confining Unit and is present beneath the Perched Clay Unit. Groundwater in the Surficial Aquifer flows towards the bluff faces at the Site – It flows both north, east and west toward surface water bodies (Willis Creek, Seeps, Old Outfall 002) and discharges into them as seeps. The Surficial Aquifer is interpreted to be in contact with the Black Creek Aquifer in places due to an erosional feature. This feature is labeled on the cross sections and is interpreted to have enabled downward cross formational groundwater flow.

Black Creek Confining Unit: The Black Creek Confining Unit is a layer of silty or sandy clay that separates the Surficial Aquifer from the Black Creek Aquifer. The lithologic contact elevation with the overlying Surficial Aquifer is variable, as is the unit thickness –the Black Creek Confining Unit is interpreted to have been eroded under the western portion of the manufacturing areas at Site. In addition to the Black Creek Confining unit being discontinuous, the potential for downward cross formational flow, also exists based on multiple vertical joints (i.e., fractures in the clay) observed in the Black Creek Confining Unit where it outcrops at the Site.

Flood Plain Deposits: Surface soils in the flood plain immediately adjacent to the Cape Fear River are comprised of finer grained, late Pleistocene alluvium deposits. These deposits have lower hydraulic conductivity than the Surficial and Black Creek Aquifers. The seeps at the Site cut into Floodplain Deposits as they flow towards the Cape Fear River.

Black Creek Aquifer: The Black Creek Aquifer is comprised of fine to medium grained sands. The Black Creek Aquifer is in contact with the Surficial Aquifer under the western portion of the manufacturing area at the Site and then is separated from the Surficial Aquifer under most of the manufacturing area by the Black Creek confining unit. The Black Creek Aquifer directly adjacent to the Cape Fear River is overlain by Flood Plain Deposits and the Black Creek Confining Unit. The Black Creek Aquifer is interpreted to be the only transmissive groundwater zone at Site in direct contact with the Cape Fear River. Groundwater in the Black Creek Aquifer flows from west to east towards the Cape Fear River.

Upper Cape Fear Confining Unit: The Upper Cape Fear Confining Unit underlies the Black Creek Aquifer. The Upper Cape Fear Confining unit is a regionally extensive clay layer which is upwards of 75 ft thick at the Site and is likely a barrier to downwards groundwater flow. Groundwater levels in the Upper Cape Fear Aquifer measured at North Carolina Division of Water Resources (NC DWR) wells are 80 ft lower than Black Creek Aquifer groundwater levels immediately above the Upper Cape Fear Aquifer. If the two units were in hydraulic connection, they would have similar groundwater elevations. The dissimilarity in water levels for these co-located NC DWR wells demonstrates that the Upper Cape Fear Confining Unit is a barrier to downward flow from the Black Creek Aquifer to the Cape Fear Aquifer.

Erosional Feature: A paleo-era process appears to have eroded the Perched Clay Unit, portions of the Surficial Aquifer and the Black Creek Confining Unit in the geological sequence under the western portion of the manufacturing area. This erosional feature potentially enables cross formational flow of groundwater from the Perched Zone, through the Surficial Aquifer and into the Black Creek Aquifer. This feature is a likely controlling factor of the distribution of PFAS observed in the Surficial and Black Creek Aquifers at Site.

2.3 PFAS at the Site

PFAS are a group of man-made carbon-based chemicals composed of a fully or partially fluorinated chain of carbon atoms (referred to as a “tail”) and a nonfluorinated, polar functional group (referred to as a “head”) at one end of the carbon chain. Fluorination of the carbon chain renders it hydrophobic and lipophobic, while the polar head group is hydrophilic (Mueller and Yingling, 2018). Generally, PFAS vapor pressures are low and water solubilities are high. Most PFAS have one or more negatively charged head groups, so they are likely to be relatively mobile in the subsurface due to the affinity of the head group for water molecules (Mueller and Yingling, 2018).

Most PFAS detected at the Site and associated with fluoroproduct manufacturing are fluoroethers (i.e. the Table 3+ PFAS). The structure of fluoroethers includes two carbons connected by an oxygen atom to form an ether bond. PFAS with ether bonds are expected to be less volatile and more soluble in water than non-ether PFAS of equivalent chain length due to the polar oxygen atoms included in their structures. Table 3+ PFAS contain at least one polar head group and many contain additional polar head groups.

Generally, Table 3+ PFAS are expected to be mobile in the environment given the presence of charged head groups and ether bonds, but they will experience some retardation due to sorption to soils. For some Table 3+ PFAS, mobility may be enhanced relative to straight-chain, non-ether PFAS by their branched structure and the presence of two charged head groups. The mobility of the Table 3+ PFAS will be retarded by various chemical processes but will likely have lower retardation than long-chain PFAS without ether bonds. Chemical processes expected to have the most impact on mobility are sorption to naturally occurring organic carbon in soil and, in the unsaturated soil zone, preferential partitioning to the air-water interface.

Since identifying the presence of the PFAS at the Site, Chemours has performed multiple investigations and assessments and is continuing to perform assessments that support corrective action for PFAS at the Site (Geosyntec 2019g).

2.4 Cape Fear River and Downstream Public Water Utility Intakes

The Cape Fear River and its entire watershed are located in the state of North Carolina (Figure 2). The Site is situated on the western bank of the Cape Fear River and draws water from the Cape Fear River and returns over 95% of this water via Outfall 002 after being used primarily as non-contact cooling water. Two lock and dam systems with United States Geological Survey (USGS) stream gauges are located downstream of the Site: (1) W.O. Huske Lock and Dam, located 0.5 river miles from the Site (USGS 02105500); and (2) Cape Fear Lock and Dam #1, located 55 river miles downstream (USGS 02105769). The Cape Fear River is also a water source for communities downstream of the Site. Raw water intakes are located at Bladen Bluffs (CFR-BLADEN) and Kings Bluff Intake Canal (CFR-KINGS), located approximately 5 miles and 55 miles downstream from the Site.

These intakes are operated by the Lower Cape Fear Water and Sewer Authority (LCFWSA) which in turn provides water to Cape Fear Public Utility Authority (CFPUA) and other water providers. Drinking water sourced from the Cape Fear River does contain certain chemicals from several sources including 1,4-dioxane, trihalomethanes associated with bromide content in raw river water, pharmaceuticals, personal care products, endocrine disrupting chemicals, and PFAS. A brief description of these chemicals and their presence in the Cape Fear River was reported previously (Geosyntec, 2018b) and is reported as part of the Cape Fear River Surface Water Sampling described in this report.

2.5 Potential Table 3+ PFAS Transport Pathways to Cape Fear River

Prior site investigations have identified potential pathways for Table 3+ PFAS originating from the Site that may reach the Cape Fear River (Geosyntec 2019g). These pathways represent compartments to model as part of the Table 3+ PFAS Mass Loading Model. The potential pathways are listed below, and are shown on the conceptual diagram provided in Figure 3:

- Transport Pathway 1: Upstream Cape Fear River and Groundwater – This pathway is comprised of contributions from non-Chemours related PFAS sources on the Cape Fear River and tributaries upstream of the Site, and upstream offsite groundwater with Table 3+ PFAS present from aerial deposition;

- Transport Pathway 2: Willis Creek – Groundwater and stormwater discharge and aerial deposition to Willis Creek and then to the Cape Fear River;
- Transport Pathway 3: Direct aerial deposition of Table 3+ PFAS on the Cape Fear River;
- Transport Pathway 4: Outfall 002 – Comprised of (i) water drawn from the Cape Fear River and used as non-contact cooling water, (ii) treated non-Chemours process water and (iii) Site stormwater, which are then discharged through Outfall 002;
- Transport Pathway 5: Onsite Groundwater – Direct upwelling of onsite groundwater to the Cape Fear River from the Black Creek Aquifer;
- Transport Pathway 6: Seeps – Onsite groundwater seeps A, B, C and D above the Cape Fear River water level on the bluff face from the facility that discharge into the Cape Fear River;
- Transport Pathway 7: Old Outfall 002 – Groundwater discharge to Old Outfall 002 and stormwater runoff that flows into the Cape Fear River;
- Transport Pathway 8: Adjacent and Downstream Offsite Groundwater – Offsite groundwater adjacent and downstream of the Site upwelling to the Cape Fear River; and,
- Transport Pathway 9: Georgia Branch Creek – Groundwater, stormwater discharge and aerial deposition to Georgia Branch Creek and then to the Cape Fear River.

2.6 Cape Fear River Mass Loading Assessments

In this report, the following definitions are used:

1. Mass load refers to the estimated PFAS total mass load, measured nominally in kilograms, reaching the Cape Fear River over a specified time period.
2. Mass loading refers to the PFAS mass discharge from the potential PFAS transport pathways to the Cape Fear River, measured in mass per unit time [MT^{-1}], typically milligrams per second. In previous assessment, the mass discharge was referred to as mass loading, but for clarity, mass discharge will be used in this and future assessments.

2.6.1 Cape Fear River Sampling Location

In a response to NCDEQ comments on Paragraph 12 (Geosyntec, 2020c), it is recommended that the estimated Cape Fear River Total Table 3+ PFAS mass load be based on concentrations from twice weekly composite samples collected from the sampling location (CFR-TARHEEL) at Cape Fear River at Tar Heel Ferry Road Bridge, approximately 7 miles downstream of the Site. This location is far enough downstream of the Site such that water from the seeps, onsite groundwater, Old Outfall 002 and Georgia Branch Creek are well mixed in the river. That the river is well mixed at this location is supported by result of numerical model simulations of the Cape Fear River and trends in hexafluoropropylene oxide dimer acid (HFPO-DA) concentrations becoming uniform in the river upstream of this point (*Assessment of the Chemical and Spatial Distribution of PFAS in the Cape Fear River*; Geosyntec 2018). The calculation of total mass load using concentrations from the CFR-TARHEEL location and Cape Fear River flow volumes are described later in this report in Section 5.

2.6.2 Prior Mass Loading Sampling and Reporting

Previously, the results of the Mass Loading Model provided ‘snapshots’ of the relative loadings per Table 3+ PFAS transport pathway to the Cape Fear River compared to measured in-river concentrations. The twice weekly sampling at the CFR-TARHEEL sample location will allow for total mass loading over time assessments.

An assessment of Table 3+ PFAS mass loading was presented in the “*Cape Fear River PFAS Mass Loading Model Assessment and Paragraph 11.1 Characterization of PFAS at Intakes*” report (Geosyntec, 2019b) submitted August 26, 2019. Subsequent assessments were reported in the *Corrective Action Plan* (Geosyntec, 2019g) and *Mass Loading Model Update – November 2019 Sampling Event* (Geosyntec, 2020a). These mass loading assessments evaluated samples collected from two wet and two dry sampling events: May 2019 (dry), June 2019 (wet), September 2019 (dry) and November 2019 (wet). For each assessment, the model-estimated total Table 3+ PFAS mass loading originating from the facility to the Cape Fear River was compared with empirically measured Table 3+ PFAS mass in the river at CFR-BLADEN, approximately 5 miles downstream from the southern edge of the Site.

The Mass Loading Model assessment presented in this report was conducted using a similar methodology with adjustments made to sampling, flow measurements, and mass loading calculations to provide an improved Mass Loading Model assessment framework. The methodology and results of the Mass Loading Model assessment are described in Section 6.

3 SCOPE AND METHODS

The Q1 2020 sampling events were completed by Geosyntec and Parsons of NC (Parsons) between January and April 2020. The scope of the sampling programs and methods employed to collect field data are summarized below. Complete descriptions of the field methods can be found in the applicable appendices for each sampling program.

3.1 Sampling Activities in Q1 2020

Q1 2020 sampling activities included:

1. **Cape Fear River Table 3+ PFAS Mass Load Sampling** - Collecting twice weekly composite samples at CFR-TARHEEL (March 2020 to present);
2. Cape Fear River Table 3+ PFAS Mass Loading Model Sampling:
    a. Collecting a synoptic round of groundwater elevations from on and offsite monitoring wells (February 2020);
    b. Collecting water samples for PFAS from 20 on and offsite monitoring wells (February 2020).
    c. Collecting surface water (seeps, creeks, Old Outfall 002, Intake River Water at Facility and Outfall 002) and river water samples for PFAS (April 2020); and
    d. Measuring flow rates at specified surface water locations (April 2020).
3. **Southwestern Offsite Seeps Sampling** - Measuring surface water flow rates and collecting surface water samples (offsite seeps) for PFAS (March 2020); and
4. **Cape Fear River Surface Water Sampling** - Collecting surface water samples in the Cape Fear, Deep, Haw and Little Rivers (January 2020);

These sampling activities are described, reported and interpreted in the remainder of this report.

3.2 Cape Fear River Table 3+ PFAS Mass Load Sampling Program

An autosampler (Teledyne ISCO 6712 Sampler) was installed near the Tar Heel Ferry Road bridge (CFR-TARHEEL; Figure 2) to collect river water samples to evaluate PFAS mass load. The autosampler sits on a concrete pad and is covered with a locked box to deter vandalism. The high-density polyethylene (HDPE) quarter-inch diameter sampling tubing runs down to the river and where possible is inside a pipe to deter vandalism. Depending on river stage, the end of the sampler collection tubing inlet is located in the Cape Fear River about 20 ft from the shore and about 3 ft above the river bottom with a typical minimum water column of one foot above the inlet. The intake tubing of the autosampler is angled at a 45-degree angle from the surface and has a steel strainer to avoid capturing debris while sampling. An orange safety buoy is positioned in the river above the intake tubing to signal the presence of the underwater obstruction.

Duplicate samples were collected by increasing the sampling flow from the autosampler and using this additional volume to collect a second set of samples. Equipment blank samples were collected by using a second autosampler and dedicated tubing to collect a sample from a deionized water container. The tubing line from which the equipment blank was collected was the same length as the line from which river water samples were collected. Samples were sent to external laboratories for analysis by the Table 3+ SOP method. PFAS compounds evaluated are listed in Table 1.

Nominally composite samples were generally composited over 84 hours with aliquots collected at one-hour intervals yielding two samples per week (i.e., week is 168 hours long = two times 84 hours). The record of composite sample collection over time is shown graphically in Figure 4. In this reporting period, the composite sampling program experienced some sampling interruptions due to vandalism, equipment malfunction or a high river stage (which will flood the platform and necessitates sampler removal). During interruptions, field protocol is to collect a grab sample from the river twice per week at the CFR-TARHEEL location to continue establishing a record of river concentrations over time. During the reporting period between March 28, 2020 and May 11, 2020, the composite sampling program experienced two interruptions and sampling adjustments to the scheduled sampling program; these interruptions are listed below:

- April 10, 2020 – Vandalism. Approximately 28-ft of 1-inch galvanized conduit was removed from the river and brought ashore. The conduit and tubing were pulled from the locked box covering the sampler resulting in a disconnection of the intake tubing to the autosampler silicon junction within the locked box. The autosampler and its housing were still intact and there were no signs of damage. The orange safety buoy, with 50 ft of stainless aircraft cable and shackle, was missing. The conduit, tubing cables and buoy were replaced and reinforced to reduce potential for vandalism. This event resulted in no sample collection during the period of April 10 to 15, 2020.

- April 30, 2020 – Vandalism. HDPE tubing that feeds into the junction box was disconnected from the tubing that runs to the autosampler. Tubing was replaced and reconnected. Composite sample collection was delayed and shortened to a 2.6 day composite instead of the planned 3.5 day composite.

The data collected from the Table 3+ PFAS Mass Load Sampling Program were used to estimate Table 3+ PFAS Mass Load in the Cape Fear River and results are described in Section 4.2 and Section 5.

3.3 Cape Fear River Table 3+ PFAS Mass Loading Model Sampling Program

The quarterly Mass Loading Model Sampling Program consisted of collecting concentration and flow data for the various PFAS transport pathways described in Section 2.5. Environmental media sampled include surface water (seeps, creeks, Old Outfall, Outfall 002, and Cape Fear River) and groundwater. Surface and river water sampling and flow gauging locations for the Q1 2020 Event are shown on Figures 5 and 6 and listed in Table 2. Groundwater sampling locations for the Q1 2020 Event are listed in Table 3 and shown on Figure 7. Collected samples were evaluated for the PFAS compounds listed in Table 1.

The quarterly Mass Loading Model Sampling started in Q1 2020 with the sampling ending in the first few days of the second quarter of 2020 (Q2 2020), i.e. early April. Sampling was extended into Q2 2020 due to access concerns at the seeps and Willis Creek due to elevated Cape Fear River levels. Rain events in March and upstream activities (i.e., release of water from Jordan Lake to decrease water levels in upstream reservoirs) led to the elevated river stage near the Site.

Samples for PFAS analysis were collected at 10 surface water locations, and flow rates were measured at 11 locations shown on Figure 5 and Figure 6 and listed in Table 2. Samples were collected for PFAS analysis from locations in Seep A, Seep B, Seep C, Seep D, Old Outfall 002, Willis Creek, Georgia Branch Creek, the Cape Fear River, Intake River Water at the Facility (i.e., location formerly referred to as Excess River Water), and Outfall 002. Flow gauging measurements were conducted at locations in Seep A, Seep B, Seep C, Seep D, Old Outfall 002, Willis Creek, and Georgia Branch Creek. Flow was measured at these locations using flumes and/or flow velocity gauging. Additional details on sample collection and flow gauging methods are described below and in the *Seeps and Creeks Investigation Report* (Geosyntec, 2019c). Four grab samples were collected from the Cape Fear River at River Mile 76 (CFR-MILE-76), CFR-TARHEEL, CFR-BLADEN, and CFR-KINGS.

Samples for PFAS analysis were collected at 20 groundwater wells for the Q1 2020 Event. The locations are shown on Figure 7 and listed in Table 3. Samples for PFAS analysis were collected from 20 monitoring well locations and synoptic groundwater elevations were collected from the entire onsite well network. The groundwater elevations are reported in Table 4 and potentiometric surface maps by aquifer are shown on Figures 8A through 8C. Additional details on groundwater monitoring methods are described in Appendix A.

Onsite rain gauges did not indicate any precipitation during the two days of surface water sample collection (April 2 and 3, 2020). While trace precipitation (0.22 inches) was observed on March 31, 2020, the last significant precipitation event was measured at the

Site on February 6, 2020 (3.4 inches). The April 2020 surface water sampling event is, therefore, considered to be a quiescent (*dry*) weather event for the purposes of the Mass Loading Model.

The data collected from these Q1 2020 field activities were then incorporated into the Mass Loading Model to estimate Table 3+ PFAS mass loading from the nine (9) potential transport pathways, as identified in the Conceptual Site Model (CSM) (Geosyntec, 2019d), listed in Section 2.5 and discussed in more detail in Section 6. These Mass Loading Model estimates of Table 3+ mass loading to the Cape Fear River were compared to mass loading observed downstream at CFR-TARHEEL.

3.3.1 Quarterly Seep, Surface Water, and the Cape Fear River Sampling

At each surface water location, where both sample collection and flow gauging were conducted, tasks were conducted in the following order in April 2020:

Water sample collection for laboratory analyses as specified in Table 1;

Water quality parameter assessment (Table 5); and

Flow gauging as specified in Table 2.

The methods employed for surface water sample collection and flow gauging are outlined in Appendix A.

3.3.1.1 Surface Water Sample Collection Methods

Autosamplers were used to collect 24-hour composite samples from the following seep, surface water, and river locations:

- Willis Creek,
- Intake River Water at Facility,
- Seep A,
- Seep B,
- Seep C,
- Seep D,
- Outfall 002,
- Old Outfall 002, and
- CFR-TARHEEL.

The autosamplers collected sample aliquots once per hour into a common sampling reservoir. Collecting composite samples from these locations allowed for a temporal assessment of loads reaching the river compared to grab samples because composite samples smooth out potential variability in data when sampling heterogenous and dynamic natural systems.

Water in the Cape Fear River takes a certain amount of time to pass from the Site to the downstream sampling location at the CFR-TARHEEL. Consequently, the composite river sample collection at the CFR-TARHEEL was initiated 7.6 hours after the autosamplers at Willis Creek were initiated based the estimated time for water to travel from the Site to CFR-TARHEEL. The travel time was estimated based on a numerical flow model of the Cape Fear River prepared by Geosyntec.

Grab samples were collected from the following locations during the sampling program:

- CFR-MILE-76,
- Georgia Branch Creek,
- CFR-BLADEN,
- CFR-TARHEEL, and
- CFR-KINGS.

Collecting composite samples from the locations listed above, with the exception of CFR-TARHEEL, was logistically infeasible; therefore, grab samples were collected at these locations. A grab sample at CFR-TARHEEL was also collected to facilitate a comparison between concentrations in grab samples collected at CFR-BLADEN and CFR-TARHEEL as CFR-TARHEEL is a new sampling location added to Cape Fear River sampling in 2020.

3.3.1.2 Flow Gauging Methods

Flow rates were measured after sample collection at seep and creek locations specified in Table 2. Flow rates were measured using flumes at the seeps and using flow velocity gauging at Willis Creek and Georgia Branch Creek, which were used to calculate volumetric flow rates. Flow data for the Intake River Water at Facility location and Outfall 002 were obtained from facility discharge monitoring reports while flow data was obtained from USGS river gauge data at the W.O. Huske Dam (USGS Gauge Site No. 02105500) for CFR-TARHEEL and CFR-BLADEN and USGS river gauge data at Cape Fear River Lock and Dam #1 for CFR-KINGS(USGS Gauge Site No. 02105769).

3.3.2 Quarterly Groundwater Monitoring Well Sampling Program

At monitoring well locations specified in Table 3, the following tasks were conducted in February 2020:

1. Assessment of water quality parameters (Table 6), and
2. Collection of groundwater samples.

Groundwater samples were collected using low-flow sampling techniques as discussed in detail in the *Long-term Groundwater Monitoring Plan* (Parsons, 2018b). Collection of synoptic groundwater elevations was conducted on February 5, 2020, approximately a week before the groundwater samples were collected. The methods used for groundwater sample collection are outlined in Appendix A.

3.4 Southwestern Offsite Seeps Sampling

As reported in the Corrective Action Plan (CAP) (Geosyntec 2019g), ten offsite groundwater seeps (Seeps E to M and Lock and Dam Seep) were identified on the west bank of the Cape Fear River south of the Site. These seeps and the Lock and Dam Seep were identified by performing a visual survey by boat between Old Outfall 002 and Georgia Branch Creek. The observed flow from these seeps ranged from seeping water from an embankment (i.e. trickles) to a visible small stream in some of the seeps.

On March 4th, 2020, the Lock and Dam Seep and Seeps E to K were sampled by submerging a 250 milliliter (mL) HDPE sampling bottle facing into the direction of flow to capture the water flowing from the seep. Flow was measured using the salt dilution method for Seeps G and K which had enough flow for this method. The Lock and Dam Seep and Seeps E, F, H and I had insufficient flow to perform the salt dilution tests and seep flow was measured using the time it took the whole seep flow to fill a container of known volume. Property access was not obtained for the offsite area for Seeps L and M, making sample collection and flow gauging not possible for these seeps during the sampling period. Appendix B contains a report summarizing the methods and results for the Southwestern Offsite Seeps Sampling event. A summary of the results of this sampling program are provided in Section 4.5 and a discussion presented in Section 7.1.

3.5 Cape Fear River Surface Water Sampling

In January 2020, surface water samples from the Cape Fear, Deep, Haw and Little Rivers were collected to assess the potential presence of a range of inorganic compounds, organic compounds (e.g. 1,4-dioxane), pharmaceutical and personal care products (PPCPs), and per and polyfluoroalkyl substances (PFAS) in the Cape Fear River that could be present in the raw water source of communities drawing water from the Cape Fear River.

Surface water was collected from eleven locations. Eight samples were collected from the Cape Fear River between River Mile 4 and the Kings Bluffs Intake Canal (River Mile 132). Three samples were collected from tributaries to the Cape Fear River. These samples were collected from the Haw, Deep, and Little Rivers immediately upstream of their confluence with the Cape Fear River.

Surface water samples were collected using a peristaltic pump; new, dedicated high density polyethylene tubing; and new, dedicated silicone tubing for the pump head at each location. The tubing was lowered halfway through the water column using an anchor weight and the tubing was fastened to the anchor with the tubing intake pointing upwards.

Surface water was pumped directly from the submerged tubing through the pump head to a flow-through cell. Field parameters (pH, temperature, specific conductance, dissolved oxygen, oxidation reduction potential, turbidity) were monitored over a 5-minute interval, then parameters were recorded, color and odors were noted, and the flow-through cell was disconnected. The tubing was cut to provide an untampered end, and grab samples were collected from the discharge of the tubing into the appropriate laboratory-supplied sampling bottles.

Sampling for organics, semi-volatiles and volatile organic compounds were not conducted through the silicone tubing since silicone may sorb some of these compounds and result in a potentially low bias. Instead, these samples were collected using the reverse-flow method by filling the tubing, retrieving the intake end of the tubing, and running the pump in reverse to discharge water in the tubing from the intake end into the bottle ware.

Samples for chlorine, chlorine dioxide, and chloramine were collected last, as these parameters must be analyzed immediately after sample collection. These samples were analyzed in the field using colorimetric methods.

Appendix C contains a report summarizing the methods and results for this river sampling event. A summary of the results of this sampling program are provided in Section 4.6 and a discussion presented in Section 7.2.

3.6 Laboratory Analyses

Samples from the mass load and mass loading model sampling programs described in Sections 3.2 and 3.3 were analyzed for PFAS by Table 3+ Laboratory SOP and some samples were analyzed for Method EPA 537 Modified. PFAS reported under these methods are listed in Table 1. The focus of this report is on Table 3+ PFAS, the PFAS originating from manufacturing activities at the Site; therefore, results of sampling activities and assessments of mass loading were performed and presented with respect to Table 3+ PFAS. Analytical results of PFAS analyzed under Method EPA 537 Modified, with the exception of HFPO-DA which is included with Table 3+ PFAS reporting, are provided in Appendix D.

4 SAMPLING RESULTS

This section presents sampling results from Q1 2020 sampling activities described in Section 3. Specifically, this section describes data quality regarding data reported in this report and then describes the results from the Cape Fear River PFAS Mass Load sampling program, Cape Fear River PFAS Mass Loading Model sampling program, the Southwestern Offsite Seeps sampling, and the Cape Fear River Surface Water sampling.

4.1 Data Quality

All analytical data were reviewed using the Data Verification Module (DVM) within the Locus™ Environmental Information Management (EIM) system, a commercial software program used to manage data. Following the DVM process, a manual review of the data was conducted. The DVM and the manual review results were combined in a data review narrative report for each set of sample results, which were consistent with Stage 2b of the USEPA Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (USEPA-540-R-08-005, 2009). The narrative report summarizes which samples were qualified (if any), the specific reasons for the qualification, and any potential bias in reported results. The data usability, in view of the project's data quality objectives (DQOs), was assessed, and the data were entered into the EIM system.

The data were evaluated by the DVM against the following data usability checks:

- Hold time criteria;
- Field and laboratory blank contamination;
- Completeness of quality assurance/quality control samples;
- Matrix spike/matrix spike duplicate recoveries and the relative percent differences (RPDs) between these spikes;
- Laboratory control sample/control sample duplicate recoveries and the RPD between these spikes;
- Surrogate spike recoveries for organic analyses; and
- RPD between field duplicate sample pairs.

A manual review of the data was also conducted and includes instrument-related quality control results for calibration standards, blanks, and recoveries. The data review process (DVM plus manual review) applied the following data evaluation qualifiers to the analytical results as required:

- J Analyte present, reported value may not be accurate or precise;

- UJ Analyte not present below the reporting limit, reporting limit may not be accurate or precise; and
- B Analyte present in a blank sample, reported value may have a high bias.

The data review process described above was performed for all laboratory chemical analytical data generated for the sampling event. The DQOs were met for the analytical results for accuracy and precision. The data collected are believed to be complete, representative and comparable, with the exception of R-PSDA, Hydrolyzed PSDA, and R-EVE.

As reported in the *Matrix Interference During Analysis of Table 3+ Compounds* memorandum (Geosyntec, 2020a), matrix interference studies conducted by the analytical laboratory (TestAmerica, Sacramento) have shown that the quantitation of these three compounds (R-PSDA [formerly Byproduct 4], Hydrolyzed PSDA [formerly Byproduct 5], and R-EVE) is inaccurate due to interferences by the sample matrix in both groundwater and surface water. Given the matrix interference issues, Total Table 3+ PFAS concentrations are calculated and presented two ways in this report: (i) summing over 17 of the 20 Table 3+ compounds "Total Table 3+ (sum of 17 compounds)", i.e., excluding results of R-PSDA, Hydrolyzed PSDA, and R-EVE, and (ii) summing over 20 of the Table 3+ compounds "Total Table 3+ (sum of 20 compounds)". Expressing these data as a range represents possible values of what these results might be without matrix interferences. In other words, the sum of all 17 compounds is an underestimate of the actual value while the sum of the 20 compounds is likely an overestimate of the actual value.

4.2 <u>Cape Fear River Table 3+ PFAS Mass Load Sampling Results</u>

For this Q1 2020 report, the Cape Fear River Mass Loads reporting period was from March 28 to May 11, 2020. During this period, twelve (12) primary composite samples, one duplicate composite sample, and one grab sample were collected at location CFR-TARHEEL. Two samples were collected from the river before the reporting period on February 14, 2020 and March 26, 2020; these sample results were excluded from the estimation of the Cape Fear River Mass Load as they were before the autosampler was fully calibrated and functional.

4.2.1 Cape Fear River Table 3+ Mass Load QA/QC Samples

PFAS concentrations for Cape Fear River Mass Loading quality assurance / quality control (QA/QC) samples are reported in Table 7. One equipment blank was collected on April 8, 2020 and one duplicate sample was collected on March 31, 2020. The equipment blank did not have PFAS detected above the associated reported limits. PFAS results for the parent (CFR-TARHEEL-83-033120) and duplicate sample (CFR-TARHEEL-83-033120-D) had relative percent differences less than 30% for the reported compounds, with the exception of HFPO-DA, perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA), and R-EVE, which were detected in one sample and not detected above the reporting limit in the other sample.

4.2.2 Cape Fear River Table 3+ Mass Load PFAS Analytical Results

Sample results used to estimate Cape Fear River Mass Loads are reported in Table 7. Minimum Total Table 3+ PFAS concentrations summed over 17 and 20 compounds were 51 and 63 nanograms per liter (ng/L) for samples which finished composite sample collection on May 6, 2020 and March 31, 2020, respectively. Maximum Total Table 3+ PFAS concentrations summed over 17 and 20 compounds were 200 and 250 ng/L for the sample which finished collection on April 9, 2020. The concentrations over time for these composite samples are plotted on Figure 9 and calculated corresponding mass loads plotted in Figure 10. Both figures are described in Section 5.

4.3 Table 3+ PFAS Mass Loading Model Sampling Seep and Surface Water Results

Sampling of seep, surface water and Cape Fear River locations occurred between April 2 and 3, with the exception of CFR-KINGS, which occurred on April 6, 2020. The Kings Bluff sample was sampled four days later to account for the estimated time for water to travel from the Site to the CFR-KINGS. Onsite rain gauges did not indicate any precipitation during the three days of surface water sample collection (April 2, 3, and 6 2020). The April 2020 surface water sampling event is, therefore, considered to be a quiescent (*dry*) weather event.

4.3.1 Seep and Surface Water QA/QC Samples

PFAS concentrations for surface water QA/QC samples are reported in Table 8. Three equipment blanks were collected (two on April 3, 2020 and one on April 6, 2020). One of the two equipment blanks collected on April 3, 2020 and the equipment blank collected on April 6, 2020 had one PFAS compound, Hydrolyzed PSDA (formerly Byproduct 5), detected above the associated reported limits. Samples collected on April 3 and 6, 2020 that had concentrations of Hydrolyzed PSDA (formerly Byproduct 5) within 5 times the level found in the associated equipment blank were B qualified to indicate the presence of the analyte in the equipment blank. This resulted in three Hydrolyzed PSDA (formerly Byproduct 5) results that was B qualified (CAP1Q20-CFR-TARHEEL-040220, EXCESS RIVER WATER-24-040320, and CAP1Q20-CFR-KINGS-040620). One field duplicate was collected; relative percent differences for the reported compounds were all less than 30%; therefore, no additional data qualification was required.Flow Gauging Results

A summary of flow rates measured for the April 2020 surface water event is presented in Table 9. Details on estimated flow measurements along with measurement methods at each flow gauging location are included in Appendix E.

Measured flow rates for Willis Creek and Georgia Branch Creek in April 2020 were 5,300 and 4,700 gallons per minute (gpm). Measured flow rates at the seeps were170, 150, 63 and 120 gpm for Seep A, B, C and D, respectively. The flow rate at Outfall 002 was 16,000 gpm while Old Outfall 002 had a flow rate of 650 gpm. The USGS reported flow at W.O. Huske Dame (USGS 02105500) and Kings Bluff (USGS 02105769) were 2,400,000 gpm and 1,300,000 gpm, respectively (5,100 and 2,900 cubic feet per second).

4.3.2 Seeps and Surface Water Field Parameters

Field parameters recorded for surface water samples collected during the Q1 2020 event are presented in Table 5 and the field forms are provided in Appendix F. Recorded field parameter data are generally consistent with expectations, with the following exceptions:

- The pH at SEEP A was 4.06 on April 2 and 6.41 on April 3. While some variability is expected, this change may indicate inaccurate readings.
- The pH at OLDOF-1 was 6.73 on April 2 and 3.63 on April 3. While some variability is expected, this change may indicate inaccurate readings.
- Dissolved oxygen at SEEP A was 8.60 mg/L on April 2 and 2.95 mg/L on April 3. The higher reading on April 2 is more consistent with flowing streams.

4.3.3 Seep and Surface Water Table 3+ PFAS Analytical Results

Table 3+ PFAS and Total Table 3+ PFAS concentrations for all samples are summarized in Table 8. Figures 11A, 11B, 12A, and 12B present the Total Table 3+ concentrations reported for samples collected in April 2020 and Figure 13 presents the HFPO-DA concentration for Cape Fear River samples. Laboratory and DVM reports are included in Appendix G.

The sample collected from CFR-MILE-76 (before site) had no detections of Table 3+ PFAS reported above the reporting limit. The sample Intake River Water at Facility showed Total Table 3+ concentrations of 100 ng/L (summed over 17 compounds) to 110 ng/L (summed over 20 compounds). Total Table 3+ PFAS concentrations in Willis Creek and Georgia Branch Creek were 2,000 ng/L to 2,400 ng/L and 1,800 to 1,900 ng/L, respectively. Grab and composite samples collected from the Outfall 002 had Total Table 3+ PFAS concentrations ranging from 130 to 320 ng/L while the concentration at the Old Outfall 002 was 110,000 ng/L. At Old Outfall 002 detected concentrations of R-PSDA, Hydrolyzed PSDA, and R-EVE were low relative to other compounds and did not change the Total Table 3+ concentration reported to two significant digits. Samples collected from the mouths of Seep A, Seep B, Seep C and Seep D had the highest Total Table 3+

PFAS concentrations of 260,000 to 290,000 ng/L, 310,00 to 340,000 ng/L, 310,000 to 320,00 ng/L, and 180,000 ng/L, respectively. At Seep D detected concentrations of R-PSDA, Hydrolyzed PSDA, and R-EVE were low relative to other compounds and did not change the Total Table 3+ concentration reported to two significant digits. The 24 hour composite sample collected from CFR-TARHEEL had Total Table 3+ PFAS concentrations of 91 ng/L to 130 ng/L, while the grab sample showed concentrations of 120 to 160 ng/L, similar to the concentrations observed at Bladen Bluffs (87 to 110 ng/L) and Kings Bluff (98 to 130 ng/L). Figure 13 shows the HFPO-DA concentrations in the four river samples. HFPO-DA concentrations were well below 140 ng/L ranging from non-detect (upstream at CFR-MILE-76) to 18 ng/L (downstream composite sample at CFR-TARHEEL).

4.4 Table 3+ PFAS Mass Loading Model Sampling Groundwater Results

A synoptic water level survey of the onsite groundwater monitoring well network was completed on February 5, 2020. Field parameters and groundwater samples were collected from 20 of the 22 CO Paragraph 16 wells between February 6 and 25, 2020. Two of the wells (INSITU-02 and Bladen-1S) were dry and not sampled.

4.4.1 Groundwater QA/QC Samples

PFAS concentrations for groundwater QA/QC samples are reported in Table 10. The following observations were noted for the QA/QC samples:

- Eleven equipment blank samples were collected over the 10 sampling days. No PFAS were detected above the associated reporting limits in eight of the 11 equipment blank samples. Equipment blank samples collected on February 11, 12 and 19, 2020 had reportable levels of PFMOAA, PFO2HxA, PFO3OA, perfluoromethoxypropyl carboxylic acid (PMPA) and/or perfluoroethoxysulfonic acid (NVHOS). Samples collected on February 11, 12 and 19, that had concentrations of PFMOAA, PFO2HxA, PFO3OA, PMPA or NVHOS within 5x the level found in the equipment blank sample were B qualified to indicate the presence of the analyte in the associated equipment blank sample.
- Ten field blank samples were collected over the 10 sampling days. No PFAS were detected above the associated reporting limits in nine of the ten field blank samples. The field blank sample from February 11, 2020 had a PMPA concentration of 110 ng/L. Results for PMPA from February 11, 2020 within 5 times the level found in the field blank sample were B qualified to indicate the presence of the analyte in the associated field blank sample.
- Two field duplicate samples were collected; relative percent differences for the reported compounds were less than 30% with the exception of PEPA, PES and

PFECA-B in the parent and field duplicate samples from LTW-03. These results were J-qualified as estimated.

4.4.2 Water Levels

Groundwater elevations were calculated for onsite and offsite wells screened in the Perched Zone, Surficial Aquifer and Black Creek Aquifer from a single synoptic water level measurement survey performed on February 5, 2020 (Table 4). Groundwater elevations from these synoptic water levels were used to develop potentiometric maps for the Perched Zone, Surficial Aquifer and Black Creek Aquifer (Figures 8A, 8B, and 8C).

Similar to Perched Zone groundwater elevations discussed in the *On and Offsite Assessment Report* (Geosyntec, 2019d), a localized groundwater mound is observed near NAF-01 and NAF-04 (Figure 8A). Groundwater elevations infer groundwater will flow radially away from the groundwater mound. Groundwater in the Perched Zone appears to be controlled by topography and the lateral extent of the clay lens. Perched Zone groundwater elevations are also shown to overlay with topographic contours and individual seeps that were identified in the *Seeps and Creeks Investigation* (Geosyntec, 2019a; Figure 8A).

Groundwater elevations in Surficial Aquifer wells (Figure 8B) indicate groundwater flow in the northern portion of the Site is likely to be east-northeast towards both Willis Creek and Cape Fear River, and at the southern end of the Site towards Old Outfall 002, consistent with the flow observed in October 2019 (Geosyntec 2019g). In the southern portion of the Site the Surficial Aquifer groundwater discharges to the Old Outfall 002 and to Seep B.

Groundwater in the Black Creek Aquifer flows in a predominantly easterly direction to the Cape Fear River (Figure 8C) similar to groundwater elevations discussed in the *Additional Site Investigation Report* (Parsons, 2018b) and the *On and Offsite Assessment Report* (Geosyntec, 2019d). Minor groundwater flow components to the northeast, towards Willis Creek (near SMW-12) and southeast, towards Old Outfall (east of PW-11 or Glengerry Road) are also likely. Additionally, based on present lithology characterization, the Black Creek Aquifer is likely in direct connection with only a portion of Willis Creek, from SMW-12 to the river, and a section of the Old Outfall in its lower reaches near the Cape Fear River. The contours drawn from the groundwater elevations were used to estimate hydraulic gradients in the Black Creek Aquifer. The hydraulic gradients were used as an input into the Mass Loading Model to estimate the contribution of onsite groundwater in the Black Creek Aquifer to the Total Table 3+ mass loading to the Cape Fear River (Pathway 5). The details of the calculations can be found in Appendix H.

4.4.3 Groundwater Field Parameters

Field parameters recorded for groundwater samples collected during the Q1 2020 event are presented in Table 6 and the field forms are provided in Appendix F. Recorded field parameter data are generally in line with expectations for the sample locations with the following exceptions:

- Turbidity at PW-07 was >999.9 NTU. The sample at this location was collected as a grab sample due to low water volume in the well.
- Dissolved oxygen at SMW-12 was 9.14 mg/L. It is expected that samples collected via low flow sampling techniques would have much lower dissolved oxygen levels.

4.4.4 Groundwater Table 3+ PFAS Analytical Results

Table 3+ PFAS and Total Table 3+ concentrations for the groundwater samples collected in February 2020 are summarized in Table 10 and Figures 14A and 14B. Laboratory and DVM reports are included in Appendix G.

Total Table 3+ concentrations ranged from 42 ng/L at SMW-12 to 680,000 ng/L at PW-11, with the highest concentrations observed at wells located near the seeps and at the mouth of Old Outfall 002 (Figures 14A and 14B). In general, the largest proportion of Total Table 3+ concentrations are comprised of HFPO-DA, PFMOAA, and PMPA (Table 10). On an aquifer basis, lower individual and Total Table 3+ concentrations are observed in wells screened in the Surficial Aquifer. Concentrations of Total Table 3+ PFAS in Floodplain deposits and Black Creek Aquifer groundwater (Figures 14A and 14B) were similar to the seep concentrations (Figures 11A and 11B). Overall, results from the Q1 2020 monitoring are consistent with trends observed at these wells in previous monitoring events (Geosyntec, 2019d).

The results from the Q1 2020 groundwater monitoring event were used to calculate the contribution of onsite groundwater in the Black Creek Aquifer to the Total Table 3+ mass discharge to the Cape Fear River. The details of the calculations can be found in Appendix H.

4.5 Southwestern Offsite Seeps Results

The results of the Southwestern Offsite Seep sampling are summarized in detail in Appendix B and discussed briefly in this section. Samples were collected from Southwestern offsite seeps E to K and the Lock and Dam seep. Seeps E to K are located south of the Old Outfall (i.e. downstream), while the Lock and Dam seep is located north of the Old Outfall (i.e. upstream). The Lock and Dam seep is also located downgradient from the potential location of the onsite groundwater remedy. Measured flow rates among all the offsite seeps ranged from 1.0 gpm (Seep F) to 73 gpm (Seep G), while the measured flow rate at the Lock and Dam Seep was16 gpm.

In general, Total Table 3+ concentrations decreased in each of the seeps with increasing distance from the Site (i.e., going southward). The Lock and Dam Seep had the highest Total Table 3+ concentration (20 compounds) of 192,000 ng/L. Total Table 3+ concentrations (20 compounds) at Seeps E to K ranged from 1,400 ng/L (Seep J) to 5,500 ng/L (Seep F). Note that the proportions of R-PSDA, Hydrolyzed PSDA, and R-EVE in the Total Table 3+ concentrations were low and ranged from 0% to 2%. The most frequently detected Table 3+ compounds were PFMOAA, HFPO-DA, PMPA, PEPA, PFO2HxA, and PFO3OA. The highest Table 3+ concentration was observed at the Lock and Dam Seep with a PFMOAA concentration of 160,000 ng/L.

4.6 January 2020 Cape Fear River Water Sampling Program Results

The results of the Cape Fear River Surface Water Sampling program are summarized in detail in Appendix C and analytical results for PFAS compounds analyzed by Table 3+ SOP and Method 537M are briefly discussed in this section.

The concentration of Total Table 3+ (20 compounds) ranged between non-detect in several samples (samples from the Deep River, Haw River, Cape Fear River Mile 4, Cape Fear River Mile 56.5, and Cape Fear River Mile 76) to a maximum concentration of 122 ng/L at River Mile 84. The highest individual compound concentration was PFMOAA at 36 ng/L from the sample collected at Cape Fear River Mile 84. In total, 9 Table 3+ compounds (including HFPO-DA) were reported in samples from this event.

Method 537M compounds were reported in all samples and ranged in concentration from 15.4 ng/L (Deep River) to 90.5 ng/L (Cape Fear River Mile 100, the Elizabethtown WWTP). The Method 537M compound with the highest measured concentration was perfluorohexanoic acid (PFHxA) at Cape Fear River Mile 100 (Elizabethtown WWTP) at 27 ng/L. In total, 9 Method 537M compounds were reported in samples collected from this event.

5 TABLE 3+ PFAS MASS LOAD TO CAPE FEAR RIVER

This section presents results of the Cape Fear River Table 3+ PFAS mass loads for the present reporting period of March 28, 2020 to May 9, 2020, a total of 43 days. Specifically, this section discusses three types of mass loads:

1. The total measured in-river Table 3+ PFAS mass load based on time-weighted concentration measurements of Table 3+ PFAS primarily from composite samples of Cape Fear River water and measured Cape Fear River flow volumes

at the W.O. Huske Dam that are adjusted for travel times to the downstream monitoring location at the CFR-TARHEEL;

2. The total measured and estimated Table 3+ PFAS mass load captured by remedies implemented by Chemours; this is the load fraction that was prevented from reaching the Cape Fear River; and
3. The total measured Table 3+ PFAS mass load to the Cape Fear River defined as the sum of the measured in-river loads and the remedy prevented loads. This total mass load may be calculated following Equation 1 below:

Equation 1: Total Table 3+ Mass Load

$$MTT3_{CFR} = m_{CFR} + m_{Remedies}$$

Where

$MTT3_{CFR}$ = is the total mass load of Table 3+ PFAS compounds in the Cape Fear River and prevented from reaching the Cape Fear River by implemented remedies;

m_{CFR} = is the Total Table 3+ PFAS mass load estimated using PFAS concentrations in samples taken in the Cape Fear River downstream of the Site where the river is well mixed and using measured river flow volumes;

$m_{Remedies}$ = is the Total Table 3+ PFAS mass load prevented from reaching the Cape Fear River by remedies implemented by Chemours;

Detailed calculation methods for each type of mass load are presented in Appendix I.

5.1 In-River Table 3+ PFAS Mass Load and Total Table 3+ PFAS Mass Load

The Total Table 3+ PFAS mass load measured in the Cape Fear River for the 43 day long reporting period of March 28to May 9, 2020 was 46 kilograms (kg) and 59 kg for the sum of Total Table 3+ PFAS summed over 17 and 20 compounds, respectively (Table 11). This in-river total mass load was estimated based on the fourteen mass loading estimation intervals presented in Table 11 and shown in Figure 4. This estimated in-river mass load was distributed over 510 million cubic meters (m^3) or 18 billion cubic feet[1] of river water that passed by the CFR-TARHEEL sampling location. During the reporting period the median flow of the river was 99.4 cubic meters per second (m^3/s) or 3,510 cubic feet per second (cfs).

[1] The volume of river water was provided in cubic meters (USGS, 2019) and was converted to cubic feet for reference.

The Total Table 3+ PFAS mass discharge had minimum values of 7.7 milligrams per second (mg/s) (17 compounds) to 11 mg/s (20 compounds) for the sample collected on May 11, 2020 (Table 12). The maximum Total Table 3+ PFAS mass discharge values were 20 mg/s (17 compounds) to 30 mg/s (20 compounds) for the sample collected on May 2, 2020. The calculated median mass discharge values were 12 mg/s and 16 mg/s for Total Table 3+ PFAS summed over 17 and 20 compounds, respectively.

The plots of concentrations over time in Figure 9 indicate that concentrations in the Cape Fear River are inversely correlated to river flow rate. That is, concentrations were higher when flow rates were lowest, while concentrations were lower when river flow rates were higher. This trend is likely related to the degree of dilution occurring in the river. Higher river flows lead to a greater volume of water that the mass loads are distributed over leading to a lower concentration value.

The plots of mass discharge over time in Figure 10 indicate that mass discharge had periods of being positively correlated with river flow volumes. Notably, the highest recorded mass discharge value for Total Table 3+ PFAS summed over 20 compounds was 30 mg/s for the composite sample between April 30 and May 2, 2020. This sample was collected after a rainfall event of more than 2 inches. Meanwhile for this same sample, the Total Table 3+ PFAS concentration summed over 20 compounds was 130 ng/L, which is approximately half the value of the highest reported concentration for all thirteen samples reported in Table 12. Therefore, while mass discharge did increase after the large rainfall event the increases in river flow volume from the same rainfall resulted in relatively similar river concentrations as before the storm event. This trend is likely due to the fact that additional mass reaching the river, potentially from stormwater, was diluted by increased river flow volumes.

For this reporting period the In-River Mass Load and the Total Table 3+ PFAS mass load is identical as no Remedy Captured Table 3+ PFAS Mass Loads were quantitated (see Section 5.2 below). The Total Table 3+ PFAS mass load is presented in Table 13.

5.2 Remedy Captured Table 3+ PFAS Mass Load

Remedies implemented by Chemours will reduce Table 3+ PFAS mass loads to the Cape Fear River. Presently, implemented remedies include air abatement measures for direct aerial deposition (Transport Pathway 3), are in place (e.g., carbon beds, Thermal Oxidizer, etc). This report and past reports have estimated the contributions from direct aerial deposition to be less than two percent of the total load based on air deposition modeling estimates for emissions reductions. Assessment of remedies, including air deposition reductions. are presently ongoing and future Mass Loading Assessment updates may include estimates of mass loading reductions from these controls.

Remedies to be implemented by Chemours (e.g. onsite seeps interim remedies, Outfall 002 remedy) that will prevent Table 3+ PFAS mass loads from reaching the Cape Fear River will be quantified and accounted for in future Mass Loading Assessments.

5.3 Mass Discharge at Bladen Bluffs, Tar Heel Ferry Road Bridge and Kings Bluff Intake Canal

As shown in the table below, Total Table 3+ PFAS concentrations at the three downstream river locations (CFR-BLADEN, CFR-TARHEEL, and CFR-KINGS) were similar and ranged from 87 ng/L to 98 ng/L and 110 ng/L to 130 ng/L, summing over 17 and 20 compounds, respectively. In particular, the similarity between the CFR-BLADEN and CFR-TARHEEL sample results indicates that the CFR-TARHEEL is a suitable location for evaluating mass loading model estimated Table 3+ PFAS mass discharge to measured in-river Table 3+ mass discharge. Prior model estimates had compared estimated mass discharges to in-river samples collected at CFR-BLADEN. The mass discharge at CFR-KINGS was the lowest and ranged from 8 mg/s to 11.6 mg/s for Total Table 3+ summed over 17 and 20 compounds, respectively.

Sample Location and Type	Sample Collection End Date	Total Table 3+ (Summed over 17 compounds)		Total Table 3+ (Summed over 20 compounds)	
		Concentration (ng/L)	Mass Discharge (mg/s)	Concentration (ng/L)	Mass Discharge (mg/s)
CFR-BLADEN	4/2/2020	87	11.6	110	14.6
CFR-TARHEEL	4/2/2020	91	12.2	130	17.4
CFR-KINGS	4/6/2020	98	8.0	130	11.6

6 CAPE FEAR RIVER TABLE 3+ PFAS MASS LOADING MODEL

While Section 5 presented the Table 3+ PFAS mass load in the Cape Fear River, this section presents an analysis evaluating the relative loadings from the identified PFAS transport pathways to the observed in-river Table 3+ PFAS mass discharge. This evaluation helps to confirm that the pathways, where mitigative measures are planned, will result in reductions of Table 3+ PFAS loading to the Cape Fear River. This evaluation was performed using the Mass Loading Model. The following subsections describe the model design, pathways, and the results of the Mass Loading Model assessment, including the sensitivity and the limitations of the Mass Loading Model.

6.1 Model Design

The Mass Loading Model estimates the mass discharge of Table 3+ PFAS from the potential PFAS transport pathways to the Cape Fear River. The Total Table 3+ PFAS mass discharge entering the Cape Fear River is defined in this model as the combined mass per unit time or mass discharge (e.g., mg/s) from potential pathways identified in Section 2.5 and further discussed in Section 6.2 below. Total Table 3+ PFAS mass load entering the Cape Fear River is calculated as:

Equation 2: Cape Fear River Estimated Mass Discharge from Mass Loading Model

$$CFR_{TM} = \sum_{n=1}^{n=9}\sum_{i=1}^{i=I} M_{n,i} = \sum_{n=1}^{n=9}\sum_{i=1}^{i=I}\left(C_{n,i} \times Q_n\right) \; : \; Q_n \; \rightarrow dry\ (April\ 2020)$$

where,

CFR_{TM} = total PFAS mass discharge entering the Cape Fear River measured in mass per unit time [MT^{-1}], typically milligrams per second.

n = represents each of the 9 potential PFAS transport pathways listed in Table 14A. To facilitate model construction, the Seeps (Transport Pathway 6) were further discretized as Seep A (Transport Pathway 6A), Seep B (Transport Pathway 6B), Seep C (Transport Pathway 6C) and Seep D (Transport Pathway 6D).

i = represents each of the Table 3+ SOP PFAS constituents listed in Table 1.

I = represents total number of Table 3+ SOP PFAS constituents included in the summation of Total Table 3+ concentrations, e.g., 17 or 20.

$M_{n,i}$ = mass load of each PFAS constituent *i* from each potential pathway *n* with measured units in mass per unit time [MT^{-1}], typically nanograms per second.

$C_{n,i}$ = concentration of each PFAS constituent *i* from each potential pathway *n* with measured units in mass per unit volume [ML^{-3}], typically nanograms per liter.

Q_n = volumetric flow rate from each potential pathway *n* with measured units in volume per time [L^3T^{-1}], typically liters per second.

For the Q1 2020 Mass Loading Model assessment, data sources used as model inputs for each potential pathway are described in Table 14A. These data sources included flow measurements, water levels and analytical results from the Q1 2020 sampling events (as discussed in Section 4) and supplemental data provided in Appendices E, H, J, and K.

The uncertainties and sensitivity of the model inputs are presented in Table 18. These data sources included flow measurements, water levels and analytical results from the Q1 2020 sampling events (as discussed in Section 4) and supplemental data provided in Appendices E, H, J, and K.

6.1.1 Adjustments to Methodology from 2019 Mass Loading Model Assessments

For the Q1 2020 Mass Loading Model adjustments were made to both sampling and calculations methodologies to improve the model assessment. These adjustments included:

1. Field Sampling/Measurement Adjustment: Composite samplers were used to collect 24-hour integrated samples from Willis Creek, Seeps A to D, Outfall 002, Old Outfall 002. In contrast, for the 2019 events, a mix of grab and composite samples were used as inputs in the Mass Loading Model.
2. Field Sampling/Measurement Adjustment: Flumes were used to measure flow at Seeps A to D and flow velocity gauging was used at the creeks. In contrast, in the 2019 Mass Loading Model flow measurements were obtained using a combination of salt dilution tests, temporary weirs and flumes.
3. Field Sampling/Measurement and Calculation Adjustment: CFR-TARHEEL replaced CFR-BLADEN for model-based comparisons. CFR-TARHEEL was selected because an autosampler was able to be installed at this location enabling modeled and observed mass loads to be more accurately compared. Additionally, similar to CFR-BLADEN, CFR-TARHEEL is far enough downstream of the Site such that inflows of water from the seeps, onsite groundwater, Old Outfall 002 and Georgia Branch Creek are well mixed in the river water based on numerical model simulations of the Cape Fear River and trends in HFPO-DA concentrations becoming uniform in the river upstream of this point (*Assessment of the Chemical and Spatial Distribution of PFAS in the Cape Fear River*; Geosyntec 2018).
4. Calculation Adjustment: A time offset was applied to the flow data that accounts for travel time for the flow passing the W.O. Huske Dam to reach the CFR-TARHEEL and CFR-BLADEN sampling locations. Travel times are estimated based on the results of a numerical model of the Cape Fear River which developed a regression curve between the USGS reported gage heights at W.O. Huske Dam and travel times. As such, the samples were collected during a representative time interval, to the extent feasible, to account for the arrival times at these two river locations.
5. Calculation Adjustment: Based on the sampling adjustments, model-based estimates of Table 3+ PFAS mass discharge were based on measurements and

concentrations representative of the entire 24-hour period. Therefore, the use of flow and concentration statistics, i.e., quartiles, over the sampling period were not used as inputs to the model as was done in 2019.

6. Calculation Adjustment: The sensitivity of modeled estimates of groundwater Table 3+ PFAS mass discharge to the Cape Fear River was assessed using upper and lower bounds of estimated onsite hydraulic conductivity. In this Q1 2020 assessment, the lower and upper bounds represent the model-estimated mass loading resulting from minimum and geometric mean hydraulic conductivity values, respectively, for the onsite groundwater flow component (Transport Pathway 5). See Section 6.2.4 below for further details and Appendix H for supporting calculations. In contrast, previous assessments used the quartile statistics to assess groundwater uncertainty, and groundwater gradients and hydraulic conductivity were calibrated to observed mass loads in the Cape Fear River after accounting for the Table 3+ PFAS mass discharge from other pathways.

6.2 PFAS Mass Loading Model Pathways

The nine potential pathways representing compartments to the Table 3+ PFAS Mass Loading Model are described below. These pathways were identified as potential contributors of Table 3+ PFAS to river Table 3+ PFAS concentrations.

6.2.1 Upstream Cape Fear River (Transport Pathway 1)

The upstream Table 3+ PFAS mass discharge contribution to Cape Fear River was estimated using measured Cape Fear River Table 3+ PFAS concentrations (Table 8) and flow rates (Table 9). One water sample was collected immediately upstream of the Site and Willis Creek at River Mile 76 to estimate upstream Table 3+ PFAS mass discharge contribution to Cape Fear River. River water samples were collected at the thalweg (i.e., deepest point of the river transect) at mid-depth in the water column.

Volumetric flow rates for the Cape Fear River were measured at the USGS flow gauging station located at the W.O. Huske Dam, ID (USGS# 02105500; USGS, 2019), approximately 0.5 river miles downstream of the Site (Appendix E). The volumetric flow rate immediately upstream of the Site (River Mile 76) was estimated using a volumetric budget accounting for flows between River Mile 76 and the W.O. Huske Dam, as depicted in Figure 3. The volumetric flow rate at River Mile 76 was estimated by subtracting inflows from Willis Creek, upwelling groundwater, seeps to the river, and Outfall 002 and by adding the river water intake from Chemours to the flow rate measurement from the W.O. Huske Dam.

6.2.2 Tributaries – Willis Creek, Georgia Branch Creek, and Old Outfall 002 (Transport Pathways 2, 7 and 9)

The Table 3+ PFAS mass discharge contribution to the Cape Fear River from tributaries to the Cape Fear River (Willis Creek, Georgia Branch Creek and Old Outfall 002) used PFAS concentrations (Table 8) and flow rate data (Table 9 and Appendix E). PFAS samples were collected at each tributary at a location near the discharge point to the Cape Fear River, but still far enough upstream in the tributary where they are not potentially influenced by the Cape Fear River. Since analytical sample locations were near the discharge point to the Cape Fear River, model input for tributaries would account for loading from groundwater discharging to the tributary, onsite surface water runoff into the tributary and direct aerial deposition on these tributaries

Volumetric discharge rates for the tributaries were obtained using a flume at Old Outfall 002 and flow velocity gauging at the creeks as outlined in the *Seeps and Creeks Investigation Report* (Geosyntec, 2019b). A summary of the measured and estimated flow values for all tributaries are provided in Table 9 and Appendix E. Detailed methods for flow measurements are presented in Appendix A.

6.2.3 Aerial Deposition to the Cape Fear River (Transport Pathway 3)

The Table 3+ PFAS mass discharge from direct aerial deposition of Table 3+ PFAS to the Cape Fear River was estimated using air deposition modeling results for HFPO-DA from the Site (ERM, 2018). Average deposition rates to the Cape Fear River were estimated based on the reported aerial extent and deposition contours. Estimated deposition rates were combined with the average river surface area and estimated residence time of flowing Cape Fear River water to estimate a mass discharge from aerial deposition. The mass discharge of Table 3+ PFAS compounds was estimated by using the relative concentration ratios of other Table 3+ PFAS to HFPO-DA based on measured concentrations from offsite wells. Supporting documentation for this estimation is included in Appendix J. This Q1 2020 report utilized the 2018 emissions reduction scenario outlined in the ERM report (ERM, 2018). This is likely a conservative assumption as further air emission reductions controls have been implemented compared to the modeled scenario. As assessment of air emissions controls continues, the bases of estimating Table 3+ PFAS mass discharge to the river from this pathway may be updated.

6.2.4 Onsite Groundwater (Transport Pathways 5 and 6)

The Mass Loading Model describes two groundwater Table 3+ PFAS transport pathways to the Cape Fear River. First, the indirect pathway of groundwater to the onsite seeps which discharge to the Cape Fear River, and second, the direct pathway of Black Creek aquifer groundwater discharging directly to the river.

6.2.4.1 Indirect Pathway – Onsite Groundwater Seeps to River (Transport Pathway 6)

Four seeps at the Site have been identified that discharge directly to the Cape Fear River: Seep A, Seep B, Seep C and Seep D (Figure 5). The Table 3+ PFAS mass discharge from these seeps to the Cape Fear River was estimated using measured Table 3+ PFAS concentrations (Table 8) and volumetric discharged rates (Table 9 and Appendix E). Volumetric discharge rates were calculated using flumes as detailed in Appendix A.

6.2.4.2 Direct Pathway – Groundwater Discharge to River (Transport Pathway 5)

The Table 3+ PFAS mass discharge of onsite groundwater discharge from the Black Creek Aquifer to the Cape Fear River was estimated by calculating the sum of the Table 3+ PFAS mass discharge for eight segments of the Black Creek aquifer along the Cape Fear River frontage. Table 3+ PFAS mass discharge for each segment was calculated based on the following parameters:

- The cross-sectional area of the Black Creek Aquifer for each segment, as determined from a three-dimensional hydrostratigraphic model of the Site;
- The hydraulic gradient for each segment, as determined from groundwater level contours in the vicinity of the river frontage;
- The hydraulic conductivity for each segment, as determined from slug tests conducted on monitoring wells representative of the Black Creek Aquifer; and
- Table 3+ PFAS concentrations detected in monitoring wells in the vicinity of each segment.

Further details on the onsite groundwater discharge term and associated calculations are provided in Appendix H.

6.2.5 Outfall 002 and Facility Stormwater Runoff (Transport Pathway 4)

The Table 3+ PFAS mass discharge of PFAS from Outfall 002 to the Cape Fear River was estimated using measured Table 3+ PFAS concentrations and measured Outfall 002 volumetric flow rates. Additionally, the concentration of Table 3+ PFAS compounds for Outfall 002 were adjusted for Table 3+ PFAS already present in the Intake River Water at Facility samples before being input into the model. The Table 3+ PFAS present in intake water are already accounted for in the Mass Loading Model in pathways 1, 2, and 3 (Upstream River, Willis Creek and Direct Aerial Deposition). Daily volumetric discharge from Outfall 002 to the Cape Fear River is recorded (Appendix E) and used in the PFAS Loading Model.

6.2.6 Adjacent and Downstream Offsite Groundwater (Transport Pathway 8)

The Table 3+ PFAS mass discharge from adjacent and downstream offsite groundwater to the Cape Fear River was estimated based on estimated upstream groundwater loading described in Section 6.2.1. Table 3+ PFAS detected in offsite groundwater originate from aerial deposition which has occurred in all directions from the Site (Geosyntec, 2019g). These aerially deposited Table 3+ PFAS have subsequently infiltrated to groundwater and migrate towards the Cape Fear River where they lead to upstream, adjacent and downstream offsite groundwater Table 3+ PFAS mass. The upstream offsite groundwater Table 3+ PFAS mass discharge is estimated relatively simply by using measured river flows and concentrations at River Mile 76 upstream of the Site. Here only the upstream offsite groundwater Table 3+ PFAS mass discharge is present in the river at this location. Conversely, the adjacent and downstream offsite groundwater Table 3+ PFAS mass discharge is difficult to measure directly since many Table 3+ PFAS mass discharges from all other pathways are present in the river where these offsite groundwater contributions join the river. Additionally, adjacent and downstream offsite groundwater have a relatively small component of the Total Table 3+ PFAS mass discharge making their additional contributions to the total discharge difficult to distinguish from other discharges already present.

Therefore, since Table 3+ PFAS mass discharge from offsite groundwater both upstream and downstream of the Site follow the same dynamics (deposition, infiltration, migration, discharge) the adjacent and downstream Table 3+ PFAS mass discharge is scaled from the upstream offsite groundwater mass discharge estimate. The downstream offsite groundwater loadings are scaled to the upstream offsite groundwater loadings based on the length of river downstream of the Site known to be in contact with offsite groundwater containing PFAS compared to the length of the river upstream also in contact with offsite groundwater containing PFAS. A description of these calculations is presented in Appendix K.

6.3 Mass Loading Model Results

The pathway-specific Table 3+ PFAS mass discharges estimated from the Mass Loading Model and measured at CFR-TARHEEL are summarized in Table 15. A summary of the Total Table 3+ (17 and 20 compounds) mass discharge estimates per pathway and a comparison to the observed mass discharge at CFR-TARHEEL is provided in Table 16 and shown in Figure 15. A comparison of relative contributions per pathway between the 2019 assessments and the Q1 2020 assessment is provided in Table 17. Note that the relative contributions per pathway derived from model-estimated Total Table 3+ PFAS mass discharge are similar when Total Table 3+ concentrations were summed over 17 and 20 compounds; therefore, based on this similarity and for clarity of discussion model results for only the Total Table 3+ PFAS (20 compounds) are discussed below.

The model-estimated Total Table 3+ PFAS mass discharge ranged from 16 mg/s (lower bound) to 26 mg/s (upper bound), while the measured mass discharge at CFR-TARHEEL was18 mg/s (Table 16 and Figure 15). The lower bound mass discharge estimate is closer to the measured mass discharge (within approximately 2 mg/s) compared to the upper bound mass discharge estimate (within 8 mg/s).

The Mass Loading Model estimates that the seeps and Old Outfall 002 (Transport Pathways 6 and 7, respectively) have the highest contribution of Total Table 3+ PFAS mass discharge in April 2020, with a combined contribution ranging from approximately 52% (upper bound) to 86% (lower bound) (Table 16). The Old Outfall 002 contributed 17% to 28% of the estimated mass discharge, which is consistent with previous Mass Loading Model assessments performed in 2019 (Table 17). The onsite seeps contributed from 35% to 57% of the mass discharge, which is higher than previous estimates, and appears to be driven by a change in measured flow and not an increase in Total Table 3+ PFAS concentrations. In particular, the change in flow was most marked at Seep D and is likely now a more accurate measurement since the installation of a flume at this seep.

Onsite groundwater (Transport Pathway 5) is the next highest Table 3+ PFAS mass discharge pathway to the Cape Fear River, contributing from 5% (lower bound) to 42% (upper bound) of the model estimated Total Table 3+ mass discharge (Table 16 and Figure 15). In previous assessments, this pathway contributed approximately 14% to 22%, which is within the range estimated for this assessment (Table 17). For this pathway, the lower and upper bounds cover a wider range than other pathways because the hydraulic conductivity in the Black Creek Aquifer, one of the most sensitive input parameters into the model, was varied to better understand the potential range of Table 3+ PFAS mass discharge from onsite groundwater discharging to the Cape Fear River. As such, the minimum and geometric mean hydraulic conductivity values were used in the Table 3+ PFAS mass discharge calculation (Appendix H). Based on the measured Table 3+ PFAS mass discharge at CFR-TARHEEL, the minimum value better represents Table 3+ PFAS mass discharge from the groundwater pathway to the river during this event. The hydraulic conductivity of the Black Creek Aquifer is expected to be better constrained following installation of passive flux meters and implementation of aquifer tests as part of the groundwater pre-design investigation anticipated to be completed over the remainder of 2020.

Willis Creek and Georgia Branch Creek (Transport Pathways 2 and 9, respectively) were modeled to contribute between 5% to 9% of the Total Table 3+ PFAS mass discharge to the Cape Fear River in April 2020. These contributions are consistent with estimated contributions reported in previous assessments.

Outfall 002 (Transport Pathway 4) contributed approximately 1% of the Total Table 3+ mass load to the Cape Fear River in April 2020 as compared to 4% – 8% in previous assessments (Table 17). Loading at Outfall 002 is expected to continue to decline as potential future controls are implemented.

Upstream River Water and Groundwater, Aerial Deposition, and Adjacent and Downstream Offsite Groundwater (Transport Pathways 1, 3 and 8, respectively) contributed less than 1% of the Total Table 3+ PFAS mass discharge to the Cape Fear River in April 2020. Previous assessments showed higher contributions for Pathway 1 ranging from 4% to 15% and the similar contributions for Pathways 3 and 8 (Table 17). In April 2020, all Table 3+ concentrations were non-detect in the upstream river sample (Pathway 1; CFR-MILE-76); therefore, for this event the Table 3+ PFAS mass discharge estimates for Pathway 1 and consequently Pathway 8 was zero[2] (Table 16 and Figure 15).

6.4 Mass Loading Model Sensitivity and Limitations

The Mass Loading Model assessments provide Table 3+ PFAS mass discharge estimates and relative proportions of loadings for a 'snapshot' in time. While controlling for temporal variability, the model-based mass discharge estimates contain some level of uncertainty due to the inherent variability and measurement error in the input parameters, e.g., flow, concentrations, etc. To better understand the sensitivity of the model to the various pathway-specific input parameters, the uncertainties associated with the input parameters were used to conduct a sensitivity analysis. For each pathway, the input parameters, assumed associated uncertainties and the resulting level of model sensitivity are presented in Table 18. The results of the sensitivity analysis are presented in Tables 19A and 19B.

Model input parameters for the following four pathways were included in the sensitivity analysis: Onsite Groundwater, Outfall 002, the Seeps, and Old Outfall. For each sensitivity test, the flow or concentration was adjusted for one pathway at a time only. For each sensitivity test, one of the input parameters to the model is varied (i.e., ±10% and ±20% for flow and concentration, respectively) and the resulting model estimated Total Table 3+ PFAS mass discharge is compared with the base case model estimated Total Table 3+ PFAS mass discharge.

For the Q1 2020 event, the model-estimated mass discharge was presented as a range with a lower and upper bound based on the minimum and geometric mean hydraulic conductivity values, respectively, used in the onsite groundwater pathway. Since the onsite groundwater term has the highest level of uncertainty, the model is the most sensitive to measurement error in and variability of its input parameters, namely hydraulic conductivity (which in heterogenous environments can span orders of magnitude). The uncertainty associated with model-based mass discharge estimates was, therefore,

[2] Note, Pathways 1 and 8, Upstream Cape Fear River and Adjacent and Downstream Groundwater were zero because location CFR-MILE-76 upstream of the Site was non-detect at the reporting limit for all Table 3+ compounds during this event. This location has had detections of Table 3+ PFAS compounds in the past.

quantified based on the minimum and geometric mean hydraulic conductivity values, respectively, for the onsite groundwater pathway. Table 19A presents the sensitivity scenarios where the lower bound hydraulic conductivity values for the onsite groundwater pathway are used for the base case while Table 19B presents scenarios using the upper bound hydraulic conductivity values for the onsite groundwater pathway. As such, the sensitivity tests were performed holding the onsite groundwater mass discharge fixed at (i) the minimum hydraulic conductivity (or low flow scenario) and (ii) the geometric mean hydraulic conductivity (or high flow scenario).

The model is most sensitive to pathways that contain the highest concentrations and flow measurements. For the Q1 2020 event, the range in model-estimated mass discharges resulted in a large range in absolute and relative terms, particularly for the onsite groundwater pathway and, to a lesser extent, the Seep pathway. Specifically, the following sensitivity observations were made:

- Varying the hydraulic conductivity of onsite groundwater changed the mass discharge estimate of the model from 16 to 26 mg/s for Total Table 3+ PFAS summed over 20 compounds;
- The greatest sensitivity to the model-estimated mass discharge for the Seep pathway was from varying the flows and concentrations. For example, the model-estimated mass discharge was reduced from 16 mg/s to 14.1 mg/s , i.e., a difference of 1.8 mg/s or -13%, when the Total Table 3+ PFAS summed over 20 compounds was reduced by 20% using the lower bound hydraulic conductivity scenario set for onsite groundwater (Table 19A);
- The model was mildly sensitive to varying input parameters for the Old Outfall pathway. For example, the change in model-estimated mass discharges ranged from -6% and 6% when the Total Table 3+ PFAS summed over 17 compounds was reduced by 20% using the lower bound hydraulic conductivity scenario set for onsite groundwater (Table 19A). This is reflective of Old Outfall being a measurable source of Table 3+ PFAS to the Cape Fear River.
- For this event the model was not sensitive to variations in Outfall 002 loading variables as the relative loading from Outfall 002 was minimal compared to the other pathways.

Ongoing groundwater and seep remedy pre-design investigations will help refine the understanding of relationships between the pathways and their relative contributions, particularly for onsite groundwater. For example, two components of the pre-design investigation, anticipated in Q3 and Q4 2020, includes installation of passive flux meters in wells along the Cape Fear River and aquifer tests in extraction wells adjacent to the

Cape Fear River. Both investigations will provide a better understanding of the connection between the Black Creek Aquifer and the Cape Fear River.

7 DISCUSSION OF OTHER Q1 2020 SAMPLING ACTIVITIES

7.1 Southwestern Offsite Seeps

The results of the Southwestern Offsite Seep sampling are summarized in Appendix B. Consistent with previous findings (CAP, Geosyntec, 2019g), offsite seeps E to K continue to indicate an aerial deposition PFAS signature (concentrations decrease in seeps more distant from the Site).

The Lock and Dam Seep PFAS concentrations are consistent with a process water signature which is the same signature observed at the Old Outfall 002 and at the onsite seeps. The Lock and Dam Seep is located upgradient of the proposed groundwater remedy, where it is anticipated to prevent flow of groundwater to this seep.

The calculated Total Table 3+ PFAS mass discharge over 20 compounds for the seeps south of the Old Outfall with an aerial deposition signature ranged from 0.0003 mg/s at Seep I to 0.02 mg/s at Seep G. The summed Total Table 3+ PFAS mass discharge from these Southwestern offsite seeps south of the Old Outfall was 0.03 mg/s. For reference, 0.03 mg/s is equivalent to 0.02% of the median Total Table 3+ mass discharge (16 mg/s) from composite samples measured during this reporting period as described in Section 5.1.

The calculated Total Table 3+ PFAS mass discharge for the Lock and Dam Seep was 0.2 mg/s. For reference, this loading is approximately 1% of the median Total Table 3+ mass discharge (16 mg/s) from composite samples measured during this reporting period as described in Section 5.1.

7.2 Cape Fear River Surface Water Sampling

The results of the surface water sampling program are summarized in Appendix C. PFAS were present along the entire sampled length of the Cape Fear River and in sampled tributaries. The PFAS present were separated into three groupings, PFAS analyzed by Method 537M, PFAS identified using the TOP assay, and PFAS analyzed by the Table 3+ method. Similar to prior events, Method 537M PFAS were present along the entire sampled length of the river and tributaries. The presence of these Method 537M PFAS in the Cape Fear River was not associated with the Chemours Fayetteville Works facility. Also similar to prior events, Table 3+ PFAS increase in concentration as the river passes the Chemours Fayetteville Works facility. For the first time, PFAS compounds identifiable by the TOP Assay were assessed. The additional PFAS fraction identified by the TOP assay were present along the entire length of the Cape Fear River and were interpreted to not be associated with the Fayetteville Works facility.

Combined concentrations of PFOA and PFOS at all locations were below the 70 ng/L USEPA Lifetime Health Advisory level (USEPA, 2016a, 2016b). Combined PFOA and PFOS concentrations ranged from 6.5 ng/L (Deep River) to 19.8 ng/L (Haw River). Concentrations of HFPO-DA were below the 140 ng/L HFPO-DA provisional health goal (NCDEQ and NCHHS, 2018). Concentrations ranged from below reporting limits to 13 ng/L (Cape Fear River Mile 84). HFPO-DA was only reported in samples downstream of the Fayetteville Works facility.

Pharmaceutical and personal care products (PPCPs) were present in the Cape Fear River and originate in part from WWTP sources. 1,4-Dioxane was also present throughout the sampled Cape Fear River above the NCDEQ in-stream target value of 350 ng/L at all locations.

8 CONCLUSIONS

Four field sampling events were conducted in Q1 2020 and the results presented herein. The field sampling events were:

- The Table 3+ PFAS Mass Load Sampling program consisting of 12 parent composite samples collected at the Tar Heel Ferry Road Bridge. The analytical results of these samples were used to calculate the in-river Table 3+ PFAS mass loads in the Cape Fear River during the reporting period;
- The Q1 2020 Table 3+ PFAS Mass Loading Model Sampling program consisting of samples collected from Table 3+ PFAS transport pathways (seeps, creeks, Old Outfall, Outfall 002, groundwater and Cape Fear River) and paired water flow measurements and estimates. These data were used to assess the relative loadings per Table 3+ PFAS transport pathway to the Cape Fear River using the Table 3+ PFAS Mass Loading Model;
- Sampling and flow gauging of the Southwestern offsite seeps to complete initial characterization of these seeps and to assess the degree of loadings from these seeps; and
- A Cape Fear River Surface Water Sampling Program consisting of water samples from the Cape Fear, Deep, Haw and Little Rivers were collected to assess the potential presence of a range of inorganic compounds, organic compounds (e.g. 1,4-dioxane), PPCPs, and PFAS in the Cape Fear River that could be present in the Cape Fear River.

At present there are data quality issues with the analysis of compounds R-PSDA [formerly Byproduct 4], Hydrolyzed PSDA [formerly Byproduct 5], and R-EVE). Laboratory QA/QC data and laboratory studies have demonstrated that these compounds may be subject to routine over-recovery due to matrix interference effects (Matrix Interference Memorandum, Geosyntec 2020b). Consequently, in this report Total Table 3+ PFAS values are reported as both the sum of 17 and the sum of 20 compounds, where these three compounds are excluded from the sum of 17 compounds. Presenting the range of Total Table 3+ PFAS brackets the expected actual value of all 20 compounds since the sum of the 17 compounds is potentially an underestimate and the sum of all 20 compounds is an overestimate.

The Cape Fear River Table 3+ PFAS Mass Load assessment estimated the Total Table 3+ PFAS that were discharged to the Cape Fear River over the Load assessment period of March 28 to May 9, 2020. Over this period 46 to 59 kg of Total Table 3+ PFAS summed over 17 and 20 compounds, respectively reached the Cape Fear River.

The Cape Fear River Table 3+ Mass Loading Model assessment determined that onsite seeps and the Old Outfall were the largest contributors to Table 3+ PFAS mass in the Cape Fear River with contribution percentages of 35% to 57% and 17% to 28%, respectively. The next largest contributing pathway was onsite groundwater estimated to range between 5% to 42%. Groundwater's large range of potential mass loading contribution to the Cape Fear River is based on the sensitivity of the pathways estimate to modifications in the selected hydraulic conductivity values. Minimum and geometric mean hydraulic conductivity values were selected for the Black Creek Aquifer to model the lower and upper bound estimates of onsite groundwater contributions to the Cape Fear River. For the Total Table 3+ PFAS mass discharge summed over 20 compounds, the Mass Loading Model estimated the Total Table PFAS mass discharge in the Cape Fear River to be 16 to 26 mg/s. This range is within the measured mass discharge of 18 mg/s at CFR-TARHEEL (Table 16 and Figure 15).

The sampling of Southwestern offsite seeps indicated that seeps south of the extent of planned groundwater remedy contribute approximately 0.02% of the discharge of Table 3+ PFAS to the Cape Fear River. Meanwhile, the Lock and Dam Seep, which was estimated to contribute approximately 1% of the discharge of Table 3+ PFAS to the Cape Fear River, is downgradient of the planned groundwater remedy and is anticipated to be hydraulically reduced by the planned remedy.

The Cape Fear River Surface Water Sampling program in January 2020 indicated that there was an additional fraction of upstream, non-Chemours previously unidentified PFAS in the Cape Fear River. These PFAS were detected using the TOP assay and were consistently seen upstream and downstream of the Site indicating they originated from before the Site. The sampling program also continued to demonstrate that Table 3+ PFAS increase in concentration as the Cape Fear River passes by the Site. This program also found PPCPs were present in the Cape Fear River. 1,4-Dioxane was also present throughout the sampled Cape Fear River above the NCDEQ in-stream target value of 350 ng/L at all locations.

9 REFERENCES

Geosyntec, 2018a. Assessment of the Chemical and Spatial Distribution of PFAS in the Cape Fear River. Chemours Fayetteville Works. 17 September 2018.

Geosyntec, 2019a. Cape Fear River PFAS Loading Reduction Plan – Supplemental Information Report. Chemours Fayetteville Works. 4 November 2019.

Geosyntec, 2019b. Cape Rear River PFAS Mass Loading Model Assessment and Paragraph 11.1 Characterization of PFAS at Intakes. Chemours Fayetteville Works. 26 August 2019.

Geosyntec, 2019c. Seeps and Creeks Investigation Report. Chemours Fayetteville Works. 26 August 2019

Geosyntec, 2019d. On and Offsite Assessment. Chemours Fayetteville Works. September 30, 2019.

Geosyntec, 2019e. Assessment of HFPO-DA and PFMOAA in Outfall 002 Discharge and Evaluation of Potential Control Options. August 26, 2019.

Geosyntec, 2019f. Observations of Elevated PFAS Concentrations at the Cape Fear River Intake and Outfall 002 Sample Locations in May and June 2019. August 7, 2019.

Geosyntec, 2019g. Corrective Action Plan. Chemours Fayetteville Works. December 31, 2019.

Geosyntec, 2020a. Mass Loading Model Update – November 2019 Sampling Event. Chemours Fayetteville Works. March 16, 2020.

Geosyntec, 2020b. Matrix Interference During Analysis of Table 3+ Compounds. Chemours Fayetteville Works. June 30, 2020.

Geosyntec, 2020c. Response to North Carolina Department of Environmental Quality Comments - Dated December 19, 2019. Chemours Fayetteville Works. January 31, 2020.USGS Current Conditions for USGS 02105500 CAPE FEAR R AT WILM O HUSKE LOCK NR TARHEEL, NC. https://waterdata.usgs.gov/nwis/uv?site_no=02105500. Accessed on June 10th 2020.

TABLE 1
ANALYTICAL METHODS AND ANALYTE LIST
Chemours Fayetteville Works, North Carolina

Analytical Method	Common Name	Chemical Name	CASN	Chemical Formula
Table 3+ Lab SOP	HFPO-DA	Hexafluoropropylene oxide dimer acid	13252-13-6	C6HF11O3
	PEPA	Perfluoro-2-ethoxypropionic acid (Formerly Perfluoroethoxypropyl carboxylic acid)	267239-61-2	C5HF9O3
	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	801212-59-9	C12H9F9O3S
	PFMOAA	Perfluoro-2-methoxyacetic acid	674-13-5	C3HF5O3
	PFO2HxA	Perfluoro-3,5-dioxahexanoic acid (Formerly Perfluoro(3,5-dioxahexanoic) acid)	39492-88-1	C4HF7O4
	PFO3OA	Perfluoro-3,5,7-trioxaoctanoic acid (Formerly Perfluoro(3,5,7-trioxaoctanoic) acid)	39492-89-2	C5HF9O5
	PFO4DA	Perfluoro-3,5,7,9-tetraoxadecanoic acid (Formerly Perfluoro(3,5,7,9-tetraoxadecanoic) acid)	39492-90-5	C6HF11O6
	PMPA	Perfluoro-2-methoxypropionic acid (Formerly 2,3,3,3-Tetrafluoro-2-(trifluoromethoxy)propanoic)	13140-29-9	C4HF7O3
	Hydro-EVE Acid	2,2,3,3-tetrafluoro-3-({1,1,1,2,3,3-hexafluoro-3-[(1,2,2,2-tetrafluoroethyl)oxy]propan-2-yl}oxy)propionic acid (Formerly Hydro-EVE Acid)	773804-62-9	C8H2F14O4
	EVE Acid	2,2,3,3-tetrafluoro-3-({1,1,1,2,3,3-hexafluoro-3-[(1,2,2-trifluoroethenyl)oxy]propan-2-yl}oxy)propionic acid (Formerly Perfluoroethoxypropionic acid)	69087-46-3	C8HF13O4
	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	151772-58-6	C5HF9O4
	R-EVE	Pentanoic acid, 4-(2-carboxy-1,1,2,2-tetrafluoroethoxy)-2,2,3,3,4,5,5,5-octafluoro- (Formerly R-EVE)	2416366-22-6	C8H2F12O5
	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	39492-91-6	C7HF13O7
	R-PSDA (Formerly Byproduct 4)	Pentanoic acid, 2,2,3,3,4,5,5,5-octafluoro-4-(1,1,2,2-tetrafluoro-2-sulfoethoxy)- (Formerly Byproduct 4)	2416366-18-0	C7H2F12O6S
	R-PSDCA (Formerly Byproduct 6)	Ethanesulfonic acid, 1,1,2,2-tetrafluoro-2-[1,2,2,3,3-pentafluoro-1-(trifluoromethyl)propoxy]- (Formerly Byproduct 6)	2416366-21-5	C6H2F12O4S
	Hydrolyzed PSDA (Foremerly Byproduct 5)	Acetic acid, 2-fluoro-2-[1,1,2,3,3,3-hexafluoro-2-(1,1,2,2-tetrafluoro-2-sulfoethoxy)propoxy]- (Formerly Byproduct 5)	2416366-19-1	C7H3F11O7S
	NVHOS	1,1,2,2,4,5,5,5-heptafluoro-3-oxapentanesulfonic acid; or 2-(1,2,2,2-ethoxy)tetrafluoroethanesulfonic acid; or 1-(1,1,2,2-tetrafluoro-2-sulfoethoxy)-1,2,2,2-tetafluoroethane (Formerly NVHOS)	1132933-86-8	C4H2F8O4S
	PES	Perfluoro-2-ethoxyethanesulfonic acid (Formerly PES)	113507-82-7	C4HF9O4S
	PS Acid (Formerly PFESA-BP1)	Ethanesulfonic acid, 2-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro- (Formerly PFESA-BP)	29311-67-9	C7HF13O5S
	Hydro-PS Acid (Formerly PFESA-BP2)	Ethanesulfonic acid, 2-[1-[difluoro(1,2,2,2-tetrafluoroethoxy)methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro- (Formerly PFESA-BP2)	749836-20-2	C7H2F14O5S

TABLE 1
ANALYTICAL METHODS AND ANALYTE LIST
Chemours Fayetteville Works, North Carolina

Analytical Method	Common Name	Chemical Name	CASN	Chemical Formula
EPA Method 537 Mod	PFBA	Perfluorobutanoic acid	375-22-4	C4HF7O2
	PFDA	Perfluorodecanoic acid	335-76-2	C10HF19O2
	PFDoA	Perfluorododecanoic acid	307-55-1	C12HF23O2
	PFHpA	Perfluoroheptanoic acid	375-85-9	C7HF13O2
	PFNA	Perfluorononanoic acid	375-95-1	C9HF17O2
	PFOA	Perfluorooctanoic acid	335-67-1	C8HF15O
	PFHxA	Perfluorohexanoic acid	307-24-4	C6HF11O2
	PFPeA	Perfluoropentanoic acid	2706-90-3	C5HF9O2
	PFTeA	Perfluorotetradecanoic acid	376-06-7	C14HF27O2
	PFTriA	Perfluorotridecanoic acid	72629-94-8	C13HF25O2
	PFUnA	Perfluoroundecanoic acid	2058-94-8	C11HF21O2
	PFBS	Perfluorobutanesulfonate	375-73-5	C4HF9SO
	PFDS	Perfluorodecanesulfonate	335-77-3	C10HF21O3S
	PFHpS	Perfluoroheptanesulfonic acid	375-92-8	C7HF15O3S
	PFHxS	Perfluorohexanesulfonic acid	355-46-4	C6HF13SO3
	PFNS	Perfluorononanesulfonate	68259-12-1	C9HF19O3S
	PFOS	Perfluorosulfonic acid	1763-23-1	C8HF17SO3
	PFPeS	Perfluoropentane sulfonic acid	2706-91-4	C5HF11O3S
	10:2 FTS	Fluorotelomer sulfonate 10:2	120226-60-0	C12H5F21O3
	4:2 FTS	Fluorotelomer sulfonate 4:2	757124-72-4	C6H5F9O3S
	6:2 FTS	Fluorotelomer sulfonate 6:2	27619-97-2	C8H5F13SO3
	8:2 FTS	Fluorotelomer sulfonate 8:2	39108-34-4	C10H5F17O3S
	NEtFOSAA	N-ethyl perfluorooctane sulfonamidoacetic acid	2991-50-6	C12H8F17NO4S
	NEtPFOSA	N-ethylperfluoro-1-octanesulfonamide	4151-50-2	C10H6F17NO2S
	NEtPFOSAE	N-ethyl perfluorooctane sulphonamidoethanol	1691-99-2	C12H10F17NO3S
	NMeFOSAA	N-methyl perfluorooctane sulfonamidoacetic acid	2355-31-9	C11H6F17NO4S
	NMePFOSA	N-methyl perfluoro-1-octanesulfonamide	31506-32-8	C9H4F17NO2S
	NMePFOSAE	N-methyl perfluorooctane sulfonamidoethanol	24448-09-7	C11H8F17NO3S
	PFDOS	Perfluorododecanesulfonic acid	79780-39-5	C12HF25O3S
	PFHxDA	Perfluorohexadecanoic acid	67905-19-5	C16HF31O2
	PFODA	Perfluorooctadecanoic acid	16517-11-6	C18HF35O2
	PFOSA	Perfluorooctane Sulfonamide	754-91-6	C8H2F17NO2S
	F-53B Major	F-53B Major	73606-19-6	C8HClF16O4S
	F-53B Minor	F-53B Minor	83329-89-9	C10HClF20O4S
	ADONA	4,8-dioxa-3H-perfluorononanoate	958445-44-8	C7H2F12O4
	NaDONA	NaDONA	EVS1361	--
	DONA	DONA	919005-14-4	--

Abbreviations:
EPA - Environmental Protection Agency
PFAS - Per- and Polyfluoroalkyl substances
SOP - Standard Operating Procedure

TABLE 2
SURFACE WATER SAMPLE COLLECTION AND FLOW MEASUREMENT SUMMARY
Chemours Fayetteville Works, North Carolina

Location ID	Location Description	Sample Collection Method[1]	Flow Measurement Method[2]
OLDOF-1	Mouth of Old Outfall 002	24-hour composite	Flume
SEEP-A-1	Mouth of Seep A	24-hour composite	Flume
SEEP-B-1	Mouth of Seep B	24-hour composite	--
SEEP-B-2	Tributary to Seep B	--	Flume
SEEP-B-TR1	Tributary to Seep B	--	Flume
SEEP-B-TR2	Tributary to Seep B	--	Flume
SEEP-C-1	Mouth of Seep C	24-hour composite	Flume
SEEP-D-1	Mouth of Seep D	24-hour composite	Flume
WC-1	Mouth of Willis Creek	24-hour composite	Velocity Probe
GBC-1	Mouth of Georgia Branch Creek	Grab	Velocity Probe
CFR-MILE-76	Cape Fear River Mile 76	Grab	USGS Data
CFR-BLADEN	Cape Fear River at Bladen Bluffs	Grab	USGS Data
CFR-KINGS	Cape Fear River at Kings Bluff Raw Water	Grab	USGS Data
TAR HEEL	Cape Fear River at Tar Heel Ferry Road Bridge	24-hour composite	USGS Data
W.O. Huske Dam	USGS Gauge Site No. 02105500	--	USGS Data
Intake River Water at Facility	Water Drawn Through the Intake Sampled at the Power Area at the Site	24-hour composite	Facility DMRs
Outfall 002	Outfall 002 in open channel	24-hour composite	Facility DMRs

Notes:

1. Samples analyzed for PFAS by EPA Method 537 Mod and Table 3+ Lab SOP.

2. Results of estimated flow at these locations are provided in Table 9 and supplemental flow measurement data are included in Appendix E.

-- not sampled or not measured
DMRs - discharge monitoring reports
EPA - Environmental Protection Agency
PFAS - per- and polyfluoroalkyl substances
USGS - United States Geological Survey

TABLE 3
GROUNDWATER MONITORING WELL SAMPLE COLLECTION AND WATER LEVEL MEASUREMENT SUMMARY
Chemours Fayetteville Works, North Carolina

Area	Hydrogeological Unit[1]	Well ID	Adjacent Surface Water Feature	Sample Collection Date	Synoptic Water Level Date
Onsite	Black Creek	PIW-3D	Cape Fear River	2/24/2020	2/5/2020
Onsite	Floodplain	PIW-7S	Cape Fear River	2/19/2020	2/5/2020
Onsite	Black Creek	PIW-7D	Cape Fear River	2/19/2020	2/5/2020
Onsite	Floodplain	LTW-01	Cape Fear River	2/24/2020	2/5/2020
Onsite	Black Creek	LTW-02	Cape Fear River	2/24/2020	2/5/2020
Onsite	Floodplain	LTW-03	Cape Fear River	2/25/2020	2/5/2020
Onsite	Floodplain	LTW-04	Cape Fear River	2/20/2020	2/5/2020
Onsite	Black Creek	LTW-05	Cape Fear River	2/19/2020	2/5/2020
Onsite	Black Creek	PZ-22	Cape Fear River	2/20/2020	2/5/2020
Onsite	Surficial	PW-06	Georgia Branch Creek	2/6/2020	2/5/2020
Onsite	Surficial	PW-07	Georgia Branch Creek	2/14/2020	2/5/2020
Onsite	Surficial	PW-04	Old Outfall	2/11/2020	2/5/2020
Onsite	Black Creek	PW-11	Old Outfall	2/13/2020	2/5/2020
Onsite	Black Creek	PW-09	Willis Creek	2/12/2020	2/5/2020
Onsite	Surficial	SMW-11	Willis Creek	2/11/2020	2/5/2020
Onsite	Surficial	SMW-10	Willis Creek	2/10/2020	2/5/2020
Onsite	Black Creek	SMW-12	Willis Creek	2/12/2020	2/5/2020
Onsite	Floodplain	PIW-1S	Cape Fear River / Willis Creek	2/13/2020	2/5/2020
Onsite	Surficial	PIW-1D	Cape Fear River / Willis Creek	2/14/2020	2/5/2020
Offsite	Surficial	Bladen-1S	Georgia Branch Creek	DRY	2/5/2020
Offsite	Black Creek	Bladen-1D	Georgia Branch Creek	2/11/2020	2/5/2020

Notes:
1. Hydrogeologic units for existing wells determined based on boring log descriptions.

TABLE 4
GROUNDWATER ELEVATIONS - FEBRUARY 2020
Chemours Fayetteville Works, North Carolina

Area	Aquifer	Well ID	Gauging Date	Northing (ft, SPCS NAD83)	Easting (ft, SPCS NAD83)	Screened Interval (ft)	TOC Elevation (NAVD 88)	Depth to Water (from TOC)	Water Level (ft NAVD88)
Onsite	Black Creek Aquifer	BCA-01	2/5/2020	399780.06	2050662.22	91 - 101	146.3	59.85	86.45
Onsite	Black Creek Aquifer	BCA-02	2/5/2020	396242.32	2051062.21	92 - 102	148.42	74.02	74.4
Onsite	Black Creek Aquifer	BCA-03R	2/5/2020	398582.23	2049522.22	88 - 98	150.82	50.67	100.15
Onsite	Black Creek Aquifer	BCA-04	2/5/2020	395877.67	2047823.11	94 - 104	150.24	29.69	120.55
Onsite	Perched Zone	FTA-01	2/5/2020	397907.50	2049373.61	12.0 - 22.0	150.63	16.13	134.5
Onsite	Perched Zone	FTA-02	2/5/2020	397786.43	2049206.27	11.5 - 21.5	150.28	17.42	132.86
Onsite	Perched Zone	FTA-03	2/5/2020	397767.09	2049313.86	12.0 - 22.0	151.08	17.41	133.67
Onsite	Surficial Aquifer	INSITU-01	2/5/2020	401658.20	2046077.31	7.0 - 17.0	118.2	5.77	112.43
Onsite	Surficial Aquifer	INSITU-02	2/5/2020	401863.46	2049136.62	7.0 - 17.0	113.12	Dry	--
Onsite	Floodplain Deposits	LTW-01	2/5/2020	399566.17	2052149.95	11.0 - 26.0	53.83	15.71	38.12
Onsite	Black Creek Aquifer	LTW-02	2/5/2020	398848.36	2052354.37	28.0 - 38.0	52.48	9.56	42.92
Onsite	Floodplain Deposits	LTW-03	2/5/2020	398115.15	2052557.52	15.0 - 30.0	52.91	12.03	40.88
Onsite	Floodplain Deposits	LTW-04	2/5/2020	397280.24	2052583.60	12.0 - 27.0	51.86	8.28	43.58
Onsite	Black Creek Aquifer	LTW-05	2/5/2020	396430.68	2052738.06	29.0 - 44.0	52.01	9.06	42.95
Onsite	Perched Zone	MW-11	2/5/2020	396544.40	2049051.06	11.5 - 21.5	148.53	23.37	125.16
Onsite	Perched Zone	MW-12S	2/5/2020	397253.60	2049273.89	17.5 - 22.5	152.06	19.76	132.3
Onsite	Surficial Aquifer	MW-13D	2/5/2020	397119.02	2049821.12	57 - 67	148.65	35.1	113.55
Onsite	Surficial Aquifer	MW-14D	2/5/2020	396974.49	2049074.56	62 - 72	149.73	41.31	108.42
Onsite	Surficial Aquifer	MW-15DRR	2/5/2020	398580.71	2049511.75	52.5 - 62.5	150.92	48.76	102.16
Onsite	Surficial Aquifer	MW-16D	2/5/2020	398493.70	2048402.84	72 - 82	148.41	37	111.41
Onsite	Surficial Aquifer	MW-17D	2/5/2020	398401.74	2047366.50	57 - 67	146.117	30.61	115.51
Onsite	Surficial Aquifer	MW-18D	2/5/2020	400947.38	2046574.72	50 - 60	107.57	20.46	87.11
Onsite	Surficial Aquifer	MW-19D	2/5/2020	401151.33	2048272.99	46 - 56	139.55	51.73	87.82
Onsite	Perched Zone	MW-1S	2/5/2020	397080.31	2049120.73	21.0-24.0	149.93	18.65	131.28
Onsite	Surficial Aquifer	MW-20D	2/5/2020	400791.28	2048733.91	65 - 75	137.18	48.37	88.81
Onsite	Surficial Aquifer	MW-21D	2/5/2020	399501.70	2047074.96	72 - 82	151.384	46.67	104.71
Onsite	Surficial Aquifer	MW-22D	2/5/2020	398518.18	2048362.68	52 - 72	149.06	36.88	112.18
Onsite	Perched Zone	MW-23	2/5/2020	396237.61	2051063.25	9.5 - 14.5	148.34	14.16	134.18
Onsite	Perched Zone	MW-24	2/5/2020	397303.94	2048767.69	18.8 - 23.8	150.31	21.17	129.14
Onsite	Perched Zone	MW-25	2/5/2020	396753.37	2050989.82	12 - 17	147.59	13.61	133.98
Onsite	Perched Zone	MW-26	2/5/2020	396265.18	2051484.67	5 - 10	147.7	11.12	136.58
Onsite	Perched Zone	MW-27	2/5/2020	396010.33	2051472.00	10 - 15	146.83	14.26	132.57
Onsite	Perched Zone	MW-28	2/5/2020	395719.79	2051165.93	9 - 14	144.7	13.57	131.13
Onsite	Perched Zone	MW-2S	2/5/2020	396934.75	2049321.85	19.0 - 23.0	149.91	18.99	130.92
Onsite	Perched Zone	MW-30	2/5/2020	397340.79	2050776.09	10 - 15	147.67	12.84	134.83
Onsite	Perched Zone	MW-31	2/5/2020	396390.50	2049622.88	17-22	147.699	15.97	131.73
Onsite	Perched Zone	MW-32	2/5/2020	396359.58	2049651.79	13-18.5	147.106	14.95	132.16
Onsite	Perched Zone	MW-33	2/5/2020	396337.51	2049678.56	12-17	146.82	14.43	132.39
Onsite	Perched Zone	MW-34	2/5/2020	396352.90	2049619.09	17-22	147.972	15.91	132.06
Onsite	Perched Zone	MW-35	2/5/2020	396332.94	2049631.16	14-19	147.541	15.39	132.15
Onsite	Perched Zone	MW-36	2/5/2020	396320.09	2049651.17	12-17	147.889	15.67	132.22
Onsite	Perched Zone	MW-7S	2/5/2020	397444.52	2049809.73	NA	147.47	10.46	137.01
Onsite	Perched Zone	MW-8S	2/5/2020	397096.48	2049867.77	NA	146.48	7.52	138.96
Onsite	Perched Zone	MW-9S	2/5/2020	396760.16	2049734.30	17.5-22.5	154.39	21.12	133.27
Onsite	Perched Zone	NAF-01	2/5/2020	398349.77	2050338.81	5.0-15.0	149.66	9.37	140.29
Onsite	Perched Zone	NAF-02	2/5/2020	398662.80	2050640.86	5.0-15.0	150.31	9.78	140.53
Onsite	Perched Zone	NAF-03	2/5/2020	398580.65	2050755.43	5.0-15.0	150.44	9.96	140.48
Onsite	Perched Zone	NAF-04	2/5/2020	398447.00	2050718.95	5.0-15.0	148.1	7.14	140.96
Onsite	Perched Zone	NAF-06	2/5/2020	398809.66	2050911.91	2.75 - 12.75	146.43	11.41	135.02
Onsite	Perched Zone	NAF-07	2/5/2020	398899.33	2050616.50	5.5 - 15.5	149.69	9.23	140.46
Onsite	Perched Zone	NAF-08A	2/5/2020	398097.99	2050886.62	5.0 - 15.0	148.82	8.19	140.63
Onsite	Surficial Aquifer	NAF-08B	2/5/2020	398095.64	2050879.94	43.5 - 53.5	148.86	53.13	95.73
Onsite	Perched Zone	NAF-09	2/5/2020	397711.09	2050806.52	7.0 - 17.0	149.29	11.63	137.66
Onsite	Perched Zone	NAF-10	2/5/2020	397612.57	2050423.15	8.25 - 18.25	150	12.03	137.97
Onsite	Perched Zone	NAF-11A	2/5/2020	398909.29	2050999.92	2.5 - 7.5	140.59	6.34	134.25
Onsite	Surficial Aquifer	NAF-11B	2/5/2020	398911.13	2050995.88	33.5 - 43.5	140.74	46.57	94.17
Onsite	Perched Zone	NAF-12	2/5/2020	398270.56	2050777.49	18 - 23	145.932	6.38	139.55
Onsite	Black Creek Aquifer	PIW-10DR	2/5/2020	395093.99	2052297.30	53 - 58	75.91	14.85	61.06
Onsite	Surficial Aquifer	PIW-10S	2/5/2020	395104.67	2052297.04	7 - 17	76.451	18.41	58.04
Onsite	Surficial Aquifer	PIW-1D	2/5/2020	400547.77	2051801.42	24.5 - 29.5	52.33	17.41	34.92
Onsite	Floodplain Deposits	PIW-1S	2/5/2020	400540.61	2051792.59	7.8 - 17.8	54.198	19.83	34.37
Onsite	Black Creek Aquifer	PIW-2D	2/5/2020	399925.46	2051316.31	40 - 50	96.13	36.67	59.46
Onsite	Black Creek Aquifer	PIW-3D	2/5/2020	399711.75	2052088.80	19 - 24	53.315	16.67	36.65
Onsite	Black Creek Aquifer	PIW-4D	2/5/2020	398817.36	2052102.82	32.3 - 37.3	53.041	10.68	42.36
Onsite	Surficial Aquifer	PIW-5S	2/5/2020	398520.38	2051951.26	9.8 - 19.8	75.188	14.48	60.71
Onsite	Floodplain Deposits	PIW-6S	2/5/2020	398118.14	2052540.57	18 - 28	53.359	13.59	39.77

TABLE 4
GROUNDWATER ELEVATIONS - FEBRUARY 2020
Chemours Fayetteville Works, North Carolina

Area	Aquifer	Well ID	Gauging Date	Northing (ft, SPCS NAD83)	Easting (ft, SPCS NAD83)	Screened Interval (ft)	TOC Elevation (NAVD 88)	Depth to Water (from TOC)	Water Level (ft NAVD88)
Onsite	Black Creek Aquifer	PIW-7D	2/5/2020	396787.69	2052595.37	29 - 34	48.597	5.43	43.17
Onsite	Floodplain Deposits	PIW-7S	2/5/2020	396787.00	2052589.49	7 - 17	48.392	5.09	43.3
Onsite	Black Creek Aquifer	PIW-8D	2/5/2020	396403.38	2052682.02	35.5 - 45.5	48.518	6.78	41.74
Onsite	Black Creek Aquifer	PIW-9D	2/5/2020	396155.97	2052250.91	40 - 45	79.529	36.92	42.61
Onsite	Surficial Aquifer	PIW-9S	2/5/2020	396148.11	2052251.10	24.8 - 29.8	79.532	29.62	49.91
Onsite	Perched Zone	PW-01	2/5/2020	399064.80	2049654.30	11 - 21	149.547	14.45	135.1
Onsite	Surficial Aquifer	PW-02	2/5/2020	399779.06	2050649.47	50 - 60	146.431	57.45	88.98
Onsite	Surficial Aquifer	PW-03	2/5/2020	397339.81	2050765.32	35 - 45	147.967	42.29	105.68
Onsite	Surficial Aquifer	PW-04	2/5/2020	394659.55	2050940.66	17 - 27	97.751	28.31	69.44
Onsite	Surficial Aquifer	PW-05	2/5/2020	395873.10	2047812.93	65 - 75	150.336	30.06	120.28
Onsite	Surficial Aquifer	PW-06	2/5/2020	392868.00	2045288.77	19 - 29	147.691	19.61	128.08
Onsite	Surficial Aquifer	PW-07	2/5/2020	390847.71	2049258.26	28 - 38	148.16	40.79	107.37
Onsite	Black Creek Aquifer	PW-09	2/5/2020	402000.08	2048979.11	44 - 54	72.925	24.82	48.1
Onsite	Black Creek Aquifer	PW-10R	2/5/2020	398516.12	2051936.59	57 - 67	75.9	27.38	48.52
Onsite	Black Creek Aquifer	PW-11	2/5/2020	394354.36	2052226.72	53 - 63	73.263	33.23	40.03
Onsite	Black Creek Aquifer	PW-12	2/5/2020	399500.45	2047063.51	109 - 119	150.61	58.48	92.13
Onsite	Black Creek Aquifer	PW-13	2/5/2020	397584.26	2048029.18	120 - 130	149.36	33.62	115.74
Onsite	Black Creek Aquifer	PW-14	2/5/2020	397325.65	2050766.36	136 - 146	147.97	61.71	86.26
Onsite	Black Creek Aquifer	PW-15R	2/5/2020	398900.88	2051011.75	110 - 120	136.14	59.93	76.21
Onsite	Perched Zone	PZ-11	2/5/2020	398646.25	2049820.94	15 - 20	151.03	12.62	138.41
Onsite	Perched Zone	PZ-12	2/5/2020	399094.96	2048981.78	15.1 - 20.1	150.91	18.92	131.99
Onsite	Perched Zone	PZ-13	2/5/2020	397708.07	2050991.73	7.1 - 12.1	149.2	10.95	138.25
Onsite	Perched Zone	PZ-14	2/5/2020	397589.92	2050618.27	9.0 - 14.0	148.38	10.48	137.9
Onsite	Perched Zone	PZ-15	2/5/2020	396805.09	2050112.02	10.2 - 15.2	148.79	12.93	135.86
Onsite	Perched Zone	PZ-17	2/5/2020	396614.82	2048872.69	21.1 - 26.1	150.08	28.29	121.79
Onsite	Perched Zone	PZ-19R	2/5/2020	397998.66	2049919.52	16 - 21	150.046	13.59	136.46
Onsite	Perched Zone	PZ-20R	2/5/2020	398185.81	2049784.60	15 - 20	151.29	14.82	136.47
Onsite	Perched Zone	PZ-21R	2/5/2020	398445.16	2049883.13	17 - 22	150.674	13.03	137.64
Onsite	Black Creek Aquifer	PZ-22	2/5/2020	397272.80	2052584.04	36.0 - 46.0	51.81	7.37	44.44
Onsite	Perched Zone	PZ-24	2/5/2020	396117.94	2050744.07	11 - 16	147.53	14.22	133.31
Onsite	Perched Zone	PZ-25	2/5/2020	396753.94	2050991.05	14 - 19	147.59	21.14	126.45
Onsite	Perched Zone	PZ-26	2/5/2020	396059.78	2050382.35	11 - 16	147.7	12.98	134.72
Onsite	Perched Zone	PZ-27	2/5/2020	395922.11	2050376.76	12 - 17	147.17	14.1	133.07
Onsite	Perched Zone	PZ-28	2/5/2020	396304.55	2049933.79	13 - 18	148.64	13.35	135.29
Onsite	Perched Zone	PZ-29	2/5/2020	396371.49	2049768.94	13 - 18	147.74	14.67	133.07
Onsite	Perched Zone	PZ-31	2/5/2020	396428.73	2049594.36	14 - 19	147.999	18	130
Onsite	Perched Zone	PZ-32	2/5/2020	396418.47	2049713.79	13 - 18	148.471	15.53	132.94
Onsite	Perched Zone	PZ-33	2/5/2020	396308.92	2049707.66	12.5 - 17.5	146.715	14.1	132.62
Onsite	Perched Zone	PZ-34	2/5/2020	396292.05	2049595.04	13.5 - 18.5	147.695	15.86	131.84
Onsite	Perched Zone	PZ-35	2/5/2020	398232.64	2050020.49	13 - 18	150.43	13.16	137.27
Onsite	Surficial Aquifer	SMW-01	2/5/2020	395295.75	2043679.19	5.0 - 15.0	136.81	12.82	123.99
Onsite	Perched Zone	SMW-02	2/5/2020	399983.75	2050654.77	5.0 - 20.0	147.93	12.77	135.16
Onsite	Surficial Aquifer	SMW-02B	2/5/2020	399983.48	2050660.48	43.0 - 53.0	145.211	Dry	--
Onsite	Perched Zone	SMW-03	2/5/2020	399778.25	2049445.96	10.0 - 20.0	151.094	Dry	--
Onsite	Black Creek Aquifer	SMW-03B	2/5/2020	399785.75	2049421.54	72 - 82	150.43	58.36	92.07
Onsite	Perched Zone	SMW-04A	2/5/2020	399668.71	2048387.57	19.5 - 34.5	148.09	37.15	110.94
Onsite	Surficial Aquifer	SMW-04B	2/5/2020	399667.12	2048390.30	43.0 - 53.0	148.372	46.86	101.51
Onsite	Perched Zone	SMW-05	2/5/2020	399334.07	2048557.33	10.0 - 20.0	148.099	23.06	125.04
Onsite	Surficial Aquifer	SMW-05P	2/5/2020	399338.61	2048559.26	45.0 - 60.0	149.32	25.5	123.82
Onsite	Perched Zone	SMW-06	2/5/2020	399172.35	2048759.48	12.0 - 22.0	150.97	24.95	126.02
Onsite	Surficial Aquifer	SMW-06B	2/5/2020	399144.74	2048764.94	58 - 68	150.32	48.59	101.73
Onsite	Perched Zone	SMW-07	2/5/2020	398932.91	2048611.16	13.0 - 23.0	147.64	19.31	128.33
Onsite	Perched Zone	SMW-08	2/5/2020	399064.97	2048468.78	21.0 - 31.0	151.017	Dry	--
Onsite	Surficial Aquifer	SMW-08B	2/5/2020	399058.33	2048478.84	58 - 68	148.81	42.01	106.8
Onsite	Surficial Aquifer	SMW-09	2/5/2020	401076.89	2050017.41	52 - 62	141.43	57.51	83.92
Onsite	Black Creek Aquifer	SMW-10	2/5/2020	402307.31	2047923.84	39 - 49	76.26	29.16	47.1
Onsite	Surficial Aquifer	SMW-11	2/5/2020	401996.15	2048975.38	13 - 23	71.95	13.65	58.3
Onsite	Black Creek Aquifer	SMW-12	2/5/2020	401314.20	2051007.22	88 - 98	118.22	84.14	34.08
Offsite	Black Creek Aquifer	Bladen-1D	2/5/2020	387522.25	2050247.40	37 - 47	76.96	19.49	57.47
Offsite	Surficial Aquifer	Bladen-1S	2/5/2020	387518.97	2050233.35	5 - 10	76.74	9.09	67.65
Offsite	Black Creek Aquifer	Bladen-2D	2/5/2020	368827.09	2042878.34	70 - 75	138.27	17.34	120.93
Offsite	Surficial Aquifer	Bladen-2S	2/5/2020	368821.46	2042882.92	10 - 20	138.04	6.32	131.72
Offsite	Black Creek Aquifer	Bladen-3D	2/5/2020	396856.98	2059006.56	33.75 - 43.75	75.52	10.93	64.59
Offsite	Surficial Aquifer	Bladen-3S	2/5/2020	396862.31	2059012.93	5 - 15	74.27	7.8	66.47
Offsite	Black Creek Aquifer	Bladen-4D	2/5/2020	363255.12	2087636.87	46.75 - 51.75	59.66	0.78	58.88
Offsite	Surficial Aquifer	Bladen-4S	2/5/2020	363263.19	2087637.46	4.75 - 14.75	59.68	4.81	54.87

TABLE 4
GROUNDWATER ELEVATIONS - FEBRUARY 2020
Chemours Fayetteville Works, North Carolina

Area	Aquifer	Well ID	Gauging Date	Northing (ft, SPCS NAD83)	Easting (ft, SPCS NAD83)	Screened Interval (ft)	TOC Elevation (NAVD 88)	Depth to Water (from TOC)	Water Level (ft NAVD88)
Offsite	Black Creek Aquifer	Cumberland-1D	2/5/2020	431459.95	2011071.39	40 - 50	174.6	3.89	170.71
Offsite	Surficial Aquifer	Cumberland-1S	2/5/2020	431459.95	2011071.39	15 - 25	174.73	3.65	171.08
Offsite	Black Creek Aquifer	Cumberland-2D	2/5/2020	449987.54	2074019.14	47 - 57	129.23	3.33	125.9
Offsite	Surficial Aquifer	Cumberland-2S	2/5/2020	449979.10	2074020.86	7 - 17	129.06	2.99	126.07
Offsite	Black Creek Aquifer	Cumberland-3D	2/5/2020	423248.12	2060409.16	22 - 27	78.79	6.64	72.15
Offsite	Surficial Aquifer	Cumberland-3S	2/5/2020	423254.64	2060413.30	9 - 14	79.063	6.48	72.58
Offsite	Black Creek Aquifer	Cumberland-4D	2/5/2020	413095.77	2078249.95	57 - 67	119.22	13	106.22
Offsite	Surficial Aquifer	Cumberland-4S	2/5/2020	413086.63	2078255.53	10 - 20	119.362	6.64	112.72
Offsite	Black Creek Aquifer	Cumberland-5D	2/5/2020	405673.82	2138069.54	52 - 57	106.67	8.09	98.58
Offsite	Surficial Aquifer	Cumberland-5S	2/5/2020	405673.82	2138069.54	14 - 24	106.65	2.66	103.99
Offsite	Black Creek Aquifer	Robeson-1D	2/5/2020	381416.28	2020158.93	42.75 - 52.75	156.36	10.99	145.37
Offsite	Surficial Aquifer	Robeson-1S	2/5/2020	381408.19	2020156.86	17 - 27	156.66	8.23	148.43

Notes:
1. Area - refers to location of well within site property boundary (“Onsite”) and outside property boundary (“Offsite”).
2. Aquifer - refers to primary aquifer unit well screen is estimated to be screened within.
3. Survey completed by Freeland-Clinkscales & Associates of NC.
4. Northing and Easting provided in North Carolina State Plane System (zone 3200), North American Datum 1983.
5. Vertical datum is North American Vertical Datum of 1988.

Abbreviations:
ft - feet
NAVD88 - North American Vertical Datum of 1988
SPCS NAD83 - State Plane Coordinate System North American Datum 1983
TOC - top of casing

TABLE 5
SEEP AND SURFACE WATER FIELD PARAMETERS
Chemours Fayetteville Works, North Carolina

Location	Date	pH (S.U.)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Specific Conductivity (mS/cm)	Temperature (°C)
SEEP A	4/2/2020	4.06	8.6	125	15.1	0.17	18.7
	4/3/2020	6.41	3.0	60.6	9.86	0.34	18.1
SEEP B	4/2/2020	4.56	7.5	123	8.68	0.12	18.4
	4/3/2020	5.18	7.4	102	12.8	0.15	17.6
SEEP C	4/2/2020	4.07	8.3	184	39.3	0.14	18.4
	4/3/2020	5.09	8.9	103	17.4	0.12	17.0
SEEP D	4/2/2020	3.93	8.4	140	4.93	0.19	19.5
	4/3/2020	4.17	8.9	144	4.64	0.16	17.0
CFR-BLADEN	4/2/2020	6.51	8.4	119	16.9	0.090	16.9
CFR-KINGS	4/6/2020	7.25	7.5	56.7	12.7	0.090	17.7
CFR-RM-76	4/2/2020	7.03	8.9	77.1	3.81	0.00	14.6
CFR-TARHEEL	4/2/2020	6.73	8.3	101	14.9	0.10	17.0
	4/3/2020	6.80	8.6	142	12.1	0.32	18.0
EXCESS RIVER WATER	4/3/2020	7.48	8.7	85.7	9.70	0.12	18.7
GBC-1	4/2/2020	4.91	8.3	121	20.7	0.10	17.0
OLDOF-1	4/2/2020	6.73	8.8	105	15.6	0.16	20.6
	4/3/2020	3.63	8.9	236	4.58	0.30	17.2
OUTFALL 002	4/3/2020	7.44	8.3	111	9.53	0.20	20.3
WC-1	4/3/2020	7.11	6.2	113	7.03	0.20	17.9

Abbreviations:
°C - Degrees Celsius
mg/L - Milligrams per liter
mS/cm - Millisiemens per centimeter
mV- Millivolts
NTU - Nephelometric Turbidity units
S.U. - standard units

TABLE 6
GROUNDWATER FIELD PARAMETERS
Chemours Fayetteville Works, North Carolina

Location	Date	pH (S.U.)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Specific Conductance (mS/cm)	Temperature (°C)
Bladen-1D	2/11/2020	5.85	0.060	8.10	4.93	0.070	19.6
LTW-01	2/24/2020	3.89	0.090	355	14.1	0.10	15.3
LTW-02	2/24/2020	4.86	0.060	105	0.090	0.060	15.9
LTW-03	2/24/2020	4.50	0.71	225	191	0.090	17.3
LTW-04	2/20/2020	4.25	0.79	363	18.8	94.4	13.2
LTW-05	2/19/2020	4.32	0.20	344	30.7	0.12	16.1
PIW-1D	2/14/2020	3.66	0.080	431	6.95	0.20	15.1
PIW-1S	2/13/2020	3.56	2.4	455	7.59	0.40	16.4
PIW-3D	2/24/2020	5.79	0.060	-52.8	20.1	0.10	16.1
PIW-7D	2/19/2020	5.49	0.030	21.1	24.2	0.060	15.4
PIW-7S	2/19/2020	4.31	0.33	108	12.2	0.090	13.7
PW-04	2/11/2020	3.79	0.19	317	5.73	0.37	19.1
PW-06	2/6/2020	4.81	1.3	136	3.93	0.050	18.5
PW-07	2/14/2020	4.71	6.4	145	>1000	0.13	13.8
PW-09	2/12/2020	7.65	0.060	-147	17.7	106	17.2
PW-11	2/13/2020	4.53	0.72	-42.5	19.1	392	19.2
PZ-22	2/20/2020	4.50	0.040	127	0.260	0.10	14.1
SMW-10	2/10/2020	5.67	4.6	111	17.6	75.3	18.2
SMW-11	2/11/2020	4.33	5.6	147	3.98	40.9	17.0
SMW-12	2/12/2020	3.79	9.1	98.9	0.00	0.060	17.2

Abbreviations:
> - greater than
°C - Degrees Celsius
mg/L - Milligrams per liter
mS/cm - Millisiemens per centimeter
mV- Millivolts
NTU - Nephelometric Turbidity unit
S.U. - standard units

TABLE 7
CAPE FEAR RIVER MASS DISCHARGE ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Program	Tarheel Sampling	Q1 2020 CAP MW Sampling	Tarheel Sampling	Tarheel Sampling	Q1 2020 CAP SW Sampling	Tarheel Sampling
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	FAY-CFR-TARHEEL-021420	CAP1Q20-TARHEEL-032720	CFR-TARHEEL-83-033120	CFR-TARHEEL-83-033120-D	CAP1Q20-CFR-TARHEEL-04022	CFR-TARHEEL-48-040220
Sample Date	2/14/2020	3/26/2020	3/31/2020	3/31/2020	4/2/2020	4/2/2020
Sample Type	Grab	Grab	Composite	Composite	Grab	Composite
Sample Start Date and Time	-	-	3/28/2020 1:00 AM	3/28/2020 1:00 AM	-	3/31/2020 1:00 PM
Sample Stop Date and Time	-	-	3/31/2020 12:00 PM	3/31/2020 12:00 PM	-	4/2/2020 1:00 PM
Composite Duration (hours)	-	-	83	83	-	48
QA/QC	-	-	-	Field Duplicate	-	-
Sample Delivery Group (SDG)	320-58729-1	320-59859-1	320-60098-1	320-60098-1	320-60029-1	320-60098-1
Lab Sample ID	320-58729-1	320-59859-2	320-60098-1	320-60098-2	320-60029-3	320-60098-3
Table 3+ Lab SOP (ng/L)						
HFPO-DA	<4	**21**	<15	**6.3**	**11**	**10**
PFMOAA	**9.5**	**44**	**26**	**29**	**35 B**	**42**
PFO2HxA	**4.1**	**26**	**9.3**	**8.9**	**15 B**	**14**
PFO3OA	<2	**5**	**2.1**	<2	**3.9 B**	**3.3**
PFO4DA	<2	**2.1**	<2	<2	<2	<2
PFO5DA	<2	<2	<2	<2	<2	<2
PMPA	**11**	**40**	**15**	**12**	**24**	**17**
PEPA	<20	<20	<20	<20	<20	<20
PS Acid	<2	**2.1**	<2	<2	<2	<2
Hydro-PS Acid	<2	**2.2**	<2	<2	<2	<2
R-PSDA	**3.4 J**	**14 J**	<2	<2	**8.5**	**7.9**
Hydrolyzed PSDA	**4.2 J**	**25 J**	**8.2 J**	**8.4 J**	**26 B**	**14 J**
R-PSDCA	<2	<2	<2	<2	<2	<2
NVHOS	<2	**3.8**	<2	<2	**2.3**	<2
EVE Acid	<2	<2	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2	<2	<2
R-EVE	**2.4 J**	**6.1 J**	**2.1 J**	<2	**6.6 B**	<2
PES	<2	<2	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2	<2
Total Table 3+ (17 compounds)	**25**	**150**	**52**	**56**	**91**	**86**
Total Table 3+ (20 compounds)	**35**	**190**	**63**	**65**	**130**	**110**

Notes:
Bold - Analyte detected above associated reporting limit
Abbreviations:
B - analyte detected in an associated blank
J - Analyte detected. Reported value may not be accurate
ND - no Table 3+ analytes were detected above the associated reporting limits
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SDG - Sample Delivery Group
SOP - standard operating procedure
UJ – Analyte not detected. Reporting limit may not be accurate or precise.

< - Analyte not detected above associated reporting limit.

TABLE 7
CAPE FEAR RIVER MASS DISCHARGE ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP SW Sampling	Tarheel Sampling	Tarheel Sampling	Tarheel Sampling	Tarheel Sampling	Tarheel Sampling	Tarheel Sampling
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	AP1Q20-CFR-TARHEEL-24-0403	CFR-TARHEEL-83-040620	CFR-TARHEEL-79-040920	CFR-TARHEEL-83-041920	CFR-TARHEEL-83-042220	CFR-TARHEEL-83-042620	CFR-TARHEEL-83-042920
Sample Date	4/3/2020	4/6/2020	4/9/2020	4/19/2020	4/22/2020	4/26/2020	4/29/2020
Sample Type	Composite	Composite	Composite	Composite	Composite	Composite	Composite
Sample Start Date and Time	4/2/2020 3:00 PM	4/2/2020 1:30 PM	4/5/2020 11:32 PM	4/15/2020 2:30 PM	4/19/2020 2:30 AM	4/22/2020 1:49 PM	4/26/2020 12:49 AM
Sample Stop Date and Time	4/3/2020 3:00 PM	4/6/2020 12:30 AM	4/9/2020 6:30 AM	4/19/2020 1:30 AM	4/22/2020 1:30 PM	4/26/2020 12:49 AM	4/29/2020 11:49 AM
Composite Duration (hours)	24	83	79	83	83	83	83
QA/QC	-	-	-	-	-	-	-
Sample Delivery Group (SDG)	320-60032-1	320-60098-1	320-60195-1	320-60435-1	320-60435-1	320-60619-1	320-60619-1
Lab Sample ID	320-60032-2	320-60098-4	320-60195-1	320-60435-1	320-60435-2	320-60619-1	320-60619-2
Table 3+ Lab SOP (ng/L)							
HFPO-DA	**18**	**17**	**20**	**5.5**	**12**	**11**	**13**
PFMOAA	**47**	**56**	**94**	**28**	**51**	**53**	**59**
PFO2HxA	**21**	**22**	**33**	**11**	**19**	**19**	**24**
PFO3OA	**4.8**	**5.5**	**8.1**	**2.6**	**5.1**	**4.8**	**5.8**
PFO4DA	<2	<2	**2.8**	<2	<2	<2	<2
PFO5DA	<2	<2	**4.9**	**6.9**	**5.5**	<2	<2
PMPA	**31**	**24**	**31**	**17**	**25**	**21**	**23**
PEPA	<20	<20	<20	<20	<20	<20	<20
PS Acid	<2	<2	<2	<2	<2	<2	<2
Hydro-PS Acid	<2	<2	<2	<2	<2	<2	<2
R-PSDA	**14 J**	**11**	**13**	<2	<2	**7.5**	**13**
Hydrolyzed PSDA	**17 J**	**20 J**	**31**	**9.6**	**17**	**23**	**27**
R-PSDCA	<2	<2	<2	<2	<2	<2	<2
NVHOS	<2	**2.1**	**5**	<2	<2	**2.8**	**3.9**
EVE Acid	<2	<2	<2	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2	<2	<2	<2
R-EVE	**2.8 J**	<2	**3.4**	<2	<2	<2	**2.4**
PES	<2	<2	<2	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2	<2	<2
Total Table 3+ (17 compounds)	**120**	**130**	**200**	**71**	**120**	**110**	**130**
Total Table 3+ (20 compounds)	**160**	**160**	**250**	**81**	**130**	**140**	**170**

Notes:
Bold - Analyte detected above associated reporting limit
Abbreviations:
B - analyte detected in an associated blank
J - Analyte detected. Reported value may not be accurate
ND - no Table 3+ analytes were detected above the associated reporting limits
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SDG - Sample Delivery Group
SOP - standard operating procedure
UJ – Analyte not detected. Reporting limit may not be accurate or precise.

< - Analyte not detected above associated reporting limit.

TABLE 7
CAPE FEAR RIVER MASS DISCHARGE ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Program	Tarheel Sampling	Tarheel Sampling	Tarheel Sampling	Tarheel Sampling
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	EQBLK
Field Sample ID	CFR-TARHEEL-62-050220	CFR-TARHEEL-83-050620	CFR-TARHEEL-83-051120	CFR-EQBLK-1-040820
Sample Date	5/2/2020	5/6/2020	5/11/2020	4/8/2020
Sample Type	Composite	Composite	Composite	Grab
Sample Start Date and Time	4/30/2020 9:49 AM	5/3/2020 12:49 AM	5/8/2020 12:00 AM	-
Sample Stop Date and Time	5/2/2020 11:49 PM	5/6/2020 11:49 AM	5/11/2020 11:00 AM	-
Composite Duration (hours)	62	83	83	-
QA/QC	-	-	-	Equipment Blank
Sample Delivery Group (SDG)	320-60763-1	320-60763-1	320-60789-1	320-60098-1
Lab Sample ID	320-60763-1	320-60763-2	320-60789-1	320-60098-5
Table 3+ Lab SOP (ng/L)				
HFPO-DA	**12**	**6.2**	**9.4**	<4
PFMOAA	**27**	**18**	**34**	<5
PFO2HxA	**16**	**9.8**	**14**	<2
PFO3OA	**3.5**	**2.1**	**3.8**	<2
PFO4DA	<2	<2	<2	<2
PFO5DA	<2	<2	<2	<2
PMPA	**24**	**15**	**18**	<10
PEPA	<20	<20	<20	<20
PS Acid	<2	<2	<2	<2
Hydro-PS Acid	<2	<2	<2	<2
R-PSDA	**20**	**11**	**13**	<2
Hydrolyzed PSDA	**18**	**12**	**15**	<2
R-PSDCA	<2	<2	<2	<2
NVHOS	**3.3**	<2	**2.3**	<2
EVE Acid	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2
R-EVE	**6**	<2	**2.7**	<2
PES	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2
Total Table 3+ (17 compounds)	**86**	**51**	**82**	ND
Total Table 3+ (20 compounds)	**130**	**74**	**110**	**0**

Notes:
Bold - Analyte detected above associated reporting limit
Abbreviations:
B - analyte detected in an associated blank
J - Analyte detected. Reported value may not be accurate
ND - no Table 3+ analytes were detected above the associated reporting limits
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SDG - Sample Delivery Group
SOP - standard operating procedure
UJ – Analyte not detected. Reporting limit may not be accurate or precise.

< - Analyte not detected above associated reporting limit.

TABLE 8
SURFACE WATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling
Location ID	CFR-BLADEN	CFR-BLADEN	CFR-KINGS	CFR-MILE-76	Intake River Water at Facility	GBC-1	OLDOF-1
Field Sample ID	CAP1Q20-CFR-BLADEN-040220	CAP1Q20-CFR-BLADEN-040220-D	CAP1Q20-CFR-KINGS-040620	CAP1Q20-CFR-RM-76-040220	EXCESS RIVER WATER-24-040320	CAP1Q20-GBC-1-040220	CAP1Q20-OLDOF-1-24-040320
Sample Date	4/2/2020	4/2/2020	4/6/2020	4/2/2020	4/3/2020	4/2/2020	4/3/2020
QA/QC		DUP					
Sample Type	Grab	Grab	Grab	Grab	24-hour composite	Grab	24-hour composite
Sample Delivery Group (SDG)	320-60035-1	320-60035-1	320-60032-1	320-60032-1	320-60029-1	320-60031-1	320-60031-1
Lab Sample ID	320-60035-1	320-60035-2	320-60032-3	320-60032-1	320-60029-4	320-60031-2	320-60031-4
Table 3+ Lab SOP (ng/L)							
HFPO-DA	**10**	**10**	**9.6**	<4	**20**	**410**	**5,800**
PFMOAA	**41 J**	**33**	**44**	<5	**21**	**100**	**75,000**
PFO2HxA	**15**	**14**	**17**	<2	**18**	**300**	**17,000**
PFO3OA	**3.6**	**3.6**	**4.1**	<2	**2.7**	**43**	**4,300**
PFO4DA	<2	<2	<2	<2	<2	**14**	**1,400**
PFO5DA	<2	<2	<2	<2	<2	**3**	**480**
PMPA	**17**	**21**	**23**	<10	**38**	**760**	**4,900**
PEPA	<20	<20	<20	<20	<20	**180**	**1,400**
PS Acid (Formerly PFESA-BP1)	<2	<2	<2	<2	<2	<2	**410**
Hydro-PS Acid (Formerly PFESA-BP2)	<2	<2	<2	<2	<2	**25**	**320**
R-PSDA (Formerly Byproduct 4)	**8.3 J**	**10**	**12**	<2	**11**	**71**	**470**
Hydrolyzed PSDA (Formerly Byproduct 5)	**15 J**	**15**	**14 B**	<2	**16 B**	**2.5**	**1,000**
R-PSDCA (Formerly Byproduct 6)	<2	<2	<2	<2	<2	<2	<15
NVHOS	<2	<2	<2	<2	<2	**4.1**	**640**
EVE Acid	<2	<2	<2	<2	<2	<2	**35**
Hydro-EVE Acid	<2	<2	<2	<2	<2	<2	**180**
R-EVE	**2.8 J**	**2.5**	**6.9**	<2	**3.1**	**23**	**170**
PES	<2	<2	<2	<2	<2	<2	<46
PFECA B	<2	<2	<2	<2	<2	<2	<60
PFECA-G	<2	<2	<2	<2	<2	<2	<41
Total Table 3+ (17 compounds)	**87**	**82**	**98**	ND	**100**	**1,800**	**110,000**
Total Table 3+ (20 compounds)	**110**	**110**	**130**	ND	**130**	**1,900**	**110,000**

TABLE 8
SURFACE WATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling
Location ID	OUTFALL 002	OUTFALL 002	SEEP-A	SEEP-B	SEEP-C	SEEP-D	TARHEEL
Field Sample ID	CAP1Q20-OUTFALL 002-040320	O2400402	CAP1Q20-SEEP-A-24-040320	CAP1Q20-SEEP-B-24-040320	CAP1Q20-SEEP-C-24-040320	CAP1Q20-SEEP-D-24-040320	CAP1Q20-CFR-TARHEEL-040220
Sample Date	4/3/2020	4/3/2020	4/3/2020	4/3/2020	4/3/2020	4/3/2020	4/2/2020
QA/QC							
Sample Type	Grab	24-hour composite	24-hour composite	24-hour composite	24-hour composite	24-hour composite	Grab
Sample Delivery Group (SDG)	320-60031-1	280-135242-1	320-60027-1	320-60027-1	320-60027-1	320-60027-1	320-60029-1
Lab Sample ID	320-60031-3	280-135242-11	320-60027-1	320-60027-2	320-60027-3	320-60027-4	320-60029-3
Table 3+ Lab SOP (ng/L)							
HFPO-DA	**49**	**53**	**17,000**	**14,000**	**17,000**	**12,000**	**11**
PFMOAA	**13**	**31 J**	**120,000**	**180,000**	**190,000**	**110,000**	**35**
PFO2HxA	**16**	**22**	**50,000**	**48,000**	**60,000**	**33,000**	**15**
PFO3OA	**3**	**4.6**	**18,000**	**10,000**	**19,000**	**8,500**	**3.9**
PFO4DA	<2	2.7	**9,700**	**1,500**	**4,100**	**2,400**	<2
PFO5DA	<2	3.5	**5,400**	**250**	<34	**130**	<2
PMPA	**37**	**42**	**22,000**	**36,000**	**13,000**	**8,700**	**24**
PEPA	<20	<20	**6,900**	**12,000**	**3,500**	**2,300**	<20
PS Acid (Formerly PFESA-BP1)	**12**	**13**	**7,200**	**2,300**	<27	<27	<2
Hydro-PS Acid (Formerly PFESA-BP2)	**3.6**	**3.7**	**1,800**	**870**	**530**	**330**	<2
R-PSDA (Formerly Byproduct 4)	**26**	**35 J**	**3,100**	**4,200**	**2,000**	**1,200**	**8.5**
Hydrolyzed PSDA (Formerly Byproduct 5)	**89**	**100 J**	**27,000**	**26,000**	**2,600**	**2,100**	**26**
R-PSDCA (Formerly Byproduct 6)	<2	<2	**73**	**66**	**34**	**17**	<2
NVHOS	<2	2.6	**1,300**	**2,600**	**1,700**	**920**	**2.3**
EVE Acid	<2	<2	**1,400**	**3,000**	<24	<24	<2
Hydro-EVE Acid	<2	<2	**2,000**	**1,900**	**2,100**	**1,300**	<2
R-EVE	**3.3**	**5.9 J**	**1,300**	**2,200**	**1,800**	**1,100**	**6.6**
PES	<2	<2	<46	<46	<46	<46	<2
PFECA B	<2	<2	<60	<60	<60	<60	<2
PFECA-G	<2	<2	<41	<41	<41	<41	<2
Total Table 3+ (17 compounds)	**130**	**160**	**260,000**	**310,000**	**310,000**	**180,000**	**91**
Total Table 3+ (20 compounds)	**250**	**180**	**290,000**	**340,000**	**320,000**	**180,000**	**130**

TABLE 8
SURFACE WATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling
Location ID	TARHEEL	WC-1	EQBLK	EQBLK	EQBLK
Field Sample ID	CAP1Q20-CFR-TARHEEL-24-040320	CAP1Q20-WC-1-24-040320	CAP1Q20-EQBK-1-040320	CAP1Q20-EQBK-2-040320	CAP1Q20-EB-040620
Sample Date	4/3/2020	4/3/2020	4/3/2020	4/3/2020	4/6/2020
QA/QC			Equipment Blank	Equipment Blank	Equipment Blank
Sample Type	24-hour composite	24-hour composite			
Sample Delivery Group (SDG)	320-60032-1	320-60031-1	320-60032-1	320-60029-1	320-60029-1
Lab Sample ID	320-60032-2	320-60031-1	320-60032-4	320-60029-1	320-60029-2
Table 3+ Lab SOP (ng/L)					
HFPO-DA	**18**	**320**	<4	<4	<4
PFMOAA	**47**	**610**	<5	<5	<5
PFO2HxA	**21**	**370**	<2	<2	<2
PFO3OA	**4.8**	**62**	<2	<2	<2
PFO4DA	<2	**13**	<2	<2	<2
PFO5DA	<2	**3.2**	<2	<2	<2
PMPA	**31**	**490**	<10	<10	<10
PEPA	<20	**110**	<20	<20	<20
PS Acid (Formerly PFESA-BP1)	<2	<2	<2	<2	<2
Hydro-PS Acid (Formerly PFESA-BP2)	<2	**11**	<2	<2	<2
R-PSDA (Formerly Byproduct 4)	**14 J**	**89**	<2	<2	<2
Hydrolyzed PSDA (Formerly Byproduct 5)	**17 B**	**230**	<2	**18**	**4.6**
R-PSDCA (Formerly Byproduct 6)	<2	<2	<2	<2	<2
NVHOS	<2	**10**	<2	<2	<2
EVE Acid	<2	<2	<2	<2	<2
Hydro-EVE Acid	<2	**4.1**	<2	<2	<2
R-EVE	**2.8 J**	**38**	<2	<2	**<2**
PES	<2	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2
Total Table 3+ (17 compounds)	**120**	**2,000**	**ND**	**ND**	**ND**
Total Table 3+ (20 compounds)	**160**	**2,400**	**ND**	**18**	**4.6**

Notes:

Bold - Analyte detected above associated reporting limit

Abbreviations:

B - analyte detected in an associated blank
EPA - Environmental Protection Agency
J - Analyte detected. Reported value may not be accurate or precise
ND - no Table 3+ analytes were detected above the associated reporting limits
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SDG - Sample Delivery Group
SOP - standard operating procedure
UJ – Analyte not detected. Reporting limit may not be accurate or precise.
< - Analyte not detected above associated reporting limit.

TABLE 9
FLOW SUMMARY FOR SEEPS, SURFACE AND RIVER WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

Pathway/ Location	Flow Measurement Date	Composite Sample 24-Hour Flow Volume (MGD)[1,2]	Grab Sample Instantaneous Flow Rate (L/s)[1,3]	Flow Rate (gpm)
Upstream River Water and Groundwater[4]	02-04-20	3,400	--	2,400,000
Willis Creek	03-04-20	7.7	--	5,300
Intake River Water at Facility	03-04-20	18	--	12,000
Outfall 002	03-04-20	23	--	16,000
Seep A	03-04-20	0.25	--	170
Seep B	03-04-20	0.22	--	150
Seep C	03-04-20	0.091	--	63
Seep D[5]	03-04-20	0.17	--	120
Old Outfall 002	03-04-20	0.93	--	650
Georgia Branch Creek	02-04-20	6.8	--	4,700
W.O'Huske[6]	03-04-20	2550	--	1,800,000
W.O'Huske[7]	02-04-20	--	130,000	2,100,000
W.O'Huske[8]	02-04-20	--	130,000	2,100,000
Cape Fear River Lock and Dam #1[9]	06-04-20	--	82,000	1,300,000

Notes

1 - Flow measurement methods are described in Table 2. Detailed flow data and calculations are provided in Appendix E.

2 - Total flow volume for composite samples is based on measurements taken over 24-hour sample collection period for all locations except Georgia Branch Creek and Willis Creek. At these locations, the total flow volume over 24-hour sample collection was estimated based on the instantaneous flow measurement.

3 - Instantaneous flow rate for grab samples is the recorded flow rate at the time of grab sample collection.

4 - The volumetric flow rate for upstream river water and groundwater was estimated by subtracting inflows from Willis Creek, upwelling groundwater, seeps to the river, and Outfall 002 and by adding the river water intake from Chemours to the flow rate measurement from the W.O. Huske Dam.

5 - The maximum flow rate that can be accurately measured for the flume installed at Seep D is 120 GPM. This maximum flow rate was assumed any time the measured water level indicated a flow rate greater than 120 GPM. A larger flume was installed at Seep D after this sampling event.

6 - Flow rate measured at USGS gauging station #02105500 located at William O Huske Lock & Dam used to estimate flow rate at Tar Heel Ferry Road Bridge during composite sample collection.

7 - Flow rate measured at USGS gauging station #02105500 located at William O Huske Lock & Dam used to estimate flow rate at Tar Heel Ferry Road Bridge during grab sample collection.

8 - Flow rate measured at USGS gauging station #02105500 located at William O Huske Lock & Dam used to estimate flow rate at Bladen Bluff during sample

9 - Flow rate measured at USGS gauging station #02105769 located at Lock #1 near Kelly used to estimate flow rate at Kings Bluff during sample collection.

Abbreviations:

MGD - Milllions of gallons per day

gpm - Gallons per minute

USGS - United States Geological Survey

TABLE 10
GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling
Aquifer	Black Creek Aquifer	Floodplain Deposits	Black Creek Aquifer	Floodplain Deposits	Floodplain Deposits	Floodplain Deposits
Location ID	BLADEN-1D	LTW-01	LTW-02	LTW-03	LTW-03	LTW-04
Field Sample ID	CAP1Q20-BLADEN-1D-021120	CAP1Q20-LTW-01-022420	CAP1Q20-LTW-02-022420	CAP1Q20-LTW-03-022520	CAP1Q20-LTW-03-022520-D	CAP1Q20-LTW-04-022020
Sample Date	2/11/2020	2/24/2020	2/24/2020	2/25/2020	2/25/2020	2/20/2020
QA/QC					Field Duplicate	
Sample Delivery Group (SDG)	320-58585-1	320-58971-1	320-58971-1	320-58966-1	320-58966-1	320-58849-1
Lab Sample ID	320-58585-1	320-58971-1	320-58971-2	320-58966-1	320-58966-2	320-58849-6
Table 3+ Lab SOP (ng/L)						
HFPO-DA	**190**	**14,000**	**8,800**	**7,500**	**7,600**	**14,000**
PFMOAA	**14 B**	**41,000**	**40,000**	**160,000**	**160,000**	**120,000**
PFO2HxA	**10 B**	**28,000**	**17,000**	**34,000**	**34,000**	**32,000**
PFO3OA	<2	**6,200**	**3,800**	**4,900**	**4,900**	**5,600**
PFO4DA	<2	**1,400**	**250**	**180 J**	**190**	**760**
PFO5DA	<2	**160**	<17	<34	<34	<34
PMPA	**77 B**	**20,000**	**6,800**	**11,000**	**11,000**	**26,000**
PEPA	<20	**7,500**	**2,400**	**2,500 J**	**3,500 J**	**9,000**
PS Acid (Formerly PFESA-BP1)	<2	<13	<13	<27	<27	<27
Hydro-PS Acid (Formerly PFESA-BP2)	**2.9 B**	**260**	**30**	<30	<30	**170**
R-PSDA (Formerly Byproduct 4)	<2	**950**	**500**	**660**	**620**	**1,700**
Hydrolyzed PSDA (Formerly Byproduct 5)	<2	**790**	**1,200**	**2,800 J**	**2,700**	**2,800**
R-PSDCA (Formerly Byproduct 6)	<2	**8.8**	<7.7	<15	<15	**16**
NVHOS	<2	**450**	**410**	**1,100**	**1,100**	**1,700**
EVE Acid	<2	<12	<12	<24	<24	<24
Hydro-EVE Acid	<2	**140**	**52**	**43**	**48**	**570**
R-EVE	<2	**730**	**420**	**450**	**450**	**1,700**
PES	<2	<23	<23	<46	**590 J**	<46
PFECA B	<2	<30	<30	<60	**780 J**	<60
PFECA-G	<2	<20	<20	<41	<41	<41
Total Table 3+ (17 compounds)	**290**	**120,000**	**80,000**	**220,000**	**220,000**	**210,000**
Total Table 3+ (20 compounds)	**290**	**120,000**	**82,000**	**230,000**	**230,000**	**220,000**

TABLE 10
GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling
Aquifer	Black Creek Aquifer	Surficial Aquifer	Floodplain Deposits	Black Creek Aquifer	Black Creek Aquifer	Floodplain Deposits
Location ID	LTW-05	PIW-1D	PIW-1S	PIW-3D	PIW-7D	PIW-7S
Field Sample ID	CAP1Q20-LTW-05-021920	CAP1Q20-PIW-1D-021420	CAP1Q20-PIW-1S-021320	CAP1Q20-PIW-3D-022420	CAP1Q20-PIW-7D-021920	CAP1Q20-PIW-7S-021920
Sample Date	2/19/2020	2/14/2020	2/13/2020	2/24/2020	2/19/2020	2/19/2020
QA/QC						
Sample Delivery Group (SDG)	320-58849-1	320-58652-1	320-58612-1	320-58971-1	320-58849-1	320-58849-1
Lab Sample ID	320-58849-5	320-58652-1	320-58612-6	320-58971-3	320-58849-1	320-58849-2
Table 3+ Lab SOP (ng/L)						
HFPO-DA	**16,000**	**10,000**	**2,700**	**8,500**	**7,700**	**17,000**
PFMOAA	**250,000**	**14,000**	**710**	**5,500**	**180,000 J**	**50,000**
PFO2HxA	**53,000**	**8,100**	**2,400**	**8,400**	**34,000 J**	**22,000**
PFO3OA	**17,000**	**1,300**	**440**	**1,700**	**3,900 J**	**6,500**
PFO4DA	**3,400**	**290**	**1,900 J**	**820**	**760 J**	**730**
PFO5DA	<67	<6.7	**8.5**	**75**	<67 UJ	<34
PMPA	**5,500**	**9,200**	**3,000**	**11,000**	**4,000 J**	**24,000**
PEPA	**540**	**3,100**	**1,200**	**3,800**	**640 J**	**9,000**
PS Acid (Formerly PFESA-BP1)	<53	<5.3	<2.7	<5.3	<53 UJ	<27
Hydro-PS Acid (Formerly PFESA-BP2)	**300**	**66**	**85**	**170**	**81 J**	**380**
R-PSDA (Formerly Byproduct 4)	**760**	**410 J**	**120**	**540**	**500 J**	**1,500**
Hydrolyzed PSDA (Formerly Byproduct 5)	**1,300**	<12 UJ	<5.8	<12	**940 J**	**120**
R-PSDCA (Formerly Byproduct 6)	**40**	**3.7**	<2	**5.5**	<31 UJ	<15
NVHOS	**1,600**	**140**	**12**	**82**	**1,000 J**	**1,500**
EVE Acid	<49	<4.9	<2.4	<4.9	<49 UJ	<24
Hydro-EVE Acid	**1,400**	**30**	**23**	**47**	**260 J**	**700**
R-EVE	**860**	**290 J**	**60**	**330**	**580 J**	**1,800**
PES	<92	<9.2	<4.6	<9.2	<92 UJ	<46
PFECA B	<120	<12	**8.1**	<12	<120 UJ	<60
PFECA-G	<82	<8.2	<4.1	<8.2	<82 UJ	<41
Total Table 3+ (17 compounds)	**350,000**	**46,000**	**12,000**	**40,000**	**230,000**	**130,000**
Total Table 3+ (20 compounds)	**350,000**	**47,000**	**13,000**	**41,000**	**230,000**	**140,000**

TABLE 10
GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling
Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	PW-04	PW-06	PW-07	PW-09	PW-11	PZ-22
Field Sample ID	CAP1Q20-PW-04-021120	CAP1Q20-PW-06-020620	CAP1Q20-PW-07-021420	CAP1Q20-PW-09-021220	CAP1Q20-PW-11-021320	CAP1Q20-PZ-22-022020
Sample Date	2/11/2020	2/6/2020	2/14/2020	2/12/2020	2/13/2020	2/20/2020
QA/QC						
Sample Delivery Group (SDG)	320-58585-1	320-58586-1	320-58652-1	320-58612-1	320-58612-1	320-58849-1
Lab Sample ID	320-58585-2	320-58586-1	320-58652-2	320-58612-2	320-58612-5	320-58849-7
Table 3+ Lab SOP (ng/L)						
HFPO-DA	**1,000**	**1,300**	**1,100**	**5.3**	**27,000**	**9,300**
PFMOAA	**9.9 B**	**270**	**350**	**17 B**	**470,000**	**190,000 J**
PFO2HxA	**9.5 B**	**790**	**840**	**5 B**	**91,000**	**39,000 J**
PFO3OA	<2	**130**	**120**	<2	**43,000**	**3,700 J**
PFO4DA	<2	**67**	**51**	<2	**20,000**	**400 J**
PFO5DA	<2	<2	**3.1 J**	<2	**660**	<67 UJ
PMPA	**120 B**	**1,600**	**1,300**	**16 B**	**12,000**	**5,000 J**
PEPA	<20	**580**	**380**	<20	**4,900**	**1,200 J**
PS Acid (Formerly PFESA-BP1)	<2	<2	<2	<2	**230**	<53 UJ
Hydro-PS Acid (Formerly PFESA-BP2)	**2.6 B**	**40**	**8.8**	<2	**960**	**66 J**
R-PSDA (Formerly Byproduct 4)	**3.6 J B**	**63 J**	**67 J**	<2	**1,500**	**450 J**
Hydrolyzed PSDA (Formerly Byproduct 5)	<2	<2	**6.1 J**	<2	**3,300**	**1,300 J**
R-PSDCA (Formerly Byproduct 6)	<2	<2	<2	<2	**100**	<31 UJ
NVHOS	**2.5 B**	**7.4**	**8.7**	<2	**4,800**	**1,100 J**
EVE Acid	<2	<2	<2	<2	<120	<49 UJ
Hydro-EVE Acid	<2	**8.9**	**6.1**	<2	**1,100**	**150 J**
R-EVE	**2.4 J B**	**28**	**26 J**	<2	<350	**590 J**
PES	<2	<2	<2	<2	<230	<92 UJ
PFECA B	<2	<2	<2	<2	<300	<120 UJ
PFECA-G	<2	<2	<2	<2	<200	<82 UJ
Total Table 3+ (17 compounds)	**1,100**	**4,800**	**4,200**	**43**	**680,000**	**250,000**
Total Table 3+ (20 compounds)	**1,200**	**4,900**	**4,300**	**43**	**680,000**	**250,000**

TABLE 10
GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling
Aquifer	Black Creek Aquifer	Black Creek Aquifer	Surficial Aquifer	Black Creek Aquifer		
Location ID	SMW-10	SMW-10	SMW-11	SMW-12	EB	EB
Field Sample ID	CAP1Q20-SMW-10-021020	CAP1Q20-SMW-10-021020-D	CAP1Q20-SMW-11-021120	CAP1Q20-SMW-12-021220	CAP1Q20-EB-020620	CAP1Q20-EB-021020
Sample Date	2/10/2020	2/10/2020	2/11/2020	2/12/2020	2/6/2020	2/10/2020
QA/QC		Field Duplicate			Equipment Blank	Equipment Blank
Sample Delivery Group (SDG)	320-58586-1	320-58586-1	320-58585-1	320-58612-1	320-58586-1	320-58586-1
Lab Sample ID	320-58586-4	320-58586-5	320-58585-3	320-58612-1	320-58586-2	320-58586-6
Table 3+ Lab SOP (ng/L)						
HFPO-DA	<4	<4	**4,800**	**1,600**	<4	<4
PFMOAA	**31**	**31**	**42 B**	**4,600**	<5	<5
PFO2HxA	<2	<2	**120 B**	**1,500**	<2	<2
PFO3OA	<2	<2	**22**	**75**	<2	<2
PFO4DA	<2	<2	**5.7**	<7.9	<2	<2
PFO5DA	<2	<2	<2	<3.4	<2	<2
PMPA	**11**	**13**	**120 B**	**1,900**	<10	<10
PEPA	<20	<20	**22**	**390**	<20	<20
PS Acid (Formerly PFESA-BP1)	<2	<2	<2	<2.7	<2	<2
Hydro-PS Acid (Formerly PFESA-BP2)	<2	<2	**18 B**	<3	<2	<2
R-PSDA (Formerly Byproduct 4)	<2	<2	**32 J**	**110**	<2	<2
Hydrolyzed PSDA (Formerly Byproduct 5)	<2	<2	<2	<5.8	<2	<2
R-PSDCA (Formerly Byproduct 6)	<2	<2	<2	<2	<2	<2
NVHOS	<2	<2	<2	**41**	<2	<2
EVE Acid	<2	<2	<2	<2.4	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2.8	<2	<2
R-EVE	<2	<2	**17 J**	**100**	<2	<2
PES	<2	<2	<2	<4.6	<2	<2
PFECA B	<2	<2	<2	<6	<2	<2
PFECA-G	<2	<2	<2	<4.1	<2	<2
Total Table 3+ (17 compounds)	**42**	**44**	**5,100**	**10,000**	**ND**	**ND**
Total Table 3+ (20 compounds)	**42**	**44**	**5,200**	**10,000**	**ND**	**ND**

TABLE 10
GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Program	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**
Aquifer						
Location ID	**EB**	**EB**	**EB**	**EB**	**EB**	**EB**
Field Sample ID	**CAP1Q20-EB-021120**	**CAP1Q20-EB-021220**	**CAP1Q20-EB-01-021320**	**CAP1Q20-EB-02-021320**	**CAP1Q20-EB-021420**	**CAP1Q20-EB-021920**
Sample Date	**2/11/2020**	**2/12/2020**	**2/13/2020**	**2/13/2020**	**2/14/2020**	**2/19/2020**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Delivery Group (SDG)	**320-58585-1**	**320-58612-1**	**320-58612-1**	**320-58612-1**	**320-58652-1**	**320-58849-1**
Lab Sample ID	**320-58585-4**	**320-58612-3**	**320-58612-8**	**320-58612-9**	**320-58652-3**	**320-58849-4**
Table 3+ Lab SOP (ng/L)						
HFPO-DA	<4	<4	<4	<4	<4	**15**
PFMOAA	**17**	**19**	<5	<5	<5 UJ	<5
PFO2HxA	**29**	**3.1**	<2	<2	<2	<2
PFO3OA	**3.4**	<2	<2	<2	<2	<2
PFO4DA	<2	<2	<2	<2	<2	<2
PFO5DA	<2	<2	<2	<2	<2	<2
PMPA	**65**	**12**	<10	<10	<10	<10
PEPA	<20	<20	<20	<20	<20	<20
PS Acid (Formerly PFESA-BP1)	<2	<2	<2	<2	<2	<2
Hydro-PS Acid (Formerly PFESA-BP2)	**10**	<2	<2	<2	<2	<2
R-PSDA (Formerly Byproduct 4)	**3.2**	<2	<2	<2	<2 UJ	<2
Hydrolyzed PSDA (Formerly Byproduct 5)	<2	**2 J**	<2	<2	<2 UJ	<2
R-PSDCA (Formerly Byproduct 6)	<2	<2	<2	<2	<2	<2
NVHOS	**2.6**	<2	<2	<2	<2	<2
EVE Acid	<2	<2	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2	<2	<2
R-EVE	**2.5**	<2	<2	<2	<2 UJ	<2
PES	<2	<2	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2	<2
Total Table 3+ (17 compounds)	**130**	**34**	**ND**	**ND**	**ND**	**15**
Total Table 3+ (20 compounds)	**130**	**36**	**ND**	**ND**	**ND**	**15**

TABLE 10
GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Program	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**
Aquifer						
Location ID	**EB**	**EB**	**EB**	**EQBLK**	**FBLK**	**FBLK**
Field Sample ID	**CAP1Q20-EB-022020**	**EB-022420**	**EB-022520**	**CAP1Q20-EQBLK-02-032720**	**CAP1Q20-FB-020620**	**CAP1Q20-FB-021020**
Sample Date	**2/20/2020**	**2/24/2020**	**2/25/2020**	**3/27/2020**	**2/6/2020**	**2/10/2020**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**	**Field Blank**	**Field Blank**
Sample Delivery Group (SDG)	**320-58849-1**	**320-58971-1**	**320-58966-1**	**320-59859-1**	**320-58586-1**	**320-58586-1**
Lab Sample ID	**320-58849-9**	**320-58971-5**	**320-58966-3**	**320-59859-1**	**320-58586-3**	**320-58586-7**
Table 3+ Lab SOP (ng/L)						
HFPO-DA	<4	<4	<4	<4	<4	<4
PFMOAA	<5	<5	<5	<5	<5	<5
PFO2HxA	<2	<2	<2	<2	<2	<2
PFO3OA	<2	<2	<2	<2	<2	<2
PFO4DA	<2	<2	<2	<2	<2	<2
PFO5DA	<2	<2	<2	<2	<2	<2
PMPA	<10	<10	<10	<10	<10	<10
PEPA	<20	<20	<20	<20	<20	<20
PS Acid (Formerly PFESA-BP1)	<2	<2	<2	<2	<2	<2
Hydro-PS Acid (Formerly PFESA-BP2)	<2	<2	<2	<2	<2	<2
R-PSDA (Formerly Byproduct 4)	<2	<2	<2	<2	<2	<2
Hydrolyzed PSDA (Formerly Byproduct 5)	<2	<2	<2	<2	<2	<2
R-PSDCA (Formerly Byproduct 6)	<2	<2	<2	<2	<2	<2
NVHOS	<2	<2	<2	<2	<2	<2
EVE Acid	<2	<2	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2	<2	<2
R-EVE	<2	<2	<2	<2	<2	<2
PES	<2	<2	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2	<2
Total Table 3+ (17 compounds)	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Total Table 3+ (20 compounds)	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**

TABLE 10
GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling
Aquifer						
Location ID	FBLK	FBLK	FBLK	FBLK	FBLK	FBLK
Field Sample ID	CAP1Q20-FB-021120	CAP1Q20-FB-021220	CAP1Q20-FB-021320	CAP1Q20-FB-021420	CAP1Q20-FB-021920	CAP1Q20-FB-022020
Sample Date	2/11/2020	2/12/2020	2/13/2020	2/14/2020	2/19/2020	2/20/2020
QA/QC	Field Blank	Field Blank	Field Blank	Field Blank	Field Blank	Field Blank
Sample Delivery Group (SDG)	320-58585-1	320-58612-1	320-58612-1	320-58652-1	320-58849-1	320-58849-1
Lab Sample ID	320-58585-5	320-58612-4	320-58612-7	320-58652-4	320-58849-3	320-58849-8
Table 3+ Lab SOP (ng/L)						
HFPO-DA	<4	<4	<4	<4	<4	<4
PFMOAA	<5	<5	<5	<5	<5	<5
PFO2HxA	<2	<2	<2	<2	<2	<2
PFO3OA	<2	<2	<2	<2	<2	<2
PFO4DA	<2	<2	<2	<2	<2	<2
PFO5DA	<2	<2	<2	<2	<2	<2
PMPA	**110**	<10	<10	<10	<10	<10
PEPA	<20	<20	<20	<20	<20	<20
PS Acid (Formerly PFESA-BP1)	<2	<2	<2	<2	<2	<2
Hydro-PS Acid (Formerly PFESA-BP2)	<2	<2	<2	<2	<2	<2
R-PSDA (Formerly Byproduct 4)	<2	<2	<2	<2 UJ	<2	<2
Hydrolyzed PSDA (Formerly Byproduct 5)	<2	<2	<2	<2 UJ	<2	<2
R-PSDCA (Formerly Byproduct 6)	<2	<2	<2	<2	<2	<2
NVHOS	<2	<2	<2	<2	<2	<2
EVE Acid	<2	<2	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2	<2	<2
R-EVE	<2	<2	<2	<2 UJ	<2	<2
PES	<2	<2	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2	<2
Total Table 3+ (17 compounds)	**110**	**ND**	**ND**	**ND**	**ND**	**ND**
Total Table 3+ (20 compounds)	**110**	**ND**	**ND**	**ND**	**ND**	**ND**

TABLE 10
GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling
Aquifer		
Location ID	FBLK	FBLK
Field Sample ID	FB-022420	FB-022520
Sample Date	2/24/2020	2/25/2020
QA/QC	Field Blank	Field Blank
Sample Delivery Group (SDG)	320-58971-1	320-58966-1
Lab Sample ID	320-58971-4	320-58966-4
Table 3+ Lab SOP (ng/L)		
HFPO-DA	<4	<4
PFMOAA	<5	<5
PFO2HxA	<2	<2
PFO3OA	<2	<2
PFO4DA	<2	<2
PFO5DA	<2	<2
PMPA	<10	<10
PEPA	<20	<20
PS Acid (Formerly PFESA-BP1)	<2	<2
Hydro-PS Acid (Formerly PFESA-BP2)	<2	<2
R-PSDA (Formerly Byproduct 4)	<2	<2
Hydrolyzed PSDA (Formerly Byproduct 5)	<2	<2
R-PSDCA (Formerly Byproduct 6)	<2	<2
NVHOS	<2	<2
EVE Acid	<2	<2
Hydro-EVE Acid	<2	<2
R-EVE	<2	<2
PES	<2	<2
PFECA B	<2	<2
PFECA-G	<2	<2
Total Table 3+ (17 compounds)	**ND**	**ND**
Total Table 3+ (20 compounds)	**ND**	**ND**

Notes:

Bold - Analyte detected above associated reporting limit

Abbreviations:

B - analyte detected in an associated blank
EPA - Environmental Protection Agency
J - Analyte detected. Reported value may not be accurate or precise
ND - no Table 3+ analytes were detected above the associated reporting limits
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SDG - Sample Delivery Group
SOP - standard operating procedure
UJ – Analyte not detected. Reporting limit may not be accurate or precise.
< - Analyte not detected above associated reporting limit.

TABLE 11
CAPE FEAR RIVER TOTAL TABLE 3+ PFAS MASS LOAD BY COMPOUND AND TIME INTERVAL
Chemours Fayetteville Works, North Carolina

Interval Details					Calculated Mass Load [1] (kg)																					
Interval ID	Start Time[2]	End Time[2]	Duration (h)	Total River Flow (m^3)	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PS Acid (Formerly PFESA-BP1)	Hydro-PS Acid (Formerly PFESA-BP2)	R-PSDA (Formerly Byproduct 4)	Hydrolyzed PSDA (Foremerly Byproduct 5)	R-PSDCA (Formerly Byproduct 6)	NVHOS	EVE Acid	Hydro-EVE Acid	R-EVE	PES	PFECA B	PFECA-G	Total Table 3+ Mass Discharge (17 Compounds)	Total Table 3+ Mass Discharge (20 Compounds)
2020_1_Q1	3/28/2020 1:00	3/31/2020 12:30	83	90,900,000	0.29	2.50	0.83	0.10	-	-	1.23	-	-	-	-	0.75	-	-	-	-	0.10	-	-	-	4.9	5.8
2020_2_Q2	3/31/2020 12:30	4/2/2020 13:30	49	27,756,000	0.28	1.17	0.39	0.09	-	-	0.47	-	-	-	0.22	0.39	-	-	-	-	-	-	-	-	2.4	3.0
2020_3_Q2	4/2/2020 13:30	4/3/2020 15:00	25	9,680,800	0.17	0.48	0.21	0.05	-	-	0.28	-	-	-	0.13	0.17	-	0.005	-	-	0.02	-	-	-	1.2	1.5
2020_4_Q2	4/3/2020 15:00	4/6/2020 0:00	57	15,146,000	0.28	1.14	0.42	0.10	0.02	0.04	0.42	-	-	-	0.18	0.39	-	0.05	-	-	0.03	-	-	-	2.5	3.1
2020_5_Q2	4/6/2020 0:00	4/9/2020 6:30	79	16,575,000	0.33	1.56	0.55	0.13	0.05	0.08	0.51	-	-	-	0.22	0.51	-	0.08	-	-	0.06	-	-	-	3.3	4.1
2020_6_Q2	4/9/2020 6:30	4/15/2020 14:30	152	38,571,000	0.49	2.35	0.85	0.21	0.05	0.23	0.93	-	-	-	0.25	0.78	-	0.10	-	-	0.07	-	-	-	5.2	6.3
2020_7_Q2	4/15/2020 14:30	4/19/2020 2:00	83	55,746,000	0.31	1.56	0.61	0.14	-	0.38	0.95	-	-	-	-	0.54	-	-	-	-	-	-	-	-	4.0	4.5
2020_8_Q2	4/19/2020 2:00	4/22/2020 13:30	83	27,904,000	0.33	1.42	0.53	0.14	-	0.15	0.70	-	-	-	-	0.47	-	-	-	-	-	-	-	-	3.3	3.8
2020_9_Q2	4/22/2020 13:30	4/26/2020 0:49	83	28,653,000	0.32	1.52	0.54	0.14	-	-	0.60	-	-	-	0.21	0.66	-	0.08	-	-	-	-	-	-	3.2	4.1
2020_10_Q2	4/26/2020 0:49	4/29/2020 11:49	83	22,889,000	0.30	1.35	0.55	0.13	-	-	0.53	-	-	-	0.30	0.62	-	0.09	-	-	0.05	-	-	-	2.9	3.9
2020_11_Q2	4/29/2020 11:49	4/30/2020 9:49	22	7,256,900	0.09	0.30	0.14	0.03	-	-	0.17	-	-	-	0.12	0.16	-	0.03	-	-	0.03	-	-	-	0.8	1.1
2020_12_Q2	4/30/2020 9:49	5/3/2020 1:00	63	55,522,000	0.67	1.50	0.89	0.19	-	-	1.33	-	-	-	1.11	1.00	-	0.18	-	-	0.33	-	-	-	4.8	7.2
2020_13_Q2	5/3/2020 1:00	5/6/2020 12:00	83	72,975,000	0.45	1.31	0.72	0.15	-	-	1.09	-	-	-	0.80	0.88	-	-	-	-	-	-	-	-	3.7	5.4
2020_14_Q2	5/6/2020 12:00	5/9/2020 23:49	84	44,994,000	0.42	1.53	0.63	0.17	-	-	0.81	-	-	-	0.58	0.67	-	0.10	-	-	0.12	-	-	-	3.7	5.0
Totals[3]			**1,031**	**514,570,000**	**4.7**	**20**	**7.8**	**1.8**	**0.12**	**0.88**	**10**	**-**	**-**	**-**	**4.1**	**8.0**	**-**	**0.72**	**-**	**-**	**0.81**	**-**	**-**	**-**	**46**	**59**

Abbreviations:
h - hours
m^3 - cubic meters
kg - kilograms

Notes
1 - The calculated mass discharge is a product of weighted concentration of the samples in the interval and of total river flow during the interval.
A detailed presentation of the calculation is provided in Appendix I. Data used in these calculations come from samples collected at CFR-TARHEEL.
2 - Start and end times are adjusted based on sample collection times ± one hour to account for the total flow of the Cape Fear River and avoid timegaps between intervals.
3 - Total values are rounded to two significant digits. Values in calculations supporting totals are not rounded.
\- - Mass discharge not calculated, sample concentration below reporting limit.

TABLE 12
SUMMARY OF MASS DISCHARGE AT TAR HEEL FERRY ROAD BRIDGE
Chemours Fayetteville Works, North Carolina

Location ID	Field Sample ID	Collection Date	Hours composited	Total Table 3+ (ng/L) (17 compounds)	Total Table 3+ (ng/L) (20 compounds)	Total Volume (m^3)[1]	Mass Discharge (mg/s) (17 Compounds)	Mass Discharge (mg/s) (20 Compounds)
CFR-TARHEEL	CFR-TARHEEL-83-033120	3/31/2020	83	52	63	90,537,000	16	19
CFR-TARHEEL	CFR-TARHEEL-83-033120-D	3/31/2020	83	56	65	90,537,000	17	20
CFR-TARHEEL	CFR-TARHEEL-48-040220	4/2/2020	48	86	110	27,145,000	14	17
CFR-TARHEEL	CAP1Q20-CFR-TARHEEL-24-040320	4/3/2020	24	120	160	9,059,500	13	16
CFR-TARHEEL	CFR-TARHEEL-83-040620	4/6/2020	83	130	160	24,943,000	11	13
CFR-TARHEEL	CFR-TARHEEL-79-040920	4/9/2020	79	200	250	16,692,000	12	14
CFR-TARHEEL	CFR-TARHEEL-83-041920	4/19/2020	83	71	81	56,599,000	13	15
CFR-TARHEEL	CFR-TARHEEL-83-042220	4/22/2020	83	120	130	28,104,000	11	13
CFR-TARHEEL	CFR-TARHEEL-83-042620	4/26/2020	83	110	140	28,717,000	11	14
CFR-TARHEEL	CFR-TARHEEL-83-042920	4/29/2020	83	130	170	22,389,000	9.6	13
CFR-TARHEEL	CFR-TARHEEL-62-050220	5/2/2020	62	86	130	49,870,000	19	29
CFR-TARHEEL	CFR-TARHEEL-83-050620	5/6/2020	83	51	74	75,234,000	13	19
CFR-TARHEEL	CFR-TARHEEL-83-051120	5/11/2020	83	82	110	29,212,000	8	11

Notes:
1 - Total flow volume is determined based on measurements taken over the sample collection period.
Abbreviations:
ng/L - nanograms per liter
m^3 - cubic meters
mg/s - milligrams per second

TABLE 13
CAPE FEAR RIVER TOTAL TABLE 3+ PFAS MASS LOAD SUMMARY
Chemours Fayetteville Works, North Carolina

Reporting Peroid	Reporting Period Details				Load in Cape Fear River (kg) [1]		Remedy Captured Loads (kg)[2]		Total Load to Cape Fear River (kg)[3]	
	Start Date	End Date	Days	River volume (m^3)	Total Table 3+ (17 Compounds)	Total Table 3+ (20 Compounds)	Total Table 3+ (17 Compounds)	Total Table 3+ (20 Compounds)	Total Table 3+ (17 Compounds)	Total Table 3+ (20 Compounds)
2020-Q1 Report	03/28/2020 1:00	05/09/2020 23:49	43	514,570,000	46	59	0	0	46	59
Total[4]	**03/28/2020 1:00**	**05/09/2020 23:49**	**43**	**514,570,000**	**46**	**59**	**0**	**0**	**46**	**59**

***Abbreviations*:**
kg - kilograms
mg/s - milligrams per second

Notes:
1 - Calculated Cape Fear River loads represents loads measured in the Cape Fear River at the CFR-TARHEEL sampling location downstream of the Site.
2 - Calculated remedy captured loads represents loads from environmental pathways (e.g. Old Outfall 002, Seeps, etc.,) that were prevented from reaching the Cape Fear River.
3 - Total load to Cape Fear River represents the sum of the measured in-river load and the remedy captured load. This value represents the load that would reach the Cape Fear River in the absence of any remedies.
4 - Total values are rounded to two significant digits. Values in calculations supporting totals are not rounded.

TABLE 14
PFAS MASS LOADING MODEL POTENTIAL PATHWAYS
Chemours Fayetteville Works, North Carolina

Transport Pathway Number	Potential PFAS Transport Pathway	Analytical Data Source for Mass Loading Model[1]	Flow Data Source for Mass Loading Model[1]
1	Upstream River and Groundwater	Measured from Cape Fear River Mile 76 sample collected in April 2020 as reported in Table 8.	Measured flow rates from USGS gauging station at W.O. Huske Dam during April 2020 volumetrically adjusted for flow pathways between River Mile 76 and W.O. Huske Dam[2].
2	Willis Creek	Measured from Willis Creek sample collected in April 2020 as reported in Table 8.	Measured flow rates through point velocity method during April 2020 as reported in Appendix E.
3	Aerial Deposition on River	Estimated from air deposition modeling[3].	Estimated from air deposition modeling[3].
4	Outfall 002	Measured from Outfall 002 sample collected in April 2020 as reported in Table 8.	Measured daily Outfall 002 flow rates recorded in Facility discharge monitoring reports, summarized in Appendix E.
5	Onsite Groundwater	Measured from monitoring well samples collected in February 2020 as reported in Table 10.	Estimated as the sum of the mass flux from the Black Creek Aquifer calculated from a transect along the Cape Fear River. Further details and supporting calculations provided in Appendix H.
6	Seeps	Measured from Seeps A, B, C, and D samples collected in April 2020 as reported in Table 8.	Measured flow rates through flumes during April 2020 as reported in Appendix E.
7	Old Outfall 002	Measured from Old Outfall 002 sample collected in April 2020 as reported in Table 8.	Measured flow rates through flumes during April 2020 as reported in Appendix E.
8	Adjacent and Downstream Groundwater	Estimated using a scaling factor applied to upstream mass discharge. See Section 7.2.6 for details.	Estimated using a scaling factor applied to upstream mass discharge. See Section 7.2.6 for details.
9	Georgia Branch Creek	Measured from Georgia Branch Creek sample collected in April 2020 as reported in Table 8.	Measured flow rates through point velocity method during April 2020 as reported in Appendix E.

Notes:
1. Flow and concentration data are multiplied together to estimate the PFAS mass discharge in the Cape Fear River originating from each pathway.
2. Cape Fear River flow rates measured at USGS gauging station #02105500 located at William O Huske Lock & Dam accessed from https://waterdata.usgs.gov on 2020-05-20 at 14:59:08 EDT.
3. ERM, 2018. Modeling Report: HFPO-DA Atmospheric Deposition and Screening Groundwater Effects. 27 April 2018.

TABLE 15
ESTIMATED 2020 QUARTER 1 EVENT TABLE 3+ PFAS MASS DISCHARGE BY PATHWAY
Chemours Fayetteville Works, North Carolina

Pathway Number[1]	**1**	**2**	**4**	**5**	
Pathway Name	**Upstream River Water and Groundwater**	**Willis Creek**	**Outfall 002[3]**	**Onsite Groundwater - Lower Bound[4]**	**Onsite Groundwater - Upper Bound[4]**
Location ID	**CFR-MILE-76**	**WC-1**	**OUTFALL 002**	**--**	**--**
Field Sample ID	**CAP1Q20-CFR-RM-76-040220**	**CAP1Q20-WC-1-24-040320**	**O2400402**	**--**	**--**
Sample Date and Time[2]	**4/2/20 9:20 AM**	**4/3/20 2:12 PM**	**4/3/20 2:36 PM**	**--**	**--**
Sample Type	**Grab**	**24-Hour Composite**	**24-Hour Composite**	**--**	**--**
Table 3+ Lab SOP Mass Discharge[6] (mg/s)					
HFPO-DA	ND	**0.108**	**0.0333**	**0.0432**	**0.512**
PFMOAA	ND	**0.206**	**0.0101**	**0.521**	**7.29**
PFO2HxA	ND	**0.125**	**4.04E-03**	**0.119**	**1.51**
PFO3OA	ND	**0.0209**	**1.92E-03**	**0.0417**	**0.596**
PFO4DA	ND	**4.38E-03**	**2.73E-03**	**0.0157**	**0.264**
PFO5DA	ND	**1.08E-03**	**3.54E-03**	**4.79E-04**	**8.54E-03**
PMPA	ND	**0.165**	**4.04E-03**	**0.0284**	**0.318**
PEPA	ND	**0.0371**	ND	**9.83E-03**	**0.116**
PS Acid (Formerly PFESA-BP1)	ND	ND	**0.0131**	**1.60E-04**	**0.00285**
Hydro-PS Acid (Formerly PFESA-BP2)	ND	**3.71E-03**	**3.74E-03**	**8.97E-04**	**0.0144**
R-PSDA (Formerly Byproduct 4)	ND	**0.0300**	**0.0242**	**2.46E-03**	**0.0293**
Hydrolyzed PSDA (Formerly Byproduct 5)	ND	**0.0775**	**0.0849**	**4.90E-03**	**0.0514**
Byproduct 6 (Formerly Byproduct 6)	ND	ND	ND	**8.00E-05**	**1.30E-03**
NVHOS	ND	**3.37E-03**	**2.63E-03**	**4.90E-03**	**0.0711**
EVE Acid	ND	ND	ND	ND	ND
Hydro-EVE Acid	ND	**1.38E-03**	ND	**1.29E-03**	**0.0173**
R-EVE	ND	**0.0128**	**2.83E-03**	**1.30E-03**	**0.0104**
PES	ND	ND	ND	ND	ND
PFECA B	ND	ND	ND	**1.94E-06**	**3.45E-05**
PFECA-G	ND	ND	ND	ND	ND
Total Table 3+ Mass Discharge (17 compounds)[7]	ND	**0.674**	**0.0808**	**0.790**	**10.8**
Total Table 3+ Mass Discharge (20 Compounds)[7]	ND	**0.809**	**0.192**	**0.795**	**10.8**

TABLE 15
ESTIMATED 2020 QUARTER 1 EVENT TABLE 3+ PFAS MASS DISCHARGE BY PATHWAY
Chemours Fayetteville Works, North Carolina

Pathway Number[1]	6A	6B	6C	6D	7
Pathway Name	Seep A	Seep B	Seep C	Seep D	Old Outfall 002
Location ID	SEEP-A	SEEP-B	SEEP-C	SEEP-D	OLDOF-1
Field Sample ID	CAP1Q20-SEEP-A-24-040320	CAP1Q20-SEEP-B-24-040320	CAP1Q20-SEEP-C-24-040320	CAP1Q20-SEEP-D-24-040320	CAP1Q20-OLDOF-1-24-040320
Sample Date and Time[2]	4/3/20 2:10 PM	4/3/20 2:26 PM	4/3/20 2:30 PM	4/3/20 2:33 PM	4/3/20 2:42 PM
Sample Type	24-Hour Composite	24-Hour Composite	24-Hour Composite	24-Hour Composite	24-Hour Composite
Table 3+ Lab SOP Mass Discharge[6] (mg/s)					
HFPO-DA	**0.185**	**0.134**	**6.81E-02**	**9.19E-02**	**0.237**
PFMOAA	**1.31**	**1.73**	**0.761**	**0.843**	**3.06**
PFO2HxA	**0.546**	**0.461**	**0.240**	**0.253**	**0.694**
PFO3OA	**0.196**	**0.096**	**7.61E-02**	**6.51E-02**	**0.176**
PFO4DA	**0.106**	**0.0144**	**1.64E-02**	**1.84E-02**	**0.0572**
PFO5DA	**0.0589**	**2.40E-03**	ND	**1.0E-03**	**0.0196**
PMPA	**0.240**	**0.346**	**5.20E-02**	**6.66E-02**	**0.200**
PEPA	**0.0753**	**0.115**	**1.40E-02**	**1.76E-02**	**0.0572**
PS Acid (Formerly PFESA-BP1)	**0.0786**	**0.0221**	ND	ND	**0.0167**
Hydro-PS Acid (Formerly PFESA-BP2)	**0.0196**	**8.35E-03**	**2.12E-03**	**2.53E-03**	**0.0131**
R-PSDA (Formerly Byproduct 4)	**0.0338**	**0.0403**	**8.01E-03**	**9.19E-03**	**0.0192**
Hydrolyzed PSDA (Formerly Byproduct 5)	**0.295**	**0.250**	**1.04E-02**	**1.61E-02**	**0.0408**
Byproduct 6 (Formerly Byproduct 6)	**7.97E-04**	**6.34E-04**	**1.36E-04**	**1.30E-04**	ND
NVHOS	**0.0142**	**0.0250**	**6.81E-03**	**7.05E-03**	**0.0261**
EVE Acid	**0.0153**	**0.0288**	ND	ND	**1.43E-03**
Hydro-EVE Acid	**0.0218**	**0.0182**	**8.41E-03**	**9.96E-03**	**7.35E-03**
R-EVE	**0.0142**	**0.0211**	**7.21E-03**	**8.43E-03**	**6.94E-03**
PES	ND	ND	ND	ND	ND
PFECA B	ND	ND	ND	ND	ND
PFECA-G	ND	ND	ND	ND	ND
Total Table 3+ Mass Discharge (17 compounds)[7]	**2.84**	**2.98**	**1.24**	**1.38**	**4.49**
Total Table 3+ Mass Discharge (20 Compounds)[7]	**3.16**	**3.26**	**1.28**	**1.38**	**4.49**

TABLE 15
ESTIMATED 2020 QUARTER 1 EVENT TABLE 3+ PFAS MASS DISCHARGE BY PATHWAY
Chemours Fayetteville Works, North Carolina

Pathway Number[1]	**9**	**Sum of All Pathways - Lower Bound**	**Sum of All Pathways - Upper Bound**	**--**
Pathway Name	**Georgia Branch Creek**			**Tar Heel Ferry Road Bridge**
Location ID	**GBC-1**			**CFR-TARHEEL**
Field Sample ID	**CAP1Q20-GBC-1-040220**			**CAP1Q20-CFR-TARHEEL-24-040320**
Sample Date and Time[2]	**4/2/20 1:45 PM**			**4/3/20 3:00 PM**
Sample Type	**24-Hour Composite**			**24-Hour Composite**
Table 3+ Lab SOP Mass Discharge[6] ***(mg/s)***				
HFPO-DA	**0.122**	**1.02**	**1.49**	**2.01**
PFMOAA	**0.0299**	**8.47**	**15.2**	**5.25**
PFO2HxA	**0.0896**	**2.53**	**3.92**	**2.35**
PFO3OA	**0.0128**	**0.687**	**1.24**	**0.536**
PFO4DA	**4.18E-03**	**0.239**	**0.487**	ND
PFO5DA	**8.96E-04**	**0.0879**	**0.0960**	ND
PMPA	**0.227**	**1.33**	**1.62**	**3.46**
PEPA	**0.0538**	**0.380**	**0.486**	ND
PS Acid (Formerly PFESA-BP1)	ND	**0.131**	**0.133**	ND
Hydro-PS Acid (Formerly PFESA-BP2)	**7.47E-03**	**0.0615**	**0.0750**	ND
R-PSDA (Formerly Byproduct 4)	**0.0212**	**0.188**	**0.215**	**1.56**
Hydrolyzed PSDA (Formerly Byproduct 5)	**7.47E-04**	**0.780**	**0.826**	**1.90**
Byproduct 6 (Formerly Byproduct 6)	ND	**1.78E-03**	**2.99E-03**	ND
NVHOS	**1.22E-03**	**0.0913**	**0.157**	ND
EVE Acid	ND	**0.0455**	**0.0455**	ND
Hydro-EVE Acid	ND	**0.0684**	**0.0844**	ND
R-EVE	**6.87E-03**	**0.0817**	**0.0908**	**0.313**
PES	ND	ND	ND	ND
PFECA B	ND	**1.94E-06**	**3.45E-05**	ND
PFECA-G	ND	ND	ND	ND
Total Table 3+ Mass Discharge (17 compounds)[7]	**0.538**	**15.0**	**25.0**	**13.4**
Total Table 3+ Mass Discharge (20 Compounds)[7]	**0.567**	**15.9**	**25.9**	**17.9**

TABLE 15
ESTIMATED 2020 QUARTER 1 EVENT TABLE 3+ PFAS MASS DISCHARGE BY PATHWAY
Chemours Fayetteville Works, North Carolina

Pathway Number[1]	--	--	--
Pathway Name	Tar Heel Ferry Road Bridge[5]	Bladen Bluff[5]	Kings Bluff[5]
Location ID	CFR-TARHEEL	CFR-BLADEN	CFR-KINGS
Field Sample ID	CAP1Q20-CFR-TARHEEL-040220	CAP1Q20-CFR-BLADEN-040220	CAP1Q20-CFR-KINGS-040620
Sample Date and Time[2]	4/2/20 3:45 PM	4/2/20 2:45 PM	4/6/20 10:15 AM
Sample Type	Grab	Grab	Grab
Table 3+ Lab SOP Mass Discharge [6] ***(mg/s)***			
HFPO-DA	**1.48**	**1.33**	**0.79**
PFMOAA	**4.70**	**5.45**	**3.60**
PFO2HxA	**2.01**	**1.99**	**1.39**
PFO3OA	**0.523**	**0.478**	**0.336**
PFO4DA	ND	ND	ND
PFO5DA	ND	ND	ND
PMPA	**3.22**	**2.26**	**1.88**
PEPA	ND	ND	ND
PS Acid (Formerly PFESA-BP1)	ND	ND	ND
Hydro-PS Acid (Formerly PFESA-BP2)	ND	ND	ND
R-PSDA (Formerly Byproduct 4)	**1.14**	**1.10**	**0.98**
Hydrolyzed PSDA (Formerly Byproduct 5)	**3.49**	**1.99**	**1.15**
Byproduct 6 (Formerly Byproduct 6)	ND	ND	ND
NVHOS	**0.3**	ND	ND
EVE Acid	ND	ND	ND
Hydro-EVE Acid	ND	ND	ND
R-EVE	**0.89**	**0.372**	**0.565**
PES	ND	ND	ND
PFECA B	ND	ND	ND
PFECA-G	ND	ND	ND
Total Table 3+ Mass Discharge (17 compounds)[7]	**12.2**	**11.6**	**8.02**
Total Table 3+ Mass Discharge (20 Compounds)[7]	**17.4**	**14.6**	**10.6**

Notes:

Bold - Analyte detected above associated reporting limit

1 - Pathway 3 (Aerial Deposition on Water Features) and Pathway 8 (Offsite Adjacent and Downstream Groundwater) are not included in this table. Loading from Pathway 3 was estimated using relative concentration ratios from offsite wells, and loading from Pathway 8 was estimated by scaling to the upstream offsite groundwater loading. Further details are provided in Appendix J and K.

2 - For composite samples, the end of the composite sample time period is listed as the sample date and time.

3 - Total Table 3+ concentrations at the Intake River Water at the Facility are subtracted from Outfall 002 concentrations to compute the mass discharge at Outfall 002.

4 - Mass discharge for Onsite Groundwater (Pathway 5) is determined using calculations described in Appendix H. The lower and upper bounds on the mass discharge was calculated using the minimum and geometric mean hydraulic conductivity in the Black Creek Aquifer as described in Appendix H.

5 - Mass discharge values for grab samples collected at Tar Heel Ferry Road Bridge, Bladen Bluff, and Kings Bluff are determined based on instantaneous flow rates.

6 - Mass discharge by analyte is calculated based on Table 3+ concentrations in Tables 8 and 10 and 24-hour flow volumes reported in Table 9.

7 - Total Table 3+ mass discharge is based on the summed Total Table 3+ concentrations reported in Table 8 and Table 10, which are rounded to two significant figures.

mg/s - milligrams per second

SOP - standard operating procedure

TABLE 16
SUMMARY OF TOTAL TABLE 3+ MASS DISCHARGE BY PATHWAY
Chemours Fayetteville Works, North Carolina

Pathway	Pathway Name	Total Flow Volume on Sample Date (MGD)[1]	Total Table 3+ (17 Compounds)				Total Table 3+ (20 Compounds)			
			Total Table 3+ Concentration (ng/L)	Mass Discharge (mg/s)	Relative Contribution (Lower Bound)	Relative Contribution (Upper Bound)	Total Table 3+ Concentration (ng/L)	Mass Discharge (mg/s)	Relative Contribution (Lower Bound)	Relative Contribution (Upper Bound)
1	Upstream River Water and Groundwater[2]	3,400	ND	0.0	0.0%	0.0%	ND	0	0.0%	0.0%
2	Willis Creek	7.7	2,000	0.675	4.5%	2.7%	2,400	0.810	5.1%	3.12%
3	Aerial Deposition on Water Features	--	--	0.01	0.067%	0.040%	--	0.01	0.063%	0.039%
4	Outfall 002[3]	23	80	0.0808	0.54%	0.32%	190	0.192	1.2%	0.74%
5	Onsite Groundwater (Lower Bound)[4]	--	--	0.790	5.3%	--	--	0.795	5.0%	--
5	Onsite Groundwater (Upper Bound)[4]	--	--	10.8	--	43%	--	10.8	--	42%
6A	Seep A	0.25	260,000	2.84	19%	11%	290,000	3.16	20%	12%
6B	Seep B	0.22	310,000	2.97	20%	12%	340,000	3.26	20%	13%
6C	Seep C	0.091	310,000	1.24	8.3%	5.0%	320,000	1.28	8.0%	4.9%
6D	Seep D[5]	0.17	180,000	1.38	9.2%	5.5%	180,000	1.38	8.6%	5.3%
7	Old Outfall 002	0.93	110,000	4.49	30%	23%	110,000	4.49	28%	17%
8	Offsite Adjacent and Downstream Groundwater	--	--	0.00	0.00%	0.00%	--	0.00	0.00%	0.00%
9	Georgia Branch Creek	6.8	1,800	0.538	3.6%	2.2%	1,900	0.568	3.6%	2.2%
Calculated Total Table 3+ Discharge (mg/s) at Tar Heel (Lower Bound)		--	--	**15.0**	--	--	--	**16.0**	--	--
Calculated Total Table 3+ Discharge (mg/s) at Tar Heel (Upper Bound)		--	--	**25.0**	--	--	--	**26.0**	--	--
Measured Total Table 3+ Discharge (mg/s) at Tar Heel		**2,600**	**120**	**13.4**	--	--	**160**	**17.9**	--	--

Notes:

1 - Total flow volume is determined based on measurements taken over 24-hour sample collection period for all locations except Georgia Branch Creek and Willis Creek. At these locations, the total flow volume was estimated based on the instantaneous flow measurement.

2 - The volumetric flow rate for upstream river water and groundwater was estimated by subtracting inflows from Willis Creek, upwelling groundwater, seeps to the river, and Outfall 002 and by adding the river water intake from Chemours to the flow rate measurement from the W.O. Huske Dam.

3 - Total table 3+ concentrations at the Intake River Water at Facility location are subtracted from Outfall 002 concentrations to compute the mass discharge at Outfall 002.

4 - Mass Discharge for Onsite Groundwater was determined using calculations described in Appendix H. The lower and upper bounds on the mass discharge were calculated using the minimum and geometric mean hydraulic conductivity in the Black Creek Aquifer as described in Appendix H.

5 - The maximum flow rate that can be accurately measured for the flume installed at Seep D is 120 GPM. This maximum flow rate was assumed any time the measured water level indicated a flow rate greater than 120 GPM. A larger flume was installed at Seep D after this sampling event.

ND - No Table 3+ compounds were detected above the associated reporting limits

TABLE 17
CAPE FEAR RIVER TOTAL TABLE 3+ PFAS
MASS LOADING MODEL PATHWAY APPORTIONMENT UPDATE
ESTIMATED LOADING PERCENTAGE PER PATHWAY
Chemours Fayetteville Works, North Carolina

Pathway	May 2019 (dry)1	June 2019 (wet)1	Sep 2019 (dry)2	Nov 2019 (wet)3	April 2020 (dry)4			
	Total Table 3+ (20 Compounds)				Total Table 3+ (17 Compounds)		Total Table 3+ (20 Compounds)	
					Lower	Upper	Lower	Upper
[1] Upstream River Water and Groundwater	4%	15%	8%	7%	0%	0%	0%	0%
[2] Willis Creek	10%	4%	3%	5%	4%	3%	5%	3%
[3] Aerial Deposition on Water Features	<2%	<2%	<2%	<2%	<1%	<1%	<1%	<1%
[4] Outfall 002	4%	7%	4%	8%	1%	<1%	1%	1%
[5] Onsite Groundwater	22%	17%	14%	14%	5%	43%	5%	42%
[6] Seeps	32%	24%	41%	43%	56%	34%	57%	35%
[7] Old Outfall 002	23%	29%	27%	22%	30%	23%	28%	17%
[8] Offsite Adjacent and Downstream Groundwater	<2%	<2%	<2%	<2%	0%	0%	0%	0%
[9] Georgia Branch Creek	4%	3%	2%	1%	4%	2%	4%	2%

Notes:

1. Model estimated Total Table 3+ mass discharge for May 2019 and June 2019 are presented in the Cape Fear River PFAS Mass Loading Model Assessment Update - September 2019 (Geosyntec, 2019).
2. Model estimated Total Table 3+ mass discharge for September 2019 is presented in the Cape Fear River PFAS Mass Loading Model Assessment and Paragraph 11.1 Characterization of PFAS at Intakes (Geosyntec, 2019).
3. Model estimated Total Table 3+ mass discharge for November 2019 is presented in the Mass Loading Model Update - November 2019 Sampling Event (Geosyntec, 2020).
4. Model estimated Total Table 3+ mass discharge for April 2020 is presented in this report.

TABLE 18
SENSITIVITY IN MASS LOADING MODEL INPUT PARAMETERS BY PATHWAY
Chemours Fayetteville Works, North Carolina

Transport Pathway Number	Potential PFAS Transport Pathway	Model Input Parameter(s)	Uncertainty	Model Sensitivity
1	Upstream River and Groundwater	Flow and Table 3+ PFAS Concentrations	Not Evaluated	Not Evaluated
2	Willis Creek	Flow and Table 3+ PFAS Concentrations	Flow Velocity Method at least ± 10% Concentrations ± 20%	Not Evaluated
3	Aerial Deposition on River	Depositon rates, Table 3+ Concentrations, width of the river, river velocity	Not Evaluated	Not Evaluated
4	Outfall 002	Flow and Table 3+ PFAS Concentrations	Flumes ± 10% Concentrations ± 20%	Low
5	Onsite Groundwater	Hydraulic conductivity, hydraulic gradients, and Table 3+ Concentrations	Hydraulic Conductivity ± order of magnitude Concentrations ± 20%	High
6	Seeps	Flow and Table 3+ PFAS Concentrations	Flumes ± 10% Concentrations ± 20%	Moderate
7	Old Outfall 002	Flow and Table 3+ PFAS Concentrations	Flumes ± 10% Concentrations ± 20%	Moderate
8	Adjacent and Downstream Groundwater	Flow and Table 3+ PFAS Concentrations	Not Evaluated	Not Evaluated
9	Georgia Branch Creek	Flow and Table 3+ PFAS Concentrations	Not Evaluated	Not Evaluated

TABLE 19A
MASS LOADING MODEL SENSITIVITY ASSESSMENT - GROUNDWATER LOWER BOUND SCENARIO SET

	Pathway Being Varied[1]	Flow Variation[2] Low	Flow Variation[2] High	Concentration Variation[2] Low	Concentration Variation[2] High	Model Estimated Total Mass Discharge (mg/s)	Difference from Model Base Case (mg/s)	Percent Difference from Model Base Case	Upstream River Water and Groundwater	Willis Creek	Aerial Deposition to Cape Fear River	Outfall 002	Onsite Groundwater	Onsite Seeps	Old Outfall	Offsite Adjacent and Downstream Groundwater	Georgia Branch Creek
	Estimated per Pathway Mass Discharge (mg/s)																
Total Table 3+ (17 Compounds)	**Model Base Case: Onsite Groundwater Lower Bound Hydraulic Conductivity[3]**					15.0	0.0	0.0%	0.0	0.67	0.01	0.08	0.79	8.43	4.49	0.0	0.54
	Onsite Groundwater	--	--	✓	--	14.9	-0.2	-1%	0.0	0.67	0.01	0.08	0.63	8.43	4.49	0.0	0.54
		--	--	--	✓	15.2	0.2	1%	0.0	0.67	0.01	0.08	0.95	8.43	4.49	0.0	0.54
	Outfall 002	✓	--	--	--	15.0	-0.01	-0.1%	0.0	0.67	0.01	0.07	0.79	8.43	4.49	0.0	0.54
		--	✓	--	--	15.0	0.00	0.0%	0.0	0.67	0.01	0.08	0.79	8.43	4.49	0.0	0.54
		--	--	✓	--	15.0	-0.02	-0.1%	0.0	0.67	0.01	0.06	0.79	8.43	4.49	0.0	0.54
		--	--	--	✓	15.0	0.02	0.1%	0.0	0.67	0.01	0.10	0.79	8.43	4.49	0.0	0.54
	Seeps	✓	--	--	--	14.2	-0.8	-6%	0.0	0.67	0.01	0.08	0.79	7.59	4.49	0.0	0.54
		--	✓	--	--	15.9	0.8	5%	0.0	0.67	0.01	0.08	0.79	9.28	4.49	0.0	0.54
		--	--	✓	--	13.3	-1.7	-13%	0.0	0.67	0.01	0.08	0.79	6.75	4.49	0.0	0.54
		--	--	--	✓	16.7	1.7	10%	0.0	0.67	0.01	0.08	0.79	10.12	4.49	0.0	0.54
	Old Outfall	✓	--	--	--	14.6	-0.4	-3%	0.0	0.67	0.01	0.08	0.79	8.43	4.04	0.0	0.54
		--	✓	--	--	15.5	0.4	3%	0.0	0.67	0.01	0.08	0.79	8.43	4.94	0.0	0.54
		--	--	✓	--	14.1	-0.9	-6%	0.0	0.67	0.01	0.08	0.79	8.43	3.59	0.0	0.54
		--	--	--	✓	15.9	0.9	6%	0.0	0.67	0.01	0.08	0.79	8.43	5.39	0.0	0.54

TABLE 19A
MASS LOADING MODEL SENSITIVITY ASSESSMENT - GROUNDWATER LOWER BOUND SCENARIO SET

	Pathway Being Varied[1]	Flow Variation[2]		Concentration Variation[2]		Model Estimated Total Mass Discharge (mg/s)	Difference from Model Base Case (mg/s)	Percent Difference from Model Base Case	Upstream River Water and Groundwater	Willis Creek	Aerial Deposition to Cape Fear River	Outfall 002	Onsite Groundwater	Onsite Seeps	Old Outfall	Offsite Adjacent and Downstream Groundwater	Georgia Branch Creek
		Low	High	Low	High												
Estimated per Pathway Relative Contributions to Mass Discharge																	
Total Table 3+ (17 Compounds)	**Model Base Case: Onsite Groundwater Lower Bound Hydraulic Conductivity[3]**					15.0	0.00	0.00%	0.0%	4.5%	0.1%	0.5%	5.3%	56.2%	29.9%	0.0%	3.6%
	Onsite Groundwater	--	--	✓	--	14.9	-0.2	-1%	0.0%	4.5%	0.1%	0.5%	4.3%	56.7%	30.2%	0.0%	3.6%
		--	--	--	✓	15.2	0.2	1%	0.0%	4.4%	0.1%	0.5%	6.2%	55.6%	29.6%	0.0%	3.5%
	Outfall 002	✓	--	--	--	15.0	-0.01	-0.1%	0.0%	4.5%	0.1%	0.5%	5.3%	56.2%	29.9%	0.0%	3.6%
		--	✓	--	--	15.0	0.00	0.00%	0.0%	4.5%	0.1%	0.5%	5.3%	56.2%	29.9%	0.0%	3.6%
		--	--	✓	--	15.0	-0.02	-0.1%	0.0%	4.5%	0.1%	0.4%	5.3%	56.2%	29.9%	0.0%	3.6%
		--	--	--	✓	15.0	0.02	0.1%	0.0%	4.5%	0.1%	0.6%	5.3%	56.1%	29.9%	0.0%	3.6%
	Seeps	✓	--	--	--	14.2	-0.8	-6%	0.0%	4.8%	0.1%	0.6%	5.6%	53.5%	31.7%	0.0%	3.8%
		--	✓	--	--	15.9	0.8	5%	0.0%	4.3%	0.1%	0.5%	5.0%	58.5%	28.3%	0.0%	3.4%
		--	--	✓	--	13.3	-1.7	-13%	0.0%	5.1%	0.1%	0.6%	5.9%	50.6%	33.7%	0.0%	4.0%
		--	--	--	✓	16.7	1.7	10%	0.0%	4.0%	0.1%	0.5%	4.7%	60.6%	26.9%	0.0%	3.2%
	Old Outfall	✓	--	--	--	14.6	-0.4	-3%	0.0%	4.6%	0.1%	0.6%	5.4%	57.9%	27.8%	0.0%	3.7%
		--	✓	--	--	15.5	0.4	3%	0.0%	4.4%	0.1%	0.5%	5.1%	54.5%	32.0%	0.0%	3.5%
		--	--	✓	--	14.1	-0.9	-6%	0.0%	4.8%	0.1%	0.6%	5.6%	59.7%	25.5%	0.0%	3.8%
		--	--	--	✓	15.9	0.9	6%	0.0%	4.2%	0.1%	0.5%	5.0%	53.0%	33.9%	0.0%	3.4%

TABLE 19A
MASS LOADING MODEL SENSITIVITY ASSESSMENT - GROUNDWATER LOWER BOUND SCENARIO SET

	Pathway Being Varied[1]	Flow Variation[2] Low	Flow Variation[2] High	Concentration Variation[2] Low	Concentration Variation[2] High	Model Estimated Total Mass Discharge (mg/s)	Difference from Model Base Case (mg/s)	Percent Difference from Model Base Case	Upstream River Water and Groundwater	Willis Creek	Aerial Deposition to Cape Fear River	Outfall 002	Onsite Groundwater	Onsite Seeps	Old Outfall	Offsite Adjacent and Downstream Groundwater	Georgia Branch Creek
									Estimated per Pathway Mass Discharge (mg/s)								
Total Table 3+ (20 Compounds)	Model Base Case: Onsite Groundwater Lower Bound Hydraulic Conductivity[3]					16.0	0.00	0.00%	0.0	0.81	0.01	0.19	0.80	9.09	4.49	0.0	0.57
	Onsite Groundwater	--	--	✓	--	15.8	-0.2	-1%	0.0	0.81	0.01	0.19	0.64	9.09	4.49	0.0	0.57
		--	--	--	✓	16.1	0.2	1%	0.0	0.81	0.01	0.19	0.95	9.09	4.49	0.0	0.57
	Outfall 002	✓	--	--	--	15.9	-0.02	-0.1%	0.0	0.81	0.01	0.17	0.80	9.09	4.49	0.0	0.57
		--	✓	--	--	16.0	0.00	0.00%	0.0	0.81	0.01	0.19	0.80	9.09	4.49	0.0	0.57
		--	--	✓	--	15.9	-0.04	-0.2%	0.0	0.81	0.01	0.15	0.80	9.09	4.49	0.0	0.57
		--	--	--	✓	16.0	0.04	0.2%	0.0	0.81	0.01	0.23	0.80	9.09	4.49	0.0	0.57
	Seeps	✓	--	--	--	15.0	-0.9	-6%	0.0	0.81	0.01	0.19	0.80	8.18	4.49	0.0	0.57
		--	✓	--	--	16.9	0.9	5%	0.0	0.81	0.01	0.19	0.80	10.00	4.49	0.0	0.57
		--	--	✓	--	14.1	-1.8	-13%	0.0	0.81	0.01	0.19	0.80	7.27	4.49	0.0	0.57
		--	--	--	✓	17.8	1.8	10%	0.0	0.81	0.01	0.19	0.80	10.91	4.49	0.0	0.57
	Old Outfall	✓	--	--	--	15.5	-0.4	-3%	0.0	0.81	0.01	0.19	0.80	9.09	4.04	0.0	0.57
		--	✓	--	--	16.4	0.4	3%	0.0	0.81	0.01	0.19	0.80	9.09	4.94	0.0	0.57
		--	--	✓	--	15.1	-0.9	-6%	0.0	0.81	0.01	0.19	0.80	9.09	3.59	0.0	0.57
		--	--	--	✓	16.9	0.9	5%	0.0	0.81	0.01	0.19	0.80	9.09	5.39	0.0	0.57

TABLE 19A
MASS LOADING MODEL SENSITIVITY ASSESSMENT - GROUNDWATER LOWER BOUND SCENARIO SET

	Pathway Being Varied[1]	Flow Variation[2]		Concentration Variation[2]		Model Estimated Total Mass Discharge (mg/s)	Difference from Model Base Case (mg/s)	Percent Difference from Model Base Case	Upstream River Water and Groundwater	Willis Creek	Aerial Deposition to Cape Fear River	Outfall 002	Onsite Groundwater	Onsite Seeps	Old Outfall	Offsite Adjacent and Downstream Groundwater	Georgia Branch Creek
		Low	High	Low	High												
Estimated per Pathway Relative Contributions to Mass Discharge																	
Total Table 3+ (20 Compounds)	Model Base Case: Onsite Groundwater Lower Bound Hydraulic Conductivity[3]					16.0	0.00	0.00%	0.0%	5.1%	0.1%	1.2%	5.0%	57.0%	28.2%	0.0%	3.6%
	Onsite Groundwater	--	--	✓	--	15.8	-0.2	-1%	0.0%	5.1%	0.1%	1.2%	4.0%	57.5%	28.4%	0.0%	3.6%
		--	--	--	✓	16.1	0.2	1%	0.0%	5.0%	0.1%	1.2%	5.9%	56.4%	27.9%	0.0%	3.5%
	Outfall 002	✓	--	--	--	15.9	-0.02	-0.1%	0.0%	5.1%	0.1%	1.1%	5.0%	57.0%	28.2%	0.0%	3.6%
		--	✓	--	--	16.0	0.00	0.00%	0.0%	5.1%	0.1%	1.2%	5.0%	57.0%	28.2%	0.0%	3.6%
		--	--	✓	--	15.9	-0.04	-0.2%	0.0%	5.1%	0.1%	1.0%	5.0%	57.1%	28.2%	0.0%	3.6%
		--	--	--	✓	16.0	0.04	0.2%	0.0%	5.1%	0.1%	1.4%	5.0%	56.8%	28.1%	0.0%	3.5%
	Seeps	✓	--	--	--	15.0	-0.9	-6%	0.0%	5.4%	0.1%	1.3%	5.3%	54.4%	29.9%	0.0%	3.8%
		--	✓	--	--	16.9	0.9	5%	0.0%	4.8%	0.1%	1.1%	4.7%	59.3%	26.6%	0.0%	3.4%
		--	--	✓	--	14.1	-1.8	-13%	0.0%	5.7%	0.1%	1.4%	5.6%	51.4%	31.8%	0.0%	4.0%
		--	--	--	✓	17.8	1.8	10%	0.0%	4.6%	0.1%	1.1%	4.5%	61.4%	25.3%	0.0%	3.2%
	Old Outfall	✓	--	--	--	15.5	-0.4	-3%	0.0%	5.2%	0.1%	1.2%	5.1%	58.6%	26.1%	0.0%	3.7%
		--	✓	--	--	16.4	0.4	3%	0.0%	4.9%	0.1%	1.2%	4.8%	55.4%	30.1%	0.0%	3.5%
		--	--	✓	--	15.1	-0.9	-6%	0.0%	5.4%	0.1%	1.3%	5.3%	60.4%	23.9%	0.0%	3.8%
		--	--	--	✓	16.9	0.9	5%	0.0%	4.8%	0.1%	1.1%	4.7%	53.9%	32.0%	0.0%	3.4%

Notes:

1 - The sensitivity analysis presented here is performed for pathways Onsite Groundwater, Outfall 002, Seeps and Old Outfall. The sensitivity of mass loading model results to variations in each pathway's flow and concentration data are assessed on each pathway independently.

2 - The estimated ranges of potential uncertainty in each pathways' flow and concentration data are listed in Table 18.

3 - The base case model scenario presented here uses the lower bound hydraulic conductivity value.

Abbreviations:

mg/s - milligrams per second

TABLE 19B
MASS LOADING MODEL SENSITIVITY ASSESSMENT - GROUNDWATER UPPER BOUND SCENARIO SET

	Pathway Being Varied[1]	Flow Variation[2]		Concentration Variation[2]		Model Estimated Total Mass Discharge (mg/s)	Difference from Model Base Case (mg/s)	Percent Difference from Model Base Case	Upstream River Water and Groundwater	Willis Creek	Aerial Deposition to Cape Fear River	Outfall 002	Onsite Groundwater	Onsite Seeps	Old Outfall	Offsite Adjacent and Downstream Groundwater	Georgia Branch Creek
		Low	High	Low	High												
	Estimated per Pathway Mass Discharge (mg/s)																
Total Table 3+ (17 Compounds)	Model Base Case: Onsite Groundwater Upper Bound Hydraulic Conductivity[3]					25.0	0.00	0.00%	0.0	0.67	0.01	0.08	10.76	8.43	4.49	0.0	0.54
	Onsite Groundwater	--	--	✓	--	22.8	-2.2	-9%	0.0	0.67	0.01	0.08	8.61	8.43	4.49	0.0	0.54
		--	--	--	✓	27.1	2.2	8%	0.0	0.67	0.01	0.08	12.92	8.43	4.49	0.0	0.54
	Outfall 002	✓	--	--	--	25.0	-0.01	-0.03%	0.0	0.67	0.01	0.07	10.76	8.43	4.49	0.0	0.54
		--	✓	--	--	25.0	0.00	0.00%	0.0	0.67	0.01	0.08	10.76	8.43	4.49	0.0	0.54
		--	--	✓	--	25.0	-0.02	-0.1%	0.0	0.67	0.01	0.06	10.76	8.43	4.49	0.0	0.54
		--	--	--	✓	25.0	0.02	0.06%	0.0	0.67	0.01	0.10	10.76	8.43	4.49	0.0	0.54
	Seeps	✓	--	--	--	24.2	-0.8	-3%	0.0	0.67	0.01	0.08	10.76	7.59	4.49	0.0	0.54
		--	✓	--	--	25.8	0.8	3%	0.0	0.67	0.01	0.08	10.76	9.28	4.49	0.0	0.54
		--	--	✓	--	23.3	-1.7	-7%	0.0	0.67	0.01	0.08	10.76	6.75	4.49	0.0	0.54
		--	--	--	✓	26.7	1.7	6%	0.0	0.67	0.01	0.08	10.76	10.12	4.49	0.0	0.54
	Old Outfall	✓	--	--	--	24.5	-0.4	-2%	0.0	0.67	0.01	0.08	10.76	8.43	4.04	0.0	0.54
		--	✓	--	--	25.4	0.4	2%	0.0	0.67	0.01	0.08	10.76	8.43	4.94	0.0	0.54
		--	--	✓	--	24.1	-0.9	-4%	0.0	0.67	0.01	0.08	10.76	8.43	3.59	0.0	0.54
		--	--	--	✓	25.9	0.9	3%	0.0	0.67	0.01	0.08	10.76	8.43	5.39	0.0	0.54

TABLE 19B
MASS LOADING MODEL SENSITIVITY ASSESSMENT - GROUNDWATER UPPER BOUND SCENARIO SET

	Pathway Being Varied[1]	Flow Variation[2] Low	Flow Variation[2] High	Concentration Variation[2] Low	Concentration Variation[2] High	Model Estimated Total Mass Discharge (mg/s)	Difference from Model Base Case (mg/s)	Percent Difference from Model Base Case	Upstream River Water and Groundwater	Willis Creek	Aerial Deposition to Cape Fear River	Outfall 002	Onsite Groundwater	Onsite Seeps	Old Outfall	Offsite Adjacent and Downstream Groundwater	Georgia Branch Creek
									Estimated per Pathway Relative Contributions to Mass Discharge								
Total Table 3+ (17 Compounds)	**Model Base Case: Onsite Groundwater Upper Bound Hydraulic Conductivity[3]**					25.0	0.00	0.00%	0.0%	2.7%	0.0%	0.3%	43.1%	33.7%	18.0%	0.0%	2.2%
	Onsite Groundwater	--	--	✓	--	22.8	-2.2	-9%	0.0%	3.0%	0.0%	0.4%	37.7%	36.9%	19.7%	0.0%	2.4%
		--	--	--	✓	27.1	2.2	8%	0.0%	2.5%	0.0%	0.3%	47.6%	31.1%	16.6%	0.0%	2.0%
	Outfall 002	✓	--	--	--	25.0	-0.01	-0.03%	0.0%	2.7%	0.0%	0.3%	43.1%	33.8%	18.0%	0.0%	2.2%
		--	✓	--	--	25.0	0.00	0.00%	0.0%	2.7%	0.0%	0.3%	43.1%	33.7%	18.0%	0.0%	2.2%
		--	--	✓	--	25.0	-0.02	-0.1%	0.0%	2.7%	0.0%	0.3%	43.1%	33.8%	18.0%	0.0%	2.2%
		--	--	--	✓	25.0	0.02	0.1%	0.0%	2.7%	0.0%	0.4%	43.0%	33.7%	18.0%	0.0%	2.1%
	Seeps	✓	--	--	--	24.2	-0.8	-3%	0.0%	2.8%	0.0%	0.3%	44.6%	31.4%	18.6%	0.0%	2.2%
		--	✓	--	--	25.8	0.8	3%	0.0%	2.6%	0.0%	0.3%	41.7%	35.9%	17.4%	0.0%	2.1%
		--	--	✓	--	23.3	-1.7	-7%	0.0%	2.9%	0.0%	0.3%	46.2%	28.9%	19.3%	0.0%	2.3%
		--	--	--	✓	26.7	1.7	6%	0.0%	2.5%	0.0%	0.3%	40.3%	37.9%	16.8%	0.0%	2.0%
	Old Outfall	✓	--	--	--	24.5	-0.4	-2%	0.0%	2.7%	0.0%	0.3%	43.9%	34.4%	16.5%	0.0%	2.2%
		--	✓	--	--	25.4	0.4	2%	0.0%	2.6%	0.0%	0.3%	42.3%	33.1%	19.4%	0.0%	2.1%
		--	--	✓	--	24.1	-0.9	-4%	0.0%	2.8%	0.0%	0.3%	44.7%	35.0%	14.9%	0.0%	2.2%
		--	--	--	✓	25.9	0.9	3%	0.0%	2.6%	0.0%	0.3%	41.6%	32.6%	20.8%	0.0%	2.1%

TABLE 19B
MASS LOADING MODEL SENSITIVITY ASSESSMENT - GROUNDWATER UPPER BOUND SCENARIO SET

	Pathway Being Varied[1]	Flow Variation[2] Low	Flow Variation[2] High	Concentration Variation[2] Low	Concentration Variation[2] High	Model Estimated Total Mass Discharge (mg/s)	Difference from Model Base Case (mg/s)	Percent Difference from Model Base Case	Upstream River Water and Groundwater	Willis Creek	Aerial Deposition to Cape Fear River	Outfall 002	Onsite Groundwater	Onsite Seeps	Old Outfall	Offsite Adjacent and Downstream Groundwater	Georgia Branch Creek
									Estimated per Pathway Mass Discharge (mg/s)								
Total Table 3+ (20 Compounds)	Model Base Case: Onsite Groundwater Upper Bound Hydraulic Conductivity[3]					26.0	0.00	0.00%	0.0	0.81	0.01	0.19	10.80	9.09	4.49	0.0	0.57
	Onsite Groundwater	--	--	✓	--	23.8	-2.2	-9%	0.0	0.81	0.01	0.19	8.64	9.09	4.49	0.0	0.57
		--	--	--	✓	28.1	2.2	8%	0.0	0.81	0.01	0.19	12.96	9.09	4.49	0.0	0.57
	Outfall 002	✓	--	--	--	25.9	-0.02	-0.1%	0.0	0.81	0.01	0.17	10.80	9.09	4.49	0.0	0.57
		--	✓	--	--	26.0	0.00	0.00%	0.0	0.81	0.01	0.19	10.80	9.09	4.49	0.0	0.57
		--	--	✓	--	25.9	-0.04	-0.1%	0.0	0.81	0.01	0.15	10.80	9.09	4.49	0.0	0.57
		--	--	--	✓	26.0	0.04	0.1%	0.0	0.81	0.01	0.23	10.80	9.09	4.49	0.0	0.57
	Seeps	✓	--	--	--	25.1	-0.9	-4%	0.0	0.81	0.01	0.19	10.80	8.18	4.49	0.0	0.57
		--	✓	--	--	26.9	0.9	3%	0.0	0.81	0.01	0.19	10.80	10.00	4.49	0.0	0.57
		--	--	✓	--	24.1	-1.8	-8%	0.0	0.81	0.01	0.19	10.80	7.27	4.49	0.0	0.57
		--	--	--	✓	27.8	1.8	7%	0.0	0.81	0.01	0.19	10.80	10.91	4.49	0.0	0.57
	Old Outfall	✓	--	--	--	25.5	-0.4	-2%	0.0	0.81	0.01	0.19	10.80	9.09	4.04	0.0	0.57
		--	✓	--	--	26.4	0.4	2%	0.0	0.81	0.01	0.19	10.80	9.09	4.94	0.0	0.57
		--	--	✓	--	25.1	-0.9	-4%	0.0	0.81	0.01	0.19	10.80	9.09	3.59	0.0	0.57
		--	--	--	✓	26.9	0.9	3%	0.0	0.81	0.01	0.19	10.80	9.09	5.39	0.0	0.57

TABLE 19B
MASS LOADING MODEL SENSITIVITY ASSESSMENT - GROUNDWATER UPPER BOUND SCENARIO SET

	Pathway Being Varied[1]	Flow Variation[2] Low	Flow Variation[2] High	Concentration Variation[2] Low	Concentration Variation[2] High	Model Estimated Total Mass Discharge (mg/s)	Difference from Model Base Case (mg/s)	Percent Difference from Model Base Case	Upstream River Water and Groundwater	Willis Creek	Aerial Deposition to Cape Fear River	Outfall 002	Onsite Groundwater	Onsite Seeps	Old Outfall	Offsite Adjacent and Downstream Groundwater	Georgia Branch Creek
	Estimated per Pathway Relative Contributions to Mass Discharge																
Total Table 3+ (20 Compounds)	**Model Base Case: Onsite Groundwater Upper Bound Hydraulic Conductivity[3]**					26.0	0.00	0.00%	0.0%	3.1%	0.0%	0.7%	41.6%	35.0%	17.3%	0.0%	2.2%
	Onsite Groundwater	--	--	✓	--	23.8	-2.2	-9%	0.0%	3.4%	0.0%	0.8%	36.3%	38.2%	18.9%	0.0%	2.4%
		--	--	--	✓	28.1	2.2	8%	0.0%	2.9%	0.0%	0.7%	46.1%	32.3%	16.0%	0.0%	2.0%
	Outfall 002	✓	--	--	--	25.9	-0.02	-0.1%	0.0%	3.1%	0.0%	0.7%	41.6%	35.0%	17.3%	0.0%	2.2%
		--	✓	--	--	26.0	0.00	0.0%	0.0%	3.1%	0.0%	0.7%	41.6%	35.0%	17.3%	0.0%	2.2%
		--	--	✓	--	25.9	-0.04	-0.1%	0.0%	3.1%	0.0%	0.6%	41.7%	35.1%	17.3%	0.0%	2.2%
		--	--	--	✓	26.0	0.04	0.1%	0.0%	3.1%	0.0%	0.9%	41.5%	35.0%	17.3%	0.0%	2.2%
	Seeps	✓	--	--	--	25.1	-0.9	-4%	0.0%	3.2%	0.0%	0.8%	43.1%	32.7%	17.9%	0.0%	2.3%
		--	✓	--	--	26.9	0.9	3%	0.0%	3.0%	0.0%	0.7%	40.2%	37.2%	16.7%	0.0%	2.1%
		--	--	✓	--	24.1	-1.8	-8%	0.0%	3.4%	0.0%	0.8%	44.7%	30.1%	18.6%	0.0%	2.4%
		--	--	--	✓	27.8	1.8	7%	0.0%	2.9%	0.0%	0.7%	38.9%	39.3%	16.2%	0.0%	2.0%
	Old Outfall	✓	--	--	--	25.5	-0.4	-2%	0.0%	3.2%	0.0%	0.8%	42.3%	35.6%	15.9%	0.0%	2.2%
		--	✓	--	--	26.4	0.4	2%	0.0%	3.1%	0.0%	0.7%	40.9%	34.4%	18.7%	0.0%	2.1%
		--	--	✓	--	25.1	-0.9	-4%	0.0%	3.2%	0.0%	0.8%	43.1%	36.3%	14.3%	0.0%	2.3%
		--	--	--	✓	26.9	0.9	3%	0.0%	3.0%	0.0%	0.7%	40.2%	33.8%	20.1%	0.0%	2.1%

Notes:

1 - The sensitivity analysis presented here is performed for pathways Onsite Groundwater, Outfall 002, Seeps and Old Outfall. The sensitivity of mass loading model results to variations in each pathway's flow and concentration data are assessed on each pathway independently.

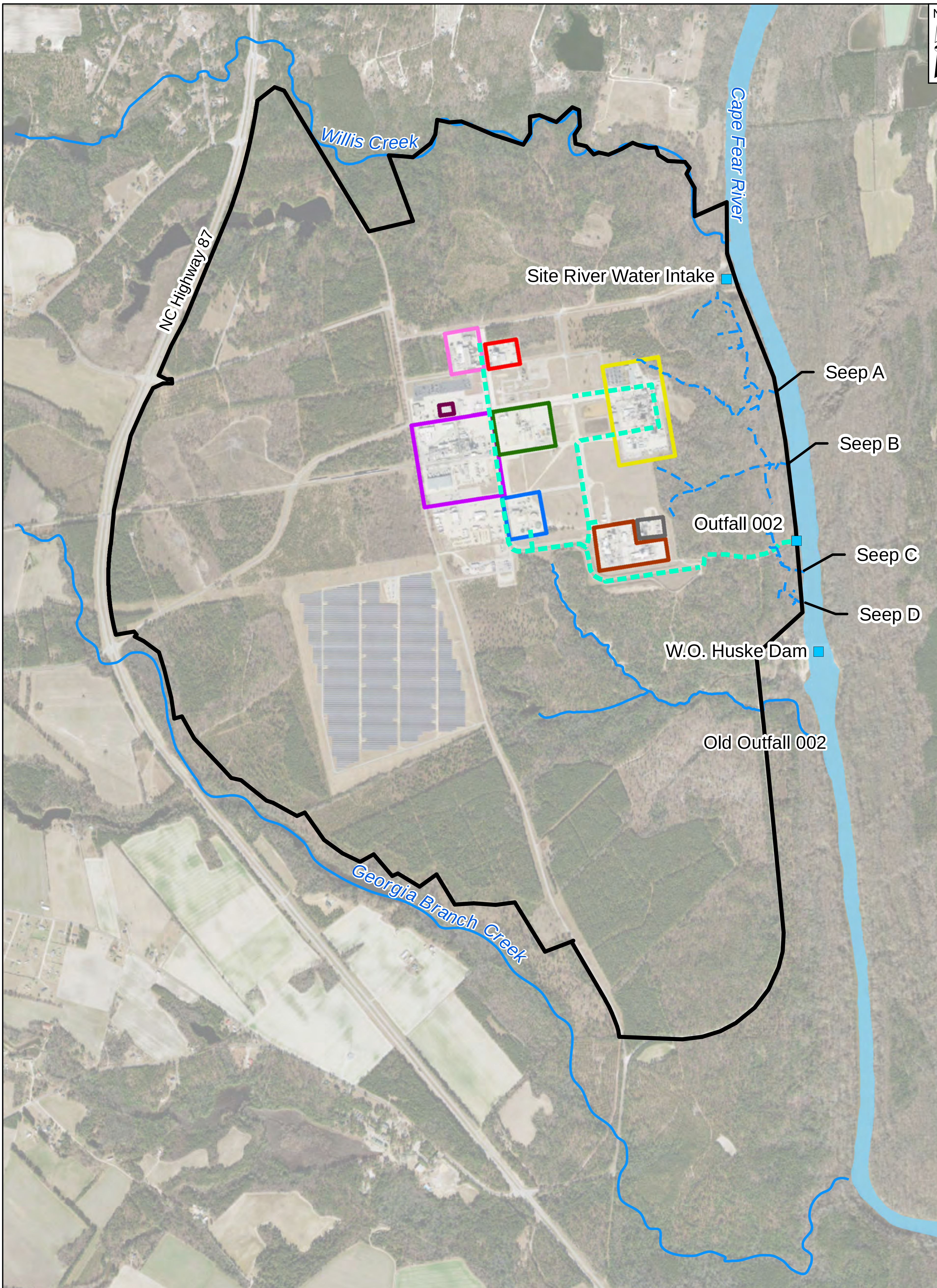
2 - The estimated ranges of potential uncertainty in each pathways' flow and concentration data are listed in Table 18.

3 - The base case model scenario presented here uses the upper bound hydraulic conductivity value.

Abbreviations:

mg/s - milligrams per second

FIGURES



Legend

- Site Features
- Site Boundary
- Nearby Tributary
- Observed Seep (Natural Drainage)
- Site Conveyance Network

Areas at Site

- Chemours Monomers IXM
- Chemours Polymer Processing Aid Area
- DuPont Polyvinyl Fluoride Leased Area
- Former DuPont PMDF Area
- Kuraray SentryGlas® Leased Area
- Kuraray Trosifol® Leased Area
- Wastewater Treatment Plant
- Power - Filtered and Demineralized Water Production
- Kuraray Laboratory

Notes:
1. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS (MajorHydro shapefile).
2. Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEROGRID, IGN, and the GIS User Community

1,000 500 0 1,000 Feet

Site Location Map

Chemours Fayetteville Works, North Carolina

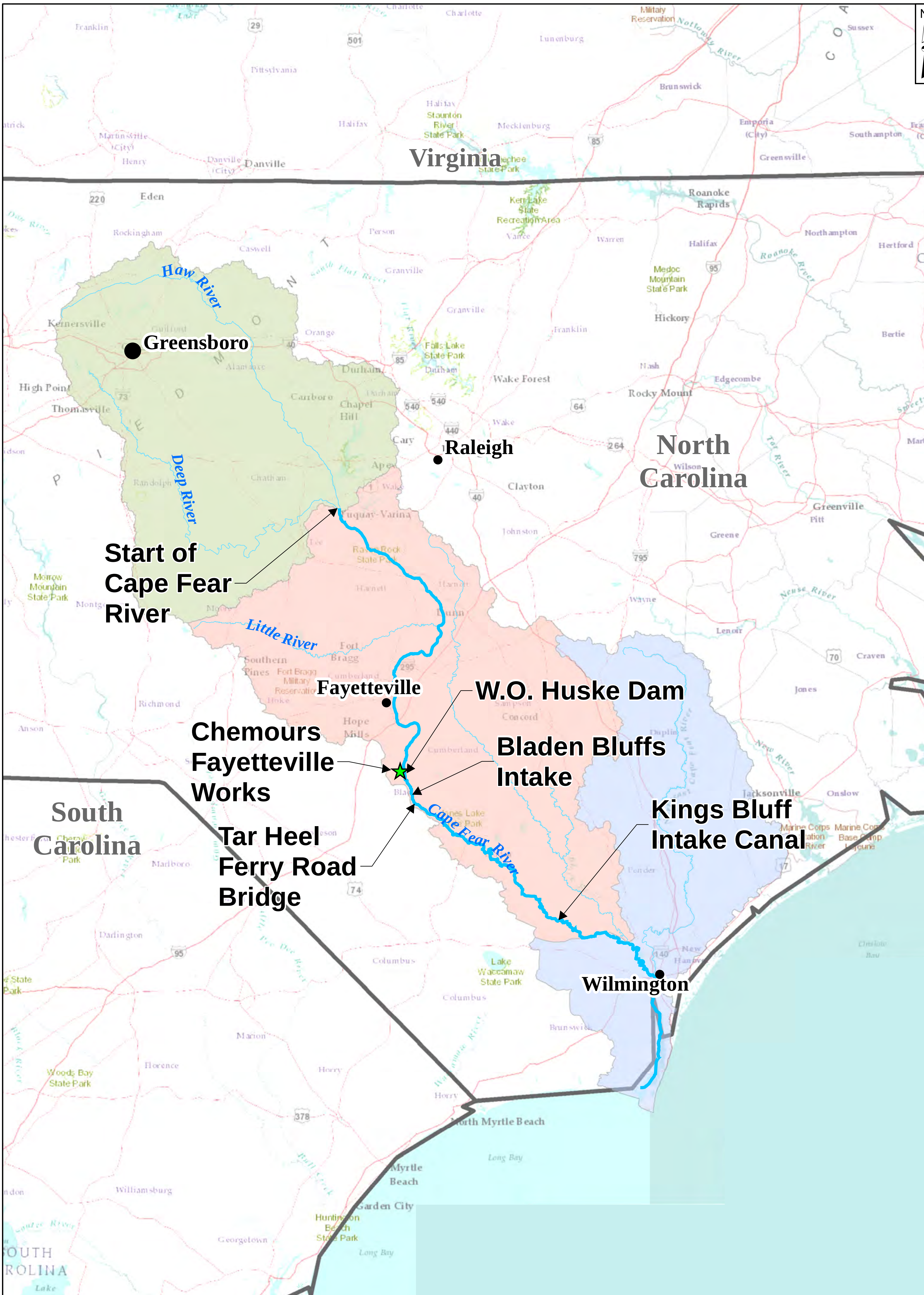
Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure 1

Raleigh | July 2020

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend

Chemours Fayetteville Works

Upper Basin

Middle Basin

Lower Basin

Note:
Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US

20 10 0 20 Miles

Cape Fear River Watershed and Downstream Drinking Water Intakes

Chemours Fayetteville Works, North Carolina

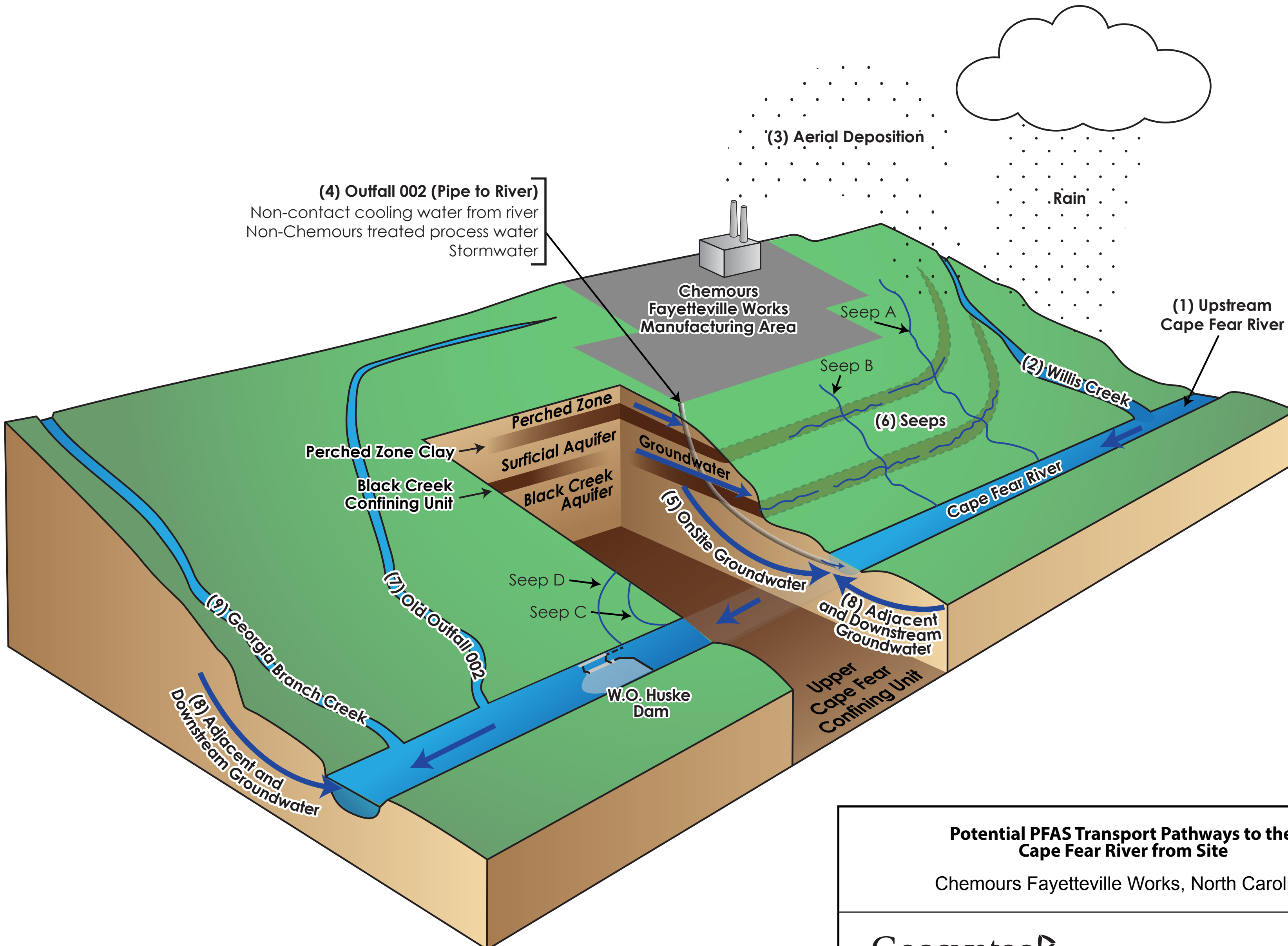
Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Figure 2

Raleigh

July 2020



Note: Image is conceptual and is not to scale

Potential PFAS Transport Pathways to the Cape Fear River from Site

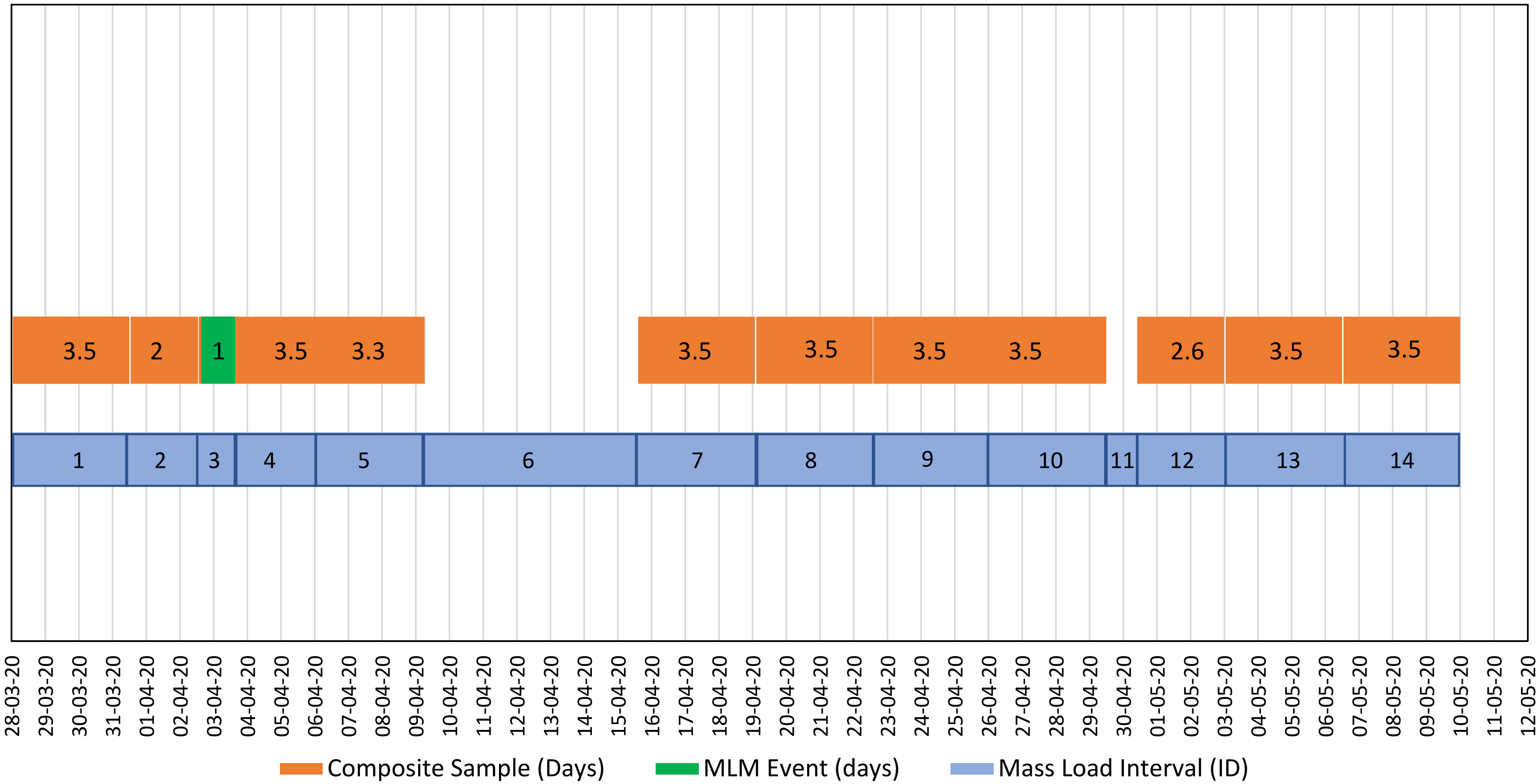
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Figure 3

Raleigh, NC | July 2020



Abbrevations:

MLM - mass loading model

Notes:

Mass load intervals are the basis upon which the mass loads in the Cape Fear River for the entire reporting period are estimated.

Sample Collection and Mass Load Interval Calculation Timeline at Tar Heel Ferry Road Bridge

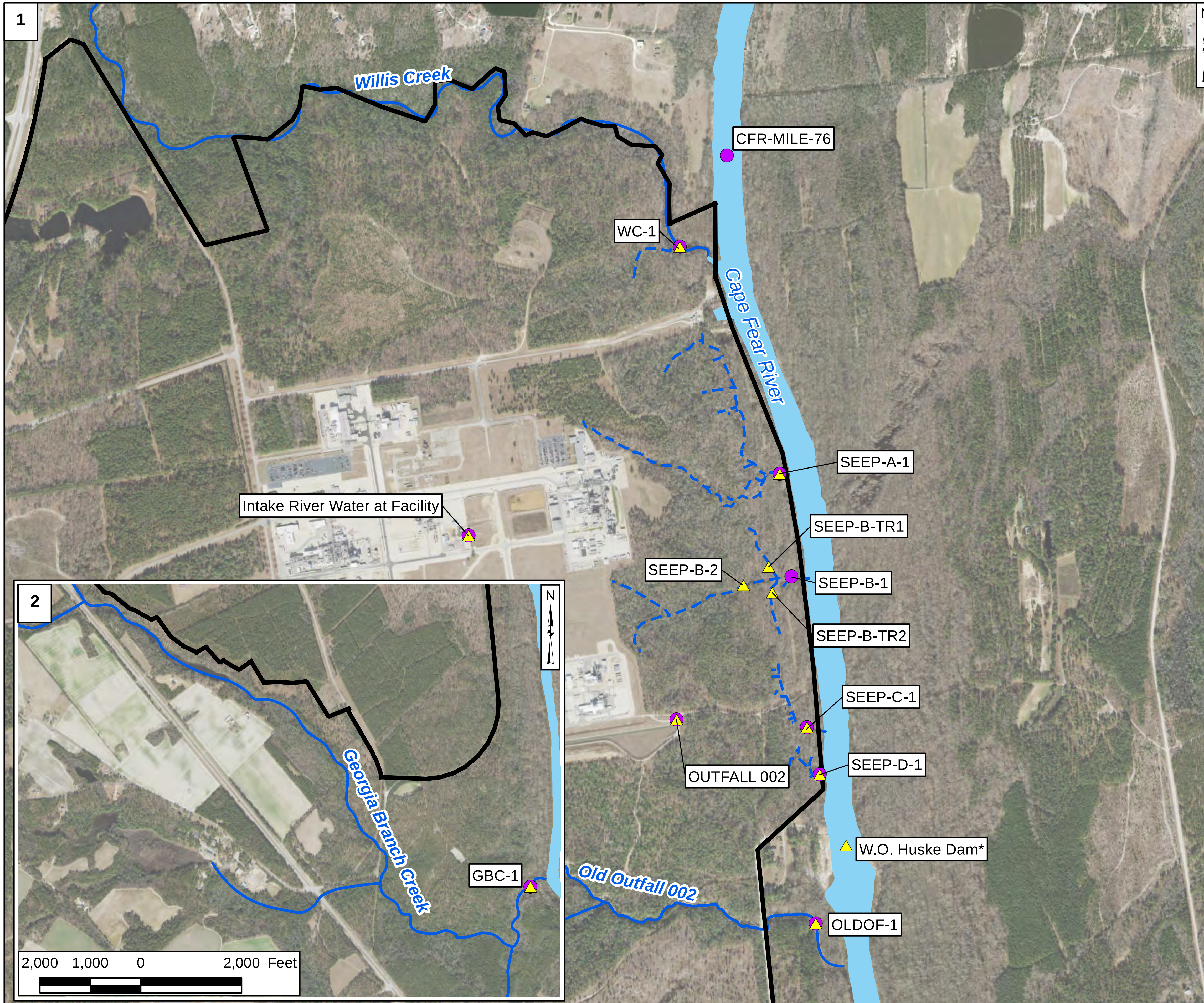
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Raleigh | July 2020

Figure 4



Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US

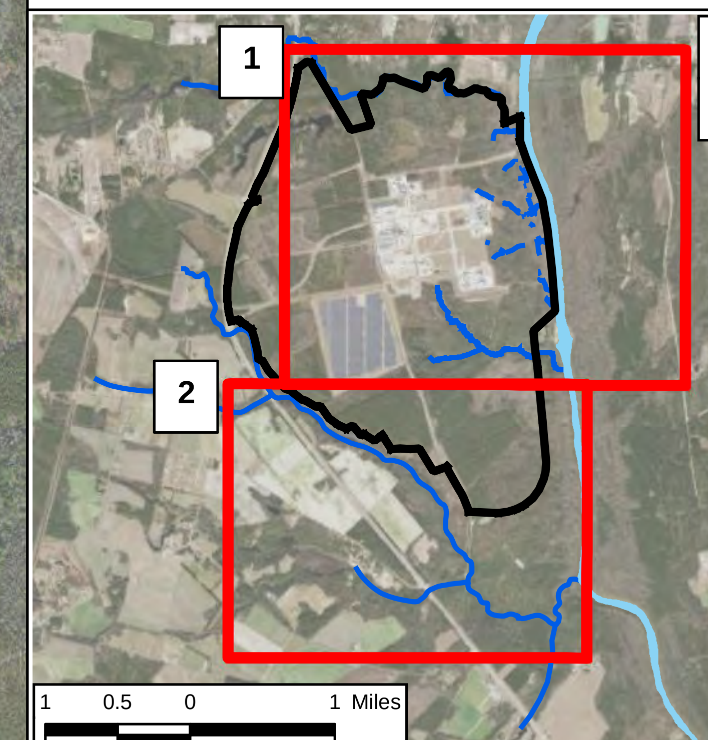
Legend

- Flow Measurement Location
- Sample Location
- Observed Seep
- Nearby Tributary
- Site Boundary

Notes:

* - Flow measurement was taken at W.O. Huske Dam - USGS Gauge Site No. 02105500

1. Flow at Old Outfall 002, Seep A, Seep B, Seep C, and Seep D locations were measured using flumes.
2. Flow at Willis Creek and Georgia Branch Creek were measured using flow velocity method.
3. Results of estimated flow at these locations are provided in Table 9 with supplemental flow measurement data included in Appendix E.
4. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS.
5. Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.



1,000 500 0 1,000 Feet

Sample and Flow Measurement Locations - April 2020

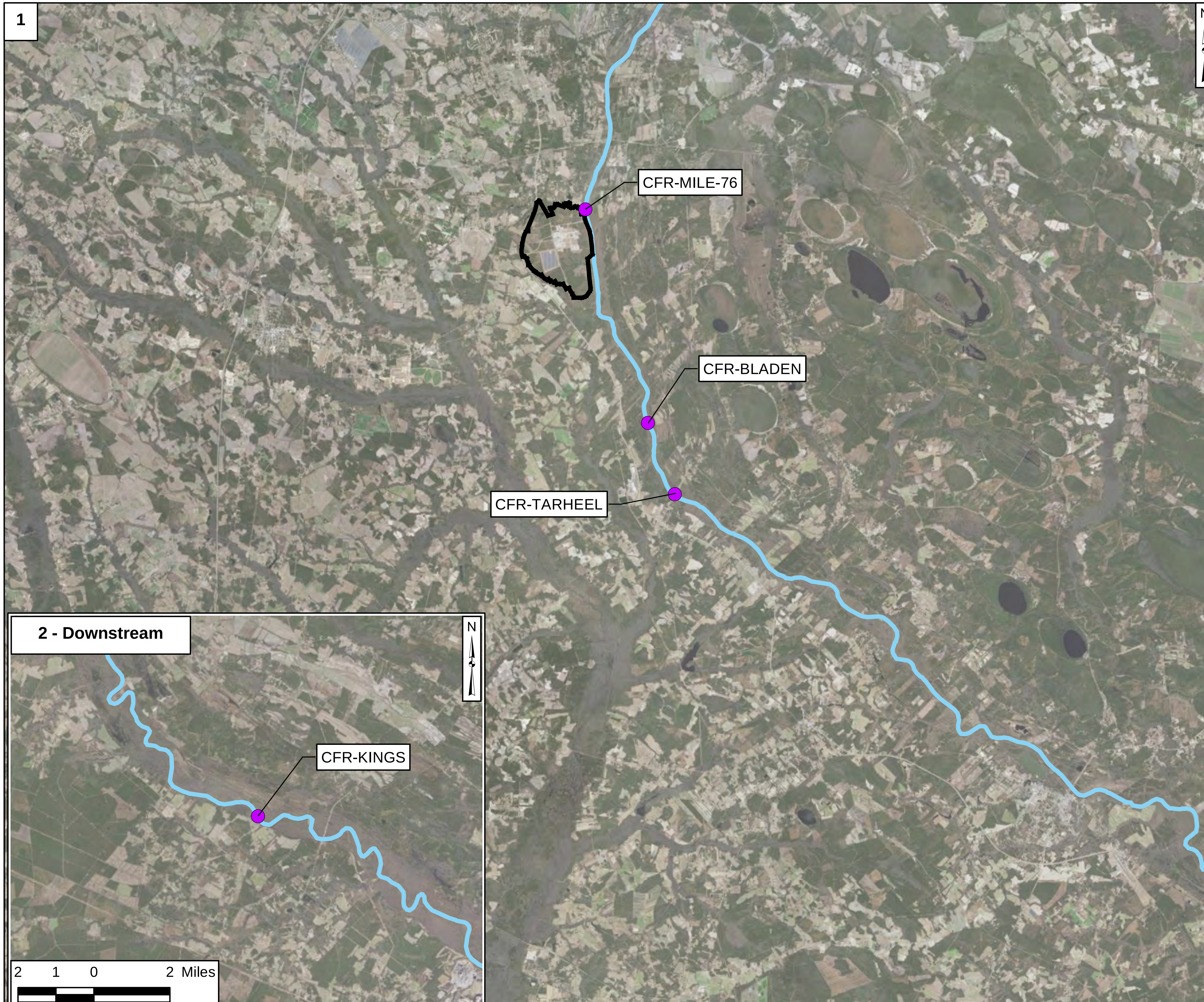
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

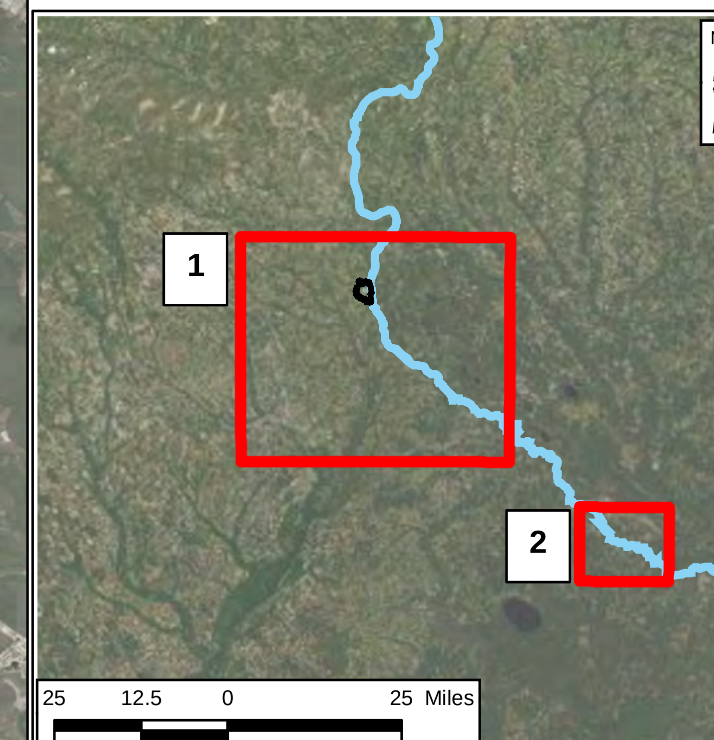
Raleigh | July 2020

Figure 5



Legend
- Sample Location
- Site Boundary
- Cape Fear River

Notes:
1. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS.
2. Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.



2 1 0 2 Miles

Cape Fear River Sample Locations - April 2020

Chemours Fayetteville Works, North Carolina

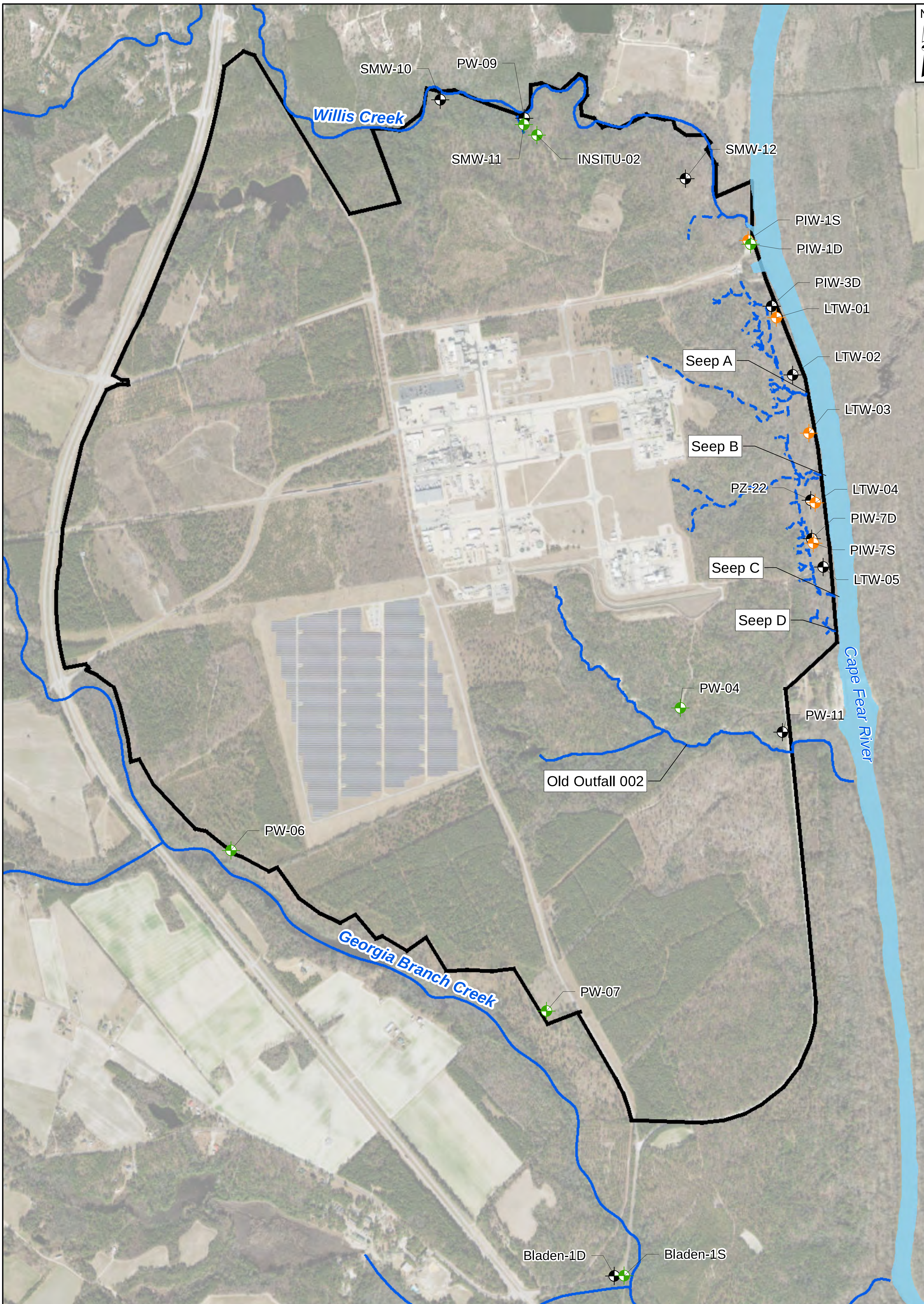
Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Figure 6

Raleigh | July 2020

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend

- Surficial Aquifer
- Floodplain Deposits
- Black Creek Aquifer
- Observed Seep
- Nearby Tributary
- Site Boundary

1,000 500 0 1,000 Feet

Groundwater Monitoring Well Network

Chemours Fayetteville Works, North Carolina

Notes:
1. Due to the scale of the map, pairs of wells that are in close proximity have been offset for visibility. Therefore, the placement of these wells on this map do not reflect their true geographic coordinates.
2. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS.
3. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

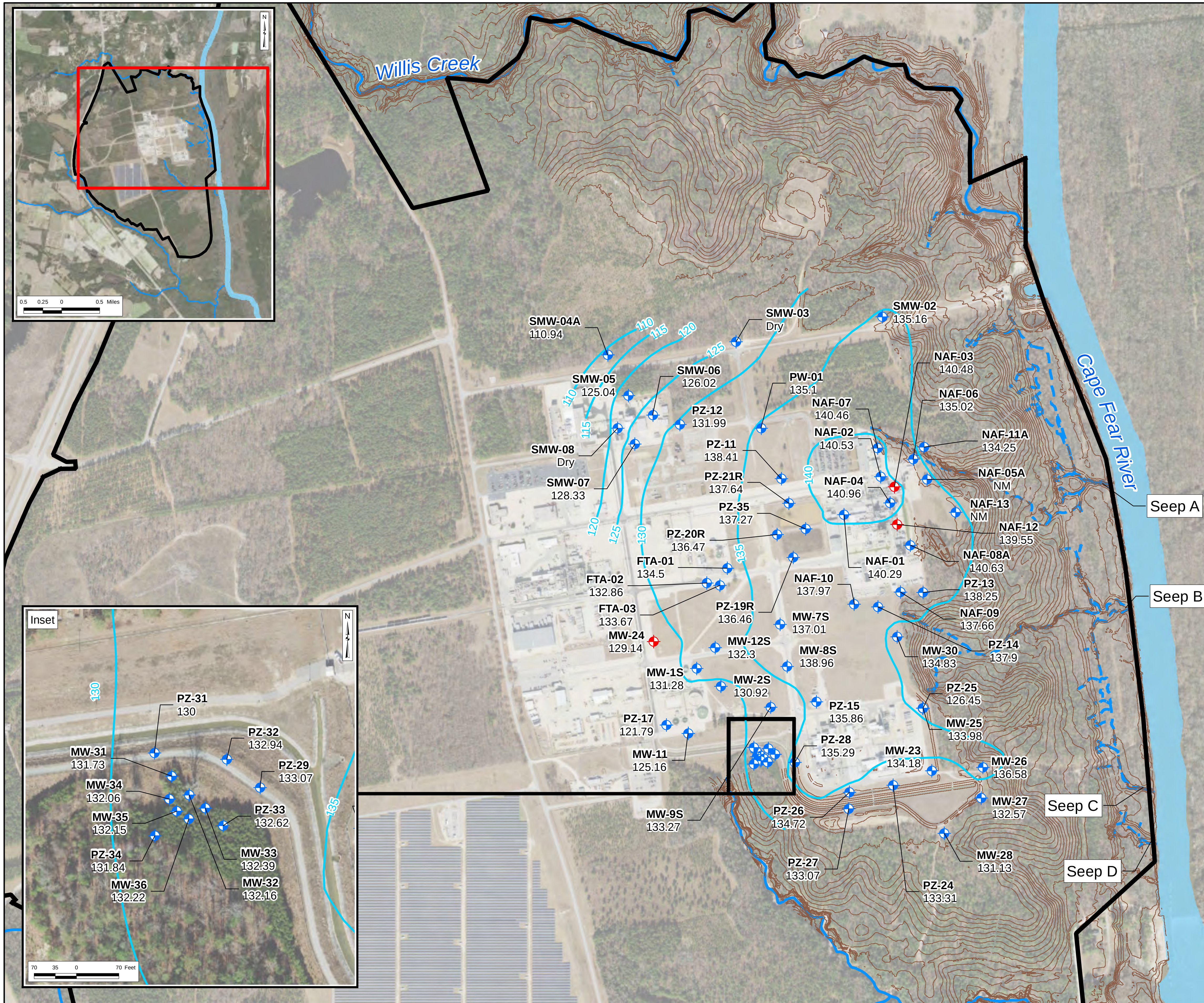
Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Raleigh | July 2020

Figure 7

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US

Legend

- Monitoring Well
- Monitoring Well Used for Groundwater Extraction
- Groundwater Contours (ft NAVD88) - 5 feet interval
- Observed Seep
- Nearby Tributary
- Ground Surface Elevation Contour (ft NAVD88) - 5 ft interval
- Site Boundary

Notes:
ft NAVD88 - feet North American Vertical Datum 1988.
1. Depth to water measurements collected on February 5, 2020 were used to generate contours.
2. Ground surface elevation contours are derived from Lidar scans performed on December 1, 2019 and December 19, 2019 by Spectral Data Consultants, Inc.
3. Seep locations identified visually as reported in Geosyntec, 2019. Seeps and Creeks Investigation Report. Chemours Fayetteville Works. 26 August 2019.
4. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS (MajorHydro shapefile).
5. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

1,000 500 0 1,000 Feet

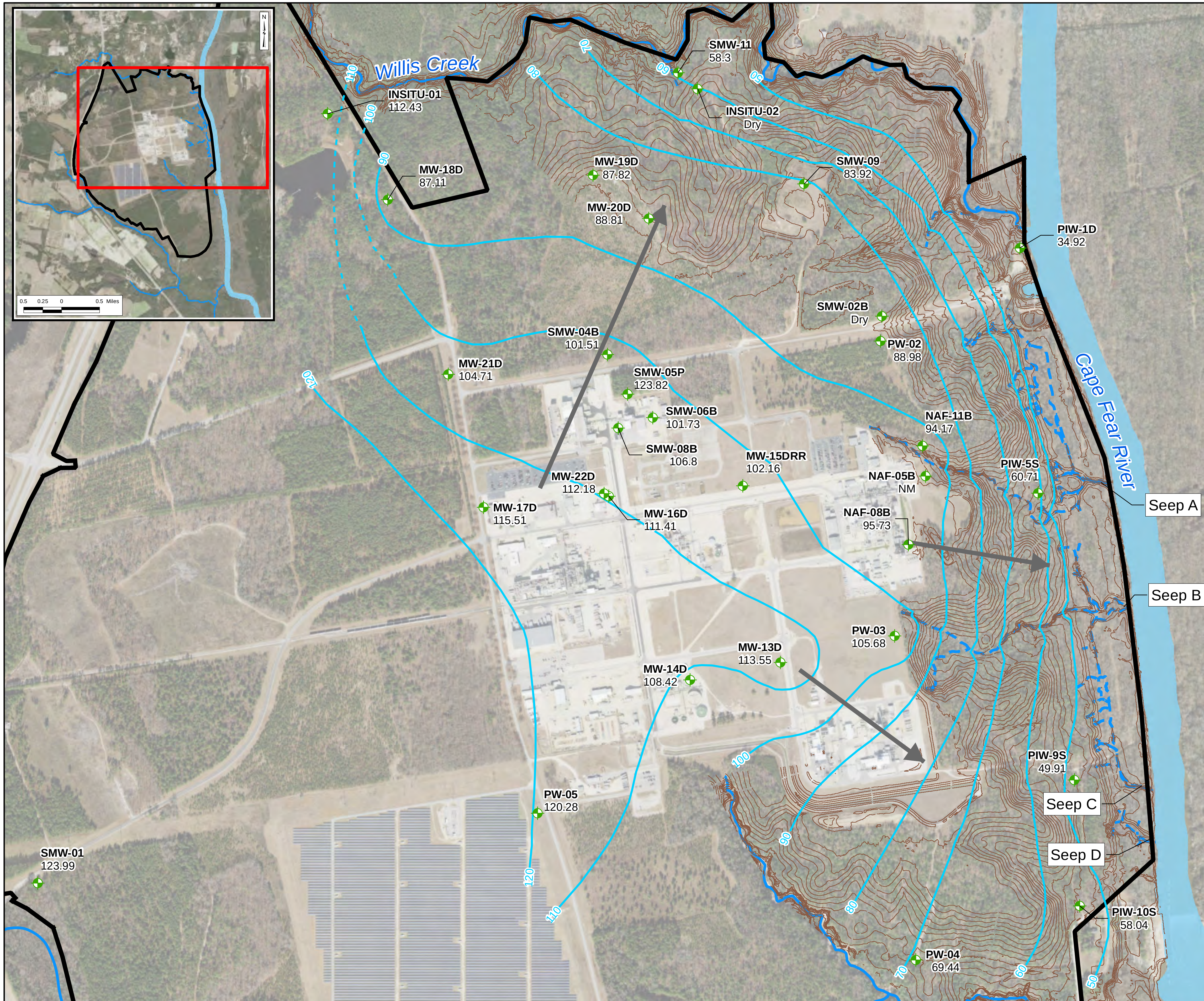
Groundwater Elevation Map
Perched Zone - February 2020

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Raleigh	July 2020	Figure 8A



Legend

- Monitoring Well
- Groundwater Contours (ft NAVD88) - 10 feet interval
- Potentiometric Surface Inferred
- Inferred Groundwater Flow Direction
- Observed Seep
- Nearby Tributary
- Ground Surface Elevation Contour (ft NAVD88) - 5 ft interval
- Site Boundary

Notes:
NM - Not measured
ft NAVD88 - feet North American Vertical Datum 1988.
1. Depth to water measurements collected on February 5, 2020 were used to generate contours.
2. Ground surface elevation contours are derived from Lidar scans performed on December 1, 2019 and December 19, 2019 by Spectral Data Consultants, Inc.
3. Seep locations identified visually as reported in Geosyntec, 2019. Seeps and Creeks Investigation Report. Chemours Fayetteville Works. 26 August 2019.
4. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS (MajorHydro shapefile).
5. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

1,000 500 0 1,000 Feet

Groundwater Elevation Map
Surficial Aquifer - February 2020

Chemours Fayetteville Works, North Carolina

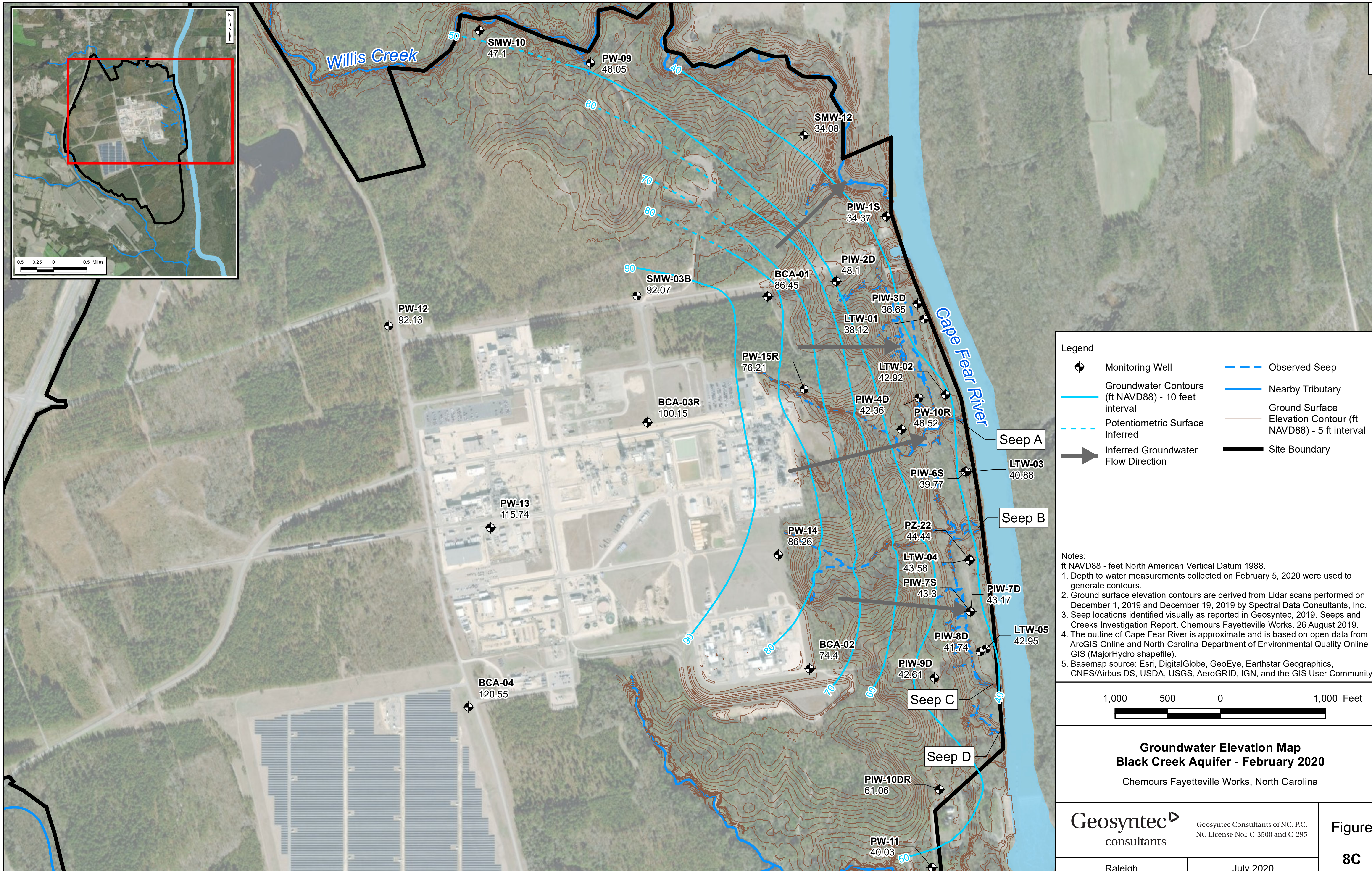
Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Raleigh | July 2020

Figure 8B

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US

Legend

- Monitoring Well
- Groundwater Contours (ft NAVD88) - 10 feet interval
- Potentiometric Surface Inferred
- Inferred Groundwater Flow Direction
- Observed Seep
- Nearby Tributary
- Ground Surface Elevation Contour (ft NAVD88) - 5 ft interval
- Site Boundary

Notes:
ft NAVD88 - feet North American Vertical Datum 1988.
1. Depth to water measurements collected on February 5, 2020 were used to generate contours.
2. Ground surface elevation contours are derived from Lidar scans performed on December 1, 2019 and December 19, 2019 by Spectral Data Consultants, Inc.
3. Seep locations identified visually as reported in Geosyntec, 2019. Seeps and Creeks Investigation Report. Chemours Fayetteville Works. 26 August 2019.
4. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS (MajorHydro shapefile).
5. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

1,000 500 0 1,000 Feet

Groundwater Elevation Map
Black Creek Aquifer - February 2020

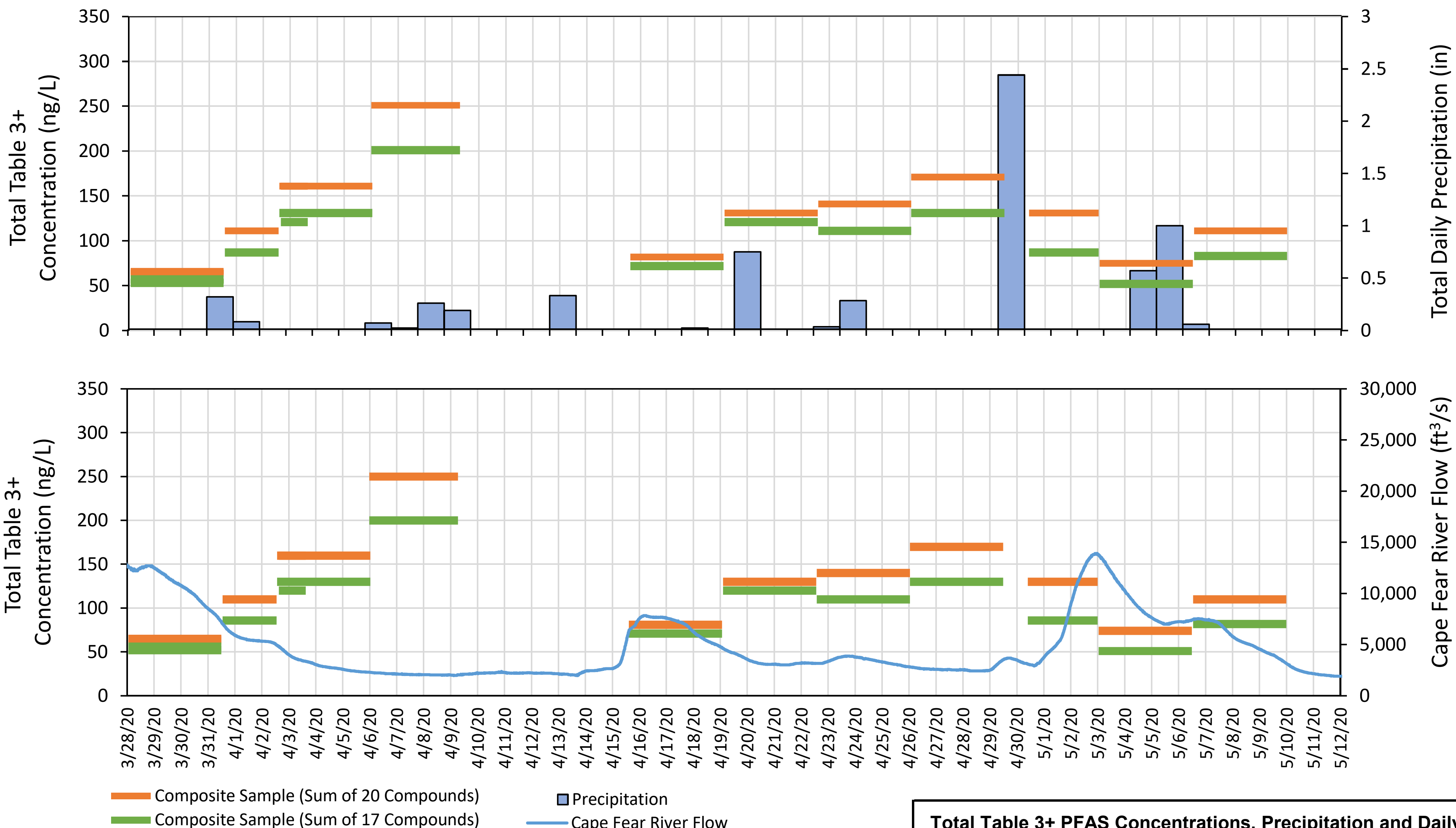
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Raleigh | July 2020

Figure **8C**



Notes:

-Total Table 3+ concentrations summed over 17 or 20 Table 3+ compounds.

-Precipitation data are from the USGS monitoring site at the W.O. Huske Dam.

Abbreviations:

in - inches

ng/L - nanograms per liter

ft^3/s - cubic feet per seconds

Total Table 3+ PFAS Concentrations, Precipitation and Daily Flow at Tar Heel Ferry Road Bridge

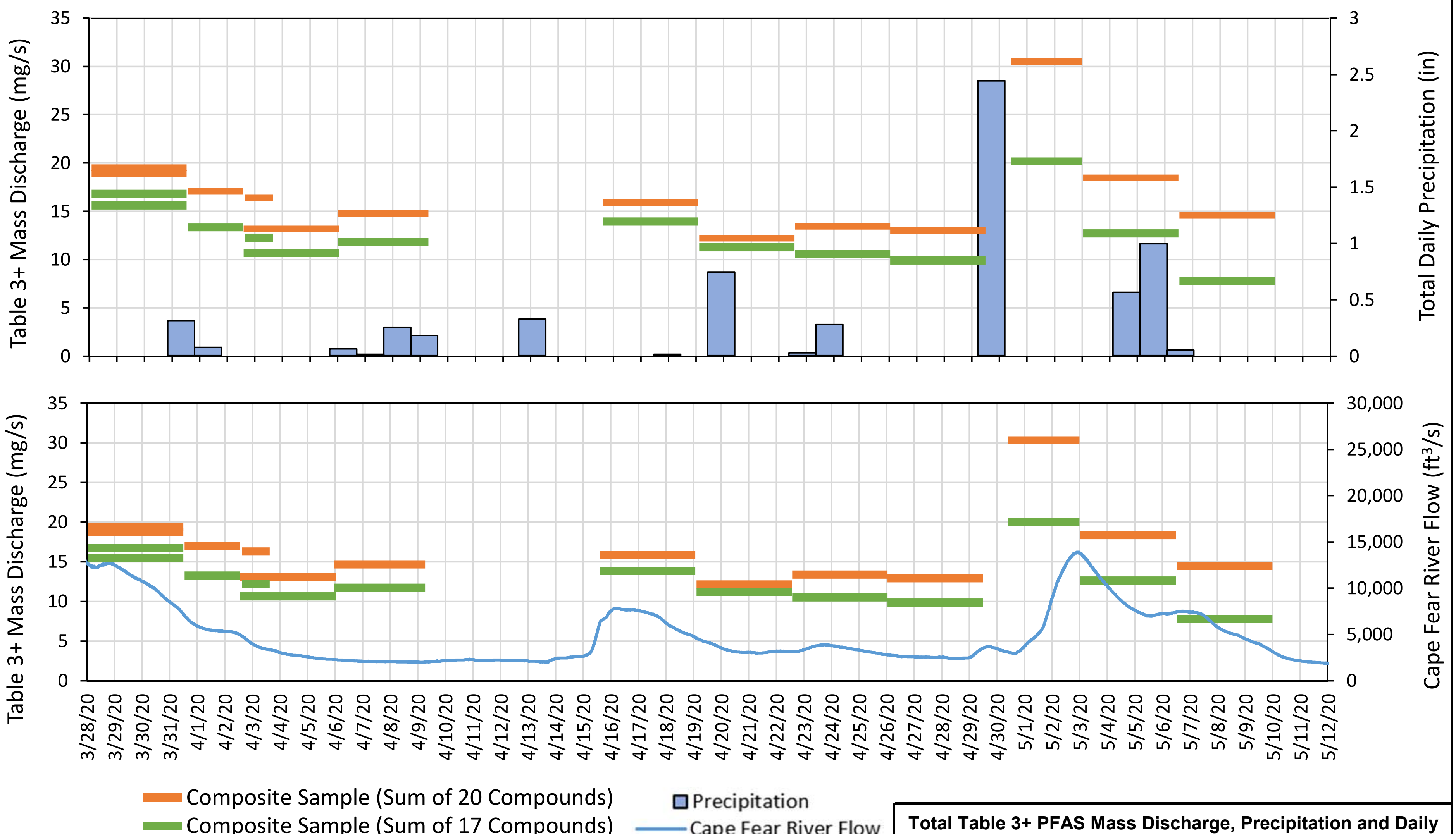
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Raleigh | July 2020

Figure 9



Notes:

-Total Table 3+ concentrations summed over 17 Table 3+ compounds.

-Precipitation data are from the USGS monitoring site at the W.O. Huske Dam.

Abbrevations:

in - inches

mg/s - milligram per seconds

ft^3/s - cubic feet per seconds

Total Table 3+ PFAS Mass Discharge, Precipitation and Daily Flow at Tar Heel Ferry Road Bridge

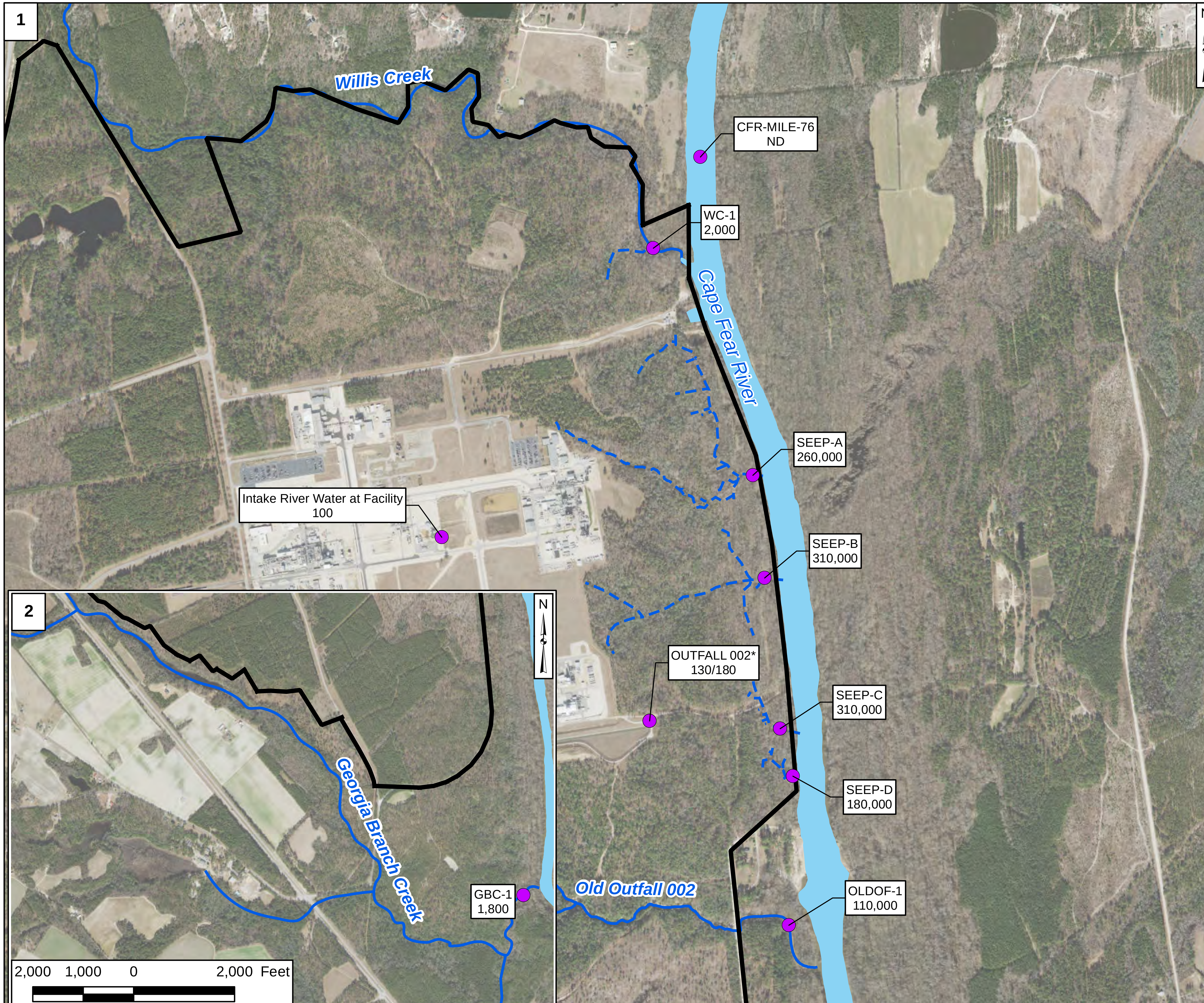
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

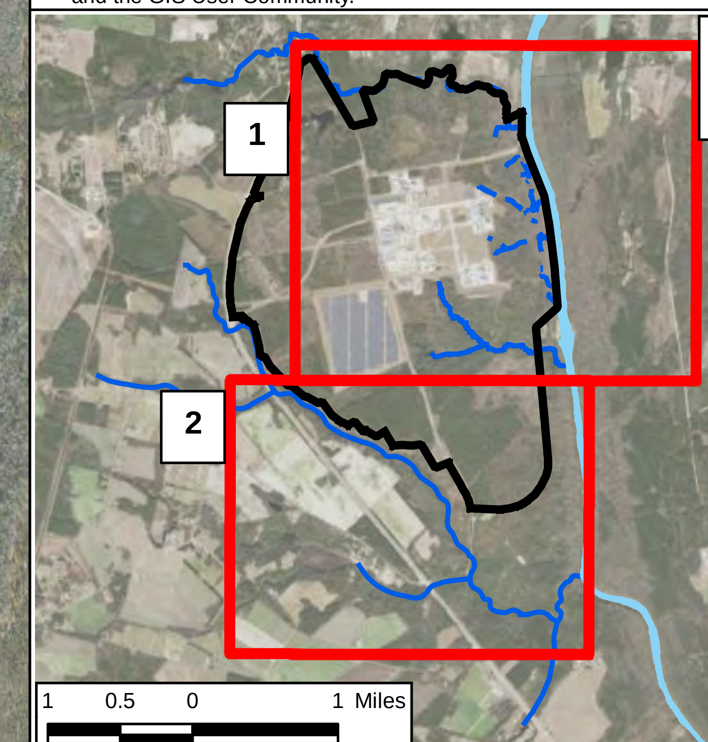
Figure **10**

Raleigh | July 2020



Legend
- Sample Location
- Observed Seep
- Nearby Tributary
- Site Boundary

Notes:
* Grab and composite samples collected at Outfall 002. Results reported as grab / composite.
ND - non-detect
HFPO-DA - hexafluoropropylene oxide dimer acid
1. All results are in nanograms per liter.
2. Total table 3+ concentration includes HFPO-DA results evaluated by EPA Method 537 Mod and does not include R-PSDA, Hydrolyzed PSDA, and R-EVE.
3. Non-detect values were not included in sum of total Table 3+ results.
4. Total Table 3+ results include J-qualified data.
5. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS.
6. Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.



1,000 500 0 1,000 Feet

Total Table 3+ Concentrations (17 Compounds)
in Seeps and Surface Water - April 2020

Chemours Fayetteville Works, North Carolina

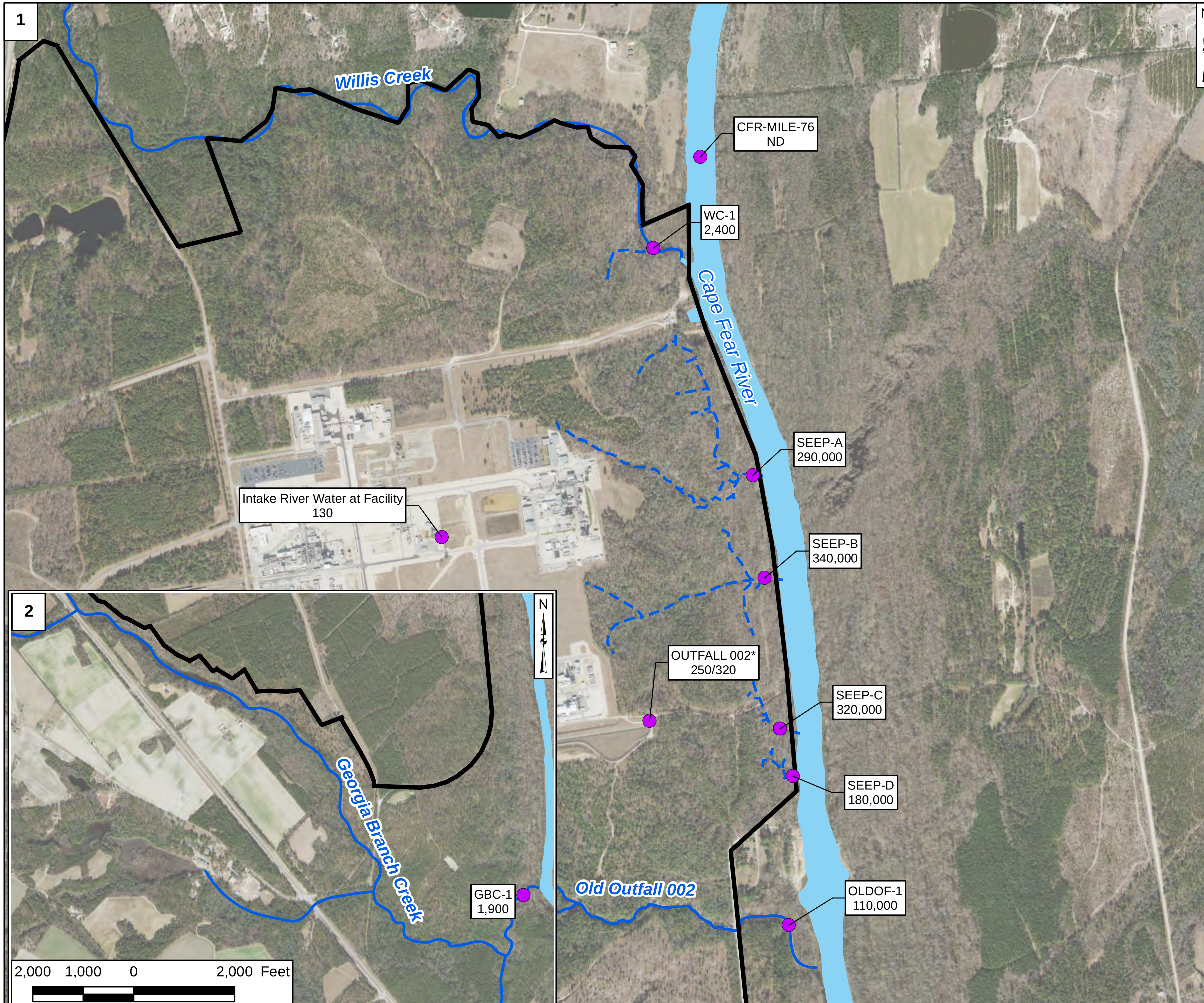
Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure **11A**

Raleigh | July 2020

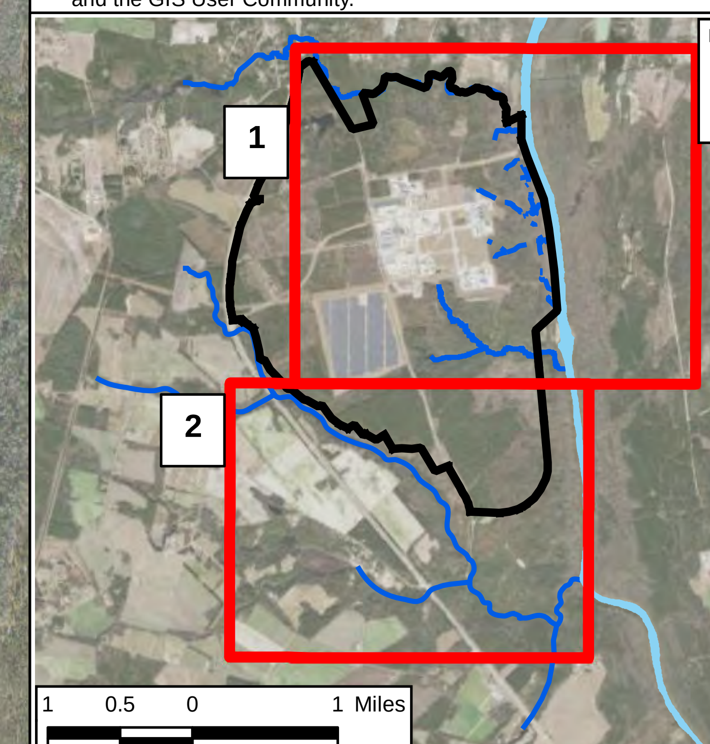
Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend

- Sample Location
- Observed Seep
- Nearby Tributary
- Site Boundary

Notes:
* Grab and composite samples collected at Outfall 002. Results reported as grab / composite.
ND - non-detect
HFPO-DA - hexafluoropropylene oxide dimer acid
1. All results are in nanograms per liter.
2. Total table 3+ concentration is summed over all 20 compounds including R-PSDA, Hydrolyzed PSDA, and R-EVE, and includes HFPO-DA results evaluated by EPA Method 537 Mod.
3. Non-detect values were not included in sum of total Table 3+ results.
4. Total Table 3+ results include J-qualified data.
5. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS.
6. Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.



1,000 500 0 1,000 Feet

Total Table 3+ Concentrations (20 Compounds) in Seeps and Surface Water - April 2020

Chemours Fayetteville Works, North Carolina

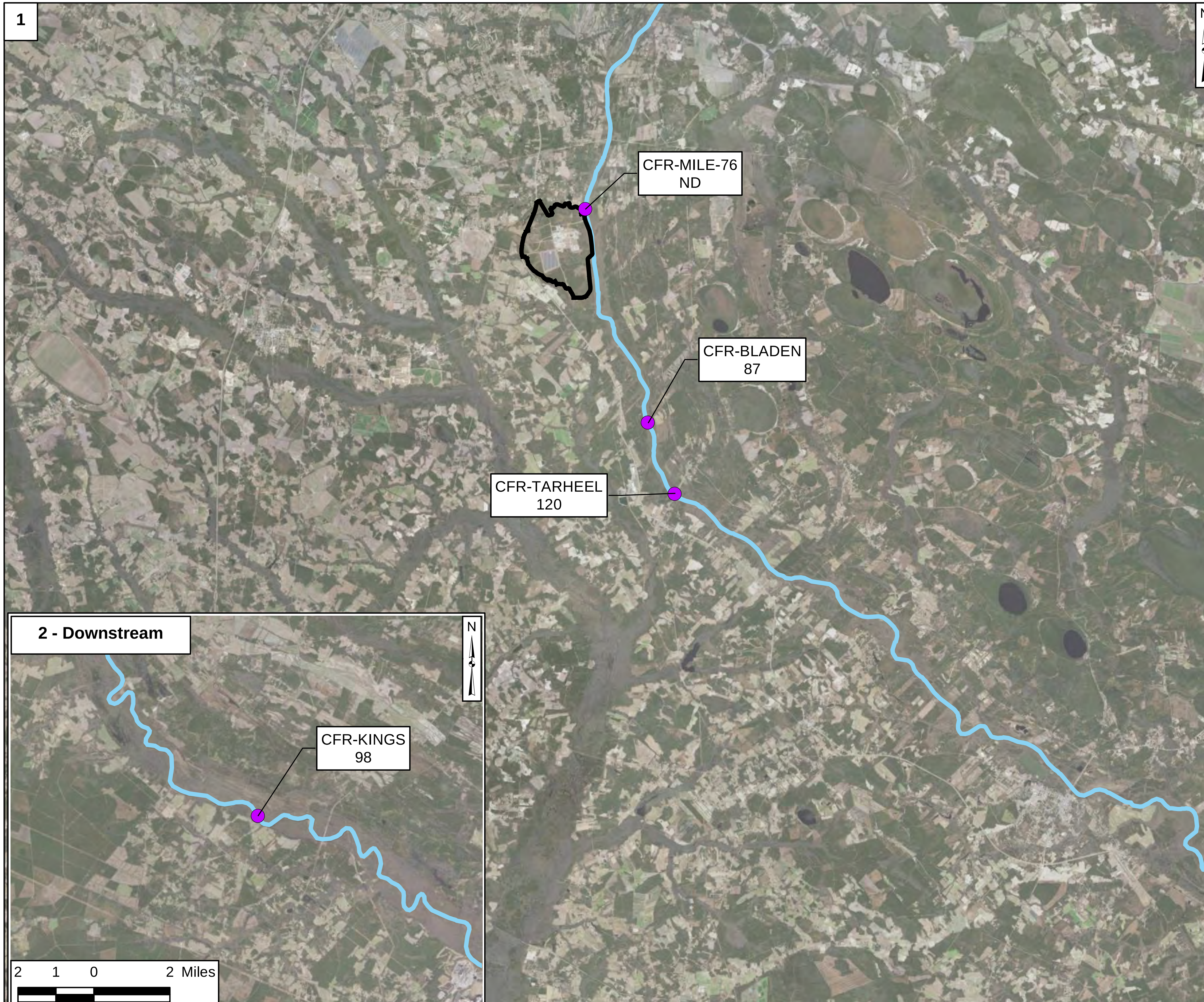
Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Raleigh | July 2020

Figure 11B

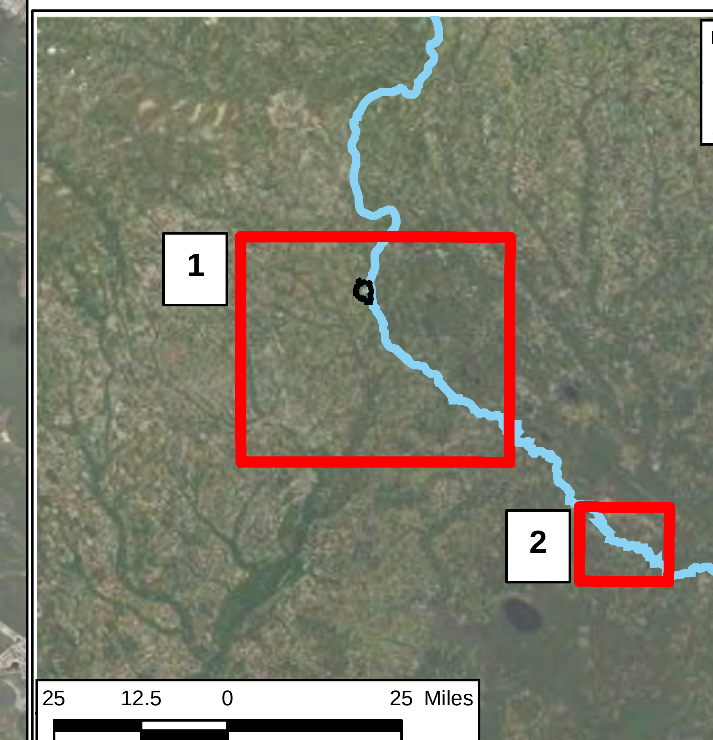
Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend

- Sample Location
- Site Boundary
- Cape Fear River

Notes:
ND - non-detect
HFPO-DA - hexafluoropropylene oxide dimer acid
1. All results are in nanograms per liter.
2. Total table 3+ concentration includes HFPO-DA results evaluated by EPA Method 537 Mod and does not include R-PSDA, Hydrolyzed PSDA, and R-EVE.
3. Non-detect values were not included in sum of total Table 3+ results.
4. Total Table 3+ results include J-qualified data.
5. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS.
6. Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.



2 1 0 2 Miles

Cape Fear River Total Table 3+ Concentrations (17 Compounds) - April 2020

Chemours Fayetteville Works, North Carolina

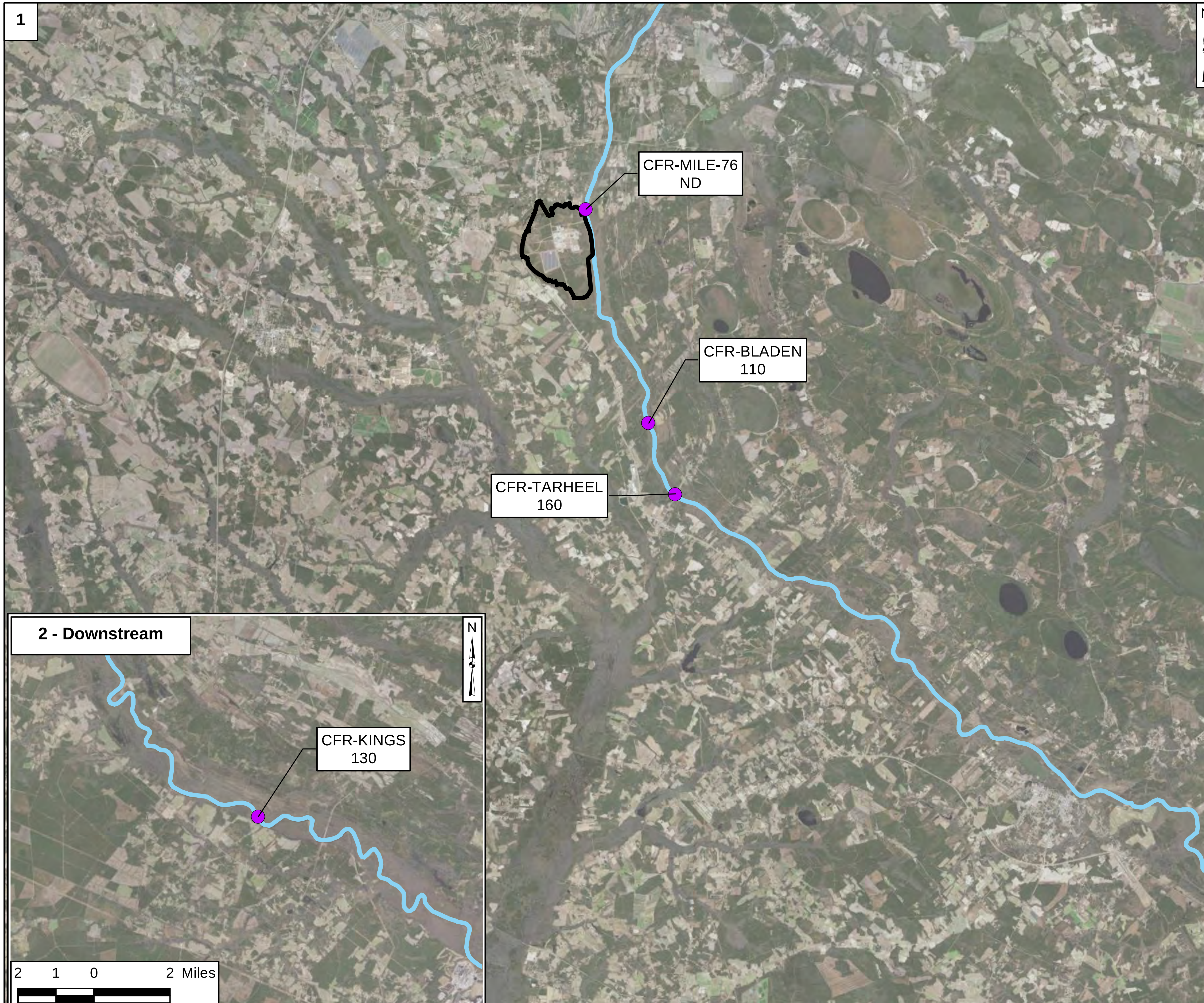
Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure **12A**

Raleigh | July 2020

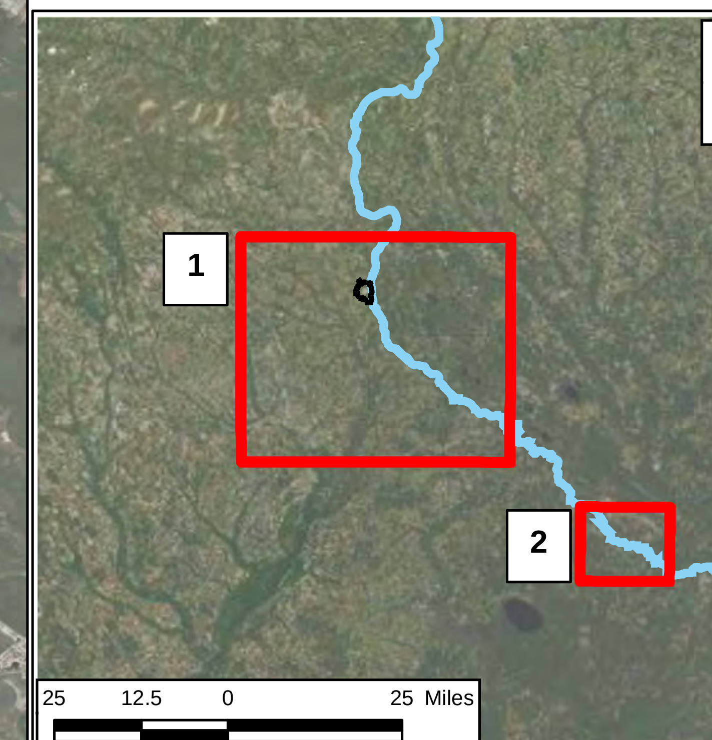
Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend

- Sample Location
- Site Boundary
- Cape Fear River

Notes:
ND - non-detect
HFPO-DA - hexafluoropropylene oxide dimer acid
1. All results are in nanograms per liter.
2. Total table 3+ concentration is summed over all 20 compounds including R-PSDA, Hydrolyzed PSDA, and R-EVE, and includes HFPO-DA results evaluated by EPA Method 537 Mod.
3. Non-detect values were not included in sum of total Table 3+ results.
4. Total Table 3+ results include J-qualified data.
5. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS.
6. Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.



2 1 0 2 Miles

Cape Fear River Total Table 3+ Concentrations (20 Compounds) - April 2020

Chemours Fayetteville Works, North Carolina

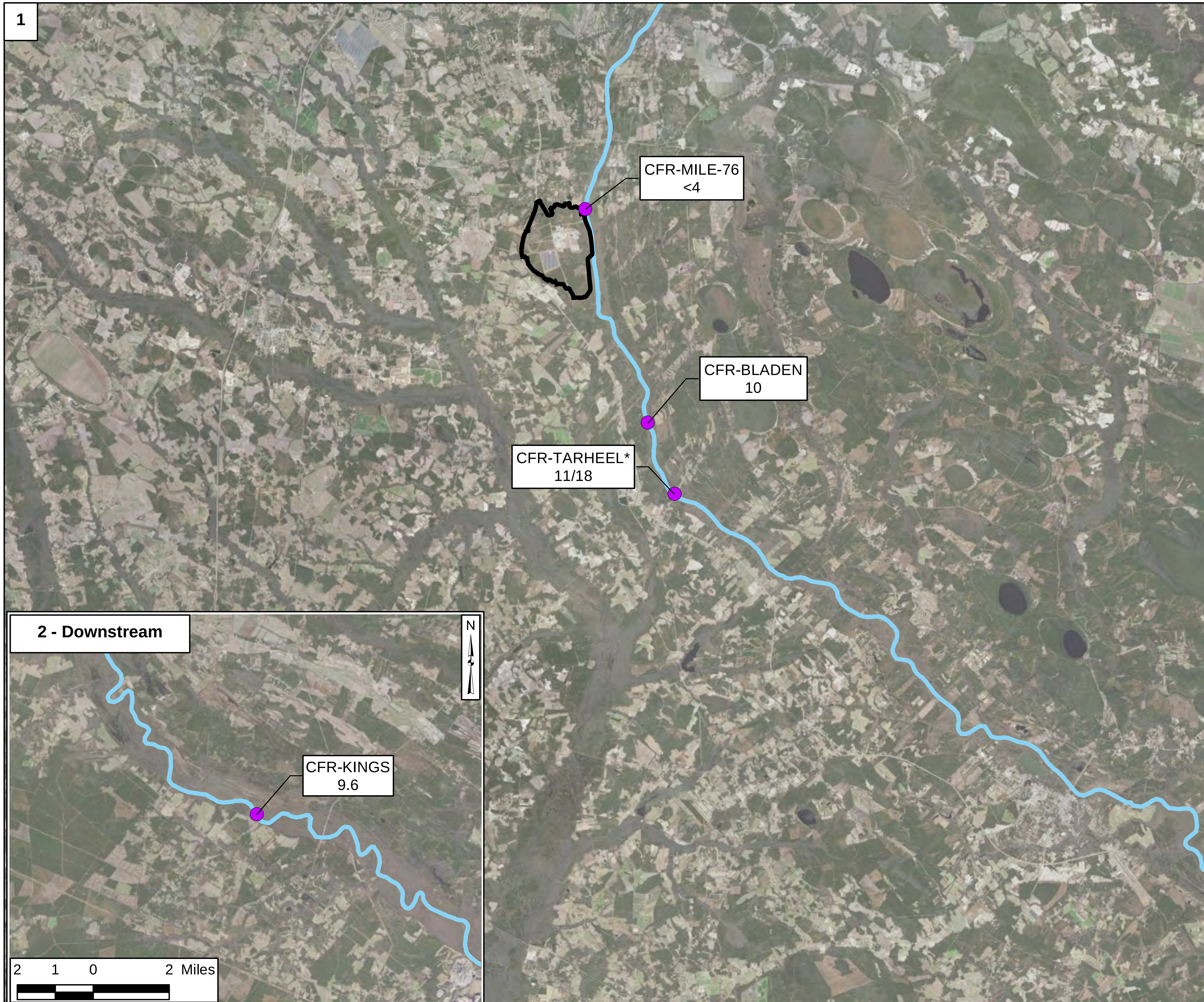
Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure **12B**

Raleigh | July 2020

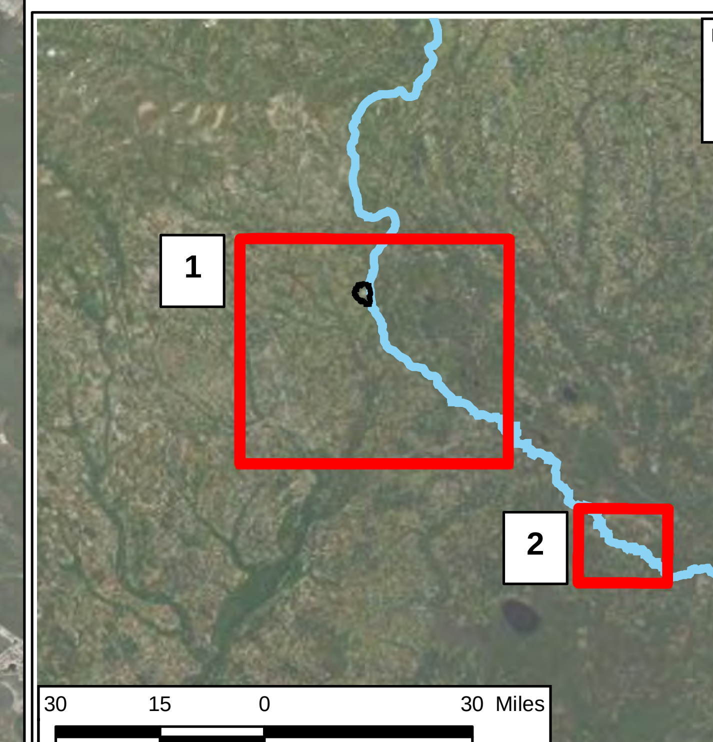
Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend

- Sample Location
- Site Boundary
- Cape Fear River

Notes:
* Location showing grab/composite sample results.
< - non-detect
HFPO-DA - hexafluoropropylene oxide dimer acid
1. All results are in nanograms per liter.
2. Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.



2 1 0 2 Miles

Cape Fear River HFPO-DA Concentrations - April 2020

Chemours Fayetteville Works, North Carolina

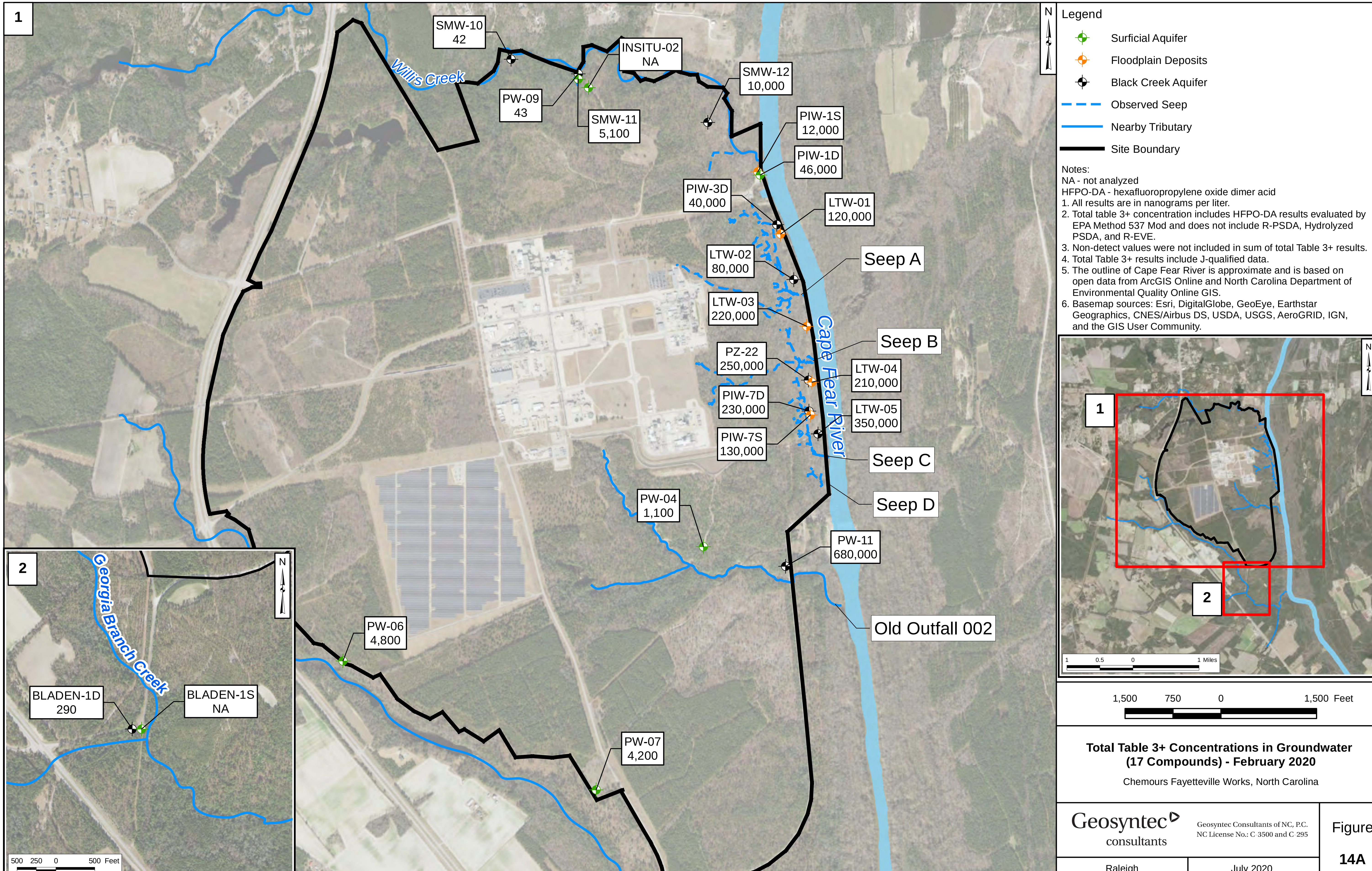
Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure 13

Raleigh | July 2020

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Total Table 3+ Concentrations in Groundwater (17 Compounds) - February 2020

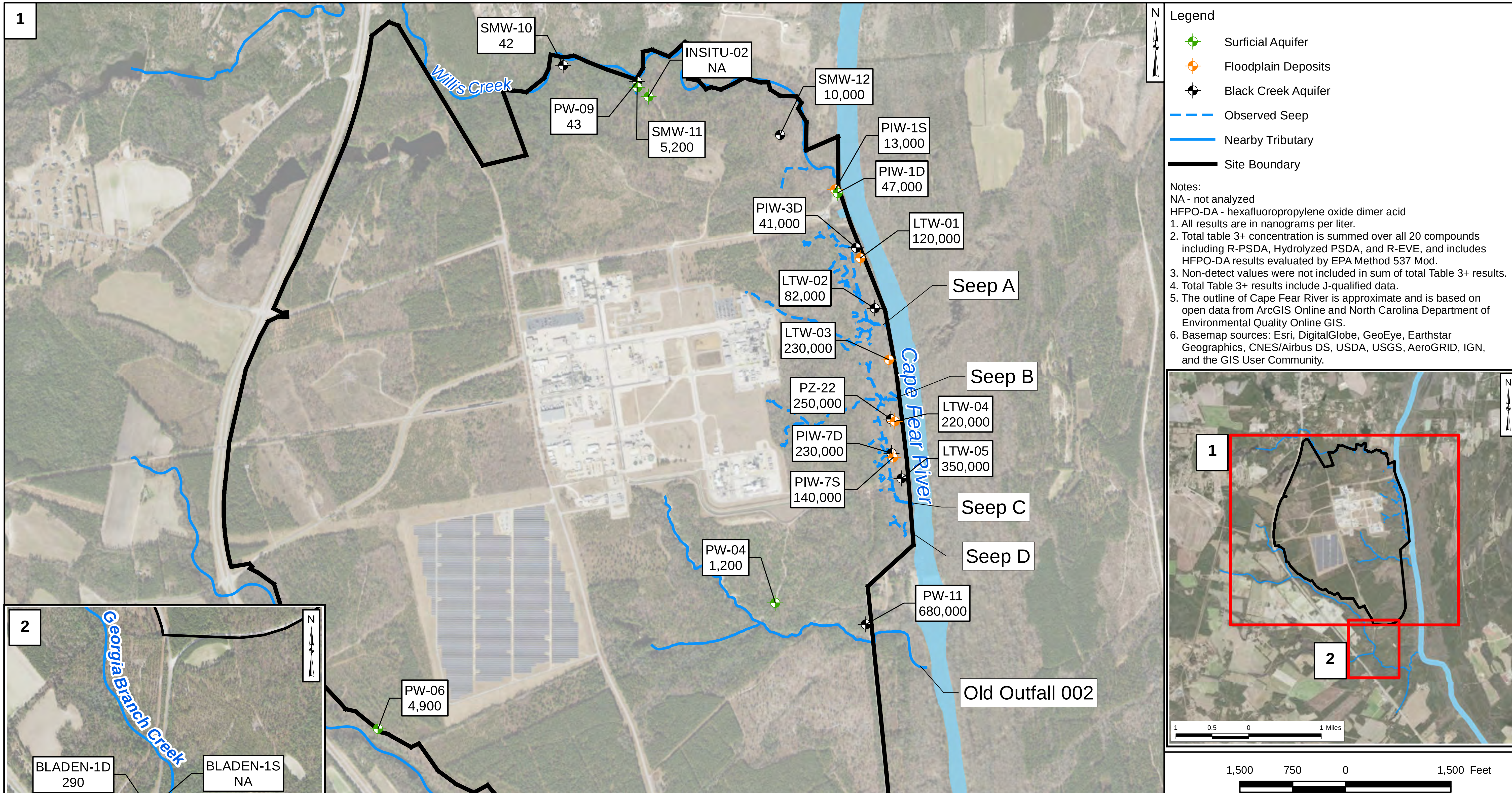
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Raleigh | July 2020

Figure **14A**



Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US

Total Table 3+ Concentrations in Groundwater (20 Compounds) - February 2020

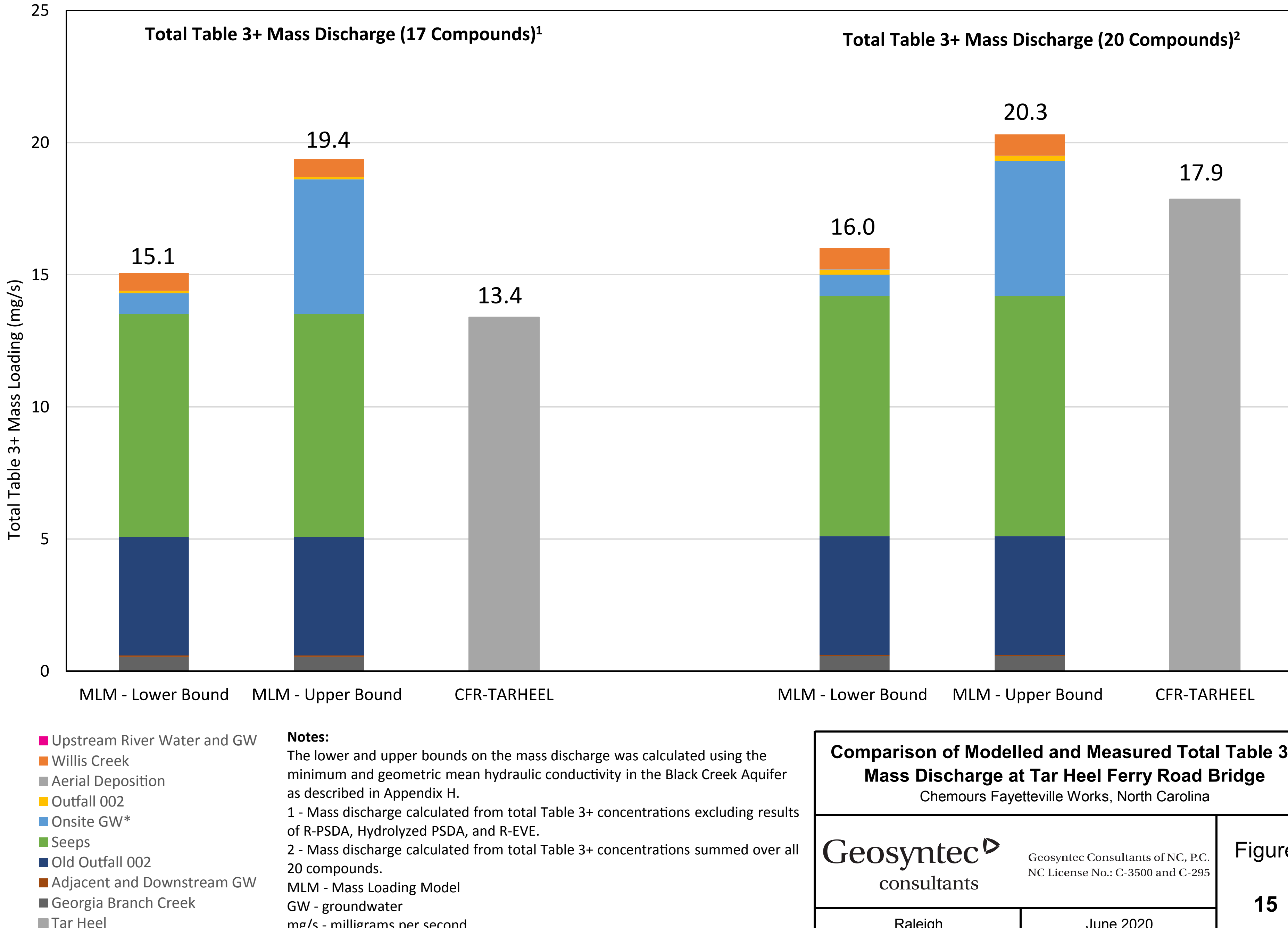
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Raleigh | July 2020

Figure 14B



Notes:
The lower and upper bounds on the mass discharge was calculated using the minimum and geometric mean hydraulic conductivity in the Black Creek Aquifer as described in Appendix H.
1 - Mass discharge calculated from total Table 3+ concentrations excluding results of R-PSDA, Hydrolyzed PSDA, and R-EVE.
2 - Mass discharge calculated from total Table 3+ concentrations summed over all 20 compounds.
MLM - Mass Loading Model
GW - groundwater
mg/s - milligrams per second

Comparison of Modelled and Measured Total Table 3+ Mass Discharge at Tar Heel Ferry Road Bridge
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Figure **15**

Raleigh | June 2020

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

APPENDIX A

Field Methods

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

APPENDIX A

FIELD METHODS

INTRODUCTION AND OBJECTIVES

This appendix summarizes the field methods employed to conduct monitoring activities for total Table 3+ per- and polyfluoroalkyl substances (PFAS) mass loading to the Cape Fear River at and surrounding the Chemours Fayetteville Works, North Carolina site (the Site). The effort described herein was conducted by Geosyntec and Parsons in February and April 2020. The monitoring program includes collecting data on flow rates and PFAS concentrations from the PFAS transport pathways to the Cape Fear River.

SCOPE OF WORK

The scope of work involves four tasks: (1) collecting surface water and groundwater seep water samples for PFAS; (2) measuring flow rates at specified surface water and seep locations; (3) collecting a synoptic round of groundwater elevations from designated monitoring wells; and (4) collecting water samples for PFAS analysis from the designated monitoring wells. Field methods for each task are described below in the Methods section. Field forms collected during implementation of this scope of work are provided in Appendix F.

The work was performed according to the project health and safety plan (HASP) prepared by Parsons (Parsons Health and Safety Plan Chemours Fayetteville Site, 2020). A Plan on Action Discussion (POAD) and Project Safety Analysis (PSA) was held prior to commencing field activities. The work was performed under Nationwide Permit 6 (United States Army Corps of Engineers, 2017).

METHODS

This section describes the field methods and procedures that were employed for collecting surface water and onsite seep samples, gauging stream flow, collection of groundwater elevations, water quality parameter assessment and sample collection.

Surface Water and Onsite Seep Sample Collection Methods

Surface Water and Onsite Seep Composite Sampling Methods

Autosamplers were used to collect 24-hour integrated samples from various surface water bodies and onsite Seeps. The autosamplers collected sample aliquots once per hour. The sample tubing from the autosampler was positioned at minimum 2 inches above the bottom of the water body flow with the open end of the sample tubing pointed in the downstream direction to minimize the potential for sediment accumulation and uptake. Autosampler materials consisted of high-density polyethylene (HDPE) tubing, silicon tubing, and an HDPE sample reservoir. Water from the sample reservoir was decanted into laboratory supplied bottles (e.g. 250-milliliter [mL] HDPE bottles for PFAS analysis) and then sent to an approved laboratory. Field parameters were measured twice for composite samples: once during composite sampling (collected directly from the water stream), and once after composite sampling (collected from the autosampler reservoir). The following water quality parameters were recorded:

- pH;
- Temperature (degrees Celsius [°C]);
- Specific Conductivity (microsiemens per centimeter [µS/cm]);
- Dissolved Oxygen (DO) (milligrams per liter [mg/L]); and,
- Oxidation-Reduction Potential (ORP) (millivolts [mV])

Creek and Seep Water Grab Sampling Methods

Where composite sample collection was not feasible due to access and other field conditions, creek and seep water samples were collected as grab samples. Laboratory-supplied 250 mL HDPE sample bottles were lowered into the flowing water of the creek to collect the sample. The bottles were lowered into the stream either using a properly decontaminated dip rod with bottle attached with a nylon zip tie, or in shallow streams, by hand. The bottle was lowered into the stream with the cap removed, open and facing oncoming flow. Where possible, the sample was collected from the middle of the stream. Care was taken to avoid collecting suspended solids or other materials in the sample. The following water quality parameters were measured after sample collection using water from the same location in the stream:

- pH;
- Temperature (°C);
- Specific Conductivity (µS/cm);
- DO (mg/L); and
- ORP (mV).

Cape Fear River Water Grab Sampling Methods

Cape Fear River water samples were collected using a peristaltic pump and new dedicated HDPE tubing and dedicated silicone tubing for the pump head at each location. The tubing was lowered to the specified sampling depth below the water surface using an anchor weight and the tubing fastened to the anchor pointing upwards. Surface water was pumped directly from the submerged tubing through the pump head to a flow-through cell. Field parameters were monitored over a 5-minute interval, then the flow-through cell was disconnected, the tubing cut to provide a new, clean end and a grab sample was collected from the discharge of the peristaltic pump in new 250 mL laboratory-supplied HDPE bottles. The following water quality parameters were measured:

- pH;
- Temperature (°C);

- Specific Conductivity (µS/cm);
- DO (mg/L); and
- ORP (mV).

<u>Flow Gauging Methods</u>

Flow velocity was measured after sample collection at seep and creek locations specified in Table 2. Flow velocity was measured using flumes where they exist, otherwise flow velocity was measured via flow meters.

Flumes

Flumes are currently installed in Seep A, Seep B, Seep C, Seep D, and Old Outfall 002 under Nationwide Permit 38 (United States Army Corps of Engineers, June 2019). Where present, they were used to calculate flow based on the data collected by the level logger installed in the flume.

Flow Velocity Gauging

Where flumes are not installed (i.e., Willis Creek and Georgia Branch Creek), the flow rate of the stream was measured using a submersible flow meter. The flow meter was placed beneath the flowing stream along the cross section of the stream at regular intervals (e.g. every six inches) and the height of the water was recorded along with the recorded water velocity. These measurements were then used to calculate the volumetric flow of water passing through the structure based on the regular geometry and measured flow rates. Flow was measured using two to three transects to assess variability in estimated flow. Transects were selected that have fairly uniform cross sections that could be gauged with minimal disturbance.

<u>Synoptic Water Level Measurements</u>

Water level measurements for monitoring wells listed in Table 3 were collected during a single synoptic event. At each location, notes on well condition, weather, date and time of collection, depth to bottom of well and depth to water level from top of casing were recorded.

<u>Groundwater Sampling Methods</u>

Designated monitoring wells were monitored as part of the quarterly monitoring activities. These wells are listed in Table 3 and Figure 7.

The groundwater samples were analyzed for the list of Table 3+ compounds listed in Table 1. Field equipment was inspected by the program on-Site supervisor and calibrated daily prior to use according to the manufacturer's recommended guidelines. Field parameters were measured with a water quality meter after sample collection and included the following:

- pH;
- Temperature (°C);

- Specific Conductivity (µS/cm);
- DO (mg/L);
- ORP (mV);
- Turbidity (nephelometric turbidity units [NTU]); and,
- Color.

Non-dedicated or non-disposable sampling equipment was decontaminated immediately before sample collection in the following manner:

1. De-ionized water rinse;
2. Scrub with de-ionized water containing non-phosphate detergent (i.e., Alconox®); and
3. De-ionized water rinse.

Disposable equipment (e.g. gloves, tubing, etc.) was not reused. New sample containers were used for each sample.

Groundwater samples were collected, where possible, using low-flow sampling techniques as discussed in detail in the *Long-term Groundwater Monitoring Plan* (Parsons, 2018) and briefly summarized here.

1. New disposable or dedicated HDPE tubing was placed at the midpoint of the well's screened interval.
2. Water was purged through a flow-through cell attached to a water quality meter capable of measuring pH, temperature, specific conductivity, dissolved oxygen, and ORP.
3. Water was pumped using a peristaltic pump, with dedicated silicone tubing for the pump head, at wells with water level less than 30 feet. A submersible pump was used for wells with water level deeper than 30 feet.
4. Groundwater was pumped directly from submerged tubing through the pump head to a flow-through cell until field parameters (pH, temperature, specific conductivity, DO, ORP) were stabilized within ±10% over three consecutive readings within a five-minute interval. If field parameters stabilized, but turbidity remained stable yet elevated greater than 20 NTU, field personnel purged five well volumes prior to sample collection.
5. Water levels in the designated wells were monitored during purging so that minimum draw-down of the water column was maintained.
6. Once flow-through cell readings were stable, the flow-through cell was disconnected, the tubing cut to provide a new clean end and samples were collected from the discharge of the peristaltic pump in new 250 mL laboratory-supplied HDPE bottles.
7. Sample identification information (e.g., well/sample identification number, sample time and date, samplers' names, preservative, and analytical parameters) were recorded on the bottle label with permanent ink after the sample was collected.

Sample Packing and Shipping

Upon sample collection, each containerized sample was placed into an insulated sample cooler. Wet ice was placed around the sample containers within heavy-duty plastic bags within the sample cooler.

A chain-of-custody form was completed by the field sample custodian for each sample shipment. Sample locations, sample identification numbers, description of samples, number of samples collected, and specific laboratory analyses were recorded on the chain-of-custody form.

Field QA/QC Samples

Field quality assurance/ quality control (QA/QC) samples were collected as discussed in detail in the *Long-term Groundwater Monitoring Plan* (Parsons, 2018) and summarized below:

1. For samples collected to be analyzed by Method EPA 537 Modified, three blind duplicate samples were collected; two in the February sampling event and one in the April sampling event.
2. For samples collected to be analyzed by Method Table 3+, three blind duplicate samples were collected; two in the February sampling event and one in the April sampling event.
3. For samples collected to be analyzed by EPA 537, three Modified Matrix Spike and Matrix Spike Duplicate (MS/MSD) samples were collected; two in the February sampling event and one in the April sampling event.
4. For samples collected to be analyzed by Method Table 3+, three MS/MSD samples were collected; two in the February sampling event and one in the April sampling event.
5. For groundwater samples collected in February, equipment blanks and field blanks were collected daily.
6. For surface water samples collected in April, three equipment blanks were collected.

REFERENCES

Parsons, 2018. Long-term Groundwater Monitoring Plan. September 28, 2018.

Parsons, 2020. Fayetteville Works Health and Safety Plan.

United States Army Corps of Engineers. Nationwide Permit 6. 19 March 2017. http://saw-reg.usace.army.mil/NWP2017/2017NWP06.pdf. Accessed 30 January 2019.

United States Army Corps of Engineers. Nationwide Permit 36, 06 June 2019.

APPENDIX B

Southwestern Offsite Seeps Sampling and Flow Gauging Memorandum

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

APPENDIX B

SOUTHWESTERN OFFSITE SEEPS SAMPLING AND FLOW GAUGING SAMPLING EVENT

INTRODUCTION

Geosyntec Consultants of NC, PC (Geosyntec) has prepared this report for The Chemours Company FC, LLC (Chemours) for the Fayetteville Works facility in Bladen County, North Carolina (the Site) to describe the findings of the Southwestern Offsite Seeps Sampling and Flow Gauging Memorandum. Groundwater seeps are a common hydrogeological feature in areas of sloping terrain. In late 2019 ten offsite groundwater seeps, the Lock and Dam Seep and Seeps E through M, (Figure B1) located between the Old Outfall 002 and Georgia Branch Creek were identified and sampled (Corrective Action Plan, Geosyntec, 2019). The assessment described in this memorandum describes the sampling and flow gauging of these offsite groundwater seeps to assess their Table 3+ PFAS mass load to the Cape Fear River.

METHODS

As reported in the Corrective Action Plan (Geosyntec, 2019) ten offsite groundwater seeps were identified on the west bank of the Cape Fear River south of the Site. The southwestern offsite seeps were identified by observation from a boat along the west shore of the Cape Fear River from the Old Outfall 002 to Georgia Branch Creek (Attachment A). The shoreline was observed for surface water runoff, ground water seeps or erosional features indicative of flowing water. A total of ten seeps were identified on the western shore of the Cape Fear River (Figure B1) in 2019 (Geosyntec, 2019). The observed flow from these seeps ranged from seeping water from an embankment (i.e. trickles) to a visible small stream in some of the seeps. On March 4th, 2020 the Lock and Dam seep and Seeps E to K were sampled by submerging a 250 mL HDPE sampling bottle facing into the direction of flow to capture the water flowing from the seeps. Flow was measured using the salt dilution method for Seeps G and K which had enough flow for this method. Flow at Seeps E, F, H and I had insufficient flow to use the salt dilution tests and seep flow was measured by recording the time for the flow from the seep to fill a container of known volume. Chemours obtained verbal or written access agreement for sampling the offsite seeps with the exception of seep L and seep M for which the landowners could not be contacted, preventing the sampling of flow gauging of these two seeps. Seep samples were sent to Test America (Sacramento) and analyzed for the Table 3+ Standard Operating Protocol (SOP) and EPA Method 537 Mod. Seep Table 3+ PFAS mass discharge was calculated by multiplying the measured Total Table 3+ PFAS concentration by the measured flow.

DATA QUALITY

Analytical data were reviewed using the Data Verification Module (DVM) within the Locus™ Environmental Information Management (EIM) system, which is a commercial software program used to manage data. Following the DVM process, a manual review of the data was conducted. The DVM and manual review results were combined in a data review narrative report for each set of sample results, which were consistent with Stage 2b of the EPA Guidance for Labeling

Externally Validated Laboratory Analytical Data for Superfund Use (EPA-540-R-08-005 2009). The narrative report summarizes which samples were qualified (if any), the specific reasons for the qualification, and any potential bias in reported results. The data usability, in view of the project's data quality objectives (DQOs), was assessed and the data were entered into the EIM system. The data were evaluated by the DVM against the following data usability checks:

- Hold time criteria;
- Field and laboratory blank contamination;
- Completeness of QA/QC samples;
- MS/MSD recoveries and the relative percent differences (RPDs) between these spikes;
- Laboratory control sample/control sample duplicate recoveries and the RPD between these spikes;
- Surrogate spike recoveries for organic analyses; and
- RPD between field duplicate sample pairs.

The analytical results for the offsite seeps are presented in Table B1. Results are presented with all validation flags. The "J" and "UJ" flagged results indicate usable data, which should be considered as quantitatively estimated. The results are not necessarily within the laboratory's criteria for accuracy and precision of the test method employed, but in the reviewer's professional judgment are usable. Laboratory reports and data review narratives are provided in Attachment B.

The data review process described above was performed for all laboratory chemical analytical data generated for the sampling event. The DQOs were met for the analytical results for accuracy and precision. The data collected are believed to be complete, representative and comparable, with the exception of R-PSDA, Hydrolyzed PSDA, and R-EVE.

As reported in the *Matrix Interference During Analysis of Table 3+ Compounds* memorandum (Geosyntec, 2020b) matrix interference studies conducted by the analytical laboratory (TestAmerica, Sacramento) have shown that the quantitation of these three compounds (R-PSDA [formerly Byproduct 4], Hydrolyzed PSDA [formerly Byproduct 5], and R-EVE) may be inaccurate due to interferences by the sample matrix. Given the matrix interference issues, Total Table 3+ PFAS concentrations are calculated and presented two ways in this report: (i) summing over 17 of the 20 Table 3+ compounds "Total T3+(17)", i.e., excluding results of R-PSDA, Hydrolyzed PSDA, and R-EVE and (ii) summing over 20 of the Table 3+ compounds "Total T3+(20)". Expressing these data as a range represents the range of what these results might be without any matrix interferences. In other words, the sum of all 20 compounds is likely an overestimate of the actual value while the sum of the 17 compounds is an underestimate of the actual value.

One field blank sample was analyzed for Table 3+ and Mod 537 PFAS compounds. All analytes were non-detect indicating there was no cross-contamination in the field blank.

RESULTS AND DISCUSSION

The analytical results for the samples collected at the southwestern offsite seeps are presented in Table B1 and B2. The samples collected and analyzed for Table 3+ from the southwestern offsite seeps reported 14 PFAS. The sum of the Total Table 3+ PFAS in seeps south of Old Outfall ranged between 1,500 ng/L to 5,500 ng/L at seeps J and F, respectively, for seeps located south of the Old Outfall. The Lock and Dam seep had a Total Table 3+ PFAS concentration of 192,000 to ng/L. The highest Table 3 + compounds detected in the Lock and Dam seep was PFMOAA with concentrations of 160,000 ng/L. PMPA, PEPA, PFO2HxA, PFO3OA, NVHOS and HFPO-DA were detected in all of the 8 seeps sampled. The concentration of Table 3+ PFAS decreases in each of the seeps with increasing distance from the Site (i.e. going southward). Note that in the offsite seeps samples, concentrations of R-PSDA, Hydrolyzed PSDA, and R-EVE were low relative to other compounds (0% to 2% of Total Table 3+) and did not change the Total Table 3+ concentration reported to two significant digits for all seeps, except Seeps E and F. Seeps E and F had concentrations of Total Table 3+ PFAS summed over 20 compounds 100 ng/L higher than the sum of total Table 3+ over 17 compounds when rounding to two significant figures.

Twelve (12) of 35 PFAS were detected with EPA Method 537 Mod. Of these 12 PFAS, perfluoropentanoic acid was detected at all seeps. The highest perfluoropentanoic acid concentration c (620 ng/L) was reported in the sample collected at the Lock and Dam Seep. PFOS concentrations ranged between non-detect (Seeps G and H) to 45 ng/L (Lock and Dam Seep). PFOA concentrations ranged between non-detect (Seeps F, G, H and I) to 23 ng/L (Lock and Dam Seep).

Measured flows among all the offsite seeps ranged from 1 gallon per minute (gpm) at seep F to 73 gpm at seep G. The measured flow rate at the Lock and Dam seep was 16 gpm.

Consistent with previous findings (Corrective Action Plan, Geosyntec, 2019), Seeps E to K continue to indicate an aerial deposition PFAS signature (concentrations decrease in seeps more distant from the Site). The Lock and Dam Seep PFAS concentrations and PFAS signatures are consistent with a process water signature consistent with the Old Outfall and onsite seep concentrations and signatures. The Lock and Dam seep is located upgradient of the proposed groundwater remedy which, similar to the onsite seeps, is anticipated to prevent flow of groundwater to this seep.

The calculated Total Table 3+ PFAS mass discharge over 20 compounds for the seeps south of the Old Outfall with an aerial deposition signature ranged from 0.0003 mg/s at Seep I to 0.02 mg/s at Seep G. The summed Total Table 3+ PFAS mass discharge from these offsite seeps south of the Old Outfall was 0.03 mg/s. For reference, 0.03 mg/s is equivalent to 0.02% of the median Total Table 3+ mass discharge (16 mg/s) from composite samples measured in the Cape Fear River as described in the *Cape Fear River Table 3+ PFAS Mass Loading Assessment – First Quarter 2020 Report* .

The calculated Total Table 3+ PFAS mass discharge for the Lock and Dam Seep was 0.2 mg/s. For reference, this loading is equivalent to 1% of the median Total Table 3+ mass discharge (16 mg/s) from composite Cape Fear River water samples from the Tar Heel Ferry Road sampling location (Geosyntec, 2020a).

REFERENCES:

Geosyntec, 2019. Corrective Action Plan. 2019. Chemours Fayetteville Works. December 31, 2019.

Geosyntec, 2020a. Cape Fear River Table 3+ PFAS Mass Loading Assessment – First Quarter 2020 Report. Chemours Fayetteville Works. July 31, 2020.

Geosyntec, 2020b. Matrix Interference During Analysis of Table 3+ Compounds. Chemours Fayetteville Works. July 31, 2020.

* * * * *

Enclosures:

- Tables
- Figures
- Attachment A: Field Logs
- Attachment B: Data Review Narratives and Laboratory Reports

TABLES

TABLE B1
SOUTHWESTERN OFFSITE SEEPS TABLE 3+ RESULTS
Chemours Fayetteville Works, North Carolina

Location ID	Lock-Dam Seep	Lock-Dam Seep	SEEP-E	SEEP-F	SEEP-G	SEEP-H	SEEP-I	SEEP-J	SEEP-K	FBLK
Field Sample ID	Lock-Dam Seep-030420	Lock-Dam Seep-030420-D	Seep E-030420	Seep F-030420	Seep G-030420	Seep H-030420	Seep I-030420	Seep J-030420	Seep K-030420	FB-030420
Sample Date	04-03-20	04-03-20	04-03-20	04-03-20	04-03-20	04-03-20	04-03-20	04-03-20	04-03-20	04-03-20
QA/QC		Duplicate								Field Blank
Table 3+ SOP (ng/L)										
Hfpo Dimer Acid	**6,800**	**5,300**	**950**	**1,100**	**730**	**540**	**470**	**250**	**490**	<2.5
PFMOAA	**140,000**	**160,000**	**390**	**730**	**220**	**180**	**200**	**140**	**210**	<5
PFO2HxA	**27,000**	**27,000**	**470**	**640**	**410**	**330**	**280**	**130**	**230**	<2
PFO3OA	**8,500**	**8,500**	**83**	**110**	**56**	**30**	**18**	**16**	**28**	<2
PFO4DA	**1,300**	**1,600**	**17**	**9.1**	**7.9**	<2	<2	**4.7**	**5**	<2
PFO5DA	<200	<200	<2	<2	<2	<2	<2	**2.2**	<2	<2
PMPA	**6,300**	**6,400**	**1,800**	**2,100**	**1,500**	**1,100**	**1,100**	**660**	**1,000**	<10
PEPA	<2,000	**2,100**	**600**	**710**	**520**	**360**	**390**	**200**	**350**	<20
PS Acid (Formerly PFESA-BP1)	<200	<200	<2	<2	<2	<2	<2	<2	<2	<2
Hydro-PS Acid (Formerly PFESA-BP2)	<200	<200	**24**	**10**	**11**	**9.3**	**12**	**6.9**	**16**	<2
R-PSDA (Formerly Byproduct 4)	**440 J**	**490 J**	**53 J**	**68 J**	**44 J**	**30 J**	**36**	**23**	**49**	<2
Hydrolyzed PSDA (Formerly Byproduct 5)	**450**	**460**	<2	<2	<2	<2	<2	<2	<2	<2
R-PSDCA (Formerly Byproduct 6)	<200	<200	<2	<2	<2	<2	<2	<2	<2	<2
NVHOS	**1,500**	**1,500**	**6**	**8**	**5**	**3.7**	**4.5**	**2.8**	**4.7**	<2
EVE Acid	<200	<200	<2	<2	<2	<2	<2	<2	<2	<2
Hydro-EVE Acid	<200	<200	**2.3**	<2	<2	<2	<2	<2	<2	<2
R-EVE	<200	<200	**20**	**40**	**28**	**20**	**17**	**13**	**25**	<2
PES	<200	<200	<2	<2	<2	<2	<2	<2	<2	<2
PFECA B	<200	<200	<2	<2	<2	<2	<2	<2	<2	<2
PFECA-G	<200	<200	<2	<2	<2	<2	<2	<2	<2	<2
Total Table 3+ (17 Compounds) (ng/L)	**210,000**	**190,000**	**4,300**	**5,400**	**3,500**	**2,600**	**2,500**	**1,400**	**2,300**	**0.0**
Total Table 3+ (20 Compounds) (ng/L)	**210,000**	**190,000**	**4,400**	**5,500**	**3,500**	**2,600**	**2,500**	**1,400**	**2,400**	**0.0**

Notes:
Bold - Analyte detected above associated reporting limit
Abbreviations:
B - analyte detected in an associated blank
R - Rejected, data should not be used
J - Analyte detected. Reported value may not be accurate or precise
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SOP - standard operating procedure
UJ – Analyte not detected. Reporting limit may not be accurate or precise.
< - Analyte not detected above associated reporting limit.

TABLE B2
SOUTHWESTERN OFFSITE SEEPS OTHER PFAS RESULTS
Chemours Fayetteville Works, North Carolina

Location ID	Lock-Dam Seep	Lock-Dam Seep	SEEP-E	SEEP-F	SEEP-G	SEEP-H	SEEP-I	SEEP-J	SEEP-K	FBLK
Field Sample ID	Lock-Dam Seep-030420	Lock-Dam Seep-030420-D	Seep E-030420	Seep F-030420	Seep G-030420	Seep H-030420	Seep I-030420	Seep J-030420	Seep K-030420	FB-030420
Sample Date	04-03-20	04-03-20	04-03-20	04-03-20	04-03-20	04-03-20	04-03-20	04-03-20	04-03-20	04-03-20
QA/QC		Duplicate								Field Blank
Other PFAS (ng/L)										
10:2 Fluorotelomer sulfonate	<4.3	<4.3	<4.1	<4.5	<4.3	<4.7	<4.4	<4.1	<4.2	<4.2
11Cl-PF3OUdS	<1.7	<1.7	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2.6	<2.6	<2.5	<2.7	<2.6	<2.8	<2.6	<2.5	<2.5	<2.5
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<1.7	<1.7	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2.6 UJ	<2.6 UJ	<2.5	<2.7	<2.6	<2.8	<2.6	<2.5 UJ	<2.5 UJ	<2.5
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<2.6 UJ	<2.6 UJ	<2.5	<2.7	<2.6	<2.8	<2.6	<2.5 UJ	<2.5 UJ	<2.5
6:2 Fluorotelomer sulfonate	<4.3	<4.3	<4.1	<4.5	<4.3	<4.7	<4.4	<4.1	<4.2	<4.2
9Cl-PF3ONS	<1.7	<1.7	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
DONA	<1.7	<1.7	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
N-ethyl perfluorooctane sulfonamidoacetic acid	<2.6	<2.6	<2.5	<2.7	<2.6	<2.8	<2.6	<2.5	<2.5	<2.5
N-ethylperfluoro-1-octanesulfonamide	<4.3 UJ	<4.3 UJ	<4.1 UJ	<4.5 UJ	<4.3 UJ	<4.7	<4.4 UJ	<4.1 UJ	<4.2 UJ	<4.2
N-methyl perfluoro-1-octanesulfonamide	<2.6 UJ	<2.6 UJ	<2.5 UJ	<2.7 UJ	<2.6 UJ	<2.8 UJ	<2.6 UJ	<2.5 UJ	<2.5 UJ	<2.5
N-methyl perfluorooctane sulfonamidoacetic acid	<1.7	**1.8**	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
Perfluorobutane Sulfonic Acid	**2.2**	**2**	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
Perfluorobutanoic Acid	**74**	**74**	**11**	**14**	**11**	**9.9**	**8.5**	<4.1	**6.3**	<4.2
Perfluorodecane Sulfonic Acid	<1.7	<1.7	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
Perfluorodecanoic Acid	<1.7	**1.9**	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
Perfluorododecane sulfonic acid (PFDoS)	<2.6	<2.6	<2.5	<2.7	<2.6	<2.8	<2.6	<2.5	<2.5	<2.5
Perfluorododecanoic Acid	<1.7	<1.7	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
Perfluoroheptane sulfonic acid (PFHpS)	<1.7	<1.7	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
Perfluoroheptanoic Acid	**45**	**48**	**2.4**	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
Perfluorohexadecanoic acid (PFHxDA)	<2.6 UJ	<2.6	<2.5	<2.7	<2.6	<2.8	<2.6	<2.5	<2.5	<2.5
Perfluorohexane Sulfonic Acid	**5.1**	**5.2**	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
Perfluorohexanoic Acid	**16**	**15**	**2.5**	**3.7**	**2.6**	**2.5**	**2**	<1.6	**2.2**	<1.7
Perfluorononanesulfonic acid	<1.7	<1.7	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
Perfluorononanoic Acid	**3.1**	**2.7**	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
Perfluorooctadecanoic acid	<2.6 R	<2.6	<2.5	<2.7	<2.6	<2.8	<2.6	<2.5	<2.5	<2.5
Perfluorooctane Sulfonamide	**5.2**	**4.7**	<1.7	<1.8	<1.7	**2.2**	<1.8	<1.6	**1.8**	<1.7
Perfluoropentane sulfonic acid (PFPeS)	<1.7	<1.7	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
Perfluoropentanoic Acid	**620**	**600**	**12**	**17**	**14**	**12**	**10**	**4.5**	**7.3**	<1.7
Perfluorotetradecanoic Acid	<1.7	<1.7	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
Perfluorotridecanoic Acid	<1.7	<1.7	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
Perfluoroundecanoic Acid	<1.7	<1.7	<1.7	<1.8	<1.7	<1.9	<1.8	<1.6	<1.7	<1.7
PFOA	**23**	**21**	**3.3**	<1.8	<1.7	<1.9	<1.8	**3.6**	**2.2**	<1.7
PFOS	**45**	**47**	**3.5**	**1.9**	<1.7	<1.9	**4**	**12**	**5**	<1.7

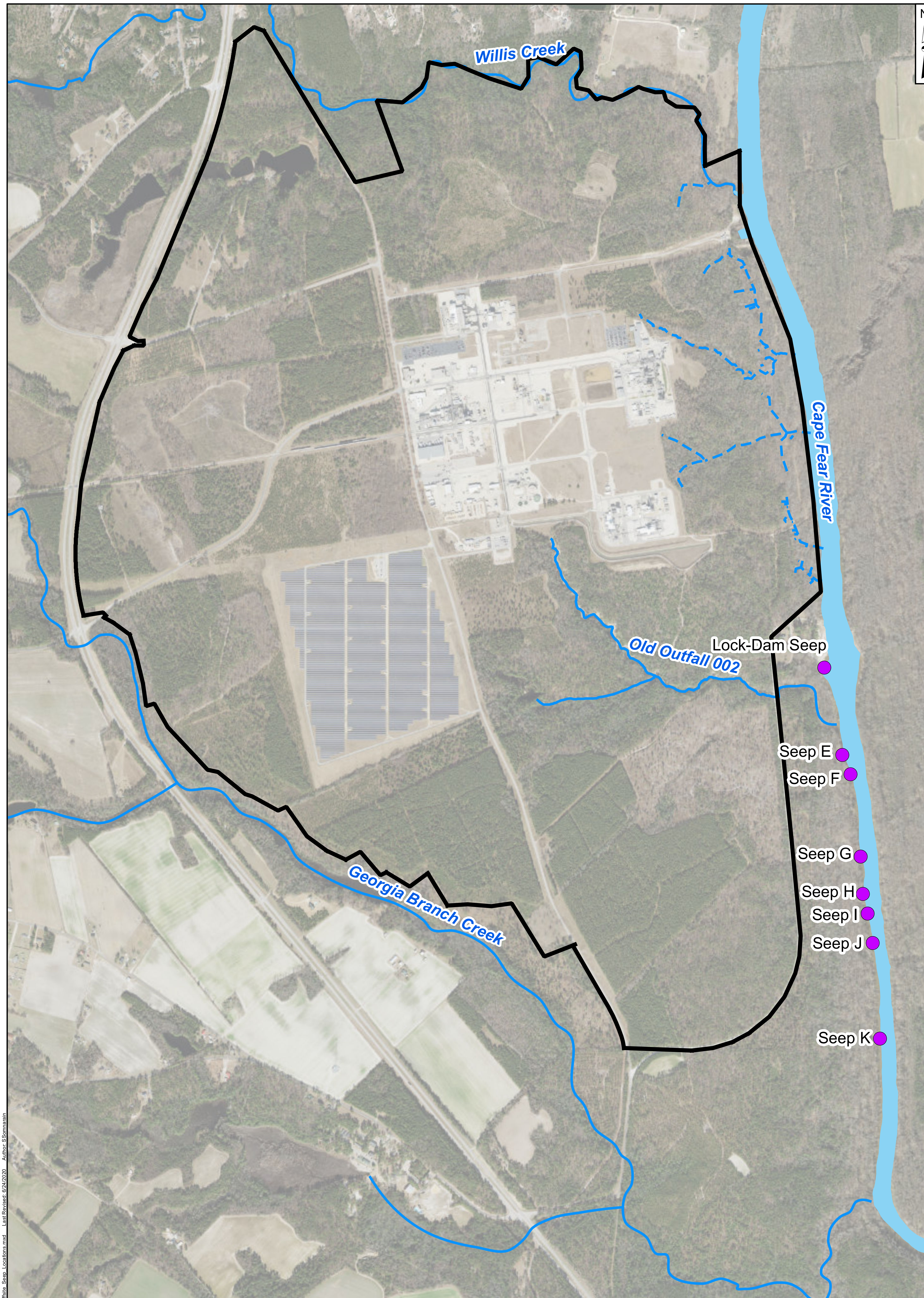
Notes:
Bold - Analyte detected above associated reporting limit
Abbreviations:
B - analyte detected in an associated blank
R - Rejected, data should not be used
J - Analyte detected. Reported value may not be accurate or precise
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SOP - standard operating procedure
UJ – Analyte not detected. Reporting limit may not be accurate or precise.
< - Analyte not detected above associated reporting limit.

TABLE B3
SUMMARY OF OFFSITE SEEPS MASS DISCHARGE
Chemours Fayetteville Works, North Carolina

Seep	Flow (gpm)	Total Table 3+ (17 Compounds) (ng/L)	Total Table 3+ (20 Compounds) (ng/L)	Mass Discharge (17 Compounds) (mg/s)	Mass Discharge (20 Compounds) (mg/s)
Lock-Dam Seep	16	190,000	190,000	0.196	0.20
SEEP-E	17	4,300	4,400	0.0048	0.0049
SEEP-F	1.0	5,400	5,500	0.00034	0.00035
SEEP-G	73	3,500	3,500	0.016	0.016
SEEP-H	4.5	2,600	2,600	0.00072	0.00074
SEEP-I	1.8	2,500	2,500	0.00028	0.00029
SEEP-J	5.1	1,400	1,400	0.00046	0.00047
SEEP-K	19	2,300	2,400	0.0028	0.0029
Total				**0.22**	**0.22**

Abbreviations:
gpm - Gallons per minute
ng/L - nanograms per liter
mg/s - milligrams per second

FIGURES



Legend

- Location of Offsite Seep Mouth at Cape Fear River
- Observed Seep
- Nearby Tributary
- Site Boundary

Notes:

1. Seep E to K samples were collected where the seeps entered the Cape Fear River. Their locations on this figure have been slightly adjusted to facilitate interpretation so that they do not appear to be in the Cape Fear River.
2. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS (MajorHydro shapefile).
3. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

1,000 500 0 1,000 Feet

Southwestern Offsite Seeps Locations

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure **B1**

Raleigh | July 2020

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Baseline Monitoring Workplan\TR0795_Offsite_Seep_Locations.mxd Last Revised: 6/24/2020 Author: SSomnarain

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US

ATTACHMENT A
Field Logs

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: Lock-Dam Seep

Samplers: KEN STUART,

Event: Other

Project Manager: Tracy Ovbey

Date: 03-04-2020 22:08

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
Lock-Dam Seep-030420	03-04-2020 10:18	10:25	6.41	1.53	140.70	61.51	0.41	14.47	lt tan	none	X	

Sampling Data

Method:

Latitude: 34.8337962

Longitude: -78.8236701

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

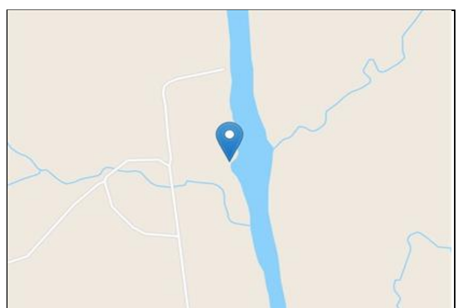
EPA 537 Modified; Table 3+

WEATHER CONDITIONS

Temperature (F):	57.00
Sky:	Cloudy
Precipitation:	Rain
Wind (mph)	5

Flow Rate: 61.5 liters per minute

Lock and Dam Seep at boat ramo



GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: Seep E

Samplers: KEN STUART, Danielle Delgado

Event: Other

Project Manager: Tracy Ovbey

Date: 03-04-2020 11:45

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
Seep E-030420	03-04-2020 11:45	11:50	3.85	7.12	159.60	0.08	0.24	12.58	clear	no		

Sampling Data

Method:

Latitude: 34.8307047

Longitude: -78.8230833

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

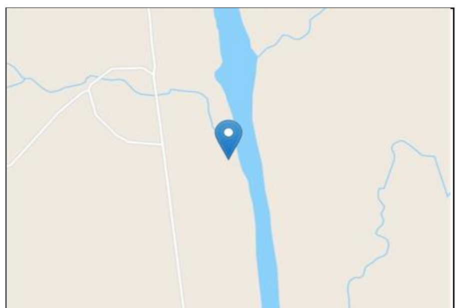
ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3+

WEATHER CONDITIONS

Temperature (F):	55.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	2

Flow Rate: 66 liters per minute



GPS Location (if collected)

Parsons PLUS creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: Seep F

Samplers: KEN STUART, Danielle Delgado

Event: Other

Project Manager: Tracy Ovbey

Date: 03-03-2020 12:16

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
Seep F-030322	03-03-2022 12:16	12:20	4.46	5.42	137.70	15.41	0.18	16.82	lt tan	none		

Sampling Data

Method:

Latitude: 34.8299146

Longitude: -78.8225626

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

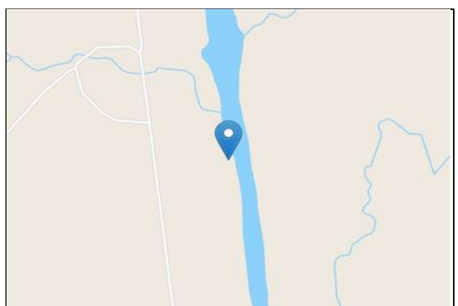
EPA 537 Modified; Table 3+

WEATHER CONDITIONS

Temperature (F):	55.00
Sky:	Cloudy
Precipitation:	
Wind (mph)	2

Flow Rate:	3.78	liters per minute

just before river



GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville
Location ID: Seep G
Samplers: KEN STUART, Danielle Delgado
Event: Other
Project Manager: Tracy Ovbey
Date: 03-04-2020 12:47

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
Seep G-030420	03-04-2020 12:50	12:55	3.86	7.28	162.50	2.28	0.17	15.64	clear	no e		

Sampling Data

Method:

Latitude: 34.8272885
Longitude: -78.8229701

SAMPLE SET			
Parameter	**Bottle**	**Pres.**	**Method**
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

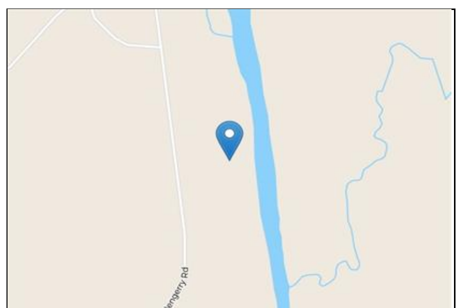
ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3+

WEATHER CONDITIONS	
Temperature (F):	57.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	2

Flow Rate:

sample and flow location



GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: Seep H

Samplers: KEN STUART, Danielle Delgado

Event: Other

Project Manager: Tracy Ovbey

Date: 03-04-2020 13:35

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	^oC				
Seep H-030420	03-04-2020 13:35	13:40	4.00	5.33	154.70	7.18	0.12	16.36	clear	no		

Sampling Data

Method:

Latitude: 34.825597

Longitude: -78.8222154

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

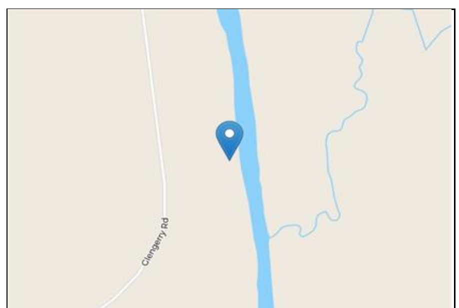
EPA 537 Modified; Table 3+

WEATHER CONDITIONS

Temperature (F):	55.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	2

Flow Rate: 17 liters per minute

at flow sample area



GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: Seep I

Samplers: KEN STUART, Danielle Delgado

Event: Other

Project Manager: Tracy Ovbey

Date: 03-04-2020 14:26

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
Seep I-030420	03-04-2020 14:26	14:30	5.08	8.77	162.20	78.32	0.09	14.10	lt brown	no		

Sampling Data

Method:

Latitude: 34.8248994

Longitude: -78.8219862

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

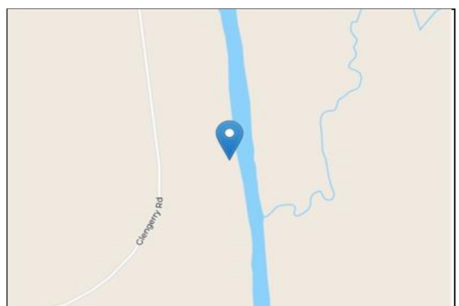
EPA 537 Modified; Table 3+

WEATHER CONDITIONS

Temperature (F):	55.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	2

Flow Rate:	6.8	liters per minute

sample flow location near river



GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: Seep J

Samplers: KEN STUART, Danielle Delgado

Event: Other

Project Manager: Tracy Ovbey

Date: 03-04-2020 15:10

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
Seep J-030420	03-04-2020 15:10	15:15	6.22	7.32	134.90	71.83	0.08	14.83	lt brown	none		

Sampling Data

Method: Other

Latitude: 34.8239222

Longitude: -78.821726

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

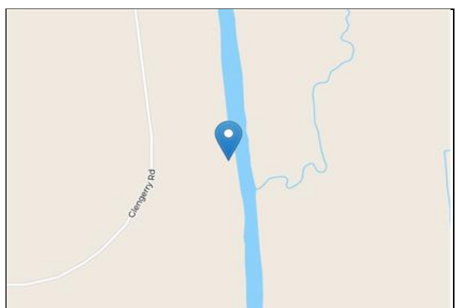
ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3+

WEATHER CONDITIONS

Temperature (F):	60.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	2

Flow Rate:	19.5	liters per minute



GPS Location (if collected)

Site: Chemours Fayetteville Works **Salt Dilution Gauging** Project Number: TR0726

Sample Location Seep K
Date 3-4-2020

Approx. stream width 2'
Total length ≈ 40'

Geosyntec consultants

EC Probe Calibration

S.No.	Salt Mass (g)	~~Carboy Water Volume (L)~~ BW Time	Stock Concentration (mg/L)	EC Reading (µS/cm)	Temp °C
1		1330	0.1	35	18.17
2		1332	1	28	18.58
3		1334	10	34	18.91
4		1336	100	154	18.84
5		1338	1006	1263	18.61
6		1342	10000	12987	18.41
7		1351	100000	46342	16.26
8					

Background Stream Conductivity

S.No	Time	EC Reading (µS/cm)	Temp °C
1	13:54	BW ~~54~~ 88	13.50
2	13:55	BW ~~12~~ 85	13.49
3	13:56	84	13.48
4	13:57	82	13.47
5	13:58	88	13.47
6			
7			
8			

BW Stream leaf

~~**Stock Solution Dosing Rate**~~

S.No.	~~Volume (mL)~~	BW ~~Time (min)~~ s	Flow Rate (mL/min)
1		21.11	
2		23.15	
3		22.17	

10' Interval BW Avg: 22.14 s with ~~leave~~ BW leaf

Tests	salt mass	concentration	Time	Temp
1. 3L	299.9 g NaCl	81,390	14:11	13.56 °C
2. 3L	300.6 g NaCl	85 215	14:31	13.56 °C
3. 3L	300.3 g NaCl	82 441	14 42	13.48 °C

Stock Solution and Stream Conductivity Readings

S.No.	Time	Distance (feet from stock solution)	EC Reading (µS/cm)	Notes	S.No.	Time	Distance (feet from stock solution)	EC Reading (µS/cm)
1		0		Stock Solution	15			
2	~~1417~~ 1427	End ~40'			16			
3	1439	End ~40'			17			
4	1451	End ~40'			18			
5					19			
6					20			
7					21			
8					22			
9					23			
10					24			
11					25			
12					26			
13					27			
14					28			

Site: Chemours Fayetteville Works **Salt Dilution Gauging** Project Number: TR0726

Sample Location Seep G
Date 3-4-2020
Approx. stream width 15'
Total Length ≈ 30'

Geosyntec consultants

EC Probe Calibration

S.No.	Salt Mass (g)	Carboy Water Volume (L)	Stock Concentration (mg/L)	EC Reading (µS/cm)
1			~~[illegible]~~ BW	
2			0.1	26
3			1	39
4			10	34
5			100	155
6			1000	1320
7			10000	12997
8			100000	99895

Background Stream Conductivity

S.No	Time	EC Reading (µS/cm)	Temp
1	11:21	120	14.51°C
2	11:23	129	14.51°C
3	11:25	119	14.46°C
4	11:25	112	14.42°C
5	11:26	119	15.11°C
6			
7			
8			

BW Flow BW ~~Stock Solution Dosing~~ Rate

S.No.	Volume (mL)	Time BW ~~(min)~~ sec	Flow Rate (mL/min)
1		25.43	
2		33.73	
3		23.23	

Avg = 23.83 BW 22.31 with leaf

Tests	salt mass	concentration	Time	Temp
1. 3L	300.5 g NaCl	100,056 µS/cm	11:19	13.24°C
2. 3L	300.4 g NaCl	96035	11:48	13.19°C
3. 3L	299.9 g	98969	12:10	13.80°C

Stock Solution and Stream Conductivity Readings

S.No.	Time	Distance (feet from stock solution)	EC Reading (µS/cm)	Notes	S.No.	Time	Distance (feet from stock solution)	EC Reading (µS/cm)
1		0		Stock Solution	15			
2	1128	end ~40'			16			
3	1150	end ~40'			17			
4	1214	end ~40'			18			
5					19			
6					20			
7					21			
8					22			
9					23			
10					24			
11					25			
12					26			
13					27			
14					28			

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: Seep K

Samplers: KEN STUART, Danielle Delgado

Event: Other

Project Manager: Tracy Ovbey

Date: 03-04-2020 15:35

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
Seep K-030420	03-04-2020 15:35	15:45	4.27	8.41	179.10	5.91	0.14	14.40	clear	none		

Sampling Data

Method: Bottle Grab

Latitude: 34.8208566

Longitude: -78.8221119

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

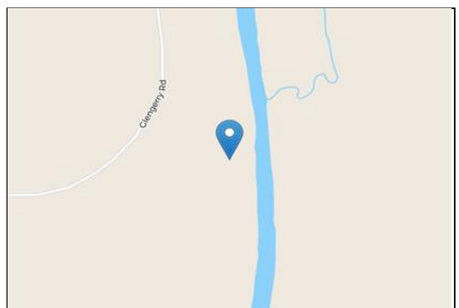
EPA 537 Modified; Table 3+

WEATHER CONDITIONS

Temperature (F):	60.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	2

Flow Rate:

samaple and flow



GPS Location (if collected)

ATTACHMENT B
DATA REVIEW NARRATIVES AND LABORATORY REPORTS

Data review narratives are included in this attachment. Due to file size limits, analytical laboratory reports will be provided separately with the hard copy of the report.

DVM Narrative Report

Site: Fayetteville **Sampling Program:** Offsite Seeps 2020 **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the data rejection level. The reported non-detect result is unusable.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
Lock-Dam Seep-030420	03/04/2020	1274938	Perfluorooctadecanoic acid	0.0026	ug/L	PQL		0.0026	R	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** Offsite Seeps 2020 **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit. The actual detection limits may be higher than reported.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
Lock-Dam Seep-030420	03/04/2020	1274938	Perfluorohexadecanoic acid (PFHxDA)	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** Offsite Seeps 2020 **Validation Options:** LABSTATS

Validation Reason One or more surrogates had relative percent recovery (RPR) values less than the data rejection level. The reported result is unusable.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
Lock-Dam Seep-030420	03/04/2020	1274938	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Lock-Dam Seep-030420	03/04/2020	1274938	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Lock-Dam Seep-030420	03/04/2020	1274938	N-methyl perfluoro-1-octanesulfonamide	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Lock-Dam Seep-030420	03/04/2020	1274938	N-ethylperfluoro-1-octanesulfonamide	0.0043	UG/L	PQL		0.0043	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Lock-Dam Seep-030420-D	03/04/2020	1274942	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Lock-Dam Seep-030420-D	03/04/2020	1274942	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Lock-Dam Seep-030420-D	03/04/2020	1274942	N-methyl perfluoro-1-octanesulfonamide	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Lock-Dam Seep-030420-D	03/04/2020	1274942	N-ethylperfluoro-1-octanesulfonamide	0.0043	UG/L	PQL		0.0043	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep E-030420	03/04/2020	1274946	N-methyl perfluoro-1-octanesulfonamide	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep E-030420	03/04/2020	1274946	N-ethylperfluoro-1-octanesulfonamide	0.0041	UG/L	PQL		0.0041	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep F-030420	03/04/2020	1274950	N-methyl perfluoro-1-octanesulfonamide	0.0027	ug/L	PQL		0.0027	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep F-030420	03/04/2020	1274950	N-ethylperfluoro-1-octanesulfonamide	0.0045	UG/L	PQL		0.0045	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep G-030420	03/04/2020	1274954	N-methyl perfluoro-1-octanesulfonamide	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep G-030420	03/04/2020	1274954	N-ethylperfluoro-1-octanesulfonamide	0.0043	UG/L	PQL		0.0043	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep I-030420	03/04/2020	1274962	N-methyl perfluoro-1-octanesulfonamide	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep I-030420	03/04/2020	1274962	N-ethylperfluoro-1-octanesulfonamide	0.0044	UG/L	PQL		0.0044	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** Offsite Seeps 2020 **Validation Options:** LABSTATS

Validation Reason One or more surrogates had relative percent recovery (RPR) values less than the data rejection level. The reported result is unusable.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
Seep J-030420	03/04/2020	1274966	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep J-030420	03/04/2020	1274966	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep J-030420	03/04/2020	1274966	N-methyl perfluoro-1-octanesulfonamide	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep J-030420	03/04/2020	1274966	N-ethylperfluoro-1-octanesulfonamide	0.0041	UG/L	PQL		0.0041	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep K-030420	03/04/2020	1274970	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep K-030420	03/04/2020	1274970	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep K-030420	03/04/2020	1274970	N-methyl perfluoro-1-octanesulfonamide	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep K-030420	03/04/2020	1274970	N-ethylperfluoro-1-octanesulfonamide	0.0042	UG/L	PQL		0.0042	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep H-030420	03/04/2020	1274958	N-methyl perfluoro-1-octanesulfonamide	0.0028	ug/L	PQL		0.0028	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** Offsite Seeps 2020 **Validation Options:** LABSTATS

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values higher than the upper control limit. The reported result may be biased high.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
Seep H-030420	03/04/2020	1274961	Byproduct 4	0.030	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Seep H-030420	03/04/2020	1274958	Byproduct 4	0.028	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Seep G-030420	03/04/2020	1274957	Byproduct 4	0.044	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Seep G-030420	03/04/2020	1274954	Byproduct 4	0.042	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Seep F-030420	03/04/2020	1274953	Byproduct 4	0.068	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Seep F-030420	03/04/2020	1274950	Byproduct 4	0.067	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Seep E-030420	03/04/2020	1274949	Byproduct 4	0.053	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Seep E-030420	03/04/2020	1274946	Byproduct 4	0.050	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Lock-Dam Seep-030420-D	03/04/2020	1274945	Byproduct 4	0.49	UG/L	PQL		0.20	J	Cl. Spec. Table 3 Compound SOP		
Lock-Dam Seep-030420-D	03/04/2020	1274942	Byproduct 4	0.52	UG/L	PQL		0.20	J	Cl. Spec. Table 3 Compound SOP		
Lock-Dam Seep-030420	03/04/2020	1274941	Byproduct 4	0.44	UG/L	MDL	0.20	0.20	J	Cl. Spec. Table 3 Compound SOP		
Lock-Dam Seep-030420	03/04/2020	1274938	Byproduct 4	0.45	UG/L	PQL		0.20	J	Cl. Spec. Table 3 Compound SOP		

APPENDIX C

Cape Fear River Surface Water Sampling Report

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

CAPE FEAR RIVER SURFACE WATER SAMPLING REPORT

Prepared for

The Chemours Company FC, LLC
22828 NC Highway 87
Fayetteville, NC 28306

Prepared by

Geosyntec Consultants of NC, PC
2501 Blue Ridge Road, Suite 430
Raleigh, NC 27607

Project Number TR0795

July 2020

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

LIST OF ABBREVIATIONS

CFPUA	Cape Fear Public Utility Authority
CFR	Cape Fear River
DQO	Data Quality Objective
EIM	Environmental Information Management
DVM	Data Verification Module
HFPO-DA	Hexafluoropropylene Oxide Dimer Acid
NC	North Carolina
NCDEQ	North Carolina Department of Environmental Quality
ng/L	Nanograms per liter
NCHHS	North Carolina Health and Human Services
NVHOS	Perfluoromethoxysulfonic Acid
PCB	Polychlorinated biphenyl
PFAS	Per- and Polyfluoroalkyl Substances
PFAA	Perfluoroalkyl Acid
PFCA	Perfluorocarboxylic Acid
PFMOAA	Perfluoro-2-methoxyacetic Acid
PFOA	Perfluorooctanoic Acid
PFO2HxA	Perfluoro(3,5-dioxahexanoic) Acid
PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) Acid
PFOS	Perfluorooctane Sulfonate
PFPeA	perfluoropentanoic acid
PFHxA	perfluorohexanoic acid
PMPA	perfluoromethoxypropyl carboxylic acid
POTW	Publicly owned treatment works
ppt	part per trillion
PPCPs	Pharmaceutical and Personal Care Products
PSDA	(Hydrolyzed) Acetic acid, 2-fluoro-2-[1,1,2,3,3,3-hexafluoro-2-(1,1,2,2-tetrafluoro-2-sulfoethoxy)propoxy]-
RPD	Relative Percent Difference

R-PSDA	Ethanesulfonic acid, 1,1,2,2-tetrafluoro-2-[1,2,2,3,3-pentafluoro-1-(trifluoromethyl)propoxy]-
R-PSDCA	Pentanoic acid, 2,2,3,3,4,5,5,5-octafluoro-4-(1,1,2,2-tetrafluoro-2-sulfoethoxy)-
SVOC	Semi Volatile Organic Carbon
TOP	Total Oxidizable Precursor
UCMR	Unregulated Contaminant Monitoring Rule
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
WWTP	Wastewater Treatment Plant

1 INTRODUCTION

Geosyntec Consultants of NC, PC (Geosyntec) has prepared this report for The Chemours Company FC, LLC (Chemours). Chemours operates the Fayetteville Works facility in Bladen County, North Carolina (the Site). The purpose of this report is to describe the findings of surface water samples collected in the Cape Fear River in January 2020. This work was performed to assess the potential presence of a range of compounds in the Cape Fear River.

2 CAPE FEAR RIVER WATERSHED BACKGROUND

The Cape Fear River and its entire watershed are located within the state of North Carolina (NC) (Figure C1). The Cape Fear River drains 9,164 square miles and empties into the Atlantic Ocean near the city of Wilmington, NC.

The Cape Fear River serves as a raw water source for multiple communities, providing water for upwards of 400,000 people. Fayetteville Public Works Commission (Fayetteville PWC, Cape Fear River Mile 54) draws water upstream of the Site to supply the City of Fayetteville. The Lower Cape Fear Water & Sewer Authority draws water from Bladen's Bluffs (Cape Fear River Mile 84), supplying water in Bladen County, and from Kings Bluff (Cape Fear River Mile 132), to supply Brunswick, Columbus, New Hanover and Pender Counties. The Cape Fear Public Utility Authority (CFPUA) receives water from Kings Bluff Intake Canal and supplies water to the City of Wilmington and New Hanover County.

The Cape Fear River also receives wastewater from multiple industrial and community discharges. Wastewaters from these sources include discharges into the Cape Fear River from wastewater treatment plants (WWTPs) or publicly owned treatment works (POTWs) located along the length of the River. Influent to these WWTPs may contain contaminants which may in turn be discharged into the Cape Fear River. Three of these WWTPs in the vicinity of the Site include Cross Creek Water Reclamation Facility (serving Fayetteville, Cape Fear River Mile 63.5), Rockfish Creek Water Reclamation Facility (serving Fayetteville, Cape Fear River Mile 56.5), and Elizabethtown WWTP (serving Elizabethtown, Cape Fear River Mile 100) as shown on Figure C1.

Drinking water sourced from the Cape Fear River by the Fayetteville Public Works Commission, Brunswick County Public Utility, and the CFPUA is known to contain contaminants including 1,4-dioxane, trihalomethanes, pharmaceutical and personal care products (PPCPs) and PFAS (CFPUA, 2018). 1,4-Dioxane has recently been identified in WWTP influent water from 22 out of 25 major POTWs in the Cape Fear River basin; PFAS were reported in all 25 sampled POTWs (North Carolina Department of Environmental Quality [NCDEQ], 2020). Consequently, the discharges from these

POTWs have the potential to increase in-river concentrations of these chemicals in the Cape Fear River.

In 2018, Chemours sampled surface water along the length of the Cape Fear River to assess the concentrations and distribution of PFAS in the Cape Fear River; results were reported in the *Assessment of the Chemical and Spatial Distribution of PFAS in the Cape Fear River* (Geosyntec, 2018). This Report builds upon the 2018 work by assessing additional inorganic compounds, organic compounds, PPCPs, and PFAS (including precursor compounds).

3 OBJECTIVES

The goal of this work was to assess the potential presence of a range of inorganic compounds, organic compounds (e.g. 1,4-dioxane), PPCPs, and per and polyfluoroalkyl substances (PFAS) in the Cape Fear River. Eleven sampling locations were selected to meet the following objectives:

- Deep River: sample collected in the Deep River prior to its confluence with the Cape Fear River to assess inputs into the Cape Fear River;
- Haw River: sample collected in the Haw River prior to its confluence with the Cape Fear River to assess inputs into the Cape Fear River;
- Cape Fear River Mile 4: sample collected to assess concentrations at the start of the Cape Fear River;
- Little River: sample collected in the Little River prior to its confluence with the Cape Fear River to assess inputs into the Cape Fear River;
- Cape Fear River Mile 54: sample collected adjacent to Fayetteville water intake to assess Cape Fear River concentrations near the Fayetteville water intake;
- Cape Fear River Mile 56.5: sample collected approximately 100 meters downstream of the Cross Creek Water Reclamation Facility outfall discharge (sample collected in the mixing zone) to assess contributions from the Water Reclamation Facility to the Cape Fear River;
- Cape Fear River Mile 63.5: sample collected approximately 100 meters downstream of the Rockfish Creek Water Reclamation Facility discharge (sample collected in the mixing zone) to assess contributions from the Water Reclamation Facility to the Cape Fear River;
- Cape Fear River Mile 76: sample collected directly upstream of the Site to assess concentrations upriver of the Fayetteville Works facility;

- Cape Fear River Mile 84: sample collected adjacent to Bladen Bluffs intake to assess concentrations downstream of the Fayetteville Works facility and adjacent to the intake;
- Cape Fear River Mile 100: sample collected approximately 100 meters downstream of the Elizabethtown WWTP outfall discharge (sample collected in the mixing zone) to assess contributions from the WWTP to the Cape Fear River; and
- Cape Fear River Mile 132: sample collected within the Kings Bluff Intake Canal which is proximal to the Cape Fear Lock and Dam No. 1 to assess concentrations adjacent to the intake.

4 SCOPE AND METHODS

4.1 Sampling Locations

Surface water was collected from eleven locations. Eight samples were collected from the Cape Fear River between River Mile 4 and the Kings Bluffs Intake Canal (River Mile 132). Three samples were collected from tributaries to the Cape Fear River. These samples were collected from the Haw, Deep, and Little Rivers immediately upstream of their confluence with the Cape Fear River. Sampling locations are shown in Figure C1, and sample location coordinates are provided in Table C1.

4.2 Sampling Methods

Samples collected at Cape Fear River Miles 56.5 (Cross Creek Water Reclamation Facility), 63.5 (Rockfish Creek Water Reclamation Facility), and 100 (Elizabethtown WWTP), were collected approximately 100 meters downstream of the locations where the discharges flow into the River, within the expected mixing zones of these discharges. Samples collected near drinking water intakes at Cape Fear River Mile 54 (Fayetteville water intake), 84 (Bladen Bluffs), and 132 (Kings Bluff) were collected in the river, adjacent to the location of the intakes. Samples from Cape Fear River Miles 4 and 76 were collected from the thalweg (the deepest point in the River cross-section at these locations). Samples in all locations were collected from a depth approximately equivalent with the mid-point in the water column.

Surface water samples were collected using a peristaltic pump; new, dedicated high density polyethylene tubing; and new, dedicated silicone tubing for the pump head at each location. The tubing was lowered halfway through the water column using an anchor weight and the tubing was fastened to the anchor with the tubing intake pointing upwards.

Surface water was pumped directly from the submerged tubing through the pump head to a flow-through cell. Field parameters (pH, temperature, specific conductance, dissolved oxygen, oxidation reduction potential, turbidity) were monitored over a 5-minute interval, then parameters were recorded, color and odors were noted, and the flow-through cell was disconnected. The tubing was cut to provide an un-tampered end, and grab samples were collected from the discharge of the tubing into the appropriate laboratory-supplied sampling bottles.

Sampling for organics, semi-volatiles and volatile organic compounds were not conducted through the silicone tubing since silicone may sorb some of these compounds and result in a potentially low bias. Instead, these samples were collected using the reverse-flow method by filling the tubing, retrieving the intake end of the tubing, and running the pump in reverse to discharge water in the tubing from the intake end into the bottleware.

Samples for chlorine, chlorine dioxide, and chloramine were collected last, as these parameters must be analyzed immediately after sample collection. These samples were analyzed in the field using colorimetric methods.

4.3 Analytical Methods

Samples were analyzed according to the methods listed for each location in Table C2. Chloramine, chlorine residual, and chlorine dioxide samples were analyzed colorimetrically in the field. Coliform samples were sent to Microbac Laboratories in Fayetteville, NC. Samples for remaining analytes were shipped to either Lancaster Laboratories or TestAmerica. Samples were shipped on the same day as sample collection.

4.4 Unknown PFAS via TOP Assay

There may be PFAS in samples that are not reported by currently available analytical methods. The total oxidizable precursor (TOP) assay can provide information about the potential presence of certain PFAS compounds beyond the targeted analytical methods. The TOP assay estimates the total concentration of polyfluoroalkyl acid (PFAA) precursors (e.g., fluorotelomers) present in a sample that may be oxidized to PFAAs quantitated on the United States Environmental Protection Agency (USEPA) Method 537M. Some of these PFAA precursors may already be known (that is, they may be quantitated as target analytes by the Method 537M), but some may be unknown, and these unknown PFAA precursors would be unaccounted for by the other analytical methods. The TOP assay, therefore, provides additional information about the PFAS composition, namely the presence of unknown PFAA precursors, in a sample.

The TOP assay consists of three steps and a calculation:

1. Analysis of the original sample by USEPA Method 537M;
2. Oxidation of the sample; and
3. Analysis of the oxidized sample by USEPA Method 537M.

The calculation is performed as follows:

- During the oxidation step, all PFAA precursors (both known and unknown) in the original sample are oxidized to form perfluorocarboxylic acids (PFCAs), while the existing PFCAs (and other PFAAs) already present in the original sample remain unchanged (Houtz and Sedlak, 2012).
- The total concentration of PFAA precursors (both known and unknown) in the original sample is then estimated by calculating the increase in PFCA concentration resulting from the oxidation step.
- The total concentration of unknown PFAA precursors in the original (unoxidized) sample is then calculated by subtracting the known PFAA precursors in the original sample from the total concentration of PFAA precursors (both known and unknown).

While the TOP assay provides an estimate of the total concentrations of unknown PFAA precursors, it does not provide information on the structure or the concentration of the individual unknown PFAA precursors. Additionally, the presence of unknown PFAA precursors will only be observed if the unknown PFAA precursors are oxidized to a PFCA that is on the USEPA Method 537M analyte list.

As noted above, PFAAs present in the original sample are not expected to oxidize during the TOP oxidation step (Martin et al, 2019). However, EPA Method 537M compounds often have elevated reporting limits after TOP oxidation due to analytical effects from the oxidation step. Therefore, if, after the TOP oxidation step, a given PFAA was not reported above the reporting limit, or a given PFAA was present at a lower concentration than the pre-oxidation step concentration, then, during the calculation step, the original reporting limit or concentration (before oxidation) of the PFAA was used. This assumption enables the calculation of precursor concentrations.

Table 3+ PFAS are not expected to yield PFAA precursors present on the EPA 537M analyte list based on research performed by Zhang and Knappe (Zhang et al. 2019). Of the 11[1] Table 3+ PFAS studied none formed PFAAs measured by Method 537M after the

[1] Table 3+ compounds assessed by Zhang et al for oxidation during TOP assay: HFPO-DA, PFMOAA, PMPA, PEPA, PFO2HxA, PFO3OA, PFO4DA, PFO5DA, Hydro-PS Acid, NVHOS and Hydro-EVE Acid. Table 3+ compounds not assessed by Zhang et al for oxidation during TOP assay: PFECA-B, PFECA-G, PES, PFESA, R-PSDA, Hydrolyzed PSDA, R-PSDCA, EVE Acid and R-EVE.

oxidation step. Therefore these 11 compounds were not expected to contribute to the estimated mass of unknown PFAA precursors in samples assessed in this report.

5 RESULTS

This section provides details related to data quality and discusses results of the sampling. A summary of analyte results by method is provided in Table C3. Surface water field parameters are provided in Table C4. Tables C5a, C5b, and 5c provide analytical results. TOP Assay results are provided in Tables C6 and C7.

5.1 Data Quality

All analytical data were reviewed using the Data Verification Module (DVM) within the Locus™ Environmental Information Management (EIM) system, a commercial software program used to manage data. Following the DVM process, a manual review of the data was conducted. The DVM and the manually reviewed results were combined in a data review narrative report for each set of sample results, which were consistent with Stage 2b of the USEPA Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (USEPA-540-R-08-005, 2009). The narrative report summarizes which samples were qualified (if any), the specific reasons for the qualification, and any potential bias in reported results. The data usability, in view of the project's data quality objectives (DQOs), was assessed, and the data were entered into the EIM system.

The data were evaluated by the DVM against the following data usability checks:

- Hold time criteria;
- Field and laboratory blank contamination;
- Completeness of quality assurance/quality control samples;
- Matrix spike/matrix spike duplicate recoveries and the relative percent differences (RPDs) between these spikes;
- Laboratory control sample/control sample duplicate recoveries and the RPD between these spikes;
- Surrogate spike recoveries for organic analyses; and
- RPD between field duplicate sample pairs.

A manual review of the data was also conducted, which included a review of instrument-related quality control results for calibration standards, blanks, and recoveries. The data review process (DVM plus manual review) applied the following data evaluation qualifiers to the analytical results as required:

- J Analyte present, reported value may not be accurate or precise;
- UJ Analyte not present below the reporting limit, reporting limit may not be accurate or precise; and
- B Analyte present in a blank sample, reported value may have a high bias.

The data review process described above was performed for all laboratory chemical analytical data generated for the sampling event. The DQOs were met for the analytical results for accuracy and precision. The data collected are believed to be complete, representative and comparable, with the exception of R-PSDA (formerly Byproduct 4), Hydrolyzed PSDA (formerly Byproduct 5), and R-EVE.

As reported in the *Matrix Interference During Analysis of Table 3+ Compounds* memorandum (Geosyntec, 2020a) matrix interference studies conducted by the analytical laboratory (TestAmerica, Sacramento) have shown that the quantitation of these three compounds (R-PSDA [formerly Byproduct 4], Hydrolyzed PSDA [formerly Byproduct 5], and R-EVE) is inaccurate due to interferences by the sample matrix in both groundwater and surface water. Given the matrix interference issues, Total Table 3+ PFAS concentrations are calculated and presented two ways in this report: (i) summing over 17 of the 20 Table 3+ compounds "Total Table 3+ (sum of 17 compounds)", i.e., excluding results of R-PSDA, Hydrolyzed PSDA, and R-EVE, and (ii) summing over 20 of the Table 3+ compounds "Total Table 3+ (sum of 20 compounds)". Expressing these data as a range represents possible values of what these results might be without matrix interferences. In other words, the sum of all 17 compounds is an underestimate of the actual value while the sum of the 20 compounds is likely an overestimate of the actual value.

5.2 PFAS and Precursors

The concentration of Total Table 3+ (20 compounds) ranged between below the reporting limits in several samples (samples from the Deep River, Haw River, Cape Fear River Mile 4, Cape Fear River Mile 56.5, and Cape Fear River Mile 76) to a maximum concentration of 122 nanograms per liter (ng/L) at River Mile 84. The highest individual compound concentration was PFMOAA at 36 ng/L from the sample collected at Cape Fear River Mile 84. In total, 9 Table 3+ compounds (including Hexafluoropropylene Oxide Dimer Acid [HFPO-DA]) were reported in samples from this event (Table C5a). By excluding the three compounds with matrix interference (R-PSDA, Hydrolyzed PSDA, and R-EVE), the sum of reported Table 3+ (17 compounds) ranged from below the reporting limit to a maximum concentration of 69 ng/L at River Mile 84.

Method 537M compounds were reported in all samples and ranged in concentration from 15.4 ng/L (Deep River) to 90.5 ng/L (Cape Fear River Mile 100, the Elizabethtown WWTP). The Method 537M compound with the highest measured concentration was perfluorohexanoic acid (PFHxA) at Cape Fear River Mile 100 (Elizabethtown WWTP) at 27 ng/L (Figure C2; Table C5a). In total, nine (9) Method 537M compounds were reported in samples collected from this event (Table C5a).

TOP assay results are provided in Tables C6 and C7. Table C6 provides the results of the EPA Method 537M results before and after the TOP oxidation step, and shows which analytes are known oxidizable precursors to PFAAs present in EPA Method 537M, which analytes are existing PFCAs, and which compounds are not expected to change in concentration as a result of the TOP oxidation step. Table 7 provides the calculation of the concentration of unknown PFAA precursors present in each sample. Concentrations of precursors ranged from below the reporting limit (Deep River sample) to 42.2 ng/L (Haw River sample). Precursors were reported at similar concentrations in all eight of the Cape Fear River samples as well as in the Little River sample.

5.3 Pharmaceutical and Personal Care Products

Total concentrations from the 73 target PPCPs (excluding sucralose) ranged from 300 nanograms per liter (ng/L) at Cape Fear River Mile 54[2] to 2,150 ng/L at Elizabethtown WWTP (Figure C3; Table C5b). Sucralose concentrations were the highest of all the PPCP compounds with concentrations ranging from 1,400 ng/L at Cape Fear River Mile 132 to 9,900 ng/L at the Elizabethtown WWTP (Figure C3; Table C5b). Tris(2-Chloroethyl) Phosphate and Acesulfame-K were the second and third highest reported compounds at 540 and 500 ng/L, respectively, in the Elizabethtown WWTP sample. In total, 30 PPCP compounds were reported in samples collected from this event, and 13 of these compounds were found in every individual sample (Table C5b).

Of the 74 PPCPs analyzed, two were fluorinated PPCPs (fluoxetine and dexamethasone), and of these two, one was present (fluoxetine). Fluoxetine was present in samples from Cross Creek Water Reclamation Facility (10 ng/L; Cape Fear River Mile 56.5) and Elizabethton WWTP (6 ng/L; Cape Fear River Mile 100).

5.4 1,4-Dioxane

1,4-Dioxane concentrations varied from not present above the reporting limit (Little River sample) to 1,500 ng/L (Deep River sample).

5.5 Other Compounds

Samples were analyzed for other compounds during this work as shown in Table C2. Analyzed compounds included metals, metalloids, anions, volatile organic carbon

[2] Average of parent and duplicate sample results.

(VOCs), semi volatile carbon (SVOCs), haloacetic acids, chlorinated acids, polychlorinated biphenyl (PCBs), pesticides, and other compounds found in the USEPA Primary Drinking Water Regulations (USEPA, 2009) and the USEPA Unregulated Contaminant Monitoring Rules (UCMR3 and UCMR4, USEPA 2012 and USEPA, 2016c). The results for these compounds are provided in Table C5c.

Metals were the most commonly reported compounds, with barium, calcium, magnesium, potassium, sodium, and strontium reported in every sample, and manganese and zinc reported in some samples; all metals concentrations were below USEPA MCLs except for iron and manganese which were above USEPA Secondary Maximum Contaminant Level for all samples. Chloride and perchlorate were also reported in every sample, and bromide, nitrate, sulfate, phosphate, chloramine, and chlorine dioxide were reported in some samples.

The only reported VOC (method 525.2 and 524.2) was chloroform (100 ng/L and 200 ng/L for Cape Fear River Miles 84 and 132, respectively). Results for all of these samples are qualified, as chloroform was also reported in the associated equipment blanks, which may indicate cross-contamination between samples. PCBs were not reported in any the analyzed samples. Dichloroacetic acid (a haloacetic acid) was reported in one sample (1,000 ng/L at Cape Fear River Mile 84). Coliforms were present in two samples (Cape Fear River Mile 76 and Cape Fear River Mile 84) but were also present in the blanks.

6 DISCUSSION

Results from this sampling program are presented from upstream to downstream.

6.1 PFAS

6.1.1 Table 3+ Compounds

The most up-stream presence of any Table 3+ compound was in the Little River sample, which had measurable concentrations of perfluoromethoxypropyl carboxylic acid (PMPA; 16 ng/L), R-SPDA (9.1 ng/L), Hydrolyzed PSDA (5.3 ng/L), Perfluoromethoxysulfonic Acid (NVHOS; 8.5 ng/L), and R-EVE (4.9 ng/L). Only one of these compounds, R-PSDA, was reported in the next-downstream sample of the confluence with Little River and upstream of the Fayetteville Works facility (sample Cape Fear River Mile 54 Duplicate with a concentration of 2.1 ng/L). This suggests Table 3+ PFAS may be entering the Little River, upstream of the Little River sampling location, and that these compounds are being diluted as they travel downstream in the Cape Fear River given the downstream non-detect data. As described in Section 5.1 results for R-PSDA, Hydrolyzed PSDA and R-EVE may be over-reported. therefore, the reported results of these compounds are used to understand their presence but not used for quantitative estimates.

Similarly, R-PSDA was not present again until the sample from the Rockfish Creek Water Reclamation Facility where it was detected at 2 ng/L, just at the reporting limit, and then was not present in the next downstream sample located immediately upstream from the Fayetteville Works facility (Cape Fear River Mile 76).

Table 3+ PFAS are found in each of the samples collected downstream of the Fayetteville Works facility (Cape Fear River Mile 84, Cape Fear River Mile 100, and CFR Mile 132) at higher concentrations compared to samples upstream of the Fayetteville Works facility. Compounds most commonly present in these samples are HFPO-DA, Perfluoro-2-methoxyacetic Acid (PFMOAA), Perfluoro(3,5-dioxahexanoic) Acid (PFO2HxA), Perfluoro(3,5,7-trioxaoctanoic) Acid (PFO3OA), PMPA, R-PSDA, Hydrolyzed PSDA, and R-EVE.

6.1.2 Method 537M Compounds

Method 537M compounds were reported along the length of the Cape Fear River. Water samples from the mouth of the Haw River had higher concentrations than the samples from the mouth of the Deep River or the Little River. The Cross Creek Water Reclamation Facility and the Elizabethtown WWTP both also appear to be sources of Method 537M compounds to the Cape Fear River as total Method 537M concentrations increase in each of these mixing zone samples compared with River samples (Table C5a; Figure C2). Concentration of method 537M PFAS were generally consistent between Cape Fear River Mile 76 (upstream of Fayetteville Works facility; 68.2 ng/L total concentration) and Cape Fear River Mile 84 (Bladen Bluffs; 68.0 ng/L total concentration), which is consistent with prior studies showing these compounds do not increase in concentration as the River flows past the Fayetteville Works facility (Geosyntec, 2018; Geosyntec, 2019).

6.1.3 TOP Assay

The TOP assay analysis identified a fraction of PFAS in the Cape Fear River which had not been previously quantified: unknown oxidizable PFAA precursors. The unknown oxidizable PFAA precursors were not present in the Deep River but were present in every other sample collected during this sampling event, with the highest concentration of total unknown oxidizable PFAA precursors found in the Haw River Sample at 36.8 ng/L. Total unknown oxidizable PFAA precursor concentrations in the Cape Fear River range from 19.2 to 36.8 ng/L over the length of the study area, with slight increases associated with the Cross Creek Water Reclamation Facility and Elizabethtown WWTP compared to the closest upstream samples. Given the relatively constant level of TOP assay detections upstream and downstream of the Site, the TOP assay identified PFAS fraction in the Cape Fear River is interpreted to originate from non-Chemours sources.

6.1.4 Overall PFAS Results

Combined concentrations of Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) at all locations were below the 70-ng/L USEPA Lifetime Health Advisory level (USEPA, 2016a, 2016b). Combined PFOA and PFOS concentrations ranged from 6.5 ng/L (Deep River) to 19.8 ng/L (Haw River). Within the Cape Fear River (excluding samples from the Haw, Deep, and Little Rivers), combined concentrations of PFOA and PFOS ranged from 13.9 ng/L (Cape Fear River Mile 54) to 18.3 ng/L (Cape Fear River Mile 84).

Concentrations of HFPO-DA were below the 140-ng/L HFPO-DA provisional health goal (NCDEQ and North Carolina Department of Health and Human Services [NCDHHS], 2018). Concentrations ranged from below reporting limits to 13 ng/L (Cape Fear River Mile 84). HFPO-DA was only reported in samples downstream of the Fayetteville Works facility.

6.2 Pharmaceutical and Personal Care Products

Where reported, PPCPs were present at part per trillion (ppt or ng/L) levels in River samples collected for this sampling program. Concentrations increased in samples collected from WWTP mixing zones (Cross Creek Water Reclamation Facility and Elizabethtown WWTP; Table C5b; Figure C3). This is expected, since these products are used by communities and discharged to their WWTPs.

The reported fluorinated PPCP fluoxetine which was found in two samples (Cross Creek Reclamation Facility at Cape Fear River Mile 56.5 [10 ng/L] and Elizabethtown WWTP at Cape Fear River Mile 100 [6 ng/L]).

6.3 1,4-Dioxane

NCDEQ's in-stream target for 1,4-dioxane is 350 ng/L for streams used as a water supply (NCDEQ Surface Water Standards, 2019), based on the USEPA risk assessment indicating a drinking water concentration representing a 10^{-6} increased cancer risk level for 1,4-dioxane is 350 ng/L (USEPA 1,4-dioxane Fact Sheet)[3]. All samples collected in support of this work in the Cape Fear River, Deep River, and Haw River contained 1,4-dioxane above the NCDEQ in-stream target value. The sample from the Little River was the only sample to not contain reportable levels of 1,4-dioxane. Concentrations of 1,4-dioxane are relatively consistent throughout the Cape Fear River with concentrations

[3] There is no maximum contaminant level (MCL) for 1,4-dioxane.

ranging between 780 ng/L and 1,300 ng/L and average concentrations of 1,000 ng/L. Results are provided in Figure C4 and Table C5c.

6.4 Other Compounds

The Haw and Deep River samples generally contained similar concentrations of metals. Concentrations in the Little River are lower than the Haw, Deep, or Cape Fear River concentrations. Some metals concentrations increase in the Cross Creek Water Reclamation Facility and Elizabethtown WWTP effluent mixing zones, and then return to average in-River concentrations. Iron and manganese concentrations exceed the USEPA secondary maximum contaminant levels set for cosmetic and aesthetic effects (USEPA Secondary Drinking Water Regulation, 2018).

7 SUMMARY

In January 2020, surface water samples were collected from 11 locations along the length of the Cape Fear River and associated tributaries, the Deep, Haw and Little Rivers. These samples were collected to evaluate the presence and concentrations of a range of inorganic compounds, organic compounds (e.g. 1,4-dioxane), PPCPs, and PFAS in the Cape Fear River. This report focuses on presenting and interpreting concentrations results and trends for PFAS, PPCPs, 1,4-dioxane throughout the watershed.

PFAS were present along the entire sampled length of the Cape Fear River and in sampled tributaries. The PFAS present were separated into three groupings, PFAS analyzed by Method 537M, PFAS identified using the TOP assay, and PFAS analyzed by the Table 3+ method. Similar to prior events, Method 537M PFAS were present along the entire sampled length of the river and tributaries. The presence of these Method 537M PFAS in the Cape Fear River was not associated with the Chemours Fayetteville Works facility. Also similar to prior events, Table 3+ PFAS increase in concentration as the river passes the Chemours Fayetteville Works facility. For the first time, TOP assay PFAS compounds were additionally assessed in this event. These PFAS were present along the entire length of the Cape Fear River and were interpreted to not be associated with the Fayetteville Works facility.

Combined concentrations of PFOA and PFOS at all locations were below the 70-ng/L USEPA Lifetime Health Advisory level (USEPA, 2016a, 2016b). Combined PFOA and PFOS concentrations ranged from 6.5 ng/L (Deep River) to 19.8 ng/L (Haw River). Concentrations of HFPO-DA were below the 140-ng/L HFPO-DA provisional health goal (NCDEQ and NCHHS, 2018). Concentrations ranged from below reporting limits to 13 ng/L (Cape Fear River Mile 84). HFPO-DA was only reported in samples downstream of the Fayetteville Works facility.

PPCPs were present in the Cape Fear River and originate in part from WWTP sources. 1,4-Dioxane was also present throughout the sampled Cape Fear River above the NCDEQ in-stream target value of 350 ng/L at all locations.

8 REFERENCES

CFPUA, 2018. 2018 Annual Water Quality Report: Sweeny Water Treatment Plant. https://www.cfpua.org/ArchiveCenter/ViewFile/Item/777 Accessed 7 May 2020.

Geosyntec, 2018. Assessment of the Chemical and Spatial Distribution of PFAS in the Cape Fear River. Prepared for The Chemours Company, FC, LLC.

Geosyntec, 2019. Cape Fear River PFAS Mass Loading Model Assessment and Paragraph 11.1 Characterization of PFAS at Intakes. Prepared for The Chemours Company, FC, LLC.

Geosyntec, 2020a. Matrix Interference During Analysis of Table 3+ Compounds. Prepared for Chemours. Prepared for The Chemours Company, FC, LLC.

Geosyntec, 2020b, Mass Loading Model Update – November 2019 Sampling Event. Prepared for The Chemours Company, FC, LLC.

Houtz, Erika F., and David L. Sedlak. 2012. 'Oxidative Conversion as a Means of Detecting Precursors to Perfluoroalkyl Acids in Urban Runoff', Environmental Science & Technology, 46: 9342-9349.

Martin, Deborah, Gabriel Munoz, Sandra Mejia-Avendano, Sung Vo Duy, Yuan Yao, Konstantin Volchek, Carl E. Brown, Jinxia Liu, and Sebastien Sauve. 2019. 'Zwitterionic, cationic, and anionic perfluoroalkyl and polyfluoroalkyl substances integrated into total oxidizable precursor assay of contaminated groundwater', Talanta, 195: 533-542

NCDEQ Surface Water Standards, 2019. Subchapter 02B – Surface Water and Wetland Standards. https://deq.nc.gov/about/divisions/water-resources/planning/classification-standards/surface-water-standards Accessed 30 April 2020.

NCDEQ and NCDHHS, 2018. Secretaries' Science Advisory Board; Review of the North Carolina Drinking Water Provisional Health Goal for GenX. Draft. August 29, 2018. https://files.nc.gov/ncdeq/GenX/SAB/SAB-GenX-Report-draft-08-29-2018.pdf Accessed 7 May 2020.

NCDEQ, 2020, Managing Emerging Compounds in Water. https://deq.nc.gov/news/key-issues/emerging-compounds/managing-emerging-compounds-water. Accessed 27 March 2020.USEPA, 2009. National Primary Drinking Water Regulation. United State Environmental Protection Agency.

USEPA, 2012. Third Unregulated Contaminant Monitoring Rule. United State Environmental Protection Agency.

USEPA 2016a. Drinking Water Health Advisory for Perfluorooctanoic Acid (PFOA). USEPA 822-R-16-005.

USEPA, 2016b. Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOS). USEPA 822-R-16-004. USEPA, 2016c. Fourth Unregulated Contaminant Monitoring Rule. United State Environmental Protection Agency.

USEPA, 2017. *Technical Fact Sheet – 1,4-Dioxane*. United State Environmental Protection Agency. https://www.epa.gov/sites/production/files/2014-03/documents/ffrro_factsheet_contaminant_14-dioxane_january2014_final.pdf Accessed 1 May 2020.

USEPA, 2018, 2018 Edition of the Drinking Water Standards and Health Advisories

Tables,https://www.epa.gov/sites/production/files/201803/documents/dwtable2018.pdf

Zhang, Chuhui, Zachary R. Hopkins, James McCord, Mark J. Strynar, and Detlef R. U. Knappe. 2019. 'Fate of Per- and Polyfluoroalkyl Ether Acids in the Total Oxidizable Precursor Assay and Implications for the Analysis of Impacted Water', *Environmental Science & Technology Letters*, 6: 662-668.

TABLES

TABLE C1
SAMPLING LOCATIONS AND COORDINATES
The Chemours Company, FC, LLC.

Location	Description	Coordinates	
		Easting	Northing
Deep River	Before confluence with Cape Fear River	1984036	672148
Haw River	Before confluence with Cape Fear River	1984584	672261
Cape Fear River Mile 4	After confluence of Deep and Haw Rivers	1996196	652595
Little River	Near its confluence with the Cape Fear River	2077563	550992
Cape Fear River Mile 54	Adjacent to Fayetteville water intake	2040550	486255
Cape Fear River Mile 56.5	100-meters downstream of the Cross Creek Water Reclamation Facility	2043401	475660
Cape Fear River Mile 63.5	100-meters downstream of the Rockfish Creek Water Reclamation Facility	2050522	444267
Cape Fear River Mile 76	Directly upstream of the Site	2052819	398182
Cape Fear River Mile 84	Adjacent to Bladen Bluffs intake	2066252	361171
Cape Fear River Mile 100	100-meters downstream of Elizabethtown WWTP	2128297	318922
Cape Fear River Mile 132	Within the Kings Bluff Intake Canal	2213192	239033

Notes:
Coordinate system : North Carolina State Plane Coordinate System (NAD 1983, feet)
Sampling details are provided in Table 4.

TABLE C2
SAMPLING ANALYTES BY LOCATION
The Chemours Company, FC, LLC.

Method	Analyte Group	Deep River	Haw River	Cape Fear River Mile 4	Little River	Cape Fear River Mile 54	Cape Fear River Mile 56.5	Cape Fear River Mile 63.5	Cape Fear River Mile 76	Cape Fear River Mile 84	Cape Fear River Mile 100	Cape Fear River Mile 132	Duplicate	Matrix Spike	Matrix spike Duplicate	Trip Blank	Equipment Blank
1613B	Dioxins and furans	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
200.8 / 200.7	Metals	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	-	✔
245.1	Mercury	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	-	✔
218.6	Chromium, Hexavalent	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	-	✔
300.1 / 353.2	Inorganic anions	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	-	✔
365 / 14500-P	Phosphate	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	-	✔
331.0	Perchlorate	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	-	✔
335.4	Total Cyanide	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
5310C	TOC	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
4500 CL F	Chloramine, Chlorine Residual, and Chlorine Dioxide	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
504.1	EDB and DBCP	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
505	PCBs, Toxaphene, & Chlordane	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
515.3	Chlorinated Acids	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
522	1,4 Dioxane	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	-	✔
524.2	Trihalomethanes	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	✔	✔
525.2	Organics	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
525.3	Semivolatiles	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
530	Select SVOC	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
531.2	Carbamate Pesticides	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
537 (modified)	PFAS (all)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Table 3+	Table 3+ (all)	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Top assay 537	Top assay 537	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	-	✔
547	Glyphosate	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
548.1	Endothall	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
549.2	Diquat	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
552.2	HAA5 Analytes	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
552.3	Haloacetic Acids	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
9222B	Total Coliforms by Presence/Absence	-	-	-	-	-	-	-	✔	✔	-	✔	-	-	-	-	✔
L211	Pharmaceuticals and Personal Care Products	-	-	-	-	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	-	✔
L200	Pharmaceuticals and Personal Care Products	-	-	-	-	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	-	✔
L220	Pharmaceuticals and Personal Care Products	-	-	-	-	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	-	✔
L221	Pharmaceuticals and Personal Care Products	-	-	-	-	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	-	✔

Notes:
✔ - Sample collected at location for specified analyte group
- - Sample not collected at location for specified analyte group
TOC - Total Organic Carbon
DBCP - Dibromochloropropane
EDB - Ethylene Dibromide
PCB- Polychlorinated Biphenyl
SVOC - Semi-Volatile Organic Carbon
PFAS - Per- and Polyfluoroalkyl Substances
HAA5 - Haloacetic Acid

TABLE C3
SUMMARY OF ANALYTE RESULTS BY METHOD
The Chemours Company, FC, LLC.

Method	Analyte Group	Deep River	Haw River	Cape Fear River Mile 4	Little River	Cape Fear River Mile 54	Cape Fear River Mile 56.5	Cape Fear River Mile 63.5	Cape Fear River Mile 76	Cape Fear River Mile 84	Cape Fear River Mile 100	Cape Fear River Mile 132	Trip Blank	Equipment Blank
1613B	Dioxins and furans	-	-	-	-	-	-	-	N	**Y**	-	N	-	N
200.8 / 200.7	Metals	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	-	**Y**
245.1	Mercury	N	N	N	N	N	N	N	N	N	N	N	-	N
218.6	Chromium, Hexavalent	N	N	N	N	N	N	N	N	N	N	N	-	N
300.1 / 353.2	Inorganic anions	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	-	**Y**
365 / 14500-P	Phosphate	N	N	N	N	N	**Y**	**Y**	N	N	**Y**	N	-	N
331.0	Perchlorate	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	-	N
335.4	Total Cyanide	-	-	-	-	-	-	-	N	N	-	N	-	N
5310C	TOC	-	-	-		-	-	-	**Y**	**Y**	-	**Y**	-	**Y**
4500 CL F	Chloramine, Chlorine Residual, and Chlorine Dioxide	-	-	-	-	-	-	-	**Y**	**Y**	-	**Y**	-	N
504.1	EDB and DBCP	-	-	-	-	-	-	-	N	N	-	N	-	N
505	PCBs, Toxaphene, & Chlordane	-	-	-	-	-	-	-	N	N	-	N	-	N
515.3	Chlorinated Acids	-	-	-	-	-	-	-	N	N	-	N	-	N
522	1,4 Dioxane (GC/MS SIM)	**Y**	**Y**	**Y**	N	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	-	N
524.2	Trihalomethanes	-	-	-	-	-	-	-	**Y**	**Y**	-	**Y**	N	**Y**
525.2	Organics	-	-	-	-	-	-	-	N	N	-	N	-	N
525.3	Semivolatiles	-	-	-	-	-	-	-	N	N	-	N	-	N
530	Select SVOC	-	-	-	-	-	-	-	N	N	-	N	-	N
531.2	Carbamate Pesticides	-	-	-	-	-	-	-	N	N	-	N	-	N
537 (modified)	PFAS (all)	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	N	N
Table 3+	Table 3+ (all)	N	N	N	N	**Y**	N	**Y**	N	**Y**	**Y**	**Y**	N	N
Top assay 537	Top assay 537	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	-	N
547	Glyphosate	-	-	-	-	-	-	-	N	N	-	N	-	N
548.1	Endothall	-	-	-	-	-	-	-	N	N	-	N	-	N
549.2	Diquat	-	-	-	-	-	-	-	N	N	-	N	-	N
552.2	HAA5 Analytes	-	-	-	-	-	-	-	N	**Y**	-	N	-	N
552.3	Haloacetic Acids	-	-	-	-	-	-	-	N	N	-	N	-	N
9222B	Total Coliforms by Presence/Absence	-	-	-	-	-	-	-	**Y**	**Y**	-	**Y**	-	**Y**
L211	Pharmaceuticals and Personal Care Products	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	-	N
L200	Pharmaceuticals and Personal Care Products	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	-	N
L220	Pharmaceuticals and Personal Care Products	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	-	N
L221	Pharmaceuticals and Personal Care Products	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	-	N

Notes:
Y - At least one compound detected above reporting limit at location for specified analyte group
N - No compound detected above reporting limit at location for specified analyte group
- - Sample not collected at location for specified analyte group
TOC - Total Organic Carbon
DBCP - Dibromochloropropane
EDB - Ethylene Dibromide
PCB- Polychlorinated Biphenyl
SVOC - Semi-Volatile Organic Carbon
PFAS - Per- and Polyfluoroalkyl Substances
HAA5 - Haloacetic Acid

TABLE C4
FIELD PARAMETERS
The Chemours Company, FC, LLC.

Sample ID	Location	Sample Date	Time	pH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Specific Conductance (mS/cm)	Temperature (°C)	Color	Odor
FAY-DEEP-012120	Deep River	01-21-2020	13:05	NC	11.12	186.6	17.63	118.99	7.78	clear	None
FAY-HAW-012120	Haw River	01-21-2020	13:48	7.22	10.83	196.5	28.18	136.95	9.82	tan	None
FAY-RM-4-012120	Cape Fear River Mile 4	01-21-2020	15:02	7.44	11.09	213.7	25.64	129.15	9.11	clear	None
FAY-LITTLERIVERMOUTH-012320	Little River	01-23-2020	11:40	7.09	11.36	113.8	8.04	0.15	8.49	clear	None
FAY-RM-54-012220	Cape Fear River Mile 54	01-22-2020	10:42	7.49	11.32	134.8	22.22	104.93	7.75	muddy	None
FAY-CROSS-012220	Cape Fear River Mile 56.5	01-22-2020	12:34	6.90	11.23	188.4	43.15	101.57	9.78	clear	Faint odor
FAY-ROCKFISH-012220	Cape Fear River Mile 63.5	01-22-2020	15:00	7.01	11.23	238.4	21.87	112.43	9.32	clear	None
FAY-RM-76-012320	Cape Fear River Mile 76	01-23-2020	11:00	7.21	11.11	108.6	15.14	103.17	7.87	muddy	None
FAY-RM-84-012320	Cape Fear River Mile 84	01-23-2020	14:48	7.07	11.16	166.4	16.55	96.76	8.25	slight brown clear	None
FAY-ELIZABETHTOWN-012320	Cape Fear River Mile 100	01-23-2020	17:20	7.03	10.35	179.0	57.09	0.23	11.26	clear	None
FAY-RM-132-012420	Cape Fear River Mile 132	01-24-2020	10:42	6.74	10.09	151.3	15.20	106.51	9.23	muddy	None

Notes:
NC - Not collected
mg/L - Milligrams per liter
mV- Millivolts
mS/cm - Millisiemens per centimeter
°C - Degrees Celcius

TABLE C5a
PFAS AND TOP ASSAY RESULTS
The Chemours Company, FC, LLC.

Location ID	Deep River	Haw River	Cape Fear River Mile 4	Little River	Cape Fear River Mile 54
Field Sample ID	FAY-DEEP RIVER-012120	FAY-HAW RIVER-012120	FAY-CFR-RM-4-012120	FAY-LITTLE RIVER MOUTH-012320	Fay-CFR-RM-54-012220
Sample Date	21-01-20	21-01-20	21-01-20	23-01-20	22-01-20
QA/QC	FS	FS	FS	FS	FS
Table 3+ Lab SOP (ng/L)					
Hfpo Dimer Acid	<2.6	<2.6	<2.9	<2.6	<2.6
PFMOAA	<5	<5	<5	<5	<5
PFO2HxA	<2	<2	<2	<2	<2
PFO3OA	<2	<2	<2	<2	<2
PFO4DA	<2	<2	<2	<2	<2
PFO5DA	<2	<2	<2	<2	<2
PMPA	<10	<10	<10	**16**	<10
PEPA	<20	<20	<20	<20	<20
PS Acid	<2	<2	<2	<2	<2
Hydro-PS Acid	<2	<2	<2	<2	<2
R-PSDA	<2	<2	<2	**9.1**	<2
Hydrolysed PSDA	<2	<2	<2	**5.3**	<2
R-PSDCA	<2	<2	<2	<2	<2
NVHOS	<2	<2	<2	**8.5**	<2
EVE Acid	<2	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2	<2
R-EVE	<2	<2	<2	**4.9**	<2
PES	<2	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2
Total Table 3+ (17 compounds)	0.0	0.0	0.0	**24.5**	0.0
Total Table 3+ (20 compounds)	0.0	0.0	0.0	**44.0**	0.0
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	<4.3	<4.4	<4.8	<4.3 UJ	<4.4
11Cl-PF3OUdS	<1.7	<1.7	<1.9	<1.7 UJ	<1.8
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2.6	<2.6	<2.9	<2.6 UJ	<2.6
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<1.7	<1.7	<1.9	<1.7	<1.8
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2.6 UJ	<2.6 UJ	<2.9 UJ	<2.6 UJ	<2.6 UJ
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<2.6 UJ	<2.6 UJ	<2.9 UJ	<2.6 UJ	<2.6 UJ
6:2 Fluorotelomer sulfonate	<4.3	<4.4	<4.8	<4.3 UJ	<4.4
9Cl-PF3ONS	<1.7	<1.7	<1.9	<1.7 UJ	<1.8
DONA	<1.7	<1.7	<1.9	<1.7 UJ	<1.8
N-ethyl perfluorooctane sulfonamidoacetic acid	<2.6	<2.6	<2.9	<2.6 UJ	<2.6
N-ethylperfluoro-1-octanesulfonamide	<4.3 UJ	<4.4 UJ	<4.8 UJ	<4.3 UJ	<4.4 UJ
N-methyl perfluoro-1-octanesulfonamide	<2.6 UJ	<2.6 UJ	<2.9 UJ	<2.6 UJ	<2.6 UJ
N-methyl perfluorooctane sulfonamidoacetic acid	<1.7	<1.7	<1.9	<1.7 UJ	<1.8
Perfluorobutane Sulfonic Acid	<1.7	**4 J**	**3.1 J**	**2.7 J**	**2.9 J**
Perfluorobutanoic Acid	<4.3	**7.6**	**5.9**	<4.3 UJ	**5**
Perfluorodecane Sulfonic Acid	<1.7	<1.7	<1.9	<1.7 UJ	<1.8
Perfluorodecanoic Acid	<1.7	<1.7	<1.9	<1.7 UJ	<1.8
Perfluorododecane sulfonic acid (PFDoS)	<2.6	<2.6	<2.9	<2.6 UJ	<2.6
Perfluorododecanoic Acid	<1.7	<1.7	<1.9	<1.7 UJ	<1.8
Perfluoroheptane sulfonic acid (PFHpS)	<1.7	<1.7	<1.9	<1.7	<1.8
Perfluoroheptanoic Acid	<1.7	**16**	**12**	<1.7 UJ	**8.8**
Perfluorohexadecanoic acid (PFHxDA)	<2.6	<2.6	<2.9	<2.6 UJ	<2.6
Perfluorohexane Sulfonic Acid	**1.9**	**3.4**	**3.1**	**8.2**	**3.1**
Perfluorohexanoic Acid	**3.4**	**23**	**17**	**3.6**	**13**
Perfluorononanesulfonic acid	<1.7	<1.7	<1.9	<1.7 UJ	<1.8
Perfluorononanoic Acid	<1.7	<1.7	<1.9	<1.7 UJ	<1.8
Perfluorooctadecanoic acid	<2.6	<2.6	<2.9	<2.6 UJ	<2.6
Perfluorooctane Sulfonamide	<1.7	<1.7	<1.9	<1.7	<1.8
Perfluoropentane sulfonic acid (PFPeS)	<1.7	<1.7	<1.9	<1.7 UJ	<1.8
Perfluoropentanoic Acid	**3.6 J**	**15 J**	**12 J**	**9.5 J**	**9.5 J**
Perfluorotetradecanoic Acid	<1.7	<1.7	<1.9	<1.7 UJ	<1.8
Perfluorotridecanoic Acid	<1.7	<1.7	<1.9	<1.7 UJ	<1.8
Perfluoroundecanoic Acid	<1.7	<1.7	<1.9	<1.7 UJ	<1.8
PFOA	**2.5**	**8.8**	**7**	**3.4 J**	**5.9**
PFOS	**4**	**11**	**8.9**	**10 J**	**8**
Total Method 537 PFAS	**15.4**	**88.8**	**69.0**	**37.4**	**56.2**

Notes:
Bold - Analyte detected above associated reporting limit
B - analyte detected in an associated blank
EPA - Environmental Protection Agency
J - Analyte detected. Reported value may not be accurate or precise
µg/L - micrograms per liter
mg/L - milligrams per liter
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SOP - standard operating procedure
UJ – Analyte not detected. Reporting limit may not be accurate or precise.
< - Analyte not detected above associated reporting limit.
Method used for Table 3+ Lab SOP - Cl. Spec. Table 3 Compound SOP
Method used for Other PFAS and HFPO-DA - EPA 537 Rev. 1.1 modified

TABLE C5a
PFAS AND TOP ASSAY RESULTS
The Chemours Company, FC, LLC.

Location ID	**Cape Fear River Mile 54**	**Cape Fear River Mile 56.5**	**Cape Fear River Mile 63.5**	**Cape Fear River Mile 76**	**Cape Fear River Mile 84**
Field Sample ID	**FAY-CFR-RM-54-012220-D**	**FAY- Cross Creek Rec-012220**	**FAY-Rockfish Creek Rec-012220**	**FAY-CFR-RM-76-012320**	**FAY-CFR-RM-84-INTAKE-012320**
Sample Date	**22-01-20**	**22-01-20**	**22-01-20**	**23-01-20**	**23-01-20**
QA/QC	**DUP**	**FS**	**FS**	**FS**	**FS**
Table 3+ Lab SOP (ng/L)					
Hfpo Dimer Acid	<2.6	<2.6	<2.8	<2.5	**13**
PFMOAA	<5	<5 UJ	<5	<5	**36**
PFO2HxA	<2	<2	<2	<2	**14**
PFO3OA	<2	<2	<2	<2	**3.8**
PFO4DA	<2	<2	<2	<2	<2
PFO5DA	<2	<2	<2	<2	<2
PMPA	<10	<10	<10	<10	**22**
PEPA	<20	<20	<20	<20	<20
PS Acid	<2	<2	<2	<2	<2
Hydro-PS Acid	<2	<2 UJ	<2	<2	<2
R-PSDA	**2.1**	<2	**2**	<2	**5.6**
Hydrolysed PSDA	<2	<2	<2	<2	**20**
R-PSDCA	<2	<2	<2	<2	<2
NVHOS	<2	<2	<2	<2	**2.2**
EVE Acid	<2	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2	<2
R-EVE	<2	<2	<2	<2	**5 J**
PES	<2	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2
Total Table 3+ (17 compounds)	0.0	0.0	0.0	0.0	**69.0**
Total Table 3+ (20 compounds)	**2.1**	0.0	**2.0**	0.0	**122.0**
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	<4.3	<4.3	<4.7	<4.2	<4.2 UJ
11Cl-PF3OUdS	<1.7	<1.7	<1.9	<1.7 UJ	<1.7 UJ
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2.6	<2.6	<2.8	<2.5	<2.5 UJ
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<1.7	<1.7	<1.9	<1.7	<1.7
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2.6 UJ	<2.6 UJ	<2.8 UJ	<2.5 UJ	<2.5 UJ
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<2.6 UJ	<2.6 UJ	<2.8 UJ	<2.5 UJ	<2.5 UJ
6:2 Fluorotelomer sulfonate	<4.3	<4.3	<4.7	<4.2	<4.2
9Cl-PF3ONS	<1.7	<1.7	<1.9	<1.7 UJ	<1.7 UJ
DONA	<1.7	<1.7	<1.9	<1.7	<1.7
N-ethyl perfluorooctane sulfonamidoacetic acid	<2.6	<2.6	<2.8	<2.5	<2.5 UJ
N-ethylperfluoro-1-octanesulfonamide	<4.3 UJ	<4.3 UJ	**6.5 J**	<4.2 UJ	<4.2 UJ
N-methyl perfluoro-1-octanesulfonamide	<2.6 UJ	**12 J**	<2.8 R	<2.5 UJ	<2.5 UJ
N-methyl perfluorooctane sulfonamidoacetic acid	<1.7	<1.7	<1.9	<1.7	<1.7 UJ
Perfluorobutane Sulfonic Acid	**3 J**	**4.1 J**	**3 J**	**3.9**	**4.1**
Perfluorobutanoic Acid	**5**	**5.5**	<4.7	**5.6 J**	**5.6 J**
Perfluorodecane Sulfonic Acid	<1.7	<1.7	<1.9	<1.7 UJ	<1.7 UJ
Perfluorodecanoic Acid	<1.7	<1.7	<1.9	<1.7 UJ	<1.7 UJ
Perfluorododecane sulfonic acid (PFDoS)	<2.6	<2.6	<2.8	<2.5 UJ	<2.5 UJ
Perfluorododecanoic Acid	<1.7	<1.7	<1.9	<1.7	<1.7 UJ
Perfluoroheptane sulfonic acid (PFHpS)	<1.7	<1.7	<1.9	<1.7	<1.7
Perfluoroheptanoic Acid	**9.1**	**7.5**	**8.4**	**10**	**10**
Perfluorohexadecanoic acid (PFHxDA)	<2.6	<2.6 UJ	<2.8	<2.5	<2.5
Perfluorohexane Sulfonic Acid	**2.9**	**5**	**3.2**	**4.5**	**4**
Perfluorohexanoic Acid	**13**	**16**	**13**	**14**	**15**
Perfluorononanesulfonic acid	<1.7	<1.7	<1.9	<1.7 UJ	<1.7 UJ
Perfluorononanoic Acid	<1.7	<1.7	<1.9	<1.7 UJ	<1.7 UJ
Perfluorooctadecanoic acid	<2.6	<2.6 UJ	<2.8	<2.5	<2.5
Perfluorooctane Sulfonamide	<1.7	<1.7	<1.9	<1.7	<1.7
Perfluoropentane sulfonic acid (PFPeS)	<1.7	<1.7	<1.9	<1.7	<1.7
Perfluoropentanoic Acid	**9.7 J**	**12 J**	**9.9 J**	**12**	**11**
Perfluorotetradecanoic Acid	<1.7	<1.7	<1.9	<1.7	<1.7
Perfluorotridecanoic Acid	<1.7	<1.7	<1.9	<1.7	<1.7 UJ
Perfluoroundecanoic Acid	<1.7	<1.7	<1.9	<1.7 UJ	<1.7 UJ
PFOA	**6**	**7.6**	**6.1**	**7.2 J**	**7.3 J**
PFOS	**8.7**	**8.7**	**8.2**	**11 J**	**11 J**
Total Method 537 PFAS	**57.4**	**78.4**	**58.3**	**68,2**	**68.0**

Notes:
Bold - Analyte detected above associated reporting limit
B - analyte detected in an associated blank
EPA - Environmental Protection Agency
J - Analyte detected. Reported value may not be accurate or precise
µg/L - micrograms per liter
mg/L - milligrams per liter
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SOP - standard operating procedure
UJ – Analyte not detected. Reporting limit may not be accurate or precise.
< - Analyte not detected above associated reporting limit.
Method used for Table 3+ Lab SOP - Cl. Spec. Table 3 Compou
Method used for Other PFAS and HFPO-DA - EPA 537 Rev. 1.

TABLE C5a
PFAS AND TOP ASSAY RESULTS
The Chemours Company, FC, LLC.

Location ID	Cape Fear River Mile 100	Cape Fear River Mile 132	Equipment Blank	Equipment Blank	Equipment Blank
Field Sample ID	FAY-Elizabethtown WWTP-012320	FAY-CFR-RM-132-012420	EB3-012320	EB4-012420	EB1-012120
Sample Date	23-01-20	24-01-20	23-01-20	24-01-20	21-01-20
QA/QC	FS	FS	EB	EB	EB
Table 3+ Lab SOP (ng/L)					
Hfpo Dimer Acid	**5.1**	**7**	<2.6	<2.6	<3
PFMOAA	**19**	**30**	<5	<5	<5
PFO2HxA	**7.4**	**15**	<2	<2	<2
PFO3OA	<2	**2.9**	<2	<2	<2
PFO4DA	<2	<2	<2	<2	<2
PFO5DA	<2	<2	<2	<2	<2
PMPA	**13**	**16**	<10	<10	<10
PEPA	<20	<20	<20	<20	<20
PS Acid	<2	<2	<2	<2	<2
Hydro-PS Acid	<2	<2	<2	<2	<2
R-PSDA	**2.5**	**5.1 J**	<2	<2	<2
Hydrolysed PSDA	**9.1**	**12**	<2	<2	<2
R-PSDCA	<2	<2	<2	<2	<2
NVHOS	<2	<2	<2	<2	<2
EVE Acid	<2	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2	<2
R-EVE	**4.4**	**6.9 J**	<2	<2	<2
PES	<2	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2
Total Table 3+ (17 compounds)	**44.5**	**70.9**	0.0	0.0	0.0
Total Table 3+ (20 compounds)	**61.0**	**95.0**	0.0	0.0	0.0
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	<4.7 UJ	<4.3 UJ	<4.3	<4.3	<5
11Cl-PF3OUdS	<1.9 UJ	<1.7 UJ	<1.7	<1.7	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2.8 UJ	<2.6 UJ	<2.6	<2.6	<3
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<1.9	<1.7	<1.7	<1.7	<2
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2.8 UJ	<2.6 UJ	<2.6	<2.6	<3
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<2.8 UJ	<2.6 UJ	<2.6	<2.6	<3
6:2 Fluorotelomer sulfonate	<4.7 UJ	<4.3	<4.3	<4.3	<5
9Cl-PF3ONS	<1.9 UJ	<1.7 UJ	<1.7	<1.7	<2
DONA	<1.9 UJ	<1.7	<1.7	<1.7	<2
N-ethyl perfluorooctane sulfonamidoacetic acid	<2.8 UJ	<2.6 UJ	<2.6	<2.6	<3
N-ethylperfluoro-1-octanesulfonamide	<4.7 UJ	<4.3 UJ	<4.3	<4.3	<5
N-methyl perfluoro-1-octanesulfonamide	<2.8 UJ	<2.6 UJ	<2.6	<2.6	<3
N-methyl perfluorooctane sulfonamidoacetic acid	<1.9 UJ	<1.7 UJ	<1.7	<1.7	<2
Perfluorobutane Sulfonic Acid	**4.5 J**	**3.6**	<1.7	<1.7	<2
Perfluorobutanoic Acid	**5.4 J**	**4.6 J**	<4.3	<4.3	<5
Perfluorodecane Sulfonic Acid	<1.9 UJ	<1.7 UJ	<1.7	<1.7	<2
Perfluorodecanoic Acid	<1.9 UJ	<1.7 UJ	<1.7	<1.7	<2
Perfluorododecane sulfonic acid (PFDoS)	<2.8 UJ	<2.6 UJ	<2.6	<2.6	<3
Perfluorododecanoic Acid	<1.9	<1.7 UJ	<1.7	<1.7	<2
Perfluoroheptane sulfonic acid (PFHpS)	<1.9	<1.7	<1.7	<1.7	<2
Perfluoroheptanoic Acid	**7 J**	**7.8**	<1.7	<1.7	<2
Perfluorohexadecanoic acid (PFHxDA)	<2.8	<2.6	<2.6	<2.6	<3
Perfluorohexane Sulfonic Acid	**4.3**	**3.6**	<1.7	<1.7	<2
Perfluorohexanoic Acid	**27**	**12**	<1.7	<1.7	<2
Perfluorononanesulfonic acid	<1.9 UJ	<1.7 UJ	<1.7	<1.7	<2
Perfluorononanoic Acid	<1.9 UJ	<1.7 UJ	<1.7	<1.7	<2
Perfluorooctadecanoic acid	<2.8	<2.6	<2.6	<2.6	<3
Perfluorooctane Sulfonamide	<1.9	<1.7	<1.7	<1.7	<2
Perfluoropentane sulfonic acid (PFPeS)	<1.9 UJ	<1.7	<1.7	<1.7	<2
Perfluoropentanoic Acid	**26 J**	**10 J**	<1.7	<1.7	<2
Perfluorotetradecanoic Acid	<1.9	<1.7	<1.7	<1.7	<2
Perfluorotridecanoic Acid	<1.9	<1.7 UJ	<1.7	<1.7	<2
Perfluoroundecanoic Acid	<1.9 UJ	<1.7 UJ	<1.7	<1.7	<2
PFOA	**6.9 J**	**6.4 J**	<1.7	<1.7	<2
PFOS	**9.4 J**	**9.6 J**	<1.7	<1.7	<2
Total Method 537 PFAS	**90.5**	**57.6**	0.0	0.0	0.0

Notes:
Bold - Analyte detected above associated reporting limit
B - analyte detected in an associated blank
EPA - Environmental Protection Agency
J - Analyte detected. Reported value may not be accurate or precise
µg/L - micrograms per liter
mg/L - milligrams per liter
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SOP - standard operating procedure
UJ – Analyte not detected. Reporting limit may not be accurate or precise.
< - Analyte not detected above associated reporting limit.
Method used for Table 3+ Lab SOP - Cl. Spec. Table 3 Compou
Method used for Other PFAS and HFPO-DA - EPA 537 Rev. 1.

TABLE C5a
PFAS AND TOP ASSAY RESULTS
The Chemours Company, FC, LLC.

Location ID	Equipment Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank
Field Sample ID	EB2-012220	TB1-012120	TB2- 012220	TB3-012320	TB4-012420
Sample Date	22-01-20	21-01-20	22-01-20	23-01-20	24-01-20
QA/QC	EB	TB	TB	TB	TB
Table 3+ Lab SOP (ng/L)					
Hfpo Dimer Acid	<2.7	<2.6	<2.6	<2.6	<2.6
PFMOAA	<5	<5	<5	<5	<5
PFO2HxA	<2	<2	<2	<2	<2
PFO3OA	<2	<2	<2	<2	<2
PFO4DA	<2	<2	<2	<2	<2
PFO5DA	<2	<2	<2	<2	<2
PMPA	<10	<10	<10	<10	<10
PEPA	<20	<20	<20	<20	<20
PS Acid	<2	<2	<2	<2	<2
Hydro-PS Acid	<2	<2	<2	<2	<2
R-PSDA	<2	<2	<2	<2	<2
Hydrolysed PSDA	<2	<2	<2	<2	<2
R-PSDCA	<2	<2	<2	<2	<2
NVHOS	<2	<2	<2	<2	<2
EVE Acid	<2	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2	<2
R-EVE	<2	<2	<2	<2	<2
PES	<2	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2
Total Table 3+ (17 compounds)	0.0	0.0	0.0	0.0	0.0
Total Table 3+ (20 compounds)	0.0	0.0	0.0	0.0	0.0
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	<4.5	<4.4	<4.3	<4.3	<4.3
11Cl-PF3OUdS	<1.8	<1.8	<1.7	<1.7	<1.7
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2.7	<2.6	<2.6	<2.6	<2.6
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<1.8	<1.8	<1.7	<1.7	<1.7
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2.7	<2.6	<2.6	<2.6	<2.6
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<2.7	<2.6	<2.6	<2.6	<2.6
6:2 Fluorotelomer sulfonate	<4.5	<4.4	<4.3	<4.3	<4.3
9Cl-PF3ONS	<1.8	<1.8	<1.7	<1.7	<1.7
DONA	<1.8	<1.8	<1.7	<1.7	<1.7
N-ethyl perfluorooctane sulfonamidoacetic acid	<2.7	<2.6	<2.6	<2.6	<2.6
N-ethylperfluoro-1-octanesulfonamide	<4.5	<4.4	<4.3	<4.3	<4.3
N-methyl perfluoro-1-octanesulfonamide	<2.7	<2.6	<2.6	<2.6	<2.6
N-methyl perfluorooctane sulfonamidoacetic acid	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluorobutane Sulfonic Acid	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluorobutanoic Acid	<4.5	<4.4	<4.3	<4.3	<4.3
Perfluorodecane Sulfonic Acid	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluorodecanoic Acid	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluorododecane sulfonic acid (PFDoS)	<2.7	<2.6	<2.6	<2.6	<2.6
Perfluorododecanoic Acid	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluoroheptane sulfonic acid (PFHpS)	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluoroheptanoic Acid	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluorohexadecanoic acid (PFHxDA)	<2.7	<2.6	<2.6	<2.6	<2.6
Perfluorohexane Sulfonic Acid	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluorohexanoic Acid	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluorononanesulfonic acid	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluorononanoic Acid	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluorooctadecanoic acid	<2.7	<2.6	<2.6	<2.6	<2.6
Perfluorooctane Sulfonamide	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluoropentane sulfonic acid (PFPeS)	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluoropentanoic Acid	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluorotetradecanoic Acid	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluorotridecanoic Acid	<1.8	<1.8	<1.7	<1.7	<1.7
Perfluoroundecanoic Acid	<1.8	<1.8	<1.7	<1.7	<1.7
PFOA	<1.8	<1.8	<1.7	<1.7	<1.7
PFOS	<1.8	<1.8	<1.7	<1.7	<1.7
Total Method 537 PFAS	0.0	0.0	0.0	0.0	0.0

Notes:
Bold - Analyte detected above associated reporting limit
B - analyte detected in an associated blank
EPA - Environmental Protection Agency
J - Analyte detected. Reported value may not be accurate or precise
µg/L - micrograms per liter
mg/L - milligrams per liter
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SOP - standard operating procedure
UJ – Analyte not detected. Reporting limit may not be accurate or precise.
< - Analyte not detected above associated reporting limit.
Method used for Table 3+ Lab SOP - Cl. Spec. Table 3 Compou
Method used for Other PFAS and HFPO-DA - EPA 537 Rev. 1.

TABLE C5b
PHARMACEUTICALS AND PERSONAL CARE PRODUCTS RESULTS
The Chemours Company, FC, LLC.

		Location ID	Cape Fear River Mile 54	Cape Fear River Mile 54	Cape Fear River Mile 56.5	Cape Fear River Mile 63.5	Cape Fear River Mile 76	Cape Fear River Mile 84
		Field Sample ID	Fay-CFR-RM-54-012220	FAY-CFR-RM-54-012220-D	FAY- Cross Creek Rec-012220	FAY-Rockfish Creek Rec-012220	FAY-CFR-RM-76-012320	FAY-CFR-RM-84-INTAKE-012320
		Sample Date	22-01-20	22-01-20	22-01-20	22-01-20	23-01-20	23-01-20
		QA/QC	FS	DUP	FS	FS	FS	FS
Pharmaceutical Parameter	**Lab Method**	**Units**						
Pentachlorophenol	L200	ng/L	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	L200	ng/L	<100	<100	**100**	<100	<100	<100
4-N-Nonylphenol	L200	ng/L	<500	<500	<500	<500	<500	<500
4-n-Octylphenol	L200	ng/L	<500	<500	<500	<500	<500	<500
4-tert-Octylphenol	L200	ng/L	<500	<500	<500	<500	<500	<500
Bisphenol A	L200	ng/L	<100	<100	<100	<100	<100	<100
Phenylphenol	L200	ng/L	<100	<100	<100	<100	<100	<100
Tetrabromobisphenol A	L200	ng/L	<100	<100	<100	<100	<100	<100
17alpha-Estradiol	L211	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
17alpha-Ethynyl estradiol	L211	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-Testosterone	L211	ng/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Diethylstilbestrol	L211	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Estradiol 17B	L211	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Estriol	L211	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Estrone	L211	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Progesterone	L211	ng/L	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
trans-Testosterone	L211	ng/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acetaminophen	L220	ng/L	<5	<5	**14**	<5	<5	<5
Antipyrine	L220	ng/L	<1	<1	**1**	<1	<1	<1
Atenolol	L220	ng/L	**3 J**	**2 J**	**80**	**4**	**3**	**3**
Azithromycin	L220	ng/L	<5	<5	**9**	<5	<5	<5
Caffeine	L220	ng/L	<50	<50	<50	<50	<50	<50
Carbadox	L220	ng/L	<5	<5	<5	<5	<5	<5
Carbamazepine	L220	ng/L	**8**	**8**	**61**	**12**	**9**	**8**
Cotinine	L220	ng/L	**6**	**6**	**9**	**6**	**5**	**6**
Dexamethasone	L220	ng/L	<5	<5	<5	<5	<5	<5
Diazepam	L220	ng/L	<1	<1	**1**	<1	<1	<1
Diltiazem	L220	ng/L	**0.2**	**0.2**	**0.5**	**0.2**	**0.2**	**0.2**
Erythromycin	L220	ng/L	<1	<1	<1	<1	<1	<1
Fluoxetine (Prozac)	L220	ng/L	<1	<1	**10**	<1	<1	<1
Iopromide	L220	ng/L	<50	<50	<50	<50	<50	<50
Lincomycin	L220	ng/L	**0.1**	**0.1**	<0.1	**0.1**	**0.1**	**0.1**
Meprobamate	L220	ng/L	**2**	**2**	**14**	**3**	**2**	**2**
Monensin	L220	ng/L	<1	<1	<1	<1	<1	<1
N,N-Diethyl-3-Methylbenzamide	L220	ng/L	**17**	**17**	**11**	**16**	**15**	**15**
Narasin	L220	ng/L	<1	<1	<1	<1	<1	<1
Nicotine	L220	ng/L	<10	<10	<10	<10	<10	<10
Oleandomycin	L220	ng/L	<1	<1	<1	<1	<1	<1
Paraxanthine	L220	ng/L	**18**	**18**	**11**	**17**	**17**	**18**
Primidone	L220	ng/L	**11**	**11**	**110**	**14**	**11**	**11**
Roxithromycin	L220	ng/L	<1	<1	<1	<1	<1	<1
Salinomycin	L220	ng/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfadiazine	L220	ng/L	<1	<1	<1	<1	<1	<1
Sulfadimethoxine	L220	ng/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfamethazine	L220	ng/L	<1	<1	<1	<1	<1	<1
Sulfamethizole	L220	ng/L	<1	<1	<1	<1	<1	<1
Sulfamethoxazole	L220	ng/L	**12**	**12**	**67**	**14**	**12**	**12**
Sulfasalazine	L220	ng/L	<5	<5	**8**	<5	<5	<5
Sulfathiazole	L220	ng/L	<1	<1	<1	<1	<1	<1
Theobromine	L220	ng/L	<50	<50	<50	<50	<50	<50
Trimethoprim	L220	ng/L	<1	<1	**16**	<1	<1	<1
Tris(1-Chloro-2-Propyl)Phosphate	L220	ng/L	**90**	**90**	**350**	**110**	**90**	**90**
Tris(2-Chloroethyl) Phosphate	L220	ng/L	<10	<10	**30**	<10	<10	<10
Tylosin	L220	ng/L	<1	<1	<1	<1	<1	<1
Virginiamycin M1	L220	ng/L	<1	<1	<1	<1	<1	<1
Acesulfame-K	L221	ng/L	**110**	**130**	**90**	**110**	**170**	**150**
Bezafibrate	L221	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloramphenicol	L221	ng/L	<5	<5	<5	<5	<5	<5
Chlorotetracycline	L221	ng/L	<50	<50	<50	<50	<50	<50
Clofibric Acid	L221	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diclofenac	L221	ng/L	<0.5	<0.5	**9.6**	<0.5	<0.5	<0.5
Gemfibrozil	L221	ng/L	**1**	**1**	**1.4**	**1**	**1**	**1**
Ibuprofen	L221	ng/L	<50	<50	<50	<50	<50	<50
Levothyroxine (Synthroid)	L221	ng/L	<2	<2	<2	<2	<2	<2
Naproxen	L221	ng/L	**6**	**6**	**4**	**6**	**5**	**6**
Penicillin G	L221	ng/L	<2	<2	<2	<2	<2	<2
Penicillin V	L221	ng/L	<2	<2	<2	<2	<2	<2
Phenytoin	L221	ng/L	**2**	**2**	**21**	**6**	**2**	<3
Prednisone	L221	ng/L	<2	<2	<2	<2	<2	<2
Salicylic Acid	L221	ng/L	<50	<50	<50	<50	<50	<50
Sucralose	L221	ng/L	**1,500**	**1,500**	**8,100**	**2,100**	**1,600**	**1,500**
Theophylline	L221	ng/L	<5	<5	<5	<5	<5	<5
Triclocarban	L221	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Triclosan	L221	ng/L	<51	<50	<50	<50	<50	<50

Notes:
Bold - Analyte detected above associated reporting limit
B - analyte detected in an associated blank
EPA - Environmental Protection Agency
J - Analyte detected. Reported value may
not be accurate or precise
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SOP - standard operating procedure
UJ – Analyte not detected. Reporting limit
may not be accurate or precise.
< - Analyte not detected above associated reporting limit.

TABLE C5b
PHARMACEUTICALS AND PERSONAL CARE PRODUCTS RESULTS
The Chemours Company, FC, LLC.

		Location ID	Cape Fear River Mile 100	Cape Fear River Mile 132	Equipment Blank	Equipment Blank	Equipment Blank
		Field Sample ID	FAY-Elizabethtown WWTP-012320	FAY-CFR-RM-132-012420	EB2-012220	EB3-012320	EB4-012420
		Sample Date	23-01-20	24-01-20	22-01-20	23-01-20	24-01-20
		QA/QC	FS	FS	EB	EB	EB
Pharmaceutical Parameter	**Lab Method**	**Units**					
Pentachlorophenol	L200	ng/L	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	L200	ng/L	<100	<100	<100	<100	<100
4-N-Nonylphenol	L200	ng/L	<500	<500	<500	<500	<500
4-n-Octylphenol	L200	ng/L	<500	<500	<500	<500	<500
4-tert-Octylphenol	L200	ng/L	<500	<500	<500	<500	<500
Bisphenol A	L200	ng/L	<100	<100	<100	<100	<100
Phenylphenol	L200	ng/L	<100	<100	<100	<100	<100
Tetrabromobisphenol A	L200	ng/L	<100	<100	<100	<100	<100
17alpha-Estradiol	L211	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5
17alpha-Ethynyl estradiol	L211	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5
cis-Testosterone	L211	ng/L	<0.1	<0.1	<0.1	<0.1	<0.1
Diethylstilbestrol	L211	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5
Estradiol 17B	L211	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5
Estriol	L211	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5
Estrone	L211	ng/L	**1.3**	<0.5	<0.5	<0.5	<0.5
Progesterone	L211	ng/L	**0.1**	<0.1	<0.1	<0.1	<0.1
trans-Testosterone	L211	ng/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acetaminophen	L220	ng/L	**10**	<5	<5	<5	<5
Antipyrine	L220	ng/L	<1	<1	<1	<1	<1
Atenolol	L220	ng/L	**40**	**2**	<1	<1	<1
Azithromycin	L220	ng/L	**19**	<5	<5	<5	<5
Caffeine	L220	ng/L	<50	<50	<50	<50	<50
Carbadox	L220	ng/L	<5	<5	<5	<5	<5
Carbamazepine	L220	ng/L	**38**	**9**	<1	<1	<1
Cotinine	L220	ng/L	**14**	**5**	<1	<1	<1
Dexamethasone	L220	ng/L	<5	<5	<5	<5	<5
Diazepam	L220	ng/L	<1	<1	<1	<1	<1
Diltiazem	L220	ng/L	**6.3**	**0.1**	<0.1	<0.1	<0.1
Erythromycin	L220	ng/L	<1	<1	<1	<1	<1
Fluoxetine (Prozac)	L220	ng/L	**6**	<1	<1	<1	<1
Iopromide	L220	ng/L	<50	<50	<50	<50	<50
Lincomycin	L220	ng/L	<0.1	**0.5**	<0.1	<0.1	<0.1
Meprobamate	L220	ng/L	**12**	**2**	<1	<1	<1
Monensin	L220	ng/L	<1	<1	<1	<1	<1
N,N-Diethyl-3-Methylbenzamide	L220	ng/L	**15**	**14**	<5	<5	<5
Narasin	L220	ng/L	<1	<1	<1	<1	<1
Nicotine	L220	ng/L	<10	<10	<10	<10	<10
Oleandomycin	L220	ng/L	<1	<1	<1	<1	<1
Paraxanthine	L220	ng/L	**32**	**14**	<5	<5	<5
Primidone	L220	ng/L	**190**	**10**	<5	<5	<5
Roxithromycin	L220	ng/L	<1	<1	<1	<1	<1
Salinomycin	L220	ng/L	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfadiazine	L220	ng/L	<1	<1	<1	<1	<1
Sulfadimethoxine	L220	ng/L	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfamethazine	L220	ng/L	<1	**2**	<1	<1	<1
Sulfamethizole	L220	ng/L	<1	<1	<1	<1	<1
Sulfamethoxazole	L220	ng/L	**290**	**10**	<1	<1	<1
Sulfasalazine	L220	ng/L	<5	<5	<5	<5	<5
Sulfathiazole	L220	ng/L	**1**	<1	<1	<1	<1
Theobromine	L220	ng/L	<50	<50	<50	<50	<50
Trimethoprim	L220	ng/L	**17**	<1	<1	<1	<1
Tris(1-Chloro-2-Propyl)Phosphate	L220	ng/L	**300**	**80**	<10	<10	<10
Tris(2-Chloroethyl) Phosphate	L220	ng/L	**540**	<10	<10	<10	<10
Tylosin	L220	ng/L	<1	<1	<1	<1	<1
Virginiamycin M1	L220	ng/L	<1	<1	<1	<1	<1
Acesulfame-K	L221	ng/L	**500**	**180**	<10	<10	<10
Bezafibrate	L221	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chloramphenicol	L221	ng/L	<5	<5	<5	<5	<5
Chlorotetracycline	L221	ng/L	<50	<50	<50	<50	<50
Clofibric Acid	L221	ng/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diclofenac	L221	ng/L	**62**	<0.5	<0.5	<0.5	<0.5
Gemfibrozil	L221	ng/L	**5.6**	**0.7**	<0.5	<0.5	<0.5
Ibuprofen	L221	ng/L	<50	<50	<50	<50	<50
Levothyroxine (Synthroid)	L221	ng/L	<2	<2	<2	<2	<2
Naproxen	L221	ng/L	**11**	**5**	<2	<2	<2
Penicillin G	L221	ng/L	<2	<2	<2	<2	<2
Penicillin V	L221	ng/L	<2	<2	<2	<2	<2
Phenytoin	L221	ng/L	**42**	**2**	<2	<2	<2
Prednisone	L221	ng/L	<2	<2	<2	<2	<2
Salicylic Acid	L221	ng/L	<50	<50	<50	<50	<50
Sucralose	L221	ng/L	**9,900**	**1,400**	<25	<25	<25
Theophylline	L221	ng/L	<5	<5	<5	<5	<5
Triclocarban	L221	ng/L	<1.2	<0.5	<0.5	<0.5	<0.5
Triclosan	L221	ng/L	<50	<50	<50	<50	<50

Notes:
Bold - Analyte detected above associated reporting limit
B - analyte detected in an associated blank
EPA - Environmental Protection Agency
J - Analyte detected. Reported value may
not be accurate or precise
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SOP - standard operating procedure
UJ – Analyte not detected. Reporting limit
may not be accurate or precise.
< - Analyte not detected above associated reporting limit.

TABLE C5c
OTHER COMPOUNDS RESULTS
The Chemours Company, FC, LLC.

		Location ID	**Deep River**	**Haw River**	**Cape Fear River Mile 4**	**Little River**	**Cape Fear River Mile 54**	**Cape Fear River Mile 54**
		Field Sample ID	**FAY-DEEP RIVER-012120**	**FAY-HAW RIVER-012120**	**FAY-CFR-RM-4-012120**	**FAY-Little River Mouth-012320**	**Fay-CFR-RM-54-012220**	**FAY-CFR-RM-54-012220-D**
		Sample Date	**21-01-20**	**21-01-20**	**21-01-20**	**23-01-20**	**22-01-20**	**22-01-20**
		QA/QC	**FS**	**FS**	**FS**	**FS**	**FS**	**DUP**
Other Analytes	**Lab Method**	**Units**						
2,3,7,8-TCDD	1613B	ng/L	--	--	--	--	--	--
Antimony	200.7 Rev. 4.4	ng/L	<16,000	<16,000	<16,000	<16,000	<16,000	<16,000
Arsenic	200.7 Rev. 4.4	ng/L	<16,000	<16,000	<16,000	<16,000	<16,000	<16,000
Barium	200.7 Rev. 4.4	ng/L	**20,600**	**27,200**	**24,600**	**27,500**	**27,300**	**29,200**
Beryllium	200.7 Rev. 4.4	ng/L	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
Cadmium	200.7 Rev. 4.4	ng/L	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
Calcium	200.7 Rev. 4.4	ng/L	**7,660,000**	**7,630,000**	**7,320,000**	**2,140,000**	**6,570,000**	**7,190,000**
Chromium	200.7 Rev. 4.4	ng/L	<1,600	**1,700 J**	<1,600	<1,600	<1,600	<1,600
Cobalt	200.7 Rev. 4.4	ng/L	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500
Copper	200.7 Rev. 4.4	ng/L	<12,000	<12,000	<12,000	<12,000	<12,000	<12,000
Iron	200.7 Rev. 4.4	ng/L	**741,000**	**677,000**	**645,000 J**	**466,000**	**972,000**	**864,000**
Lead	200.7 Rev. 4.4	ng/L	<7,100	<7,100	<7,100	<7,100	<7,100	<7,100
Magnesium	200.7 Rev. 4.4	ng/L	**3,040,000**	**2,940,000**	**2,900,000**	**973,000**	**2,690,000**	**2,900,000**
Manganese	200.7 Rev. 4.4	ng/L	**34,100**	**83,800**	**75,900**	**16,100**	**77,100**	**81,400**
Molybdenum	200.7 Rev. 4.4	ng/L	<2,000	<2,000	<2,000	<2,000	<2,000	<2,000
Nickel	200.7 Rev. 4.4	ng/L	<2,100	<2,100	<2,100	<2,100	<2,100	<2,100
Potassium	200.7 Rev. 4.4	ng/L	**3,190,000**	**3,120,000**	**3,080,000**	**1,840,000**	**3,040,000**	**3,280,000**
Selenium	200.7 Rev. 4.4	ng/L	<16,000	<16,000	<16,000	<16,000	<16,000	<16,000
Silver	200.7 Rev. 4.4	ng/L	<5,000	<5,000	<5,000	<5,000	<5,000	<5,000
Sodium	200.7 Rev. 4.4	ng/L	**8,800,000**	**12,500,000**	**11,400,000**	**3,850,000**	**9,590,000**	**10,600,000**
Strontium	200.7 Rev. 4.4	ng/L	**53,000**	**62,100**	**57,100**	**15,200**	**50,200**	**54,700**
Vanadium	200.7 Rev. 4.4	ng/L	**2,400 J**	**2,900 J**	**1,900 J**	<1,900	**2,800 J**	**2,800 J**
Zinc	200.7 Rev. 4.4	ng/L	<3,700	<3,700	**3,800 J**	**5,400 J**	**4,300 J**	**3,900 J**
Thallium	200.8	ng/L	<130	<130	<130	<130	<130	<130
Hexavalent Chromium	218.6	ng/L	<150	<150	<150	<150	<150 UJ	<150 UJ
Mercury	245.1	ng/L	<50	<50	<50	<50	<50	<50
Bromide	300.0	ng/L	<1,300,000	<1,300,000	<1,300,000	**31,000**	<1,300,000	<1,300,000
Chlorate	300.0	ng/L	--	--	--	<10,000	--	--
Chloride	300.0	ng/L	**9,700,000 B**	**11,300,000 B**	**10,800,000 B**	**5,700,000**	**9,600,000 J**	**9,700,000 J**
Chlorite	300.0	ng/L	--	--	--	<20,000	--	--
Fluoride	300.0	ng/L	<250,000	<250,000	<250,000	<100,000	<250,000	<250,000
Nitrate	300.0/353.2	ng/L	**1,000,000 J**	**880,000 J**	**900,000 J**	<1,000,000 UJ	**840,000 J**	**850,000 J**
Nitrite	300.0/353.2	ng/L	<250,000	<250,000	<250,000	<100,000	<250,000	<250,000
Sulfate	300.0	ng/L	**9,300,000 B**	**11,400,000 B**	**11,400,000 B**	<15,000,000	**9,900,000 J**	**9,900,000 J**
Bromate	300.1	ng/L	--	--	--	<5,000	--	--
Perchlorate	331.0	ng/L	**70**	**70**	**70**	**50**	**110**	**100**
Cyanide	335.4	ng/L	--	--	--	--	--	--
Phosphate	365.1/4500-P	ng/L	<250,000	<250,000	<250,000	<65,000	<250,000	<250,000
Chloramine	4500 CL F	ng/L	--	--	--	--	--	--
Chlorine	4500 CL F	ng/L	--	--	--	--	--	--
Chlorine Dioxide	4500 CL F	ng/L	--	--	--	--	--	--
1,2-Dibromo-3-Chloropropane	504.1	ng/L	--	--	--	--	--	--
1,2-Dibromoethane (EDB)	504.1	ng/L	--	--	--	--	--	--
1,2,3-Trichloropropane	505/552.2	ng/L	--	--	--	--	--	--
Chlordane	505	ng/L	--	--	--	--	--	--
PCB 1016	505	ng/L	--	--	--	--	--	--
PCB 1221	505	ng/L	--	--	--	--	--	--
PCB 1232	505	ng/L	--	--	--	--	--	--
PCB 1242	505	ng/L	--	--	--	--	--	--
PCB 1248	505	ng/L	--	--	--	--	--	--
PCB 1254	505	ng/L	--	--	--	--	--	--
PCB 1260	505	ng/L	--	--	--	--	--	--
Total PCB (congeners)	505	ng/L	--	--	--	--	--	--
Toxaphene	505	ng/L	--	--	--	--	--	--
2,4-Dichlorophenoxyacetic Acid	515.3	ng/L	--	--	--	--	--	--
Dalapon 85	515.3	ng/L	--	--	--	--	--	--
Dicamba	515.3	ng/L	--	--	--	--	--	--
Dinoseb	515.3	ng/L	--	--	--	--	--	--
Pentachlorophenol	515.3	ng/L	--	--	--	--	--	--
Picloram	515.3	ng/L	--	--	--	--	--	--
Silvex	515.3	ng/L	--	--	--	--	--	--
1,4-Dioxane	522	ng/L	**1,500**	**1,000**	**1,200**	<70	**960**	**990**
Bromodichloromethane	524.2	ng/L	--	--	--	--	--	--
Bromoform	524.2	ng/L	--	--	--	--	--	--
Chlorodibromomethane	524.2	ng/L	--	--	--	--	--	--
Chloroform	524.2	ng/L	--	--	--	--	--	--
Alachlor	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Aldrin	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Atrazine	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Benzo[A]Pyrene	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Bis(2-Ethylhexyl)Adipate	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Bis(2-Ethylhexyl)Phthalate	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Butachlor	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Dieldrin	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Endrin	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Heptachlor	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Heptachlor Epoxide	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Hexachlorobenzene	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Hexachlorocyclopentadiene	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Lindane	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Methoxychlor	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Metolachlor	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Metribuzin	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Propachlor	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Simazine	525.2 Rev 2.0	ng/L	--	--	--	--	--	--
Alpha-BHC	525.3	ng/L	--	--	--	--	--	--
Chlorpyrifos	525.3	ng/L	--	--	--	--	--	--
Dimethipin	525.3	ng/L	--	--	--	--	--	--
Merphos Oxide	525.3	ng/L	--	--	--	--	--	--
Mocap	525.3	ng/L	--	--	--	--	--	--
Oxyfluorfen	525.3	ng/L	--	--	--	--	--	--
Permethrin	525.3	ng/L	--	--	--	--	--	--
Tebuconazole	525.3	ng/L	--	--	--	--	--	--

TABLE C5c
OTHER COMPOUNDS RESULTS
The Chemours Company, FC, LLC.

		Location ID	Deep River	Haw River	Cape Fear River Mile 4	Little River	Cape Fear River Mile 54	Cape Fear River Mile 54
		Field Sample ID	FAY-DEEP RIVER-012120	FAY-HAW RIVER-012120	FAY-CFR-RM-4-012120	FAY-Little River Mouth-012320	Fay-CFR-RM-54-012220	FAY-CFR-RM-54-012220-D
		Sample Date	21-01-20	21-01-20	21-01-20	23-01-20	22-01-20	22-01-20
		QA/QC	FS	FS	FS	FS	FS	DUP
Other Analytes	**Lab Method**	**Units**						
Buytlated Hydroxyanisole	530	ng/L	--	--	--	--	--	--
O-Toluidine	530	ng/L	--	--	--	--	--	--
Quinoline	530	ng/L	--	--	--	--	--	--
3-Hydroxycarbofuran	531.2	ng/L	--	--	--	--	--	--
Aldicarb	531.2	ng/L	--	--	--	--	--	--
Aldicarb Sulfone	531.2	ng/L	--	--	--	--	--	--
Aldicarb Sulfoxide	531.2	ng/L	--	--	--	--	--	--
Carbaryl	531.2	ng/L	--	--	--	--	--	--
Carbofuran	531.2	ng/L	--	--	--	--	--	--
Methomyl	531.2	ng/L	--	--	--	--	--	--
Oxamyl	531.2	ng/L	--	--	--	--	--	--
Total Organic Carbon	5310 C-2011	ng/L	--	--	--	--	--	--
Glyphosate	547	ng/L	--	--	--	--	--	--
Endothall	548.1	ng/L	--	--	--	--	--	--
Diquat Dibromide	549.2	ng/L	--	--	--	--	--	--
Dibromoacetic Acid	552.2/552.3	ng/L	--	--	--	--	--	--
Dichloroacetic Acid	552.2/552.3	ng/L	--	--	--	--	--	--
Monobromoacetic Acid	552.2/552.3	ng/L	--	--	--	--	--	--
Monochloroacetic Acid	552.2/552.3	ng/L	--	--	--	--	--	--
Total Haloacetic Acids(5)	552.2/552.3	ng/L	--	--	--	--	--	--
Trichloroacetic Acid	552.2/552.3	ng/L	--	--	--	--	--	--
Bromochloroacetic Acid	552.3	ng/L	--	--	--	--	--	--
Bromodichloroacetic acid	552.3	ng/L	--	--	--	--	--	--
Chlorodibromoacetic acid	552.3	ng/L	--	--	--	--	--	--
Tribromoacetic acid	552.3	ng/L	--	--	--	--	--	--
Coliforms (Presence/Absence)	9222B	Absent/Present	--	--	--	--	--	--

Notes:
Bold - Analyte detected above associated reporting limit
B - analyte detected in an associated blank
EPA - Environmental Protection Agency
J - Analyte detected. Reported value
may not be accurate or precise
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SOP - standard operating procedure
UJ – Analyte not detected. Reporting
limit may not be accurate or precise.
< - Analyte not detected above associated reporting limit.

TABLE C5c
OTHER COMPOUNDS RESULTS
The Chemours Company, FC, LLC.

		Location ID	**Cape Fear River Mile 56.5**	**Cape Fear River Mile 63.5**	**Cape Fear River Mile 76**	**Cape Fear River Mile 84**	**Cape Fear River Mile 100**	**Cape Fear River Mile 132**
		Field Sample ID	**FAY- Cross Creek Rec-012220**	**FAY-Rockfish Creek Rec-012220**	**FAY-CFR-RM-76-012320**	**FAY-CFR-RM-84-INTAKE-012320**	**FAY-Elizabethtown WWTP-012320**	**FAY-CFR-RM-132-012420**
		Sample Date	**22-01-20**	**22-01-20**	**23-01-20**	**23-01-20**	**23-01-20**	**24-01-20**
		QA/QC	**FS**	**FS**	**FS**	**FS**	**FS**	**FS**
Other Analytes	**Lab Method**	**Units**						
2,3,7,8-TCDD	1613B	ng/L	--	--	<0.000127	**0.000119 J**	--	<0.000204
Antimony	200.7 Rev. 4.4	ng/L	<16,000	<16,000	<16,000	<16,000	<16,000	<16,000
Arsenic	200.7 Rev. 4.4	ng/L	<16,000	<16,000	<16,000	<16,000	<16,000	<16,000
Barium	200.7 Rev. 4.4	ng/L	**18,800**	**24,400**	**25,200**	**26,100**	**20,300**	**26,100**
Beryllium	200.7 Rev. 4.4	ng/L	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
Cadmium	200.7 Rev. 4.4	ng/L	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
Calcium	200.7 Rev. 4.4	ng/L	**8,690,000**	**6,970,000**	**6,000,000**	**6,140,000**	**10,000,000**	**6,350,000**
Chromium	200.7 Rev. 4.4	ng/L	<1,600	<1,600	<1,600	<1,600	<1,600	<1,600
Cobalt	200.7 Rev. 4.4	ng/L	<1,500	<1,500	<1,500	<1,500	<1,500	<1,500
Copper	200.7 Rev. 4.4	ng/L	<12,000	<12,000	<12,000	<12,000	<12,000	<12,000
Iron	200.7 Rev. 4.4	ng/L	**658,000**	**728,000**	**674,000**	**757,000**	**738,000**	**710,000**
Lead	200.7 Rev. 4.4	ng/L	<7,100	<7,100	<7,100	<7,100	<7,100	<7,100
Magnesium	200.7 Rev. 4.4	ng/L	**5,740,000**	**3,920,000**	**2,490,000**	**2,560,000**	**2,410,000**	**2,500,000**
Manganese	200.7 Rev. 4.4	ng/L	**81,300**	**73,600**	**64,000 J**	**58,900**	**64,800**	**70,600**
Molybdenum	200.7 Rev. 4.4	ng/L	**3,000 J**	<2,000	<2,000	<2,000	<2,000	<2,000
Nickel	200.7 Rev. 4.4	ng/L	**2,900 J**	<2,100	<2,100	<2,100	<2,100	<2,100
Potassium	200.7 Rev. 4.4	ng/L	**6,290,000**	**3,890,000**	**2,800,000**	**2,910,000**	**5,330,000**	**2,920,000**
Selenium	200.7 Rev. 4.4	ng/L	<16,000	<16,000	<16,000	<16,000	<16,000	<16,000
Silver	200.7 Rev. 4.4	ng/L	<5,000	<5,000	<5,000	<5,000	<5,000	<5,000
Sodium	200.7 Rev. 4.4	ng/L	**29,200,000**	**16,300,000**	**9,250,000**	**9,370,000**	**28,400,000**	**36,300,000**
Strontium	200.7 Rev. 4.4	ng/L	**46,300**	**47,200**	**45,300**	**46,800**	**49,800**	**46,100**
Vanadium	200.7 Rev. 4.4	ng/L	**2,000 J**	**2,100 J**	<1,900	**2,200 J**	<1,900	**2,700 J**
Zinc	200.7 Rev. 4.4	ng/L	**165,000**	**25,300**	**5,300 J**	**5,100 J**	**27,100**	**5,800 J**
Thallium	200.8	ng/L	<130	<130	<130	<130	<130	<130
Hexavalent Chromium	218.6	ng/L	<150 UJ	<150 UJ	<150	<150	<150	<150
Mercury	245.1	ng/L	<50	<50	<50	<50	<50	<50
Bromide	300.0	ng/L	<1,300,000	<1,300,000	**78,000**	**77,000**	**63,000**	--
Chlorate	300.0	ng/L	--	--	<10,000	<10,000	<10,000	--
Chloride	300.0	ng/L	**17,500,000 J**	**10,400,000 J**	**9,900,000**	**9,700,000**	**29,000,000**	**10,000,000**
Chlorite	300.0	ng/L	--	--	<20,000	<20,000	<20,000	--
Fluoride	300.0	ng/L	<250,000	<250,000	<100,000	<100,000	<100,000	<100,000
Nitrate	300.0/353.2	ng/L	**4,000,000 J**	**1,100,000 J**	<1,000,000 UJ	<1,000,000 UJ	**3,200,000**	<1,000,000 UJ
Nitrite	300.0/353.2	ng/L	<250,000	<250,000	<100,000	<100,000	<100,000	<100,000
Sulfate	300.0	ng/L	**20,900,000 J**	**10,800,000 J**	<15,000,000	<15,000,000	<15,000,000	<15,000,000
Bromate	300.1	ng/L	--	--	<5,000	<5,000	<5,000	--
Perchlorate	331.0	ng/L	**200**	**120**	**110**	**120**	**80**	**130**
Cyanide	335.4	ng/L	--	--	<5,000	<5,000	--	<5,000
Phosphate	365.1/4500-P	ng/L	**2,400,000 J**	**400,000 J**	<65,000	<65,000	**880,000**	--
Chloramine	4500 CL F	ng/L	--	--	**510,000**	0	--	**300,000**
Chlorine	4500 CL F	ng/L	--	--	**40,000**	**50,000**	--	**10,000**
Chlorine Dioxide	4500 CL F	ng/L	--	--	0	0	--	**110,000**
1,2-Dibromo-3-Chloropropane	504.1	ng/L	--	--	<20	<20	--	<20
1,2-Dibromoethane (EDB)	504.1	ng/L	--	--	<10	<10	--	<10
1,2,3-Trichloropropane	505/552.2	ng/L	--	--	--	--	--	<100
Chlordane	505	ng/L	--	--	<200	<200	--	<200
PCB 1016	505	ng/L	--	--	<80	<80	--	<80
PCB 1221	505	ng/L	--	--	<190	<190	--	<190
PCB 1232	505	ng/L	--	--	<230	<230	--	<230
PCB 1242	505	ng/L	--	--	<260	<260	--	<260
PCB 1248	505	ng/L	--	--	<100	<100	--	<100
PCB 1254	505	ng/L	--	--	<100	<100	--	--
PCB 1260	505	ng/L	--	--	<200	<200	--	--
Total PCB (congeners)	505	ng/L	--	--	<100	<100	--	--
Toxaphene	505	ng/L	--	--	<1,000	<1,000	--	<1,000
2,4-Dichlorophenoxyacetic Acid	515.3	ng/L	--	--	<100	<100	--	<100
Dalapon 85	515.3	ng/L	--	--	<1,000	<1,000	--	<1,000
Dicamba	515.3	ng/L	--	--	<1,000	<1,000	--	<1,000
Dinoseb	515.3	ng/L	--	--	<200	<200	--	<200
Pentachlorophenol	515.3	ng/L	--	--	<40	<40	--	<40
Picloram	515.3	ng/L	--	--	<100	<100	--	<100
Silvex	515.3	ng/L	--	--	<200	<200	--	<200
1,4-Dioxane	522	ng/L	**800**	**940**	**1,300**	**1,200**	**780**	**860**
Bromodichloromethane	524.2	ng/L	--	--	<100	<100	--	<100
Bromoform	524.2	ng/L	--	--	<200	<200	--	<200
Chlorodibromomethane	524.2	ng/L	--	--	<100	<100	--	<100
Chloroform	524.2	ng/L	--	--	<100	**200 B**	--	**100 B**
Alachlor	525.2 Rev 2.0	ng/L	--	--	<100	<100	--	<200
Aldrin	525.2 Rev 2.0	ng/L	--	--	<100	<100	--	<200
Atrazine	525.2 Rev 2.0	ng/L	--	--	<100	<100	--	<100
Benzo[A]Pyrene	525.2 Rev 2.0	ng/L	--	--	<20	<20	--	<20
Bis(2-Ethylhexyl)Adipate	525.2 Rev 2.0	ng/L	--	--	<600	<600	--	<600
Bis(2-Ethylhexyl)Phthalate	525.2 Rev 2.0	ng/L	--	--	<600	<600	--	<1,320
Butachlor	525.2 Rev 2.0	ng/L	--	--	<100	<100	--	<8,000
Dieldrin	525.2 Rev 2.0	ng/L	--	--	<100	<100	--	<200
Endrin	525.2 Rev 2.0	ng/L	--	--	<10	<10	--	<10
Heptachlor	525.2 Rev 2.0	ng/L	--	--	<40	<40	--	<40
Heptachlor Epoxide	525.2 Rev 2.0	ng/L	--	--	<20	<20	--	<20
Hexachlorobenzene	525.2 Rev 2.0	ng/L	--	--	<100	<100	--	<100
Hexachlorocyclopentadiene	525.2 Rev 2.0	ng/L	--	--	<100	<100	--	<100
Lindane	525.2 Rev 2.0	ng/L	--	--	<20	<20	--	<20
Methoxychlor	525.2 Rev 2.0	ng/L	--	--	<100	<100	--	<100
Metolachlor	525.2 Rev 2.0	ng/L	--	--	<100	<100	--	<800
Metribuzin	525.2 Rev 2.0	ng/L	--	--	<100	<100	--	<800
Propachlor	525.2 Rev 2.0	ng/L	--	--	<100	<100	--	<6,000
Simazine	525.2 Rev 2.0	ng/L	--	--	<70	<70	--	<70
Alpha-BHC	525.3	ng/L	--	--	<10	<10	--	<10
Chlorpyrifos	525.3	ng/L	--	--	<30	<30	--	<30
Dimethipin	525.3	ng/L	--	--	<200	<200	--	<200
Merphos Oxide	525.3	ng/L	--	--	<70	<70	--	<70
Mocap	525.3	ng/L	--	--	<30	<30	--	<30
Oxyfluorfen	525.3	ng/L	--	--	<50	<50	--	<50
Permethrin	525.3	ng/L	--	--	<40	<40	--	<40
Tebuconazole	525.3	ng/L	--	--	<200	<200	--	<200

TABLE C5c
OTHER COMPOUNDS RESULTS
The Chemours Company, FC, LLC.

		Location ID	**Cape Fear River Mile 56.5**	**Cape Fear River Mile 63.5**	**Cape Fear River Mile 76**	**Cape Fear River Mile 84**	**Cape Fear River Mile 100**	**Cape Fear River Mile 132**
		Field Sample ID	**FAY- Cross Creek Rec-012220**	**FAY-Rockfish Creek Rec-012220**	**FAY-CFR-RM-76-012320**	**FAY-CFR-RM-84-INTAKE-012320**	**FAY-Elizabethtown WWTP-012320**	**FAY-CFR-RM-132-012420**
		Sample Date	**22-01-20**	**22-01-20**	**23-01-20**	**23-01-20**	**23-01-20**	**24-01-20**
		QA/QC	**FS**	**FS**	**FS**	**FS**	**FS**	**FS**
Other Analytes	**Lab Method**	**Units**						
Buytlated Hydroxyanisole	530	ng/L	--	--	<30	<30	--	<30
O-Toluidine	530	ng/L	--	--	<7	<7	--	<7
Quinoline	530	ng/L	--	--	<20	<20	--	<20
3-Hydroxycarbofuran	531.2	ng/L	--	--	<4,000	<4,000	--	<4,000
Aldicarb	531.2	ng/L	--	--	<500	<500	--	<500
Aldicarb Sulfone	531.2	ng/L	--	--	<800	<800	--	<800
Aldicarb Sulfoxide	531.2	ng/L	--	--	<500	<500	--	<500
Carbaryl	531.2	ng/L	--	--	<4,000	<4,000	--	<4,000
Carbofuran	531.2	ng/L	--	--	<900	<900	--	<900
Methomyl	531.2	ng/L	--	--	<4,000	<4,000	--	<4,000
Oxamyl	531.2	ng/L	--	--	<2,000	<2,000	--	<2,000
Total Organic Carbon	5310 C-2011	ng/L	--	--	**5,900,000**	**6,000,000**	--	**7,600,000**
Glyphosate	547	ng/L	--	--	<6,000	<6,000	--	--
Endothall	548.1	ng/L	--	--	<9,000	<9,000	--	<9,000
Diquat Dibromide	549.2	ng/L	--	--	<400	<400	--	<400
Dibromoacetic Acid	552.2/552.3	ng/L	--	--	<1,000	<1,000	--	<1,000
Dichloroacetic Acid	552.2/552.3	ng/L	--	--	<1,000	**1,000**	--	<1,000
Monobromoacetic Acid	552.2/552.3	ng/L	--	--	<1,000	<1,000	--	<1,000
Monochloroacetic Acid	552.2/552.3	ng/L	--	--	<2,000	<2,000	--	<2,000
Total Haloacetic Acids(5)	552.2/552.3	ng/L	--	--	<2,000	<2,000	--	<2,000
Trichloroacetic Acid	552.2/552.3	ng/L	--	--	<1,000	<1,000	--	<1,000
Bromochloroacetic Acid	552.3	ng/L	--	--	<1,000	<1,000	--	<1,000
Bromodichloroacetic acid	552.3	ng/L	--	--	<1,000	<1,000	--	<1,000
Chlorodibromoacetic acid	552.3	ng/L	--	--	<2,000	<2,000	--	<2,000
Tribromoacetic acid	552.3	ng/L	--	--	<4,000	<4,000	--	<4,000
Coliforms (Presence/Absence)	9222B	Absent/Present	--	--	**Present B**	**Present B**	--	Absent

Notes:
Bold - Analyte detected above associated reporting limit
B - analyte detected in an associated blank
EPA - Environmental Protection Agency
J - Analyte detected. Reported value may not be accurate or precise
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SOP - standard operating procedure
UJ – Analyte not detected. Reporting limit may not be accurate or precise.
< - Analyte not detected above associated reporting limit.

TABLE C5c
OTHER COMPOUNDS RESULTS
The Chemours Company, FC, LLC.

		Location ID	Equipment Blank	Equipment Blank	Equipment Blank		Equipment Blank	Trip Blank	Trip Blank
		Field Sample ID	EB1-012120	EB2-012220	EB3-012320		EB4-012420	TB1-012320	TB2-012420
		Sample Date	21-01-20	22-01-20	23-01-20		24-01-20	23-01-20	24-01-20
		QA/QC	EB	EB	EB		EB	TB	TB
Other Analytes	**Lab Method**	**Units**							
2,3,7,8-TCDD	1613B	ng/L	--	--	<0.00011		<0.000266	--	--
Antimony	200.7 Rev. 4.4	ng/L	<16,000	<16,000	<16,000		<16,000	--	--
Arsenic	200.7 Rev. 4.4	ng/L	<16,000	<16,000	<16,000		<16,000	--	--
Barium	200.7 Rev. 4.4	ng/L	<1,000	<1,000	<1,000		<1,000	--	--
Beryllium	200.7 Rev. 4.4	ng/L	<1,000	<1,000	<1,000		<1,000	--	--
Cadmium	200.7 Rev. 4.4	ng/L	<1,000	<1,000	<1,000		<1,000	--	--
Calcium	200.7 Rev. 4.4	ng/L	<96,000	<96,000	<96,000		<96,000	--	--
Chromium	200.7 Rev. 4.4	ng/L	<1,600	<1,600	<1,600		<1,600	--	--
Cobalt	200.7 Rev. 4.4	ng/L	<1,500	<1,500	<1,500		<1,500	--	--
Copper	200.7 Rev. 4.4	ng/L	<12,000	<12,000	<12,000		<12,000	--	--
Iron	200.7 Rev. 4.4	ng/L	<40,000 UJ	<40,000	<40,000		<40,000	--	--
Lead	200.7 Rev. 4.4	ng/L	<7,100	<7,100	<7,100		<7,100	--	--
Magnesium	200.7 Rev. 4.4	ng/L	<40,000	<40,000	<40,000		<40,000	--	--
Manganese	200.7 Rev. 4.4	ng/L	<3,000	<3,000	<3,000		<3,000	--	--
Molybdenum	200.7 Rev. 4.4	ng/L	<2,000	<2,000	<2,000		<2,000	--	--
Nickel	200.7 Rev. 4.4	ng/L	<2,100	<2,100	<2,100		<2,100	--	--
Potassium	200.7 Rev. 4.4	ng/L	<204,000	<204,000	<204,000		<204,000	--	--
Selenium	200.7 Rev. 4.4	ng/L	<16,000	<16,000	<16,000		<16,000	--	--
Silver	200.7 Rev. 4.4	ng/L	<5,000	<5,000	<5,000		<5,000	--	--
Sodium	200.7 Rev. 4.4	ng/L	**246,000 J**	<239,000	<239,000		<239,000	--	--
Strontium	200.7 Rev. 4.4	ng/L	<730	<730	<730		<730	--	--
Vanadium	200.7 Rev. 4.4	ng/L	<1,900	<1,900	<1,900		<1,900	--	--
Zinc	200.7 Rev. 4.4	ng/L	<3,700	<3,700	<3,700		<3,700	--	--
Thallium	200.8	ng/L	<130	<130	<130		<130	--	--
Hexavalent Chromium	218.6	ng/L	<150	<150 UJ	<150		<150	--	--
Mercury	245.1	ng/L	<50	<50	<50		<50	--	--
Bromide	300.0	ng/L	<1,300,000	<250,000	<10,000		<10,000	--	--
Chlorate	300.0	ng/L	--	--	<10,000		<10,000	--	--
Chloride	300.0	ng/L	**1,000,000 J**	<200,000	<2,000,000		<2,000,000	--	--
Chlorite	300.0	ng/L	--	--	<20,000		<20,000	--	--
Fluoride	300.0	ng/L	<250,000	<50,000	<100,000		<100,000	--	--
Nitrate	300.0/353.2	ng/L	<250,000	<50,000	<1,000,000 UJ		<1,000,000 UJ	--	--
Nitrite	300.0/353.2	ng/L	<250,000	<50,000	<100,000		<100,000	--	--
Sulfate	300.0	ng/L	**2,300,000 J**	<300,000	<15,000,000		<15,000,000	--	--
Bromate	300.1	ng/L	--	--	<5,000		<5,000	--	--
Perchlorate	331.0	ng/L	<50	--	<50		<50	--	--
Cyanide	335.4	ng/L	--	--	<5,000		<5,000	--	--
Phosphate	365.1/4500-P	ng/L	<250,000	<250,000	<65,000		<65,000	--	--
Chloramine	4500 CL F	ng/L	--	--	--	--	--	--	--
Chlorine	4500 CL F	ng/L	--	--	--	--	--	--	--
Chlorine Dioxide	4500 CL F	ng/L	--	--	--	--	--	--	--
1,2-Dibromo-3-Chloropropane	504.1	ng/L	--	--	<20		<20	--	--
1,2-Dibromoethane (EDB)	504.1	ng/L	--	--	<10		<10	--	--
1,2,3-Trichloropropane	505/552.2	ng/L	--	--	--		<100	--	--
Chlordane	505	ng/L	--	--	<200		<200	--	--
PCB 1016	505	ng/L	--	--	<80		<80	--	--
PCB 1221	505	ng/L	--	--	<190		<190	--	--
PCB 1232	505	ng/L	--	--	<230		<230	--	--
PCB 1242	505	ng/L	--	--	<260		<260	--	--
PCB 1248	505	ng/L	--	--	<100		<100	--	--
PCB 1254	505	ng/L	--	--	<100		<100	--	--
PCB 1260	505	ng/L	--	--	<200		<200	--	--
Total PCB (congeners)	505	ng/L	--	--	<100		--	--	--
Toxaphene	505	ng/L	--	--	<1,000		<1,000	--	--
2,4-Dichlorophenoxyacetic Acid	515.3	ng/L	--	--	<100		<100	--	--
Dalapon 85	515.3	ng/L	--	--	<1,000		<1,000	--	--
Dicamba	515.3	ng/L	--	--	<1,000		<1,000	--	--
Dinoseb	515.3	ng/L	--	--	<200		<200	--	--
Pentachlorophenol	515.3	ng/L	--	--	<40		<40	--	--
Picloram	515.3	ng/L	--	--	<100		--	--	--
Silvex	515.3	ng/L	--	--	<200		--	--	--
1,4-Dioxane	522	ng/L	<70	--	<70		<70	--	--
Bromodichloromethane	524.2	ng/L	--	--	<100		<100	<100	<100
Bromoform	524.2	ng/L	--	--	<200		<200	<200	<200
Chlorodibromomethane	524.2	ng/L	--	--	<100		<100	<100	<100
Chloroform	524.2	ng/L	--	--	**200 J**		**400 J**	<100	<100
Alachlor	525.2 Rev 2.0	ng/L	--	--	<200		<200	--	--
Aldrin	525.2 Rev 2.0	ng/L	--	--	<200		<200	--	--
Atrazine	525.2 Rev 2.0	ng/L	--	--	<100		<100	--	--
Benzo[A]Pyrene	525.2 Rev 2.0	ng/L	--	--	<20		<20	--	--
Bis(2-Ethylhexyl)Adipate	525.2 Rev 2.0	ng/L	--	--	<600		<600	--	--
Bis(2-Ethylhexyl)Phthalate	525.2 Rev 2.0	ng/L	--	--	<1,320		<1,320	--	--
Butachlor	525.2 Rev 2.0	ng/L	--	--	<8,000		<8,000	--	--
Dieldrin	525.2 Rev 2.0	ng/L	--	--	<200		<200	--	--
Endrin	525.2 Rev 2.0	ng/L	--	--	<10		<10	--	--
Heptachlor	525.2 Rev 2.0	ng/L	--	--	<40		<40	--	--
Heptachlor Epoxide	525.2 Rev 2.0	ng/L	--	--	<20		<20	--	--
Hexachlorobenzene	525.2 Rev 2.0	ng/L	--	--	<100		<100	--	--
Hexachlorocyclopentadiene	525.2 Rev 2.0	ng/L	--	--	<100		<100	--	--
Lindane	525.2 Rev 2.0	ng/L	--	--	<20		<20	--	--
Methoxychlor	525.2 Rev 2.0	ng/L	--	--	<100		<100	--	--
Metolachlor	525.2 Rev 2.0	ng/L	--	--	<800		<800	--	--
Metribuzin	525.2 Rev 2.0	ng/L	--	--	<800		<800	--	--
Propachlor	525.2 Rev 2.0	ng/L	--	--	<6,000		<6,000	--	--
Simazine	525.2 Rev 2.0	ng/L	--	--	<70		<70	--	--
Alpha-BHC	525.3	ng/L	--	--	<10		--	--	--
Chlorpyrifos	525.3	ng/L	--	--	<30		--	--	--
Dimethipin	525.3	ng/L	--	--	<200		--	--	--
Merphos Oxide	525.3	ng/L	--	--	<70		--	--	--
Mocap	525.3	ng/L	--	--	<30		--	--	--
Oxyfluorfen	525.3	ng/L	--	--	<50		--	--	--
Permethrin	525.3	ng/L	--	--	<40		--	--	--
Tebuconazole	525.3	ng/L	--	--	<200		--	--	--

TABLE C5c
OTHER COMPOUNDS RESULTS
The Chemours Company, FC, LLC.

		Location ID	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**		**Equipment Blank**	**Trip Blank**	**Trip Blank**
		Field Sample ID	**EB1-012120**	**EB2-012220**	**EB3-012320**		**EB4-012420**	**TB1-012320**	**TB2-012420**
		Sample Date	**21-01-20**	**22-01-20**	**23-01-20**		**24-01-20**	**23-01-20**	**24-01-20**
		QA/QC	**EB**	**EB**	**EB**		**EB**	**TB**	**TB**
Other Analytes	**Lab Method**	**Units**							
Buytlated Hydroxyanisole	530	ng/L	--	--	<30		--	--	--
O-Toluidine	530	ng/L	--	--	<7		--	--	--
Quinoline	530	ng/L	--	--	<20		--	--	--
3-Hydroxycarbofuran	531.2	ng/L	--	--	<4,000		<4,000	--	--
Aldicarb	531.2	ng/L	--	--	<500		<500	--	--
Aldicarb Sulfone	531.2	ng/L	--	--	<800		<800	--	--
Aldicarb Sulfoxide	531.2	ng/L	--	--	<500		<500	--	--
Carbaryl	531.2	ng/L	--	--	<4,000		<4,000	--	--
Carbofuran	531.2	ng/L	--	--	<900		<900	--	--
Methomyl	531.2	ng/L	--	--	<4,000		<4,000	--	--
Oxamyl	531.2	ng/L	--	--	<2,000		<2,000	--	--
Total Organic Carbon	5310 C-2011	ng/L	--	--	**720,000 J**		**650,000 J**	--	--
Glyphosate	547	ng/L	--	--	<6,000		<6,000	--	--
Endothall	548.1	ng/L	--	--	<9,000		<9,000	--	--
Diquat Dibromide	549.2	ng/L	--	--	<400		<400	--	--
Dibromoacetic Acid	552.2/552.3	ng/L	--	--	<1,000		--	--	--
Dichloroacetic Acid	552.2/552.3	ng/L	--	--	<1,000		--	--	--
Monobromoacetic Acid	552.2/552.3	ng/L	--	--	<1,000		--	--	--
Monochloroacetic Acid	552.2/552.3	ng/L	--	--	<2,000		--	--	--
Total Haloacetic Acids(5)	552.2/552.3	ng/L	--	--	<2,000		--	--	--
Trichloroacetic Acid	552.2/552.3	ng/L	--	--	<1,000		<1,000	--	--
Bromochloroacetic Acid	552.3	ng/L	--	--	<1,000		--	--	--
Bromodichloroacetic acid	552.3	ng/L	--	--	<1,000		--	--	--
Chlorodibromoacetic acid	552.3	ng/L	--	--	<2,000		--	--	--
Tribromoacetic acid	552.3	ng/L	--	--	<4,000		--	--	--
Coliforms (Presence/Absence)	9222B	Absent/Present	--	--	**Present**	--	Absent	--	--

Notes:
Bold - Analyte detected above associated reporting limit
B - analyte detected in an associated blank
EPA - Environmental Protection Agency
J - Analyte detected. Reported value
may not be accurate or precise
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SOP - standard operating procedure
UJ – Analyte not detected. Reporting
limit may not be accurate or precise.
< - Analyte not detected above associated reporting limit.

TABLE C6
RESULTS OF EPA METHOD 537M PFAS ANALYSIS BEFORE AND AFTER TOP OXIDATION
The Chemours Company, FC, LLC.

			Concentration (ng/L)																							
			Deep River		Haw River		Cape Fear River Mile 4		Little River		Cape Fear River Mile 54				Cape Fear River Mile 56.5		Cape Fear River Mile 63.5		Cape Fear River Mile 76		Cape Fear River Mile 84		Cape Fear River Mile 100		Cape Fear River Mile 132	
		CAS number	FAY-DEEP RIVER-012120	FAY-DEEP RIVER-012120-POSTOX	FAY-HAW RIVER-012120	FAY-HAW RIVER-012120-POSTOX	FAY-CFR-RM-4-012120	FAY-CFR-RM-4-012120-POSTOX	FAY-LITTLE RIVER MOUTH-012320	LITTLE RIV MOUTH-012320-POSTOX	FAY-CFR-RM-54-012220	FAY-CFR-RM-54-012220-POSTOX	FAY-CFR-RM-54-012220-D	FAY-CFR-RM-54-012220-D-POSTOX	FAY-Cross Creek Rec-012220	FAY-Cross Ck Rec-012220-POSTOX	FAY-Rockfish Creek Rec-012220	Rockfish Crk Rec-012220-POSTOX	FAY-CFR-RM-76-012320	FAY-CFR-RM-76-012320-POSTOX	FAY-CFR-RM-84-INTAKE-012320	CFR-RM-84-INTAKE-012320-POSTOX	FAY-Elizabethtown WWTP-012320	Elizabethtn WWTP-012320-POSTOX	FAY-CFR-RM-132-012420	FAY-CFR-RM-132-012420-POSTOX
Known oxidizable PFAA precursors present in EPA Method 537M: These compounds are expected to oxidize during TOP assay oxidation	10:2 Fluorotelomer sulfonate	120226-60-0	<4.3	<25	<4.4	<25	<4.8	<25	<4.3	<25	<4.4	<25	<4.3	<25	<4.3	<25	<4.7	<25	<4.2	<25	<4.2	<25	<4.7	<25	<4.3	<25
	11Cl-PF3OUdS	83329-89-9	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10	<1.8	<10	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10
	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	39108-34-4	<2.6	<15	<2.6	<15	<2.9	<15	<2.6	<15	<2.6	<15	<2.6	<15	<2.6	<15	<2.8	<15	<2.5	<15	<2.5	<15	<2.8	<15	<2.6	<15
	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	757124-72-4	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10	<1.8	<10	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10
	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1691-99-2	<2.6	<15	<2.6	<15	<2.9	<15	<2.6	<15	<2.6	<15	<2.6	<15	<2.6	<15	<2.8	<15	<2.5	<15	<2.5	<15	<2.8	<15	<2.6	<15
	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	24448-09-7	<2.6	<15	<2.6	<15	<2.9	<15	<2.6	<15	<2.6	<15	<2.6	<15	<2.6	<15	<2.8	<15	<2.5	<15	<2.5	<15	<2.8	<15	<2.6	<15
	6:2 Fluorotelomer sulfonate	27619-97-2	<4.3	<25	<4.4	<25	<4.8	<25	<4.3	<25	<4.4	<25	<4.3	<25	<4.3	<25	<4.7	<25	<4.2	<25	<4.2	<25	<4.7	<25	<4.3	<25
	9Cl-PF3ONS	73606-19-6	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10	<1.8	<10	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10
	DONA	958445-44-8	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10	<1.8	<10	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10
	N-ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	2991-50-6	<2.6	<15	<2.6	<15	<2.9	<15	<2.6	<15	<2.6	<15	<2.6	<15	<2.6	<15	<2.8	<15	<2.5	<15	<2.5	<15	<2.8	<15	<2.6	<15
	N-ethylperfluoro-1-octanesulfonamide	4151-50-2	<4.3	<25	<4.4	<25	<4.8	<25	<4.3	<25	<4.4	<25	<4.3	<25	<4.3	<25	6.5	<25	<4.2	<25	<4.2	<25	<4.7	<25	<4.3	<25
	N-methyl perfluoro-1-octanesulfonamide	31506-32-8	<2.6	<15	<2.6	<15	<2.9	<15	<2.6	<15	<2.6	<15	<2.6	<15	12	<15	<2.8	<15	<2.5	<15	<2.5	<15	<2.8	<15	<2.6	<15
	N-methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	2355-31-9	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10	<1.8	<10	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10
	Perfluorooctane Sulfonamide	754-91-6	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10	<1.8	<10	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10	<1.7	<10	<1.9	<10	<1.7	<10
Terminal oxidation products (PFCAs): The concentration of these compounds is expected to increase after the TOP oxidation step from both known and unknown precursors	Perfluorobutanoic acid	375-22-4	<4.3	<4.3	7.6	7.6	5.9	5.9	<4.3	<4.3	5	5	5	5	5.5	5.5	<4.7	<4.7	5.6	5.6	5.6	5.6	5.4	5.4	4.6	4.6
	Perfluoropentanoic acid	2706-90-3	3.6	3.6	15	27	12	22	9.5	16	9.5	20	9.7	19	12	22	9.9	18	12	20	11	22	26	38	10	17
	Perfluorohexanoic acid	307-24-4	3.4	3.4	23	35	17	25	3.6	12	13	22	13	21	16	23	13	22	14	22	15	24	27	34	12	19
	Perfluoroheptanoic acid	375-85-9	<1.7	<1.7	16	22	12	18	<1.7	<1.7	8.8	14	9.1	14	7.5	13	8.4	14	10	14	10	14	7	7	7.8	10
	Perfluorooctanoic acid	335-67-1	2.5	2.5	8.8	14	7	12	3.4	3.4	5.9	10	6	6	7.6	12	6.1	6.1	7.2	10	7.3	11	6.9	11	6.4	6.4
	Perfluorononanoic acid	375-95-1	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7
	Perfluorodecanoic acid	335-76-2	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7
	Perfluoroundecanoic acid	2058-94-8	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7
	Perfluorododecanoic acid	307-55-1	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7
	Perfluorotridecanoic acid	72629-94-8	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7
	Perfluorotetradecanoic acid	376-06-7	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7
	Perfluorohexadecanoic acid	67905-19-5	<2.6	<2.6	<2.6	<2.6	<2.9	<2.9	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.8	<2.8	<2.5	<2.5	<2.5	<2.5	<2.8	<2.8	<2.6	<2.6
	Perfluorooctadecanoic acid	16517-11-6	<2.6	<2.6	<2.6	<2.6	<2.9	<2.9	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.8	<2.8	<2.5	<2.5	<2.5	<2.5	<2.8	<2.8	<2.6	<2.6
Terminal PFAS compounds (PFSAs): The concentration of these compounds is expected to neither increase nor decrease after the TOP oxidation step	Perfluorobutane sulfonic acid	375-73-5	<1.7	<1.7	4	4	3.1	3.1	2.7	2.7	2.9	2.9	3	3	4.1	4.1	3	3	3.9	3.9	4.1	4.1	4.5	4.5	3.6	3.6
	Perfluoropentane sulfonic acid	2706-91-4	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7
	Perfluorohexane sulfonic acid	355-46-4	1.9	1.9	3.4	3.4	3.1	3.1	8.2	8.2	3.1	3.1	2.9	2.9	5	5	3.2	3.2	4.5	4.5	4	4	4.3	4.3	3.6	3.6
	Perfluoroheptane sulfonic acid	375-92-8	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7
	Perfluorooctane sulfonic acid	1763-23-1	4	4	11	18	8.9	14	10	15	8	16	8.7	13	8.7	13	8.2	13	11	13	11	15	9.4	11	9.6	13
	Perfluorononane sulfonic acid	68259-12-1	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7
	Perfluorodecane sulfonic acid	335-77-3	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.8	<1.8	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7	<1.7	<1.7	<1.9	<1.9	<1.7	<1.7
	Perfluorododecane sulfonic acid	79780-39-5	<2.6	<2.6	<2.6	<2.6	<2.9	<2.9	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.8	<2.8	<2.5	<2.5	<2.5	<2.5	<2.8	<2.8	<2.6	<2.6
	Sum of EPA Method 537M analytes		**15**	**15**	**89**	**131**	**69**	**103**	**37**	**57**	**56**	**93**	**57**	**84**	**78**	**98**	**58**	**79**	**68**	**93**	**68**	**100**	**91**	**115**	**58**	**77**

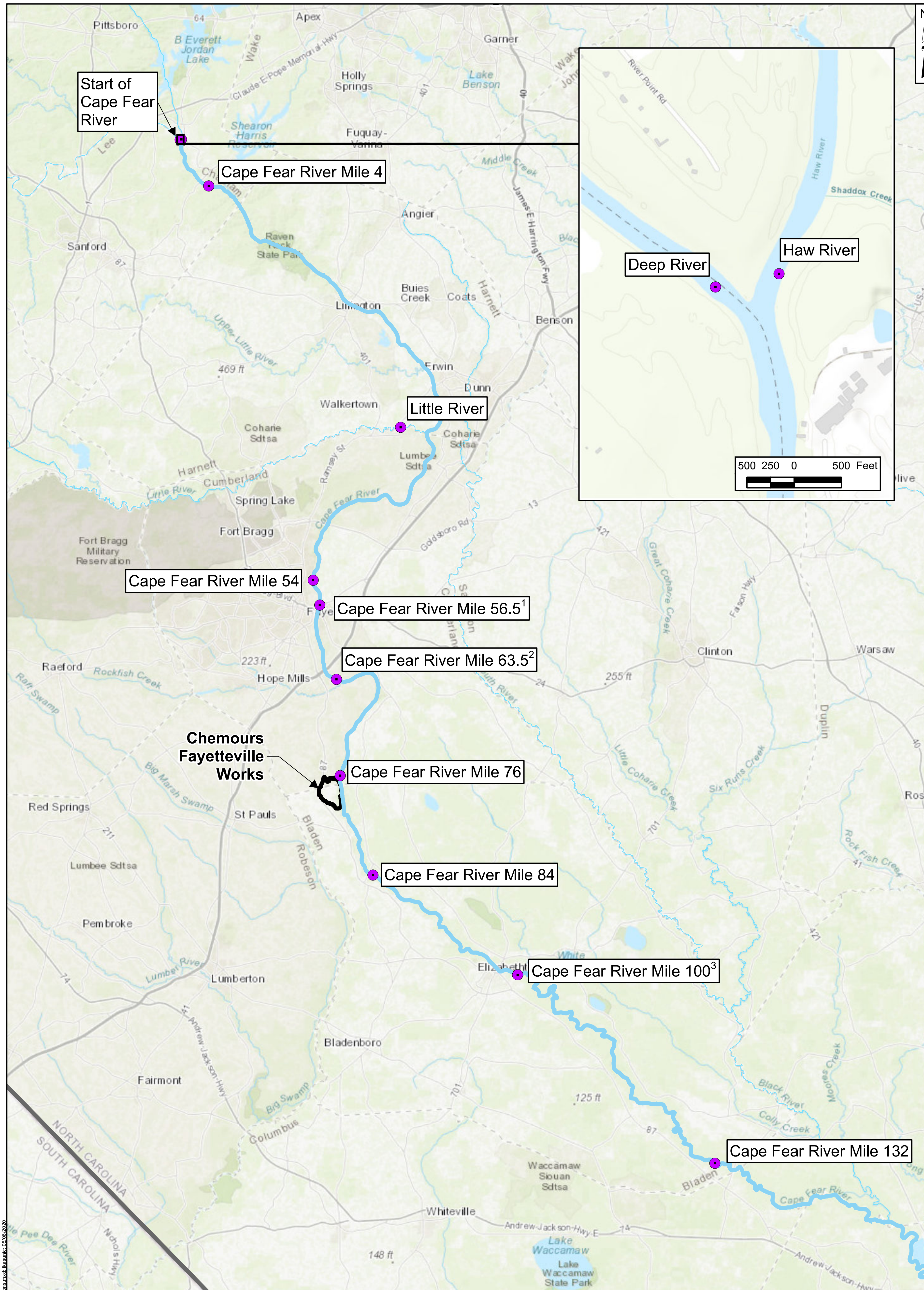
Notes:
ng/L - nanograms per liter
TOP - total oxidizable precursors
PFAA - perfluoroalkyl acid
PFAS - perfluoroalkyl substances
PFCA - perfluorocarboxylic acid
PFSA - perfluorosulfonic acid
< - Analyte not detected above associated reporting limit.

TABLE C7
CONCENTRATIONS OF UNKNOWN PFAA PRECURSORS AS DETERMINED BY TOP ASSAY
The Chemours Company, FC, LLC.

	Concentration of Unknown PFAA Precursors as Determined by TOP Assay (ng/L)																							
	Deep River		**Haw River**		**Cape Fear River Mile 4**		**Little River**		**Cape Fear River Mile 54**				**Cape Fear River Mile 56.5**		**Cape Fear River Mile 63.5**		**Cape Fear River Mile 76**		**Cape Fear River Mile 84**		**Cape Fear River Mile 100**		**Cape Fear River Mile 132**	
	FAY-DEEP RIVER-012120	FAY-DEEP RIVER-012120-POSTOX	FAY-HAW RIVER-012120	FAY-HAW RIVER-012120-POSTOX	FAY-CFR-RM-4-012120	FAY-CFR-RM-4-012120-POSTOX	FAY-LITTLE RIVER MOUTH-012320	LITTLE RIV MOUTH-012320-POSTOX	FAY-CFR-RM-54-012220	FAY-CFR-RM-54-012220-POSTOX	FAY-CFR-RM-54-012220-D	FAY-CFR-RM-54-012220-D-POSTOX	FAY-Cross Creek Rec-012220	FAY-Cross Ck Rec-012220-POSTOX	FAY-Rockfish Creek Rec-012220	Rockfish Crk Rec-012220-POSTOX	FAY-CFR-RM-76-012320	FAY-CFR-RM-76-012320-POSTOX	FAY-CFR-RM-84-INTAKE-012320	CFR-RM-84-INTAKE-012320-POSTOX	FAY-Elizabethtown WWTP-012320	Elizabethtn WWTP-012320-POSTOX	FAY-CFR-RM-132-012420	FAY-CFR-RM-132-012420-POSTOX
Sum of EPA Method 537M analytes[1]	15	15	89	131	69	103	37	57	56	93	57	84	78	98	58	79	68	93	68	100	91	115	58	77
Sum of Known Oxidizable PFAA Precursors in EPA Method 537M[2]	0	0	0	0	0	0	0	0	0	0	0	0	12	0	6.5	0	0	0	0	0	0	0	0	0
Sum of PFAAs in EPA Method 537M[3]	15	15	89	131	69	103	37	57	56	93	57	84	66	98	52	79	68	93	68	100	91	115	58	77
Sum of Unknown PFAA Precursors Present in Sample[4]	0		42		34		20		37		27		19		21		25		32		25		20	

Notes:
ng/L - nanograms per liter
TOP - total oxidizable precursors
PFAA - perfluoroalkyl acid
PFCA - perfluorocarboxylic acid
PFSA - perfluorosulfonic acid
[1] - see Table 6
[2] - see Table 6
[3] - sum of PFCAs and PFSAs; see Table 6
[4] - sum of unknown PFAA precursors = (sum of PFAAs post-oxidation - sum of PFAAs pre-oxidation) - (sum of known oxidizable PFAA precursors pre-oxidation - sum of known oxidizable PFAA precursors post-oxidation)
After the TOP oxidation step, if a given PFAA was not detected above the reporting limit, or a given PFAA was present at a lower concentration than the pre-oxidation step sample, then the during the calculation step, the original reporting limit or concentration (before oxidation) of the PFAA was used.

FIGURES



Legend

Sampling Location

Chemours Fayetteville Works

Cape Fear River

Note:
WWTP - Wastewater treatment plant
1. Sample collected 100 meters downstream of Cross Creek Water Reclamation Facility.
2. Sample collected 100 meters downstream of Rockfish Water Reclamation Facility.
3. Sample collected 100 meters downstream of Elizabethtown WWTP.
Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

Projection: WGS 1984 Web Mercator Auxiliary Sphere; Units in Meter

10 5 0 10 Miles

Cape Fear River Sampling Locations

The Chemours Company, FC, LLC.

Geosyntec consultants

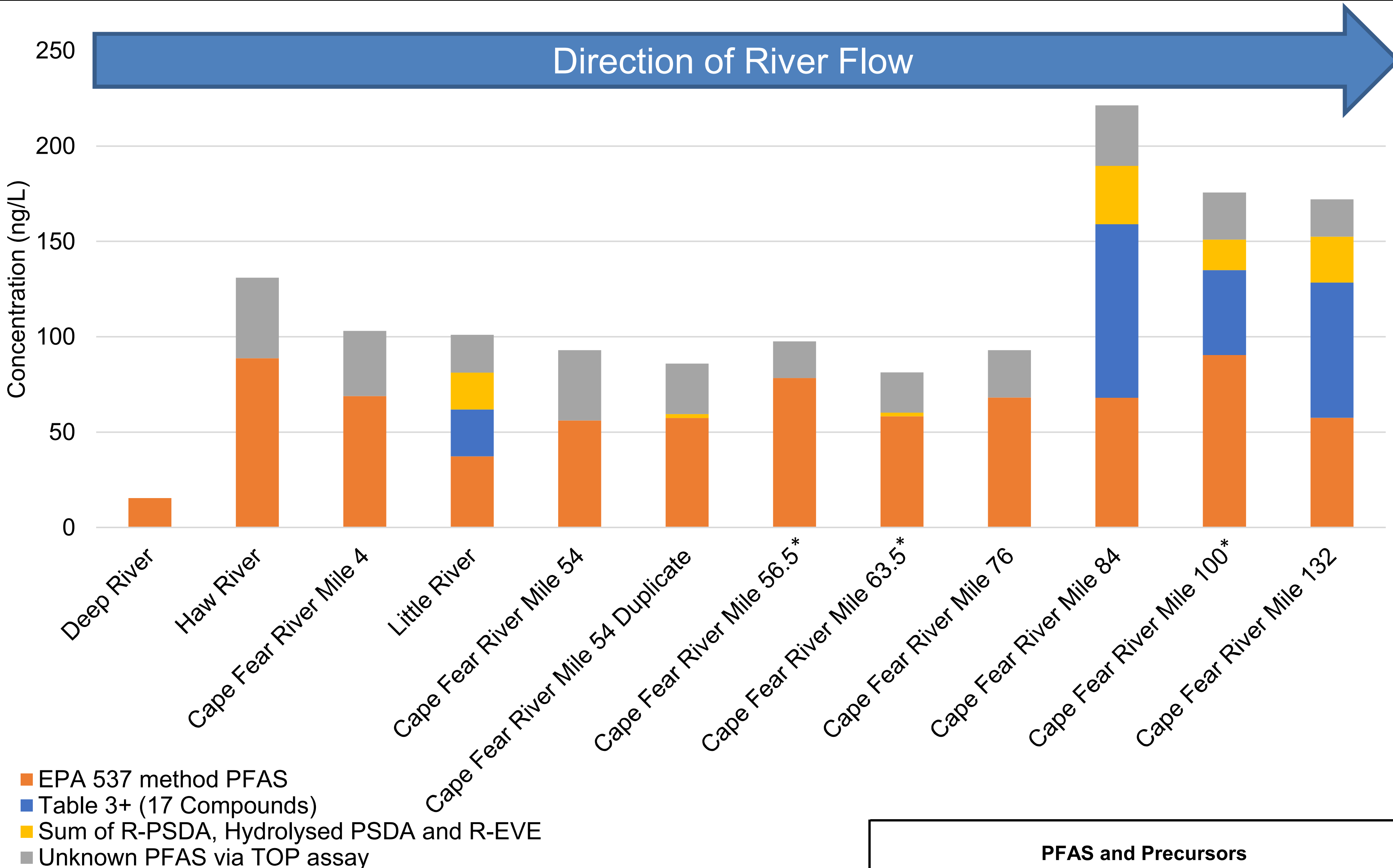
Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Figure

C1

Raleigh

July 2020



Notes:

* Locations are 100-m downstream from a wastewater treatment plant or water reclamation facility

Only compounds above detections limits were included in the chart

ng/L - nanograms per liter

PFAS - Per- and Polyfluoroalkyl Substances

PFAS and Precursors

The Chemours Company, FC, LLC.

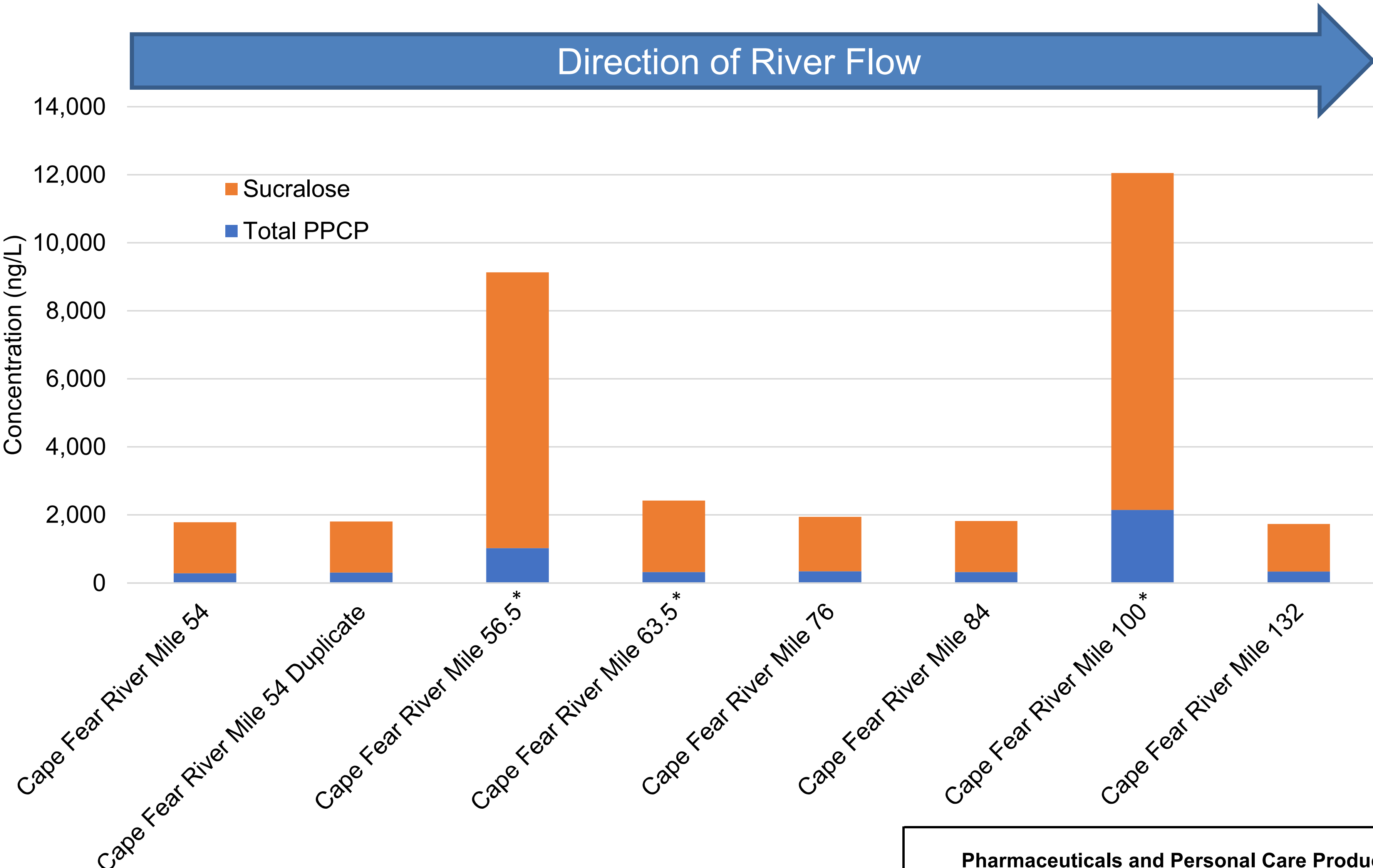
Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Raleigh | July 2020

Figure

C2



Notes:
* Locations are 100-m downstream from a wastewater treatment plant or water reclamation facility
µg/L - micrograms per liter
Total PPCP includes 29 compounds and excludes sucralose.
Only coumpounds above reporting limits are included Total PPCP

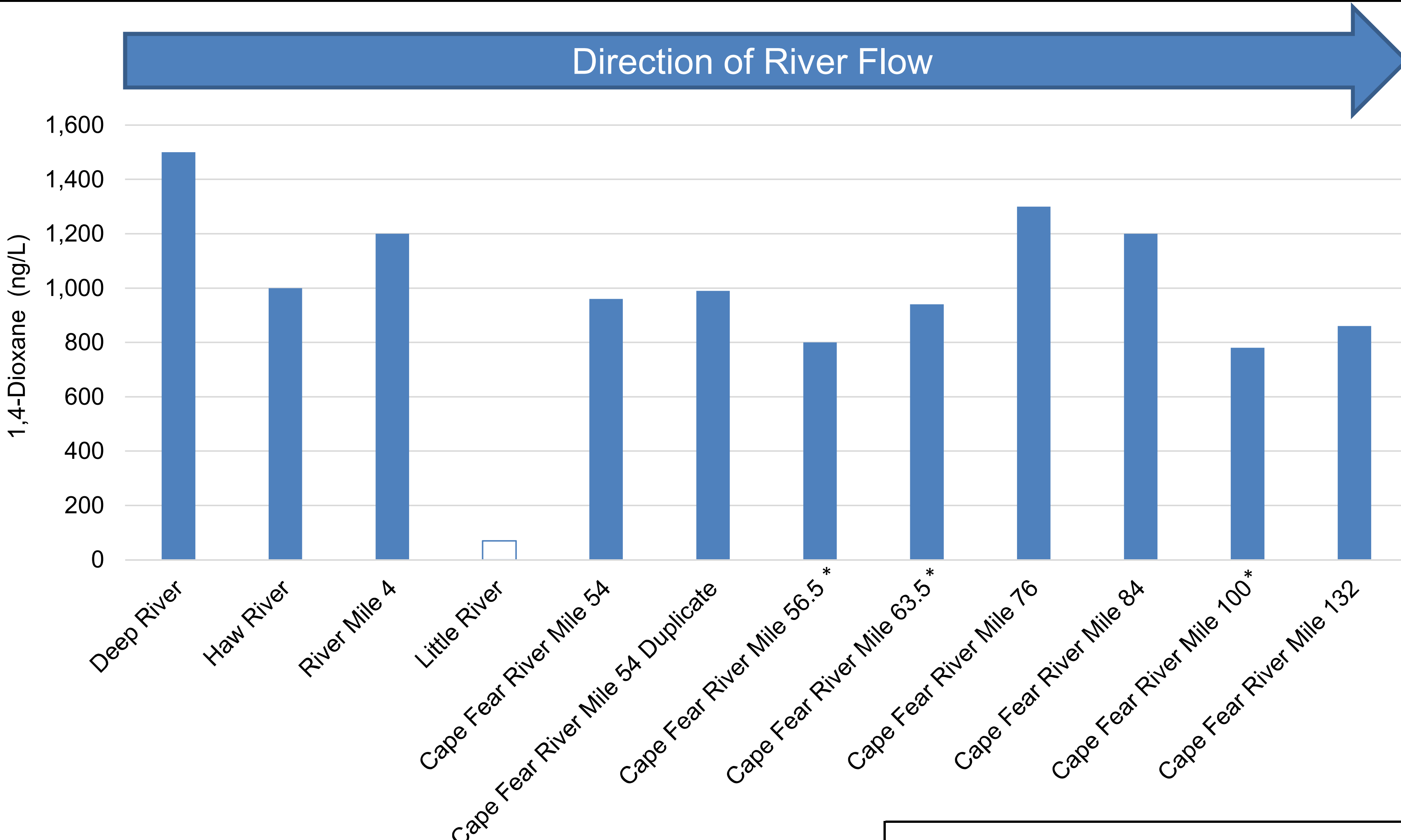
Pharmaceuticals and Personal Care Products
The Chemours Company, FC, LLC.

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure C3

Raleigh | July 2020



Notes:
* Locations are 100-m downstream from a wastewater treatment plant or water reclamation facility
µg/L - micrograms per liter
White bar represents a concentration below the reporting limit

1,4-Dioxane
The Chemours Company, FC, LLC.

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Raleigh | July 2020

Figure **C4**

ATTACHMENT A

Data Review Narrative

ADQM DATA REVIEW
NARRATIVE

Site **Chemours FAY – Fayetteville**

Project **Baseline River Sampling 1/20 (updated)**

Project Reviewer **Michael Aucoin, AECOM as a Chemours contractor**

Sampling Dates **January 21 - 24, 2020**

Analytical Protocol

Laboratory	Analytical Method	Parameter(s)
Eurofins Lancaster (ELLE)	EPA 537 Rev. 1.1 modified	PFAS[1]
ELLE	Cl. Spec. Table 3 Compound SOP	Table 3+ compounds
ELLE	200.7 Rev. 4.4/200.8/245.1	Total Metals
ELLE	218.6	Hexavalent Chromium
ELLE and Eurofins Eaton (EEA)	300.0/300.1	Anions including nitrate, nitrite
EEA	331.0	Perchlorate
ELLE	335.4	Cyanide
EEA	353.2	Nitrate and nitrite
ELLE and EEA	365.1/4500-P E-2011	Phosphate
EEA	504.1	EDB/DBCP
EEA	505	PCB/Toxaphene/Chlordane
EEA	515.3	Chlorinated Acids
EEA	522	1,4-Dioxane
ELLE	524.2	Trihalomethanes
EEA	525.2	Organics
EEA	525.3	Semivolatiles
EEA	530	Select SVOC
EEA	531.2	Carbamate Pesticides
EEA	547	Glyphosate
EEA	548.1	Endothall
EEA	549.2	Diquat
EEA	552.2	HAA5 Analytes
EEA	552.3	Haloacetic Acids
ELLE	1613B	2,3,7,8-TCDD

Laboratory	Analytical Method	Parameter(s)
ELLE	5310 C-2011	Total Organic Carbon
Microbac Fayetteville	9222B	Coliform Presence/Absence
EEA	L200	Phenolic Endocrine Disrupting Chemicals
EEA	L211	Estrogens and Other Hormones
EEA	L220	Pharmaceutically Active Compounds - Positive
EEA	L221	Pharmaceutically Active Compounds - Negative

[1] Perfluoroalkylsubstances, a list of 36 compounds including HFPO-DA.

Sample Receipt

The following items are noted for this data set:

- All samples were received in satisfactory condition and within EPA temperature guidelines on January 22 - 25, 2020.
- Sample IDs reported by the laboratory were modified to append the term "-POSTOX" in the Locus EIM database to reflect post-oxidation PFAS analysis of some samples.

Data Review

The electronic data submitted for this project was reviewed via the Data Verification Module (DVM) process.

Overall the data is acceptable for use without qualification, except as noted below:

- The non-detect result for N-methylperfluoro-1-octanesulfonamide in one water sample was qualified R and is considered to be unusable due to a very poor surrogate spike recovery.
- Results for chloroform, chloride and sulfate in one or more water samples were qualified B and the reported results may be biased high, or false positives, due to a comparable concentration found in associated equipment rinsate blanks.
- Several analytical results have been qualified J as estimated, and non-detect results qualified UJ indicating an estimated reporting limit, due to a poor or very poor recovery of a surrogate, lab control spike, or matrix spike; sample preparation and/or analysis which exceeded the laboratory established hold time; and poor field duplicate or lab replicate precision. See the Data Verification Module (DVM) Narrative Report for which samples were qualified, the specific reasons for qualification, and potential bias in reported results.
- The non-PFAS results for samples were reported by the laboratory to the method detection limit (MDL); results reported between the MDL and the limit of quantitation (LOQ) are qualified J and are considered to be estimated values.

Attachments

The DVM Narrative report is attached. The lab reports due to a large page count are stored on an AECOM network shared drive and are available to be posted on external shared drives, or on a flash drive.

Data Verification Module (DVM)

The DVM is an internal review process used by the ADQM group to assist with the determination of data usability. The electronic data deliverables received from the laboratory are loaded into the Locus EIM™ database and processed through a series of data quality checks, which are a combination of software (Locus EIM™ database Data Verification Module (DVM)) and manual reviewer evaluations. The data is evaluated against the following data usability checks:

- Field and laboratory blank contamination
- US EPA hold time criteria
- Missing Quality Control (QC) samples
- Matrix spike(MS)/matrix spike duplicate (MSD) recoveries and the relative percent differences (RPDs) between these spikes
- Laboratory control sample(LCS)/control sample duplicate (LCSD) recoveries and the RPD between these spikes
- Surrogate spike recoveries for organic analyses
- RPD between field duplicate sample pairs
- RPD between laboratory replicates for inorganic analyses
- Difference / percent difference between total and dissolved sample pairs.

There are two qualifier fields in EIM:

Lab Qualifier is the qualifier assigned by the lab and may not reflect the usability of the data. This qualifier may have many different meanings and can vary between labs and over time within the same lab. Please refer to the laboratory report for a description of the lab qualifiers. As they are lab descriptors they are not to be used when evaluating the data.

Validation Qualifier is the 3rd party formal validation qualifier if this was performed. Otherwise this field contains the qualifier resulting from the ADQM DVM review process. This qualifier assesses the usability of the data and may not equal the lab qualifier. The DVM applies the following data evaluation qualifiers to analysis results, as warranted:

Qualifier	Definition
B	Not detected substantially above the level reported in the laboratory or field blanks.
R	Unusable result. Analyte may or may not be present in the sample.
J	Analyte present. Reported value may not be accurate or precise.
UJ	Not detected. Reporting limit may not be accurate or precise.

The **Validation Status Code** field is set to “DVM” if the ADQM DVM process has been performed. If the DVM has not been run, the field will be blank.

If the DVM has been run (**Validation Status Code** equals “DVM”), use the **Validation Qualifier.**

DVM Narrative Report

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason One or more surrogates had relative percent recovery (RPR) values less than the data rejection level. The reported result is unusable.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-Rockfish Creek Rec-012220	01/22/2020	1244771	N-methyl perfluoro-1-octanesulfonamide	0.0028	ug/L	PQL		0.0028	R	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason Contamination detected in equipment blank(s). Sample result does not differ significantly from the analyte concentration detected in the associated equipment blank(s).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-CFR-RM-4-012120	01/21/2020	1243803	Sulfate	11.4	MG/L	MDL	1.5	5.0	B	300.0		
FAY-CFR-RM-4-012120	01/21/2020	1243803	Chloride	10.8	MG/L	MDL	1.0	2.0	B	300.0		
FAY-DEEP RIVER-012120	01/21/2020	1243801	Sulfate	9.3	MG/L	MDL	1.5	5.0	B	300.0		
FAY-DEEP RIVER-012120	01/21/2020	1243801	Chloride	9.7	MG/L	MDL	1.0	2.0	B	300.0		
FAY-HAW RIVER-012120	01/21/2020	1243802	Sulfate	11.4	MG/L	MDL	1.5	5.0	B	300.0		
FAY-HAW RIVER-012120	01/21/2020	1243802	Chloride	11.3	MG/L	MDL	1.0	2.0	B	300.0		
FAY-CFR-RM-84-012320	01/23/2020	1246868	Chloroform	0.2	UG/L	MDL	0.1	0.5	B	524.2		
FAY-CFR-RM-132-012420	01/24/2020	1246874	Chloroform	0.1	UG/L	MDL	0.1	0.5	B	524.2		

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason Only one surrogate has relative percent recovery (RPR) values outside control limits and the parameter is a PFC (Nondetects).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	Perfluorononanesulfonic acid	0.0017	ug/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	Perfluorotridecanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Elizabethtn WWTP-012320-POSTOX	01/23/2020	1246876P	Hfpo Dimer Acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	Perfluorodecanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	Perfluorodecane Sulfonic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	9Cl-PF3ONS	0.0017	ug/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	11Cl-PF3OUdS	0.0017	ug/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	Perfluorododecane sulfonic acid (PFDoS)	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	Perfluorononanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420-POSTOX	01/24/2020	1246908P	Hfpo Dimer Acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120	01/21/2020	1243919	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0029	ug/L	PQL		0.0029	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB2-012220-POSTOX	01/22/2020	1244783P	Hfpo Dimer Acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB2-012220-POSTOX	01/22/2020	1244783P	Perfluoropentanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY- Cross Creek Rec-012220	01/22/2020	1244767	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	10:2 Fluorotelomer sulfonate	0.0043	ug/L	PQL		0.0043	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	Perfluoroundecanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	N-methyl perfluorooctane sulfonamidoacetic acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	N-ethyl perfluorooctane sulfonamidoacetic acid	0.0026	UG/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason Only one surrogate has relative percent recovery (RPR) values outside control limits and the parameter is a PFC (Nondetects).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	Perfluorododecanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-76-012320	01/23/2020	1246880	Perfluorodecanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-76-012320	01/23/2020	1246880	Perfluorodecane Sulfonic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	10:2 Fluorotelomer sulfonate	0.0042	ug/L	PQL		0.0042	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	Perfluoroundecanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	N-methyl perfluorooctane sulfonamidoacetic acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	N-ethyl perfluorooctane sulfonamidoacetic acid	0.0025	UG/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	Perfluorododecanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	Perfluorononanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	Perfluorononanesulfonic acid	0.0017	ug/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	Perfluorotridecanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	9Cl-PF3ONS	0.0017	ug/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	11Cl-PF3OUdS	0.0017	ug/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	Perfluorododecane sulfonic acid (PFDoS)	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220-D-POSTOX	01/22/2020	1244779P	Hfpo Dimer Acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220-D-POSTOX	01/22/2020	1244779P	PFOA	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220-POSTOX	01/22/2020	1244775P	Hfpo Dimer Acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-76-012320	01/23/2020	1246880	Perfluoroundecanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-76-012320	01/23/2020	1246880	Perfluorononanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-76-012320	01/23/2020	1246880	Perfluorononanesulfonic acid	0.0017	ug/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason Only one surrogate has relative percent recovery (RPR) values outside control limits and the parameter is a PFC (Nondetects).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-CFR-RM-76-012320	01/23/2020	1246880	9Cl-PF3ONS	0.0017	ug/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-76-012320	01/23/2020	1246880	11Cl-PF3OUdS	0.0017	ug/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-76-012320	01/23/2020	1246880	Perfluorododecane sulfonic acid (PFDoS)	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	Perfluorononanoic Acid	0.0019	UG/L	PQL		0.0019	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	0.0028	ug/L	PQL		0.0028	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	Perfluorononanesulfonic acid	0.0019	ug/L	PQL		0.0019	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	9Cl-PF3ONS	0.0019	ug/L	PQL		0.0019	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	11Cl-PF3OUdS	0.0019	ug/L	PQL		0.0019	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	Perfluorododecane sulfonic acid (PFDoS)	0.0028	ug/L	PQL		0.0028	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	DONA	0.0019	ug/L	PQL		0.0019	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	Perfluorodecanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	Perfluorodecane Sulfonic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	Perfluoroundecanoic Acid	0.0019	UG/L	PQL		0.0019	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	N-methyl perfluorooctane sulfonamidoacetic acid	0.0019	UG/L	PQL		0.0019	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	Perfluoropentane sulfonic acid (PFPeS)	0.0019	ug/L	PQL		0.0019	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	6:2 Fluorotelomer sulfonate	0.0047	ug/L	PQL		0.0047	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	N-ethyl perfluorooctane sulfonamidoacetic acid	0.0028	UG/L	PQL		0.0028	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	Perfluorodecanoic Acid	0.0019	UG/L	PQL		0.0019	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	Perfluorodecane Sulfonic Acid	0.0019	UG/L	PQL		0.0019	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	10:2 Fluorotelomer sulfonate	0.0047	ug/L	PQL		0.0047	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Rockfish Crk Rec-012220-POSTOX	01/22/2020	1244771P	Hfpo Dimer Acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason Only one surrogate has relative percent recovery (RPR) values outside control limits and the parameter is a PFC (Nondetects).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
TB4-012420-POSTOX	01/24/2020	1246904P	Hfpo Dimer Acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	10:2 Fluorotelomer sulfonate	0.0043	ug/L	PQL		0.0043	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluorooctadecanoic acid	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluoroundecanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	N-methyl perfluorooctane sulfonamidoacetic acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluoropentane sulfonic acid (PFPeS)	0.0017	ug/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	6:2 Fluorotelomer sulfonate	0.0043	ug/L	PQL		0.0043	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	N-ethyl perfluorooctane sulfonamidoacetic acid	0.0026	UG/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluorododecanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluoroheptanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluorononanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluorotetradecanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluorohexadecanoic acid (PFHxDA)	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluorononanesulfonic acid	0.0017	ug/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluorotridecanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	9Cl-PF3ONS	0.0017	ug/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason Only one surrogate has relative percent recovery (RPR) values outside control limits and the parameter is a PFC (Nondetects).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	11Cl-PF3OUdS	0.0017	ug/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluorododecane sulfonic acid (PFDoS)	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	DONA	0.0017	ug/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluorodecanoic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluorodecane Sulfonic Acid	0.0017	UG/L	PQL		0.0017	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluorobutanoic Acid	0.0043	UG/L	PQL		0.0043	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The analysis hold time for this sample was exceeded. The reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-CFR-RM-54-012220	01/22/2020	1244543	Hexavalent Chromium	0.00015	MG/L	MDL	0.00015	0.0005	UJ	218.6		
EB2-012220	01/22/2020	1244545	Hexavalent Chromium	0.00015	MG/L	MDL	0.00015	0.0005	UJ	218.6		
FAY-Cross Creek Rec-012220	01/22/2020	1244538	Hexavalent Chromium	0.00015	MG/L	MDL	0.00015	0.0005	UJ	218.6		
FAY-CFR-RM-54-012220-D	01/22/2020	1244544	Hexavalent Chromium	0.00015	MG/L	MDL	0.00015	0.0005	UJ	218.6		
FAY-Rockfish Creek Rec-012220	01/22/2020	1244542	Hexavalent Chromium	0.00015	MG/L	MDL	0.00015	0.0005	UJ	218.6		

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit. The actual detection limits may be higher than reported.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EB1-012120	01/21/2020	1243804	Iron	0.0400	MG/L	MDL	0.0400	0.200	UJ	200.7 Rev. 4.4		200.7
FAY- Cross Creek Rec-012220	01/22/2020	1244767	Perfluorooctadecanoic acid	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY- Cross Creek Rec-012220	01/22/2020	1244770	PFMOAA	0.005	ug/L	PQL		0.005	UJ	Cl. Spec. Table 3 Compound SOP		
FAY- Cross Creek Rec-012220	01/22/2020	1244767	PFMOAA	0.005	ug/L	PQL		0.005	UJ	Cl. Spec. Table 3 Compound SOP		
FAY- Cross Creek Rec-012220	01/22/2020	1244767	Perfluorohexadecanoic acid (PFHxDA)	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY- Cross Creek Rec-012220	01/22/2020	1244770	PFESA-BP2	0.002	ug/L	PQL		0.002	UJ	Cl. Spec. Table 3 Compound SOP		
FAY- Cross Creek Rec-012220	01/22/2020	1244767	PFESA-BP2	0.002	ug/L	PQL		0.002	UJ	Cl. Spec. Table 3 Compound SOP		

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded. The reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	10:2 Fluorotelomer sulfonate	0.025	ug/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Hfpo Dimer Acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluorooctadecanoic acid	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluoroundecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	N-methyl perfluorooctane sulfonamidoacetic acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluoroheptane sulfonic acid (PFHpS)	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluorononanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluorotetradecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	N-ethylperfluoro-1-octanesulfonamide	0.025	UG/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluorohexadecanoic acid (PFHxDA)	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluorononanesulfonic acid	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluorotridecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluorooctane Sulfonamide	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	9Cl-PF3ONS	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	11Cl-PF3OUdS	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded. The reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluorododecane sulfonic acid (PFDoS)	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	DONA	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluoropentane sulfonic acid (PFPeS)	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	6:2 Fluorotelomer sulfonate	0.025	ug/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	N-ethyl perfluorooctane sulfonamidoacetic acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluorododecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	N-methyl perfluoro-1-octanesulfonamide	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluorodecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluorodecane Sulfonic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluorohexane Sulfonic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluorobutanoic Acid	0.025	UG/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluorobutane Sulfonic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	10:2 Fluorotelomer sulfonate	0.025	ug/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Hfpo Dimer Acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluorooctadecanoic acid	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	PFOS	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluoroundecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	N-methyl perfluorooctane sulfonamidoacetic acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	2-(N-methyl perfluoro-1-	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded. The reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
			octanesulfonamido)-ethanol									
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluoropentanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluoropentane sulfonic acid (PFPeS)	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	6:2 Fluorotelomer sulfonate	0.025	ug/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	N-ethyl perfluorooctane sulfonamidoacetic acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluorohexanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluorododecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	N-methyl perfluoro-1-octanesulfonamide	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	PFOA	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluorodecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluorodecane Sulfonic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluorohexane Sulfonic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluorobutanoic Acid	0.025	UG/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluorobutane Sulfonic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluoroheptanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluoroheptane sulfonic acid (PFHpS)	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluorononanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluorotetradecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	N-ethylperfluoro-1-octanesulfonamide	0.025	UG/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluorohexadecanoic acid (PFHxDA)	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded. The reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluorononanesulfonic acid	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluorotridecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluorooctane Sulfonamide	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	9Cl-PF3ONS	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	11Cl-PF3OUdS	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	Perfluorododecane sulfonic acid (PFDoS)	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
EB1-012120-POSTOX	01/21/2020	1243923POSTOX	DONA	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	10:2 Fluorotelomer sulfonate	0.025	ug/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Hfpo Dimer Acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluorooctadecanoic acid	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	PFOS	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluoroundecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	N-methyl perfluorooctane sulfonamidoacetic acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluoropentanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluoropentane sulfonic acid (PFPeS)	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	6:2 Fluorotelomer sulfonate	0.025	ug/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	N-ethyl perfluorooctane	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded. The reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
			sulfonamidoacetic acid									
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluorohexanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluorododecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	N-methyl perfluoro-1-octanesulfonamide	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	PFOA	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluorodecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluorodecane Sulfonic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluorohexane Sulfonic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluorobutanoic Acid	0.025	UG/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluorobutane Sulfonic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluoroheptanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluoroheptane sulfonic acid (PFHpS)	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluorononanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluorotetradecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	N-ethylperfluoro-1-octanesulfonamide	0.025	UG/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluorohexadecanoic acid (PFHxDA)	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluorononanesulfonic acid	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluorotridecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluorooctane Sulfonamide	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	9Cl-PF3ONS	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	1H,1H,2H,2H-perfluorohexanesulf	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded. The reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
			onate (4:2 FTS)									
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	11Cl-PF3OUdS	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	Perfluorododecane sulfonic acid (PFDoS)	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120-POSTOX	01/21/2020	1243911POSTOX	DONA	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluorododecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	N-methyl perfluoro-1-octanesulfonamide	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	10:2 Fluorotelomer sulfonate	0.025	ug/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Hfpo Dimer Acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluorooctadecanoic acid	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	PFOS	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluoroundecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	N-methyl perfluorooctane sulfonamidoacetic acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluoropentanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluoropentane sulfonic acid (PFPeS)	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	6:2 Fluorotelomer sulfonate	0.025	ug/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	N-ethyl perfluorooctane sulfonamidoacetic acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluorohexanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded. The reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluorododecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	N-methyl perfluoro-1-octanesulfonamide	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	PFOA	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluorodecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluorodecane Sulfonic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluorohexane Sulfonic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluorobutanoic Acid	0.025	UG/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluorobutane Sulfonic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluoroheptanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluoroheptane sulfonic acid (PFHpS)	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluorononanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluorotetradecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	N-ethylperfluoro-1-octanesulfonamide	0.025	UG/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluorohexadecanoic acid (PFHxDA)	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluorononanesulfonic acid	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluorotridecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluorooctane Sulfonamide	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	9Cl-PF3ONS	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	11Cl-PF3OUdS	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	Perfluorododecane sulfonic acid (PFDoS)	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded. The reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
TB1-012120-POSTOX	01/21/2020	1243927POSTOX	DONA	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	10:2 Fluorotelomer sulfonate	0.025	ug/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Hfpo Dimer Acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluorooctadecanoic acid	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluoroundecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	N-methyl perfluorooctane sulfonamidoacetic acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluoropentane sulfonic acid (PFPeS)	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	6:2 Fluorotelomer sulfonate	0.025	ug/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	N-ethyl perfluorooctane sulfonamidoacetic acid	0.015	UG/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluorodecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluorodecane Sulfonic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluorohexane Sulfonic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluorobutanoic Acid	0.025	UG/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluorobutane Sulfonic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluoroheptane sulfonic acid (PFHpS)	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluorononanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluorotetradecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded. The reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	N-ethylperfluoro-1-octanesulfonamide	0.025	UG/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluorohexadecanoic acid (PFHxDA)	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluorononanesulfonic acid	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluorotridecanoic Acid	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluorooctane Sulfonamide	0.01	UG/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	9Cl-PF3ONS	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	11Cl-PF3OUdS	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluorododecane sulfonic acid (PFDoS)	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	DONA	0.01	ug/L	PQL		0.01	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason One or more surrogates had relative percent recovery (RPR) values less than the data rejection level. The reported result is unusable.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	N-ethylperfluoro-1-octanesulfonamide	0.0043	UG/L	PQL		0.0043	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120	01/21/2020	1243919	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0029	ug/L	PQL		0.0029	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120	01/21/2020	1243919	N-ethylperfluoro-1-octanesulfonamide	0.0048	UG/L	PQL		0.0048	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120	01/21/2020	1243919	N-methyl perfluoro-1-octanesulfonamide	0.0029	ug/L	PQL		0.0029	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220	01/22/2020	1244775	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220	01/22/2020	1244775	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Elizabethtn WWTP-012320-POSTOX	01/23/2020	1246876P	N-ethylperfluoro-1-octanesulfonamide	0.025	UG/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY- Cross Creek Rec-012220	01/22/2020	1244767	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY- Cross Creek Rec-012220	01/22/2020	1244767	N-ethylperfluoro-1-octanesulfonamide	0.0043	UG/L	PQL		0.0043	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	N-methyl perfluoro-1-octanesulfonamide	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	N-methyl perfluoro-1-octanesulfonamide	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason One or more surrogates had relative percent recovery (RPR) values less than the data rejection level. The reported result is unusable.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-DEEP RIVER-012120	01/21/2020	1243911	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120	01/21/2020	1243911	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	N-ethylperfluoro-1-octanesulfonamide	0.0042	UG/L	PQL		0.0042	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220	01/22/2020	1244775	N-methyl perfluoro-1-octanesulfonamide	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220	01/22/2020	1244775	N-ethylperfluoro-1-octanesulfonamide	0.0044	UG/L	PQL		0.0044	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220-D	01/22/2020	1244779	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220-D	01/22/2020	1244779	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220-D	01/22/2020	1244779	N-methyl perfluoro-1-octanesulfonamide	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220-D	01/22/2020	1244779	N-ethylperfluoro-1-octanesulfonamide	0.0043	UG/L	PQL		0.0043	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-76-012320	01/23/2020	1246880	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-76-012320	01/23/2020	1246880	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-76-012320	01/23/2020	1246880	N-methyl perfluoro-1-octanesulfonamide	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-76-012320	01/23/2020	1246880	N-ethylperfluoro-1-octanesulfonamide	0.0042	UG/L	PQL		0.0042	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120	01/21/2020	1243915	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120	01/21/2020	1243915	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason One or more surrogates had relative percent recovery (RPR) values less than the data rejection level. The reported result is unusable.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-HAW RIVER-012120	01/21/2020	1243915	N-methyl perfluoro-1-octanesulfonamide	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120	01/21/2020	1243915	N-ethylperfluoro-1-octanesulfonamide	0.0044	UG/L	PQL		0.0044	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	N-ethylperfluoro-1-octanesulfonamide	0.0047	UG/L	PQL		0.0047	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120	01/21/2020	1243911	N-methyl perfluoro-1-octanesulfonamide	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120	01/21/2020	1243911	N-ethylperfluoro-1-octanesulfonamide	0.0043	UG/L	PQL		0.0043	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0028	ug/L	PQL		0.0028	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	N-methyl perfluoro-1-octanesulfonamide	0.0028	ug/L	PQL		0.0028	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0028	ug/L	PQL		0.0028	UJ	EPA 537 Rev. 1.1 modified		537_Prep
LITTLE RIV MOUTH-012320-POSTOX	01/23/2020	1246888P	N-methyl perfluoro-1-octanesulfonamide	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
LITTLE RIV MOUTH-012320-POSTOX	01/23/2020	1246888P	N-ethylperfluoro-1-octanesulfonamide	0.025	UG/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB4-012420-POSTOX	01/24/2020	1246904P	N-methyl perfluoro-1-octanesulfonamide	0.015	ug/L	PQL		0.015	UJ	EPA 537 Rev. 1.1 modified		537_Prep
TB4-012420-POSTOX	01/24/2020	1246904P	N-ethylperfluoro-1-octanesulfonamide	0.025	UG/L	PQL		0.025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	N-methyl perfluoro-1-octanesulfonamide	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	N-ethylperfluoro-1-octanesulfonamide	0.0043	UG/L	PQL		0.0043	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Rockfish Creek Rec-012220	01/22/2020	1244771	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0028	ug/L	PQL		0.0028	UJ	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Rockfish Creek Rec-012220	01/22/2020	1244771	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0028	ug/L	PQL		0.0028	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The analysis hold time for this sample was exceeded by a factor of 2. The reported non-detect result is unusable.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EB3-012320-Z	01/23/2020	4547345	Nitrate	1	MG/L	MDL	1	0	UJ	300.0		
EB4-012420	01/24/2020	4548296	Nitrate	1	MG/L	MDL	1	0	UJ	300.0		
FAY-CFR-RM-132-012420	01/24/2020	4548308	Nitrate	1	MG/L	MDL	1	0	UJ	300.0		
FAY-CFR-RM-76-012320-Z	01/23/2020	4547371	Nitrate	1	MG/L	MDL	1	0	UJ	300.0		
FAY-CFR-RM-84-012320-Z	01/23/2020	4547357	Nitrate	1	MG/L	MDL	1	0	UJ	300.0		
FAY-LittleRiverMouth-012320-Z	01/23/2020	4547378	Nitrate	1	MG/L	MDL	1	0	UJ	300.0		

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values higher than the upper control limit. The reported result may be biased high.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
LITTLE RIV MOUTH-012320-POSTOX	01/23/2020	1246888P	Perfluorohexanoic Acid	0.012	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-76-012320-POSTOX	01/23/2020	1246880P	Perfluorohexanoic Acid	0.022	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
CFR-RM-84-INTAKE-012320-POSTOX	01/23/2020	1246884P	Perfluorohexanoic Acid	0.024	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420-POSTOX	01/24/2020	1246908P	Perfluorohexanoic Acid	0.019	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
Elizabethtn WWTP-012320-POSTOX	01/23/2020	1246876P	Perfluorohexanoic Acid	0.034	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values higher than the upper control limit. The reported result may be biased high.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-Rockfish Creek Rec-012220	01/22/2020	1244542	Sulfate	10.8	MG/L	MDL	1.5	5.0	J	300.0		
FAY-DEEP RIVER-012120	01/21/2020	1243801	Nitrate	1.0	MG/L	MDL	0.25	0.50	J	300.0		
FAY-HAW RIVER-012120	01/21/2020	1243802	Nitrate	0.88	MG/L	MDL	0.25	0.50	J	300.0		
FAY-CFR-RM-54-012220-D	01/22/2020	1244544	Sulfate	9.9	MG/L	MDL	1.5	5.0	J	300.0		
FAY-Cross Creek Rec-012220	01/22/2020	1244538	Sulfate	20.9	MG/L	MDL	1.5	5.0	J	300.0		
FAY-CFR-RM-54-012220	01/22/2020	1244543	Sulfate	9.9	MG/L	MDL	1.5	5.0	J	300.0		
FAY-CFR-RM-4-012120	01/21/2020	1243803	Nitrate	0.90	MG/L	MDL	0.25	0.50	J	300.0		
EB1-012120	01/21/2020	1243804	Sulfate	2.3	MG/L	MDL	1.5	5.0	J	300.0		
EB1-012120	01/21/2020	1243804	Chloride	1.0	MG/L	MDL	1.0	2.0	J	300.0		

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason High relative percent difference (RPD) observed between field duplicate and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-CFR-RM-54-012220-D	01/22/2020	4546194	Atenolol	0.002	ug/L	MDL	0.001	0	J	L220		
Fay-CFR-RM-54-012220	01/22/2020	4546190	Atenolol	0.003	ug/L	MDL	0.001	0	J	L220		

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason Only one surrogate has relative percent recovery (RPR) values outside control limits and the parameter is a PFC (Detects).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-Rockfish Creek Rec-012220	01/22/2020	1244771	Perfluoropentanoic Acid	0.0099	UG/L	PQL		0.0019	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluorobutane Sulfonic Acid	0.0027	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	PFOA	0.0034	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	Perfluoropentanoic Acid	0.0095	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-LITTLE RIVER MOUTH-012320	01/23/2020	1246888	PFOS	0.01	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Rockfish Creek Rec-012220	01/22/2020	1244771	Perfluorobutane Sulfonic Acid	0.003	UG/L	PQL		0.0019	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	PFOS	0.0094	UG/L	PQL		0.0019	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	Perfluorobutanoic Acid	0.0054	UG/L	PQL		0.0047	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	Perfluorobutane Sulfonic Acid	0.0045	UG/L	PQL		0.0019	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	Perfluoroheptanoic Acid	0.007	UG/L	PQL		0.0019	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	PFOA	0.0069	UG/L	PQL		0.0019	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-Elizabethtown WWTP-012320	01/23/2020	1246876	Perfluoropentanoic Acid	0.026	UG/L	PQL		0.0019	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	Perfluorobutanoic Acid	0.0056	UG/L	PQL		0.0042	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120	01/21/2020	1243915	Perfluorobutane Sulfonic Acid	0.004	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120	01/21/2020	1243915	Perfluoropentanoic Acid	0.015	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-76-012320	01/23/2020	1246880	PFOA	0.0072	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-76-012320	01/23/2020	1246880	PFOS	0.011	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220-POSTOX	01/22/2020	1244775P	Perfluoropentanoic Acid	0.02	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220-D-POSTOX	01/22/2020	1244779P	Perfluoropentanoic Acid	0.019	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220-D	01/22/2020	1244779	Perfluorobutane Sulfonic Acid	0.003	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220-D	01/22/2020	1244779	Perfluoropentanoic Acid	0.0097	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220	01/22/2020	1244775	Perfluorobutane Sulfonic Acid	0.0029	UG/L	PQL		0.0018	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-DEEP RIVER-012120	01/21/2020	1243911	Perfluoropentanoic Acid	0.0036	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason Only one surrogate has relative percent recovery (RPR) values outside control limits and the parameter is a PFC (Detects).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	PFOA	0.0073	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	PFOS	0.011	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-76-012320	01/23/2020	1246880	Perfluorobutanoic Acid	0.0056	UG/L	PQL		0.0042	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	PFOA	0.0064	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	Perfluoropentanoic Acid	0.01	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	PFOS	0.0096	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY- Cross Creek Rec-012220	01/22/2020	1244767	Perfluoropentanoic Acid	0.012	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY- Cross Creek Rec-012220	01/22/2020	1244767	Perfluorobutane Sulfonic Acid	0.0041	UG/L	PQL		0.0017	J	EPA 537 Rev. 1.1 modified		537_Prep
CFR-RM-84-INTAKE-012320-POSTOX	01/23/2020	1246884P	Perfluoropentanoic Acid	0.022	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220	01/22/2020	1244775	Perfluoropentanoic Acid	0.0095	UG/L	PQL		0.0018	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120	01/21/2020	1243919	Perfluorobutane Sulfonic Acid	0.0031	UG/L	PQL		0.0019	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120	01/21/2020	1243919	Perfluoropentanoic Acid	0.012	UG/L	PQL		0.0019	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-132-012420	01/24/2020	1246908	Perfluorobutanoic Acid	0.0046	UG/L	PQL		0.0043	J	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason Quality review criteria exceeded between the REP (laboratory replicate) and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-Rockfish Creek Rec-012220	01/22/2020	1244542	Phosphate	0.40	MG/L	MDL	0.25	0.31	J	365.1		365.1
FAY-Rockfish Creek Rec-012220	01/22/2020	1244542	Nitrate	1.1	MG/L	MDL	0.25	0.50	J	300.0		
FAY-Rockfish Creek Rec-012220	01/22/2020	1244542	Chloride	10.4	MG/L	MDL	1.0	2.0	J	300.0		
FAY-CFR-RM-54-012220-D	01/22/2020	1244544	Nitrate	0.85	MG/L	MDL	0.25	0.50	J	300.0		
FAY-CFR-RM-54-012220-D	01/22/2020	1244544	Chloride	9.7	MG/L	MDL	1.0	2.0	J	300.0		
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246887	R-EVE	0.005	UG/L	PQL		0.002	J	Cl. Spec. Table 3 Compound SOP		
FAY-CFR-RM-84-INTAKE-012320	01/23/2020	1246884	R-EVE	0.003	UG/L	PQL		0.002	J	Cl. Spec. Table 3 Compound SOP		
FAY-Cross Creek Rec-012220	01/22/2020	1244538	Phosphate	2.4	MG/L	MDL	0.25	0.31	J	365.1		365.1
FAY-Cross Creek Rec-012220	01/22/2020	1244538	Nitrate	4.0	MG/L	MDL	0.25	0.50	J	300.0		
FAY-Cross Creek Rec-012220	01/22/2020	1244538	Chloride	17.5	MG/L	MDL	1.0	2.0	J	300.0		
FAY- Cross Creek Rec-012220	01/22/2020	1244767	N-methyl perfluoro-1-octanesulfonamide	0.012	ug/L	PQL		0.0026	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-54-012220	01/22/2020	1244543	Nitrate	0.84	MG/L	MDL	0.25	0.50	J	300.0		
FAY-CFR-RM-54-012220	01/22/2020	1244543	Chloride	9.6	MG/L	MDL	1.0	2.0	J	300.0		
FAY-CFR-RM-132-012420	01/24/2020	1246911	R-EVE	0.0069	UG/L	PQL		0.002	J	Cl. Spec. Table 3 Compound SOP		
FAY-CFR-RM-132-012420	01/24/2020	1246908	R-EVE	0.0047	UG/L	PQL		0.002	J	Cl. Spec. Table 3 Compound SOP		
FAY-CFR-RM-132-012420	01/24/2020	1246911	Byproduct 4	0.0051	UG/L	PQL		0.002	J	Cl. Spec. Table 3 Compound SOP		
FAY-CFR-RM-132-012420	01/24/2020	1246908	Byproduct 4	0.004	UG/L	PQL		0.002	J	Cl. Spec. Table 3 Compound SOP		

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The analysis hold time for this sample was exceeded by a factor of 2. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-ElizabethtownWWTP-012320-Z	01/23/2020	4547380	Nitrate	3.1	MG/L	MDL	1	0	J	300.0		

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The analysis hold time for this sample was exceeded. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-CFR-RM-76-012320	01/23/2020	K0A0362-01	E. Coli	Present	/100ml	PQL		1	J	SM9222 B-2006		
FAY-CFR-RM-76-012320	01/23/2020	K0A0362-01	Total Coliform	Present	/100ml	PQL		1	J	SM9222 B-2006		
FAY-CFR-RM-84-012320	01/23/2020	K0A0362-02	E. Coli	Present	/100ml	PQL		1	J	SM9222 B-2006		
FAY-CFR-RM-84-012320	01/23/2020	K0A0362-02	Total Coliform	Present	/100ml	PQL		1	J	SM9222 B-2006		
EB3-012320	01/23/2020	K0A0362-03	E. Coli	Present	/100ml	PQL		1	J	SM9222 B-2006		
EB3-012320	01/23/2020	K0A0362-03	Total Coliform	Present	/100ml	PQL		1	J	SM9222 B-2006		

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-CFR-RM-76-012320	01/23/2020	1246867	Manganese	0.0640	MG/L	MDL	0.0030	0.0100	J	200.7 Rev. 4.4		200.7
FAY-CFR-RM-4-012120	01/21/2020	1243803	Iron	0.645	MG/L	MDL	0.0400	0.200	J	200.7 Rev. 4.4		200.7

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluoroheptanoic Acid	0.022	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluorohexanoic Acid	0.035	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	Perfluoropentanoic Acid	0.027	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	PFOS	0.018	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-HAW RIVER-012120-POSTOX	01/21/2020	1243915POSTOX	PFOA	0.014	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluoroheptanoic Acid	0.018	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	PFOA	0.012	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluorohexanoic Acid	0.025	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	Perfluoropentanoic Acid	0.022	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep
FAY-CFR-RM-4-012120-POSTOX	01/21/2020	1243919POSTOX	PFOS	0.014	UG/L	PQL		0.01	J	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason One or more surrogates had relative percent recovery (RPR) values less than the data rejection level. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-Rockfish Creek Rec-012220	01/22/2020	1244771	N-ethylperfluoro-1-octanesulfonamide	0.0065	UG/L	PQL		0.0047	J	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The result is estimated since the concentration is between the method detection limit and practical quantitation limit.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-CFR-RM-132-012420	01/24/2020	1246874	Vanadium	0.0027	MG/L	MDL	0.0019	0.0100	J	200.7 Rev. 4.4		200.7
FAY-CFR-RM-132-012420	01/24/2020	1246874	Zinc	0.0058	MG/L	MDL	0.0037	0.0200	J	200.7 Rev. 4.4		200.7
FAY-CFR-RM-4-012120	01/21/2020	1243803	Vanadium	0.0019	MG/L	MDL	0.0019	0.0100	J	200.7 Rev. 4.4		200.7
FAY-CFR-RM-4-012120	01/21/2020	1243803	Zinc	0.0038	MG/L	MDL	0.0037	0.0200	J	200.7 Rev. 4.4		200.7
EB1-012120	01/21/2020	1243804	Sodium	0.246	MG/L	MDL	0.239	1.00	J	200.7 Rev. 4.4		200.7
EB4-012420	01/24/2020	1246873	Chloroform	0.4	UG/L	MDL	0.1	0.5	J	524.2		
EB4-012420	01/24/2020	1246873	Total Organic Carbon	0.65	MG/L	MDL	0.50	1.0	J	5310 C-2011		
EB3-012320	01/23/2020	1246871	Chloroform	0.2	UG/L	MDL	0.1	0.5	J	524.2		
EB3-012320	01/23/2020	1246871	Total Organic Carbon	0.72	MG/L	MDL	0.50	1.0	J	5310 C-2011		
FAY-CFR-RM-84-012320	01/23/2020	1246868	Vanadium	0.0022	MG/L	MDL	0.0019	0.0100	J	200.7 Rev. 4.4		200.7
FAY-CFR-RM-84-012320	01/23/2020	1246868	Zinc	0.0051	MG/L	MDL	0.0037	0.0200	J	200.7 Rev. 4.4		200.7
FAY-CFR-RM-84-012320	01/23/2020	1246868	2,3,7,8-TCDD	0.119	PG/L	MDL	0.0401	3.88	J	1613B		1613B
FAY-Cross Creek Rec-012220	01/22/2020	1244538	Molybdenum	0.0030	MG/L	MDL	0.0020	0.0100	J	200.7 Rev. 4.4		200.7
FAY-Cross Creek Rec-012220	01/22/2020	1244538	Nickel	0.0029	MG/L	MDL	0.0021	0.0100	J	200.7 Rev. 4.4		200.7
FAY-Cross Creek Rec-012220	01/22/2020	1244538	Vanadium	0.0020	MG/L	MDL	0.0019	0.0100	J	200.7 Rev. 4.4		200.7
FAY-CFR-RM-54-012220	01/22/2020	1244543	Vanadium	0.0028	MG/L	MDL	0.0019	0.0100	J	200.7 Rev. 4.4		200.7
FAY-CFR-RM-54-012220	01/22/2020	1244543	Zinc	0.0043	MG/L	MDL	0.0037	0.0200	J	200.7 Rev. 4.4		200.7
FAY-CFR-RM-54-012220-D	01/22/2020	1244544	Vanadium	0.0028	MG/L	MDL	0.0019	0.0100	J	200.7 Rev. 4.4		200.7
FAY-CFR-RM-54-012220-D	01/22/2020	1244544	Zinc	0.0039	MG/L	MDL	0.0037	0.0200	J	200.7 Rev. 4.4		200.7
FAY-CFR-RM-76-012320	01/23/2020	1246867	Zinc	0.0053	MG/L	MDL	0.0037	0.0200	J	200.7 Rev. 4.4		200.7
FAY-HAW RIVER-012120	01/21/2020	1243802	Chromium	0.0017	MG/L	MDL	0.0016	0.0150	J	200.7 Rev. 4.4		200.7
FAY-HAW RIVER-012120	01/21/2020	1243802	Vanadium	0.0029	MG/L	MDL	0.0019	0.0100	J	200.7 Rev. 4.4		200.7
FAY-DEEP RIVER-012120	01/21/2020	1243801	Vanadium	0.0024	MG/L	MDL	0.0019	0.0100	J	200.7 Rev. 4.4		200.7

Site: Fayetteville **Sampling Program:** BASELINE RIVER SAMPLING 1/20 **Validation Options:** LABSTATS

Validation Reason The result is estimated since the concentration is between the method detection limit and practical quantitation limit.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-Rockfish Creek Rec-012220	01/22/2020	1244542	Vanadium	0.0021	MG/L	MDL	0.0019	0.0100	J	200.7 Rev. 4.4		200.7
FAY-Little River Mouth-012320	01/23/2020	1246870	Zinc	0.0054	MG/L	MDL	0.0037	0.0200	J	200.7 Rev. 4.4		200.7

APPENDIX D

Supplemental Analytical Tables

TABLE D1
SEEP AND SURFACE WATER ANALYTICAL RESULTS - OTHER PFAS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling
Location ID	CFR-BLADEN	CFR-BLADEN	CFR-KINGS	CFR-MILE-76	Intake River Water at Facility
Field Sample ID	CAP1Q20-CFR-BLADEN-040220	CAP1Q20-CFR-BLADEN-040220-D	CAP1Q20-CFR-KINGS-040620	CAP1Q20-CFR-RM-76-040220	EXCESS RIVER WATER-24-040320
Sample Date	4/2/2020	4/2/2020	4/6/2020	4/2/2020	4/3/2020
QA/QC		Field Duplicate			
Sample Delivery Group (SDG)	320-60035-1	320-60035-1	320-60032-1	320-60032-1	320-60029-1
Lab Sample ID	320-60035-1	320-60035-2	320-60032-3	320-60032-1	320-60029-4
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	<2	<2	<2	<2	<2
11Cl-PF3OUdS	<2	<2	<2	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<2	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<4	<4	<4
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20
9Cl-PF3ONS	<2	<2	<2	<2	<2
ADONA	<2.1	<2.1	<2.1	<2.1	<2.1
NaDONA	<2.1	<2.1	<2.1	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	**3.9**	**3.7**	**4.3**	**4.8**	**4.2**
Perfluorobutanoic Acid	**5.1**	**4.9**	**5.2**	**5.2**	**8.4**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	**11**	**12**	**13**	**13**	**12**
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<2	<2	<2
Perfluorohexane Sulfonic Acid	**4.1**	**4.3**	**4.8**	**4**	**4.3**
Perfluorohexanoic Acid	**15**	**15**	**14**	**14**	**16**
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2	<2	<2
Perfluorooctadecanoic acid	<2 UJ	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	**12**	**11**	**11**	**12**	**11**
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2	<2
PFOA	**7.8**	**7.8**	**6.2**	**7.3**	**6.9**
PFOS	**12**	**12**	**11**	**11**	**8.3**
Total Other PFAS	**71**	**71**	**70**	**71**	**71**

TABLE D1
SEEP AND SURFACE WATER ANALYTICAL RESULTS - OTHER PFAS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling
Location ID	**GBC-1**	**OLDOF-1**	**OUTFALL 002**	**SEEP-A**	**SEEP-B**
Field Sample ID	**CAP1Q20-GBC-1-040220**	**CAP1Q20-OLDOF-1-24-040320**	**CAP1Q20-OUTFALL 002-040320**	**CAP1Q20-SEEP-A-24-040320**	**CAP1Q20-SEEP-B-24-040320**
Sample Date	**4/2/2020**	**4/3/2020**	**4/3/2020**	**4/3/2020**	**4/3/2020**
QA/QC					
Sample Delivery Group (SDG)	**320-60031-1**	**320-60031-1**	**320-60031-1**	**320-60027-1**	**320-60027-1**
Lab Sample ID	**320-60031-2**	**320-60031-4**	**320-60031-3**	**320-60027-1**	**320-60027-2**
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	<2	<2	<2	<2	<2
11Cl-PF3OUdS	<2	<2	<2	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<2	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<4	<4	<4
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20
9Cl-PF3ONS	<2	<2	<2	<2	<2
ADONA	<2.1	<2.1	<2.1	<2.1	<2.1
NaDONA	<2.1	<2.1	<2.1	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	**2.3**	<2	**3.8**	<2	<2
Perfluorobutanoic Acid	**8.2**	**77**	**5.2**	**260**	**500**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2	**2.4**
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	<2	**25**	**9.5**	**110**	**150**
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<2	<2	<2
Perfluorohexane Sulfonic Acid	<2	<2	**4.1**	**3.1**	**2.3**
Perfluorohexanoic Acid	**2.5**	**16**	**13**	**44**	**40**
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2
Perfluorononanoic Acid	<2	**8**	<2	**18**	**15**
Perfluorooctadecanoic acid	<2	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	**7.4**	**140**	**11**	**700**	**1,200**
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2	<2
PFOA	**2.8**	**33**	**8.1**	**31**	**24**
PFOS	<2	**2**	**11**	**4.1**	**3**
Total Other PFAS	**23**	**300**	**66**	**1,200**	**1,900**

TABLE D1
SEEP AND SURFACE WATER ANALYTICAL RESULTS - OTHER PFAS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling
Location ID	**SEEP-C**	**SEEP-D**	**TARHEEL**	**WC-1**	**EQBLK**
Field Sample ID	**CAP1Q20-SEEP-C-24-040320**	**CAP1Q20-SEEP-D-24-040320**	**CAP1Q20-CFR-TARHEEL-24-040320**	**CAP1Q20-WC-1-24-040320**	**CAP1Q20-EQBK-1-040320**
Sample Date	**4/3/2020**	**4/3/2020**	**4/3/2020**	**4/3/2020**	**4/2/2020**
QA/QC					**Equipment Blank**
Sample Delivery Group (SDG)	**320-60027-1**	**320-60027-1**	**320-60032-1**	**320-60031-1**	**320-60032-1**
Lab Sample ID	**320-60027-3**	**320-60027-4**	**320-60032-2**	**320-60031-1**	**320-60032-4**
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	<2	<2	<2	<2	<2
11Cl-PF3OUdS	<2	<2	<2	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<2	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<4	<4	<4
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20
9Cl-PF3ONS	<2	<2	<2	<2	<2
ADONA	<2.1	<2.1	<2.1	<2.1	<2.1
NaDONA	<2.1	<2.1	<2.1	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	**4**	**3.8**	<2
Perfluorobutanoic Acid	**340**	**190**	**5.5**	**5.9**	<2
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	**230**	**110**	**11**	**2**	<2
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<2	<2	<2
Perfluorohexane Sulfonic Acid	**2.5**	**2.1**	**4.6**	<2	<2
Perfluorohexanoic Acid	**86**	**43**	**14**	**3.5**	<2
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2
Perfluorononanoic Acid	<2	**3.1**	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	**1,700**	**820**	**12**	**7.8**	<2
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2	<2
PFOA	**20**	**12**	**8.2**	**5**	<2
PFOS	**3.1**	<2	**12**	**2.7**	<2
Total Other PFAS	**2,400**	**1,200**	**71**	**31**	ND

TABLE D1
SEEP AND SURFACE WATER ANALYTICAL RESULTS - OTHER PFAS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP SW Sampling	Q1 2020 CAP SW Sampling
Location ID	EQBLK	EQBLK
Field Sample ID	CAP1Q20-EQBK-2-040320	CAP1Q20-EB-040620
Sample Date	4/3/2020	4/6/2020
QA/QC	Equipment Blank	Equipment Blank
Sample Delivery Group (SDG)	320-60029-1	320-60029-1
Lab Sample ID	320-60029-1	320-60029-2
Other PFAS (ng/L)		
10:2 Fluorotelomer sulfonate	<2	<2
11Cl-PF3OUdS	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4
6:2 Fluorotelomer sulfonate	<20	<20
9Cl-PF3ONS	<2	<2
ADONA	<2.1	<2.1
NaDONA	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2
Perfluorobutanoic Acid	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2
Perfluorodecanoic Acid	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2
Perfluorododecanoic Acid	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2
Perfluoroheptanoic Acid	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	<2	<2
Perfluorohexane Sulfonic Acid	<2	<2
Perfluorohexanoic Acid	<2	<2
Perfluorononanesulfonic acid	<2	<2
Perfluorononanoic Acid	<2	<2
Perfluorooctadecanoic acid	<2	<2
Perfluorooctane Sulfonamide	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2
Perfluoropentanoic Acid	<2	<2
Perfluorotetradecanoic Acid	<2	<2
Perfluorotridecanoic Acid	<2	<2
Perfluoroundecanoic Acid	<2	<2
PFOA	<2	<2
PFOS	<2	<2
Total Other PFAS	ND	ND

Notes:

Bold - Analyte detected above associated reporting limit
ND - no listed analytes were detected above the associated reporting limits
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SDG - Sample Delivery Group
UJ – Analyte not detected. Reporting limit may not be accurate or precise.
< - Analyte not detected above associated reporting limit.

TABLE D2
GROUNDWATER ANALYTICAL RESULTS - OTHER PFAS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling
Location ID	**BLADEN-1D**	**LTW-01**	**LTW-02**	**LTW-03**	**LTW-03**	**LTW-04**
Field Sample ID	**CAP1Q20-BLADEN-1D-021120**	**CAP1Q20-LTW-01-022420**	**CAP1Q20-LTW-02-022420**	**CAP1Q20-LTW-03-022520**	**CAP1Q20-LTW-03-022520-D**	**CAP1Q20-LTW-04-022020**
Sample Date	**2/11/2020**	**2/24/2020**	**2/24/2020**	**2/25/2020**	**2/25/2020**	**2/20/2020**
QA/QC					**Field Duplicate**	
Sample Delivery Group (SDG)	**320-58585-1**	**320-58971-1**	**320-58971-1**	**320-58966-1**	**320-58966-1**	**320-58849-1**
Lab Sample ID	**320-58585-1**	**320-58971-1**	**320-58971-2**	**320-58966-1**	**320-58966-2**	**320-58849-6**
Other PFAS (ng/L)						
10:2 Fluorotelomer sulfonate	<2	<2	<2	<2	<2	<2
11Cl-PF3OUdS	<2	<2	<2	<2	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<2	<2	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<4	<4	<4	<4
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20	<20
9Cl-PF3ONS	<2	<2	<2	<2	<2	<2
ADONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
NaDONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	**2.2**	<2	<2	<2	<2
Perfluorobutanoic Acid	**4.1**	**140**	**70**	**120**	**120**	**390**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	<2	**41**	**14**	**18**	**17**	**67**
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<2	<2	<2	<2
Perfluorohexane Sulfonic Acid	<2	**5.1**	<2	<2	<2	<2
Perfluorohexanoic Acid	<2	**24**	**11**	**14**	**12**	**39**
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	**5**	**400**	**300**	**640**	**640**	**1,500**
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2 UJ	<2	<2
PFOA	<2	**27**	<2	<2	<2	**6.9**
PFOS	<2	**9.7**	<2	<2	<2	<2
Total Other PFAS	**9**	**650**	**400**	**790**	**790**	**2,000**

TABLE D2
GROUNDWATER ANALYTICAL RESULTS - OTHER PFAS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling
Location ID	**LTW-05**	**PIW-1D**	**PIW-1S**	**PIW-3D**	**PIW-7D**	**PIW-7S**
Field Sample ID	**CAP1Q20-LTW-05-021920**	**CAP1Q20-PIW-1D-021420**	**CAP1Q20-PIW-1S-021320**	**CAP1Q20-PIW-3D-022420**	**CAP1Q20-PIW-7D-021920**	**CAP1Q20-PIW-7S-021920**
Sample Date	**2/19/2020**	**2/14/2020**	**2/13/2020**	**2/24/2020**	**2/19/2020**	**2/19/2020**
QA/QC						
Sample Delivery Group (SDG)	**320-58849-1**	**320-58652-1**	**320-58612-1**	**320-58971-1**	**320-58849-1**	**320-58849-1**
Lab Sample ID	**320-58849-5**	**320-58652-1**	**320-58612-6**	**320-58971-3**	**320-58849-1**	**320-58849-2**
Other PFAS (ng/L)						
10:2 Fluorotelomer sulfonate	<2	<2	<2	<2	<2	<2
11Cl-PF3OUdS	<2	<2	<2	<2	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<2	<2	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<4	<4	<4	<4
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20	<20
9Cl-PF3ONS	<2	<2	<2	<2	<2	<2
ADONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
NaDONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	**2.4**	<2	**3.4**
Perfluorobutanoic Acid	**220**	**67**	**21**	**61**	**110**	**270**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	**350**	**14**	**11**	**27**	**55**	**74**
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<2	<2	<2	<2
Perfluorohexane Sulfonic Acid	<2	<2	**4.3**	**3.9**	<2	**4**
Perfluorohexanoic Acid	**74**	**9.4**	**6.2**	**20**	**18**	**42**
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2	**3.8**	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	**2,000**	**140**	**34**	**120**	**930**	**980**
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2	<2	<2
PFOA	**2.4**	**6.6**	**14**	**28**	<2	**13**
PFOS	<2	<2	**3.9**	**10**	<2	**4.8**
Total Other PFAS	**2,600**	**240**	**94**	**280**	**1,100**	**1,400**

TABLE D2
GROUNDWATER ANALYTICAL RESULTS - OTHER PFAS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling
Location ID	**PW-04**	**PW-06**	**PW-07**	**PW-09**	**PW-11**	**PZ-22**
Field Sample ID	**CAP1Q20-PW-04-021120**	**CAP1Q20-PW-06-020620**	**CAP1Q20-PW-07-021420**	**CAP1Q20-PW-09-021220**	**CAP1Q20-PW-11-021320**	**CAP1Q20-PZ-22-022020**
Sample Date	**2/11/2020**	**2/6/2020**	**2/14/2020**	**2/12/2020**	**2/13/2020**	**2/20/2020**
QA/QC						
Sample Delivery Group (SDG)	**320-58585-1**	**320-58586-1**	**320-58652-1**	**320-58612-1**	**320-58612-1**	**320-58849-1**
Lab Sample ID	**320-58585-2**	**320-58586-1**	**320-58652-2**	**320-58612-2**	**320-58612-5**	**320-58849-7**
Other PFAS (ng/L)						
10:2 Fluorotelomer sulfonate	<2	<2	<2	<2	<2	<2
11Cl-PF3OUdS	<2	<2	<2	<2	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<85	<2	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<140	<4	<4	<4
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20	<20
9Cl-PF3ONS	<2	<2	<2	<2	<2	<2
ADONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
NaDONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20 UJ	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<87	<2	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<43	<2	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20 UJ	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2	<2	<2
Perfluorobutanoic Acid	**11**	**11**	**30**	<2	**210**	**120**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2 UJ	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	**7.8**	**5**	**5**	<2	**450**	**35**
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<89	<2	<2	<2
Perfluorohexane Sulfonic Acid	<2	<2	<2	<2	**4.2**	<2
Perfluorohexanoic Acid	**3.8**	**3.7**	**3.9**	<2	**44**	**18**
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2	<2	**3.7**	<2
Perfluorooctadecanoic acid	<2	<2	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2 UJ	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	**23**	**14**	**20**	<2	**2,000**	**980**
Perfluorotetradecanoic Acid	<2	<2	<29	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2 UJ	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2	<2	<2
PFOA	<2	**5.6**	<2	<2	**24**	<2
PFOS	<2	<2	<2	<2	<2	<2
Total Other PFAS	**46**	**39**	**59**	ND	**2,700**	**1,200**

TABLE D2
GROUNDWATER ANALYTICAL RESULTS - OTHER PFAS
Chemours Fayetteville Works, North Carolina

Program	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**
Location ID	**SMW-10**	**SMW-10**	**SMW-11**	**SMW-12**	**EB**	**EB**
Field Sample ID	**CAP1Q20-SMW-10-021020**	**CAP1Q20-SMW-10-021020-D**	**CAP1Q20-SMW-11-021120**	**CAP1Q20-SMW-12-021220**	**CAP1Q20-EB-020620**	**CAP1Q20-EB-021020**
Sample Date	**2/10/2020**	**2/10/2020**	**2/11/2020**	**2/12/2020**	**2/6/2020**	**2/10/2020**
QA/QC		**Field Duplicate**			**Equipment Blank**	**Equipment Blank**
Sample Delivery Group (SDG)	**320-58586-1**	**320-58586-1**	**320-58585-1**	**320-58612-1**	**320-58586-1**	**320-58586-1**
Lab Sample ID	**320-58586-4**	**320-58586-5**	**320-58585-3**	**320-58612-1**	**320-58586-2**	**320-58586-6**
Other PFAS (ng/L)						
10:2 Fluorotelomer sulfonate	<2	<2	<8.7	<2	<2	<2
11Cl-PF3OUdS	<2	<2	<15	<2	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<91	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<240	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<39	<2	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<64	<4	<4	<4
6:2 Fluorotelomer sulfonate	<20	<20	<91	<20	<20	<20
9Cl-PF3ONS	<2	<2	<11	<2	<2	<2
ADONA	<2.1	<2.1	<8.7	<2.1	<2.1	<2.1
NaDONA	<2.1	<2.1	<8.7	<2.1	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<87	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<40	<2	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<20	<2	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<140	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<9.1	<2	<2	<2
Perfluorobutanoic Acid	<2	<2	**16**	**17**	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2	<15	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<14	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<21	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<25	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<8.7	<2	<2	<2
Perfluoroheptanoic Acid	<2	<2	**11**	<2	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<41	<2	<2	<2
Perfluorohexane Sulfonic Acid	<2	<2	<7.7	<2	<2	<2
Perfluorohexanoic Acid	<2	<2	<26	<2	<2	<2
Perfluorononanesulfonic acid	<2	<2	<7.3	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<12	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<21	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<16	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<14	<2	<2	<2
Perfluoropentanoic Acid	<2	<2	**42**	**44**	<2	<2
Perfluorotetradecanoic Acid	<2	<2	<13	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<59	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<50	<2	<2	<2
PFOA	<2	<2	<39	<2	<2	<2
PFOS	<2	<2	<25	<2	<2	<2
Total Other PFAS	ND	ND	**69**	**61**	ND	ND

TABLE D2
GROUNDWATER ANALYTICAL RESULTS - OTHER PFAS
Chemours Fayetteville Works, North Carolina

Program	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**	**Q1 2020 CAP MW Sampling**
Location ID	**EB**	**EB**	**EB**	**EB**	**EB**	**EB**
Field Sample ID	**CAP1Q20-EB-021120**	**CAP1Q20-EB-021220**	**CAP1Q20-EB-01-021320**	**CAP1Q20-EB-02-021320**	**CAP1Q20-EB-021420**	**CAP1Q20-EB-021920**
Sample Date	**2/11/2020**	**2/12/2020**	**2/13/2020**	**2/13/2020**	**2/14/2020**	**2/19/2020**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Delivery Group (SDG)	**320-58585-1**	**320-58612-1**	**320-58612-1**	**320-58612-1**	**320-58652-1**	**320-58849-1**
Lab Sample ID	**320-58585-4**	**320-58612-3**	**320-58612-8**	**320-58612-9**	**320-58652-3**	**320-58849-4**
Other PFAS (ng/L)						
10:2 Fluorotelomer sulfonate	<2	<2	<2	<2	<2	<2
11Cl-PF3OUdS	<2	<2	<2	<2	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<2	<2	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<4	<4	<4	<4
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20	<20
9Cl-PF3ONS	<2	<2	<2	<2	<2	<2
ADONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
NaDONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2	<2	<2
Perfluorobutanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<2	<2	<2	<2
Perfluorohexane Sulfonic Acid	<2	<2	<2	<2	<2	<2
Perfluorohexanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2	<2	<2
PFOA	<2	<2	<2	<2	<2	<2
PFOS	<2	<2	<2	<2	<2	<2
Total Other PFAS	ND	ND	ND	ND	ND	ND

TABLE D2
GROUNDWATER ANALYTICAL RESULTS - OTHER PFAS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling
Location ID	**EB**	**EB**	**EB**	**EQBLK**	**FBLK**	**FBLK**
Field Sample ID	**CAP1Q20-EB-022020**	**EB-022420**	**EB-022520**	**CAP1Q20-EQBLK-02-032720**	**CAP1Q20-FB-020620**	**CAP1Q20-FB-021020**
Sample Date	**2/20/2020**	**2/24/2020**	**2/25/2020**	**3/27/2020**	**2/6/2020**	**2/10/2020**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**	**Field Blank**	**Field Blank**	**Field Blank**
Sample Delivery Group (SDG)	**320-58849-1**	**320-58971-1**	**320-58966-1**	**320-59859-1**	**320-58586-1**	**320-58586-1**
Lab Sample ID	**320-58849-9**	**320-58971-5**	**320-58966-3**	**320-59859-1**	**320-58586-3**	**320-58586-7**
Other PFAS (ng/L)						
10:2 Fluorotelomer sulfonate	<2	<2	<2	<2	<2	<2
11Cl-PF3OUdS	<2	<2	<2	<2	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<2	<2	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<4	<4	<4	<4
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20	<20
9Cl-PF3ONS	<2	<2	<2	<2	<2	<2
ADONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
NaDONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2	<2	<2
Perfluorobutanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<2	<2	<2	<2
Perfluorohexane Sulfonic Acid	<2	<2	<2	<2	<2	<2
Perfluorohexanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2	<2	<2
PFOA	<2	<2	<2	<2	<2	<2
PFOS	<2	<2	<2	<2	<2	<2
Total Other PFAS	ND	ND	ND	ND	ND	ND

TABLE D2
GROUNDWATER ANALYTICAL RESULTS - OTHER PFAS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling
Location ID	**FBLK**	**FBLK**	**FBLK**	**FBLK**	**FBLK**	**FBLK**
Field Sample ID	**CAP1Q20-FB-021120**	**CAP1Q20-FB-021220**	**CAP1Q20-FB-021320**	**CAP1Q20-FB-021420**	**CAP1Q20-FB-021920**	**CAP1Q20-FB-022020**
Sample Date	**2/11/2020**	**2/12/2020**	**2/13/2020**	**2/14/2020**	**2/19/2020**	**2/20/2020**
QA/QC	**Field Blank**	**Field Blank**	**Field Blank**	**Field Blank**	**Field Blank**	**Field Blank**
Sample Delivery Group (SDG)	**320-58585-1**	**320-58612-1**	**320-58612-1**	**320-58652-1**	**320-58849-1**	**320-58849-1**
Lab Sample ID	**320-58585-5**	**320-58612-4**	**320-58612-7**	**320-58652-4**	**320-58849-3**	**320-58849-8**
Other PFAS (ng/L)						
10:2 Fluorotelomer sulfonate	<2	<2	<2	<2	<2	<2
11Cl-PF3OUdS	<2	<2	<2	<2	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<2	<2	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<4	<4	<4	<4
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20	<20
9Cl-PF3ONS	<2	<2	<2	<2	<2	<2
ADONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
NaDONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2	<2	<2
Perfluorobutanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<2	<2	<2	<2
Perfluorohexane Sulfonic Acid	<2	<2	<2	<2	<2	<2
Perfluorohexanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2	<2	<2
PFOA	<2	<2	<2	<2	<2	<2
PFOS	<2	<2	<2	<2	<2	<2
Total Other PFAS	ND	ND	ND	ND	ND	ND

TABLE D2
GROUNDWATER ANALYTICAL RESULTS - OTHER PFAS
Chemours Fayetteville Works, North Carolina

Program	Q1 2020 CAP MW Sampling	Q1 2020 CAP MW Sampling
Location ID	**FBLK**	**FBLK**
Field Sample ID	**FB-022420**	**FB-022520**
Sample Date	**2/24/2020**	**2/25/2020**
QA/QC	**Field Blank**	**Field Blank**
Sample Delivery Group (SDG)	**320-58971-1**	**320-58966-1**
Lab Sample ID	**320-58971-4**	**320-58966-4**
Other PFAS (ng/L)		
10:2 Fluorotelomer sulfonate	<2	<2
11Cl-PF3OUdS	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4
6:2 Fluorotelomer sulfonate	<20	<20
9Cl-PF3ONS	<2	<2
ADONA	<2.1	<2.1
NaDONA	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2
Perfluorobutanoic Acid	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2
Perfluorodecanoic Acid	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2
Perfluorododecanoic Acid	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2
Perfluoroheptanoic Acid	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	<2	<2
Perfluorohexane Sulfonic Acid	<2	<2
Perfluorohexanoic Acid	<2	<2
Perfluorononanesulfonic acid	<2	<2
Perfluorononanoic Acid	<2	<2
Perfluorooctadecanoic acid	<2	<2
Perfluorooctane Sulfonamide	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2
Perfluoropentanoic Acid	<2	<2
Perfluorotetradecanoic Acid	<2	<2
Perfluorotridecanoic Acid	<2	<2
Perfluoroundecanoic Acid	<2	<2
PFOA	<2	<2
PFOS	<2	<2
Total Other PFAS	ND	ND

Notes:
Bold - Analyte detected above associated reporting limit
ND - no listed analytes were detected above the associated reporting limits
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SDG - Sample Delivery Group
UJ – Analyte not detected. Reporting limit may not be accurate or precise.
< - Analyte not detected above associated reporting limit.

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

APPENDIX E

Supplemental Flow Data

TABLE E1
SEEP A FLUME DATA
Chemours Fayetteville Works, North Carolina

Date	Time	Water Level (kPa)	Water Level (ft)	Flow Rate (gpm)	Flow Volume (gal)*	Notes
4/2/2020	2:09:11 PM	1.84	0.616	194	2,910	
4/2/2020	2:24:11 PM	1.81	0.604	185	2,770	
4/2/2020	2:39:11 PM	1.93	0.646	221	3,310	
4/2/2020	2:54:11 PM	1.89	0.632	208	3,120	
4/2/2020	3:09:11 PM	1.86	0.623	200	3,010	
4/2/2020	3:24:11 PM	1.83	0.612	191	2,860	
4/2/2020	3:39:11 PM	1.84	0.614	193	2,890	
4/2/2020	3:54:11 PM	1.82	0.610	190	2,850	
4/2/2020	4:09:11 PM	1.81	0.605	185	2,780	
4/2/2020	4:24:11 PM	1.80	0.602	183	2,740	
4/2/2020	4:39:11 PM	1.81	0.604	185	2,770	
4/2/2020	4:54:11 PM	1.80	0.601	182	2,730	
4/2/2020	5:09:11 PM	1.80	0.603	184	2,760	
4/2/2020	5:24:11 PM	1.81	0.606	186	2,790	
4/2/2020	5:39:11 PM	1.76	0.587	172	2,570	
4/2/2020	5:54:11 PM	1.76	0.589	173	2,600	
4/2/2020	6:09:11 PM	1.77	0.592	175	2,630	
4/2/2020	6:24:11 PM	1.78	0.597	179	2,680	
4/2/2020	6:39:11 PM	1.73	0.578	164	2,460	
4/2/2020	6:54:11 PM	1.75	0.587	171	2,570	
4/2/2020	7:09:11 PM	1.76	0.589	173	2,600	
4/2/2020	7:24:11 PM	1.79	0.599	180	2,710	
4/2/2020	7:39:11 PM	1.67	0.560	151	2,270	
4/2/2020	7:54:11 PM	1.68	0.563	154	2,300	
4/2/2020	8:09:11 PM	1.70	0.569	158	2,370	
4/2/2020	8:24:11 PM	1.72	0.575	162	2,440	
4/2/2020	8:39:11 PM	1.72	0.575	162	2,440	
4/2/2020	8:54:11 PM	1.75	0.585	170	2,550	
4/2/2020	9:09:11 PM	1.77	0.591	175	2,620	
4/2/2020	9:24:11 PM	1.79	0.599	181	2,710	
4/2/2020	9:39:11 PM	1.71	0.573	160	2,410	
4/2/2020	9:54:11 PM	1.72	0.577	164	2,450	
4/2/2020	10:09:11 PM	1.74	0.581	167	2,500	
4/2/2020	10:24:11 PM	1.74	0.581	167	2,500	
4/2/2020	10:39:11 PM	1.71	0.571	160	2,400	
4/2/2020	10:54:11 PM	1.72	0.577	163	2,450	
4/2/2020	11:09:11 PM	1.73	0.579	165	2,480	
4/2/2020	11:24:11 PM	1.73	0.579	165	2,480	
4/2/2020	11:39:11 PM	1.73	0.578	165	2,470	
4/2/2020	11:54:11 PM	1.73	0.580	166	2,490	
4/3/2020	12:09:11 AM	1.73	0.579	165	2,480	
4/3/2020	12:24:11 AM	1.72	0.577	164	2,450	
4/3/2020	12:39:11 AM	1.77	0.593	176	2,640	
4/3/2020	12:54:11 AM	1.77	0.593	176	2,640	
4/3/2020	1:09:11 AM	1.76	0.590	174	2,600	
4/3/2020	1:24:11 AM	1.77	0.592	175	2,630	
4/3/2020	1:39:11 AM	1.76	0.590	173	2,600	
4/3/2020	1:54:11 AM	1.76	0.588	172	2,580	
4/3/2020	2:09:11 AM	1.75	0.586	170	2,550	
4/3/2020	2:24:11 AM	1.72	0.576	163	2,440	
4/3/2020	2:39:11 AM	1.80	0.601	182	2,730	
4/3/2020	2:54:11 AM	1.79	0.600	181	2,720	
4/3/2020	3:09:11 AM	1.80	0.602	183	2,750	
4/3/2020	3:24:11 AM	1.81	0.607	187	2,800	
4/3/2020	3:39:11 AM	1.76	0.589	173	2,590	
4/3/2020	3:54:11 AM	1.77	0.592	175	2,630	

TABLE E1
SEEP A FLUME DATA
Chemours Fayetteville Works, North Carolina

Date	Time	Water Level (kPa)	Water Level (ft)	Flow Rate (gpm)	Flow Volume (gal)*	Notes
4/3/2020	4:09:11 AM	1.77	0.593	176	2,630	
4/3/2020	4:24:11 AM	1.77	0.593	176	2,640	
4/3/2020	4:39:11 AM	1.71	0.572	160	2,400	
4/3/2020	4:54:11 AM	1.71	0.571	160	2,400	
4/3/2020	5:09:11 AM	1.73	0.578	164	2,460	
4/3/2020	5:24:11 AM	1.75	0.586	170	2,560	
4/3/2020	5:39:11 AM	1.71	0.571	160	2,400	
4/3/2020	5:54:11 AM	1.73	0.580	166	2,490	
4/3/2020	6:09:11 AM	1.77	0.591	174	2,610	
4/3/2020	6:24:11 AM	1.77	0.593	176	2,630	
4/3/2020	6:39:11 AM	1.72	0.574	161	2,420	
4/3/2020	6:54:11 AM	1.72	0.577	164	2,450	
4/3/2020	7:09:11 AM	1.73	0.578	164	2,470	
4/3/2020	7:24:11 AM	1.73	0.580	166	2,490	
4/3/2020	7:39:11 AM	1.75	0.585	169	2,540	
4/3/2020	7:54:11 AM	1.76	0.588	172	2,580	
4/3/2020	8:09:11 AM	1.76	0.589	173	2,590	
4/3/2020	8:24:11 AM	1.75	0.585	169	2,540	
4/3/2020	8:39:11 AM	1.78	0.594	177	2,650	
4/3/2020	8:54:11 AM	1.78	0.594	177	2,650	
4/3/2020	9:09:11 AM	1.78	0.594	177	2,650	
4/3/2020	9:24:11 AM	1.76	0.589	173	2,590	
4/3/2020	9:39:11 AM	1.81	0.604	185	2,770	
4/3/2020	9:54:11 AM	1.78	0.596	179	2,680	
4/3/2020	10:09:11 AM	1.77	0.593	176	2,630	
4/3/2020	10:24:11 AM	1.73	0.579	165	2,470	
4/3/2020	10:39:11 AM	1.87	0.625	202	3,030	
4/3/2020	10:54:11 AM	1.85	0.618	196	2,950	
4/3/2020	11:09:11 AM	1.81	0.604	185	2,770	
4/3/2020	11:24:11 AM	1.78	0.596	179	2,680	
4/3/2020	11:39:11 AM	1.66	0.555	148	1,730	Level logger disturbed. Water level is average of the recordings before and after.
4/3/2020	11:50:52 AM	1.66	0.555	148	2,220	Level logger disturbed. Water level is average of the recordings before and after.
4/3/2020	12:05:52 PM	1.54	0.514	121	1,810	
4/3/2020	12:20:52 PM	1.49	0.500	112	1,680	
4/3/2020	12:35:52 PM	1.68	0.562	153	2,290	
4/3/2020	12:50:52 PM	1.63	0.546	142	2,130	
4/3/2020	1:05:52 PM	1.57	0.526	128	1,930	
4/3/2020	1:20:52 PM	1.53	0.513	120	1,810	
4/3/2020	1:35:52 PM	1.69	0.566	156	2,340	
4/3/2020	1:50:52 PM	1.65	0.551	145	2,170	
4/3/2020	2:05:52 PM	1.59	0.533	133	2,000	
4/3/2020	2:20:52 PM	1.56	0.521	125	1,880	
Total					**249,080**	

Acronyms:

ft - feet gpm - gallons per minute

gal - gallons kPa - kilopascals

* - Flow volumes are calculated as the total volume of flow passing through the flume for the duration of the interval where the interval duration is calculated as the time between the present recording and the previous recording.

TABLE E2
SEEP B-TR1 FLUME DATA
Chemours Fayetteville Works, North Carolina

Date	Time	Water Level (kPa)	Water Level (ft)	Flow Rate (gpm)	Flow Volume (gal)*	Notes
02-04-20	2:30:00 PM	1.14	0.381	57.7	870	
02-04-20	2:45:00 PM	1.11	0.372	54.3	810	
02-04-20	3:00:00 PM	1.06	0.355	48.1	720	
02-04-20	3:15:00 PM	1.02	0.342	43.7	650	
02-04-20	3:30:00 PM	1.04	0.347	45.2	680	
02-04-20	3:45:00 PM	1.02	0.341	43.3	650	
02-04-20	4:00:00 PM	1.00	0.334	41.0	610	
02-04-20	4:15:00 PM	0.974	0.326	38.6	580	
02-04-20	4:30:00 PM	0.980	0.328	39.2	590	
02-04-20	4:45:00 PM	0.981	0.328	39.3	590	
02-04-20	5:00:00 PM	0.977	0.327	38.9	580	
02-04-20	5:15:00 PM	0.966	0.323	37.7	570	
02-04-20	5:30:00 PM	0.905	0.303	31.9	480	
02-04-20	5:45:00 PM	0.904	0.302	31.8	480	
02-04-20	6:00:00 PM	0.903	0.302	31.7	480	
02-04-20	6:15:00 PM	0.923	0.309	33.6	500	
02-04-20	6:30:00 PM	0.837	0.280	26.1	390	
02-04-20	6:45:00 PM	0.853	0.285	27.4	410	
02-04-20	7:00:00 PM	0.874	0.292	29.2	440	
02-04-20	7:15:00 PM	0.886	0.296	30.2	450	
02-04-20	7:30:00 PM	0.814	0.272	24.3	360	
02-04-20	7:45:00 PM	0.821	0.275	24.8	370	
02-04-20	8:00:00 PM	0.830	0.278	25.5	380	
02-04-20	8:15:00 PM	0.845	0.283	26.7	400	
02-04-20	8:30:00 PM	0.834	0.279	25.8	390	
02-04-20	8:45:00 PM	0.867	0.290	28.6	430	
02-04-20	9:00:00 PM	0.891	0.298	30.6	460	
02-04-20	9:15:00 PM	0.912	0.305	32.5	490	
02-04-20	9:30:00 PM	0.841	0.281	26.4	400	
02-04-20	9:45:00 PM	0.853	0.285	27.4	410	
02-04-20	10:00:00 PM	0.858	0.287	27.8	420	
02-04-20	10:15:00 PM	0.877	0.293	29.4	440	
02-04-20	10:30:00 PM	0.829	0.277	25.4	380	
02-04-20	10:45:00 PM	0.854	0.286	27.5	410	
02-04-20	11:00:00 PM	0.863	0.289	28.2	420	
02-04-20	11:15:00 PM	0.871	0.291	28.9	430	
02-04-20	11:30:00 PM	0.871	0.291	28.9	430	
02-04-20	11:45:00 PM	0.873	0.292	29.1	440	
03-04-20	12:00:00 AM	0.875	0.293	29.2	440	
03-04-20	12:15:00 AM	0.864	0.289	28.3	420	
03-04-20	12:30:00 AM	0.921	0.308	33.4	500	
03-04-20	12:45:00 AM	0.914	0.306	32.7	490	
03-04-20	1:00:00 AM	0.908	0.304	32.2	480	
03-04-20	1:15:00 AM	0.914	0.306	32.7	490	
03-04-20	1:30:00 AM	0.926	0.310	33.8	510	
03-04-20	1:45:00 AM	0.903	0.302	31.7	480	
03-04-20	2:00:00 AM	0.895	0.299	31.0	460	
03-04-20	2:15:00 AM	0.879	0.294	29.6	440	
03-04-20	2:30:00 AM	0.928	0.311	34.0	510	

TABLE E2
SEEP B-TR1 FLUME DATA
Chemours Fayetteville Works, North Carolina

Date	Time	Water Level (kPa)	Water Level (ft)	Flow Rate (gpm)	Flow Volume (gal)*	Notes
03-04-20	2:45:00 AM	0.931	0.312	34.3	510	
03-04-20	3:00:00 AM	0.932	0.312	34.4	520	
03-04-20	3:15:00 AM	0.950	0.318	36.2	540	
03-04-20	3:30:00 AM	0.904	0.302	31.8	480	
03-04-20	3:45:00 AM	0.902	0.302	31.6	470	
03-04-20	4:00:00 AM	0.905	0.303	31.9	480	
03-04-20	4:15:00 AM	0.908	0.304	32.2	480	
03-04-20	4:30:00 AM	0.851	0.285	27.2	410	
03-04-20	4:45:00 AM	0.844	0.282	26.6	400	
03-04-20	5:00:00 AM	0.851	0.285	27.2	410	
03-04-20	5:15:00 AM	0.877	0.293	29.4	440	
03-04-20	5:30:00 AM	0.841	0.281	26.4	400	
03-04-20	5:45:00 AM	0.862	0.288	28.1	420	
03-04-20	6:00:00 AM	0.888	0.297	30.4	460	
03-04-20	6:15:00 AM	0.903	0.302	31.7	480	
03-04-20	6:30:00 AM	0.851	0.285	27.2	410	
03-04-20	6:45:00 AM	0.855	0.286	27.5	410	
03-04-20	7:00:00 AM	0.856	0.286	27.6	410	
03-04-20	7:15:00 AM	0.866	0.290	28.5	430	
03-04-20	7:30:00 AM	0.881	0.295	29.8	450	
03-04-20	7:45:00 AM	0.885	0.296	30.1	450	
03-04-20	8:00:00 AM	0.896	0.300	31.1	470	
03-04-20	8:15:00 AM	0.889	0.297	30.5	460	
03-04-20	8:30:00 AM	0.918	0.307	33.1	500	
03-04-20	8:45:00 AM	0.923	0.309	33.6	500	
03-04-20	9:00:00 AM	0.916	0.306	32.9	490	
03-04-20	9:15:00 AM	0.914	0.306	32.7	490	
03-04-20	9:30:00 AM	0.970	0.325	38.2	570	
03-04-20	9:45:00 AM	0.954	0.319	36.5	550	
03-04-20	10:00:00 AM	0.939	0.314	35.1	530	
03-04-20	10:15:00 AM	0.912	0.305	32.5	490	
03-04-20	10:30:00 AM	1.03	0.346	45.0	670	
03-04-20	10:45:00 AM	1.02	0.342	43.7	650	
03-04-20	11:00:00 AM	0.992	0.332	40.4	610	
03-04-20	11:15:00 AM	0.958	0.321	36.9	550	
03-04-20	11:30:00 AM	1.08	0.362	50.5	760	
03-04-20	11:45:00 AM	1.02	0.343	43.9	660	
03-04-20	12:00:00 PM	0.992	0.332	40.4	610	
03-04-20	12:15:00 PM	0.957	0.320	36.8	550	
03-04-20	12:30:00 PM	1.17	0.393	62.4	940	
03-04-20	12:45:00 PM	1.15	0.386	59.6	890	
03-04-20	1:00:00 PM	1.12	0.375	55.5	830	
03-04-20	1:15:00 PM	1.05	0.351	46.8	700	
03-04-20	1:30:00 PM	1.20	0.402	66.2	990	
03-04-20	1:45:00 PM	1.16	0.387	60.1	900	
03-04-20	2:00:00 PM	1.11	0.371	54.0	810	
03-04-20	2:15:00 PM	1.05	0.352	47.0	710	
03-04-20	2:30:00 PM	1.17	0.392	62.3	930	
Total					**51,480**	

Acronyms:

ft - feet gpm - gallons per minute

gal - gallons kPa - kilopascals

* - Flow volumes are calculated as the total volume of flow passing through the flume for the duration of the interval where the interval duration is calculated as the time between the present recording and the previous recording.

TABLE E3
SEEP B-TR2 FLUME DATA
Chemours Fayetteville Works, North Carolina

Date	Time	Water Level (kPa)	Water Level (ft)	Flow Rate (gpm)	Flow Volume (gal)*	Notes
4/2/2020	2:30:00 PM	0.990	0.331	40.2	600	
4/2/2020	2:45:00 PM	0.959	0.321	37.0	560	
4/2/2020	3:00:00 PM	0.913	0.305	32.6	490	
4/2/2020	3:15:00 PM	0.884	0.296	30.0	450	
4/2/2020	3:30:00 PM	0.893	0.299	30.8	460	
4/2/2020	3:45:00 PM	0.874	0.292	29.2	440	
4/2/2020	4:00:00 PM	0.852	0.285	27.3	410	
4/2/2020	4:15:00 PM	0.831	0.278	25.6	380	
4/2/2020	4:30:00 PM	0.835	0.279	25.9	390	
4/2/2020	4:45:00 PM	0.831	0.278	25.6	380	
4/2/2020	5:00:00 PM	0.837	0.280	26.1	390	
4/2/2020	5:15:00 PM	0.835	0.279	25.9	390	
4/2/2020	5:30:00 PM	0.782	0.262	21.9	330	
4/2/2020	5:45:00 PM	0.785	0.263	22.1	330	
4/2/2020	6:00:00 PM	0.786	0.263	22.2	330	
4/2/2020	6:15:00 PM	0.797	0.267	23.0	340	
4/2/2020	6:30:00 PM	0.733	0.245	18.5	280	
4/2/2020	6:45:00 PM	0.753	0.252	19.9	300	
4/2/2020	7:00:00 PM	0.775	0.259	21.4	320	
4/2/2020	7:15:00 PM	0.790	0.264	22.5	340	
4/2/2020	7:30:00 PM	0.685	0.229	15.5	230	
4/2/2020	7:45:00 PM	0.691	0.231	15.9	240	
4/2/2020	8:00:00 PM	0.702	0.235	16.6	250	
4/2/2020	8:15:00 PM	0.717	0.240	17.5	260	
4/2/2020	8:30:00 PM	0.704	0.236	16.7	250	
4/2/2020	8:45:00 PM	0.734	0.246	18.6	280	
4/2/2020	9:00:00 PM	0.762	0.255	20.5	310	
4/2/2020	9:15:00 PM	0.782	0.262	21.9	330	
4/2/2020	9:30:00 PM	0.710	0.238	17.1	260	
4/2/2020	9:45:00 PM	0.723	0.242	17.9	270	
4/2/2020	10:00:00 PM	0.726	0.243	18.1	270	
4/2/2020	10:15:00 PM	0.742	0.248	19.1	290	
4/2/2020	10:30:00 PM	0.694	0.232	16.1	240	
4/2/2020	10:45:00 PM	0.724	0.242	17.9	270	
4/2/2020	11:00:00 PM	0.731	0.245	18.4	280	
4/2/2020	11:15:00 PM	0.736	0.246	18.7	280	
4/2/2020	11:30:00 PM	0.733	0.245	18.5	280	
4/2/2020	11:45:00 PM	0.735	0.246	18.6	280	
4/3/2020	12:00:00 AM	0.734	0.246	18.6	280	
4/3/2020	12:15:00 AM	0.726	0.243	18.1	270	
4/3/2020	12:30:00 AM	0.784	0.262	22.0	330	
4/3/2020	12:45:00 AM	0.773	0.259	21.2	320	
4/3/2020	1:00:00 AM	0.764	0.256	20.6	310	
4/3/2020	1:15:00 AM	0.774	0.259	21.3	320	
4/3/2020	1:30:00 AM	0.784	0.262	22.0	330	
4/3/2020	1:45:00 AM	0.760	0.254	20.3	300	
4/3/2020	2:00:00 AM	0.755	0.253	20.0	300	
4/3/2020	2:15:00 AM	0.738	0.247	18.8	280	
4/3/2020	2:30:00 AM	0.788	0.264	22.3	330	
4/3/2020	2:45:00 AM	0.792	0.265	22.6	340	
4/3/2020	3:00:00 AM	0.787	0.263	22.2	330	
4/3/2020	3:15:00 AM	0.812	0.272	24.1	360	
4/3/2020	3:30:00 AM	0.765	0.256	20.7	310	
4/3/2020	3:45:00 AM	0.760	0.254	20.3	300	
4/3/2020	4:00:00 AM	0.763	0.255	20.5	310	
4/3/2020	4:15:00 AM	0.763	0.255	20.5	310	
4/3/2020	4:30:00 AM	0.705	0.236	16.7	250	
4/3/2020	4:45:00 AM	0.703	0.235	16.6	250	
4/3/2020	5:00:00 AM	0.711	0.238	17.1	260	
4/3/2020	5:15:00 AM	0.736	0.246	18.7	280	
4/3/2020	5:30:00 AM	0.699	0.234	16.4	250	

TABLE E3
SEEP B-TR2 FLUME DATA
Chemours Fayetteville Works, North Carolina

Date	Time	Water Level (kPa)	Water Level (ft)	Flow Rate (gpm)	Flow Volume (gal)*	Notes
4/3/2020	5:45:00 AM	0.717	0.240	17.5	260	
4/3/2020	6:00:00 AM	0.745	0.249	19.3	290	
4/3/2020	6:15:00 AM	0.759	0.254	20.3	300	
4/3/2020	6:30:00 AM	0.711	0.238	17.1	260	
4/3/2020	6:45:00 AM	0.714	0.239	17.3	260	
4/3/2020	7:00:00 AM	0.714	0.239	17.3	260	
4/3/2020	7:15:00 AM	0.725	0.243	18.0	270	
4/3/2020	7:30:00 AM	0.734	0.246	18.6	280	
4/3/2020	7:45:00 AM	0.744	0.249	19.2	290	
4/3/2020	8:00:00 AM	0.752	0.252	19.8	300	
4/3/2020	8:15:00 AM	0.745	0.249	19.3	290	
4/3/2020	8:30:00 AM	0.774	0.259	21.3	320	
4/3/2020	8:45:00 AM	0.774	0.259	21.3	320	
4/3/2020	9:00:00 AM	0.772	0.258	21.2	320	
4/3/2020	9:15:00 AM	0.770	0.258	21.0	320	
4/3/2020	9:30:00 AM	0.824	0.276	25.0	380	
4/3/2020	9:45:00 AM	0.802	0.268	23.4	350	
4/3/2020	10:00:00 AM	0.792	0.265	22.6	340	
4/3/2020	10:15:00 AM	0.762	0.255	20.5	310	
4/3/2020	10:30:00 AM	0.889	0.297	30.5	460	
4/3/2020	10:45:00 AM	0.878	0.294	29.5	440	
4/3/2020	11:00:00 AM	0.853	0.285	27.4	410	
4/3/2020	11:15:00 AM	0.821	0.275	24.8	370	
4/3/2020	11:30:00 AM	0.946	0.317	35.8	540	
4/3/2020	11:45:00 AM	0.893	0.299	30.8	460	
4/3/2020	12:00:00 PM	0.857	0.287	27.7	420	
4/3/2020	12:15:00 PM	0.808	0.270	23.8	360	
4/3/2020	12:30:00 PM	0.975	0.326	38.7	580	
4/3/2020	12:45:00 PM	0.931	0.312	34.3	510	
4/3/2020	1:00:00 PM	0.890	0.298	30.6	460	
4/3/2020	1:15:00 PM	0.839	0.281	26.2	390	
4/3/2020	1:30:00 PM	1.04	0.346	45.1	680	
4/3/2020	1:45:00 PM	0.973	0.326	38.5	580	
4/3/2020	2:00:00 PM	0.936	0.313	34.8	520	
4/3/2020	2:15:00 PM	0.895	0.299	31.0	460	
4/3/2020	2:30:00 PM	1.03	0.345	44.5	670	
Total					**33,730**	

Acronyms:

ft - feet — gpm - gallons per minute

gal - gallons — kPa - kilopascals

* - Flow volumes are calculated as the total volume of flow passing through the flume for the duration of the interval where the interval duration is calculated as the time between the present recording and the previous recording.

TABLE E4
SEEP B-2 FLUME DATA
Chemours Fayetteville Works, North Carolina

Date	Time	Water Level (kPa)	Water Level (ft)	Flow Rate (gpm)	Flow Volume (gal)*	Notes
4/2/2020	2:30:00 PM	1.56	0.523	126	1,890	
4/2/2020	2:45:00 PM	1.54	0.514	121	1,810	
4/2/2020	3:00:00 PM	1.49	0.500	112	1,680	
4/2/2020	3:15:00 PM	1.46	0.489	106	1,590	
4/2/2020	3:30:00 PM	1.49	0.498	111	1,660	
4/2/2020	3:45:00 PM	1.46	0.489	106	1,590	
4/2/2020	4:00:00 PM	1.44	0.483	103	1,540	
4/2/2020	4:15:00 PM	1.42	0.474	97.9	1,470	
4/2/2020	4:30:00 PM	1.42	0.476	98.8	1,480	
4/2/2020	4:45:00 PM	1.43	0.479	101	1,510	
4/2/2020	5:00:00 PM	1.44	0.481	102	1,530	
4/2/2020	5:15:00 PM	1.42	0.476	98.6	1,480	
4/2/2020	5:30:00 PM	1.38	0.462	91.1	1,370	
4/2/2020	5:45:00 PM	1.38	0.462	91.5	1,370	
4/2/2020	6:00:00 PM	1.38	0.462	91.3	1,370	
4/2/2020	6:15:00 PM	1.39	0.465	93.1	1,400	
4/2/2020	6:30:00 PM	1.33	0.444	82.4	1,240	
4/2/2020	6:45:00 PM	1.35	0.451	85.5	1,280	
4/2/2020	7:00:00 PM	1.37	0.459	89.6	1,340	
4/2/2020	7:15:00 PM	1.38	0.463	91.8	1,380	
4/2/2020	7:30:00 PM	1.28	0.427	74.0	1,110	
4/2/2020	7:45:00 PM	1.29	0.431	75.9	1,140	
4/2/2020	8:00:00 PM	1.30	0.435	78.1	1,170	
4/2/2020	8:15:00 PM	1.31	0.437	78.8	1,180	
4/2/2020	8:30:00 PM	1.31	0.439	79.6	1,190	
4/2/2020	8:45:00 PM	1.34	0.447	83.9	1,260	
4/2/2020	9:00:00 PM	1.35	0.453	86.5	1,300	
4/2/2020	9:15:00 PM	1.39	0.464	92.2	1,380	
4/2/2020	9:30:00 PM	1.30	0.436	78.5	1,180	
4/2/2020	9:45:00 PM	1.32	0.442	81.3	1,220	
4/2/2020	10:00:00 PM	1.32	0.443	81.6	1,220	
4/2/2020	10:15:00 PM	1.33	0.446	83.4	1,250	
4/2/2020	10:30:00 PM	1.29	0.431	76.2	1,140	
4/2/2020	10:45:00 PM	1.31	0.440	80.1	1,200	
4/2/2020	11:00:00 PM	1.33	0.445	82.9	1,240	
4/2/2020	11:15:00 PM	1.32	0.443	81.6	1,220	
4/2/2020	11:30:00 PM	1.33	0.443	81.9	1,230	
4/2/2020	11:45:00 PM	1.32	0.443	81.6	1,220	
4/3/2020	12:00:00 AM	1.33	0.445	82.7	1,240	
4/3/2020	12:15:00 AM	1.31	0.438	79.5	1,190	
4/3/2020	12:30:00 AM	1.37	0.458	89.4	1,340	
4/3/2020	12:45:00 AM	1.36	0.454	87.0	1,310	
4/3/2020	1:00:00 AM	1.37	0.458	89.1	1,340	
4/3/2020	1:15:00 AM	1.36	0.455	87.5	1,310	
4/3/2020	1:30:00 AM	1.38	0.461	90.8	1,360	
4/3/2020	1:45:00 AM	1.35	0.453	86.7	1,300	
4/3/2020	2:00:00 AM	1.35	0.452	86.0	1,290	
4/3/2020	2:15:00 AM	1.33	0.446	83.4	1,250	
4/3/2020	2:30:00 AM	1.37	0.460	90.1	1,350	
4/3/2020	2:45:00 AM	1.38	0.461	90.8	1,360	
4/3/2020	3:00:00 AM	1.39	0.464	92.5	1,390	
4/3/2020	3:15:00 AM	1.41	0.470	95.6	1,430	
4/3/2020	3:30:00 AM	1.36	0.455	87.7	1,320	
4/3/2020	3:45:00 AM	1.36	0.455	87.5	1,310	
4/3/2020	4:00:00 AM	1.35	0.452	86.2	1,290	
4/3/2020	4:15:00 AM	1.36	0.454	87.2	1,310	
4/3/2020	4:30:00 AM	1.29	0.433	77.0	1,150	
4/3/2020	4:45:00 AM	1.29	0.432	76.6	1,150	
4/3/2020	5:00:00 AM	1.31	0.437	78.8	1,180	

TABLE E4
SEEP B-2 FLUME DATA
Chemours Fayetteville Works, North Carolina

Date	Time	Water Level (kPa)	Water Level (ft)	Flow Rate (gpm)	Flow Volume (gal)*	Notes
4/3/2020	5:15:00 AM	1.32	0.442	81.4	1,220	
4/3/2020	5:30:00 AM	1.29	0.432	76.6	1,150	
4/3/2020	5:45:00 AM	1.31	0.437	78.8	1,180	
4/3/2020	6:00:00 AM	1.34	0.448	84.0	1,260	
4/3/2020	6:15:00 AM	1.34	0.448	84.2	1,260	
4/3/2020	6:30:00 AM	1.29	0.432	76.3	1,140	
4/3/2020	6:45:00 AM	1.31	0.437	78.8	1,180	
4/3/2020	7:00:00 AM	1.31	0.437	79.0	1,190	
4/3/2020	7:15:00 AM	1.32	0.440	80.4	1,210	
4/3/2020	7:30:00 AM	1.32	0.443	81.7	1,230	
4/3/2020	7:45:00 AM	1.34	0.449	84.7	1,270	
4/3/2020	8:00:00 AM	1.33	0.446	83.4	1,250	
4/3/2020	8:15:00 AM	1.34	0.449	84.7	1,270	
4/3/2020	8:30:00 AM	1.35	0.453	86.5	1,300	
4/3/2020	8:45:00 AM	1.37	0.459	89.8	1,350	
4/3/2020	9:00:00 AM	1.36	0.455	87.7	1,320	
4/3/2020	9:15:00 AM	1.36	0.455	87.9	1,320	
4/3/2020	9:30:00 AM	1.40	0.469	95.2	1,430	
4/3/2020	9:45:00 AM	1.39	0.465	92.9	1,390	
4/3/2020	10:00:00 AM	1.38	0.462	91.5	1,370	
4/3/2020	10:15:00 AM	1.37	0.457	88.9	1,330	
4/3/2020	10:30:00 AM	1.50	0.503	114	1,710	
4/3/2020	10:45:00 AM	1.48	0.494	109	1,630	
4/3/2020	11:00:00 AM	1.44	0.483	103	1,540	
4/3/2020	11:15:00 AM	1.40	0.469	94.8	1,420	
4/3/2020	11:30:00 AM	1.53	0.510	119	1,780	
4/3/2020	11:45:00 AM	1.47	0.492	108	1,610	
4/3/2020	12:00:00 PM	1.43	0.479	101	1,510	
4/3/2020	12:15:00 PM	1.38	0.463	91.7	1,380	
4/3/2020	12:30:00 PM	1.55	0.518	123	1,850	
4/3/2020	12:45:00 PM	1.50	0.500	113	1,690	
4/3/2020	1:00:00 PM	1.46	0.489	106	1,590	
4/3/2020	1:15:00 PM	1.42	0.474	97.7	1,470	
4/3/2020	1:30:00 PM	1.59	0.531	132	1,970	
4/3/2020	1:45:00 PM	1.55	0.520	124	1,870	
4/3/2020	2:00:00 PM	1.49	0.500	112	1,680	
4/3/2020	2:15:00 PM	1.45	0.487	105	1,570	
4/3/2020	2:30:00 PM	1.60	0.534	134	2,010	
Total					**133,900**	

Acronyms:

ft - feet gpm - gallons per minute

gal - gallons kPa - kilopascals

* - Flow volumes are calculated as the total volume of flow passing through the flume for the duration of the interval where the interval duration is calculated as the time between the present recording and the previous recording.

TABLE E5
SEEP C FLUME DATA
Chemours Fayetteville Works, North Carolina

Date	Time	Water Level (kPa)	Water Level (ft)	Flow Rate (gpm)	Flow Volume (gal)*	Notes
02-04-20	2:30:00 PM	1.37	0.458	89.2	1,340	
02-04-20	2:45:00 PM	1.34	0.448	84.0	1,260	
02-04-20	3:00:00 PM	1.30	0.434	77.4	1,160	
02-04-20	3:15:00 PM	1.27	0.425	73.1	1,100	
02-04-20	3:30:00 PM	1.29	0.430	75.6	1,130	
02-04-20	3:45:00 PM	1.27	0.424	73.0	1,090	
02-04-20	4:00:00 PM	1.25	0.418	70.1	1,050	
02-04-20	4:15:00 PM	1.23	0.411	66.9	1,000	
02-04-20	4:30:00 PM	1.23	0.413	67.9	1,020	
02-04-20	4:45:00 PM	1.23	0.412	67.5	1,010	
02-04-20	5:00:00 PM	1.23	0.412	67.5	1,010	
02-04-20	5:15:00 PM	1.24	0.416	69.1	1,040	
02-04-20	5:30:00 PM	1.18	0.396	60.9	910	
02-04-20	5:45:00 PM	1.19	0.397	61.3	920	
02-04-20	6:00:00 PM	1.19	0.400	62.3	930	
02-04-20	6:15:00 PM	1.21	0.405	64.6	970	
02-04-20	6:30:00 PM	1.14	0.382	55.5	830	
02-04-20	6:45:00 PM	1.17	0.390	58.5	880	
02-04-20	7:00:00 PM	1.19	0.397	61.1	920	
02-04-20	7:15:00 PM	1.20	0.402	63.1	950	
02-04-20	7:30:00 PM	1.10	0.367	50.0	750	
02-04-20	7:45:00 PM	1.10	0.369	50.7	760	
02-04-20	8:00:00 PM	1.12	0.373	52.1	780	
02-04-20	8:15:00 PM	1.14	0.380	54.5	820	
02-04-20	8:30:00 PM	1.12	0.374	52.3	780	
02-04-20	8:45:00 PM	1.15	0.383	55.8	840	
02-04-20	9:00:00 PM	1.18	0.393	59.8	900	
02-04-20	9:15:00 PM	1.20	0.401	62.7	940	
02-04-20	9:30:00 PM	1.13	0.376	53.3	800	
02-04-20	9:45:00 PM	1.14	0.382	55.4	830	
02-04-20	10:00:00 PM	1.14	0.382	55.3	830	
02-04-20	10:15:00 PM	1.16	0.388	57.6	860	
02-04-20	10:30:00 PM	1.11	0.371	51.2	770	
02-04-20	10:45:00 PM	1.14	0.381	54.9	820	
02-04-20	11:00:00 PM	1.15	0.383	55.8	840	
02-04-20	11:15:00 PM	1.15	0.384	56.2	840	
02-04-20	11:30:00 PM	1.14	0.382	55.4	830	
02-04-20	11:45:00 PM	1.14	0.383	55.7	830	
03-04-20	12:00:00 AM	1.14	0.381	54.9	820	
03-04-20	12:15:00 AM	1.13	0.379	54.4	820	
03-04-20	12:30:00 AM	1.19	0.397	61.2	920	
03-04-20	12:45:00 AM	1.18	0.396	60.9	910	
03-04-20	1:00:00 AM	1.17	0.392	59.3	890	
03-04-20	1:15:00 AM	1.18	0.394	60.1	900	
03-04-20	1:30:00 AM	1.19	0.398	61.7	930	
03-04-20	1:45:00 AM	1.17	0.392	59.4	890	
03-04-20	2:00:00 AM	1.16	0.389	58.3	870	
03-04-20	2:15:00 AM	1.15	0.383	55.8	840	
03-04-20	2:30:00 AM	1.21	0.403	63.8	960	
03-04-20	2:45:00 AM	1.20	0.402	63.1	950	
03-04-20	3:00:00 AM	1.20	0.400	62.6	940	
03-04-20	3:15:00 AM	1.23	0.410	66.6	1,000	

TABLE E5
SEEP C FLUME DATA
Chemours Fayetteville Works, North Carolina

Date	Time	Water Level (kPa)	Water Level (ft)	Flow Rate (gpm)	Flow Volume (gal)*	Notes
03-04-20	3:30:00 AM	1.17	0.392	59.2	890	
03-04-20	3:45:00 AM	1.17	0.392	59.3	890	
03-04-20	4:00:00 AM	1.17	0.392	59.3	890	
03-04-20	4:15:00 AM	1.17	0.393	59.6	890	
03-04-20	4:30:00 AM	1.12	0.373	52.0	780	
03-04-20	4:45:00 AM	1.11	0.371	51.2	770	
03-04-20	5:00:00 AM	1.13	0.377	53.5	800	
03-04-20	5:15:00 AM	1.15	0.384	56.2	840	
03-04-20	5:30:00 AM	1.11	0.372	51.8	780	
03-04-20	5:45:00 AM	1.13	0.379	54.3	810	
03-04-20	6:00:00 AM	1.16	0.387	57.3	860	
03-04-20	6:15:00 AM	1.17	0.393	59.6	890	
03-04-20	6:30:00 AM	1.12	0.375	52.9	790	
03-04-20	6:45:00 AM	1.13	0.377	53.4	800	
03-04-20	7:00:00 AM	1.13	0.376	53.3	800	
03-04-20	7:15:00 AM	1.14	0.380	54.5	820	
03-04-20	7:30:00 AM	1.15	0.384	56.3	840	
03-04-20	7:45:00 AM	1.16	0.387	57.2	860	
03-04-20	8:00:00 AM	1.17	0.390	58.5	880	
03-04-20	8:15:00 AM	1.16	0.388	57.7	870	
03-04-20	8:30:00 AM	1.18	0.394	60.1	900	
03-04-20	8:45:00 AM	1.19	0.397	61.3	920	
03-04-20	9:00:00 AM	1.19	0.397	61.3	920	
03-04-20	9:15:00 AM	1.18	0.394	60.2	900	
03-04-20	9:30:00 AM	1.23	0.411	66.9	1,000	
03-04-20	9:45:00 AM	1.21	0.405	64.5	970	
03-04-20	10:00:00 AM	1.19	0.399	62.1	930	
03-04-20	10:15:00 AM	1.17	0.391	59.0	890	
03-04-20	10:30:00 AM	1.29	0.432	76.6	1,150	
03-04-20	10:45:00 AM	1.28	0.427	74.2	1,110	
03-04-20	11:00:00 AM	1.26	0.422	71.9	1,080	
03-04-20	11:15:00 AM	1.21	0.405	64.4	970	
03-04-20	11:30:00 AM	1.35	0.451	85.7	1,290	
03-04-20	11:45:00 AM	1.28	0.427	74.3	1,110	
03-04-20	12:00:00 PM	1.25	0.418	70.0	1,050	
03-04-20	12:15:00 PM	1.20	0.400	62.4	940	
03-04-20	12:30:00 PM	1.37	0.457	88.7	1,330	
03-04-20	12:45:00 PM	1.32	0.441	80.9	1,210	
03-04-20	1:00:00 PM	1.28	0.428	74.5	1,120	
03-04-20	1:15:00 PM	1.29	0.431	76.2	1,140	
03-04-20	1:30:00 PM	1.35	0.451	85.9	1,290	
03-04-20	1:45:00 PM	1.31	0.438	79.2	1,190	
03-04-20	2:00:00 PM	1.26	0.422	71.8	1,080	
03-04-20	2:15:00 PM	1.21	0.404	64.2	960	
03-04-20	2:30:00 PM	1.32	0.441	80.8	1,210	
Total					**91,390**	

Acronyms:

ft - feet   gpm - gallons per minute

gal - gallons   kPa - kilopascals

* - Flow volumes are calculated as the total volume of flow passing through the flume for the duration of the interval where the interval duration is calculated as the time between the present recording and the previous recording.

TABLE E6
SEEP D FLUME DATA
Chemours Fayetteville Works, North Carolina

Date	Time	Water Level (kPa)	Water Level (ft)	Flow Rate (gpm)	Corrected Flow Rate (gpm)*	Flow Volume (gal)**	Notes
4/2/2020	2:30:00 PM	1.99	0.66	242	120	1,800	
4/2/2020	2:45:00 PM	1.96	0.65	233	120	1,800	
4/2/2020	3:00:00 PM	1.87	0.62	206	120	1,800	
4/2/2020	3:15:00 PM	1.84	0.62	199	120	1,800	
4/2/2020	3:30:00 PM	1.86	0.62	204	120	1,800	
4/2/2020	3:45:00 PM	1.84	0.62	199	120	1,800	
4/2/2020	4:00:00 PM	1.82	0.61	193	120	1,800	
4/2/2020	4:15:00 PM	1.79	0.60	185	120	1,800	
4/2/2020	4:30:00 PM	1.78	0.60	184	120	1,800	
4/2/2020	4:45:00 PM	1.77	0.59	180	120	1,800	
4/2/2020	5:00:00 PM	1.75	0.59	175	120	1,800	
4/2/2020	5:15:00 PM	1.75	0.58	174	120	1,800	
4/2/2020	5:30:00 PM	1.68	0.56	156	120	1,800	
4/2/2020	5:45:00 PM	1.67	0.56	156	120	1,800	
4/2/2020	6:00:00 PM	1.68	0.56	158	120	1,800	
4/2/2020	6:15:00 PM	1.69	0.57	160	120	1,800	
4/2/2020	6:30:00 PM	1.62	0.54	142	120	1,800	
4/2/2020	6:45:00 PM	1.63	0.55	146	120	1,800	
4/2/2020	7:00:00 PM	1.66	0.55	152	120	1,800	
4/2/2020	7:15:00 PM	1.67	0.56	155	120	1,800	
4/2/2020	7:30:00 PM	1.56	0.52	131	120	1,800	
4/2/2020	7:45:00 PM	1.57	0.52	131	120	1,800	
4/2/2020	8:00:00 PM	1.57	0.53	132	120	1,800	
4/2/2020	8:15:00 PM	1.59	0.53	136	120	1,800	
4/2/2020	8:30:00 PM	1.57	0.53	132	120	1,800	
4/2/2020	8:45:00 PM	1.60	0.53	138	120	1,800	
4/2/2020	9:00:00 PM	1.62	0.54	143	120	1,800	
4/2/2020	9:15:00 PM	1.64	0.55	147	120	1,800	
4/2/2020	9:30:00 PM	1.56	0.52	130	120	1,800	
4/2/2020	9:45:00 PM	1.57	0.53	133	120	1,800	
4/2/2020	10:00:00 PM	1.57	0.53	132	120	1,800	
4/2/2020	10:15:00 PM	1.58	0.53	134	120	1,800	
4/2/2020	10:30:00 PM	1.52	0.51	122	120	1,800	
4/2/2020	10:45:00 PM	1.56	0.52	129	120	1,800	
4/2/2020	11:00:00 PM	1.58	0.53	133	120	1,800	
4/2/2020	11:15:00 PM	1.56	0.52	130	120	1,800	
4/2/2020	11:30:00 PM	1.54	0.51	125	120	1,800	
4/2/2020	11:45:00 PM	1.52	0.51	121	120	1,800	
4/3/2020	12:00:00 AM	1.49	0.50	116	116	1,740	
4/3/2020	12:15:00 AM	1.48	0.49	113	113	1,700	
4/3/2020	12:30:00 AM	1.51	0.51	120	120	1,800	
4/3/2020	12:45:00 AM	1.50	0.50	118	118	1,770	
4/3/2020	1:00:00 AM	1.49	0.50	115	115	1,730	
4/3/2020	1:15:00 AM	1.48	0.50	114	114	1,710	
4/3/2020	1:30:00 AM	1.48	0.50	113	113	1,700	
4/3/2020	1:45:00 AM	1.46	0.49	109	109	1,630	
4/3/2020	2:00:00 AM	1.51	0.51	120	120	1,800	
4/3/2020	2:15:00 AM	1.49	0.50	116	116	1,740	
4/3/2020	2:30:00 AM	1.55	0.52	127	120	1,800	
4/3/2020	2:45:00 AM	1.56	0.52	130	120	1,800	
4/3/2020	3:00:00 AM	1.56	0.52	130	120	1,800	
4/3/2020	3:15:00 AM	1.58	0.53	135	120	1,800	
4/3/2020	3:30:00 AM	1.54	0.51	125	120	1,800	
4/3/2020	3:45:00 AM	1.54	0.51	126	120	1,800	
4/3/2020	4:00:00 AM	1.55	0.52	127	120	1,800	
4/3/2020	4:15:00 AM	1.55	0.52	127	120	1,800	
4/3/2020	4:30:00 AM	1.50	0.50	116	116	1,750	
4/3/2020	4:45:00 AM	1.49	0.50	115	115	1,730	
4/3/2020	5:00:00 AM	1.51	0.50	119	119	1,790	
4/3/2020	5:15:00 AM	1.54	0.52	126	120	1,800	
4/3/2020	5:30:00 AM	1.50	0.50	118	118	1,770	
4/3/2020	5:45:00 AM	1.52	0.51	122	120	1,800	
4/3/2020	6:00:00 AM	1.56	0.52	130	120	1,800	
4/3/2020	6:15:00 AM	1.58	0.53	134	120	1,800	

TABLE E6
SEEP D FLUME DATA
Chemours Fayetteville Works, North Carolina

Date	Time	Water Level (kPa)	Water Level (ft)	Flow Rate (gpm)	Corrected Flow Rate (gpm)*	Flow Volume (gal)**	Notes
4/3/2020	6:30:00 AM	1.53	0.51	124	120	1,800	
4/3/2020	6:45:00 AM	1.54	0.51	125	120	1,800	
4/3/2020	7:00:00 AM	1.53	0.51	123	120	1,800	
4/3/2020	7:15:00 AM	1.52	0.51	121	120	1,800	
4/3/2020	7:30:00 AM	1.52	0.51	121	120	1,800	
4/3/2020	7:45:00 AM	1.51	0.51	120	120	1,800	
4/3/2020	8:00:00 AM	1.51	0.50	119	119	1,790	
4/3/2020	8:15:00 AM	1.51	0.50	119	119	1,790	
4/3/2020	8:30:00 AM	1.56	0.52	129	120	1,800	
4/3/2020	8:45:00 AM	1.58	0.53	134	120	1,800	
4/3/2020	9:00:00 AM	1.61	0.54	141	120	1,800	
4/3/2020	9:15:00 AM	1.66	0.55	152	120	1,800	
4/3/2020	9:30:00 AM	1.75	0.58	174	120	1,800	
4/3/2020	9:45:00 AM	1.77	0.59	181	120	1,800	
4/3/2020	10:00:00 AM	1.77	0.59	180	120	1,800	
4/3/2020	10:15:00 AM	1.76	0.59	178	120	1,800	
4/3/2020	10:30:00 AM	1.88	0.63	209	120	1,800	
4/3/2020	10:45:00 AM	1.86	0.62	205	120	1,800	
4/3/2020	11:00:00 AM	1.85	0.62	202	120	1,800	
4/3/2020	11:15:00 AM	1.82	0.61	194	120	1,800	
4/3/2020	11:30:00 AM	1.96	0.65	233	120	1,800	
4/3/2020	11:45:00 AM	1.83	0.61	195	120	1,800	
4/3/2020	12:00:00 PM	1.84	0.61	198	120	1,800	
4/3/2020	12:15:00 PM	1.81	0.61	192	120	1,800	
4/3/2020	12:30:00 PM	1.99	0.67	245	120	1,800	
4/3/2020	12:45:00 PM	1.85	0.62	201	120	1,100	
4/3/2020	12:54:08 PM	1.74	0.58	172	120	1,800	Level logger disturbed. Water level is average of the recordings before and after.
4/3/2020	1:09:08 PM	1.63	0.55	145	120	1,800	
4/3/2020	1:24:08 PM	1.58	0.53	133	120	1,800	
4/3/2020	1:39:08 PM	1.75	0.58	174	120	1,800	
4/3/2020	1:54:08 PM	1.69	0.57	160	120	1,800	
4/3/2020	2:09:08 PM	1.65	0.55	150	120	1,800	
4/3/2020	2:24:08 PM	1.61	0.54	140	120	1,800	
4/3/2020	2:39:08 PM	1.74	0.58	171	120	1,800	
Total						**174,840**	

Notes:
* - The maximum flow rate that can be accurately measured for the flume installed at Seep D is 120 GPM. This maximum flow rate was assumed any time the measured water level indicated a flow rate greater than 120 GPM. A larger flume was installed at Seep D after this sampling event.
** - Flow volumes are calculated as the total volume of flow passing through the flume for the duration of the interval where the interval duration is calculated as the time between the present recording and the previous recording.

Acronyms:

ft - feet	gpm - gallons per minute
gal - gallons	kPa - kilopascals

TABLE E7
OLD OUTFALL FLUME DATA
Chemours Fayetteville Works, North Carolina

Date	Time	Water Level (kPa)	Water Level (ft)	Flow Rate (gpm)	Flow Volume (gal)*	Notes
4/2/2020	2:45:00 PM	3.03	1.01	721	10,800	
4/2/2020	3:00:00 PM	3.00	1.00	702	10,500	
4/2/2020	3:15:00 PM	2.97	0.99	682	10,200	
4/2/2020	3:30:00 PM	2.97	0.99	685	10,300	
4/2/2020	3:45:00 PM	2.97	0.99	683	10,200	
4/2/2020	4:00:00 PM	2.95	0.99	673	10,100	
4/2/2020	4:15:00 PM	2.93	0.98	657	9,860	
4/2/2020	4:30:00 PM	2.94	0.98	666	9,990	
4/2/2020	4:45:00 PM	2.94	0.98	665	9,980	
4/2/2020	5:00:00 PM	2.93	0.98	663	9,940	
4/2/2020	5:15:00 PM	2.95	0.99	670	10,000	
4/2/2020	5:30:00 PM	2.90	0.97	644	9,660	
4/2/2020	5:45:00 PM	2.90	0.97	641	9,620	
4/2/2020	6:00:00 PM	2.90	0.97	644	9,670	
4/2/2020	6:15:00 PM	2.91	0.97	648	9,720	
4/2/2020	6:30:00 PM	2.85	0.95	613	9,200	
4/2/2020	6:45:00 PM	2.87	0.96	624	9,360	
4/2/2020	7:00:00 PM	2.90	0.97	641	9,610	
4/2/2020	7:15:00 PM	2.91	0.97	648	9,730	
4/2/2020	7:30:00 PM	2.81	0.94	593	8,900	
4/2/2020	7:45:00 PM	2.81	0.94	594	8,910	
4/2/2020	8:00:00 PM	2.83	0.95	600	9,000	
4/2/2020	8:15:00 PM	2.85	0.95	611	9,170	
4/2/2020	8:30:00 PM	2.83	0.95	600	9,000	
4/2/2020	8:45:00 PM	2.86	0.96	618	9,270	
4/2/2020	9:00:00 PM	2.89	0.97	636	9,540	
4/2/2020	9:15:00 PM	2.91	0.97	646	9,680	
4/2/2020	9:30:00 PM	2.84	0.95	609	9,140	
4/2/2020	9:45:00 PM	2.85	0.95	614	9,220	
4/2/2020	10:00:00 PM	2.85	0.95	615	9,230	
4/2/2020	10:15:00 PM	2.87	0.96	626	9,400	
4/2/2020	10:30:00 PM	2.81	0.94	593	8,900	
4/2/2020	10:45:00 PM	2.85	0.95	613	9,190	
4/2/2020	11:00:00 PM	2.85	0.95	616	9,230	
4/2/2020	11:15:00 PM	2.85	0.95	616	9,240	
4/2/2020	11:30:00 PM	2.85	0.95	614	9,210	
4/2/2020	11:45:00 PM	2.86	0.96	620	9,300	
4/3/2020	12:00:00 AM	2.85	0.95	614	9,220	
4/3/2020	12:15:00 AM	2.85	0.95	616	9,240	
4/3/2020	12:30:00 AM	2.90	0.97	642	9,630	
4/3/2020	12:45:00 AM	2.89	0.97	639	9,580	
4/3/2020	1:00:00 AM	2.89	0.97	639	9,580	
4/3/2020	1:15:00 AM	2.89	0.97	635	9,520	
4/3/2020	1:30:00 AM	2.91	0.97	646	9,680	
4/3/2020	1:45:00 AM	2.87	0.96	628	9,410	
4/3/2020	2:00:00 AM	2.88	0.96	629	9,430	
4/3/2020	2:15:00 AM	2.85	0.95	616	9,240	
4/3/2020	2:30:00 AM	2.91	0.97	647	9,710	
4/3/2020	2:45:00 AM	2.91	0.97	647	9,710	
4/3/2020	3:00:00 AM	2.91	0.97	648	9,730	
4/3/2020	3:15:00 AM	2.93	0.98	660	9,900	
4/3/2020	3:30:00 AM	2.88	0.96	632	9,470	
4/3/2020	3:45:00 AM	2.88	0.96	630	9,460	
4/3/2020	4:00:00 AM	2.89	0.97	635	9,530	
4/3/2020	4:15:00 AM	2.88	0.96	632	9,470	
4/3/2020	4:30:00 AM	2.83	0.95	601	9,010	
4/3/2020	4:45:00 AM	2.83	0.95	600	9,000	
4/3/2020	5:00:00 AM	2.83	0.95	605	9,070	
4/3/2020	5:15:00 AM	2.86	0.96	621	9,310	
4/3/2020	5:30:00 AM	2.82	0.94	598	8,970	

TABLE E7
OLD OUTFALL FLUME DATA
Chemours Fayetteville Works, North Carolina

Date	Time	Water Level (kPa)	Water Level (ft)	Flow Rate (gpm)	Flow Volume (gal)*	Notes
4/3/2020	5:45:00 AM	2.85	0.95	613	9,200	
4/3/2020	6:00:00 AM	2.88	0.96	629	9,440	
4/3/2020	6:15:00 AM	2.89	0.97	635	9,520	
4/3/2020	6:30:00 AM	2.84	0.95	607	9,110	
4/3/2020	6:45:00 AM	2.84	0.95	611	9,160	
4/3/2020	7:00:00 AM	2.84	0.95	607	9,110	
4/3/2020	7:15:00 AM	2.85	0.95	612	9,180	
4/3/2020	7:30:00 AM	2.87	0.96	623	9,350	
4/3/2020	7:45:00 AM	2.86	0.96	621	9,310	
4/3/2020	8:00:00 AM	2.88	0.96	629	9,440	
4/3/2020	8:15:00 AM	2.87	0.96	625	9,370	
4/3/2020	8:30:00 AM	2.90	0.97	643	9,640	
4/3/2020	8:45:00 AM	2.90	0.97	642	9,630	
4/3/2020	9:00:00 AM	2.89	0.97	635	9,520	
4/3/2020	9:15:00 AM	2.89	0.97	634	9,510	
4/3/2020	9:30:00 AM	2.95	0.99	672	10,100	
4/3/2020	9:45:00 AM	2.92	0.98	652	9,780	
4/3/2020	10:00:00 AM	2.90	0.97	643	9,640	
4/3/2020	10:15:00 AM	2.87	0.96	625	9,370	
4/3/2020	10:30:00 AM	3.00	1.00	703	10,500	
4/3/2020	10:45:00 AM	2.98	1.00	691	10,400	
4/3/2020	11:00:00 AM	2.95	0.99	670	10,000	
4/3/2020	11:15:00 AM	2.90	0.97	641	9,610	
4/3/2020	11:30:00 AM	3.02	1.01	717	10,800	
4/3/2020	11:45:00 AM	2.96	0.99	677	10,200	
4/3/2020	12:00:00 PM	2.92	0.98	657	9,850	
4/3/2020	12:15:00 PM	2.87	0.96	628	9,410	
4/3/2020	12:30:00 PM	3.04	1.02	729	6,940	
4/3/2020	12:39:31 PM	3.01	1.01	708	10,600	Level logger disturbed. Water level is average of the recordings before and after.
4/3/2020	12:54:31 PM	2.97	1.00	687	10,300	
4/3/2020	1:09:31 PM	2.90	0.97	645	9,670	
4/3/2020	1:24:31 PM	3.07	1.03	748	11,200	
4/3/2020	1:39:31 PM	3.03	1.01	722	10,800	
4/3/2020	1:54:31 PM	2.97	0.99	683	10,200	
4/3/2020	2:09:31 PM	2.93	0.98	657	9,860	
4/3/2020	2:24:31 PM	3.04	1.02	728	10,900	
4/3/2020	2:39:31 PM	3.02	1.01	716	10,700	
Total					**932,160**	

Acronyms:

ft - feet gpm - gallons per minute
gal - gallons kPa - kilopascals

* - Flow volumes are calculated as the total volume of flow passing through the flume for the duration of the interval where the interval duration is calculated as the time between the present recording and the previous recording.

TABLE E8
WILLIS CREEK VOLUMETRIC DISCHARGE CALCULATIONS
Chemours Fayetteville Works, North Carolina

Measurement Point	Cell	Distance Along Measured Cross Section (ft)	Measured Water Column Depth (in)	Measured Water Column Depth (ft)	Calculated Creek Cell Area[2] (ft^2)	Measured Creek Velocity (ft/s)	Calculated Discharge Through Creek Cell Area[1] (ft^3/s)
Eastern bank	1	0	0	0.0	-	0.00	-
Bottom of creek	2	5	14	1.17	2.92	0.14	0.70
middle of creek		5	7	0.58	-	0.24	-
top of creek		5	0	0.00	-	0.27	-
bottom	3	10	40	3.33	11.3	0.03	3.49
middle		10	20	1.67	-	0.31	-
top		10	0	0.00	-	0.33	-
bottom	4	15	25	2.08	13.5	0.03	4.88
middle		15	12.5	1.04	-	0.36	-
top		15	0	0.00	-	0.46	-
bottom	5	20	21	1.75	4.38	0.03	1.79
middle		20	10.5	0.88	-	0.41	-
top		20	0	0.00	-	0.36	-
bottom	6	25	18	1.5	3.75	0.04	1.05
middle		25	9	0.8	-	0.28	-
top		25	0	0.0	-	0.36	-
bottom	7	30	22	1.8	4.58	0.01	1.10
middle		30	11	0.9	-	0.24	-
top		30	0	0.0	-	0.31	-
Eastern bank of creek	8	35	0	0.0	-	0.00	-

Total Volumetric Discharge	
(ft^3/s)	11.91
(gpm)	5344
(L/s)	337.15

Associated Measurement Notes

Location: Chemours Fayetteville

Station: Willis Creek 01 (SW-WC-01)

Date: 03 April 2020

Acronyms

- - data not measured or calculated

in - inches

ft - feet

ft^2 - square feet

ft/s - feet per second

ft^3/s - cubic feet per second

gpm - gallons per minute

Notes

[1] Discharge is calculated as product of creek velocity measured at the mid-depth (feet per second) times the cross sectional area of each measurement cell.

[2] Measurement cell areas are calculated assuming a trapezoidal geometry based on distances between Measurement points and the measured water column depths. A measurement cell is an areal section from the width of the river channel.

TABLE E9
GEORGIA BRANCH CREEK VOLUMETRIC DISCHARGE CALCULATIONS
Chemours Fayetteville Works, North Carolina

Measurement Point	Cell	Distance Along Measured Cross Section (ft)	Measured Water Column Depth (in)	Measured Water Column Depth (ft)	Calculated Creek Cell Area[2] (ft^2)	Measured Creek Velocity (ft/s)	Calculated Discharge Through Creek Cell Area[1] (ft^3/s)
South bank	1	0	0	0.0	-	0	-
bottom	2	5	37	3.1	7.71	0.04	0.85
middle		5	18.5	1.5	-	0.11	-
top		5	0	0.0	-	0.16	-
bottom	3	10	28	2.3	13.54	0.02	3.39
middle		10	14	1.2	-	0.25	-
top		10	0	0.0	-	0.27	-
bottom	4	15	22	1.8	10.42	0.02	2.81
middle		15	11	0.9	-	0.27	-
top		15	0	0.0	-	0.32	-
bottom	5	20	19	1.6	8.54	0.03	2.39
middle		20	8.5	0.7	-	0.28	-
top		20	0	0.0	-	0.3	-
bottom	6	25	16.5	1.4	7.40	0.02	1.11
middle		25	8.25	0.7	-	0.15	-
top		25	0	0.0	-	0.22	-
North bank	7	30	0	0.0	3.44	0	-

Total Volumetric Discharge	
(ft^3/s)	10.55
(gpm)	4734
(L/s)	298.65

Associated Measurement Notes
Location: Chemours Fayetteville
Station: Georgia Branch 01 (SW-GB-01)
Date: 02 April 2020

Acronyms
- - data not measured or calculated
in - inches
ft - feet
ft^2 - square feet
ft/s - feet per second
ft^3/s - cubic feet per second
gpm - gallons per minute

Notes
[1] Discharge is calculated as product of creek velocity measured at the mid-depth (feet per second) times the cross sectional area of each measurement cell.
[2] Measurement cell areas are calculated assuming a trapezoidal geometry based on distances between Measurement points and the measured water column depths. A measurement cell is an areal section from the width of the river channel.

TABLE E10
OUTFALL 002 FLOW RATE
Chemours Fayetteville Works, North Carolina

Date	Outfall 002 Flow (MGD)	Total Daily Volume (gal)	Hours of Sample Collection	Approximate Total Volume during 24 hour Sample Collection (gal)
4/2/2020	22.5	22,466,000	9	8,424,750
4/3/2020	23.4	23,416,000	15	14,635,000
4/2/2020 3:00 pm to 4/3/2020 3:00 pm			24	23,059,750

Notes:
Daily flow rates collected from facility Discharge Monitoring Reports.
Total flow volume for 24-hour temporal composite sample collected at 3 pm on 4/3/2020 approximated based on flow rates for 4/2/2020 and 4/3/2020
Acronyms:
gal - gallons
MGD - millions of gallons per day

TABLE E11
RIVER FLOW RATES
Chemours Fayetteville Works, North Carolina

Pathway/ Location	Sample Collection Timepoint	Flow Gauging Location[1]	Travel Time Offset (hr)[2]	Adjusted Flow Gauging Timepoint	Composite Sample 24-Hour Flow Volume (MGD)[3]	Grab Sample Instantaneous Flow Rate (ft^3/s)[4]
Upstream River Water and Groundwater	4/2/2020 9:30	William O Huske Lock and Dam	--	4/2/2020 9:30	3,410	--
Tarheel (Composite Sample)	4/3/2020 15:00	William O Huske Lock and Dam	6	4/3/2020 9:00	2,550	--
Tarheel (Grab Sample)	4/2/2020 15:45	William O Huske Lock and Dam	5	4/2/2020 10:45	--	4,740
Bladen Bluff	4/2/2020 14:45	William O Huske Lock and Dam	3	4/2/2020 11:45	--	4,690
Kings Bluff	4/6/2020 10:15	Cape Fear River Lock and Dam #1	--	4/6/2020 10:15	--	2,890

Notes:

1 - Flow rate measured at USGS gauging station #02105500 located at William O Huske Lock & Dam and USGS gauging station # 02105769 located at Lock and Dam #1 near Kelly, North Carolina

2 - Flow rates measured at William O Huske Lock and Dam were used for mass loading assessments at Tarheel and Bladen Bluff sample locations. Travel times between William O Huske Lock and Dam and the downstream locations were estimated based on the results of a numerical model of the Cape Fear River developed by Geosyntec which developed a regression curve between the USGS reported gage heights at William O Huske Lock and Dam and travel times.

3 - Total flow volume for composite samples is based on measurements taken over 24-hour sample collection period.

4 - Instantaneous flow rate for grab samples is the recorded flow rate at the time of grab sample collection.

Acronyms:

ft^3/s - cubic feet per second

hr - hours

MGD - millions of gallons per day

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

APPENDIX F

Field Forms

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	Bladen-1D	Well Diameter:	2 Inches
Samplers:	MEGAN JUNOD Brandon Weidner	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Low Flow: Geo Pump | Date: 02-11-2020 | Time: 15:10

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = -3.056

Initial Depth to Water (ft.): 19.1 | Depth to Well Bottom (ft.):

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
15:20	19.17	200.00	1000.00	11.74	0.32	27.80	263.59	0.67	19.97	Cloudy	No	Volume is in milliliters.
15:25	19.18	200.00	1000.00	7.47	0.17	36.60	36.39	0.09	19.74	Clear	No	Volume is in milliliters.
15:30	19.18	200.00	1000.00	6.16	0.12	62.40	22.09	0.08	19.65	Clear	No	Volume is in milliliters.
15:35	19.18	200.00	1000.00	6.1	0.10	52.10	16.21	0.08	19.60	Clear	No	Volume is in milliliters.
15:40	19.18	200.00	1000.00	5.95	0.09	47.80	11.58	0.07	19.56	Clear	No	Volume is in milliliters.
15:45	19.19	200.00	1000.00	5.89	0.08	41.70	4.80	0.07	19.62	Cleat	No	Volume is in milliliters.
15:50	19.19	200.00	1000.00	5.92	0.07	36.70	5.43	0.07	19.63	Clear	No	Volume is in milliliters.
15:55	19.19	200.00	1000.00	5.82	0.07	32.00	7.87	0.07	19.43	Clear	No	Volume is in milliliters.
16:00	19.19	200.00	1000.00	5.8	0.08	27.20	4.25	0.07	19.58	Clear	No	Volume is in milliliters.
16:05	19.19	200.00	1000.00	5.87	0.07	23.10	4.46	0.07	19.54	Clear	No	Volume is in milliliters.
16:08	19.19	200.00	600.00	5.77	0.06	20.10	3.92	0.07	19.53	Cleat	No	Volume is in milliliters.
16:11	19.19	200.00	600.00	5.75	0.06	17.80	5.02	0.07	19.48	Clear	No	Volume is in milliliters.
16:14	19.19	200.00	600.00	5.8	0.06	14.80	5.56	0.07	19.47	Clear	No	Volume is in milliliters.
16:17	19.20	200.00	600.00	5.72	0.06	12.60	4.44	0.07	19.44	Clear	No	Volume is in milliliters.
16:20	19.20	200.00	600.00	5.83	0.06	10.00	5.05	0.07	19.54	Clear	No	Volume is in milliliters.
16:23	19.20	200.00	600.00	5.85	0.06	8.10	4.93	0.07	19.57	Clear	No	Volume is in milliliters.

Sampling Data

Zero HS:

Method: Peristaltic Pump | Date: 02-11-2020 | Time: 16:25 | Total Volume Purged (gallons): 3.33

Field Parameters

STABILIZED PARAMETERS	
pH	5.85
Spec. Cond.(mS/cm)	0.07
Turbidity (NTU)	4.93
Temp.(^oC)	19.57
DO (mg/L)	0.06
ORP (mV)	8.10

Screen Interval: 37 - 47

Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-BLADEN-1D-021120

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	75.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	5

Parsons PLUS creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville
Location ID: CFR-BLADEN
Samplers: LUKE TART, James Briggs
Event: Quarterly CAP
Project Manager: Tracy Ovbey
Date: 04-02-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CAP1Q20-CFR-BLADEN-040220	04-02-2020	14:45	6.51	8.41	118.80	16.88	0.09	16.88	Cloudy	None	X	

Sampling Data

Method: Peri Pump Grab
Latitude: 34.7724499460634
Longitude: -78.7982437201578

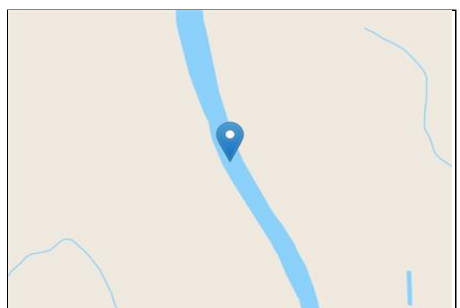
SAMPLE SET			
Parameter	**Bottle**	**Pres.**	**Method**
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3 (Special); Table 3+(20)

WEATHER CONDITIONS	
Temperature (F):	65.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	7

Flow Rate:



GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: CFR-KINGS

Samplers: , Brandon Weidner

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 04-06-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CAP1Q20-CFR-KINGS-040620	04-06-2020	10:15	7.25	7.45	56.70	12.68	0.09	17.71	Clear	No		

Sampling Data

Method: Peri Pump Grab

Latitude: 0

Longitude: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3 (Special); Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	67.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	9

Flow Rate:

GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: CFR-RM-76

Samplers: CHARLES PACE,

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 04-02-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CAP1Q20-CFR-RM-76-040220	04-02-2020	09:20	7.03	8.89	77.10	3.81	0.00	14.61				

Sampling Data

Method: Peri Pump Grab

Latitude: 0

Longitude: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3 (Special); Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	51.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	9

Flow Rate:

GPS Location (if collected)

Parsons PLUS creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: CFR-TARHEEL

Samplers: LUKE TART, James Briggs

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 04-02-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	^{o}C				
CAP1Q20-CFR-TARHEEL-040220	04-02-2020	15:45	6.73	8.34	100.50	14.85	0.10	17.04	Cloudy	None		

Sampling Data

Method: Peri Pump Grab

Latitude: 34.744500909033

Longitude: -78.7854432967294

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

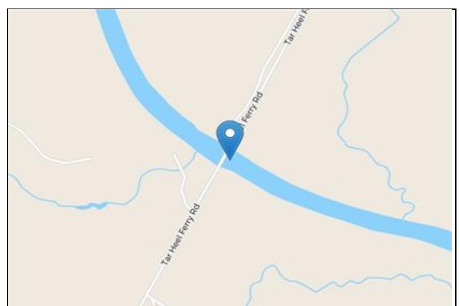
EPA 537 Modified; Table 3 (Special); Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	67.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	8

Staff gauge water level, ft: 4.1

Flow Rate:



GPS Location (if collected)

Parsons PLUS creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: CFR-TARHEEL

Samplers: LUKE TART,

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 4/3/2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CAP1Q20-CFR-TARHEEL-24-040320	04-03-2020	15:00	6.80	8.59	142.30	12.09	0.32	18.02				

Sampling Data

Method: 24H ISCO

Latitude: 0

Longitude: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3 (Special); Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	6

Flow Rate:

GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: EXCESS RIVER WATER

Samplers: LUKE TART,

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 4/3/2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CAP1Q20-EXCESS RIVER WATER-24-	04-03-2020	14:39	7.48	8.68	85.70	9.70	0.12	18.74				

Sampling Data

Method: 24H ISCO

Latitude: 0

Longitude: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3 (Special); Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	6

Flow Rate:

GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: GBC-1

Samplers: MATT SCHEUER,

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 04-02-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CAP1Q20-GBC-1-040220	04-02-2020	13:45	4.91	8.29	120.80	20.69	0.10	16.99	Cloudy	N/A		

Sampling Data

Method: Peri Pump Grab

Latitude: 0

Longitude: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	64.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	11

Flow Rate:		

GPS Location (if collected)

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	LTW-01	Well Diameter:	2 Inches
Samplers:	MEGAN JUNOD Danielle Delgado	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Peristaltic Pump | Date: 02-24-2020 | Time: 14:07

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	2.576		
Initial Depth to Water (ft.):	12.65	Depth to Well Bottom (ft.):	28.75

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
14:30	12.76	200.00	1000.00	3.9	0.43	151.50	22.94	0.10	15.07	Clear	No	Volume is in milliliters.
14:35	12.78	200.00	1000.00	3.92	0.20	259.30	33.42	0.10	15.35	Clear	No	Volume is in milliliters.
14:40	12.78	200.00	1000.00	3.92	0.13	307.60	36.36	0.10	15.45	Clesr	No	Volume is in milliliters.
14:45	12.79	200.00	1000.00	3.91	0.10	327.70	28.03	0.10	15.39	Clear	No	Volume is in milliliters.
14:50	12.79	200.00	1000.00	3.89	0.11	336.70	19.26	0.10	15.25	Clear	No	Volume is in milliliters.
14:55	12.80	200.00	1000.00	3.89	0.10	346.10	16.70	0.10	15.38	Clear	No	Volume is in milliliters.
15:00	12.80	200.00	1000.00	3.89	0.09	354.90	14.10	0.10	15.31	Clear	No	Volume is in milliliters.

Sampling Data

Zero HS:

Method: Peristaltic Pump | Date: 02-24-2020 | Time: 15:05 | Total Volume Purged (gallons): 1.85

Field Parameters

STABILIZED PARAMETERS	
pH	3.89
Spec. Cond.(mS/cm)	0.10
Turbidity (NTU)	14.10
Temp.(°C)	15.31
DO (mg/L)	0.09
ORP (mV)	354.90

Screen Interval: 11.0-26.0

SAMPLE SET				
Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-LTW-01-022420

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	53.00
Sky:	Cloudy
Precipitation:	Rain
Wind (mph)	4

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	LTW-02	Well Diameter:	2 Inches
Samplers:	MEGAN JUNOD Danielle Delgado	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Peristaltic Pump Date: 02-24-2020 Time: 10:57

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 5.168

Initial Depth to Water (ft.): 8.35 Depth to Well Bottom (ft.): 40.65

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
11:20	8.43	200.00	1000.00	5.37	0.28	113.70	9.73	0.08	15.83	Clear	No	Volume is in milliliters.
11:25	8.45	200.00	1000.00	5.02	0.16	118.50	2.91	0.07	16.07	Clear	No	Volume is in milliliters.
11:30	8.44	200.00	1000.00	4.94	0.07	112.90	1.20	0.07	15.98	Clear	No	Volume is in milliliters.
11:35	8.45	200.00	1000.00	4.85	0.09	111.50	0.72	0.06	15.93	Clear	No	Volume is in milliliters.
11:40	8.45	200.00	1000.00	4.85	0.07	107.70	0.09	0.06	15.87	Clear	No	Volume is in milliliters.
11:45	8.45	200.00	1000.00	4.86	0.06	105.20	0.09	0.06	15.94	Clear	No	Volume is in milliliters.

Sampling Data

Zero HS:

Method: Peristaltic Pump Date: 02-24-2020 Time: 11:50 Total Volume Purged (gallons): 1.59

Field Parameters

STABILIZED PARAMETERS	
pH	4.86
Spec. Cond.(mS/cm)	0.06
Turbidity (NTU)	0.09
Temp.(^oC)	15.94
DO (mg/L)	0.06
ORP (mV)	105.20

Screen Interval: 28.0-38.0

SAMPLE SET				
Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-LTW-02-022420

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	54.00
Sky:	Cloudy
Precipitation:	Rain
Wind (mph)	4

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	LTW-04	Well Diameter:	2 Inches
Samplers:	OTHER Ezio Ambrosetti	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Low Flow: Geo Pump Date: 02-20-2020 Time: 12:31

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	3.534		
Initial Depth to Water (ft.):	6.41	Depth to Well Bottom (ft.):	28.5

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
12:48	7.62	250.00		4.14	1.01	300.50	40.12	104.47	12.97	Clear	No	
12:53	9.15	250.00		4.15	0.96	348.90	47.97	100.22	12.95	Clear	No	
12:58	9.87	250.00		4.16	0.93	367.50	55.08	98.67	13.09	Clear	No	
13:03	10.38	250.00		4.18	0.84	369.20	22.30	95.20	13.04	Clear	No	
13:08	10.97	250.00		4.22	0.82	367.70	19.53	94.09	13.16	Clear	No	
13:13	11.64	250.00		4.25	0.79	362.50	18.75	94.42	13.17	Clear	No	

Sampling Data

Zero HS:

Method: Peristaltic Pump Date: 02-20-2020 Time: 13:25 Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.25
Spec. Cond.(mS/cm)	94.42
Turbidity (NTU)	18.75
Temp.(^oC)	13.17
DO (mg/L)	0.79
ORP (mV)	362.50

Screen Interval: 12.0-27.0

SAMPLE SET				
Parameter	**Bottle**	**Pres.**	**Method**	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-LTW-04-022020

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	44.00
Sky:	Cloudy
Precipitation:	Rain
Wind (mph)	2

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	LTW-05	Well Diameter:	2 Inches
Samplers:	MEGAN JUNOD Ezio Ambrosetti	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Peristaltic Pump Date: 02-19-2020 Time: 15:00

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	6.438		
Initial Depth to Water (ft.):	8.01	Depth to Well Bottom (ft.):	48.25

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^{o}C			
15:20	8.21	300.00	1200.00	4.12	0.90	394.20	286.28	0.13	15.54	Cloudy	No	Volume is in milliliters.
15:25	8.25	300.00	1500.00	4.13	0.39	416.80	264.62	0.13	15.93	Cloudy	No	Volume is in milliliters.
15:30	8.26	300.00	1500.00	4.16	0.27	415.00	71.40	0.13	15.89	Slightly Cloudy	No	Volume is in milliliters.
15:35	8.26	300.00	1500.00	4.18	0.25	407.40	74.70	0.13	16.15	Slightly Cloudy	No	Volume is in milliliters.
15:40	8.27	300.00	1500.00	4.25	0.16	379.10	59.50	0.13	16.03	Slightly Cloudy	No	Volume is in milliliters.
15:45	8.27	300.00	1500.00	4.29	0.13	359.90	37.70	0.13	16.08	Slightly Cloudy	No	Volume is in milliliters.
15:50	8.28	300.00	1500.00	4.3	0.12	351.20	31.40	0.12	16.00	Clear	No	Volume is in milliliters.
15:55	8.29	300.00	1500.00	4.31	0.23	350.00	32.10	0.12	16.18	Clear	No	Volume is in milliliters.
16:00	8.29	300.00	1500.00	4.32	0.20	343.90	30.70	0.12	16.07	Clear	No	Volume is in milliliters.

Sampling Data

Zero HS:

Method: Peristaltic Pump Date: 02-19-2020 Time: 16:05 Total Volume Purged (gallons): 3.49

Field Parameters

STABILIZED PARAMETERS	
pH	4.32
Spec. Cond.(mS/cm)	0.12
Turbidity (NTU)	30.70
Temp.(^{o}C)	16.07
DO (mg/L)	0.20
ORP (mV)	343.90

Screen Interval: 29.0-44.0

SAMPLE SET				
Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-LTW-05-021920

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	51.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	11

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: OLDOF-1

Samplers: LUKE TART,

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 4/2/2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
OLDOF-1-040220	04-02-2020	13:50	6.73	8.77	104.90	15.57	0.16	20.55				

Sampling Data

Method: Other

Latitude: 0

Longitude: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

0

WEATHER CONDITIONS	
Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	6

Flow Rate:

Parameters taken during 24hr sampling program

GPS Location (if collected)

Parsons PLUS
creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: OLDOF-1

Samplers: LUKE TART,

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 4/3/2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CAP1Q20-OLDOF-1-24-040320	04-03-2020	14:42	3.63	8.90	235.50	4.58	0.30	17.17				

Sampling Data

Method: 24H ISCO

Latitude: 0

Longitude: 0

SAMPLE SET			
Parameter	**Bottle**	**Pres.**	**Method**
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3 (Special); Table 3+(20)

WEATHER CONDITIONS	
Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	5

Flow Rate:

GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: OUTFALL 002

Samplers: LUKE TART,

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 4/3/2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CAP1Q20-OUTFALL 002-040320	04-03-2020	14:36	7.44	8.29	111.30	9.53	0.20	20.27				

Sampling Data

Method: 24H ISCO

Latitude: 0

Longitude: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3 (Special); Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	4

Flow Rate:

GPS Location (if collected)

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-1D	Well Diameter:	2 Inches
Samplers:	MEGAN JUNOD Danielle Delgado	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Peristaltic Pump Date: 02-14-2020 Time: 10:34

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	3.266		
Initial Depth to Water (ft.):	11.31	Depth to Well Bottom (ft.):	31.72

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
10:48	11.36	230.00	1150.00	3.69	0.65	387.80	49.90	0.20	14.04	Clear	No	Volume is in milliliters.
10:53	11.36	230.00	1150.00	3.69	0.26	412.20	50.60	0.20	14.43	Clear	No	Volume is in milliliters.
10:58	11.36	230.00	1150.00	3.68	0.17	435.90	32.75	0.20	14.39	Clear	No	Volume is in milliliters.
11:03	11.36	230.00	1150.00	3.67	0.14	449.60	21.43	0.20	14.73	Clear	No	Volume is in milliliters.
11:08	11.36	230.00	1150.00	3.67	0.12	447.70	16.16	0.20	14.89	Clear	No	Volume is in milliliters.
11:13	11.36	230.00	1150.00	3.66	0.09	439.10	12.81	0.20	14.97	Clear	No	Volume is in milliliters.
11:18	11.36	230.00	1150.00	3.66	0.08	430.60	6.95	0.20	15.09	Clear	No	Volume is in milliliters.

Sampling Data

Zero HS:

Method: Peristaltic Pump Date: 02-14-2020 Time: 11:20 Total Volume Purged (gallons): 1.82

Field Parameters

STABILIZED PARAMETERS	
pH	3.66
Spec. Cond.(mS/cm)	0.20
Turbidity (NTU)	6.95
Temp.(^oC)	15.09
DO (mg/L)	0.08
ORP (mV)	430.60

Screen Interval: 24.5 to 29.5

SAMPLE SET				
Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-PIW-1D-021420

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	46.00
Sky:	Partly Cloudy
Precipitation:	None
Wind (mph)	10

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-1S	Well Diameter:	2 Inches
Samplers:	MEGAN JUNOD Brandon Weidner	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:
Pump Loc: within screen

Method: Peristaltic Pump Date: 02-13-2020 Time: 12:45

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 1.451

Initial Depth to Water (ft.): 13.13 Depth to Well Bottom (ft.): 22.2

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
13:17	13.25	250.00	1250.00	3.66	2.33	424.20	35.03	0.40	18.17	Clear	No	Volume is in milliliters.
13:22	13.28	250.00	1250.00	3.55	2.30	442.00	31.31	0.40	17.85	Clear	No	Volume is in milliliters.
13:27	13.31	250.00	1250.00	3.54	2.42	451.40	16.13	0.41	17.34	Clear	No	Volume is in milliliters.
13:32	13.34	250.00	1250.00	3.55	2.46	454.00	9.95	0.40	16.69	Clear	No	Volume is in milliliters.
13:37	13.34	250.00	1250.00	3.56	2.43	455.20	7.59	0.40	16.43	Clear	No	Volume is in milliliters.

Sampling Data

Zero HS:

Method: Peristaltic Pump Date: 02-13-2020 Time: 13:40 Total Volume Purged (gallons): 1.32

Field Parameters

STABILIZED PARAMETERS	
pH	3.56
Spec. Cond.(mS/cm)	0.40
Turbidity (NTU)	7.59
Temp.(°C)	16.43
DO (mg/L)	2.43
ORP (mV)	455.20

Screen Interval: 7.8 - 17.8

Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-PIW-1S-021320

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	80.00
Sky:	Partly Cloudy
Precipitation:	None
Wind (mph)	8

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-3D	Well Diameter:	2 Inches
Samplers:	MEGAN JUNOD Danielle Delgado	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Peristaltic Pump Date: 02-24-2020 Time: 12:04

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	2.182		
Initial Depth to Water (ft.):	13.15	Depth to Well Bottom (ft.):	26.79

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
12:20	13.52	200.00	1000.00	6.53	0.18	-39.20	114.41	0.13	15.84	Cloudy	No	Volume is in milliliters.
12:25	13.54	200.00	1000.00	6.24	0.11	-50.00	133.74	0.12	15.84	Cloudy	No	Volume is in milliliters.
12:30	13.55	200.00	1000.00	6.19	0.09	-51.90	59.00	0.11	15.87	Clear	No	Volume is in milliliters.
12:35	13.57	200.00	1000.00	6.09	0.08	-50.80	39.63	0.11	15.94	Clear	Mo	Volume is in milliliters.
12:40	13.58	200.00	1000.00	5.88	0.07	-50.20	40.25	0.10	16.14	Cleat	No	Volume is in milliliters.
12:45	13.58	200.00	1000.00	5.86	0.06	-50.40	32.96	0.10	15.95	Clear	Mo	Volume is in milliliters.
12:50	13.58	200.00	1000.00	5.79	0.06	-52.80	20.10	0.10	16.12	Clear	No	Water seems to have iron oxide sediment. Volume is in milliliters.

Sampling Data

Zero HS:

Method: Peristaltic Pump Date: 02-24-2020 Time: 12:55 Total Volume Purged (gallons): 1.85

Field Parameters

STABILIZED PARAMETERS	
pH	5.79
Spec. Cond.(mS/cm)	0.10
Turbidity (NTU)	20.10
Temp.(°C)	16.12
DO (mg/L)	0.06
ORP (mV)	

Screen Interval: 19 - 24

SAMPLE SET				
Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-PIW-3D-022420

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	52.00
Sky:	Cloudy
Precipitation:	Rain
Wind (mph)	4

Parsons PLUS
creating a safer world

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-7D	Well Diameter:	2 Inches
Samplers:	MEGAN JUNOD Ezio Ambrosetti	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:
Pump Loc: within screen

Method: Peristaltic Pump   Date: 02-19-2020   Time: 11:40

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	5.246		
Initial Depth to Water (ft.):	4.21	Depth to Well Bottom (ft.):	37

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^{o}C			
12:07	4.21	300.00	900.00	6.12	0.14	-0.20	176.11	0.12	15.55	Cloudy	No	Volume is in milliliters.
12:15	4.25	300.00	2400.00	5.45	0.07	30.70	76.34	0.07	15.46	Cloudy	No	Volume is in milliliters.
12:20	4.26	300.00	1500.00	5.48	0.05	27.30	44.53	87.29	15.31	Cloudy	No	Volume is in milliliters.
12:25	4.26	300.00	1500.00	5.47	0.05	25.10	34.38	0.08	15.28	Clear	No	Volume is in milliliters.
12:30	4.26	300.00	1500.00	5.46	0.04	25.50	27.93	0.07	15.22	Clesr	No	Volume is in milliliters.
12:35	4.26	300.00	1500.00	5.48	0.04	21.20	33.27	0.07	15.31	Cleat	No	Volume is in milliliters.
12:40	4.26	300.00	1500.00	5.43	0.04	23.20	21.97	0.07	15.35	Clear	No	Volume is in milliliters.
12:45	4.26	300.00	1500.00	5.49	0.03	21.10	24.16	0.06	15.36	Clear	No	Volume is in milliliters.

Sampling Data

Zero HS:

Method: Peristaltic Pump   Date: 02-19-2020   Time: 12:53   Total Volume Purged (gallons): 3.25

Field Parameters

STABILIZED PARAMETERS	
pH	5.49
Spec. Cond.(mS/cm)	0.06
Turbidity (NTU)	24.16
Temp.(^{o}C)	15.36
DO (mg/L)	0.03
ORP (mV)	21.10

Screen Interval: 29 - 34

SAMPLE SET				
Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-PIW-7D-021920

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	54.00
Sky:	Cloudy
Precipitation:	Rain
Wind (mph)	12

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-7S	Well Diameter:	2 Inches
Samplers:	BRANDON WEIDNER E. Helton	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Peristaltic Pump Date: 02-19-2020 Time: 12:45

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	-0.629		
Initial Depth to Water (ft.):	3.93	Depth to Well Bottom (ft.):	

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^{o}C			
12:55	4.32	220.00	0.29	3.01	1.57	239.50	55.00	0.09	12.57	Cloudy	None	
13:00	4.35	220.00	0.29	3.56	0.66	194.20	44.10	0.09	12.61	Clear	None	
13:05	4.36	220.00	0.29	4.23	0.47	154.50	26.30	0.09	12.82	Clear	None	
13:10	4.38	220.00	0.29	4.19	0.47	144.60	22.10	0.09	12.64	Clear	None	
13:15	4.40	220.00	0.29	4.27	0.46	130.90	20.10	0.09	12.92	Clear	None	
13:20	4.41	220.00	0.29	4.51	0.34	123.20	17.20	0.09	12.83	Clear	None	
13:25	4.41	220.00	0.29	4.26	0.35	115.90	13.70	0.09	13.20	Clear	None	
13:30	4.42	220.00	0.29	4.32	0.32	110.20	14.90	0.09	13.31	Clear	None	
13:35	4.41	220.00	0.29	4.31	0.33	108.20	12.20	0.09	13.67	Clear	None	

Sampling Data

Zero HS:

Method:

Date: 02-19-2020 Time: 13:54 Total Volume Purged (gallons): 2.61

Field Parameters

STABILIZED PARAMETERS	
pH	4.31
Spec. Cond.(mS/cm)	0.09
Turbidity (NTU)	12.20
Temp.(^{o}C)	13.67
DO (mg/L)	0.33
ORP (mV)	108.20

Screen Interval: 7 - 17

SAMPLE SET				
Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-PIW-7S-021920

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	50.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	7

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PW-04	Well Diameter:	2 Inches
Samplers:	MEGAN JUNOD Brandon Weidner	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Low Flow: Geo Pump Date: 02-10-2020 Time: 13:22

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = -4.499

Initial Depth to Water (ft.): 28.12 Depth to Well Bottom (ft.):

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
13:47	28.80	100.00		3.68	0.31	124.60	2.43	0.37	19.22	Clear	No	
13:50	29.01	100.00		3.64	0.26	145.90	5.48	0.36	19.20	Clear	No	
13:53	29.28	100.00		3.61	0.22	202.40	11.52	0.38	19.04	Clear	No	
13:56	29.61	100.00		3.68	0.19	100.00	75.16	0.35	18.99	Cleat	No	
13:59	29.96	100.00		3.69	0.18	140.90	55.79	0.35	18.97	Clear	No	
14:02	30.25	100.00		3.7	0.20	182.40	48.53	0.36	19.08	Clear	No	
14:04	35.59	100.00		3.74	0.19	158.70	25.41	0.37	19.13	Clear	No	
14:07	3.71	100.00		3.76	0.22	140.40	19.98	0.37	19.42	Clear	No	
14:09	30.78	100.00		3.77	0.28	140.80	20.82	0.37	19.83	Clear	No	Well goes dry, will allow recharge, continue tomorrow

Sampling Data Zero HS:

Method: Date: 02-10-2020 Time: Total Volume Purged (gallons): 0.63

Field Parameters

STABILIZED PARAMETERS	
pH	3.77
Spec. Cond.(mS/cm)	0.37
Turbidity (NTU)	20.82
Temp.(^oC)	19.83
DO (mg/L)	0.28
ORP (mV)	140.80

Screen Interval: 17 - 27

SAMPLE SET			
Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

Sample ID:

DuplicateID:

Well ran dry

WEATHER CONDITIONS	
Temperature (F):	69.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	9

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: PW-04 | Well Diameter: 2 Inches

Samplers: MEGAN JUNOD Brandon Weidner | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Low Flow: Geo Pump | Date: 02-11-2020 | Time: 09:43

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = -4.48

Initial Depth to Water (ft.): 28 | Depth to Well Bottom (ft.):

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
10:07	29.05	100.00	0.05	3.79	0.19	316.90	5.73	0.37	19.06	Clear	No	Only took one set of parameters. Purged well dry the day before

Sampling Data

Zero HS:

Method: Peristaltic Pump | Date: 02-11-2020 | Time: 10:10 | Total Volume Purged (gallons): 0.053

Field Parameters

STABILIZED PARAMETERS	
pH	3.79
Spec. Cond.(mS/cm)	0.37
Turbidity (NTU)	5.73
Temp.(^oC)	19.06
DO (mg/L)	0.19
ORP (mV)	316.90

Screen Interval: 17 - 27

SAMPLE SET

Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-PW-04-021120

DuplicateID:

Well ran dry

WEATHER CONDITIONS	
Temperature (F):	69.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	7

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PW-06	Well Diameter:	2 Inches
Samplers:	BRANDON WEIDNER Luke Tart	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Low Flow: Geo Pump | Date: 02-06-2020 | Time: 15:05

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	-3.136		
Initial Depth to Water (ft.):	19.6	Depth to Well Bottom (ft.):	

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
15:23	20.98	225.00		4.83	1.07	235.10	15.06	0.06	18.97	Clear	No	
15:26	20.98	225.00		4.69	1.06	243.10	9.47	0.06	18.90	Clear	No	
15:29	20.98	225.00		4.71	1.07	228.80	8.00	0.05	18.77	Clear	No	
15:32	20.98	225.00		4.62	1.12	194.40	5.64	0.05	18.75	Clear	No	
15:35	20.98	225.00		4.77	1.18	162.80	5.19	0.05	18.52	Clear	No	
15:38	20.99	225.00		4.58	1.35	146.80	6.99	0.05	18.41	Clear	No	
15:41	20.99	225.00		4.6	1.36	142.30	5.08	0.05	18.44	Clear	No	
15:44	20.99	225.00		4.81	1.34	136.10	3.93	0.05	18.47	Clear	No	

Sampling Data

Zero HS:

Method: Peristaltic Pump | Date: 02-06-2020 | Time: 15:45 | Total Volume Purged (gallons): 1.5

Field Parameters

STABILIZED PARAMETERS	
pH	4.81
Spec. Cond.(mS/cm)	0.05
Turbidity (NTU)	3.93
Temp.(°C)	18.47
DO (mg/L)	1.34
ORP (mV)	136.10

Screen Interval: 19 - 29

Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-PW-06-020620

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	75.00
Sky:	Partly Cloudy
Precipitation:	None
Wind (mph)	15

RECORD OF WELL Development

Site Name:	Chemours Fayetteville	Well ID:	PW-07	Well Diameter:	2 Inches
Samplers:	MEGAN JUNOD Brandon Weidner	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc:

Method: Date: 02-10-2020 Time: 11:40

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	-6.515		
Initial Depth to Water (ft.):	40.72	Depth to Well Bottom (ft.):	

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
12:07	40.72			4.52	5.39	233.80	259.19	0.09	19.31	Cloudy	No	Used bailer to get parameters, then bailed dry, will continue tomorrow

Sampling Data

Zero HS:

Method: Date: 02-10-2020 Time: Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.52
Spec. Cond.(mS/cm)	0.09
Turbidity (NTU)	259.19
Temp.(°C)	19.31
DO (mg/L)	5.39
ORP (mV)	233.80

Screen Interval: 28 - 38

SAMPLE SET			
Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

Sample ID:

DuplicateID:

Well ran dry

WEATHER CONDITIONS	
Temperature (F):	66.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	7

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PW-07	Well Diameter:	2 Inches
Samplers:	MEGAN JUNOD Brandon Weidner	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method:

Date: 02-12-2020 Time: 10:15

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	0		
Initial Depth to Water (ft.):		Depth to Well Bottom (ft.):	

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
10:35	40.75		500.00	4.74	6.29	263.10	999.90	0.17	19.80	Brown	No	Used bailer to sample, only could retrieve two bottles of sample, will

Sampling Data

Zero HS:

Method: Other

Date: 02-12-2020 Time: 10:30

Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.74
Spec. Cond.(mS/cm)	0.17
Turbidity (NTU)	999.90
Temp.(^oC)	19.80
DO (mg/L)	6.29
ORP (mV)	263.10

Screen Interval: 28 - 38

SAMPLE SET				
Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-PW-07-021420

DuplicateID:

Well ran dry

WEATHER CONDITIONS	
Temperature (F):	62.00
Sky:	Partly Cloudy
Precipitation:	None
Wind (mph)	4

Parsons PLUS
creating a safer world

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PW-07	Well Diameter:	2 Inches
Samplers:	MEGAN JUNOD Brandon Weidner	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Date: 02-13-2020 Time: 10:17

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = -6.573

Initial Depth to Water (ft.): 41.08 Depth to Well Bottom (ft.):

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
10:37	41.08		480.00	4.83	6.68	195.70	999.90	0.12	22.72	Brown	No	Volume is in milliliters. Sampled two bottles will come back later to try

Sampling Data

Zero HS:

Method: Grab Date: 02-13-2020 Time: 10:40 Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.83
Spec. Cond.(mS/cm)	0.12
Turbidity (NTU)	999.90
Temp.(°C)	22.72
DO (mg/L)	6.68
ORP (mV)	195.70

Screen Interval: 28 - 38

SAMPLE SET				
Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-PW-07-021420

DuplicateID:

Well ran dry

WEATHER CONDITIONS	
Temperature (F):	74.00
Sky:	Partly Cloudy
Precipitation:	None
Wind (mph)	5

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PW-07	Well Diameter:	2 Inches
Samplers:	MEGAN JUNOD Danielle Delgado	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc:

Method: | Date: 02-14-2020 | Time: 09:37

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	-6.52		
Initial Depth to Water (ft.):	40.75	Depth to Well Bottom (ft.):	

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
10:05	40.75		500.00	4.71	6.40	144.80	999.90	0.13	13.80	Brown	No	Volume is in ml

Sampling Data

Zero HS:

Method: Grab | Date: 02-14-2020 | Time: 10:05 | Total Volume Purged (gallons): 500

Field Parameters

STABILIZED PARAMETERS	
pH	4.71
Spec. Cond.(mS/cm)	0.13
Turbidity (NTU)	999.90
Temp.(^oC)	13.80
DO (mg/L)	6.40
ORP (mV)	144.80

Screen Interval: 28 - 38

SAMPLE SET				
Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-PW-07-021420

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	53.00
Sky:	Partly Cloudy
Precipitation:	None
Wind (mph)	10

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PW-09	Well Diameter:	2 Inches
Samplers:	MATT SCHEUER	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth: 52
Pump Loc: within screen

Method: Peristaltic Pump Date: 02-11-2020 Time: 11:46

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	5.349		
Initial Depth to Water (ft.):	24.27	Depth to Well Bottom (ft.):	57.7

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
11:48	26.11	250.00		11.58	0.33	86.00	8.34	523.02	18.05	Clear	No	
11:52	26.63	250.00		11.79	0.28	80.60	6.53	765.41	18.08	Clear	No	
11:57	26.82	250.00		12.09	0.22	69.40	6.91	1382.00	18.34	Clear	No	
12:02	26.86	250.00		12.17	0.17	53.40	21.55	1296.80	18.35	Clear	No	
12:07	26.82	250.00		12.13	0.14	33.60	31.64	1187.40	18.17	Clear	No	
12:12	26.81	250.00		12.06	0.14	17.00	34.16	977.84	18.24	Clear	No	
12:17	26.80	250.00		11.89	0.14	2.90	40.62	732.81	18.35	Clear	No	
12:23	26.80	250.00		11.64	0.26	-5.50	64.95	453.42	18.43	Clear	No	
12:27	26.76	250.00		10.9	0.13	-1.10	203.25	221.71	18.49	Cloudy	No	
12:32	26.74	250.00		10.52	0.13	-1.10	213.44	195.20	18.51	Cloudy	No	
12:37	26.74	250.00		10.48	0.15	-6.50	197.82	184.88	18.40	Cloudy	No	
12:42	26.73	250.00		10.29	0.10	-13.50	204.46	173.87	18.46	Cloudy	No	
12:47	26.73	250.00		10.18	0.09	-21.00	187.14	165.50	18.53	Cloudy	No	
12:52	26.73	250.00		10.07	0.09	-27.50	182.83	158.03	18.31	Cloudy	No	
12:57	26.73	250.00		9.96	0.09	-34.10	177.01	150.98	18.53	Cloudy	No	
13:02	26.73	250.00		9.93	0.09	-38.50	151.45	148.27	18.42	Cloudy	No	
13:07	26.73	250.00		9.85	0.09	-44.80	176.55	143.76	18.38	Cloudy	No	
13:12	26.73	250.00		9.81	0.08	-49.30	157.00	140.27	18.21	Cloudy	No	
13:17	26.73	250.00		9.76	0.09	-54.30	139.99	137.77	18.20	Clear	No	
13:22	26.73	250.00		9.72	0.07	-59.40	132.17	134.94	18.22	Cloudy	No	
13:27	26.73	250.00		9.67	0.08	-64.60	129.26	131.80	18.26	Cloudy	No	
13:32	26.73	250.00		9.64	0.08	-71.00	113.49	130.43	18.30	Slightly Cloudy	No	
13:37	26.73	250.00		9.61	0.08	-75.90	126.12	128.84	18.34	Slightly Cloudy	No	
13:42	26.73	250.00		9.58	0.07	-81.50	125.74	127.26	18.29	Slightly Cloudy	No	
13:47	26.73	250.00		9.55	0.06	-86.50	111.15	125.40	18.22	Clear	No	
13:52	26.73	250.00		9.53	0.06	-91.40	113.60	124.06	18.23	Slightly Cloudy	No	
13:57	26.73	250.00		9.49	0.06	-96.50	103.68	122.57	18.39	Slightly Cloudy	No	
14:02	26.73	250.00		9.44	0.06	-101.20	109.12	121.06	18.40	Clear	No	
14:07	26.73	250.00		9.43	0.06	-106.00	96.05	120.17	18.38	Clear	No	
14:12	26.73	250.00		9.41	0.06	-109.90	99.14	119.33	18.32	Clear	No	
14:17	26.73	250.00		9.38	0.05	-114.80	96.12	118.30	18.16	Clear	No	
14:22	26.73	250.00		9.37	0.05	-118.40	108.69	117.77	18.33	Clear	No	
14:27	26.73	250.00		9.34	0.05	-122.30	108.03	116.87	18.23	Clear	No	
14:32	26.73	250.00		9.31	0.05	-127.90	93.61	115.98	18.29	Clear	No	
14:37	26.74	250.00		9.29	0.05	-13.90	82.38	115.30	18.31	Clear	No	
14:42	26.73	250.00		9.29	0.05	-135.70	84.67	114.83	18.18	Clear	No	
14:47	26.73	250.00		9.22	0.05	-144.90	95.81	112.76	18.30	Clear	No	
15:02	26.73	250.00		9.13	0.04	-159.30	86.86	110.82	18.39	Clear	No	
14:52	26.73	250.00		9.2	0.04	-147.50	89.68	112.44	18.33	Clear	No	
14:57	26.73	250.00		9.16	0.04	-153.10	76.68	111.49	18.36	Clear	No	
15:02	26.73	250.00		9.13	0.40	-159.30	86.86	110.82	18.39	Clear	No	

15:07	2673.00	250.00		9.14	0.04	-165.30	73.52	111.19	18.40	Clear	No	
15:12	26.73	250.00		9.09	0.04	-177.60	67.50	109.98	18.18	Clear	No	
15:17	26.74	250.00		9.14	0.05	-183.20	66.91	110.01	18.23	Clear	No	
15:22	26.63	250.00		9.1	0.05	-178.90	69.94	109.14	18.21	Clear	No	
15:27	26.73	250.00		9.03	0.04	-188.70	80.23	108.60	18.25	Clear	No	
15:32	26.73	250.00		9.05	0.04	-193.00	60.89	108.15	18.15	Clear	No	
15:37	26.74	250.00		8.99	0.05	-181.90	71.67	107.66	18.20	Clear	No	
15:42	26.73	250.00		8.95	0.04	-195.50	65.54	107.25	18.22	Clear	No	No
15:47	26.73	250.00		8.92	0.04	-203.00	61.41	107.07	18.31	Clear	No	
15:52	26.73	250.00		8.93	0.04	-209.50	70.06	106.47	18.20	Clear	No	
15:57	26.66	250.00		8.86	0.04	-220.00	64.85	106.06	18.22	Clear	No	
16:02	26.66	250.00		8.82	0.04	-222.80	66.32	105.76	18.27	Clear	No	
16:07	26.73	250.00		8.82	0.04	-220.50	68.90	105.46	18.14	Clear	No	
16:12	26.66	250.00		8.77	0.04	-224.90	57.25	105.05	18.19	Clear	No	
16:17	26.66	250.00		8.76	0.04	-223.60	60.93	104.76	18.30	Clear	No	
16:22	26.66	250.00		8.72	0.04	-227.50	59.35	104.47	18.06	Clear	No	
16:27	26.66	250.00		8.71	0.04	-226.40	59.64	104.25	18.22	Clear	No	
16:32	26.66	250.00		8.66	0.04	-222.90	52.89	103.97	18.22	Clear	No	
16:37	26.66	250.00		8.66	0.04	-221.70	59.58	103.83	18.15	Clear	No	
16:42	26.66	250.00		8.63	0.04	-223.10	55.09	103.49	18.02	Clear	No	Ran out of time, continue tomorrow

Sampling Data

Zero HS:

Method:

Date: 02-11-2020 Time:

Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	8.63
Spec. Cond.(mS/cm)	103.49
Turbidity (NTU)	55.09
Temp.(^{o}C)	18.02
DO (mg/L)	0.04
ORP (mV)	

Screen Interval:

44 - 54

SAMPLE SET				
Parameter	**Bottle**	**Pres.**	**Method**	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID:

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	70.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	16

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PW-09	Well Diameter:	2 Inches
Samplers:	MATT SCHEUER Danielle Delgado	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Peristaltic Pump Date: 02-12-2020 Time: 09:46

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	-3.92		
Initial Depth to Water (ft.):	24.5	Depth to Well Bottom (ft.):	

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^{o}C			
09:48	26.04	220.00		9.21	0.16	-36.80	58.87	118.61	16.98	Clear	No	
09:53	26.31	220.00		9.52	0.20	-73.70	48.52	124.24	17.00	Clear	No	
09:58	26.42	220.00		10.43	0.13	-90.00	43.70	158.62	16.96	Clear	None	
10:03	26.46	220.00		10.52	0.13	-93.10	58.80	168.25	17.04	Clear	None	
10:08	26.47	220.00		10.67	0.12	-96.90	48.18	174.05	17.01	Clear	No	
10:13	26.46	220.00		9.87	0.13	-90.00	74.34	147.74	17.00	Clear	No	
10:18	26.46	220.00		9.41	0.12	-106.80	78.30	144.55	17.03	Clear	No	
10:23	26.46	220.00		9.37	0.13	-122.30	65.10	136.94	17.14	Clear	No	
10:28	26.46	220.00		9.33	0.12	-139.90	65.20	136.41	17.11	Clear	No	
10:33	26.46	220.00		9.22	0.11	-154.80	63.52	131.98	17.11	Clear	No	
10:38	26.46	220.00		9.18	0.12	-172.70	59.26	128.16	17.20	Clear	No	
10:43	26.64	220.00		9.15	0.12	-185.10	60.14	126.77	17.19	Clear	No	
10:48	26.46	220.00		9	0.14	-198.50	56.13	121.90	17.27	Clear	No	
10:53	26.46	220.00		8.98	0.11	-216.90	58.70	121.23	17.31	Clear	No	
10:58	26.46	220.00		8.94	0.14	-232.90	52.57	119.81	17.37	Clear	No	
11:03	26.42	220.00		8.96	0.10	-236.50	42.70	118.64	17.42	Clear	None	Hach In-Use
11:08	26.42	220.00		8.89	0.14	-233.48	41.50	117.18	17.33	Clear	None	
11:13	26.42	220.00		8.81	0.11	-237.60	41.90	115.66	17.56	Clear	No	
11:18	26.42	220.00		8.77	0.16	-233.00	41.60	114.83	17.53	Clear	No	
11:23	26.42	220.00		8.73	0.11	-236.40	40.40	114.04	17.49	Clear	No	
11:28	26.42	220.00		8.72	0.10	-239.20	38.80	113.37	17.50	Clear	No	
11:33	26.42	220.00		8.62	0.11	-246.40	38.30	11.56	17.64	Clear	No	
11:38	26.42	220.00		8.6	0.09	-246.20	37.60	115.63	17.45	Clear	No	
11:43	26.42	220.00		8.55	0.08	-234.00	37.80	114.39	17.49	Clear	No	
11:48	26.42	220.00		8.42	0.08	-223.70	36.80	112.97	17.46	Clear	No	
11:53	26.42	220.00		8.42	0.07	-222.00	36.50	112.88	17.55	Clear	No	
11:58	26.42	220.00		8.38	0.10	-216.80	35.20	112.03	17.49	Clear	No	
12:03	26.42	220.00		8.3	0.07	-207.10	35.10	111.38	17.51	Clear	None	
12:08	26.42	220.00		8.32	0.09	-212.00	34.00	111.36	17.50	Clear	No	
12:13	26.42	220.00		8.39	0.08	-223.50	34.20	111.47	17.57	Clear	No	
12:18	26.42	220.00		8.3	0.06	-210.70	33.30	110.17	17.45	Clear	No	
12:23	26.42	220.00		8.15	0.08	-197.40	33.10	109.20	17.41	Clear	No	
12:28	26.42	220.00		8.09	0.07	-185.60	33.00	108.14	17.45	Clear	No	
12:33	26.42	220.00		8.2	0.07	-197.80	30.30	108.34	17.43	Clear	No	
12:38	26.44	220.00		8.09	0.07	-187.60	32.70	107.88	17.43	Clear	No	
12:43	26.44	220.00		8.04	0.07	-185.00	32.40	110.17	17.39	Clear	No	
12:48	26.44	220.00		8.06	0.07	-184.60	32.20	109.54	17.37	Clear	No	
12:53	26.44	220.00		7.94	0.06	-170.70	32.20	108.38	17.33	Clear	No	
12:58	26.44	220.00		8.05	0.06	-184.20	31.80	108.25	17.35	Clear	None	
13:03	26.43	220.00		8	0.08	-174.80	31.60	107.63	17.33	Clear	No	
13:08	26.44	220.00		8.03	0.06	-180.00	29.60	107.06	17.28	Clear	No	

Parsons PLUS creating a safer world

13:13	26.44	220.00		7.96	0.06	-173.20	30.20	106.77	17.28	Clear	No	
13:18	26.44	220.00		7.92	0.07	-168.40	29.30	109.35	17.27	Clear	No	
13:23	26.44	220.00		7.97	0.06	-169.50	28.80	108.73	17.27	Clear	No	
13:28	26.44	220.00		7.85	0.07	-160.00	28.60	107.42	17.26	Clear	No	
13:33	26.44	220.00		7.82	0.05	-159.00	28.00	107.19	17.17	Clear	No	
13:38	26.44	220.00		7.79	0.07	-157.10	27.60	106.03	17.24	Clear	No	
13:43	26.44	220.00		7.8	0.07	-159.00	27.20	105.98	17.26	Clear	No	
13:48	26.44	220.00		7.82	0.05	-162.30	26.40	105.88	17.23	Clear	No	
13:53	26.44	220.00		7.69	0.05	-149.10	26.11	104.62	17.20	Clear	No	
13:58	26.42	220.00		7.81	0.05	-159.80	25.30	107.67	17.22	Clear	None	
14:03	26.42	220.00		7.7	0.05	-150.90	23.90	105.76	17.21	Clear	None	
14:08	26.41	220.00		7.68	0.06	-148.40	20.60	105.23	17.22	Clear	No	
14:13	26.41	220.00		7.63	0.06	-143.80	19.70	104.22	17.20	Clear	No	
14:17	26.41	220.00		7.67	0.06	-146.20	18.30	106.21	17.18	Clear	No	
14:22	26.41	220.00		7.65	0.06	-147.20	17.70	106.15	17.18	Clear	No	

Sampling Data

Zero HS:

Method:

Date: 02-12-2020 Time: 14:28

Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	7.65
Spec. Cond.(mS/cm)	106.15
Turbidity (NTU)	17.70
Temp.(^{o}C)	17.18
DO (mg/L)	0.06
ORP (mV)	

Screen Interval: 44 - 54

SAMPLE SET				
Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-PW-09-021220

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	59.00
Sky:	Partly Cloudy
Precipitation:	None
Wind (mph)	10

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: PW-11 | Well Diameter: 2 Inches

Samplers: MATT SCHEUER Danielle Delgado | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Double valve pump | Date: 02-13-2020 | Time: 09:38

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 5.992

Initial Depth to Water (ft.): 30.06 | Depth to Well Bottom (ft.): 67.51

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^{o}C			
09:41	30.27	200.00		4.48	0.51	-82.40	9.72	395.37	18.33	Clear	No	
09:46	30.18	200.00		4.5	0.76	-79.10	13.89	395.49	18.31	Clear	No	
09:51	30.10	200.00		4.5	0.67	-76.50	16.52	401.45	18.42	Clear	No	
09:56	30.04	200.00		4.46	0.50	-72.90	20.59	397.38	19.12	Clear	No	
10:01	30.05	200.00		4.49	0.72	-69.70	23.40	396.79	18.58	Clear	No	
10:06	30.05	200.00		4.48	0.75	-64.40	29.98	398.55	18.63	Clear	No	
10:11	30.05	200.00		4.49	0.70	-62.70	31.34	400.12	18.80	Clear	No	
10:16	30.05	200.00		4.5	0.67	-60.20	40.61	390.95	19.04	Clear	No	
10:21	30.05	200.00		4.53	0.70	-59.30	31.38	391.31	18.82	Clear	No	
10:26	30.05	200.00		4.52	0.67	-57.70	28.01	392.05	18.82	Clear	No	
10:31	30.05	200.00		4.53	0.66	-56.70	26.63	391.32	18.81	Clear	No	
10:36	30.05	200.00		4.53	0.79	-54.20	27.53	391.32	18.92	Clear	No	
10:41	30.05	200.00		4.53	0.72	-52.10	27.30	390.55	18.79	Clear	No	
10:46	30.07	200.00		4.54	0.69	-50.80	26.19	391.66	18.96	Clear	No	
10:51	30.07	200.00		4.54	0.73	-49.90	24.55	391.06	19.02	Clear	No	
10:56	30.07	200.00		4.54	0.67	-48.50	24.66	391.23	18.94	Clear	No	
11:01	30.07	200.00		4.54	0.75	-48.70	23.80	392.26	18.93	Clear	No	
11:06	30.07	200.00		4.54	0.69	-47.60	23.82	392.71	19.36	Clear	No	
11:11	4.53	200.00		4.53	0.72	-46.60	22.51	392.78	19.19	Clear	No	
11:16	30.07	200.00		4.53	0.69	-45.80	22.34	392.17	19.15	Clear	No	
11:21	30.06	200.00		4.53	0.73	-44.70	20.65	392.61	19.13	Clear	No	
11:26	30.06	200.00		4.54	0.69	-43.60	19.84	391.78	19.17	Clear	No	
11:31	30.06	200.00		4.53	0.72	-42.50	19.05	391.91	19.19	Clear	No	

Sampling Data

Zero HS:

Method: | Date: 02-13-2020 | Time: 11:42 | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.53
Spec. Cond.(mS/cm)	391.91
Turbidity (NTU)	19.05
Temp.(^{o}C)	19.19
DO (mg/L)	0.72
ORP (mV)	

Screen Interval: 53 - 63

SAMPLE SET				
Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-PW-11-021320

DuplicateID:

WEATHER CONDITIONS	
Temperature (F): 68.00	

Sky:	Cloudy
Precipitation:	None
Wind (mph)	11

Parsons PLUS
creating a safer world

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PZ-22	Well Diameter:	1 Inches
Samplers:	BRANDON WEIDNER	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Peristaltic Pump Date: 02-20-2020 Time: 12:25

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = -0.251

Initial Depth to Water (ft.): 6.11 Depth to Well Bottom (ft.):

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
12:50		250.00	1250.00	4.51	0.17	267.10	5.10	0.11	12.53	Clear	No	
12:55		250.00	1250.00	4.54	0.13	248.80	1.86	0.11	13.02	Clear	No	
13:00		250.00	1250.00	4.46	0.09	195.40	0.41	0.10	13.67	Clear	No	
13:05		250.00	1250.00	4.48	0.07	166.70	1.27	0.10	13.80	Clear	No	
13:10		250.00	1250.00	4.49	0.06	149.60	3.52	0.10	14.11	Clear	No	
13:15		250.00	1250.00	4.49	0.05	139.30	1.07	0.10	14.13	Clear	No	
13:20		250.00	1250.00	4.49	0.05	133.30	1.23	0.10	14.18	Clear	No	
13:25		250.00	1250.00	4.5	0.04	127.40	0.26	0.10	14.09	Clear	No	Total purge volume in ml

Sampling Data

Zero HS:

Method: Peristaltic Pump Date: 02-20-2020 Time: 13:30 Total Volume Purged (gallons): 2.31

Field Parameters

STABILIZED PARAMETERS	
pH	4.50
Spec. Cond.(mS/cm)	0.10
Turbidity (NTU)	0.26
Temp.(°C)	14.09
DO (mg/L)	0.04
ORP (mV)	127.40

Screen Interval: 36.0-46.0

Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-PZ-22-022020

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	40.00
Sky:	Cloudy
Precipitation:	Rain
Wind (mph)	7

Parsons PLUS creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: SEEP-A-1

Samplers: LUKE TART,

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 4/2/2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
SEEP-A-1-040220	04-02-2020	14:07	4.06	8.60	124.50	15.07	0.17	18.65				

Sampling Data

Method: Other

Latitude: 0

Longitude: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

0

WEATHER CONDITIONS

Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	0

Flow Rate:

Parameters taken during 24hr sampling program

GPS Location (if collected)

Parsons PLUS
creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: SEEP-A-1

Samplers: LUKE TART, Charles Pace

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 04-03-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CAP1Q20-SEEP-A-24-040320	04-03-2020	14:10	6.41	2.95	60.60	9.86	0.34	18.14	Cloudy	None		

Sampling Data

Method: 24H ISCO

Latitude: 0

Longitude: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3 (Special); Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	5

Flow Rate:

GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: SEEP-B-1

Samplers: LUKE TART,

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 4/2/2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
SEEP-B-1-040220	04-02-2020	13:41	4.56	7.46	123.00	8.68	0.12	18.36				

Sampling Data

Method: Other

Latitude: 0

Longitude: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

0

WEATHER CONDITIONS	
Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	6

Flow Rate:

Parameters taken during 24hr sampling program

GPS Location (if collected)

Parsons PLUS
creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: SEEP-B-1

Samplers: LUKE TART,

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 4/3/2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CAP1Q20-SEEP-B-24-040320	04-03-2020	14:20	5.18	7.36	101.80	12.81	0.15	17.62				

Sampling Data

Method: 24H ISCO

Latitude: 0

Longitude: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3 (Special); Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	5

Flow Rate:

GPS Location (if collected)

Parsons PLUS
creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville
Location ID: SEEP-C-1
Samplers: LUKE TART,
Event: Quarterly CAP
Project Manager: Tracy Ovbey
Date: 4/2/2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
SEEP-C-1-040220	04-02-2020	13:20	4.07	8.33	183.90	39.30	0.14	18.04				

Sampling Data

Method: Other
Latitude: 0
Longitude: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

0

WEATHER CONDITIONS	
Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	6

Flow Rate:

Parameters taken during 24hr sampling program

GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: SEEP-C-1

Samplers: LUKE TART,

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 4/3/2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CAP1Q20-SEEP-C-24-040320	04-03-2020	14:30	5.09	8.89	103.00	17.38	0.12	17.02				

Sampling Data

Method: 24H ISCO

Latitude: 0

Longitude: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3 (Special); Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	5

Flow Rate:

GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: SEEP-D-1

Samplers: LUKE TART,

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 4/2/2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
SEEP-D-1-040220	04-02-2020	13:00	3.93	8.43	140.30	4.93	0.19	19.45				

Sampling Data

Method: Other

Latitude: 0

Longitude: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

0

WEATHER CONDITIONS

Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	6

Flow Rate:

Parameters taken during 24hr sampling program

GPS Location (if collected)

Parsons PLUS
creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: SEEP-D-1

Samplers: LUKE TART,

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 4/3/2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CAP1Q20-SEEP-D-24-040320	04-03-2020	14:33	4.17	8.85	144.30	4.64	0.16	16.98				

Sampling Data

Method: 24H ISCO

Latitude: 0

Longitude: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3 (Special); Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	6

Flow Rate:

GPS Location (if collected)

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville
Well ID: SMW-10
Well Diameter: 2 Inches
Samplers: MATT SCHEUER Daniel Delgado
Event: Quarterly
Project Manager: Tracy Ovbey

Purging Data
Pump Depth: 44
Pump Loc: within screen
Method: Double valve pump
Date: 02-10-2020
Time: 11:30

WATER VOLUME CALCULATION
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot
Water Volume = 3.819
Initial Depth to Water (ft.): 28.2
Depth to Well Bottom (ft.): 52.07

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
12:24	28.20	200.00		5.67	3.71	137.70	18.20	84.45	18.64	Clear	NA	
12:29	28.20	200.00		5.51	4.26	126.20	65.40	71.65	18.23	Clear	NA	
12:34	28.20	200.00		5.68	5.58	127.70	25.30	76.79	18.32	Clear	No	
12:39	28.20	200.00		5.53	5.40	124.60	26.79	74.63	18.12	Clear	No	
12:44	28.20	200.00		5.54	5.56	124.70	25.49	74.68	18.28	Clear	No	
12:48	28.20	200.00		5.53	5.32	122.70	23.08	74.95	18.14	Clear	No	
12:53	28.20	200.00		5.55	5.29	119.50	19.76	74.97	18.14	Clear	No	
12:57	28.20	200.00		5.54	4.91	111.90	19.50	74.08	18.14	Clear	No	
13:02	28.20	200.00		5.67	4.72	110.40	13.29	77.08	18.19	Clear	No	
13:07	28.20	200.00		5.67	4.55	111.20	17.58	75.28	18.17	Clear	No	

Sampling Data
Zero HS:
Method: Other
Date: 02-10-2020
Time: 13:13
Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	5.67
Spec. Cond.(mS/cm)	75.28
Turbidity (NTU)	17.58
Temp.(^oC)	18.17
DO (mg/L)	4.55
ORP (mV)	111.20

Screen Interval: 39 to 49

SAMPLE SET

Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-SMW-10-021020
DuplicateID: CAP1Q20-SMW-10-021020-D

MS/REP/D

WEATHER CONDITIONS	
Temperature (F):	66.00
Sky:	Partly Cloudy
Precipitation:	None
Wind (mph)	7

Parsons PLUS
creating a safer world

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville
Well ID: SMW-11
Well Diameter: 2 Inches
Samplers: MATT SCHEUER Danielle Delgado
Event: Quarterly
Project Manager: Tracy Ovbey

Purging Data

Pump Depth: 22
Pump Loc: within screen
Method: Peristaltic Pump
Date: 02-11-2020
Time: 08:37

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 2.333

Initial Depth to Water (ft.): 13.21
Depth to Well Bottom (ft.): 27.79

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^{o}C			
11:10	13.25	200.00		4.31	5.55	166.10	4.14	40.87	17.10	Clear	No	
11:15	13.25	200.00		4.33	5.48	150.60	4.11	40.89	17.12	Clear	No	
11:20	13.25	200.00		4.35	5.47	145.80	4.05	40.89	17.13	Clear	No	
11:25	13.25	200.00		4.33	5.62	147.40	3.98	40.91	17.03	Clear	No	

Sampling Data

Zero HS:
Method:
Date: 02-11-2020
Time: 11:30
Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.33
Spec. Cond.(mS/cm)	40.91
Turbidity (NTU)	3.98
Temp.(^{o}C)	17.03
DO (mg/L)	5.62
ORP (mV)	147.40

Screen Interval: 13 to 23

SAMPLE SET

Parameter	Bottle	Pres.	Method	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-SMW-11-021120
DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	70.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	18

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	SMW-12	Well Diameter:	2 Inches
Samplers:	MATT SCHEUER	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:
Pump Loc: within screen

Method: Double valve pump Date: 02-12-2020 Time: 15:08

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	-12.544		
Initial Depth to Water (ft.):	78.4	Depth to Well Bottom (ft.):	

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^{o}C			
15:20	78.41			3.74	6.55	180.90	2.60	6.00	17.19	Clear	No	
15:25	78.41			3.76	5.12	75.70	0.07	4.78	17.18	Clear	No	
15:30	78.41			3.79	5.81	70.00	8.45	0.06	17.17	Clear	No	
15:35	78.41			3.8	9.18	91.60	0.13	251.64	17.12	Clear	No	
15:40	78.41			3.79	9.19	104.00	0.43	0.06	17.11	Clear	No	
15:45	78.41			3.79	9.19	104.20	0.01	0.06	17.19	Clear	No	
15:50	78.41			3.79	9.13	104.30	0.02	0.06	17.19	Clear	No	
15:55	78.41			3.79	9.14	98.90	0.00	0.06	17.19	Clear	No	

Sampling Data

Zero HS:

Method: Date: 02-12-2020 Time: 16:00 Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	3.79
Spec. Cond.(mS/cm)	0.06
Turbidity (NTU)	
Temp.(^{o}C)	17.19
DO (mg/L)	9.14
ORP (mV)	98.90

Screen Interval: 88 to 98

SAMPLE SET				
Parameter	**Bottle**	**Pres.**	**Method**	
PFAS	2-250 mL poly	NP	EPA 537 Modified	✔
PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	✔

Sample ID: CAP1Q20-SMW-12-021220
DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	64.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	9

Parsons PLUS creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: WC-1

Samplers: LUKE TART,

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 04-03-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CAP1Q20-WC-1-24-040320	04-03-2020	14:12	7.11	6.17	113.10	7.03	0.20	17.85				

Sampling Data

Method: 24H ISCO

Latitude: 0

Longitude: 0

SAMPLE SET			
Parameter	**Bottle**	**Pres.**	**Method**
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

Table 3 (Special); Table 3+(20); EPA 537 Modified

WEATHER CONDITIONS	
Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	6

Flow Rate:

GPS Location (if collected)

Parsons PLUS
creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: CFR-TARHEEL

Samplers: CHARLES PACE,

Event: Weekly River

Project Manager: Tracy Ovbey

Date: 03-31-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CFR-TARHEEL-83-033120	03-31-2020	12:00									Yes	No parameters collected.

Sampling Data

Method: 3.5 Day Composite

Latitude: 0

Longitude: 0

SAMPLE SET			
Parameter	**Bottle**	**Pres.**	**Method**
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

Table 3 (Special); Table 3+(20)

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Partly Sunny
Precipitation:	None
Wind (mph)	

Flow Rate:		

GPS Location (if collected)

Parsons PLUS
creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: CFR-TARHEEL

Samplers: CHARLES PACE,

Event: Weekly River

Project Manager: Tracy Ovbey

Date: 04-02-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CFR-TARHEEL-48-040220	04-02-2020	13:00										No parameters collected.

Sampling Data

Method: 3.5 Day Composite

Latitude: 0

Longitude: 0

SAMPLE SET			
Parameter	**Bottle**	**Pres.**	**Method**
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

Table 3 (Special); Table 3+(20)

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

Flow Rate:

GPS Location (if collected)

Parsons PLUS
creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: CFR-TARHEEL

Samplers: LUKE TART,

Event: Quarterly CAP

Project Manager: Tracy Ovbey

Date: 04-07-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	^{o}C				
CFR-TARHEEL-040320	04-03-2020	15:00	6.80	8.59	142.30	12.09	0.32	18.02				

Sampling Data

Method: 24H ISCO

Latitude: 0

Longitude: 0

SAMPLE SET			
Parameter	**Bottle**	**Pres.**	**Method**
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3 (Special); Table 3+(20)

WEATHER CONDITIONS	
Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	6

Flow Rate:

GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville
Location ID: CFR-TARHEEL
Samplers: CHARLES PACE,
Event: Weekly River
Project Manager: Tracy Ovbey
Date: 04-06-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CFR-TARHEEL-83-040620	0:30											No parameters collected.

Sampling Data

Method:

Latitude: 0
Longitude: 0

SAMPLE SET			
Parameter	**Bottle**	**Pres.**	**Method**
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

0

WEATHER CONDITIONS	
Temperature (F):	78.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	9

Staff gauge water level, ft: 1.8
Temperature, deg C: 78
Rain, mm: 0

Flow Rate:

GPS Location (if collected)

Parsons PLUS
creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: CFR-TARHEEL

Samplers: 0

Event: Weekly River

Project Manager: Tracy Ovbey

Date: 04-09-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CFR-TARHEEL-040920	04-09-2020	06:30										Actual Sample ID: CFR-TARHEEL-83-040920

Sampling Data

Method: 3.5 Day Composite

Latitude: 0

Longitude: 0

Samples taken from: ISCO

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	72.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	14

Flow Rate:

Multi Meter Used:	
Velocity Meter Used:	Marsh McBirney

Multi Meter ID:

Velocity Meter ID:

Total Water Depth (ft):

Stream Velocity TOP half of water column (ft/sec):	
Stream Velocity BOTTOM half of water column (ft/sec):	

Stream Depth TOP half of water column (ft):	
Stream Depth BOTTOM half of water column (ft):	

GPS Location (if collected)

Parsons PLUS creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: CFR-TARHEEL

Samplers: 0

Event: Weekly River

Project Manager: Tracy Ovbey

Date: 04-19-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	^{o}C				
CFR-TARHEEL-041920	04-19-2020	01:30										Actual Sample ID: CFR-TARHEEL-83-041920

Sampling Data

Method:

Latitude: 0

Longitude: 0

Samples taken from: 0

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	6

Flow Rate:

Multi Meter Used:	
Velocity Meter Used:	Marsh McBirney

Multi Meter ID:

Velocity Meter ID:

Total Water Depth (ft):

Stream Velocity TOP half of water column (ft/sec):

Stream Velocity BOTTOM half of water column (ft/sec):

Stream Depth TOP half of water column (ft):

Stream Depth BOTTOM half of water column (ft):

GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: CFR-TARHEEL

Samplers: CHARLES PACE

Event: Weekly River

Project Manager: Tracy Ovbey

Date: 04-27-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CFR-TARHEEL-042220	04-22-2020	13:30										Actual Sample ID: CFR-TARHEEL-83-042220

Sampling Data

Method: 3.5 Day Composite

Latitude: 0

Longitude: 0

Samples taken from: ISCO

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	66.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	1

Flow Rate:

Multi Meter Used:	
Velocity Meter Used:	Marsh McBirney

Multi Meter ID:

Velocity Meter ID:

Total Water Depth (ft):

Stream Velocity TOP half of water column (ft/sec):	
Stream Velocity BOTTOM half of water column (ft/sec):	

Stream Depth TOP half of water column (ft):	
Stream Depth BOTTOM half of water column (ft):	

GPS Location (if collected)

Parsons PLUS creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: CFR-TARHEEL

Samplers: CHARLES PACE

Event: Weekly River

Project Manager: Tracy Ovbey

Date: 04-30-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CFR-TARHEEL-83-042620	04-26-2020	00:49										No parameters collected.

Sampling Data

Method: 3.5 Day Composite

Latitude: 0

Longitude: 0

Samples taken from: ISCO

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	72.00
Sky:	Cloudy
Precipitation:	Rain
Wind (mph)	

Flow Rate:

Multi Meter Used:		Multi Meter ID:	
Velocity Meter Used:	Marsh McBirney	Velocity Meter ID:	

Total Water Depth (ft):

Stream Velocity TOP half of water column (ft/sec):	
Stream Velocity BOTTOM half of water column (ft/sec):	

Stream Depth TOP half of water column (ft):	
Stream Depth BOTTOM half of water column (ft):	

GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: CFR-TARHEEL

Samplers: CHARLES PACE

Event: Weekly River

Project Manager: Tracy Ovbey

Date: 04-30-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CFR-TARHEEL-83-042920	04-29-2020	11:49										No parameters collected.

Sampling Data

Method: 3.5 Day Composite

Latitude: 0

Longitude: 0

Samples taken from: ISCO

SAMPLE SET			
Parameter	**Bottle**	**Pres.**	**Method**
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

Table 3+(20)

WEATHER CONDITIONS	
Temperature (F):	72.00
Sky:	Cloudy
Precipitation:	Rain
Wind (mph)	

Flow Rate:

Multi Meter Used:	
Velocity Meter Used:	Marsh McBirney

Multi Meter ID:

Velocity Meter ID:

Total Water Depth (ft):	

Stream Velocity TOP half of water column (ft/sec):	
Stream Velocity BOTTOM half of water column (ft/sec):	

Stream Depth TOP half of water column (ft):	
Stream Depth BOTTOM half of water column (ft):	

GPS Location (if collected)

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: CFR-TARHEEL

Samplers: CHARLES PACE,

Event: Weekly River

Project Manager: Tracy Ovbey

Date: 05-04-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	°C				
CFR-TARHEEL-62-050220	05-02-2020	23:49										No parameters collected.

Sampling Data

Method: 3.5 Day Composite

Latitude: 0

Longitude: 0

SAMPLE SET			
Parameter	**Bottle**	**Pres.**	**Method**
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

EPA 537 Modified; Table 3+(20)

WEATHER CONDITIONS	
Temperature (F):	86.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	12

Staff gauge water level, ft: 7

Temperature, deg C: 29

Rain, mm: 0

Flow Rate:

GPS Location (if collected)

Parsons PLUS
creating a safer world

SW SEEP SAMPLING RECORD

Site Name: Chemours Fayetteville

Location ID: CFR-TARHEEL

Samplers: , E. Helton

Event: Weekly River

Project Manager: Tracy Ovbey

Date: 05-06-2020

Spl ID	Spl Date	Time	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Dup	Comments
				mg/L	mV	NTU	mS/cm	^oC				
CFR-TARHEEL-050620	05-06-2020	11:49										Actual Sample ID: CFR-TARHEEL-83-050620

Sampling Data

Method: 3.5 Day Composite

Latitude: 0

Longitude: 0

Samples taken from: ISCO

SAMPLE SET

Parameter	Bottle	Pres.	Method
PFAS	2-250 mL poly	NP	EPA 537 Modified
PFAS	250 mL poly	NP	Table 3
PFAS	250 mL poly	NP	Table 3+

ALL PARAMETERS ANALYZED

Table 3+(20)

WEATHER CONDITIONS

Temperature (F):	68.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	8

Flow Rate:

Multi Meter Used:	
Velocity Meter Used:	Marsh McBirney

Multi Meter ID:

Velocity Meter ID:

Total Water Depth (ft):

Stream Velocity TOP half of water column (ft/sec):	
Stream Velocity BOTTOM half of water column (ft/sec):	

Stream Depth TOP half of water column (ft):	
Stream Depth BOTTOM half of water column (ft):	

GPS Location (if collected)

APPENDIX G

Laboratory Reports and DVM Report

ADQM DATA REVIEW
NARRATIVE

<u>Site</u>	**Chemours FAY – Fayetteville**
<u>Project</u>	**CAP MW Sampling**
<u>Project Reviewer</u>	**Michael Aucoin, AECOM as a Chemours contractor**
<u>Sampling Dates</u>	**February 6, 2020** **February 10 – 14, 2020** **February 19 – 20, 2020** **February 24 - 25, 2020**

Analytical Protocol

Laboratory	Analytical Method	Parameter(s)
TestAmerica - Sacramento	537 Modified	PFAS[(1)]
TestAmerica - Sacramento	Cl. Spec. Table 3 Compound SOP	Table 3+ compounds

[1] Perfluoroalkylsubstances, a list of 37 compounds including HFPO-DA.

Sample Receipt

The following items are noted for this data set:

- All samples were received in satisfactory condition and within EPA temperature guidelines on:

  February 13 - 15, 2020
  February 22, 2020
  February 27, 2020

Data Review

The electronic data submitted for this project was reviewed via the Data Verification Module (DVM) process.

Overall the data is acceptable for use without qualification, except as noted below:

- Some Table 3 results were qualified B and the reported results may be biased high, or false positives, due to a comparable concentration found in the associated equipment blank.
- Several analytical results have been qualified J as estimated, and non-detect results qualified UJ indicating an estimated reporting limit, due to a poor recovery of a surrogate, lab control spike, or matrix spike; sample analysis which exceeded the laboratory established hold time; and poor field duplicate or lab replicate precision.. See the Data Verification Module (DVM) Narrative Report

for which samples were qualified, the specific reasons for qualification, and potential bias in reported results.

Attachments

The DVM Narrative report is attached. The lab reports due to a large page count are stored on an AECOM network shared drive and are available to be posted on external shared drives, or on a flash drive.

Data Verification Module (DVM)

The DVM is an internal review process used by the ADQM group to assist with the determination of data usability. The electronic data deliverables received from the laboratory are loaded into the Locus EIM™ database and processed through a series of data quality checks, which are a combination of software (Locus EIM™ database Data Verification Module (DVM)) and manual reviewer evaluations. The data is evaluated against the following data usability checks:

- Field and laboratory blank contamination
- US EPA hold time criteria
- Missing Quality Control (QC) samples
- Matrix spike(MS)/matrix spike duplicate (MSD) recoveries and the relative percent differences (RPDs) between these spikes
- Laboratory control sample(LCS)/control sample duplicate (LCSD) recoveries and the RPD between these spikes
- Surrogate spike recoveries for organic analyses
- RPD between field duplicate sample pairs
- RPD between laboratory replicates for inorganic analyses
- Difference / percent difference between total and dissolved sample pairs.

There are two qualifier fields in EIM:

Lab Qualifier is the qualifier assigned by the lab and may not reflect the usability of the data. This qualifier may have many different meanings and can vary between labs and over time within the same lab. Please refer to the laboratory report for a description of the lab qualifiers. As they are lab descriptors they are not to be used when evaluating the data.

Validation Qualifier is the 3rd party formal validation qualifier if this was performed. Otherwise this field contains the qualifier resulting from the ADQM DVM review process. This qualifier assesses the usability of the data and may not equal the lab qualifier. The DVM applies the following data evaluation qualifiers to analysis results, as warranted:

Qualifier	**Definition**
B	Not detected substantially above the level reported in the laboratory or field blanks.
R	Unusable result. Analyte may or may not be present in the sample.
J	Analyte present. Reported value may not be accurate or precise.
UJ	Not detected. Reporting limit may not be accurate or precise.

The **Validation Status Code** field is set to “DVM” if the ADQM DVM process has been performed. If the DVM has not been run, the field will be blank.

If the DVM has been run (**Validation Status Code** equals “DVM”), use the **Validation Qualifier.**

DVM Narrative Report

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason Contamination detected in equipment blank(s). Sample result does not differ significantly from the analyte concentration detected in the associated equipment blank(s).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-BLADEN-1D-021120	02/11/2020	320-58585-1	PMPA	0.077	UG/L	PQL		0.010	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-BLADEN-1D-021120	02/11/2020	320-58585-1	PMPA	0.076	UG/L	PQL		0.010	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-BLADEN-1D-021120	02/11/2020	320-58585-1	PFO2HxA	0.010	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-BLADEN-1D-021120	02/11/2020	320-58585-1	PFO2HxA	0.010	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-BLADEN-1D-021120	02/11/2020	320-58585-1	PFMOAA	0.014	ug/L	PQL		0.0050	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-BLADEN-1D-021120	02/11/2020	320-58585-1	PFMOAA	0.014	ug/L	PQL		0.0050	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-BLADEN-1D-021120	02/11/2020	320-58585-1	PFESA-BP2	0.0029	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-BLADEN-1D-021120	02/11/2020	320-58585-1	PFESA-BP2	0.0029	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-04-021120	02/11/2020	320-58585-2	NVHOS	0.0025	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-04-021120	02/11/2020	320-58585-2	NVHOS	0.0024	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-04-021120	02/11/2020	320-58585-2	PMPA	0.12	UG/L	PQL		0.010	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-04-021120	02/11/2020	320-58585-2	PMPA	0.12	UG/L	PQL		0.010	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-04-021120	02/11/2020	320-58585-2	PFO2HxA	0.0095	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-04-021120	02/11/2020	320-58585-2	PFO2HxA	0.0095	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-04-021120	02/11/2020	320-58585-2	PFMOAA	0.0099	ug/L	PQL		0.0050	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-04-021120	02/11/2020	320-58585-2	PFMOAA	0.010	ug/L	PQL		0.0050	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason Contamination detected in equipment blank(s). Sample result does not differ significantly from the analyte concentration detected in the associated equipment blank(s).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-PW-04-021120	02/11/2020	320-58585-2	PFESA-BP2	0.0026	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-04-021120	02/11/2020	320-58585-2	PFESA-BP2	0.0026	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-04-021120	02/11/2020	320-58585-2	R-EVE	0.0024	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-09-021220	02/12/2020	320-58612-2	PMPA	0.016	UG/L	PQL		0.010	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-09-021220	02/12/2020	320-58612-2	PMPA	0.017	UG/L	PQL		0.010	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-09-021220	02/12/2020	320-58612-2	PFO2HxA	0.0050	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-09-021220	02/12/2020	320-58612-2	PFO2HxA	0.0054	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-09-021220	02/12/2020	320-58612-2	PFMOAA	0.017	ug/L	PQL		0.0050	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-09-021220	02/12/2020	320-58612-2	PFMOAA	0.018	ug/L	PQL		0.0050	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-04-021120	02/11/2020	320-58585-2	Byproduct 4	0.0032	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-SMW-11-021120	02/11/2020	320-58585-3	PMPA	0.12	UG/L	PQL		0.010	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-SMW-11-021120	02/11/2020	320-58585-3	PMPA	0.13	UG/L	PQL		0.010	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-SMW-11-021120	02/11/2020	320-58585-3	PFO2HxA	0.12	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-SMW-11-021120	02/11/2020	320-58585-3	PFO2HxA	0.13	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-SMW-11-021120	02/11/2020	320-58585-3	PFMOAA	0.042	ug/L	PQL		0.0050	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-SMW-11-021120	02/11/2020	320-58585-3	PFMOAA	0.045	ug/L	PQL		0.0050	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-SMW-11-021120	02/11/2020	320-58585-3	PFESA-BP2	0.018	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason Contamination detected in equipment blank(s). Sample result does not differ significantly from the analyte concentration detected in the associated equipment blank(s).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
										SOP		
CAP1Q20-SMW-11-021120	02/11/2020	320-58585-3	PFESA-BP2	0.019	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason Only one surrogate has relative percent recovery (RPR) values outside control limits and the parameter is a PFC (Nondetects).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-PW-07-021420	02/14/2020	320-58652-2	N-methyl perfluorooctane sulfonamidoacetic acid	0.020	UG/L	PQL		0.020	UJ	537 Modified		3535_PFC
CAP1Q20-PW-07-021420	02/14/2020	320-58652-2	N-ethyl perfluorooctane sulfonamidoacetic acid	0.020	UG/L	PQL		0.020	UJ	537 Modified		3535_PFC
CAP1Q20-PW-07-021420	02/14/2020	320-58652-2	Perfluorododecanoic Acid	0.0020	UG/L	PQL		0.0020	UJ	537 Modified		3535_PFC
CAP1Q20-PW-07-021420	02/14/2020	320-58652-2	Perfluorotridecanoic Acid	0.0020	UG/L	PQL		0.0020	UJ	537 Modified		3535_PFC
CAP1Q20-PW-07-021420	02/14/2020	320-58652-2	Perfluorooctane Sulfonamide	0.0020	UG/L	PQL		0.0020	UJ	537 Modified		3535_PFC

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason The analysis hold time for this sample was exceeded. The reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	Byproduct 6	0.031	UG/L	PQL		0.031	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	Byproduct 6	0.031	UG/L	PQL		0.031	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	EVE Acid	0.049	UG/L	PQL		0.049	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	EVE Acid	0.049	UG/L	PQL		0.049	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFECA-G	0.082	UG/L	PQL		0.082	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFECA-G	0.082	UG/L	PQL		0.082	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFESA-BP1	0.053	UG/L	PQL		0.053	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFESA-BP1	0.053	UG/L	PQL		0.053	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFECA B	0.12	UG/L	PQL		0.12	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFECA B	0.12	UG/L	PQL		0.12	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFO5DA	0.067	ug/L	PQL		0.067	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFO5DA	0.067	ug/L	PQL		0.067	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PES	0.092	UG/L	PQL		0.092	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PES	0.092	UG/L	PQL		0.092	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	Byproduct 6	0.031	UG/L	PQL		0.031	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	Byproduct 6	0.031	UG/L	PQL		0.031	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	EVE Acid	0.049	UG/L	PQL		0.049	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason The analysis hold time for this sample was exceeded. The reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	EVE Acid	0.049	UG/L	PQL		0.049	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFECA-G	0.082	UG/L	PQL		0.082	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFECA-G	0.082	UG/L	PQL		0.082	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFESA-BP1	0.053	UG/L	PQL		0.053	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFESA-BP1	0.053	UG/L	PQL		0.053	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFECA B	0.12	UG/L	PQL		0.12	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFECA B	0.12	UG/L	PQL		0.12	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFO5DA	0.067	ug/L	PQL		0.067	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFO5DA	0.067	ug/L	PQL		0.067	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PES	0.092	UG/L	PQL		0.092	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PES	0.092	UG/L	PQL		0.092	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values less than the lower control limit but above 10%. The actual detection limits may be higher than reported.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-PIW-1D-021420	02/14/2020	320-58652-1	Byproduct 5	0.012	UG/L	PQL		0.012	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-1D-021420	02/14/2020	320-58652-1	Byproduct 5	0.012	UG/L	PQL		0.012	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-EB-021420	02/14/2020	320-58652-3	R-EVE	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-EB-021420	02/14/2020	320-58652-3	R-EVE	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-EB-021420	02/14/2020	320-58652-3	Byproduct 4	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-EB-021420	02/14/2020	320-58652-3	Byproduct 4	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-EB-021420	02/14/2020	320-58652-3	Byproduct 5	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-EB-021420	02/14/2020	320-58652-3	Byproduct 5	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-FB-021420	02/14/2020	320-58652-4	R-EVE	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-FB-021420	02/14/2020	320-58652-4	R-EVE	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-FB-021420	02/14/2020	320-58652-4	Byproduct 4	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-FB-021420	02/14/2020	320-58652-4	Byproduct 4	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-FB-021420	02/14/2020	320-58652-4	Byproduct 5	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-FB-021420	02/14/2020	320-58652-4	Byproduct 5	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit. The actual detection limits may be higher than reported.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-EB-021420	02/14/2020	320-58652-3	PFMOAA	0.0050	ug/L	PQL		0.0050	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-EB-021420	02/14/2020	320-58652-3	PFMOAA	0.0050	ug/L	PQL		0.0050	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-LTW-03-022520	02/25/2020	320-58966-1	Perfluoroundecanoic Acid	0.0020	UG/L	PQL		0.0020	UJ	537 Modified		3535_PFC

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values higher than the upper control limit. The reported result may be biased high.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-PW-07-021420	02/14/2020	320-58652-2	PFO5DA	0.0031	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-07-021420	02/14/2020	320-58652-2	PFO5DA	0.0033	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values higher than the upper control limit. The reported result may be biased high.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-EB-021220	02/12/2020	320-58612-3	Byproduct 5	0.0020	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-EB-021220	02/12/2020	320-58612-3	Byproduct 5	0.0020	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-04-021120	02/11/2020	320-58585-2	R-EVE	0.0024	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-04-021120	02/11/2020	320-58585-2	Byproduct 4	0.0036	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-06-020620	02/06/2020	320-58586-1	Byproduct 4	0.063	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-06-020620	02/06/2020	320-58586-1	Byproduct 4	0.062	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-SMW-11-021120	02/11/2020	320-58585-3	R-EVE	0.017	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-SMW-11-021120	02/11/2020	320-58585-3	R-EVE	0.018	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-SMW-11-021120	02/11/2020	320-58585-3	Byproduct 4	0.032	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-SMW-11-021120	02/11/2020	320-58585-3	Byproduct 4	0.034	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason High relative percent difference (RPD) observed between field duplicate and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-LTW-03-022520	02/25/2020	320-58966-1	PEPA	2.5	UG/L	PQL		0.047	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-LTW-03-022520	02/25/2020	320-58966-1	PEPA	2.5	UG/L	PQL		0.047	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-LTW-03-022520	02/25/2020	320-58966-1	PFO4DA	0.18	ug/L	PQL		0.079	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-LTW-03-022520	02/25/2020	320-58966-1	PFO4DA	0.17	ug/L	PQL		0.079	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-LTW-03-022520-D	02/25/2020	320-58966-2	PES	0.59	UG/L	PQL		0.046	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-LTW-03-022520-D	02/25/2020	320-58966-2	PES	0.59	UG/L	PQL		0.046	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-LTW-03-022520-D	02/25/2020	320-58966-2	PFECA B	0.78	UG/L	PQL		0.060	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-LTW-03-022520-D	02/25/2020	320-58966-2	PFECA B	0.78	UG/L	PQL		0.060	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-LTW-03-022520-D	02/25/2020	320-58966-2	PEPA	3.5	UG/L	PQL		0.047	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-LTW-03-022520-D	02/25/2020	320-58966-2	PEPA	4.5	UG/L	PQL		0.047	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason Quality review criteria exceeded between the REP (laboratory replicate) and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-LTW-03-022520	02/25/2020	320-58966-1	Byproduct 5	2.8	UG/L	PQL		0.058	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-LTW-03-022520	02/25/2020	320-58966-1	Byproduct 5	2.4	UG/L	PQL		0.058	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-1S-021320	02/13/2020	320-58612-6	PFO4DA	1.9	ug/L	PQL		0.0079	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-1S-021320	02/13/2020	320-58612-6	PFO4DA	0.25	ug/L	PQL		0.0079	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason The analysis hold time for this sample was exceeded. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PMPA	4.0	UG/L	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PMPA	3.9	UG/L	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	NVHOS	1.0	UG/L	PQL		0.11	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	NVHOS	1.0	UG/L	PQL		0.11	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFMOAA	180	ug/L	PQL		0.42	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFMOAA	180	ug/L	PQL		0.42	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PEPA	0.64	UG/L	PQL		0.093	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PEPA	0.63	UG/L	PQL		0.093	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFO2HxA	34	ug/L	PQL		0.16	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFO2HxA	34	ug/L	PQL		0.16	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFO3OA	3.9	ug/L	PQL		0.12	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFO3OA	3.9	ug/L	PQL		0.12	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFO4DA	0.76	ug/L	PQL		0.16	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFO4DA	0.74	ug/L	PQL		0.16	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	R-EVE	0.58	UG/L	PQL		0.14	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	R-EVE	0.60	UG/L	PQL		0.14	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	Byproduct 4	0.50	UG/L	PQL		0.32	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason The analysis hold time for this sample was exceeded. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	Byproduct 4	0.54	UG/L	PQL		0.32	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	Byproduct 5	0.94	UG/L	PQL		0.12	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	Byproduct 5	0.94	UG/L	PQL		0.12	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFESA-BP2	0.081	ug/L	PQL		0.061	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	PFESA-BP2	0.070	ug/L	PQL		0.061	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	Hydro-EVE Acid	0.26	UG/L	PQL		0.056	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-7D-021920	02/19/2020	320-58849-1	Hydro-EVE Acid	0.26	UG/L	PQL		0.056	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PMPA	5.0	UG/L	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PMPA	5.3	UG/L	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	NVHOS	1.1	UG/L	PQL		0.11	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	NVHOS	1.1	UG/L	PQL		0.11	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFMOAA	190	ug/L	PQL		0.42	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFMOAA	200	ug/L	PQL		0.42	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PEPA	1.2	UG/L	PQL		0.093	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PEPA	1.3	UG/L	PQL		0.093	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFO2HxA	39	ug/L	PQL		0.16	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFO2HxA	40	ug/L	PQL		0.16	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason The analysis hold time for this sample was exceeded. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFO3OA	3.7	ug/L	PQL		0.12	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFO3OA	4.0	ug/L	PQL		0.12	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFO4DA	0.40	ug/L	PQL		0.16	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFO4DA	0.46	ug/L	PQL		0.16	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	R-EVE	0.59	UG/L	PQL		0.14	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	R-EVE	0.62	UG/L	PQL		0.14	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	Byproduct 4	0.45	UG/L	PQL		0.32	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	Byproduct 4	0.44	UG/L	PQL		0.32	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	Byproduct 5	1.3	UG/L	PQL		0.12	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	Byproduct 5	1.4	UG/L	PQL		0.12	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFESA-BP2	0.066	ug/L	PQL		0.061	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	PFESA-BP2	0.065	ug/L	PQL		0.061	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	Hydro-EVE Acid	0.15	UG/L	PQL		0.056	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PZ-22-022020	02/20/2020	320-58849-7	Hydro-EVE Acid	0.15	UG/L	PQL		0.056	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP MW Sampling **Validation Options:** LABSTATS

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values less than the lower control limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-PIW-1D-021420	02/14/2020	320-58652-1	R-EVE	0.29	UG/L	PQL		0.014	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-1D-021420	02/14/2020	320-58652-1	R-EVE	0.30	UG/L	PQL		0.014	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-1D-021420	02/14/2020	320-58652-1	Byproduct 4	0.41	UG/L	PQL		0.032	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PIW-1D-021420	02/14/2020	320-58652-1	Byproduct 4	0.41	UG/L	PQL		0.032	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-07-021420	02/14/2020	320-58652-2	R-EVE	0.026	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-07-021420	02/14/2020	320-58652-2	R-EVE	0.026	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-07-021420	02/14/2020	320-58652-2	Byproduct 4	0.067	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-07-021420	02/14/2020	320-58652-2	Byproduct 4	0.068	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-07-021420	02/14/2020	320-58652-2	Byproduct 5	0.0061	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-PW-07-021420	02/14/2020	320-58652-2	Byproduct 5	0.0062	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

ADQM DATA REVIEW
NARRATIVE

Site	**Chemours FAY – Fayetteville**
Project	**CAP SW Sampling (updated)**
Project Reviewer	**Michael Aucoin, AECOM as a Chemours contractor**
Sampling Dates	**March 26 - 27, 2020** **April 2 – 3, 2020** **April 6, 2020**

Analytical Protocol

Laboratory	Analytical Method	Parameter(s)
TestAmerica - Sacramento	537 Modified	PFAS(1)
TestAmerica - Sacramento	Cl. Spec. Table 3 Compound SOP	Table 3+ compounds

1 Perfluoroalkylsubstances, a list of 37 compounds including HFPO-DA.

Sample Receipt

The following items are noted for this data set:

- All samples were received in satisfactory condition and within EPA temperature guidelines on:

  March 28, 2020
  April 7, 2020

Data Review

Please note the following byproduct parameter names have been updated as follows:

Old CASN	New CASN	New Common Name	Previous Common Name
EVS1429	**2416366-18-0**	**R-PSDA**	Byproduct 4
EVS1430	**2416366-19-1**	**Hydrolyzed PSDA**	Byproduct 5
EVS1431	**2416366-21-5**	**R-PSDCA**	Byproduct 6
29311-67-9 *(unchanged)*	**29311-67-9 *(unchanged)***	**PS Acid**	PFESA-BP1
749836-20-2 *(unchanged)*	**749836-20-2 *(unchanged)***	**Hydro-PS Acid**	PFESA-BP2

The electronic data submitted for this project was reviewed via the Data Verification Module (DVM) process.

Overall the data is acceptable for use without qualification, except as noted below:

- Some Table 3 results were qualified B and the reported results may be biased high, or false positives, due to a comparable concentration found in the associated equipment blank.

  Analytical results not originally qualified by the DVM because the equipment blank was originally shown with an incorrect sample collection date, or was found in another SDG, had the B qualifier added for the following reasons:

  - CAP1Q20-CFR-TARHEEL-24-040320
    - BP-5 was reported at 17 ng/L, and the equipment blank (CAP1Q20-EBK-2-040320) had 18 ng/L
  - CAP1Q20-CFR-KINGS-040620
    - BP-5 was reported at 14 ng/L, and the equipment blank (CAP1Q20-EB-040620) had 4.6 ng/L

  Analytical results originally qualified by the DVM because an equipment blank was originally shown with an incorrect sample collection date, or was found in another SDG, had the B qualifier removed for the following reasons:

  - CAP1Q20-CFR-TARHEEL-040220 (SDG 320-60029-1). There was no blank associated with this sample.
    - PFMOAA
    - PFO2HxA
    - PFO3OA
    - BP-5
    - R-EVE
  - CAP1Q20-EXCESS RIVER WATER-24-040320 (320-60029-1). The only blank associated with this sample is CAP1Q20-EBK-2-040320
    - PFMOAA
    - PFO2HxA
    - PFO3OA
    - R-EVE

- Some analytical results have been qualified J as estimated, and non-detect results qualified UJ indicating an estimated reporting limit, due to a poor recovery of a lab control spike or matrix spike; and poor lab replicate precision. See the Data Verification Module (DVM) Narrative Report for which samples were qualified, the specific reasons for qualification, and potential bias in reported results.

Attachments

The DVM Narrative report is attached. The lab reports due to a large page count are stored on an AECOM network shared drive and are available to be posted on external shared drives, or on a flash drive.

Data Verification Module (DVM)

The DVM is an internal review process used by the ADQM group to assist with the determination of data usability. The electronic data deliverables received from the laboratory are loaded into the Locus EIM™ database and processed through a series of data quality checks, which are a combination of software (Locus EIM™ database Data Verification Module (DVM)) and manual reviewer evaluations. The data is evaluated against the following data usability checks:

- Field and laboratory blank contamination
- US EPA hold time criteria
- Missing Quality Control (QC) samples
- Matrix spike(MS)/matrix spike duplicate (MSD) recoveries and the relative percent differences (RPDs) between these spikes
- Laboratory control sample(LCS)/control sample duplicate (LCSD) recoveries and the RPD between these spikes
- Surrogate spike recoveries for organic analyses
- RPD between field duplicate sample pairs
- RPD between laboratory replicates for inorganic analyses
- Difference / percent difference between total and dissolved sample pairs.

There are two qualifier fields in EIM:

Lab Qualifier is the qualifier assigned by the lab and may not reflect the usability of the data. This qualifier may have many different meanings and can vary between labs and over time within the same lab. Please refer to the laboratory report for a description of the lab qualifiers. As they are lab descriptors they are not to be used when evaluating the data.

Validation Qualifier is the 3rd party formal validation qualifier if this was performed. Otherwise this field contains the qualifier resulting from the ADQM DVM review process. This qualifier assesses the usability of the data and may not equal the lab qualifier. The DVM applies the following data evaluation qualifiers to analysis results, as warranted:

Qualifier	**Definition**
B	Not detected substantially above the level reported in the laboratory or field blanks.
R	Unusable result. Analyte may or may not be present in the sample.
J	Analyte present. Reported value may not be accurate or precise.
UJ	Not detected. Reporting limit may not be accurate or precise.

The **Validation Status Code** field is set to “DVM” if the ADQM DVM process has been performed. If the DVM has not been run, the field will be blank.

If the DVM has been run (**Validation Status Code** equals “DVM”), use the **Validation Qualifier.**

DVM Narrative Report

Site: Fayetteville **Sampling Program:** CAP SW Sampling **Validation Options:** LABSTATS

Validation Reason Contamination detected in equipment blank(s). Sample result does not differ significantly from the analyte concentration detected in the associated equipment blank(s).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-CFR-TARHEEL-24-040320	04/03/2020	320-60032-2	Hydrolyzed PSDA	0.017	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-CFR-KINGS-040620	04/06/2020	320-60032-3	Hydrolyzed PSDA	0.014	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP SW Sampling **Validation Options:** LABSTATS

Validation Reason Contamination detected in equipment blank(s). Sample result does not differ significantly from the analyte concentration detected in the associated equipment blank(s).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-CFR-TARHEEL-24-040320	04/03/2020	320-60032-2	Hydrolyzed PSDA	0.018	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
EXCESS RIVER WATER-24-040320	04/03/2020	320-60029-4	Hydrolyzed PSDA	0.016	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP SW Sampling **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit. The actual detection limits may be higher than reported.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-CFR-BLADEN-040220	04/02/2020	320-60035-1	Perfluorooctadecanoic acid	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC

Site: Fayetteville **Sampling Program:** CAP SW Sampling **Validation Options:** LABSTATS

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values higher than the upper control limit. The reported result may be biased high.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-TARHEEL-032720	03/26/2020	320-59859-2	Hydrolyzed PSDA	0.025	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-TARHEEL-032720	03/26/2020	320-59859-2	Hydrolyzed PSDA	0.027	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP SW Sampling **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values higher than the upper control limit. The reported result may be biased high.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-CFR-BLADEN-040220	04/02/2020	320-60035-1	R-PSDA	0.0083	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-CFR-BLADEN-040220	04/02/2020	320-60035-1	Hydrolyzed PSDA	0.015	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-CFR-BLADEN-040220	04/02/2020	320-60035-1	Hydrolyzed PSDA	0.015	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-CFR-BLADEN-040220	04/02/2020	320-60035-1	R-EVE	0.0028	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-CFR-BLADEN-040220	04/02/2020	320-60035-1	R-EVE	0.0027	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-CFR-TARHEEL-24-040320	04/03/2020	320-60032-2	R-EVE	0.0028	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-CFR-TARHEEL-24-040320	04/03/2020	320-60032-2	R-EVE	0.0030	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-TARHEEL-032720	03/26/2020	320-59859-2	R-PSDA	0.014	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-TARHEEL-032720	03/26/2020	320-59859-2	R-PSDA	0.013	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-TARHEEL-032720	03/26/2020	320-59859-2	R-EVE	0.0061	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-TARHEEL-032720	03/26/2020	320-59859-2	R-EVE	0.0067	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-CFR-TARHEEL-24-040320	04/03/2020	320-60032-2	R-PSDA	0.014	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-CFR-TARHEEL-24-040320	04/03/2020	320-60032-2	R-PSDA	0.013	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP SW Sampling **Validation Options:** LABSTATS

Validation Reason Quality review criteria exceeded between the REP (laboratory replicate) and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-CFR-BLADEN-040220	04/02/2020	320-60035-1	R-PSDA	0.0094	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** CAP SW Sampling **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CAP1Q20-CFR-BLADEN-040220	04/02/2020	320-60035-1	PFMOAA	0.041	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CAP1Q20-CFR-BLADEN-040220	04/02/2020	320-60035-1	PFMOAA	0.041	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

DVM Narrative Report

Site: Fayetteville **Sampling Program:** Offsite Seeps 2020 **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the data rejection level. The reported non-detect result is unusable.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
Lock-Dam Seep-030420	03/04/2020	1274938	Perfluorooctadecanoic acid	0.0026	ug/L	PQL		0.0026	R	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** Offsite Seeps 2020 **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit. The actual detection limits may be higher than reported.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
Lock-Dam Seep-030420	03/04/2020	1274938	Perfluorohexadecanoic acid (PFHxDA)	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** Offsite Seeps 2020 **Validation Options:** LABSTATS

Validation Reason One or more surrogates had relative percent recovery (RPR) values less than the data rejection level. The reported result is unusable.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
Lock-Dam Seep-030420	03/04/2020	1274938	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Lock-Dam Seep-030420	03/04/2020	1274938	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Lock-Dam Seep-030420	03/04/2020	1274938	N-methyl perfluoro-1-octanesulfonamide	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Lock-Dam Seep-030420	03/04/2020	1274938	N-ethylperfluoro-1-octanesulfonamide	0.0043	UG/L	PQL		0.0043	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Lock-Dam Seep-030420-D	03/04/2020	1274942	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Lock-Dam Seep-030420-D	03/04/2020	1274942	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Lock-Dam Seep-030420-D	03/04/2020	1274942	N-methyl perfluoro-1-octanesulfonamide	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Lock-Dam Seep-030420-D	03/04/2020	1274942	N-ethylperfluoro-1-octanesulfonamide	0.0043	UG/L	PQL		0.0043	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep E-030420	03/04/2020	1274946	N-methyl perfluoro-1-octanesulfonamide	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep E-030420	03/04/2020	1274946	N-ethylperfluoro-1-octanesulfonamide	0.0041	UG/L	PQL		0.0041	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep F-030420	03/04/2020	1274950	N-methyl perfluoro-1-octanesulfonamide	0.0027	ug/L	PQL		0.0027	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep F-030420	03/04/2020	1274950	N-ethylperfluoro-1-octanesulfonamide	0.0045	UG/L	PQL		0.0045	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep G-030420	03/04/2020	1274954	N-methyl perfluoro-1-octanesulfonamide	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep G-030420	03/04/2020	1274954	N-ethylperfluoro-1-octanesulfonamide	0.0043	UG/L	PQL		0.0043	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep I-030420	03/04/2020	1274962	N-methyl perfluoro-1-octanesulfonamide	0.0026	ug/L	PQL		0.0026	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep I-030420	03/04/2020	1274962	N-ethylperfluoro-1-octanesulfonamide	0.0044	UG/L	PQL		0.0044	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** Offsite Seeps 2020 **Validation Options:** LABSTATS

Validation Reason One or more surrogates had relative percent recovery (RPR) values less than the data rejection level. The reported result is unusable.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
Seep J-030420	03/04/2020	1274966	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep J-030420	03/04/2020	1274966	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep J-030420	03/04/2020	1274966	N-methyl perfluoro-1-octanesulfonamide	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep J-030420	03/04/2020	1274966	N-ethylperfluoro-1-octanesulfonamide	0.0041	UG/L	PQL		0.0041	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep K-030420	03/04/2020	1274970	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep K-030420	03/04/2020	1274970	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep K-030420	03/04/2020	1274970	N-methyl perfluoro-1-octanesulfonamide	0.0025	ug/L	PQL		0.0025	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep K-030420	03/04/2020	1274970	N-ethylperfluoro-1-octanesulfonamide	0.0042	UG/L	PQL		0.0042	UJ	EPA 537 Rev. 1.1 modified		537_Prep
Seep H-030420	03/04/2020	1274958	N-methyl perfluoro-1-octanesulfonamide	0.0028	ug/L	PQL		0.0028	UJ	EPA 537 Rev. 1.1 modified		537_Prep

Site: Fayetteville **Sampling Program:** Offsite Seeps 2020 **Validation Options:** LABSTATS

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values higher than the upper control limit. The reported result may be biased high.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
Seep H-030420	03/04/2020	1274961	Byproduct 4	0.030	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Seep H-030420	03/04/2020	1274958	Byproduct 4	0.028	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Seep G-030420	03/04/2020	1274957	Byproduct 4	0.044	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Seep G-030420	03/04/2020	1274954	Byproduct 4	0.042	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Seep F-030420	03/04/2020	1274953	Byproduct 4	0.068	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Seep F-030420	03/04/2020	1274950	Byproduct 4	0.067	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Seep E-030420	03/04/2020	1274949	Byproduct 4	0.053	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Seep E-030420	03/04/2020	1274946	Byproduct 4	0.050	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		
Lock-Dam Seep-030420-D	03/04/2020	1274945	Byproduct 4	0.49	UG/L	PQL		0.20	J	Cl. Spec. Table 3 Compound SOP		
Lock-Dam Seep-030420-D	03/04/2020	1274942	Byproduct 4	0.52	UG/L	PQL		0.20	J	Cl. Spec. Table 3 Compound SOP		
Lock-Dam Seep-030420	03/04/2020	1274941	Byproduct 4	0.44	UG/L	MDL	0.20	0.20	J	Cl. Spec. Table 3 Compound SOP		
Lock-Dam Seep-030420	03/04/2020	1274938	Byproduct 4	0.45	UG/L	PQL		0.20	J	Cl. Spec. Table 3 Compound SOP		

ADQM DATA REVIEW
NARRATIVE

Site	**Chemours FAY – Fayetteville**
Project	**Tarheel Sampling 2/14/20 - 5/11/20**
Project Reviewer	**Michael Aucoin, AECOM as a Chemours contractor**
Sampling Dates	**February 14, 2020** **March 31, 2020** **April 2, 2020** **April 6, 2020** **April 8, 2020** **April 9, 2020** **April 19, 2020** **April 22, 2020** **April 26, 2020** **April 29, 2020** **May 2, 2020** **May 6, 2020** **May 11, 2020**

Analytical Protocol

Laboratory	Analytical Method	Parameter(s)
TestAmerica - Sacramento	537 Modified	PFAS(1)
TestAmerica - Sacramento	Cl. Spec. Table 3 Compound SOP	Table 3+ compounds

1 Perfluoroalkylsubstances, a list of 37 compounds including HFPO-DA.

Sample Receipt

The following items are noted for this data set:

- All samples were received in satisfactory condition and within EPA temperature guidelines on:

  February 19, 2020
  April 9, 2020
  April 15, 2020
  April 25, 2020
  May 5, 2020
  May 9, 2020
  May 12, 2020

Data Review

The electronic data submitted for this project was reviewed via the Data Verification Module (DVM) process.

Overall the data is acceptable for use without qualification, except as noted below:

- R qualifiers applied by the DVM for very poor surrogate (isotope dilution analyte or IDA) recoveries were overwritten to UJ by the reviewer because data quality is not considered affected by the laboratory if the IDA signal-to-noise ratio is greater than 10:1, which was achieved for all IDA in the samples.
- Some analytical results have been qualified J as estimated, and non-detect results qualified UJ indicating an estimated reporting limit, due to a poor recovery of a surrogate, lab control spike, or matrix spike; and poor field duplicate or lab control spike precision. See the Data Verification Module (DVM) Narrative Report for which samples were qualified, the specific reasons for qualification, and potential bias in reported results.

Attachments

The DVM Narrative report is attached. The lab reports due to a large page count are stored on an AECOM network shared drive and are available to be posted on external shared drives, or on a flash drive.

Data Verification Module (DVM)

The DVM is an internal review process used by the ADQM group to assist with the determination of data usability. The electronic data deliverables received from the laboratory are loaded into the Locus EIM™ database and processed through a series of data quality checks, which are a combination of software (Locus EIM™ database Data Verification Module (DVM)) and manual reviewer evaluations. The data is evaluated against the following data usability checks:

- Field and laboratory blank contamination
- US EPA hold time criteria
- Missing Quality Control (QC) samples
- Matrix spike(MS)/matrix spike duplicate (MSD) recoveries and the relative percent differences (RPDs) between these spikes
- Laboratory control sample(LCS)/control sample duplicate (LCSD) recoveries and the RPD between these spikes
- Surrogate spike recoveries for organic analyses
- RPD between field duplicate sample pairs
- RPD between laboratory replicates for inorganic analyses
- Difference / percent difference between total and dissolved sample pairs.

There are two qualifier fields in EIM:

Lab Qualifier is the qualifier assigned by the lab and may not reflect the usability of the data. This qualifier may have many different meanings and can vary between labs and over time within the same lab. Please refer to the laboratory report for a description of the lab qualifiers. As they are lab descriptors they are not to be used when evaluating the data.

Validation Qualifier is the 3rd party formal validation qualifier if this was performed. Otherwise this field contains the qualifier resulting from the ADQM DVM review process. This qualifier assesses the usability of the data and may not equal the lab qualifier. The DVM applies the following data evaluation qualifiers to analysis results, as warranted:

Qualifier	**Definition**
B	Not detected substantially above the level reported in the laboratory or field blanks.
R	Unusable result. Analyte may or may not be present in the sample.
J	Analyte present. Reported value may not be accurate or precise.
UJ	Not detected. Reporting limit may not be accurate or precise.

The **Validation Status Code** field is set to “DVM” if the ADQM DVM process has been performed. If the DVM has not been run, the field will be blank.

If the DVM has been run (**Validation Status Code** equals “DVM”), use the **Validation Qualifier.**

DVM Narrative Report

Site: Fayetteville **Sampling Program:** Tarheel Sampling 2/14/20 - 5/11/20 **Validation Options:** LABSTATS

Validation Reason Only one surrogate has relative percent recovery (RPR) values outside control limits and the parameter is a PFC (Nondetects).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-TARHEEL-48-040220	04/02/2020	320-60098-3	Perfluorooctadecanoic acid	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC
CFR-TARHEEL-48-040220	04/02/2020	320-60098-3	N-ethylperfluoro-1-octanesulfonamide	0.0020	UG/L	PQL		0.0020	UJ	537 Modified		3535_PFC
CFR-TARHEEL-48-040220	04/02/2020	320-60098-3	Perfluorohexadecanoic acid (PFHxDA)	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC
CFR-TARHEEL-83-033120-D	03/31/2020	320-60098-2	Perfluorooctadecanoic acid	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC
CFR-TARHEEL-83-040620	04/06/2020	320-60098-4	Perfluorooctadecanoic acid	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC
CFR-TARHEEL-83-040620	04/06/2020	320-60098-4	N-ethylperfluoro-1-octanesulfonamide	0.0020	UG/L	PQL		0.0020	UJ	537 Modified		3535_PFC
CFR-TARHEEL-83-033120-D	03/31/2020	320-60098-2	N-ethylperfluoro-1-octanesulfonamide	0.0020	UG/L	PQL		0.0020	UJ	537 Modified		3535_PFC
CFR-TARHEEL-83-033120-D	03/31/2020	320-60098-2	Perfluorohexadecanoic acid (PFHxDA)	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC
CFR-TARHEEL-83-040620	04/06/2020	320-60098-4	N-methyl perfluoro-1-octanesulfonamide	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC

Site: Fayetteville **Sampling Program:** Tarheel Sampling 2/14/20 - 5/11/20 **Validation Options:** LABSTATS

Validation Reason One or more surrogates had relative percent recovery (RPR) values less than the data rejection level. The reported non detect reporting limit is an estimated value.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-TARHEEL-48-040220	04/02/2020	320-60098-3	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC
CFR-TARHEEL-48-040220	04/02/2020	320-60098-3	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0040	ug/L	PQL		0.0040	UJ	537 Modified		3535_PFC
CFR-TARHEEL-83-033120-D	03/31/2020	320-60098-2	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC
CFR-TARHEEL-83-040620	04/06/2020	320-60098-4	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC
CFR-TARHEEL-83-040620	04/06/2020	320-60098-4	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.0040	ug/L	PQL		0.0040	UJ	537 Modified		3535_PFC

Site: Fayetteville **Sampling Program:** Tarheel Sampling 2/14/20 - 5/11/20 **Validation Options:** LABSTATS

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values higher than the upper control limit. The reported result may be biased high.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-TARHEEL-83-033120-D	03/31/2020	320-60098-2	Byproduct 5	0.0084	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-TARHEEL-83-040620	04/06/2020	320-60098-4	Byproduct 5	0.020	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-TARHEEL-48-040220	04/02/2020	320-60098-3	Byproduct 5	0.014	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-TARHEEL-83-033120	03/31/2020	320-60098-1	Byproduct 5	0.0082	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-TARHEEL-83-033120	03/31/2020	320-60098-1	Byproduct 5	0.0082	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** Tarheel Sampling 2/14/20 - 5/11/20 **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values higher than the upper control limit. The reported result may be biased high.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
FAY-CFR-TARHEEL-021420	02/14/2020	320-58729-1	R-EVE	0.0024	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
FAY-CFR-TARHEEL-021420	02/14/2020	320-58729-1	R-EVE	0.0027	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
FAY-CFR-TARHEEL-021420	02/14/2020	320-58729-1	Byproduct 4	0.0034	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
FAY-CFR-TARHEEL-021420	02/14/2020	320-58729-1	Byproduct 4	0.0034	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
FAY-CFR-TARHEEL-021420	02/14/2020	320-58729-1	Byproduct 5	0.0042	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
FAY-CFR-TARHEEL-021420	02/14/2020	320-58729-1	Byproduct 5	0.0050	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-TARHEEL-83-033120	03/31/2020	320-60098-1	R-EVE	0.0021	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** Tarheel Sampling 2/14/20 - 5/11/20 **Validation Options:** LABSTATS

Validation Reason High relative percent difference (RPD) observed between field duplicate and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-TARHEEL-83-033120-D	03/31/2020	320-60098-2	Perfluorohexane Sulfonic Acid	0.0039	UG/L	PQL		0.0020	J	537 Modified		3535_PFC
CFR-TARHEEL-83-033120-D	03/31/2020	320-60098-2	Perfluorobutanoic Acid	0.0058	UG/L	PQL		0.0020	J	537 Modified		3535_PFC
CFR-TARHEEL-83-033120-D	03/31/2020	320-60098-2	Perfluoroheptanoic Acid	0.013	UG/L	PQL		0.0020	J	537 Modified		3535_PFC
CFR-TARHEEL-83-033120	03/31/2020	320-60098-1	Perfluorohexane Sulfonic Acid	0.0083	UG/L	PQL		0.0020	J	537 Modified		3535_PFC
CFR-TARHEEL-83-033120	03/31/2020	320-60098-1	Perfluorobutanoic Acid	0.011	UG/L	PQL		0.0035	J	537 Modified		3535_PFC
CFR-TARHEEL-83-033120	03/31/2020	320-60098-1	Perfluoroheptanoic Acid	0.016	UG/L	PQL		0.0025	J	537 Modified		3535_PFC

Site: Fayetteville **Sampling Program:** Tarheel Sampling 2/14/20 - 5/11/20 **Validation Options:** LABSTATS

Validation Reason High relative percent difference (RPD) observed between LCS and LCSD samples. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-TARHEEL-83-040620	04/06/2020	320-60098-4	Perfluorotridecanoic Acid	0.0027	UG/L	PQL		0.0020	J	537 Modified		3535_PFC

Site: Fayetteville **Sampling Program:** Tarheel Sampling 2/14/20 - 5/11/20 **Validation Options:** LABSTATS

Validation Reason Only one surrogate has relative percent recovery (RPR) values outside control limits and the parameter is a PFC (Detects).

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-TARHEEL-83-040620	04/06/2020	320-60098-4	Perfluorotetradecanoic Acid	0.0031	UG/L	PQL		0.0020	J	537 Modified		3535_PFC
CFR-TARHEEL-83-040620	04/06/2020	320-60098-4	Perfluorohexadecanoic acid (PFHxDA)	0.0025	ug/L	PQL		0.0020	J	537 Modified		3535_PFC
CFR-TARHEEL-83-040620	04/06/2020	320-60098-4	Perfluorododecanoic Acid	0.0021	UG/L	PQL		0.0020	J	537 Modified		3535_PFC

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

APPENDIX H

Supporting Calculations – Onsite Groundwater Pathway

APPENDIX H

SUPPORTING CALCULATIONS – ON SITE GROUNDWATER PATHWAY

INTRODUCTION AND OBJECTIVE

Based on the conceptual site model, the Black Creek Aquifer and the Flood Plain deposits at the river bank are the primary hydrogeologic units that are potentially in hydraulic connection with the Cape Fear River. The Cape Fear River stage is lower than the top of the Black Creek Aquifer, except during peak rainfall or flooding, indicating that the Cape Fear River is a discharge boundary for the aquifer. Onsite groundwater from the Black Creek Aquifer discharging to the Cape Fear River is therefore a potential pathway for per- and polyfluoroalkyl substances (PFAS) mass loading to the Cape Fear River. This pathway was identified as Transport Pathway Number 5 in the PFAS mass loading design in the. The objective of the supporting calculations presented in this appendix is to estimate PFAS mass loading from onsite groundwater discharge based on calculated PFAS mass flux for segments of the Black Creek Aquifer along the river frontage.

APPROACH

The PFAS mass loading from onsite groundwater discharge was estimated as follows. Supporting data are provided in Table H1:

1. The Cape Fear River frontage was divided into 8 segments (Figure H1). Each segment includes at least one groundwater monitoring well that is considered representative of the Black Creek Aquifer and that is included in the Corrective Action Plan (Geosyntec, 2019b).

2. The thickness of the Black Creek Aquifer (h) was estimated for each segment based on the segment length and the cross-sectional area of the Black Creek Aquifer, as determined by the three-dimensional hydrostratigraphic model of the Site, constructed using CTech's Earth Volumetric Studio (EVS) software (Geosyntec, 2019b):

$$h = \frac{A}{l}$$

   where h is the Black Creek Aquifer thickness [ft];

   A is the cross-sectional area of the Black Creek Aquifer [ft^2]; and

   l is the segment length [ft].

   The EVS model output for each segment is presented in Figure H2.

3. The hydraulic gradient (i) was derived based on the groundwater level contour map. For each segment, the gradient was estimated based on the distance between contour lines in the vicinity of the river frontage (Figure H3):

$$i = \frac{\Delta h}{d}$$

where *i* is the hydraulic gradient [ft/ft];

Δh is the head difference between two contour lines [ft]; and

d is the estimated distance between the contour lines [ft]

This approach is considered to best represent the likely groundwater fluxes discharging from the Black Creek Aquifer to the Cape Fear River. Based on hydrographs from wells along the river presented in Figure H-4 hydraulic gradients in the aquifer are relatively constant over time. With the exception of large changes in the river level (over ten feet), these wells respond to river level fluctuation in a subdued manner.

4. The hydraulic conductivity (K) was estimated for each segment using the results of slug tests conducted for select monitoring wells representative of the Black Creek Aquifer. The range of slug test results for LTW-02, LTW-03, and LTW-05 were used to determine the hydraulic conductivity of segments 3,4, and 7, respectively since these wells are located in the corresponding segments. For other segments where no slug tests were performed, the range of slug test results for the entire Black Creek Aquifer were used to determine the hydraulic conductivity. In both cases, the minimum hydraulic conductivity and the geometric mean hydraulic conductivity were used to calculate a range of mass flux values. Table H2 provides the results of the slug tests and the minimum and geometric mean hydraulic conductivities for each segment.

5. The total Table 3+ PFAS concentration for each segment was determined based on grab samples collected from monitoring wells. For segments with two wells, the average total Table 3+ PFAS concentration was used. PFAS analytical results for these groundwater samples are presented in Appendix D of this report.

6. Mass flux for each segment, representing the PFAS mass loading to the river from groundwater, was determined as follows:

$$Q = lhKiCf$$

where *Q* is the mass flux [mg/sec];

l is the segment length [ft];

h is the Black Creek Aquifer thickness [ft];

K is the hydraulic conductivity of the aquifer [ft/sec];

i is the hydraulic gradient [ft/ft];

C is the total Table 3+ concentration [ng/L]; and

f is the conversion factor between cubic feet and liters and between ng and mg.

7. The total mass flux for the groundwater pathway was calculated as the sum of the individual mass flux results for the 8 segments.

POTENTIAL FUTURE METHODOLOGY MODIFCATIONS

Periodically, adjustments to this calculation methodology may be required based on changes in conditions or refinement of Site knowledge.

REFERENCES

Geosyntec, 2019. Corrective Action Plan. Chemours Fayetteville Works. December 2019.

TABLES

TABLE H1
ONSITE GROUNDWATER PATHWAY SUPPORTING DATA
Chemours Fayetteville Works, North Carolina

Segment	Well	Sample Date	Segment Length (ft)	Cross-sectional Area of Black Creek Aquifer (ft^2)[1]	Average Thickness of Black Creek Aquifer (ft)	Groundwater Contour Elevation Difference (ft)[2]	Horizontal Distance Between Contours (ft)[2]	Hydraulic Gradient (ft/ft)	Minimum Hydraulic Conductivity (ft/sec)[3]	Geometric Mean Hydraulic Conductivity (ft/sec)[3]	Total Table 3+ (17 Compounds)				Total Table 3+ (20 Compounds)			
											Total Table 3+ Concentration[4] (ng/L)	Average Total Table 3+ Concentration for Segment (ng/L)	Minimum Mass Discharge (mg/sec)	Geometric Mean Mass Discharge (mg/sec)	Total Table 3+ Concentration[4] (ng/L)	Average Total Table 3+ Concentration for Segment (ng/L)	Minimum Mass Dicharge (mg/sec)	Geometric Mean Mass Discharge (mg/sec)
1	PIW-1S	2/13/2020	1,150	13,400	11.7	20	497.4	0.040	1.8E-05	3.2E-04	12,000	29,000	0.00797	0.142	13,000	30,000	0.00824	0.147
	PIW-1D	2/14/2020									46,000				47,000			
2	PIW-3D	2/24/2020	873	11,010	12.6	20	454.6	0.044	1.8E-05	3.2E-04	40,000	40,000	0.00988	0.176	41,000	41,000	0.0101	0.180
3	LTW-02	2/24/2020	875	5,560	6.35	20	717.0	0.028	3.0E-04	4.0E-04	80,000	80,000	0.105	0.139	82,000	82,000	0.108	0.143
4	LTW-03	2/25/2020	729	8,340	11.4	20	717.0	0.028	2.0E-05	4.6E-05	220,000	220,000	0.0290	0.0670	230,000	230,000	0.0303	0.0700
5	PZ-22	2/20/2020	656	15,200	23.2	20	753.6	0.027	1.8E-05	3.2E-04	250,000	250,000	0.0515	0.919	250,000	250,000	0.0515	0.919
6	PIW-7S	2/19/2020	524	16,000	30.5	20	753.6	0.027	1.8E-05	3.2E-04	130,000	180,000	0.0389	0.693	140,000	185,000	0.0399	0.712
	PIW-7D	2/19/2020									230,000				230,000			
7	LTW-05	2/19/2020	887	17,200	19.4	20	826.9	0.024	1.8E-05	4.8E-05	350,000	350,000	0.0743	0.196	350,000	350,000	0.0743	0.196
8	PW-11	2/13/2020	1,990	56,300	28.3	20	826.9	0.024	1.8E-05	3.2E-04	680,000	680,000	0.473	8.43	680,000	680,000	0.473	8.43
											Total		**0.790**	**10.8**	**Total**		**0.795**	**10.8**

Notes

1 - Cross sectional areas were determined using the three-dimensional hydrostratigraphic model of the Site, constructed using CTech's Earth Volumetric Studio (EVS) software (Figure H2)
2 - Vertical and horizontal distances for hydraulic gradient determined from groundwater level contour map for the February 2020 synoptic well gauging round (Figure H3).
3 - Hydraulic conductivity values are based on slug test results presented in Table H2.
4 - Detailed Table 3+ PFAS Concentrations provided in Table 10.
ft - feet
ft/sec - feet per second
ft^2 - square feet
mg/sec - milligrams per second
ng/L - nanograms per liter

TABLE H2
HYDRAULIC CONDUCTIVITY RESULTS
Chemours Fayetteville Works, North Carolina

Segment	Well	Slug Test	Observed Hydraulic Conductivity (ft/sec)	Minimum Hydraulic Conductivity (ft/sec)	Geometric Mean Hydraulic Conductivity (ft/sec)
--	BCA-01	T1	2.1E-04	2.1E-04	2.8E-04
		T1*	3.7E-04		
		T2	2.2E-04		
		T2*	3.7E-04		
		T3	2.1E-04		
		T3*	3.6E-04		
		T4	2.2E-04		
		T4*	3.9E-04		
--	BCA-02	T1	4.6E-04	3.1E-04	5.4E-04
		T1*	1.0E-03		
		T2	4.2E-04		
		T2*	9.1E-04		
		T3	3.4E-04		
		T3*	7.4E-04		
		T4	3.3E-04		
		T4*	7.4E-04		
		T5	3.1E-04		
		T5*	6.8E-04		
--	BCA-04	T1	1.1E-03	1.1E-03	1.4E-03
		T1*	1.6E-03		
		T2	1.1E-03		
		T2*	1.7E-03		
		T3	1.1E-03		
		T3*	1.6E-03		
		T4	1.1E-03		
		T4*	1.7E-03		
		T5	1.2E-03		
		T5*	2.3E-03		
3	LTW-02	T1	3.0E-04	3.0E-04	4.0E-04
		T1*	4.8E-04		
		T2	3.2E-04		
		T2*	4.9E-04		
		T3	3.1E-04		
		T3*	4.7E-04		
		T4	3.9E-04		
		T4*	5.5E-04		
		T5	3.0E-04		
		T5*	4.5E-04		
4	LTW-03	T1	6.5E-05	2.00E-05	4.6E-05
		T2	2.4E-05		
		T3	2.6E-05		
		T4	2.6E-04		
		T5	2.0E-05		
7	LTW-05	T1	2.4E-05	1.8E-05	4.8E-05
		T1*	8.0E-05		
		T2	1.8E-05		
		T2*	3.5E-05		
		T4	7.4E-05		
		T4*	1.3E-04		
Remaining Segments (1, 2, 5, 6, and 8)	All BCA Wells	--	--	1.8E-05	3.2E-04

Notes
* - Screen length used for aquifer thickness
BCA - Black Creek Aquifer
ft/sec - feet per second

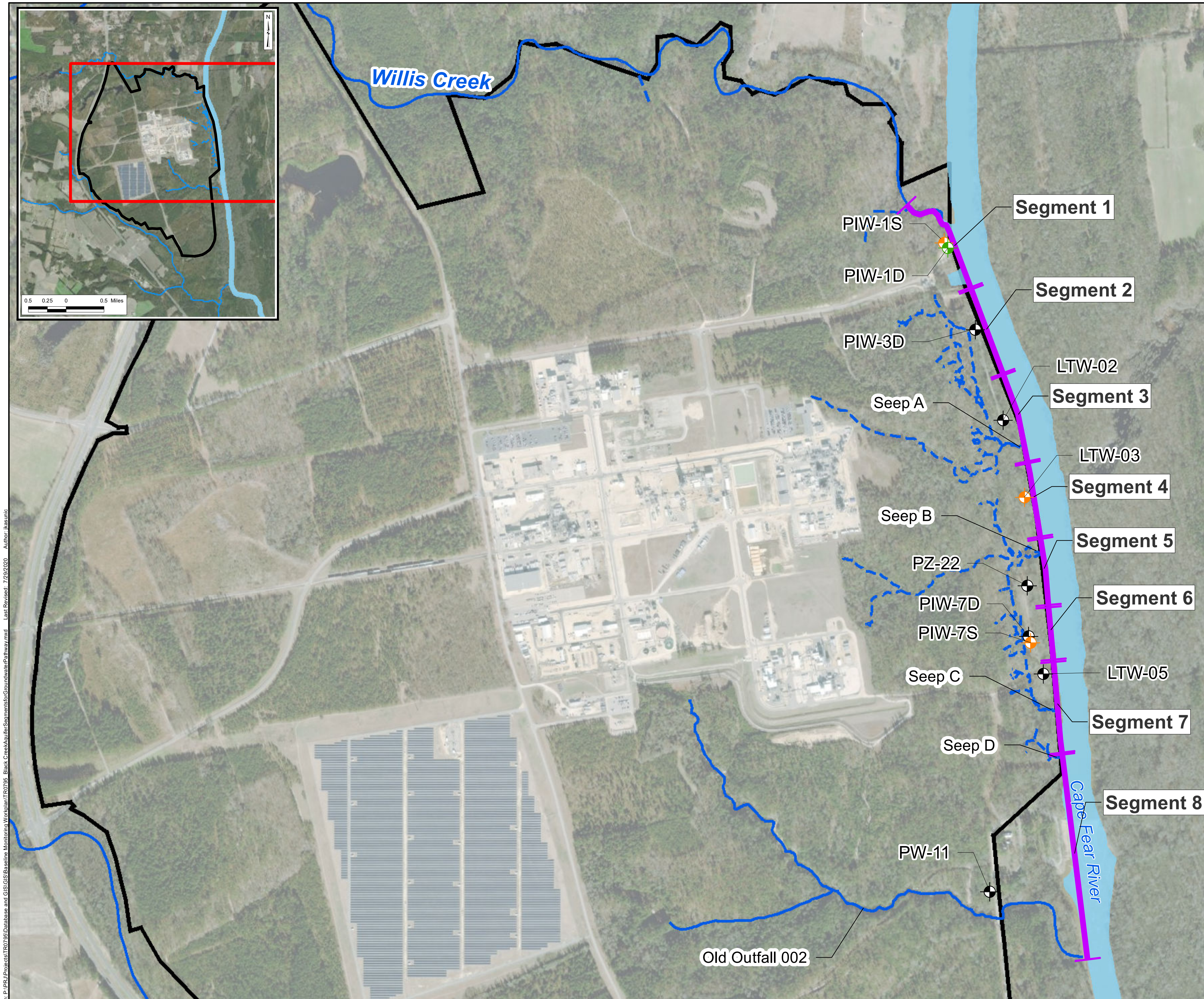
TABLE H3
ONSITE GROUNDWATER FLOW RATE
Chemours Fayetteville Works, North Carolina

Segment	Cross-sectional Area of Black Creek Aquifer (ft^2)	Hydraulic Gradient (ft/ft)	Minimum Hydraulic Conductivity (ft/sec)	Geometric Mean Hydraulic Conductivity (ft/sec)	Minimum Flow Rate (L/sec)	Geometric Mean Flow Rate (L/sec)
1	13,400	0.040	1.8E-05	3.2E-04	0.27	4.90
2	11,010	0.044	1.8E-05	3.2E-04	0.25	4.40
3	5,560	0.028	3.0E-04	4.0E-04	1.32	1.74
4	8,340	0.028	2.0E-05	4.6E-05	0.13	0.30
5	15,200	0.027	1.8E-05	3.2E-04	0.21	3.67
6	16,000	0.027	1.8E-05	3.2E-04	0.22	3.86
7	17,200	0.024	1.8E-05	4.8E-05	0.21	0.56
8	56,300	0.024	1.8E-05	3.2E-04	0.69	12.4
				Total	**3.30**	**31.8**

Notes

Supporting data for cross-sectional area, hydraulic gradient, and hydraulic conductivity provided in Table H1.
ft - feet
ft/sec - feet per second
ft^2 - square feet
L/sec - liters per second

FIGURES



Legend

- Surficial Aquifer
- Floodplain Deposits
- Black Creek Aquifer
- Observed Seep
- Nearby Tributary
- Site Boundary
- Transect Line

Notes:
1. Due to the scale of the map, pairs of wells that are in close proximity have been offset for visibility. Therefore, the placement of these wells on this map do not reflect their true geographic coordinates.
2. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS.
3. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

1,000 500 0 1,000 Feet

Black Creek Aquifer Segments for Groundwater Pathway

Chemours Fayetteville Works, North Carolina

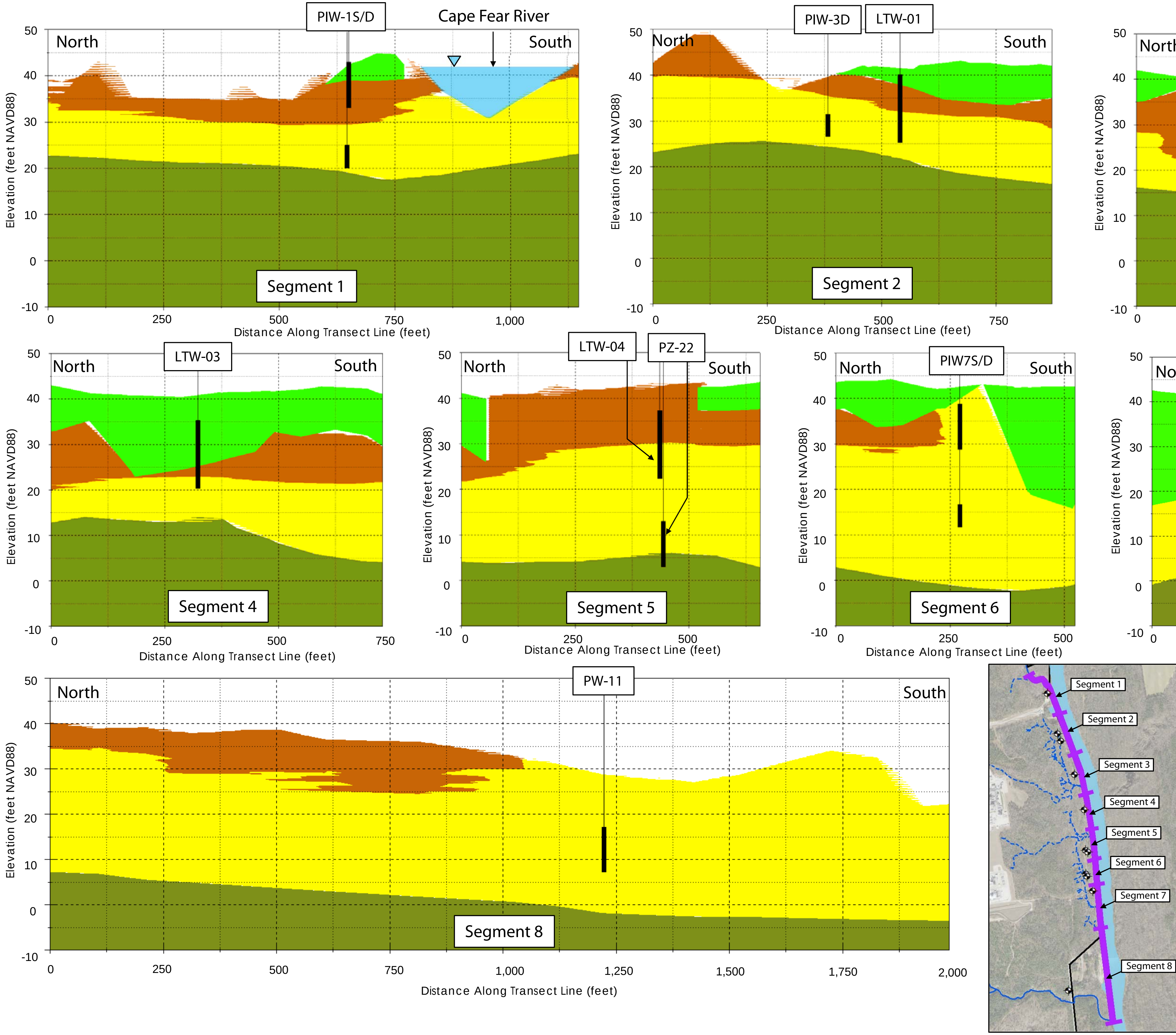
Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure **H1**

Raleigh | July 2020

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend

Well screen(1)

Units(2)

- Floodplain Deposits
- Black Creek Confining Unit
- Black Creek Aquifer
- Upper Cape Fear Confining Unit

Notes:
NAVD88 – feet North America Datum of 1988
Vertical Exaggeration = 10x
1. Wells are projected onto the cross-section.

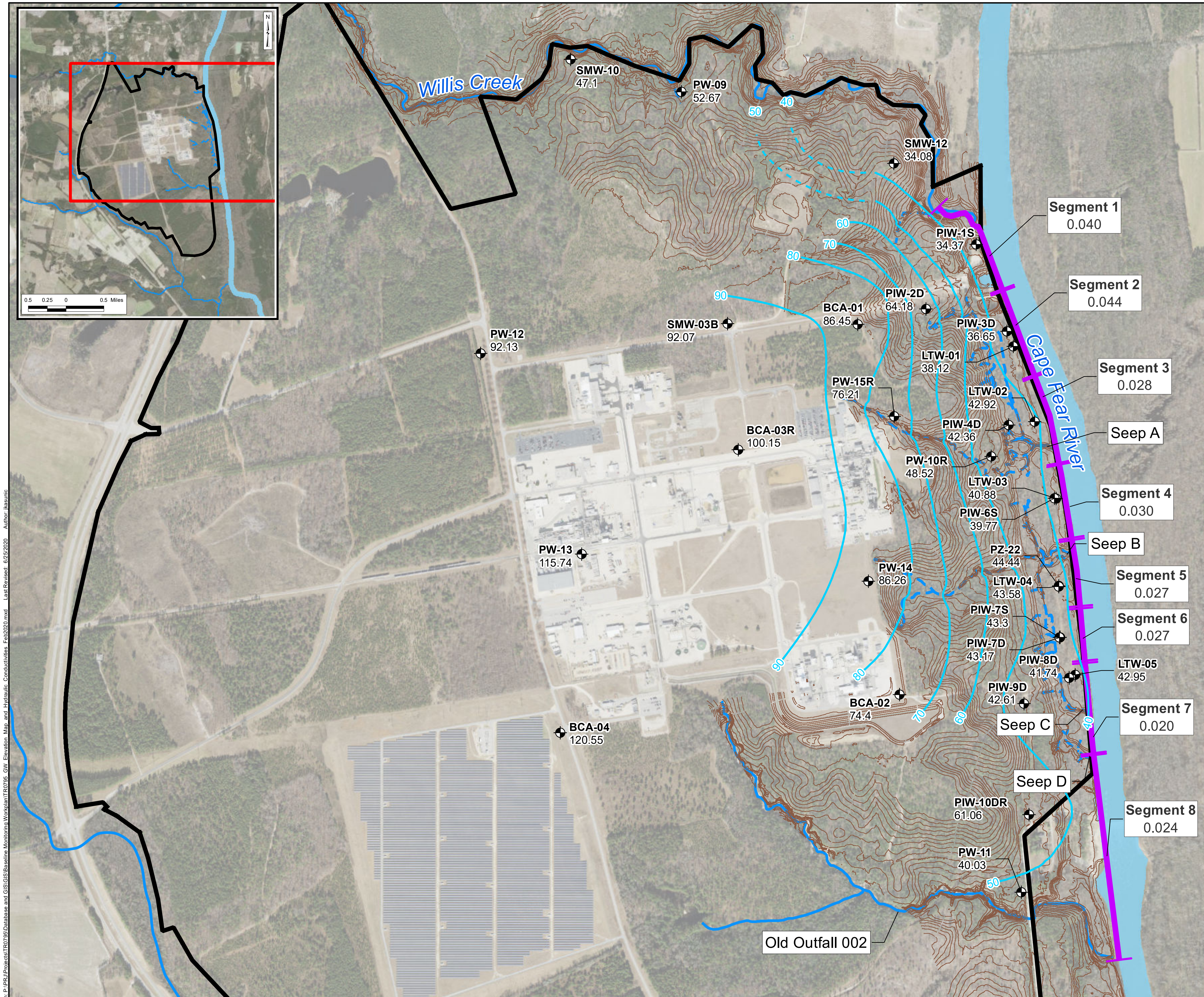
Cross-Sections Along Cape Fear River Transect Line
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Figure **H2**

Raleigh	July 2020



Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US

Legend

Monitoring Well		Nearby Tributary	
Groundwater Contours (ft NAVD88) - 10 feet interval		Ground Surface Elevation Contour (ft NAVD88) - 5 ft interval	
Potentiometric Surface Inferred		Transect Line	
Observed Seep		Site Boundary	

Segment 1 — Segment Number
0.040 — Hydraulic Gradient (ft/ft)

Notes:
ft - feet
ft NAVD88 - feet North American Vertical Datum 1988.
1. Depth to water measurements collected on February 5, 2020 were used to generate contours.
2. Ground surface elevation contours are derived from Lidar scans performed on December 1, 2019 and December 19, 2019 by Spectral Data Consultants, Inc.
3. Seep locations identified visually as reported in Geosyntec, 2019. Seeps and Creeks Investigation Report. Chemours Fayetteville Works. 26 August 2019.
4. The hydraulic gradient was derived using the groundwater level contours shown here, based on the distance between contour lines in the vicinity of the river frontage. Vertical and horizontal distances used to estimate hydraulic gradient are provided in Table H1.
5. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS (MajorHydro shapefile).
6. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

1,100 550 0 1,100 Feet

Groundwater Elevation Map and Hydraulic Gradients - February 2020

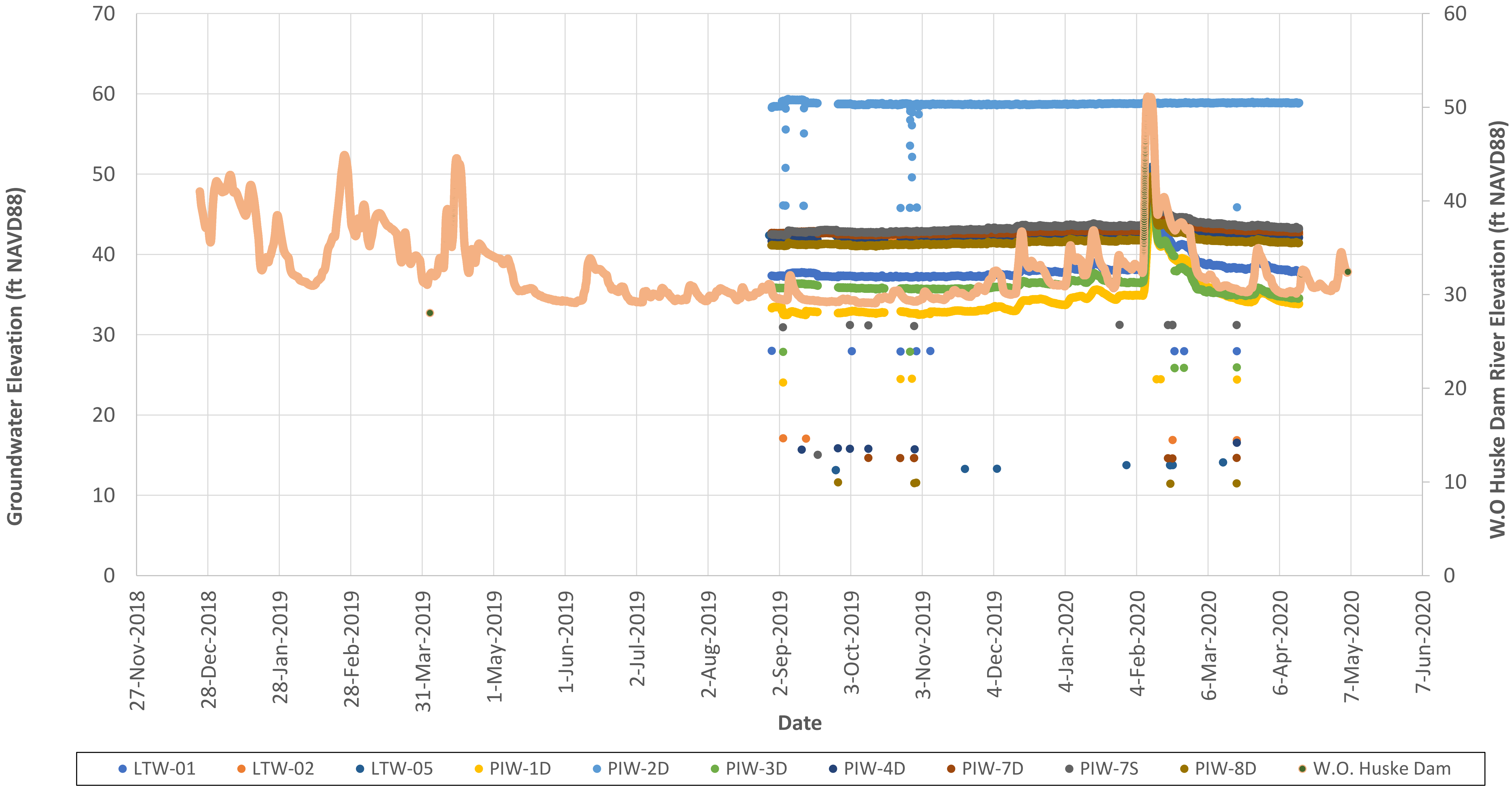
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure H3

Raleigh | July 2020



Notes:
ft - feet
NAVD88 - North American Vertical Datum of 1988 NAVD88 - North American Vertical Datum of 1988

Hydrograph for Select Onsite Groundwater Monitoring Wells and W.O Huske Dam
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure **H-4**

Raleigh | July 2020

\\projects\esb.geosyntec.com\ESSL\DavWWWRoot\SS\FWConsentOrder\Shared Documents\34 - P16 Quarterly Reports\2020 Q1\Report\Appendices\Appendix H - Onsite Groundwater Gradients\Figure H-4 - Hydrographs.xls

APPENDIX I

Cape Fear River Mass Loading Calculations

APPENDIX I

CAPE FEAR RIVER MASS LOADING CALCULATIONS

This appendix presents the methodology for calculating three types of mass loads:

1. The total measured in-river Table 3+ PFAS mass load based on time-weighted concentration measurements of Table 3+ PFAS primarily from composite samples of Cape Fear River water and measured Cape Fear River flow volumes at the W.O. Huske Dam that are adjusted for travel times to the downstream monitoring location at the CFR-TARHEEL;
2. The total measured and estimated Table 3+ PFAS mass load captured by remedies implemented by Chemours; this is the load fraction that was prevented from reaching the Cape Fear River; and
3. The total measured Total Table 3+ PFAS mass load to the Cape Fear River defined as the sum of the measured in-river loads and the remedy prevented loads.

The following sections detailed calculation methods for each type of mass load: Total, River and Captured Mass Loads.

Total Mass Load Calculation Methodology

The Total Mass Load is calculated following Equation 1 below:

Equation 1: Total Table 3+ Mass Load

$$MTT3_{CFR} = m_{CFR} + m_{Remedies}$$

where,

$MTT3_{CFR}$ = is the Total Mass Load of Table 3+ PFAS compounds in the Cape Fear River, including the mass load prevented from reaching the Cape Fear River by implemented remedies;

m_{CFR} = is the River Mass Load estimated using PFAS concentrations in samples taken in the Cape Fear River downstream of the Site where the river is well mixed and using measured river flow volumes;

$m_{Remedies}$ = is the Captured Mass Load prevented from reaching the Cape Fear River by remedies implemented by Chemours;

The following subsections describe how the River and Captured Mass Loads are calculated.

River Mass Load Calculation Methodology

The River Mass Load is the estimated mass, in kilograms, that has reached the Cape Fear River over a period of time. The River Mass Load, m_{CFR}, is calculated using primarily composite samples from the Cape Fear River and corresponding river flow volumes. The River Mass Load is calculated for a given time period following Equation 2 below:

Equation 2: River Mass Load

$$m_{CFR} = \sum_{n} \sum_{i=1}^{i=\mathrm{I}} c_{CFR,n,i} V_{CFR,n}$$

where,

m_{CFR} = is the total Table 3+ PFAS mass load estimated from PFAS concentrations in samples taken in the Cape Fear River downstream of the Site where the river is well mixed and measured river flow volumes;

n = is the number of mass load time intervals during the monitoring period;

i = represents each of the Table 3+ SOP PFAS constituents listed in Table 1.

I = represents total number of Table 3+ SOP PFAS constituents included in the summation of Total Table 3+ concentrations, e.g., 17 or 20;

$c_{CFR,n,i}$ = is the measured or estimated concentration of Table 3+ PFAS for each total mass loading time interval based on samples collected from the Cape Fear River; and

$V_{CFR,n}$ = is the volume of Cape Fear River water that flowed passed the sampling point during the total mass loading time interval.

Calculation of Time-Weighted Average Concentrations

During a time period, multiple samples will be collected, most of them being composite samples and some potentially being grab samples. The calculation methodology outlined here considers all collected samples in the time period, including cases where samples are collected contemporaneously with each other and cases where composite sample collection events do not occur successively, as is the case with twice weekly 24 hour composite samples. To facilitate this calculation the overall time period is separated into discrete time intervals with corresponding time-weighted concentrations calculated for each interval. The time intervals are defined as the duration in time between two sampling events, where sampling events consist of:

- Beginning of a composite sample collection;
- End of a composite sample collection; or
- Collection of a grab sample.

Equation 3 shows the formula used to calculate the total flow volume for each interval.

Equation 3: Mass Load Time Interval Concentration

$$c_{CFR,n,i} = \sum_{k} c_{CFR,n,i,k}\, w_k$$

where

$$w_k = \frac{\frac{t_n}{t_k}}{\sum_k \frac{t_n}{t_k}}$$

where,

$c_{CFR,n,i}$ = is the measured or estimated concentration of Table 3+ PFAS for each total mass loading time interval based on samples collected from the Cape Fear River;

n = is the number of mass load time intervals during the monitoring period;

i = is the number of Table 3+ PFAS compounds being summed to determine the total Table 3+ PFAS concentration in the sample;

k = is the number of concentration samples considered in the mass load time interval;

$c_{CFR,n,i,k}$ = is the measured concentration of Table 3+ PFAS for each sample result considered in calculating the time-weighted average concentration for a mass load time interval;

w_k = is the weighting factor calculated for and applied individually to each concentration;

t_n = the length of time of the mass load time interval; and

t_k = the length of time of the collected sample. For composite samples, t_k is the total length of the composite sample collection period. If $t_k < t_n$, i.e., the composite sample collection time is less than the interval time, or a grab sample was collected, then t_k is set to equal the interval time for the purposes of concentration weighting.

<u>Calculation of Travel Time Adjusted Flow Volumes</u>

To calculate the mass load, river flow volumes are calculated for each time interval using United States Geological Survey (USGS) reported flows at the W.O. Huske Dam. A time offset is applied to the flow data to account for travel time for the flow passing the W.O. Huske Dam to reach the CFR-TARHEEL location. River flow passing the W.O. Huske is estimated to have a travel time between 2 and 12 hours to reach CFR-TARHEEL depending on river flow (e.g., the flow rate passing W.O. Huske Dam at 8 am will arrive at CFR-TARHEEL at 11 am for a 3 hour travel time). Travel times are estimated based on the results of a numerical model of the Cape Fear River which developed a regression curve between the USGS reported gage heights at W.O. Huske Dam and travel times. Equation 4 shows the formula used to calculate the time offset. The total volume of flow for each mass loading interval is calculated as the sum of all individual flow measurements for an interval where each measurement multiplied by its corresponding 15-minute time duration. Equation 5 shows the formula used to calculate the total flow volume for each interval.

Equation 4: Travel time offset W.O. Huske Dam to Tar Heel Ferry Road Bridge

$$t_{offset} = 13{,}422 \cdot Q_{CFR\,WOHD}^{-1} + 2.019$$

where,

t_{offset} = is the travel time flow in the Cape Fear River takes in hours to pass from the W.O. Huske Dam to the Tar Heel Ferry Road Bridge based on the measured flow in the Cape Fear River at the W.O. Huske Dam;

$Q_{CFR\,WOHD}^{-1}$ = is the inverse of the measured flow rate of the Cape Fear River at W.O. Huske Dam for a given point in time in cubic feet per second; and

$13{,}422\ and\ 2.019$ = are constant values, slope and intercept of the regression curve, respectively.

Equation 5: Cape Fear River Flow Volume per Interval

$$V_{CFR,n} = \sum_{m} Q_{CFR\,WOHD,n,m+t_{offset}} \cdot (t_{n,m} - t_{n,m-1})$$

where,

$V_{CFR,n}$ = is the volume of Cape Fear River water that flowed past the sampling point during the total mass loading time interval;

n = signifies total mass loading time intervals number for which the volume is being calculated;

m = is the number of 15-minute flow measurement durations recorded by the USGS station at W.O. Huske Dam during a total mass loading time interval;

$Q_{CFR\,WOHD,n,m+t_{offset}}$ = is the Cape Fear River flow rate (units of volume per time) at Tar Heel Ferry Road bridge based on the recorded values at W.O.Huske Dam and adjusted for travel time as described in Equation 4;

$(t_{n,m} - t_{n,m-1})$ = is the length of time for the flow measurement durations (units of time reported typically in 15 minute intervals by USGS).

Complete Calculation of River Mass Load

Based on all the calculation details described above, the full expanded version of the River Mass Load calculation is shown below in Equation 6.

Equation 6: Expanded River Mass Load Calculation

$$m_{CFR} = \sum_{n} \sum_{i=1}^{i=\mathrm{I}} \sum_{k} c_{CFR,n,i,k} \frac{\frac{t_n}{t_k}}{\sum_k \frac{t_n}{t_k}} \sum_{m} Q_{CFR\,WOHD,n,m+t_{offset}} \cdot (t_{n,m} - t_{n,m-1})$$

Captured Mass Load Calculation Methodology

Remedies to be implemented by Chemours (e.g. onsite seeps interim remedies, Outfall 002 remedy) will prevent Table 3+ PFAS mass loads from reaching the Cape Fear River. The specific methodology for estimating the prevented mass per remedy will be developed on a per remedy basis. The goal of such calculations will be to estimate for a given time period (i.e. one quarter) the Table 3+ PFAS mass diverted from reaching the Cape Fear River by the remedy that would have otherwise reached the Cape Fear River.

Mass Discharge at Bladen Bluffs and Kings Bluff Intakes

This subsection presents the methodology used to calculate mass discharge at Bladen Bluffs and Kings Bluff Intakes. Total Table 3+ PFAS mass discharge is calculated as:

Equation 7: Mass Discharge at Bladen Bluffs and Kings Bluff Intakes

$$CFR_{DS} = \sum_{i=1}^{i=I} M_i = \sum_{i=1}^{i=I} (C_i \times Q)$$

where,

CFR_{DS} = Total Table 3+ PFAS mass discharge in the downstream river locations measured in mass per unit time [MT^{-1}], typically milligrams per second.

i = represents each of the Table 3+ SOP PFAS constituents listed in Table 1.

I = represents total number of Table 3+ SOP PFAS constituents included in the summation of Total Table 3+ concentrations, e.g., 17 or 20.

M_i = mass load of each Table 3+ PFAS constituent *i* with measured units in mass per unit time [MT^{-1}], typically milligrams per second.

C_i = concentration of each Table 3+ PFAS constituent *i* with measured units typically in nanograms per liter.

Q_n = volumetric flow rate with measured units in volume per time [L^3T^{-1}], typically liters per second. For Bladen Bluffs, the volumetric flow recorded at W.O. Huske Dam is adjusted for travel time using Equation 8.

Equation 8: Travel time offset W.O. Huske Dam to Bladen Bluffs Intake

$$t_{offset-BBI} = 8{,}826 \cdot Q_{CFR\ WOHD}^{-1} + 1.530$$

where,

$t_{offset-BBI}$ = is the travel time flow in the Cape Fear River takes in hours to pass from the W.O. Huske Dam to the Bladen Bluffs Intake based on the measured flow in the Cape Fear River at the W.O. Huske Dam;

$Q_{CFR\,WOHD}^{-1}$ = is the inverse of the measured flow rate of the Cape Fear River at W.O. Huske Dam for a given point in time in cubic feet per second; and

$8{,}826\ and\ 1.530$ = are constant values, slope and intercept of the regression curve, respectively.

* * * * * * *

APPENDIX J

Supporting Calculations – Direct Aerial Deposition on Cape Fear River

APPENDIX J

SUPPORTING CALCULATIONS – DIRECT AERIAL DEPOSITION ON CAPE FEAR RIVER

INTRODUCTION AND OBJECTIVE

Nine pathways (main report **Table 14**) were identified as potentially contributing to observed Cape Fear River per- and polyfluoroalkyl substances (PFAS) concentrations. These pathways include direct Table 3+ PFAS aerial deposition to the Cape Fear River. This pathway was identified as Transport Pathway Number 3 in the PFAS mass loading model. The mass discharge (mass per unit time measured in milligrams per second [mg/s]) from direct aerial deposition of Table 3+ PFAS to the Cape Fear River was estimated by scaling air deposition modeling results for Hexafluoropropylene oxide dimer acid (HFPO-DA; ERM, 2018). The objective of the supporting calculations presented in this appendix is to estimate aerially deposited Table 3+ PFAS directly on the Cape Fear River during a mass loading event.

APPROACH

HFPO-DA mass loading directly to the Cape Fear River was estimated using the reported aerial extent and deposition contours modeled for October 2018 (ERM, 2018). As depicted in (**Table J-1)**, the HFPO-DA air loading data (micrograms per meters squared [$\mu g/m^2$]) provided from ERM (2018) was used to calculate the net hourly deposition rate (nanograms per meters squared per hour [$ng/m^2/hr$]) using the **Equation 1** below:

Equation 1: Net Hourly Deposition Rate

$$DR_{NET} = \frac{ML_{AIR}}{t_{AIR}}$$

where:

DR_{NET} = Net hourly deposition rate with units of mass per area per time [$M\ L^{-2}\ T^{-1}$ i.e. $ng/m^2/hr$]

ML_{AIR} = Air mass loading of HFPO-DA with units of mass per area [$M\ L^{-2}$ i.e. $\mu g/m^2$]

t_{AIR} = time that air mass loading was modeled [T i.e. hr]

Depositional area along the river was calculated using available data for river width and computed river lengths where deposition contours were modeled. Eighteen (18) sections (**Figure J-1**) provided from FEMA (2007) were selected along the Cape Fear River to measure the average river width (m). As depicted in **Figures J-2 through J-6**, sections along the Cape Fear River with HFPO-DA concentrations contours ranging from 40 to 640 $\mu g/m^2$ were selected, and the length of the Cape Fear River along each of the sections was measured. The average river width calculated in **Table J-2** and section lengths from **Figures J-2 through J-6** were used to calculate section areas (m^2) as described in **Equation 2** below:

Equation 2: Cape Fear River Surface Area

$$\sum A = \sum L \times W_{AVG}$$

where:

$\sum A$ = Total spatial area over which deposition occurs [L^2 i.e. m^2]

$\sum L$ = Total length of river within the HFPO-DA contour 40 µg/m^2 [L i.e. m]

W_{AVG} = average river width [L i.e. m]

Start and end deposition rates (ng/m^2/hr) for each section along the Cape Fear River were estimated based on the deposition contours and corresponding net hourly deposition rate (**Table J-1**); a combined deposition rate for each section was calculated as the average of the start and end deposition rates. River velocity (meters per hour [m/hr]) was estimated from measured flow rates from USGS (2020) and the calculated river cross sectional area. Section lengths were used to calculate HFPO-DA travel time based on the river velocities in **Table J-3**. The combined deposition rate (ng/m^2/hr) from **Table J-1**, section area (m^2), and travel time (hr) were used to calculate mass HFPO-DA deposited (ng) as follows in **Equation 3** below:

Equation 3: Total HFPO-DA Mass Discharge to Cape Fear River

$$\sum M_{HFPO-DA} = \sum (DR_{AVG} \times A \times t)$$

where:

$\sum M_{HFPO-DA}$ = mass discharge of HFPO-DA into the river with units of mass per time [M T^{-1} i.e. mg/s]

DR_{AVG} = average deposition rate based from the ERM model (2018) [L i.e. m]

A = spatial area over which deposition occurs [L^2 i.e. m^2]

t = travel time through the river section length [T i.e. hr]

As reported in the Corrective Action Plan (Geosyntec 2019), ten offsite groundwater seeps south of Old Outfall 002 (Seeps E to M) were identified on the west bank of the Cape Fear River south of the Site. Seeps E to M were sampled in October 2019 and Seeps E to K were sampled in March 2020 and analyzed for Table 3+ PFAS. The results of both sampling events indicate that Seeps E to M show an aerial deposition PFAS signature (concentrations decrease in seeps more distant from the Site). Accordingly, the offsite seep data were used to build a relationship between HFPO-DA and other Table 3+ PFAS compounds (**Figure J-7**). A scaling factor (**Table J-4**) was used to estimate mass discharge of Total Table 3+ PFAS compounds to the Cape Fear River as shown in **Equation 4**. **Table J-5** shows the estimated mass discharges of HFPO-DA and Total Table 3+ compounds to the Cape Fear River.

Equation 4: Total Table 3+ Mass Discharge to Cape Fear River

$$\sum M_{TT3+} = \sum M_{HFPO-DA} \times R$$

where:

$\sum M_{TT3+}$ = mass discharge of Total Table 3+ PFAS compounds into the river [MT^{-1} i.e. mg/s]

$\sum M_{HFPO-DA}$ = mass discharge of HFPO-DA into the river [MT^{-1} i.e. mg/s]

R = average ratio of measured HFPO-DA to Total Table 3+ compounds across the nine offsite seeps [unitless]

REFERENCES

ERM, 2018. Modeling Report: HFPO-DA Atmospheric Deposition and Screening Groundwater Effects. 27 April 2018.

Federal Emergency Management Agency (FEMA), 2007. "A Report of Flood Hazards in Bladen County, North Carolina and Incorporated Areas." (2007) Flood Insurance Study, Federal Emergency Management Agency. North Carolina Flood Risk Information System Engineering Model. Cape Fear River ADJ. HEC-RAS 5.0.7.

Geosyntec, 2019. Corrective Action Plan. Chemours Fayetteville Works. December 31, 2019.

USGS, 2020. USGS 02105500 Cape Fear River at Wilm O Huske Lock near Tarheel, NC. Available at: https://waterdata.usgs.gov/nwis/uv?site_no=02105500

TABLES

TABLE J1
NET HOURLY HFPO-DA DEPOSITION RATE
Chemours Fayetteville Works, North Carolina

Air Loading ($\mu g/m^2$)	Air Loading (ng/m^2)	Time (year)	Time (hour)	Net Hourly Deposition Rate ($ng/m^2/hr$)	River Sections Within Air Loading Zones
40	40,000	1	8,760	4.6	Up River Section 2 Down River Section 2
80	80,000	1	8,760	9.1	Up River Section 1 Up River Section 2 Down River Section 1 Down River Section 2
160	160,000	1	8,760	18.3	Center Up River Section 1 Down River Section 1
320	320,000	1	8,760	36.5	Not used in calculations
640	640,000	1	8,760	73.1	Not used in calculations

Notes:

1. HFPO-DA model values are from ERM (2018). Modeling Report: HFPO-DA Atmospheric Deposition and Screening Groundwater Effects. 27 April 2018.
2. Air deposition contours are shown in Figures J-2 through J-6.
3. Net hourly deposition rates are used in the mass discharge calculations, Table J5.

Abbreviations:

HFPO-DA: Hexafluoropropylene oxide dimer acid; or dimer acid.

$\mu g/m^2$: micrograms per meter square.

ng /L: nanograms per liter.

$ng/m^2/hr$: nanograms per meter square per hour.

TABLE J2
ESTIMATION OF CAPE FEAR RIVER AVERAGE WIDTH
Chemours Fayetteville Works, North Carolina

Cross section ID*	HEC-RAS Model Point ID**	Easting (ft)	Northing (ft)	Cape Fear River Width at Cross Section (m)
619506	0	2,052,368	399,949	
	1	2,052,366	399,949	
	2	2,052,334	399,946	
	3	2,052,254	399,938	
	4	2,052,155	399,928	
	5	2,052,095	399,922	
	6	2,052,093	399,922	84
614224	18	2,053,460	394,655	
	19	2,053,436	394,649	
	20	2,053,281	394,613	
	21	2,053,277	394,612	
	22	2,053,180	394,590	
	23	2,053,079	394,566	
	24	2,052,977	394,543	
	25	2,052,949	394,536	
	26	2,052,924	394,531	163
616535	7	2,053,113	396,901	
	8	2,053,070	396,895	
	9	2,052,990	396,886	
	10	2,052,891	396,874	
	11	2,052,831	396,867	
	12	2,052,815	396,865	91
613542	21	2,053,373	393,937	
	22	2,053,349	393,931	
	23	2,053,271	393,913	
	24	2,053,174	393,891	
	25	2,053,115	393,877	
	26	2,053,081	393,869	89
614517	13	2,053,209	394,897	
	14	2,053,130	394,878	
	15	2,053,032	394,854	
	16	2,052,974	394,840	
	17	2,052,961	394,837	76***
610240	31	2,053,769	390,652	
	32	2,053,729	390,645	
	33	2,053,643	390,630	
	34	2,053,602	390,623	
	35	2,053,572	390,618	60***
612082	27	2,053,560	392,482	
	28	2,053,430	392,455	
	29	2,053,370	392,443	
	30	2,053,322	392,433	72
606667	1271	2,054,059	387,249	
	1272	2,054,022	387,215	
	1273	2,053,995	387,190	
	1274	2,053,946	387,145	
	1275	2,053,861	387,067	
	1276	2,053,812	387,023	
	1277	2,053,801	387,012	
	1278	2,053,727	386,945	101
608468	1193	2,053,950	388,876	
	1194	2,053,902	388,874	
	1195	2,053,843	388,871	
	1196	2,053,717	388,866	
	1197	2,053,659	388,864	
	1198	2,053,650	388,863	
	1199	2,053,600	388,861	107
606667	1271	2,054,059	387,249	
	1272	2,054,022	387,215	
	1273	2,053,995	387,190	
	1274	2,053,946	387,145	
	1275	2,053,861	387,067	
	1276	2,053,812	387,023	
	1277	2,053,801	387,012	
	1278	2,053,727	386,945	101
600052	1498	2,057,643	382,269	
	1499	2,057,610	382,246	
	1500	2,057,556	382,208	
	1501	2,057,461	382,141	
	1502	2,057,408	382,103	
	1503	2,057,398	382,096	
	1504	2,057,358	382,067	87

TABLE J2
ESTIMATION OF CAPE FEAR RIVER AVERAGE WIDTH
Chemours Fayetteville Works, North Carolina

Cross section ID*	HEC-RAS Model Point ID**	Easting (ft)	Northing (ft)	Cape Fear River Width at Cross Section (m)
604474	1331	2,055,879	386,154	
	1332	2,055,812	386,120	
	1333	2,055,753	386,090	
	1334	2,055,647	386,037	
	1335	2,055,588	386,007	
	1336	2,055,566	385,996	95
597968	1565	2,058,901	380,593	
	1566	2,058,830	380,549	
	1567	2,058,774	380,515	
	1568	2,058,675	380,453	
	1569	2,058,619	380,418	
	1570	2,058,518	380,356	116
602061	1406	2,056,453	383,857	
	1407	2,056,356	383,798	
	1408	2,056,301	383,763	
	1409	2,056,202	383,702	
	1410	2,056,146	383,667	
	1411	2,056,113	383,647	104
594185	1717	2,060,560	377,186	
	1718	2,060,482	377,157	
	1719	2,060,421	377,134	
	1720	2,060,312	377,094	
	1721	2,060,250	377,071	
	1722	2,060,232	377,065	100
596259	1644	2,059,549	379,003	
	1645	2,059,534	378,996	
	1646	2,059,474	378,970	
	1647	2,059,368	378,923	
	1648	2,059,308	378,896	
	1649	2,059,275	378,881	84
587968	2042	2,061,270	371,304	
	2043	2,061,246	371,290	
	2044	2,061,179	371,252	
	2045	2,061,092	371,203	
	2046	2,061,042	371,174	
	2047	2,060,966	371,131	93
591595	1825	2,060,295	374,663	
	1826	2,060,270	374,661	
	1827	2,060,201	374,658	
	1828	2,060,079	374,653	
	1829	2,060,010	374,650	
	1830	2,059,995	374,649	91
590322	1931	2,060,424	373,459	
	1932	2,060,378	373,442	
	1933	2,060,372	373,439	
	1934	2,060,311	373,416	
	1935	2,060,202	373,376	
	1936	2,060,140	373,353	
	1937	2,060,097	373,336	100
Average River Cross Section Width (m) =				**99**

Notes:
*Cross sections locations are shown in Figure J-1.
**Model point ID: are locations with northing, easting, and river depths provided in the HEC-RAS model.
1. Data provided from: "A Report of Flood Hazards in Bladen County, North Carolina and Incorporated Areas." RiverADJ. HEC-RAS 5.0.7. (2007) Flood Insurance Study, Federal Emergency Management Agency. North Carolina Flood Risk Information System Engineering Model. Cape Fear RiverADJ. HEC-RAS 5.0.7.
2. The horizontal datum is North American Datum 1983 projected into North Carolina East State Plane (3200).
3. The vertical datum is North American Datum 1988 projected into North Carolina East State Plane (3200).

Abbreviations:
ft: feet
m: meter

SUMMARY OF FLOW IN CAPE FEAR RIVER AT WILM O'HUSKE LOCK NR TARHEEL, NC
Chemours Fayetteville Works, North Carolina

Date	USGS Reported Average Discharge[1] (cfs)	USGS Reported Average Gage Height[1] (ft)	USGS Reported Total Precipitation[1,2] (inches)	USGS Reported Average Discharge (L/s)	Measured River Width (ft)	Estimated River Depth (ft)	Z Value[3]	Calculated Total Cross Sectional Area (ft^2)	Calculated River Velocity (ft/s)
4/2/2020	4,510	3.39	0.00	127,709	323	20	2	5,642	0.8
4/3/2020	3,210	2.79	0.00	90,897	323	19	2	5,495	0.6
								Average River Velocity:	**0.7**

Notes:

1) Measurements are recorded from the USGS flow gauging station at the W.O. Huske Dam, ID 02105500 (USGS, 2020).

2) The minimum value recorded by a USGS raingage is 0.01 inches. Anything detected below this threshold is recorded as 0 inches.

3) Z value is an estimated factor used to compute total cross sectional area from river depth.

cfs: cubic feet per second.

ft: feet.

ft^2: feet squared.

ft/s: feet per second

L/s: Liter per second.

mph: miles per hour.

USGS - United States Geological Survey.

TABLE J4
RATIO OF OTHER PFAS COMPOUNDS TO HFPO-DA
Chemours Fayetteville Works, North Carolina

Location ID	SEEP-E	SEEP-E	SEEP-F	SEEP-F	SEEP-G	SEEP-G	SEEP-H	SEEP-H	SEEP-I	SEEP-I
Field Sample ID	SEEP-E-0930	Seep E-030420	SEEP-F-0923	Seep F-030420	SEEP-G-0911	Seep G-030420	SEEP-H-0905	Seep H-030420	SEEP-I-0856	Seep I-030420
Sample Date	10/22/2019	3/4/2020	10/22/2019	3/4/2020	10/22/2019	3/4/2020	10/22/2019	3/4/2020	10/22/2019	3/4/2020
QA/QC	--	--	--	--	--	--	--	--	--	--
Sample Delivery Group (SDG)	320-55576-1	2091227	320-55576-1	2091227	320-55576-1	2091227	320-55576-1	2091227	320-55576-1	2091227
Lab Sample ID	320-55576-1	1274949	320-55576-2	1274953	320-55576-3	1274957	320-55576-4	1274961	320-55576-5	1274965
Table 3+ SOP (ng/L)										
Hfpo Dimer Acid	**1,200**	**950**	**1,100**	**1,100**	**700**	**730**	**550**	**540**	**570**	**470**
PFMOAA	**480 J**	**390**	**900**	**730**	**190**	**220**	**140**	**180**	**130**	**200**
PFO2HxA	**800**	**470**	**810**	**640**	**470**	**410**	**350**	**330**	**300**	**280**
PFO3OA	**170**	**83**	**130**	**110**	**57**	**56**	**28**	**30**	**17**	**18**
PFO4DA	**83**	**17**	**7.3**	**9.1**	**9**	**7.9**	<2	<2	<2	<2
PFO5DA	**46**	<2	<2	<2	<2	<2	<2	<2	<2	<2
PMPA	**2,300**	**1,800**	**2,800**	**2,100**	**1,500**	**1,500**	**1,200**	**1,100**	**1,200**	**1,100**
PEPA	**710**	**600**	**870**	**710**	**490**	**520**	**360**	**360**	**390**	**390**
PS Acid (Formerly PFESA-BP1)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Hydro-PS Acid (Formerly PFESA-BP2)	**90**	**24**	**9.6**	**10**	**22**	**11**	**16**	**9.3**	**12**	**12**
R-PSDA (Formerly Byproduct 4)	**220 J**	**53 J**	**92**	**68 J**	**79 J**	**44 J**	**39 J**	**30 J**	**53 J**	**36**
Hydrolyzed PSDA (Formerly Byproduct 5)	**2.1 J**	<2	<2.9	<2	<2	<2	<2	<2	<2	<2
R-PSDCA (Formerly Byproduct 6)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
NVHOS	**15**	**6**	**12**	**8**	**5.4**	**5**	**4.3**	**3.7**	**4.4**	**4.5**
EVE Acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Hydro-EVE Acid	**7.7**	**2.3**	**2**	<2	<2	<2	<2	<2	<2	<2
R-EVE	**76**	**20**	**60**	**40**	**39**	**28**	**21 J**	**20**	**23 J**	**17**
PES	<2	<2	<2.3	<2	<2	<2	<2	<2	<2	<2
PFECA B	<2	<2	<3	<2	<2	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Table 3+ (17 Compounds) (ng/L)	**5,900**	**4,300**	**6,600**	**5,400**	**3,400**	**3,500**	**2,600**	**2,600**	**2,600**	**2,500**
Total Table 3+ (20 Compounds) (ng/L)	**6,200**	**4,400**	**6,800**	**5,500**	**3,600**	**3,500**	**2,700**	**2,600**	**2,700**	**2,500**
Ratio of HFPO-DA to Total Table 3+ (17 Compounds)	**4.9**	**4.5**	**6.0**	**4.9**	**4.9**	**4.8**	**4.7**	**4.8**	**4.6**	**5.3**
Ratio of HFPO-DA to Total Table 3+ (20 Compounds)	**5.2**	**4.6**	**6.2**	**5.0**	**5.1**	**4.8**	**4.9**	**4.8**	**4.7**	**5.3**
Average Ratio of HFPO-DA to Total Table 3+ (17 Compounds)	**4.87**									
Average Ratio of HFPO-DA to Total Table 3+ (20 Compounds)	**5.03**									

Notes:
Bold - Analyte detected above associated reporting limit
Abbreviations:
J - Analyte detected. Reported value may not be accurate or precise
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SOP - standard operating procedure
< - Analyte not detected above associated reporting limit.

TABLE J4
RATIO OF OTHER PFAS COMPOUNDS TO HFPO-DA
Chemours Fayetteville Works, North Carolina

Location ID	SEEP-J	SEEP-J	SEEP-K	SEEP-K	SEEP-L	SEEP-M
Field Sample ID	SEEP-J-0843	Seep J-030420	SEEP-K-0835	Seep K-030420	SEEP-L-0825	SEEP-M-0818
Sample Date	10/22/2019	3/4/2020	10/22/2019	3/4/2020	10/22/2019	10/22/2019
QA/QC	--	--	--	--	--	--
Sample Delivery Group (SDG)	320-55576-1	2091227	320-55576-1	2091227	320-55576-1	320-55576-1
Lab Sample ID	320-55576-6	1274969	320-55576-7	1274973	320-55576-8	320-55576-9
Table 3+ SOP (ng/L)						
Hfpo Dimer Acid	**580**	**250**	**640**	**490**	**520**	**570**
PFMOAA	**180 J**	**140**	**160**	**210**	**130**	**100**
PFO2HxA	**350 J**	**130**	**320**	**230**	**220**	**190**
PFO3OA	**120 J**	**16**	**41**	**28**	**18**	**15**
PFO4DA	**58**	**4.7**	**11**	**5**	**2.7**	<2
PFO5DA	**20 J**	**2.2**	**4.8**	<2	<2	<2
PMPA	**810 J**	**660**	**1,300**	**1,000**	**1,200**	**1,300**
PEPA	**260**	**200**	**400**	**350**	**350**	**410**
PS Acid (Formerly PFESA-BP1)	<2	<2	<2	<2	<2	<2
Hydro-PS Acid (Formerly PFESA-BP2)	**37**	**6.9**	**70**	**16**	**44**	**28**
R-PSDA (Formerly Byproduct 4)	**110 J**	**23**	**130 J**	**49**	**120 J**	**78 J**
Hydrolyzed PSDA (Formerly Byproduct 5)	<2	<2	<2	<2	<2	<2
R-PSDCA (Formerly Byproduct 6)	<2	<2	<2	<2	<2	<2
NVHOS	**8.1 J**	**2.8**	**5.2**	**4.7**	**5.9**	**5.6**
EVE Acid	<2	<2	<2	<2	<2	<2
Hydro-EVE Acid	**2.7**	<2	**3.5**	<2	<2	<2
R-EVE	**16**	**13**	**46 J**	**25**	**44 J**	**26 J**
PES	<2	<2	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2	<2
Total Table 3+ (17 Compounds) (ng/L)	**2,400**	**1,400**	**3,000**	**2,300**	**2,500**	**2,600**
Total Table 3+ (20 Compounds) (ng/L)	**2,600**	**1,400**	**3,100**	**2,400**	**2,700**	**2,700**
Ratio of HFPO-DA to Total Table 3+ (17 Compounds)	**4.1**	**5.6**	**4.7**	**4.7**	**4.8**	**4.6**
Ratio of HFPO-DA to Total Table 3+ (20 Compounds)	**4.5**	**5.6**	**4.8**	**4.9**	**5.2**	**4.7**
Average Ratio of HFPO-DA to Total Table 3+ (17 Compounds)	**4.87**					
Average Ratio of HFPO-DA to Total Table 3+ (20 Compounds)	**5.03**					

Notes:
Bold - Analyte detected above associated reporting limit
Abbreviations:
J - Analyte detected. Reported value may not be accurate or precise
ng/L - nanograms per liter
QA/QC - Quality assurance/ quality control
SOP - standard operating procedure
< - Analyte not detected above associated reporting limit.

TABLE J5
CALCULATION OF HFPO-DA DEPOSITED MASS AND MASS FLUX
Chemours Fayetteville Works, North Carolina

Section[1]	Depositon Rate at Section Start (µg/m^2/yr)	Depositon Rate at Section End (µg/m^2/yr)	Start Deposition Rate[2] (ng/m^2/hr)	End Deposition Rate[2] (ng/m^2/hr)	Average Deposition Rate (ng/m^2/hr)	Section Distance[3] (m)	Average River Width[4] (m)	Section Area (m^2)	Estimated River Velocity[5] (ft/s)	Estimated River Velocity (m/hr)	Estimated Travel Time (hr)	Calculated Mass Deposited (mg)	Calculated Mass Discharge (mg/s)
Center	160	160	18.3	18.3	18	903	99	89,028	0.69	759	1.2	1.9	0.00045
Up River Section 1	160	80	18.3	9.1	14	490	99	48,300	0.69	759	0.6	0.4	0.00018
Up River Section 2	80	40	9.1	4.6	6.8	909	99	89,570	0.69	759	1.2	0.7	0.00017
Down River Section 1	160	80	18.3	9.1	14	586	99	57,813	0.69	759	0.8	0.6	0.00022
Down River Section 2	80	40	9.1	4.6	6.8	565	99	55,672	0.69	759	0.7	0.3	0.00011
												Total HFPO-DA:	**0.0011**
												Total Table 3+ (17 Compounds):	**0.0055**
												Total Table 3+ (20 Compounds):	**0.0057**

Notes:

[1]River sections for air deposition calculations are shown in Figures J-2 through J-6.

[2]Based on model deposition rate, Table J1.

[3]Section distances are measured in GIS, presented in Figures J-2 through J-6.

[4]Calculations for the average river width are presented in Table J2.

[5]River velocity is calculated as an average from USGS discharge data between April 2 to 3, 2020, Table J3

Abbreviations:

HFPO-DA: Hexafluoropropylene oxide dimer acid; or dimer acid

µg/m^2/yr: micrograms per meter square per year

ft/s: feet per second

hr: hours

m/hr: meters per hour

m: meter

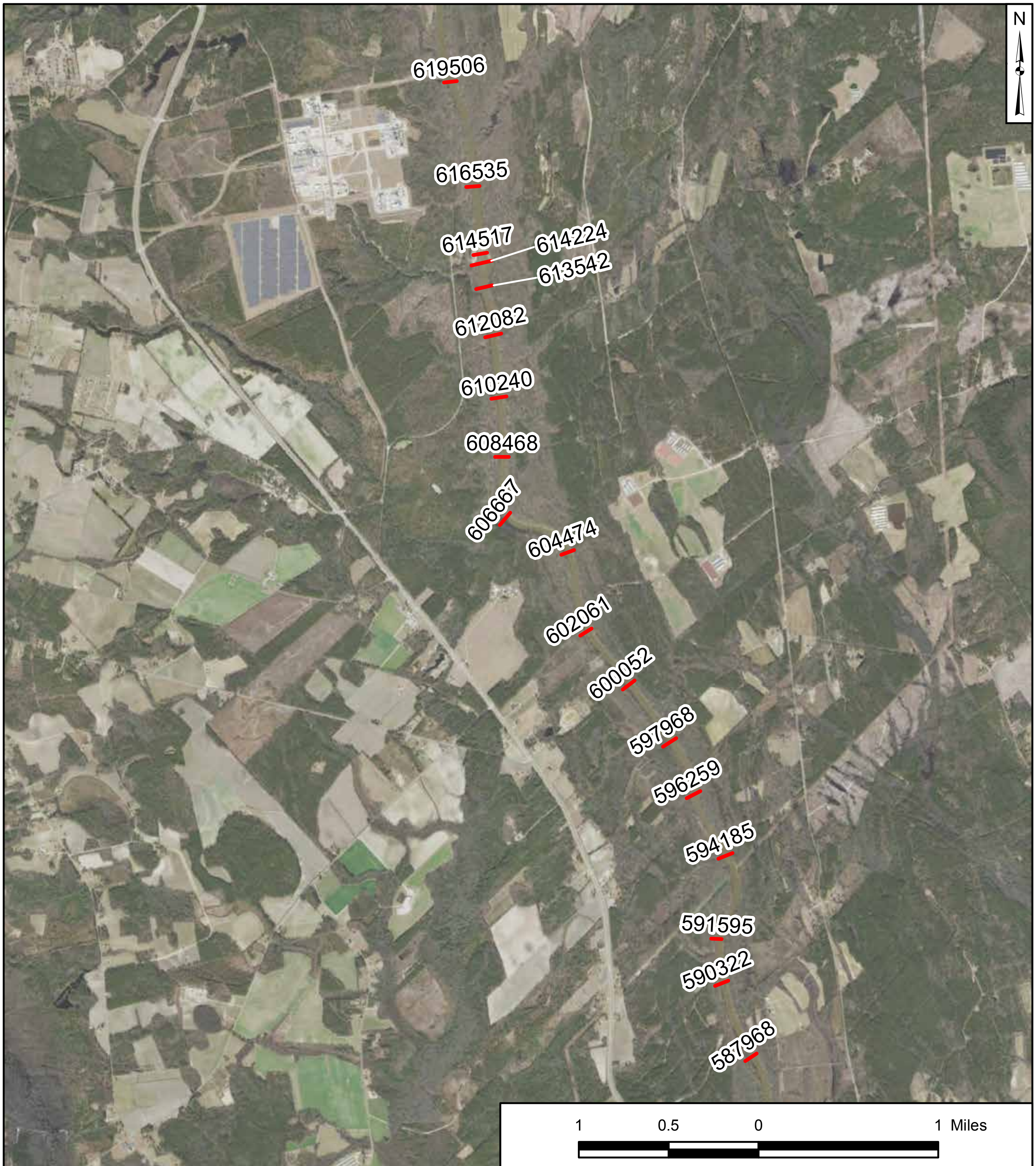
m^2: meter square

mg/s: milligrams per second

mg: milligrams

ng/m^2/hr: nanograms per meter square per hour

FIGURES



Legend

Cross Section

Notes:
1. Cape Fear River cross section locations obtained from "A Report of Flood Hazards in Bladen County, North Carolina and Incorporated Areas." (2007) Flood Insurance Study, Federal Emergency Management Agency. North Carolina Flood Risk Information System Engineering Model. Cape Fear RiverADJ. HEC-RAS 5.0.7.
2. Cross sections used for calculation of average river widths for calculation of aerial mass loading.

Cape Fear River Cross Sections Locations

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

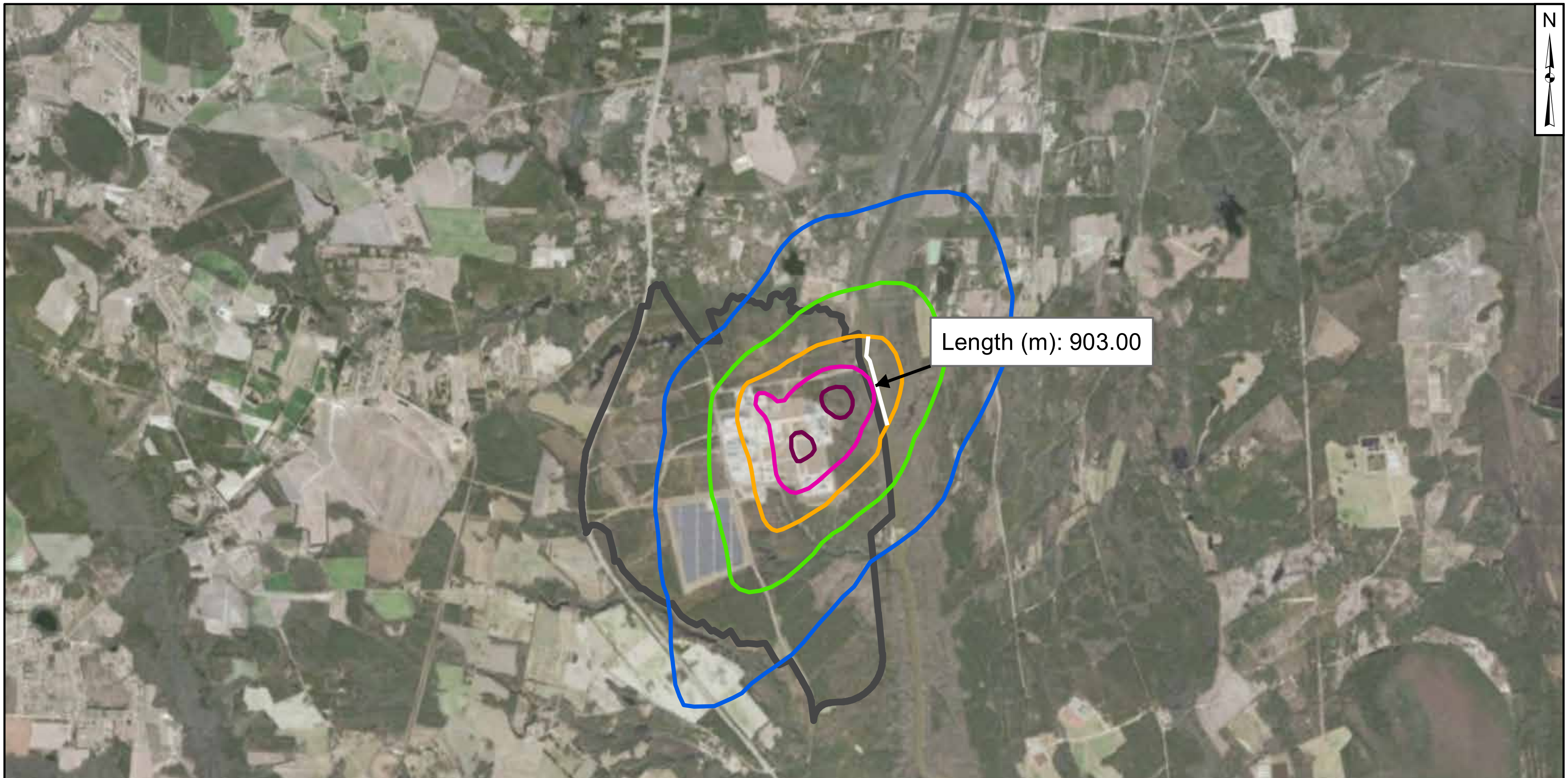
Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Figure J1

Raleigh, NC

July 2020

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend

Site Boundary

Modeled Deposition Contours, October 2018 Scenario

40 µg/m²/yr

80 µg/m²/yr

160 µg/m²/yr

320 µg/m²/yr

640 µg/m²/yr

Notes:
HFPO-DA - Hexafluoropropylene oxide dimer acid; or dimer acid; or GenX

µg / m²/yr - micrograms per square meter per year

HFPO-DA deposition model contours for October 2018 from ERM, 2018, Modeling Report: HFPO-DA Atmospheric Deposition and Screening Groundwater Effects. 27 April 2018.

1 0.5 0 1 Miles

Measurement of Cape Fear River Length at Center Section

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

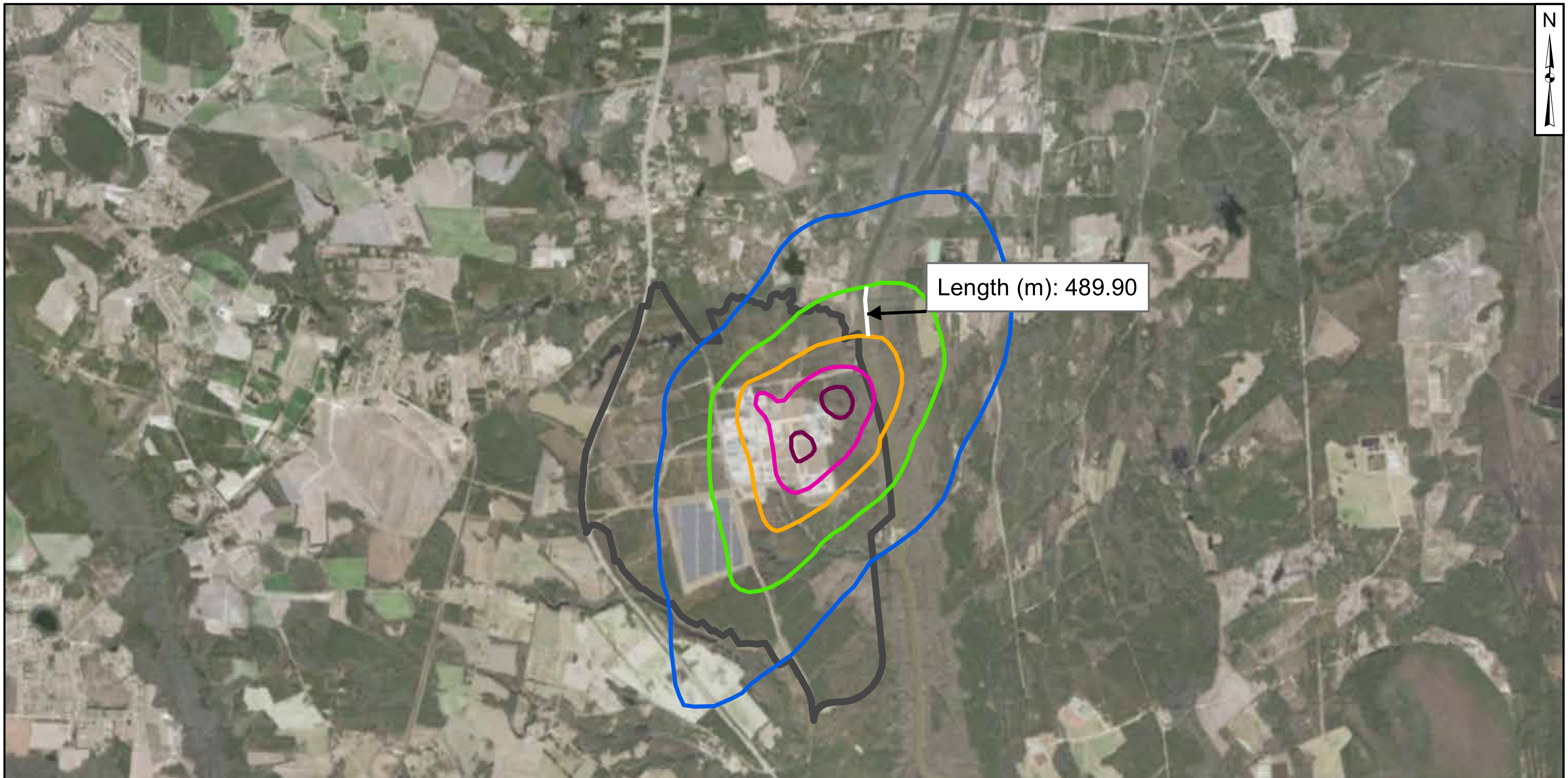
Figure

J2

Raleigh, NC

July 2020

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend

Site Boundary

Modeled Deposition Contours, October 2018 Scenario

40 μg/m^2/yr

80 μg/m^2/yr

160 μg/m^2/yr

320 μg/m^2/yr

640 μg/m^2/yr

Notes:
HFPO-DA - Hexafluoropropylene oxide dimer acid; or dimer acid; or GenX

μg /m^2/yr - micrograms per square meter per year

HFPO-DA deposition model contours for October 2018 from ERM, 2018, Modeling Report: HFPO-DA Atmospheric Deposition and Screening Groundwater Effects. 27 April 2018.

1 0.5 0 1 Miles

Measurement of Cape Fear River Length at Up-River Section 1

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

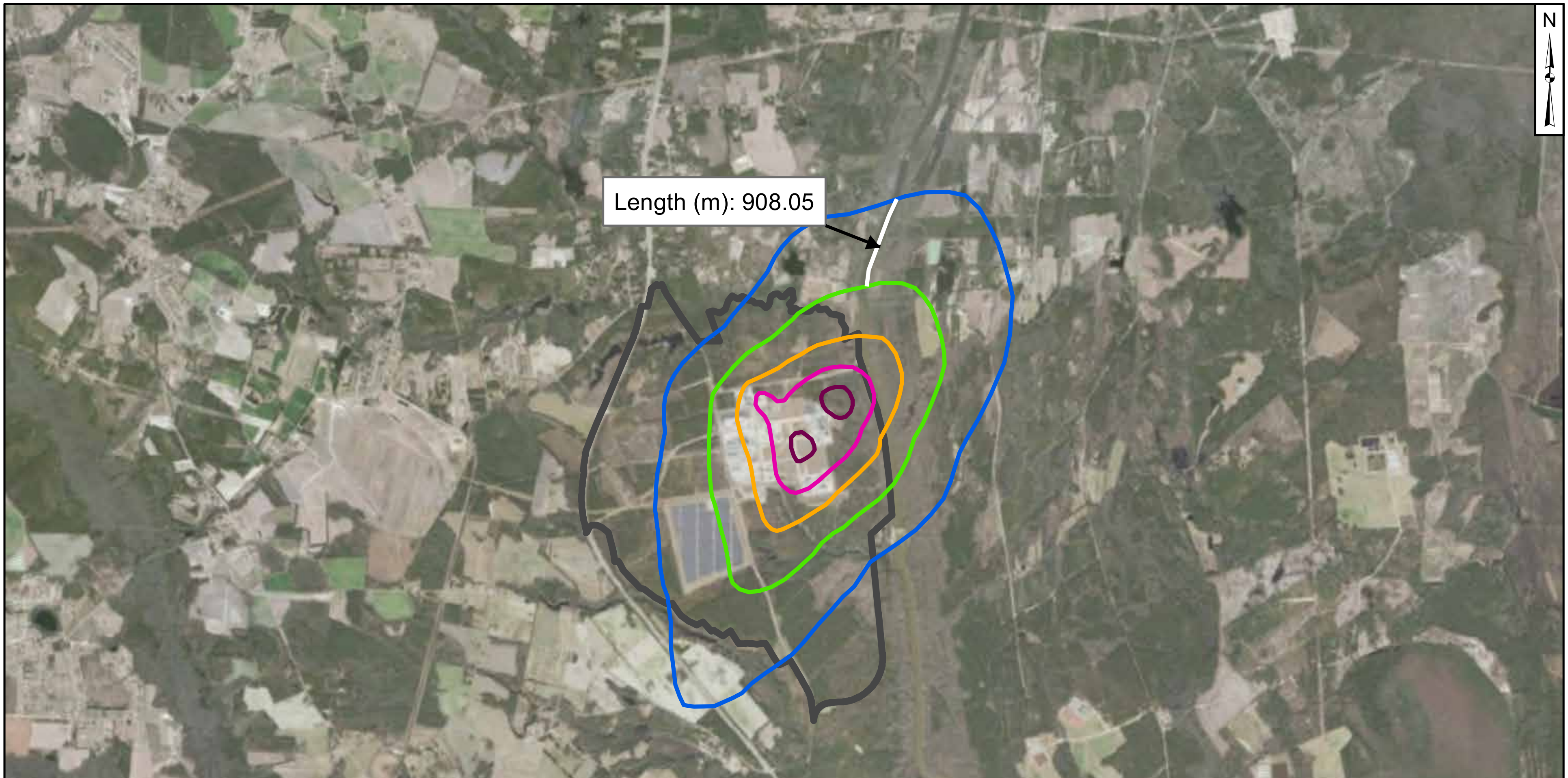
Figure

J3

Raleigh, NC

July 2020

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend

Site Boundary

Modeled Deposition Contours, October 2018 Scenario

40 μg/m²/yr

80 μg/m²/yr

160 μg/m²/yr

320 μg/m²/yr

640 μg/m²/yr

Notes:
HFPO-DA - Hexafluoropropylene oxide dimer acid; or dimer acid; or GenX

μg / m²/yr - micrograms per square meter per year

HFPO-DA deposition model contours for October 2018 from ERM, 2018, Modeling Report: HFPO-DA Atmospheric Deposition and Screening Groundwater Effects. 27 April 2018.

1 0.5 0 1 Miles

Measurement of Cape Fear River Length at Up-River Section 2

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

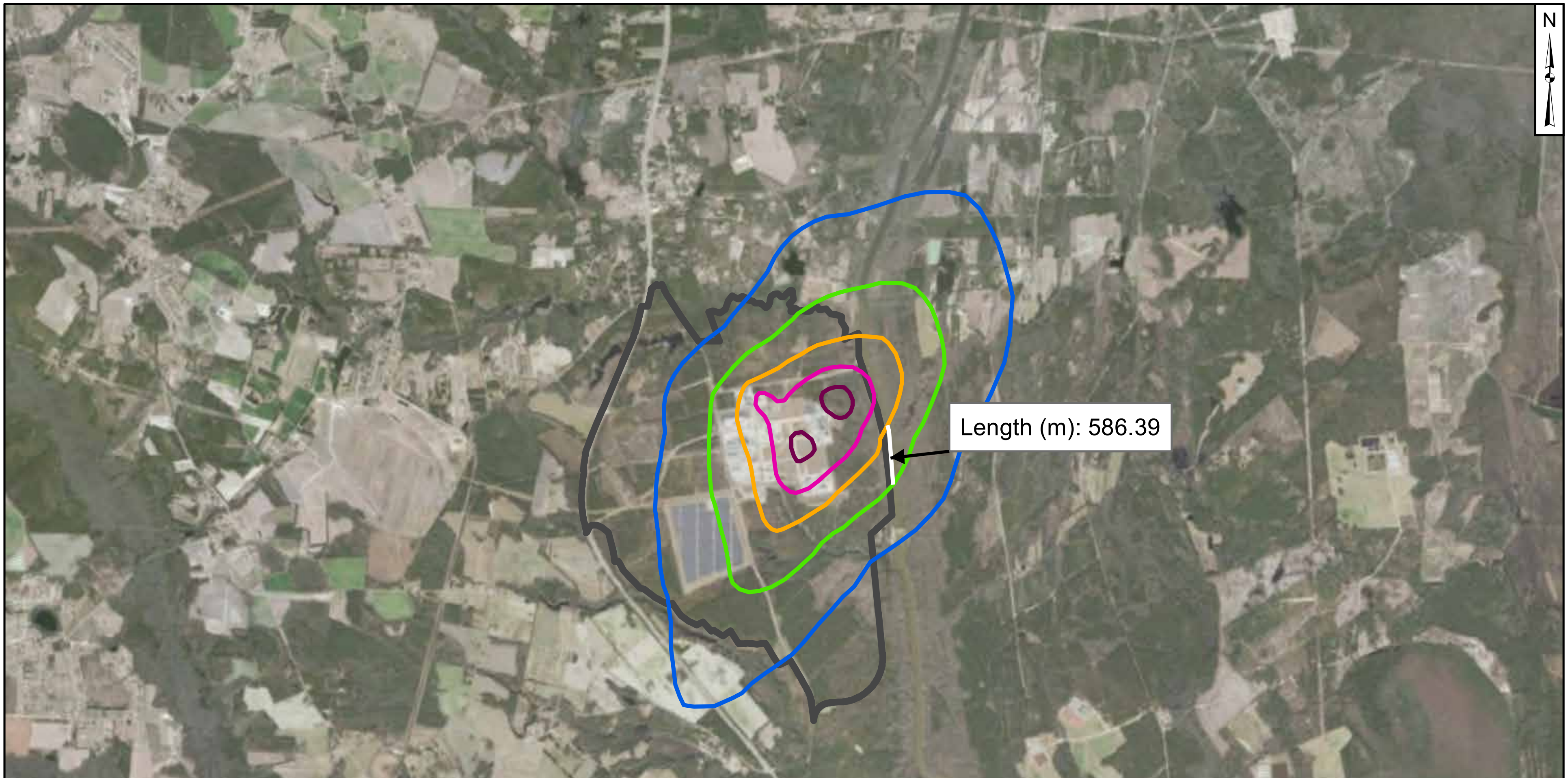
Raleigh, NC

July 2020

Figure

J4

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend

Site Boundary

Modeled Deposition Contours, October 2018 Scenario

40 µg/m^2/yr

80 µg/m^2/yr

160 µg/m^2/yr

320 µg/m^2/yr

640 µg/m^2/yr

Notes:
HFPO-DA - Hexafluoropropylene oxide dimer acid; or dimer acid; or GenX

µg /m^2/yr - micrograms per square meter per year

HFPO-DA deposition model contours for October 2018 from ERM, 2018, Modeling Report: HFPO-DA Atmospheric Deposition and Screening Groundwater Effects. 27 April 2018.

1 0.5 0 1 Miles

Measurement of Cape Fear River Length at Down-River Section 1

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

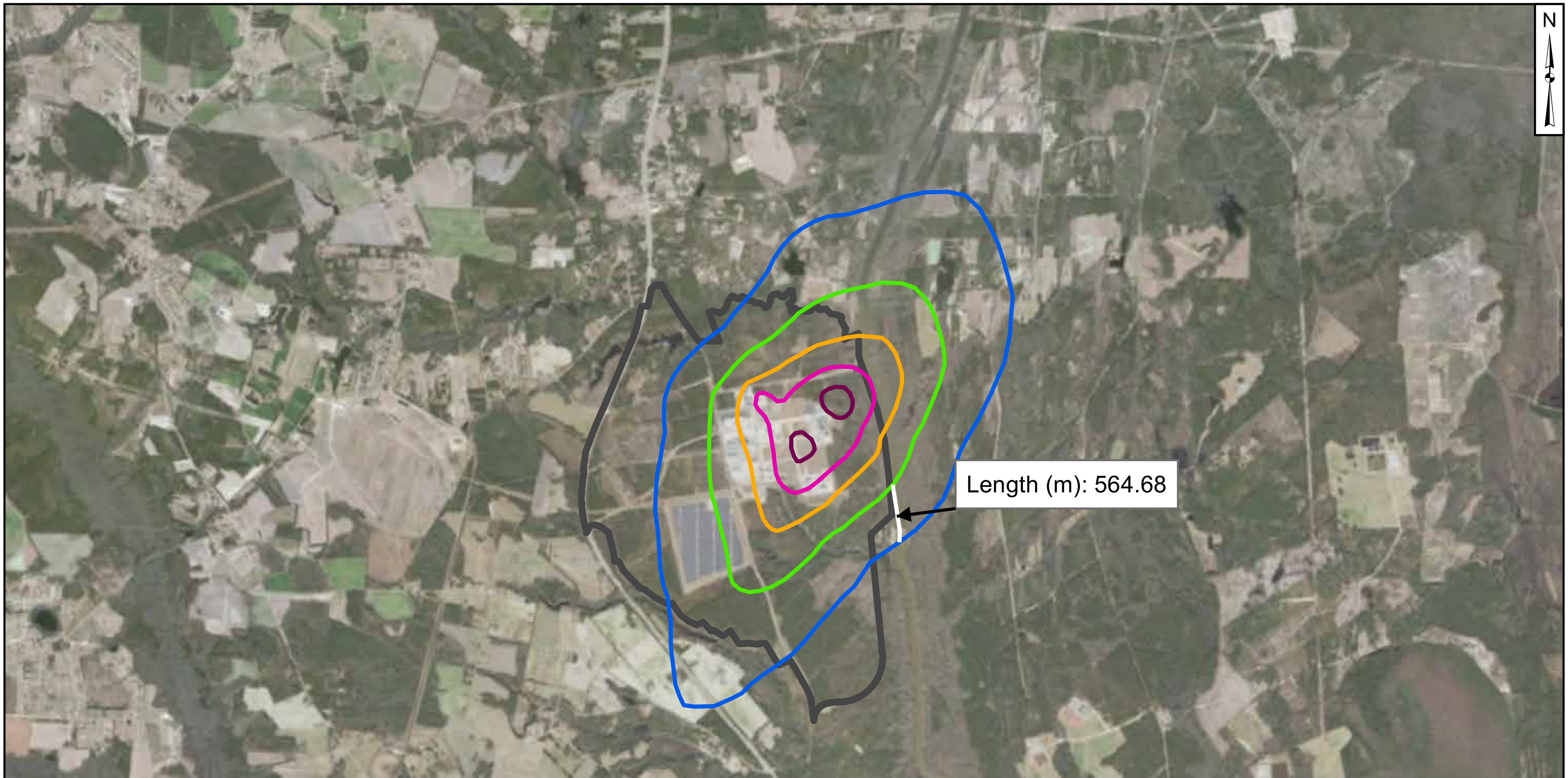
Figure

J5

Raleigh, NC

July 2020

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend

Site Boundary

Modeled Deposition Contours, October 2018 Scenario

40 µg/m²/yr

80 µg/m²/yr

160 µg/m²/yr

320 µg/m²/yr

640 µg/m²/yr

Notes:
HFPO-DA - Hexafluoropropylene oxide dimer acid; or dimer acid; or GenX

µg /m²/yr - micrograms per square meter per year

HFPO-DA deposition model contours for October 2018 from ERM, 2018, Modeling Report: HFPO-DA Atmospheric Deposition and Screening Groundwater Effects. 27 April 2018.

1 0.5 0 1 Miles

Measurement of Cape Fear River Length at Down-River Section 2

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

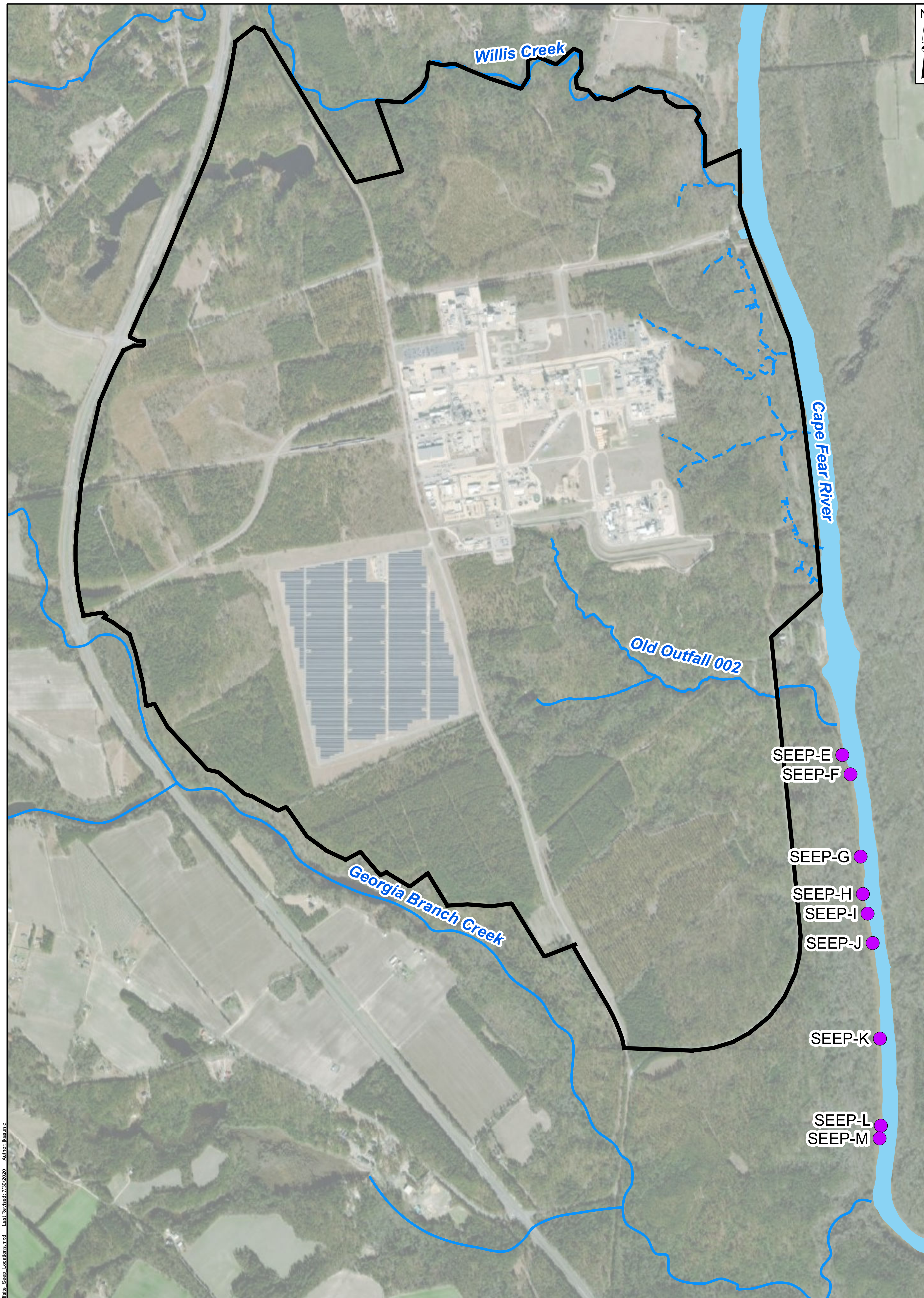
Figure

J6

Raleigh, NC

July 2020

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend

Observed Seep

Nearby Tributary

Site Boundary

Notes:
1. Seep E to M samples were collected where the seeps entered the Cape Fear River. Their locations on this figure have been slightly adjusted to facilitate interpretation so that they do not appear to be in the Cape Fear River.
2. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS (MajorHydro shapefile).
3. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

1,000 500 0 1,000 Feet

Southwestern Offsite Seeps Locations

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure **J7**

Raleigh | July 2020

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Baseline Monitoring Workplan\TR0795_Offsite_Seep_Locations.mxd Last Revised: 7/30/2020 Author: jkasunic

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

APPENDIX K

Supporting Calculations –Adjacent and Downstream Offsite Groundwater

APPENDIX K

ADJACENT AND DOWNSTREAM OFFSITE GROUNDWATER

This appendix presents the methodology for calculating the Table 3+ PFAS mass discharge from adjacent and downstream offsite groundwater to the Cape Fear River. Table 3+ PFAS detected in offsite groundwater originate from aerial deposition which has occurred in all directions from the Site (CAP Geosyntec, 2019g). These aerially deposited Table 3+ PFAS have subsequently infiltrated to groundwater and migrate towards the Cape Fear River where they lead to upstream, adjacent and downstream offsite groundwater Table 3+ PFAS mass. The upstream offsite groundwater Table 3+ PFAS mass discharge is estimated relatively simply by using measured river flows and concentrations at River Mile 76 upstream of the Site. Here only the upstream offsite groundwater Table 3+ PFAS mass discharge is present in the river at this location. Conversely, the adjacent and downstream offsite groundwater Table 3+ PFAS mass discharge is difficult to measure directly since many Table 3+ PFAS mass discharges from all other pathways are present in the river where these offsite groundwater contributions join the river. Additionally, downstream offsite groundwater has a relatively small component of the Total Table 3+ PFAS mass discharge making its additional contributions to the total discharge difficult to distinguish from other discharges already present.

Therefore, since Table 3+ PFAS mass discharge from offsite groundwater upstream, adjacent, and downstream of the Site follow the same dynamics (deposition, infiltration, migration, discharge) the adjacent and downstream Table 3+ PFAS mass discharge is scaled from the upstream offsite groundwater mass discharge estimate. The downstream offsite groundwater loadings are scaled to the upstream offsite groundwater loadings based on the length of river adjacent and downstream of the Site known to be in contact with offsite groundwater containing Table 3+ PFAS compared to the length of the river upstream also in contact with offsite groundwater containing Table 3+ PFAS. The volume of river flow is assumed to be constant immediately upstream and downstream of the Site for the purposes of this calculation. This adjacent and downstream offsite mass discharge is calculated using Equation 1 below:

Equation 1: Total Table 3+ Mass Discharge Offsite Adjacent and Downstream Groundwater

$$M_{adj-d-gw} = \sum_{i=1}^{i=I} \left(C_{up-gw,i} \times Q_{CFR} \right) \times f_{adj-d}$$

where,

$M_{adj-d-gw}$ = represents the Total Table 3+ PFAS discharge from offsite adjacent and downstream groundwater to the Cape Fear River.

i = represents each of the Table 3+ SOP PFAS constituents listed in Table 1.

I = represents total number of Table 3+ SOP PFAS constituents included in the summation of Total Table 3+ concentrations, e.g., 17 or 20.

$C_{up-gw,i}$ = represents the upstream concentration of each PFAS constituent i from measured units in mass per unit volume [ML^{-3}], typically nanograms per liter.

Q_{CFR} = represents the volumetric flow in the Cape Fear River as reported by the United States Geological Survey gage at the W.O. Huske Dam, station ID 02105500 with units used in the equation expressed as volume per time [L^3T^{-1}], typically liters per second.

f_{adj-d} = represents the unitless scaling factor to adjust offsite upstream groundwater mass discharge to offsite adjacent and downstream mass discharge. Where $f_{up-adj-d}$ is calculated following Equation 2 below:

Equation 2: Offsite Upstream Groundwater to Offsite Adjacent and Downstream Groundwater Mass Discharge Scaling Factor

$$f_{adj-d} = \frac{l_{CFR-adj} + 2l_{CFR-d}}{2l_{CFR-up}}$$

where,

$l_{CFR-adj}$ = represents the length of the Cape Fear River adjacent to the Site (i.e. the east bank of the Cape Fear River opposite the Site) where Table 3+ PFAS have been detected in offsite groundwater within one mile of the river.

$2l_{CFR-d}$ = represents the length of the Cape Fear River downstream of the Site where Table 3+ PFAS have been detected in offsite groundwater within one mile of the river. This quantity is multiplied by two (2) as the river has two downstream sides (east and west) from which groundwater discharge can reach the Cape Fear River (adjacent only has one side, east).

$2l_{CFR-up}$ = represents the length of the Cape Fear River upstream of the Site where Table 3+ PFAS have been detected in offsite groundwater within one mile of the river. This quantity is multiplied by two (2) as the river has two upstream sides (east and west) from which groundwater discharge can reach the Cape Fear River (adjacent only has one side, east).

Figure K-1 displays the quantities used in calculating the scaling factor f_{adj-d} on a map of the Cape Fear River and Table K-1 provides a calculation of f_{adj-d}.

TABLES

TABLE K-1
OFFSITE AND ADJACENT DOWNSTREAM GROUNDWATER MASS DISCHARGE SCALING FACTOR
Chemours Fayetteville Works, North Carolina

Item	Value	Unit
$l\_(CFR{-}up)$	14.2	miles
$l\_(CFR{-}adj)$	1.7	miles
$l\_(CFR{-}d)$	4.5	miles
$f\_(adj{-}d)$	0.38	--

Calculation Notes for Offsite Upstream Groundwater to Offsite Adjacent and Downstream Groundwater Mass Discharge Scaling Factor

$$f_{adj-d} = \frac{l_{CFR-adj} + 2l_{CFR-d}}{2l_{CFR-up}}$$

where,
f_{adj-d} = represents the unitless scaling factor to adjust offsite upstream groundwater mass discharge to offsite adjacent and downstream mass discharge.

$l_{CFR-adj}$ = represents the length of the Cape Fear River adjacent to the Site (i.e. the east bank of the Cape Fear River opposite the Site) where Table 3+ PFAS have been detected in offsite groundwater within one mile of the river.

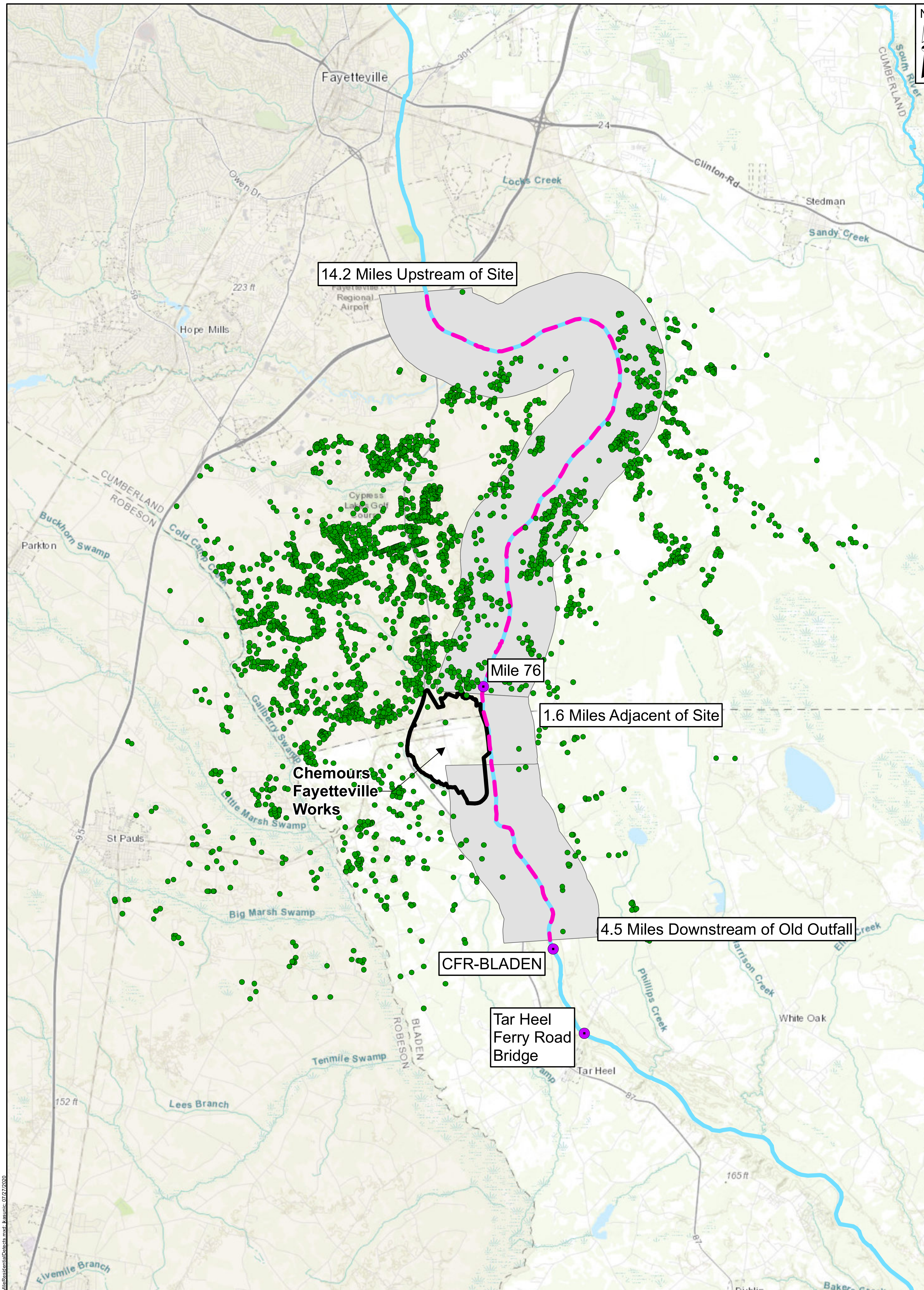
$2l_{CFR-d}$ = represents the length of the Cape Fear River downstream of the Site where Table 3+ PFAS have been detected in offsite groundwater within one mile of the river. This quantity is multiplied by two (2) as the river has two downstream sides (east and west) from which groundwater discharge can reach the Cape Fear River (adjacent only has one side, east).

$2l_{CFR-up}$ = represents the length of the Cape Fear River upstream of the Site where Table 3+ PFAS have been detected in offsite groundwater within one mile of the river. This quantity is multiplied by two (2) as the river has two upstream sides (east and west) from which groundwater discharge can reach the Cape Fear River (adjacent only has one side, east).

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

FIGURES



Legend

- Offsite Groundwater Sampling Location with Detected Result
- Selected Prior Cape Fear River Sampling Locations
- Detected Results within 1 mile of Cape Fear River
- Chemours Fayetteville Works
- Cape Fear River

Notes:
Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

2 1 0 2 Miles

Estimated Extents of Offsite Groundwater Contributions to Cape Fear River Table 3+ PFAS Mass Loads
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Figure K-1

Raleigh | July 2020

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Baseline Monitoring Workplan\TR0795_1MileResidentialDetects.mxd; ikasunic; 07/27/2020

Projection: WGS 1984 Web Mercator Auxiliary Sphere; Units in Meter