

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

Cape Fear River PFAS Mass Loading Assessment - Third Quarter 2022 Report

Chemours Fayetteville Works

Prepared for

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

Prepared by

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LIST OF ABBREVIATIONS

cfs	cubic feet per second
СО	Consent Order
CO Addendum	Addendum to Consent Order Paragraph 12
DVM	Data Verification Module
FTC	flow through cell
HDPE	high-density polyethylene
HFPO-DA	hexafluoropropylene oxide-dimer acid
kg	kilograms
LDPE	low-density polyethylene
mg/s	milligrams per second
m ³	cubic meters
ng/L	nanograms per liter
NCDEQ	North Carolina Department of Environmental Quality
PFAS	per- and polyfluoroalkyl substances
PFHpA	perfluoroheptanoic acid
Q1	first quarter
Q2	second quarter
Q3	third quarter
Q4	fourth quarter
SOP	standard operating procedure
SWTS	stormwater treatment system
USEPA	United States Environmental Protection Agency

1 INTRODUCTION

Geosyntec Consultants of NC, P.C. (Geosyntec) has prepared this *Cape Fear River PFAS Mass Loading Assessment - Third Quarter 2022 Report* for The Chemours Company, FC, LLC (Chemours). This report provides monitoring and assessment results pursuant to the requirements of Paragraphs 1(a) and 1(b) of the Addendum to Consent Order Paragraph 12 (CO Addendum) and Paragraph 16 of the executed Consent Order (CO) (dated February 25, 2019) between the North Carolina Department of Environmental Quality (NCDEQ), Cape Fear River Watch, and Chemours. The CO Addendum requires sampling the Cape Fear River and mass loading transport pathways for the per- and polyfluoroalkyl substances (PFAS) compounds listed in Attachment C of the CO (Geosyntec 2020a). This is the eleventh report prepared since the first quarter (Q1) 2020.

1.1 Site Remedies

Chemours operates the Fayetteville Works facility in Bladen County, North Carolina (the Site) (Figure 1). The Site is within a 2,177-acre property at 22828 NC Highway 87, approximately 20 miles southeast of the city of Fayetteville.

From October 2020 through June 2021,¹ Chemours installed multiple remedies to capture PFAS at the Site and to prevent PFAS from reaching the Cape Fear River. Thus far, these remedies include two treatment systems and four on-site seeps interim flow-through cells (FTC). The start date of operation of each remedy are as follows:

- Old Outfall 002 treatment system (October 1, 2020)
- Seep C FTC (December 16, 2020)
- Seep A FTC (April 28, 2021)
- Seep B FTC (June 8, 2021)
- Seep D FTC (June 24, 2021)
- Outfall 002 stormwater treatment system (SWTS) (implemented on June 30, 2021)²

One year of monthly sampling of the mass loading model pathways per CO Paragraph 1(b) was completed in December 2021. Starting in January 2022 (Q1 2022), quarterly sampling of the mass loading model pathways was initiated and will continue for a period of 4 years (through Q4 2026),

¹ There have been numerous other interim and permanent actions taken to limit PFAS reaching the Cape Fear River prior to Q3 2022, i.e., air abatement measures (installation of the thermal oxidizer and carbon beds, etc.), grouting of the terracotta pipe, sediment removal from onsite channels, among others, and these may not be reflected in the captured mass load calculations but should be considered in the overall assessment of PFAS reductions.

² Diversion sumps in the conveyance network surrounding the Monomers/IXM area capture stormwater flows that would otherwise flow to Outfall 002 and transfers the stormwater to the SWTS for treatment. The diversion sumps and SWTS are designed to convey and then treat stormwater from storm events up to 1-inch over 24-hours. Further details on the SWTS are provided in the Stormwater Treatment System Capture and Removal Efficiency Report (Geosyntec, 2021a).



as outlined in the Cape Fear River Mass Loading Calculation Protocol Version 2 (Geosyntec 2020a).

1.2 Monitoring and Report Objectives

This report presents data collected and analytical results for the third quarter (July through September) 2022 (Q3 2022) PFAS mass-loading assessment of the Cape Fear River. The primary objectives of the quarterly monitoring are as follows:

- 1. Assess the PFAS mass loads reaching the river primarily using the analytical results of the composite samples collected in the Cape Fear River at Tar Heel Ferry Road Bridge (Tar Heel), which is approximately 7 miles downstream of the Site (Figure 2).
- 2. Assess the PFAS mass loads that are being prevented from reaching the Cape Fear River by the remedies that have been implemented.

Along with presenting the results of the composite sampling conducted at Tar Heel, this report also presents the results of the grab samples collected at three downstream locations along the Cape Fear River: Bladen Bluffs, Tar Heel, and Kings Bluff Intake Canal (Kings Bluff) (Figure 3). The Tar Heel and Bladen Bluffs locations are within 2 miles of each other. The Kings Bluff location is farther away from the Site (48 miles downstream from Tar Heel).

This report also summarizes the surface water and groundwater sampling (Figures 4 and 5) that was conducted to estimate the relative PFAS loadings from the different PFAS transport pathways to the Cape Fear River, as identified in the conceptual site model (Figure 6) (Geosyntec 2019). The estimated relative PFAS loadings were modeled for this current reporting period using the Q3 2022 data and the mass loading model. A summary of the mass loading model is presented in this report, and the scope and analysis are in Appendix A.

The results are presented as three PFAS groupings and presented in Table 1: Total Table 3+(17 compounds), Total Table 3+(20 compounds), and Total Attachment C (Geosyntec 2020b). Although the report tables include results for Total Attachment C and Total Table 3+(20 compounds), the text, tables, and figures of this report focus on the Total Table 3+(17 compounds) PFAS grouping.

1.3 Report Organization

The remainder of this report is organized as follows:

- Section 2 presents details of the field work conducted (e.g., samples collected, measurements taken) and the laboratory analyses completed.
- Section 3 presents the sampling results.
- Section 4 presents the mass load and mass discharge calculations.
- Section 5 provides a summary and conclusions of the Q3 2022 mass load assessment.



2 SAMPLING ACTIVITIES AND LABORATORY ANALYSIS

The field work associated with collecting data for this Q3 2022 mass load assessment was completed by Parsons of NC (Parsons) and Geosyntec from July 1 through September 30, 2022. The scope of sampling and analysis conducted are presented below. Details of the sampling methods and flow measurement methods can be found in *Cape Fear River Mass Loading Calculation Protocol Version 2* (Geosyntec 2020a). Details of the sampling scope for the mass loading model are in Appendix A and are not presented in this section.

2.1 Sampling Activities

In Q3 2022, composite samples were collected from Tar Heel (sample location CFR-TARHEEL), which is approximately 7 miles downstream of the Site (Figure 2). In addition, grab samples were collected at the three downstream locations along the Cape Fear River. The flow measurements were collected at W.O. Huske Dam (Station #2105500) and Cape Fear Lock and Dam #1 (Station #2105769) and are summarized in Appendix B. Field forms are provided in Appendix C.

The composite samples were collected using an autosampler and were generally composited over 24 hours with aliquots collected at 1-hour intervals and at two samples per week. A total of 27 primary composite samples and 3 field duplicate composite samples were collected from this location from July 4 through September 29, 2022. The duplicate samples were collected on July 18, August 10, and September 12, 2022. The sampling program was interrupted on September 29, 2022, due to a tropical storm event (Hurricane Ian) which was predicted to flood the autosampler platform. As a result, the sampler was temporarily removed, and a grab sample was collected to continue a record of river concentrations over time.

The grab samples were collected using a peristaltic pump and new dedicated high-density polyethylene (HDPE) or low-density polyethylene (LDPE) tubing and dedicated silicone tubing for the pump head. A total of three grab samples were collected: one from Tar Heel (sample location CFR-TARHEEL) and one from Bladen Bluffs (sample location CFR-BLADEN) on July 20, 2022, and one from Kings Bluff (sample location CFR-KINGS) on July 26, 2022. The grab sample from Kings Bluff was collected six days after sampling conducted at Tar Heel and Bladen Bluffs to account for travel time between these locations.

For the remedies installed at Old Outfall 002; Seeps A, B, C, and D; and Outfall 002, samples were collected at the influent and effluent stilling basins and measured flows at the Old Outfall 002 treatment system. The sampling methods for the Seeps are not part of the scope of the mass loading assessment but are provided in *Interim Seep Remediation O&M Reports 10 and 11* (Geosyntec 2022a, 2022b).



2.2 Laboratory Analyses

Samples were sent to Eurofins Scientific (West Sacramento, California). The composite samples from Tar Heel were analyzed for PFAS by Table 3+ Laboratory standard operating procedure (SOP). The grab samples from the Bladen Bluffs, Tar Heel, and Kings Bluff were analyzed for Table 3+ Laboratory SOP and Method Mod 537 (35 compounds).

3 PFAS ANALYTICAL RESULTS

Table 3+ analytical results from samples collected at Bladen Bluffs, Tar Heel, and Kings Bluff in Q3 2022 are presented in Tables 2 and 3. The laboratory reports and Data Verification Module (DVM) reports are provided in Appendix D. The analytical data have been reviewed and validated. The duplicate samples have also been compared to the primary samples.

3.1 Data Validation

The laboratory data were reviewed using the DVM within the LocusTM Environmental Information Management (EIM) system, a commercial software program used to manage data. Following the DVM process, a secondary review of the data was conducted. The DVM and secondary review results were combined in a data review narrative report for each set of sample results, which were consistent with Stage 2b of the United States Environmental Protection Agency (USEPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (USEPA 2009).

Additional details of the data validation are provided in Appendix A. The data collected are believed to be complete, representative, and comparable, with the exception of R-PSDA, Hydrolyzed PSDA, and R-EVE.

3.2 Equipment Blanks, Quality Assurance/Quality Control, and Duplicate Samples

No equipment blank samples were collected for the Tar Heel sampling program (CFR-TARHEEL) during this period because there were no maintenance activities conducted on the composite samplers. There were no other quality assurance/quality control samples collected for this reporting period.

Two equipment blank samples and a field blank sample were collected as part of the surface water sampling activities on July 21, 2022. There were detections of PFMOAA and PFO2HxA in the two equipment blanks and applicable field sample results have been qualified with a B qualifier. These blank samples are further discussed in Appendix A.

PFAS results for the primary and duplicate samples had relative percent differences less than 30% for the reported compounds with the exception of R-PSDA in the July 18, 2022 field duplicate at CFR-TARHEEL, and Hydrolyzed PSDA and NVHOS in the August 10, 2022 field duplicate at CFR-TARHEEL. The exceptions noted have been J qualified as appropriate.

3.3 Analytical Results

The Q3 2022 analytical results from the composite samples collected at Tar Heel are presented in Table 2. The Total Table 3+ (17 compounds) concentrations ranged from undetectable above the associated reporting limits to 84 nanograms per liter (ng/L). This range in concentrations is within



the observed range in previous quarterly sampling events that occurred after the remedies were in operation.

The Q3 2022 analytical results from the grab samples collected at Bladen Bluffs, Tar Heel, and Kings Bluff are presented in Table 3 (Table 3+) and Method Mod 537 are presented in Appendix B, Table B2. The analytical results for these downstream locations are discussed in Section 4.3.

4 CAPE FEAR RIVER MASS LOAD AND MASS DISCHARGE CALCULATIONS

The analytical results from the sampling and the flows reported from W.O. Huske Dam (Station #2105500) and Cape Fear Lock and Dam #1 (Station #2105769) (Appendix B) were used to estimate the Total Table 3+ (17 compounds) mass loads and mass discharge in the Cape Fear River. Specifically, the mass load is calculated as the product of the concentration of PFAS and the total volume of water that flowed passed the sampling point within the sampling time interval (milligrams [mg] or kilograms [kg]); and the mass discharge is generally calculated as the product of the concentration of PFAS and the volumetric flow rate (milligrams per second [mg/s]).

The Total Table 3+ (17 compounds) mass load measured in the Cape Fear River and prevented from entering the Cape Fear River due to the remedies are summarized in Table 4. The mass load estimation intervals are presented in Tables 5A to 5G.

4.1 **PFAS Estimations in the Cape Fear River**

Analytical results from Tar Heel and flows reported at W.O. Huske Dam (Station #2105500) were used to estimate the Total Table 3+ (17 compounds) mass loads and PFAS mass discharge in the Cape Fear River.

In Q3 2022, the in-river Total Table 3+ (17 compounds) mass load measured at Tar Heel was 10.8 kg and is based on the 55 mass loading estimation intervals (Table 5A). The Total Table 3+ (17 compounds) mass discharge among samples with detected Total Table 3+ (17 compounds) concentrations ranged from 0.34 to 4.1 mg/s (Table 6), with the median mass discharge being 1.2 mg/s.

The flow measured in Cape Fear River, the Total Table 3+ concentrations, and mass discharge over time have been plotted from the start of the mass loading program (from March 28, 2020, to September 30, 2022; Figure 7) and within the last 12 months (from October 1, 2021, to September 30, 2022; Figure 8). The mass discharge began to decrease at the end of June 2021, which also corresponds to the time when Old Outfall 002 treatment system, the Seep FTC, and the SWTP were installed and operating.

4.2 **PFAS Prevented From Reaching the River**

Analytical results measured from samples collected at the influent and effluent of the remedies and their respective flows were used to estimate the Total Table 3+ (17 compounds) mass loads and PFAS mass discharge prevented from discharging to the Cape Fear River. During the Q3 2022 reporting period, the remedies prevented 44.5 kg of Total Table 3+ mass load.

• For the Old Outfall 002 treatment system, a total of 9.6 kg of PFAS was captured and prevented from reaching the Cape Fear River with a total treated flow of 190,000 cubic meters (m³) (Table 5B).

- For the Seep A FTC, a total of 9.1 kg was captured and prevented from reaching the Cape Fear River with a total measured flow of about 47,159 m³ (Table 5C).
- For the Seep B FTC, a total of 18 kg was captured and prevented from reaching the Cape Fear River with a total measured flow of about 65,394 m³ (Table 5D).
- For the Seep C FTC, a total of 2.9 kg was captured and prevented from reaching the Cape Fear River with a total measured flow about 28,585 m³ (Table 5E).
- For the Seep D FTC, a total of 4.1 kg was captured and prevented from reaching the Cape Fear River with a total measured flow of about 36,159 m³ (Table 5F).
- The SWTS captures PFAS originating from stormwater in the Monomers/IXM area that would otherwise flow to Outfall 002 during storm events. When stormwater is being treated at the SWTS, HFPO-DA, PFMOAA, and PMPA concentrations are measured in the SWTS influent and effluent flows. The captured total mass of HFPO-DA, PFMOAA, and PMPA during storm events between July 8, 2022, and September 30, 2022, was 0.71 kg. This estimate was based on mass loading estimates for 15 days when flow was recorded at the SWTS between July 8, 2022, and September 30, 2022, with a total treated flow of about 7,516 m³ (Table 5G). This captured total mass likely underestimates the mass of PFAS captured by the SWTS during Q3 2022 because the samples collected are analyzed for the three indicator compounds HFPO-DA, PFMOAA, and PMPA and not the full Table 3+ analyte list.

4.3 **PFAS at the Downstream River Locations**

The Total Table 3+ (17 compounds) concentrations and mass discharge values from the Q3 2022 event are shown in the table below. Total Table 3+ (17 compounds) concentrations at the three downstream river locations ranged from 26 nanograms per liter (ng/L) (CFR-BLADEN) to 50 ng/L (CFR-TARHEEL). The Tar Heel and Bladen Bluffs sampling locations are located within 2 miles of each other and historically have similar sample results. In Q3 2022, the composite sample collected at CFR-TARHEEL, and the grab sample collected at CFR-BLADEN did have similar Total Table 3+ (17 compounds) concentrations (28 ng/L and 26 ng/L, respectively), but the grab sample collected at CFR-TARHEEL had a higher Total Table 3+ (17 compounds) concentration (50 ng/L) because PFMOAA, PMPA, and Hydrolyzed PSDA were detected in this grab sample. The Kings Bluff location is located further away (i.e., 48 miles from Tar Heel) and had similar concentrations to the other two locations with a Total Table 3+ (17 compounds) concentration of 33 ng/L.

As per the Cape Fear River Mass Loading Calculation Protocol Version 2 (Geosyntec, 2020a), CFR-KINGS was sampled six days after CFR-TARHEEL and CFR-BLADEN to account for travel time between these two locations and CFR-KINGS. Flows reported at W.O. Huske Dam (Station #2105500) are adjusted for travel time and used in the calculation of mass discharge for

Bladen Bluffs and Tar Heel. Flows reported at Cape Fear Lock and Dam #1 (Station #2105769) are used in the calculation of mass discharge for Kings Bluff.

The Total Table 3+ (17 compounds) mass discharge ranged from 0.94 mg/s (CFR-TARHEEL composite) to 1.1 mg/s at CFR-KINGS and CFR-BLADEN, while the mass discharge calculated from the grab sample at CFR-TARHEEL was 2.2 mg/s. In Q3 2022, the mass discharge across the three downstream river locations was relatively consistent with previous quarters. Specifically, from the mass discharges from Q4 2021 to Q2 2022 were 1.9 to 3.0 mg/s at CFR-BLADEN, non-detect to 3.1 mg/s at CFR-TARHEEL [grab samples], and 1.9 to 4.4 mg/s at CFR-KINGS (Geosyntec: 2022c, 2022d, 2022e). The mass discharges at the downstream river locations were also consistently lower over the past four quarters (i.e., since Q4 2021) than in previous assessments, which may reflect the reduced mass discharge from the Site due to implemented remedies described in Section 4.2.

	Sample	Sample		Total Table 3+	(17 Compounds)
Sample Location	Collection Method	Collection Date	Flow Rate (cfs)	Concentration (ng/L)	Mass Discharge (mg/s)
CFR-BLADEN	Grab	7/20/2022	1,500	26	1.1
CFR-TARHEEL	Grab	7/20/2022	1,530	50	2.2
CFR-TARHEEL	Composite	7/21/2022	1,393	28	0.94
CFR-KINGS	Grab	7/26/2022	1,160	33	1.1

4.4 Mass Loading Model Assessment

Where Section 3 presented the Total Table 3+ PFAS mass load in the Cape Fear River, this section presents the estimation of mass discharge from the identified PFAS transport pathways using the mass loading model and an assessment of the relative contributions by pathway. The results of the mass loading model assessment for Q3 2022 are briefly described below. Details on the mass loading model results and calculations are provided in Appendix A.

The reduction in mass discharge is estimated as the difference between the mass discharge calculated upgradient of the remedies ("before" remedies) and downgradient of the remedies ("after" remedies). In Q3 2022 (July 2022), the total reduction in Total Table 3+ mass discharges due to the operation of the remedies was 4.98 mg/s. Specifically, the reduction of mass discharge was 0.60 mg/s at Old Outfall 002, 0.73 mg/s at Seep A, 2.39 mg/s at Seep B, 0.30 mg/s at Seep C, and 0.96 mg/s at Seep D.

In terms of relative contributions, the largest contributing pathways upgradient of the remedies (i.e., before the water passes through the remedies) continue to be the seeps and on-site groundwater, and Old Outfall 002 (see below an except from Appendix A Table A11), which is consistent with previous events (Geosyntec 2020c, 2020d, 2020e, 2021b, 2021c, 2021d, 2021e, 2022c, 2022d, 2022e). Implementation of the Old Outfall 002 treatment system, Seeps A, B, C, and D have reduced the potential loading at these pathways to approximately 1% of the Total Table 3+ (17 compounds) mass load reaching the Cape Fear River. A complete comparison of relative

contributions per pathway for the Q3 2022 mass loading model assessments is provided in Appendix A.

Dethereou	Q3 2	2022
Pathway	Lower	Upper
Onsite Groundwater	23%	24%
Seeps	56%	55%
Seeps (After Remedies)	<1%	<1%
Old Outfall 002	8%	8%
Old Outfall 002 (After Remedies)	<1%	<1%

The largest remaining contributing pathway downgradient of the remedies (i.e., after the water passes through the remedies) is onsite groundwater. The onsite groundwater reaching the Cape Fear River will be addressed in the future by the groundwater barrier wall remedy which includes a groundwater extraction and treatment system.



5 SUMMARY AND CONCLUSIONS

This Q3 2022 Cape Fear River PFAS assessment at Tar Heel estimated the Total Table 3+ (17 compounds) that was measured at the Cape Fear River over the load assessment period of July 1, 2022, through September 30, 2022. Over this period, the in-river Total Table 3+ (17 compounds) mass load measured at Tar Heel was 10.8 kg. The remedies that have been installed at Old Outfall 002; Seeps A, B, C, and D; and Outfall 002 prevented a load of 44.5 kg of Total Table 3+ (17 compounds).

The PFAS mass discharge sampling at Bladen Bluffs, Tar Heel, and Kings Bluff consisted of three grab samples collected at the three downstream locations along Cape Fear River. There is inherent variability associated with river sample collection due to changing flow rates, precipitation near the Site and along the river, sample collection location, and grab sampling methods, which can lead to variability in the PFAS mass discharge at these three locations. Overall, the mass discharges measured at the downstream river locations have been consistently lower since Q4 2021, which might in part reflect the reduced mass discharge from the Site due to implemented remedies.

In July 2022, samples were collected from the PFAS transport pathways (seeps, creeks, Old Outfall, Outfall 002, groundwater) and were used to estimate the mass discharge and the relative contribution per transport pathway to the Cape Fear River. The implementation of remedies at the Old Outfall 002 and Seeps A, B, C, and D resulted in reductions of model-estimated mass discharges of about 4.98 mg/s. These reductions represent the estimated reductions for this single mass loading event and are similar to model-estimated reductions reported in Q2 2022 of 4.95 mg/s (Geosyntec, 2022e).

In terms of relative contributions, the pathways with the largest PFAS mass discharges continue to be the seeps (transport pathway 6) onsite groundwater (transport pathway 5), and to a lesser extent Old Outfall 002 (transport pathway 7). For the Seeps and Old Outfall 002 (transport pathways 6 and 7), the implementation of the Old Outfall 002 treatment system and the seep FTC remedies have reduced the relative contribution of the Total Table 3+ (17 compounds) mass discharge from those two pathways to the Cape Fear River. In Q3 2022, the relative contributions of Old Outfall 002 and the Seeps were reduced to approximately 1% each. Accounting for implemented remedies, the remaining largest contributing pathway is onsite groundwater. Onsite groundwater reaching the Cape Fear River will be addressed in the future by the groundwater barrier wall remedy which includes a groundwater extraction and treatment system.

Quarterly sample collection was initiated in January 2022 and will continue for a period of 4 years (through Q4 2026). Assessment of PFAS mass loads will continue in future sampling events, including evaluation of reductions in mass loads from the model pathways due to the implemented remedies and calculations of measured mass loads at Tar Heel.

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Tables

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TABLE 1PFAS ANALYTE LISTChemours Fayetteville Works, North Carolina

	PFAS Grouping ²					
Common Name ¹	Attachment C	Table 3+ (17 compounds)	Table 3+ (20 compounds)	Chemical Name	CASN	Chemical Formula
HFPO-DA ³	✓	√	\checkmark	Hexafluoropropylene oxide dimer acid	13252-13-6	C6HF11O3
PEPA	✓	√	\checkmark	Perfluoro-2-ethoxypropionic acid	267239-61-2	C5HF9O3
PFECA-G	✓	√	\checkmark	Perfluoro-4-isopropoxybutanoic acid	801212-59-9	C12H9F9O3S
PFMOAA	✓	√	\checkmark	Perfluoro-2-methoxyacetic acid	674-13-5	C3HF5O3
PFO2HxA	✓	√	\checkmark	Perfluoro-3,5-dioxahexanoic acid	39492-88-1	C4HF7O4
PFO3OA	✓	√	√	Perfluoro-3,5,7-trioxaoctanoic acid	39492-89-2	C5HF9O5
PFO4DA	✓	√	√	Perfluoro-3,5,7,9-tetraoxadecanoic acid	39492-90-5	C6HF11O6
РМРА	✓	√	√	Perfluoro-2-methoxypropionic acid	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	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	69087-46-3	C8HF13O4
PFECA B		√	√	Perfluoro-3,6-dioxaheptanoic acid		C5HF9O4
R-EVE			√	Pentanoic acid, 4-(2-carboxy-1,1,2,2-tetrafluoroethoxy)-2,2,3,3,4,5,5,5-octafluoro-	2416366-22-6	C8H2F12O5
PFO5DA	✓ ✓	√	√	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	39492-91-6	C7HF13O7
R-PSDA			√	Pentanoic acid, 2,2,3,3,4,5,5,5-octafluoro-4-(1,1,2,2-tetrafluoro-2-sulfoethoxy)-	2416366-18-0	C7H2F12O6S
R-PSDCA		√	√	Ethanesulfonic acid, 1,1,2,2-tetrafluoro-2-[1,2,2,3,3-pentafluoro-1-(trifluoromethyl)propoxy]-	2416366-21-5	C6H2F12O4S
Hydrolyzed PSDA			~	Acetic acid, 2-fluoro-2-[1,1,2,3,3,3-hexafluoro-2-(1,1,2,2-tetrafluoro-2-sulfoethoxy)propoxy]-	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	801209-99-4	C4H2F8O4S
PES		√	√	Perfluoro-2-ethoxyethanesulfonic acid	113507-82-7	C4HF9O4S
PS Acid	✓	✓ ✓	√	Ethanesulfonic acid, 2-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-	29311-67-9	C7HF13O5S
Hydro-PS Acid	✓ ✓	√	√	Ethanesulfonic acid, 2-[1-[difluoro(1,2,2,2-tetrafluoroethoxy)methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-	749836-20-2	C7H2F14O5S
PFHpA ³	√			Perfluoroheptanoic acid	375-85-9	C7HF13O2

Notes:

1 - Analyzed under analytical method Table 3+ Lab SOP.

2 - 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 three compounds (R-PSDA, Hydrolyzed PSDA, 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 have been calculated and presented as: (i) the summation of 17 of the 20 Table 3+ compounds "Total Table 3+ (17 compounds)", i.e., excluding results of R-PSDA, Hydrolyzed PSDA, and R-EVE, and (ii) the summation of 20 of the Table 3+ compounds "Total Table 3+ (20 compounds)".

3 - HFPO-DA and PFHpA can be analyzed under methods Table 3+ SOP and EPA Method 537 Mod.

EPA - Environmental Protection Agency

PFAS - Per- and Polyfluoroalkyl substances

SOP - Standard Operating Procedure

Sampling Event	Q3 2022				
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-24-070422	CFR-TARHEEL-23-070822	CFR-TARHEEL-24-070922	CFR-TARHEEL-24-071122	CFR-TARHEEL-24-071422
Sample Date	07/04/22	07/08/22	07/09/22	07/11/22	07/14/22
Sample Type	Composite	Composite	Composite	Composite	Composite
Sample Start Date and Time	07/04/22 12:00 AM	07/08/22 12:00 AM	07/09/22 12:00 AM	07/11/22 12:00 AM	07/14/22 12:00 AM
Sample Stop Date and Time	07/04/22 11:00 PM	07/08/22 11:00 PM	07/09/22 11:00 PM	07/11/22 11:00 PM	07/14/22 11:00 PM
Composite Duration (hours)	24	24	24	24	24
QA/QC					
Sample Delivery Group (SDG)	320-90093-1	320-90093-1	320-90170-1	320-90170-1	320-90170-1
Lab Sample ID	320-90093-1	320-90093-2	320-90170-1	320-90170-2	320-90170-3
able 3+ SOP (ng/L)					
HFPO-DA	<2.0 UJ	<2.0	14 J	6.2	7.1
PFMOAA	<2.0 UJ	8.5	12 J	14	17
PFO2HxA	<2.0 UJ	6.5	9.6 J	6.8	9.1
PFO3OA	<2.0 UJ	<2.0	2.3 J	<2.0	2.3
PFO4DA	<2.0 UJ	<2.0	<2.0 UJ	<2.0	<2.0
PFO5DA	<2.0 UJ	<2.0	<2.0 UJ	<2.0	<2.0
PMPA	<10 UJ	<10	<10 UJ	<10	11
PEPA	<20 UJ	<20	<20 UJ	<20	<20
PS Acid	<2.0 UJ	<2.0	<2.0 UJ	<2.0	<2.0
Hydro-PS Acid	<2.0 UJ	<2.0	<2.0 UJ	<2.0	<2.0
R-PSDA	<2.0 UJ	<2.0	12 J	<2.0	<2.0
Hydrolyzed PSDA	<2.0 UJ	<2.0	10 J	6.9 J	10 J
R-PSDCA	<2.0 UJ	<2.0	<2.0 UJ	<2.0	<2.0
NVHOS	<2.0 UJ	<2.0	7.1 J	7.6	6.9
EVE Acid	<2.0 UJ	<2.0	<2.0 UJ	<2.0	<2.0
Hydro-EVE Acid	<2.0 UJ	<2.0	<2.0 UJ	<2.0	<2.0
R-EVE	<2.0 UJ	<2.0	<2.0 UJ	<2.0	<2.0
PES	<2.0 UJ	<2.0	<2.0 UJ	<2.0	<2.0
PFECA B	<2.0 UJ	<2.0	<2.0 UJ	<2.0	<2.0
PFECA-G	<2.0 UJ	<2.0	<2.0 UJ	<2.0	<2.0
Perfluoroheptanoic Acid	<2.0 UJ	5.1	4.9 J	4.1	4.2
otal Attachment C ^{1,2}	ND	15	38	27	47
otal Table 3+ (17 compounds) ^{2,3}	ND	15	45	35	53
Fotal Table 3+ (20 compounds) ²	ND	15	67	42	63

Sampling Event	Q3 2022	Q3 2022	Q3 2022	Q3 2022	Q3 2022
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-24-071822	CFR-TARHEEL-24-071822-D	CAP3Q22-CFR-TARHEEL-072022	CAP3Q22-CFR-TARHEEL-24-072122	CFR-TARHEEL-24-072122
Sample Date	07/18/22	07/18/22	07/20/22	07/21/22	07/21/22
Sample Type	Composite	Composite	Grab	Composite	Composite
Sample Start Date and Time	07/18/22 12:00 AM	07/18/22 12:00 AM		07/20/22 3:55 PM	07/21/22 12:00 AM
Sample Stop Date and Time	07/18/22 11:00 PM	07/18/22 11:00 PM		07/21/22 2:55 PM	07/21/22 11:00 PM
Composite Duration (hours)	24	24		24	24
QA/QC		Field Duplicate			
Sample Delivery Group (SDG)	320-90170-1	320-90170-1	320-90299-1	320-90301-1	320-90585-1
Lab Sample ID	320-90170-4	320-90170-5	320-90299-5	320-90301-1	320-90585-1
ble 3+ SOP (ng/L)					
HFPO-DA	7.2	6.9	6.5	7.7	13 J
PFMOAA	14	16	18 B	9.2 B	11 J
PFO2HxA	11	11	8.6 B	9.1 B	11 J
PFO3OA	2.4	2	2.0	2.1	2.2 J
PFO4DA	<2.0	<2.0	<2.0	<2.0	<2.0 UJ
PFO5DA	<2.0	<2.0	<2.0	<2.0	<2.0 UJ
PMPA	12	11	10	<10	<10 UJ
PEPA	<20	<20	<20	<20	<20 UJ
PS Acid	<2.0	<2.0	<2.0	<2.0	<2.0 UJ
Hydro-PS Acid	<2.0	<2.0	<2.0	<2.0	<2.0 UJ
R-PSDA	<2.0	7.5 J	<2.0	<2.0	<2.0 UJ
Hydrolyzed PSDA	12 J	11 J	8.6 J	<2.0	<2.0 UJ
R-PSDCA	<2.0	<2.0	<2.0	<2.0	<2.0 UJ
NVHOS	6.0	6.1	4.5	<2.0	<2.0 UJ
EVE Acid	<2.0	<2.0	<2.0	<2.0	<2.0 UJ
Hydro-EVE Acid	<2.0	<2.0	<2.0	<2.0	<2.0 UJ
R-EVE	<2.0	2.1 J	<2.0	<2.0	<2.0 UJ
PES	<2.0	<2.0	<2.0	<2.0	<2.0 UJ
PFECA B	<2.0	<2.0	<2.0	<2.0	<2.0 UJ
PFECA-G	<2.0	<2.0	<2.0	<2.0	<2.0 UJ
Perfluoroheptanoic Acid	3.4	3.5	3.7	3.7	4.3 J
otal Attachment C ^{1,2}	47	47	45	28	37
otal Table 3+ (17 compounds) ^{2,3}	53	53	50	28	37
otal Table 3+ (20 compounds) ²	65	74	58	28	37

Sampling Event	Q3 2022	Q3 2022	Q3 2022	Q3 2022
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-24-072522	CFR-TARHEEL-24-072822	CFR-TARHEEL-24-080122	CFR-TARHEEL-24-080422
Sample Date	07/25/22	07/28/22	08/01/22	08/04/22
Sample Type	Composite	Composite	Composite	Composite
Sample Start Date and Time	07/25/22 12:00 AM	07/28/22 12:00 AM	08/01/22 12:00 AM	08/04/22 12:00 AM
Sample Stop Date and Time	07/25/22 11:00 PM	07/28/22 11:00 PM	08/01/22 11:00 PM	08/04/22 11:00 PM
Composite Duration (hours)	24	24	24	24
QA/QC				
Sample Delivery Group (SDG)	320-90585-1	320-90775-1	320-90775-1	320-90775-1
Lab Sample ID	320-90585-2	320-90775-1	320-90775-2	320-90775-3
able 3+ SOP (ng/L)				
HFPO-DA	9.6	7.5	11	7.6
PFMOAA	22	11	19	11
PFO2HxA	11	9.6	15	9.7
PFO3OA	2.3	2.4	3.4	2.2
PFO4DA	<2.0	<2.0	<2.0	<2.0
PFO5DA	<2.0	<2.0	<2.0	<2.0
PMPA	<10	<10	<10	<10
PEPA	<20	<20	<20	<20
PS Acid	<2.0	<2.0	<2.0	<2.0
Hydro-PS Acid	<2.0	<2.0	<2.0	<2.0
R-PSDA	<2.0	<2.0	<2.0	<2.0
Hydrolyzed PSDA	6.6 J	<2.0	4.6 J	<2.0
R-PSDCA	<2.0	<2.0	<2.0	<2.0
NVHOS	<2.0	4.9	<2.0	<2.0
EVE Acid	<2.0	<2.0	<2.0	<2.0
Hydro-EVE Acid	<2.0	<2.0	<2.0	<2.0
R-EVE	<2.0	<2.0	<2.0	<2.0
PES	<2.0	<2.0	<2.0	<2.0
PFECA B	<2.0	<2.0	<2.0	<2.0
PFECA-G	<2.0	<2.0	<2.0	<2.0
Perfluoroheptanoic Acid	4.3	4.3	4.0	4.2
Fotal Attachment C ^{1,2}	45	31	48	31
Cotal Table 3+ (17 compounds) ^{2,3}	45	35	48	31
Example 3 + (20 compounds) ²	52	35	53	31

Sampling Event	Q3 2022	Q3 2022	Q3 2022	Q3 2022
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-24-081022	CFR-TARHEEL-24-081022-D	CFR-TARHEEL-24-081222	CFR-TARHEEL-24-081522
Sample Date	08/10/22	08/10/22	08/12/22	08/15/22
Sample Type	Composite	Composite	Composite	Composite
Sample Start Date and Time	08/10/22 12:00 AM	08/10/22 12:00 AM	08/12/22 12:00 AM	08/15/22 12:00 AM
Sample Stop Date and Time	08/10/22 11:00 PM	08/10/22 11:00 PM	08/12/22 11:00 PM	08/15/22 11:00 PM
Composite Duration (hours)	24	24	24	24
QA/QC		Field Duplicate		
Sample Delivery Group (SDG)	320-91082-1	320-91082-1	320-91082-1	320-91082-1
Lab Sample ID	320-91082-1	320-91082-2	320-91082-3	320-91082-4
Table 3+ SOP (ng/L)				
HFPO-DA	9.6	9.4	8.5	7.2
PFMOAA	24 J	19	15	14
PFO2HxA	11	10	9.9	7.4
PFO3OA	2.8 J	2.7	2.4	<2.0
PFO4DA	<2.0	<2.0	<2.0	<2.0
PFO5DA	<2.0	<2.0	<2.0	<2.0
PMPA	<10	<10	<10	<10
PEPA	<20 UJ	<20	<20	<20
PS Acid	<2.0	<2.0	<2.0	<2.0
Hydro-PS Acid	<2.0	<2.0	<2.0	<2.0
R-PSDA	<2.0	<2.0	<2.0	<2.0
Hydrolyzed PSDA	10 J	<2.0	<2.0	9.8 J
R-PSDCA	<2.0	<2.0	<2.0	<2.0
NVHOS	4.1 J	<2.0	<2.0	9.6
EVE Acid	<2.0	<2.0	<2.0	<2.0
Hydro-EVE Acid	<2.0	<2.0	<2.0	<2.0
R-EVE	<2.0	<2.0	<2.0	<2.0
PES	<2.0 UJ	<2.0	<2.0	<2.0
PFECA B	<2.0 UJ	<2.0	<2.0	<2.0
PFECA-G	<2.0	<2.0	<2.0	<2.0
Perfluoroheptanoic Acid	5.3	4.9	5.3	9.7
Fotal Attachment C ^{1,2}	47	41	36	29
Fotal Table 3+ (17 compounds) ^{2,3}	52	41	36	38
Total Table 3+ (20 compounds) ²	62	41	36	48

Sampling Event	Q3 2022	Q3 2022	Q3 2022	Q3 2022
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-24-081822	CFR-TARHEEL-24-082222	CFR-TARHEEL-24-082522	CFR-TARHEEL-24-082922
Sample Date	08/18/22	08/22/22	08/25/22	08/29/22
Sample Type	Composite	Composite	Composite	Composite
Sample Start Date and Time	08/18/22 12:00 AM	08/22/22 12:00 AM	08/25/22 12:00 AM	08/29/22 12:00 AM
Sample Stop Date and Time	08/18/22 11:00 PM	08/22/22 11:00 PM	08/25/22 11:00 PM	08/29/22 11:00 PM
Composite Duration (hours)	24	24	24	24
QA/QC				
Sample Delivery Group (SDG)	320-91395-1	320-91395-1	320-91561-1	320-91561-1
Lab Sample ID	320-91395-1	320-91395-2	320-91561-1	320-91561-2
able 3+ SOP (ng/L)				
HFPO-DA	6.5	6.0	<2.0	5.7
PFMOAA	12	12	6.8	13
PFO2HxA	9.1	7.4	<2.0	7.1
PFO3OA	2.0	<2.0	<2.0	<2.0
PFO4DA	<2.0	<2.0	<2.0	<2.0
PFO5DA	<2.0	<2.0	<2.0	<2.0
PMPA	<10	<10	<10	<10
PEPA	<20	<20	<20	<20
PS Acid	<2.0	<2.0	<2.0	<2.0
Hydro-PS Acid	<2.0	<2.0	<2.0	<2.0
R-PSDA	<2.0	<2.0	<2.0	<2.0
Hydrolyzed PSDA	<2.0	<2.0	<2.0	<2.0
R-PSDCA	<2.0	<2.0	<2.0	<2.0
NVHOS	<2.0	11	<2.0	<2.0
EVE Acid	<2.0	<2.0	<2.0	<2.0
Hydro-EVE Acid	<2.0	<2.0	<2.0	<2.0
R-EVE	<2.0	<2.0	<2.0	<2.0
PES	<2.0	<2.0	<2.0	<2.0
PFECA B	<2.0	<2.0	<2.0	<2.0
PFECA-G	<2.0	<2.0	<2.0	<2.0
Perfluoroheptanoic Acid	5.0	6.8	4.5	3.6
Total Attachment C ^{1,2}	30	25	6.8	26
Fotal Table 3+ (17 compounds) ^{2,3}	30	36	6.8	26
Cotal Table 3+ (20 compounds) ²	30	36	6.8	26

Sampling Event	Q3 2022	Q3 2022	Q3 2022	Q3 2022
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-24-090122	CFR-TARHEEL-24-090522	CFR-TARHEEL-24-090822	CFR-TARHEEL-24-091222
Sample Date	09/01/22	09/05/22	09/08/22	09/12/22
Sample Type	Composite	Composite	Composite	Composite
Sample Start Date and Time	09/01/22 12:00 AM	09/05/22 12:00 AM	09/08/22 12:00 AM	09/12/22 12:00 AM
Sample Stop Date and Time	09/01/22 11:00 PM	09/05/22 11:00 PM	09/08/22 11:00 PM	09/12/22 11:00 PM
Composite Duration (hours)	24	24	24	24
QA/QC				
Sample Delivery Group (SDG)	320-91795-1	320-91795-1	320-92166-1	320-92166-1
Lab Sample ID	320-91795-1	320-91795-2	320-92166-1	320-92166-2
able 3+ SOP (ng/L)				
HFPO-DA	8.4	9.0	8.8	3.0
PFMOAA	31	29	13	<2.0 UJ
PFO2HxA	11	11	16	<2.0
PFO3OA	2.2	2.4	3.1	<2.0
PFO4DA	<2.0	<2.0	<2.0	<2.0
PFO5DA	<2.0	<2.0	<2.0	<2.0
PMPA	<10	<10	<10	<10
PEPA	<20	<20	<20	<20
PS Acid	<2.0	<2.0	<2.0	<2.0
Hydro-PS Acid	<2.0	<2.0	<2.0	<2.0
R-PSDA	<2.0	<2.0	<2.0	<2.0
Hydrolyzed PSDA	5.0 J	4.4 J	<2.0	<2.0
R-PSDCA	<2.0	<2.0	<2.0	<2.0
NVHOS	11	7.8	12	<2.0
EVE Acid	<2.0	<2.0	<2.0	<2.0
Hydro-EVE Acid	<2.0	<2.0	<2.0	<2.0
R-EVE	<2.0	<2.0	<2.0	<2.0
PES	<2.0	<2.0	<2.0	<2.0
PFECA B	<2.0	<2.0	<2.0	<2.0
PFECA-G	<2.0	<2.0	<2.0	<2.0
Perfluoroheptanoic Acid	5.0	6.0	5.1	4.8
Fotal Attachment C ^{1,2}	53	51	41	3.0
Fotal Table 3+ (17 compounds) ^{2,3}	64	59	53	3.0
Total Table 3+ (20 compounds) ²	69	64	53	3.0

Sampling Event	Q3 2022	Q3 2022	Q3 2022	Q3 2022
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-24-091222-D	CFR-TARHEEL-24-091522	CFR-TARHEEL-24-091922	CFR-TARHEEL-24-092222
Sample Date	09/12/22	09/15/22	09/19/22	09/22/22
Sample Type	Composite	Composite	Composite	Composite
Sample Start Date and Time	09/12/22 12:00 AM	09/15/22 12:00 AM	09/19/22 12:00 AM	09/22/22 12:00 AM
Sample Stop Date and Time	09/12/22 11:00 PM	09/15/22 11:00 PM	09/19/22 11:00 PM	09/22/22 11:00 PM
Composite Duration (hours)	24	24	24	24
QA/QC	Field Duplicate			
Sample Delivery Group (SDG)	320-92166-1	320-92348-1	320-92348-1	320-92585-1
Lab Sample ID	320-92166-3	320-92348-1	320-92348-2	320-92585-1
Table 3+ SOP (ng/L)				
HFPO-DA	3.0	4.6 J	7.1	8.7
PFMOAA	<2.0	14 J	24	6.3
PFO2HxA	2.8	6.5 J	11	<2.0
PFO3OA	<2.0	<2.0 UJ	2.6	3.2
PFO4DA	<2.0	<2.0 UJ	<2.0	<2.0
PFO5DA	<2.0	<2.0 UJ	<2.0	<2.0
PMPA	<10	<10 UJ	14	<10
PEPA	<20	<20 UJ	<20	<20
PS Acid	<2.0	<2.0 UJ	<2.0	<2.0
Hydro-PS Acid	<2.0	<2.0 UJ	<2.0	<2.0
R-PSDA	<2.0	6.8 J	6.4 J	5.9 J
Hydrolyzed PSDA	<2.0	13 J	7.6 J	<2.0
R-PSDCA	<2.0	<2.0 UJ	<2.0	<2.0
NVHOS	<2.0	2.4 J	4.4	11
EVE Acid	<2.0	<2.0 UJ	<2.0	<2.0
Hydro-EVE Acid	<2.0	<2.0 UJ	<2.0	<2.0
R-EVE	<2.0	4.7 J	2.8 J	<2.0
PES	<2.0	<2.0 UJ	<2.0	<2.0
PFECA B	<2.0	<2.0 UJ	<2.0	<2.0
PFECA-G	<2.0	<2.0 UJ	<2.0	<2.0
Perfluoroheptanoic Acid	5.0	3.9 J	4.9	5.1
Гоtal Attachment C ^{1,2}	5.8	25	59	18
Total Table 3+ (17 compounds) ^{2,3}	5.8	28	63	29
Total Table 3+ (20 compounds) ²	5.8	52	80	35

TABLE 2												
CAPE FEAR RIVER TAR HEEL ANALYTICAL RESULTS - Q3 2022												
Chemours Fayetteville Works, North Carolina												

Sampling Event	Q3 2022	Q3 2022
Location ID	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-24-092622	CFR-TARHEEL CFR-TARHEEL-092922
Sample Date	09/26/22	09/29/2022
Sample Type	Composite	Grab
Sample Start Date and Time	09/26/22 12:00 AM	
Sample Stop Date and Time	09/26/22 11:00 PM	
Composite Duration (hours)	24	
QA/QC		
Sample Delivery Group (SDG)	320-92585-1	320-92933-1
Lab Sample ID	320-92585-2	320-92933-1
Table 3+ SOP (ng/L)		
HFPO-DA	10	11
PFMOAA	7.7	29
PFO2HxA	9.3	18
PFO3OA	4.1	4.1
PFO4DA	<2.0	<2.0
PFO5DA	<2.0	<2.0
PMPA	<10	15
PEPA	<20	<20
PS Acid	<2.0	<2.0
Hydro-PS Acid	<2.0	<2.0
R-PSDA	5.9 J	<2.0
Hydrolyzed PSDA	8.8 J	7.0 J
R-PSDCA	<2.0	<2.0
NVHOS	5.5	6.6
EVE Acid	<2.0	<2.0
Hydro-EVE Acid	<2.0	<2.0
R-EVE	<2.0	<2.0
PES	<2.0	<2.0
PFECA B	<2.0	<2.0
PFECA-G	<2.0	<2.0
Perfluoroheptanoic Acid	6.6	8.3
Total Attachment C ^{1,2}	31	77
Total Table 3+ (17 compounds) ^{2,3}	37	84
Total Table 3+ (20 compounds) ²	51	91
······································	*-	<i>/-</i>

Notes:

Bold - Analyte detected above associated reporting limit.

B - analyte detected in an associated blank.

- 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.
- - not applicable
- 1 Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).
- 2 Total Table 3+ and Total Attachment C were calculated including J qualified data but not non-detect data. The sum is rounded to two significant figures.
- 3 Total Table 3+ (17 compounds) does not include PFHpA, R-PSDA, Hydrolyzed PSDA, and R-EVE.

TABLE 3 SURFACE WATER ANALYTICAL RESULTS AT DOWNSTREAM LOCATIONS

Chemours Fayetteville Works, North Carolina

Location ID	CFR-BLADEN	CFR-KINGS	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CAP3Q22-CFR-BLADEN-072022	CAP3Q22-CFR-KINGS-072622	CAP3Q22-CFR-TARHEEL-072022	CAP3Q22-CFR-TARHEEL-24- 072122
Sample Date	07/20/2022	07/26/2022	07/20/2022	07/21/2022
QA/QC				
Sample Delivery Group (SDG)		320-90588-1	320-90299-1	320-90301-1
Lab Sample ID	320-90299-4	320-90588-1	320-90299-5	320-90301-1
Table 3+ SOP (ng/L)				
HFPO-DA	6.9	6.6	6.5	7.7
PFMOAA	<2.0	8.4 B	18 B	9.2 B
PFO2HxA	10 B	13 J	8.6 B	9.1 B
PFO3OA	2.1	2.3 J	2.0	2.1
PFO4DA	<2.0	<2.0 UJ	<2.0	<2.0
PFO5DA	<2.0	<2.0 UJ	<2.0	<2.0
PMPA	<10	<10 UJ	10	<10
PEPA	<20	<20 UJ	<20	<20
PS Acid	<2.0	<2.0 UJ	<2.0	<2.0
Hydro-PS Acid	<2.0	<2.0 UJ	<2.0	<2.0
R-PSDA	<2.0	13 J	<2.0	<2.0
Hydrolyzed PSDA	<2.0	13 J	8.6 J	<2.0
R-PSDCA	<2.0	<2.0 UJ	<2.0	<2.0
NVHOS	6.8	2.4 J	4.5	<2.0
EVE Acid	<2.0	<2.0 UJ	<2.0	<2.0
Hydro-EVE Acid	<2.0	<2.0 UJ	<2.0	<2.0
R-EVE	<2.0	11 J	<2.0	<2.0
PES	<2.0	<2.0 UJ	<2.0	<2.0
PFECA B	<2.0	<2.0 UJ	<2.0	<2.0
PFECA-G	<2.0	<2.0 UJ	<2.0	<2.0
Perfluoroheptanoic Acid	3.4	3.5	3.7	3.7
Total Attachment C ^{1,2}	19	30	45	28
Total Table 3+ (17 compounds) ^{2,3}	26	33	50	28
Total Table 3+ (20 compounds) ²	26	70	58	28

Geosyntec Consultants of NC, P.C.

TABLE 3 SURFACE WATER ANALYTICAL RESULTS AT DOWNSTREAM LOCATIONS

Chemours Fayetteville Works, North Carolina

Location ID	EB	EB	FBLK
Field Sample ID	CAP3Q22-EQBLK-IS-072122	CAP3Q22-EQBLK-PP-072122	CAP3Q22-FBLK-072122
Sample Date	07/21/2022	07/21/2022	07/21/2022
QA/QC	Equipment Blank	Equipment Blank	Field Blank
Sample Delivery Group (SDG)	320-90301-1	320-90301-1	320-90301-1
Lab Sample ID	320-90301-2	320-90301-3	320-90301-4
Table 3+ SOP (ng/L)			
HFPO-DA	<4.0	<4.0	<2.0
PFMOAA	7.2	6.5	<2.0
PFO2HxA	2.3	2.0	<2.0
PFO3OA	<2.0	<2.0	<2.0
PFO4DA	<2.0	<2.0	<2.0
PFO5DA	<2.0	<2.0	<2.0
PMPA	<10	<10	<10
PEPA	<20	<20	<20
PS Acid	<2.0	<2.0	<2.0
Hydro-PS Acid	<2.0	<2.0	<2.0
R-PSDA	<2.0	<2.0	<2.0
Hydrolyzed PSDA	<2.0	<2.0	<2.0
R-PSDCA	<2.0	<2.0	<2.0
NVHOS	<2.0	<2.0	<2.0
EVE Acid	<2.0	<2.0	<2.0
Hydro-EVE Acid	<2.0	<2.0	<2.0
R-EVE	<2.0	<2.0	<2.0
PES	<2.0	<2.0	<2.0
PFECA B	<2.0	<2.0	<2.0
PFECA-G	<2.0	<2.0	<2.0
Perfluoroheptanoic Acid	<2.0	<2.0	<2.0
Total Attachment C ^{1,2}	9.5	8.5	ND
Total Table 3+ (17 compounds) ^{2,3}	9.5	8.5	ND
Total Table 3+ (20 compounds) ²	9.5	8.5	ND

Notes:

B - analyte detected in an associated blank **Bold** - Analyte detected above associated reporting limit EPA - Environmental Protection Agency ng/L - nanograms per liter QA/QC - Quality assurance/ quality control SDG - Sample Delivery Group SOP - standard operating procedure < - Analyte not detected above associated reporting limit. -- - Data not available (PFHpA).

2 - Total Table 3+ and Total Attachment C were calculated including J qualified data but not non-detect data. The sum is rounded to two significant figures. 3 - Total Table 3+ (17 compounds) does not include PFHpA, R-PSDA, Hydrolyzed PSDA, and R-EVE.

- J Analyte detected. Reported value may not be accurate or precise.
- ND no analytes were detected above the associated reporting limits.
- 1 Total Attachment C does not include Perfluoroheptanoic acid

TABLE 4 SUMMARY OF CALCULATED TOTAL MASS LOAD IN THE CAPE FEAR RIVER Chemours Fayetteville Works, North Carolina

		T	otal Attachment (24	Total T	able 3+ (17 Comp	ounds) ⁵	Total T	able 3+ (20 Com	oounds)
Reporting Period ^{1,2,3}	River volume (m ³)	Projected Load (kg) ⁶	Massurad Load	Remedy Reduction Load (kg) ⁸	Projected Load (kg) ⁶	Measured Load in Cape Fear River (kg) ⁷	Remedy Reduction Load (kg) ⁸	Projected Load (kg) ⁶	Measured Load in Cape Fear River (kg) ⁷	Remedy Reduction Load (kg) ⁸
2020 Q2	1,734,001,289	119	119		121	121		155	155	
2020 Q3	1,027,925,544	77	77		78	78		99	99	
2020 Q4	2,192,048,740	128	102	26	104	78	26	127	100	27
2021 Q1	3,085,926,339	147	119	28	122	93	29	146	117	29
2021 Q2	700,546,631	118	75	43	121	77	44	152	106	47
2021 Q3	590,536,121	97	39	58	99	41	59	112	49	64
2021 Q4	278,609,600	61	17	44	64	19	45	72	22	50
2022 Q1	1,439,412,208	68	31	37	71	33	38	82	40	42
2022 Q2	664,235,177	55	13	42	58	15	42	65	19	46
2022 Q3	297,747,556	53	9	44	55	11	45	61	13	49
Last Four Quarters	2,680,004,540	238	71	167	247	78	170	280	93	187

Notes:

1 - Prior to Q2 2022, the reporting periods were based on the start and end time and date intervals of the sample. The reporting period has been adjusted to the date range of the reporting period.

2 - Calculated total mass loads by compound and time interval are provided in Tables 5A though 5G for 2022 Q3 and in Appendix B for previous reporting periods.

3 - The remedies at Old Outfall 002, Seeps A, B, C, and D, and at Outfall 002 were operational since Q3 2021.

4 - Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).

5 - Total Table 3+ (17 compounds) does not include Perfluoroheptanoic acid (PFHpA), R-PSDA, Hydrolyzed PSDA, and R-EVE.

6 - Projected load is calculated as the total of the measured load in the Cape Fear River and the calculated remedy reduction load.

7 - Measured load in Cape Fear River represent loads measured in the Cape Fear River at the CFR-TARHEEL sampling location downstream of the Site.

8 - Calculated remedy reduction loads represent the total load that was prevented from reaching the Cape Fear River. This is calculated as the total load from Old Outfall 002, Seeps A to D and the Stormwater Treatment System.

kg - kilograms

TABLE 5A CAPE FEAR RIVER PFAS MASS LOAD BY COMPOUND AND TIME INTERVAL - Q3 2022 DATA Chemours Fayetteville Works, North Carolina

	Interval	Details														Calcul	ated M	ass Loac	1 ² (kg)								
Interval ID	Start Time ¹	End Time ¹	Total River Flow (m ³)	HFPO-DA	PFMOAA	PFO2HxA	PF030A	PFO4DA	PFO5DA	PA	A	Acid	Hydro-PS Acid	-PSDA	Hydrolyzed PSDA	R-PSDCA	SOHVN	E Acid	Hydro-EVE Acid	R-EVE		PFECA B	PFECA-G	РҒНрА	Total Attachment C ³	Total Table 3+ (17 Compounds) ⁴	Total Table 3+ (20 Compounds)
				HFI	PFN	PFC	PFC	ЪFС	PFC	PMPA	PEPA	PS.	Hyc	R-P	Hye	R-P	N	EVE	Hye	R-F	PES	PFI	PFI	PFI			
2022_1_Q3	6/30/22 23:01	7/4/22 0:01	7,407,848	0.041	0.089	0.048	0.013	0	0	0	0	0	0	0	0.033	0	0.032	0	0	0	0	0	0	0.014	0.2	0.2	0.3
Q3	7/4/22 0:01	7/4/22 23:01	2,578,334	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Q3	7/4/22 23:01	7/8/22 0:01	7,948,057	0	0.034	0.026	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.020	0.1	0.1	0.1
2022_4_Q3 2022_5_Q3	7/8/22 0:01 7/8/22 23:01	7/8/22 23:01 7/9/22 0:01	4,544,004 323,152	0	0.039	0.030	0 0.00037	0	0	0	0	0	0	0.0019	0.0016	0	0	0	0	0	0	0	0	0.023	0.1 0.01	0.1 0.01	0.1 0.01
2022_5_Q3 2022_6_Q3	7/9/22 0:01	7/9/22 23:01	7,553,292	0.0023	0.0033	0.0020	0.00037	0	0	0	0	0	0	0.0019	0.0016	0	0.0011	0	0	0	0	0	0	0.0010	0.01	0.3	0.5
2022_0_Q3	7/9/22 23:01	7/11/22 0:01	9,320,943	0.094	0.12	0.076	0.011	0	0	0	0	0	0	0.056	0.079	0	0.069	-	0	0	0	0	0	0.042	0.3	0.4	0.5
2022_8_Q3	7/11/22 0:01	7/11/22 23:01	8,068,093	0.050	0.11	0.055	0	0	0	0	0	0	0	0	0.056	0	0.061	0	0	0	0	0	0	0.033	0.2	0.3	0.3
2022_9_Q3	7/11/22 23:01	7/14/22 0:01	8,919,042	0.059	0.14	0.071	0.010	0	0	0.049	0	0	0	0	0.075	0	0.065	0	0	0	0	0	0	0.037	0.3	0.4	0.5
2022_10_Q3	7/14/22 0:01	7/14/22 23:01	3,429,538	0.024	0.058	0.031	0.0079	0	0	0.038	0	0	0	0	0.034	0	0.024	0	0	0	0	0	0	0.014	0.2	0.2	0.2
2022_11_Q3	7/14/22 23:01	7/18/22 0:01	18,230,301	0.13	0.28	0.18	0.043	0	0	0.21	0	0	0	0	0.20	0	0.12	0	0	0	0	0	0	0.069	0.8	1.0	1.2
2022_12_Q3 2022_13_Q3	7/18/22 0:01 7/18/22 23:01	7/18/22 23:01 7/20/22 15:35	5,316,205 7,145,785	0.037 0.049	0.080	0.058	0.012 0.0157	0	0	0.061	0	0	0	0.020	0.061 0.074	0	0.032	0	0	0	0	0	0	0.018	0.2 0.3	0.3 0.4	0.4
2022_13_Q3 2022_14_Q3	7/20/22 15:35	7/20/22 15:35	1,180,728	0.049	0.11	0.070	0.0157	0	0	0.079	0	0	0	0	0.074	0	0.0039	0	0	0	0	0	0	0.025	0.3	0.4	0.4
2022_14_Q3 2022_15_Q3	7/21/22 0:01	7/21/22 0:01	2,782,725	0.010	0.019	0.028	0.0024	0	0	0.0080	0	0	0	0	0.0074	0	0.0035	0	0	0	0	0	0	0.0040	0.1	0.1	0.1
2022 16 Q3	7/21/22 23:01	7/25/22 0:01	7,666,956	0.087	0.13	0.084	0.017	0	0	0	0	0	0	0	0.025	0	0	0	0	0	0	0	0	0.033	0.3	0.3	0.3
2022_17_Q3	7/25/22 0:01	7/25/22 23:01	2,141,595	0.021	0.047	0.024	0.0049	0	0	0	0	0	0	0	0.014	0	0	0	0	0	0	0	0	0.0092	0.1	0.1	0.1
2022_18_Q3	7/25/22 23:01	7/28/22 0:01	6,003,820	0.051	0.099	0.062	0.014	0	0	0	0	0	0	0	0.020	0	0.015	0	0	0	0	0	0	0.026	0.2	0.2	0.3
2022_19_Q3	7/28/22 0:01	7/28/22 23:01	2,199,573	0.016	0.024	0.021	0.0053	0	0	0	0	0	0	0	0	0	0.011	0	0	0	0	0	0	0.0095	0.1	0.1	0.1
2022_20_Q3	7/28/22 23:01	8/1/22 0:01	6,426,797	0.059	0.096	0.079	0.0186	0	0	0	0	0	0	0	0.015	0	0.016		0	0	0	0	0	0.027	0.3	0.3	0.3
2022_21_Q3 2022_22_Q3	8/1/22 0:01 8/1/22 23:01	8/1/22 23:01 8/4/22 0:01	2,122,302 4,541,150	0.023	0.040	0.032	0.0072 0.013	0	0	0	0	0	0	0	0.010	0	0	0	0	0	0	0	0	0.0085	0.1	0.1 0.2	0.1
2022_22_Q3 2022_23_Q3	8/4/22 0:01	8/4/22 23:01	7,119,178	0.042	0.008	0.050	0.013	0	0	0	0	0	0	0	0.010	0	0	0	0	0	0	0	0	0.019	0.2	0.2	0.2
2022_23_Q3	8/4/22 23:01	8/10/22 0:01	10,686,234	0.092	0.187	0.11	0.027	0	0	0	0	0	0	0	0.053	0	0.022	0	0	0	0	0	0	0.050	0.4	0.4	0.5
2022 25 Q3	8/10/22 0:01	8/10/22 23:01	1,922,193	0.018	0.041	0.020	0.0053	0	0	0	0	0	0	0	0.010	0	0.0039	0	0	0	0	0	0	0.0098	0.1	0.1	0.1
2022_26_Q3	8/10/22 23:01	8/12/22 0:01	2,268,969	0.021	0.044	0.024	0.0059	0	0	0	0	0	0	0	0.011	0	0.0047	0	0	0	0	0	0	0.012	0.1	0.1	0.1
2022_27_Q3	8/12/22 0:01	8/12/22 23:01	1,850,350	0.016	0.028	0.018	0.0044	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0098	0.1	0.1	0.1
2022_28_Q3	8/12/22 23:01	8/15/22 0:01	6,399,477	0.050	0.093	0.055	0.0077	0	0	0	0	0	0	0	0.031	0	0.031	0	0	0	0	0	0	0.048	0.2	0.2	0.3
2022_29_Q3	8/15/22 0:01	8/15/22 23:01	2,614,013	0.019	0.037	0.019	0	0	0	0	0	0	0	0	0.026	0	0.025	0	0	0	0	0	0	0.025	0.1	0.1	0.1
2022_30_Q3 2022_31_Q3	8/15/22 23:01 8/18/22 0:01	8/18/22 0:01 8/18/22 23:01	7,349,921 2,728,951	0.050 0.018	0.096	0.061	0.0073	0	0	0	0	0	0	0	0.036	0	0.035	0	0	0	0	0	0	0.054 0.014	0.2	0.2	0.3
2022_31_Q3	8/18/22 23:01	8/22/22 0:01	8,423,560	0.013	0.10	0.025	0.0033	0	0	0	0	0	0	0	0	0	0.046	0	0	0	0	0	0	0.014	0.2	0.1	0.3
2022_32_Q3	8/22/22 0:01	8/22/22 23:01	3,435,145	0.021	0.041	0.025	0	0	0	0	0	0	0	0	0	0	0.038	0	0	0	0	0	0	0.023	0.1	0.1	0.1
2022_34_Q3	8/22/22 23:01	8/25/22 0:01	9,398,928	0.028	0.088	0.035	0	0	0	0	0	0	0	0	0	0	0.052	0	0	0	0	0	0	0.053	0.2	0.2	0.2
2022_35_Q3	8/25/22 0:01	8/25/22 23:01	4,136,242	0	0.028	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.019	0.03	0.03	0.03
2022_36_Q3	8/25/22 23:01	8/29/22 0:01	10,255,484	0.029	0.10	0.036	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.042	0.2	0.2	0.2
2022_37_Q3	8/29/22 0:01	8/29/22 23:01	2,477,922	0.014	0.032	0.018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0089	0.1	0.1	0.1
2022_38_Q3 2022_39_Q3	8/29/22 23:01 9/1/22 0:01	9/1/22 0:01 9/1/22 23:01	4,517,118 2,103,036	0.032 0.018	0.099	0.041 0.023	0.0050	0	0	0	0	0	0	0	0.011	0	0.025	0	0	0	0	0	0	0.019	0.2	0.2	0.2
2022_39_Q3 2022_40_Q3	9/1/22 23:01	9/1/22 23:01 9/5/22 0:01	6,454,984	0.018	0.065	0.023	0.0046	0	0	0	0	0	0	0	0.011	0	0.023	0	0	0	0	0	0	0.011	0.1	0.1	0.1
2022_40_Q3	9/5/22 0:01	9/5/22 23:01	1,936,872	-	0.056			0	0	0	0	0	0	0	0.0085	0	-	v	0	0	0	0	0	0.012	0.1	0.1	0.1
2022_42_Q3	9/5/22 23:01	9/8/22 0:01	4,303,577	0.038	0.090	0.058	0.012	0	0	0	0	0	0	0	0.0095	0	0.043	-	0	0	0	0	0	0.024	0.2	0.2	0.3
2022_43_Q3	9/8/22 0:01	9/8/22 23:01	2,201,587	0.019	0.029	0.035	0.0068	0	0	0	0	0	0	0	0	0	0.026	0	0	0	0	0	0	0.011	0.1	0.1	0.1
2022_44_Q3	9/8/22 23:01	9/12/22 0:01	13,771,876	0.081	0.090	0.11	0.021	0	0	0	0	0	0	0	0	0	0.083	-	0	0	0	0	0	0.068	0.3	0.4	0.4
2022_45_Q3	9/12/22 0:01	9/12/22 23:01	11,497,631	0.034	0	0.016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.056	0.1	0.1	0.1
2022_46_Q3 2022_47_Q3	9/12/22 23:01 9/15/22 0:01	9/15/22 0:01 9/15/22 23:01	10,884,713 3,261,081	0.041 0.015	0.076	0.035	0	0	0	0	0	0	0	0.037	-	0	0.013	-	0	0	0	0	0	0.047	0.2	0.2	0.3 0.2
2022_47_Q3 2022_48_Q3	9/15/22 0:01	9/15/22 23:01 9/19/22 0:01	7,618,636	0.015	0.046	0.021	0.0099	0	0	0.053	0	0	0	0.022	-	0	0.0078		0	0	0	0	0	0.013	0.1	0.1	0.2
2022_48_Q3	9/19/22 0:01	9/19/22 23:01	2,278,832	0.045	0.055	0.007	0.0059	0	0	0.033	0	0	0	0.030		0	0.020	_	0	0	0	0	0	0.011	0.1	0.1	0.2
2022_50_Q3	9/19/22 23:01	9/22/22 0:01	4,158,720	0.033	0.063	0.023	0.012	0	0	0.029	0	0	0	0.026		0	0.032	-	0	0	0	0	0	0.021	0.2	0.2	0.2
2022_51_Q3	9/22/22 0:01	9/22/22 23:01	1,802,999	0.016	0.011	0	0.0058	0	0	0	0	0	0	0.011	0	0	0.020	_	0	0	0	0	0	0.0092	0.03	0.1	0.1
2022_52_Q3	9/22/22 23:01	9/26/22 0:01	5,129,118	0.048	0.036		0.019	0	0	0	0	0	0	0.030	-	0		-	0	0	0	0	0	0.030	0.1	0.2	0.2
2022_53_Q3	9/26/22 0:01	9/26/22 23:01	1,731,334	0.017	0.013	0.016	0.0071	0	0	0	0	0	0	0.010	0.015	0	0.010	_	0	0	0	0	0	0.011	0.1	0.1	0.1
2022_54_Q3	9/26/22 23:01		4,143,480	0.044	0.076	0.057	0.017	0	0	0.031	0	0	0	0.012	-	0		_	0	0	0	0	0	0.031	0.2	0.2	0.3
Q3	9/29/22 11:15	9/30/22 23:01 Total	3,035,155 297,747,556	0.033	0.088	0.055	0.012	0	0	0.046	0	0	0	0	0.021	0	0.020	0	0	0	0	0	0	0.025	0.2 9.5	0.3	0.3
L		i otal	271,141,550	2.0	J.U	2.4	0.5	0	0	0.0	0	U	0	0.4	1.5	0	1.5	v	U	0.1	U			1.4	7.5	10.0	12.0

Notes

1 - Start and end times are adjusted based on sampling times \pm one hour to account for the total flow of the Cape Fear River.

The calculated mass load is a product of weighted concentration and total river flow. Refer to the Cape Fear River PFAS Mass Loading Calculation Protocol Version 2 (Geosyntec, 2020a) for more details.
 Total Attachment C does not include Perfluorohepthanoic acid (PFHpA).
 Total Table 3+ (17 compounds) does not include PFHpA, R-PSDA, Hydrolyzed PSDA, and R-EVE.

Where mass loads are equal to 0 kg, the compound was not detected above the reporting limit.

kg - kilogram

m3 - cubic meter

NA - Compound not analyzed

TABLE 5B OLD OUTFALL 002 CAPTURED MASS LOAD BY COMPOUND AND TIME INTERVAL - Q3 2022 Chemours Fayetteville Works, North Carolina

	Interva	l Details														C	alculate	ed Captu	red Mass	s Load (k	$(g)^1$						
Interval ID	Start Time	End Time	Duration (hours)	Total Flow (m ³)	HFPO-DA	PFMOAA	PFO2HxA	PF030A	PFO4DA	PFO5DA	PMPA	PEPA	PS Acid	Hydro-PS Acid	R-PSDA	Hydrolyzed PSDA	R-PSDCA	SOHAN	EVE Acid	Hydro-EVE Acid	R-EVE	PES	PFECA B	PFECA-G	Total Attachment C ²	Total Table 3+ (17 compounds) ³	Total Table 3+ (20 compounds)
OF003 2022 1 Q2	7/1/22 0:00	7/31/22 23:59	744	70,000	0.54	1.6	0.64	0.18	0.069	0.023	0.30	0.12	0.051	0.022	0.023	0.069	0.00056	0.025	0.0021	0.012	0.014	0	0	0	3.6	3.6	3.7
OF003 2022 2 Q2	8/1/22 0:00	8/31/22 23:59	744	60,000	0.53	1.5	0.52	0.15	0.067	0.022	0.24	0.10	0.049	0.022	0.024	0.067	0.00067	0.025	0.0021	0.013	0.012	0	0	0	3.2	3.3	3.4
OF003_2022_3_Q2	9/1/22 0:00	9/30/22 23:59	720	60,000	0.41	1.2	0.47	0.13	0.058	0.028	0.21	0.070	0.013	0.015	0.019	0.054	0	0.022	0	0.009	0.009	0	0	0	2.6	2.7	2.7
			Total	190,000	1.5	4.4	1.6	0.46	0.19	0.07	0.8	0.30	0.11	0.060	0.066	0.19	0.0012	0.072	0.0041	0.034	0.035	0	0	0	9.4	9.6	9.8

Notes:

1 - The calculated captured mass load is a product of the concentration difference in the influent and the effluent samples and total flow at the influent for the sampling interval, see Appendix B for more details.

2 - Total Attachment C does not include Perfluorohepthanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include PFHpA, R-PSDA, Hydrolyzed PSDA, and R-EVE.

Where mass loads are equal to 0 kg, the compound was not detected above the reporting limit.

OF003 - Outfall 003, i.e., Old Outfall 002 treatment system

kg - kilogram

TABLE 5C SEEP A FLOW THROUGH CELL CAPTURED MASS LOAD BY COMPOUND AND TIME INTERVAL - Q3 2022 Chemours Fayetteville Works, North Carolina

	Interva	l Details										-			-	-	Calculate	d Captu	red Mass	Load (kg)	1		-	-			
Interval ID	Start Time	End Time	Duration (hours)	Total Flow (m ³)	Hfpo Dimer Acid	PFMOAA	PFO2HxA	PFO30A	PFO4DA	PFO5DA	PMPA	PEPA	PS Acid	Hydro-PS Acid	R-PSDA	Hydrolyzed PSDA	R-PSDCA	SOHAN	EVE Acid	Hydro-EVE Acid	R-EVE	PES	PFECA B	PFECA-G	Total Attachment C ²	Total Table 3+ (17 compounds) ³	Total Table 3+ (20 compounds)
SeepA_2022_1_Q3	7/1/22 0:00	7/15/22 10:00	346	8,737	0.18	0.57	0.32	0.11	0.068	0.031	0.12	0.043	0.022	0.012	0.022	0.30	0.00048	0.011	0.0023	0.014	0.010	0	0	0	1.5	1.5	1.8
SeepA_2022_2_Q3	7/15/22 10:01	7/29/22 10:00	336	6,795	0.16	0.58	0.28	0.10	0.055	0.032	0.095	0.037	0.022	0.012	0.016	0.22	0.00036	0.010	0.0026	0.012	0.0075	0	0	0	1.4	1.4	1.6
SeepA_2022_3_Q3	7/29/22 10:01	8/15/22 10:00	408	7,992	0.18	0.72	0.34	0.13	0.068	0.036	0.11	0.045	0.010	0.014	0.023	0.28	0.00046	0.012	0.0010	0.014	0.0088	0	0	0	1.7	1.7	2.0
SeepA_2022_4_Q3	8/15/22 10:01	8/30/22 6:00	356	7,375	0.15	0.58	0.31	0.088	0.048	0.027	0.11	0.042	0.010	0.010	0.015	0.19	0.00036	0.010	0.0010	0.012	0.0058	0	0	0	1.4	1.4	1.6
SeepA_2022_5_Q3	8/30/22 6:01	9/15/22 18:00	396	7,041	0.15	0.58	0.28	0.092	0.051	0.023	0.11	0.035	0.006	0.010	0.018	0.27	0.00032	0.010	0.00063	0.011	0.0065	0	0	0	1.3	1.3	1.7
SeepA_2022_6_Q3	9/15/22 18:01	9/30/22 23:59	366	9,220	0.21	0.74	0.36	0.15	0.074	0.041	0.13	0.049	0.009	0.017	0.028	0.37	0	0.013	0.00092	0.018	0.012	0	0	0	1.7	1.8	2.2
			Total	47,159	1.0	3.8	1.9	0.66	0.36	0.19	0.67	0.25	0.080	0.076	0.12	1.6	0.0020	0.065	0.0086	0.080	0.051	0	0	0	9.0	9.1	11

Notes:

1 - The calculated captured mass load is a product of the concentration difference in the influent and the effluent samples and total flow recorded at the influent for the sampling interval.

2 - Total Attachment C does not include Perfluorohepthanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include PFHpA, R-PSDA, Hydrolyzed PSDA, and R-EVE.

Where mass loads are equal to 0 kg, the compound was not detected above the reporting limit.

kg - kilogram

TABLE 5D SEEP B FLOW THROUGH CELL CAPTURED MASS LOAD BY COMPOUND AND TIME INTERVAL - Q3 2022 Chemours Fayetteville Works, North Carolina

	Interv	al Details														(Calculated	l Captur	ed Mass	Load (kg)	1						
Interval ID	Start Time	End Time	Duration (hours)	Total Flow (m ³)	Hfpo Dimer Acid	PFMOAA	PFO2HxA	PFO3OA	PF04DA	PFO5DA	PMPA	PEPA	PS Acid	Hydro-PS Acid	R-PSDA	Hydrolyzed PSDA	R-PSDCA	SOHAN	EVE Acid	Hydro-EVE Acid	R-EVE	PES	PFECA B	PFECA-G	Total Attachment C ²	Total Table 3+ (17 compounds) ³	Total Table 3+ (20 compounds)
SeepB_2022_1_Q3	7/1/2022 00:00	7/15/2022 10:00	346	5,885	0.10	0.88	0.28	0.06	0.009	0	0.14	0.044	0.0012	0.0032	0.018	0.21	0.00019	0.014	0.00024	0.0056	0.0082	0	0	0	1.5	1.5	1.8
SeepB_2022_2_Q3	7/15/2022 10:01	7/29/2022 10:00	336	10,281	0.18	1.33	0.43	0.11	0.015	0.0011	0.22	0.090	0.0017	0.0064	0	0.25	0.00031	0.021	0.00023	0.010	0.011	0	0	0	2.4	2.5	2.7
SeepB_2022_3_Q3	7/29/2022 10:01	8/15/2022 10:00	408	11,986	0.19	2.28	0.64	0.17	0.022	0	0.25	0.079	0.0025	0.0072	0.029	0.36	0.00035	0.030	0.00024	0.010	0.011	0	0	0	3.6	3.7	4.1
SeepB_2022_4_Q3	8/15/2022 10:01	8/30/2022 06:00	356	11,234	0.16	1.68	0.58	0.12	0.016	0	0.27	0.084	0.0017	0.0055	0.021	0.27	0.00029	0.025	0	0.0092	0.0083	0	0	0	2.9	2.9	3.3
SeepB_2022_5_Q3	8/30/2022 06:01	9/14/2022 18:00	372	11,072	0.19	1.88	0.59	0.13	0.018	0	0.21	0.065	0.0017	0.0049	0.014	0.18	0	0.021	0	0.0090	0.0049	0	0	0	3.1	3.1	3.3
SeepB_2022_6_Q3	9/14/2022 18:01	9/30/2022 23:59	390	14,938	0.22	2.54	0.78	0.21	0.028	0	0.33	0.093	0.0025	0.0099	0.046	0.52	0	0.036	0	0.015	0.019	0	0	0	4.2	4.3	4.8
			Total	65,394	1.0	11	3.3	0.81	0.11	0.0011	1.4	0.46	0.011	0.037	0.13	1.8	0.0011	0.15	0.0007	0.058	0.064	0	0	0	18	18	20

Notes:

1 - The calculated captured mass load is a product of the concentration difference in the influent and the effluent samples and total flow recorded at the influent for the sampling interval.

2 - Total Attachment C does not include Perfluorohepthanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include PFHpA, R-PSDA, Hydrolyzed PSDA, and R-EVE.

Where mass loads are equal to 0 kg, the compound was not detected above the reporting limit.

kg - kilogram

TABLE 5E SEEP C FLOW THROUGH CELL CAPTURED MASS LOAD BY COMPOUND AND TIME INTERVAL - Q3 2022 Chemours Fayetteville Works, North Carolina

	Interv	al Details															Calcula	ted Captu	red Mass	s Load (k	$g)^1$						
Interval ID	Start Time	End Time	Duration (hours)	Total Flow (m ³)	Hfpo Dimer Acid	PFMOAA	PFO2HxA	PF030A	PFO4DA	PFOSDA	APAPA	PEPA	PS Acid	Hydro-PS Acid	R-PSDA	Hydrolyzed PSDA	R-PSDCA	SOHAN	EVE Acid	Hydro-EVE Acid	R-EVE	PES	PFECA B	PFECA-G	Total Attachment C ²	Total Table 3+ (17 compounds) ³	Total Table 3+ (20 compounds)
SeepC_2022_1_Q2	7/1/22 0:00	7/15/22 10:00	346	4,530	0.054	0.14	0.063	0.019	0.008	0.00043	0.026	0.0082	0	0.0010	0	0.0034	0	0.0025	0	0.0033	0.0026	0	0	0	0.32	0.33	0.33
SeepC_2022_2_Q2	7/15/22 10:01	7/29/22 10:00	336	4,638	0.055	0.15	0.069	0.020	0.010	0.00056	0.027	0.0092	0	0.0017	0.00031	0.0024	0	0.0028	0	0.0038	0.0022	0	0	0	0.34	0.34	0.35
SeepC_2022_3_Q2	7/29/22 10:01	8/15/22 10:00	408	4,511	0.090	0.23	0.11	0.037	0.012	0.00044	0.037	0.015	0	0.0022	0	0.0050	0	0.0034	0	0.0059	0.0036	0	0	0	0.52	0.56	0.56
SeepC_2022_4_Q2	8/15/22 10:01	8/30/22 6:00	356	4,704	0.071	0.20	0.10	0.027	0.008	0	0.037	0.013	0	0.0016	0.0021	0.0035	0	0.0029	0	0.0052	0.0024	0	0	0	0.46	0.47	0.47
SeepC_2022_5_Q2	9/15/22 3:28	9/30/22 23:59	381	4,486	0.081	0.21	0.11	0.030	0.011	0	0.041	0.012	0	0.0015	0.0036	0.0054	0	0.0031	0	0.0054	0.0029	0	0	0	0.49	0.49	0.54
SeepC_2022_6_Q2	9/15/22 3:28	9/30/22 23:59	381	5,717	0.11	0.32	0.15	0.053	0.016	0.00050	0.053	0.018	0	0.0023	0.0063	0.012	0	0.0042	0	0.0086	0.0063	0.000043	0	0	0.74	0.74	0.74
			Total	28,585	0.46	1.3	0.61	0.19	0.065	0.0019	0.22	0.074	0	0.010	0.012	0.032	0	0.019	0	0.032	0.020	0.000043	0	0	2.9	2.9	3.0

Notes:

1 - The calculated captured mass load is a product of the concentration difference in the influent and the effluent samples and total flow recorded at the influent for the sampling interval.

2 - Total Attachment C does not include Perfluorohepthanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include PFHpA, R-PSDA, Hydrolyzed PSDA, and R-EVE.

Where mass loads are equal to 0 kg, the compound was not detected above the reporting limit.

kg - kilogram

TABLE 5F SEEP D FLOW THROUGH CELL CAPTURED MASS LOAD BY COMPOUND AND TIME INTERVAL - Q3 2022 Chemours Fayetteville Works, North Carolina

Interval Details						Calculated Captured Mass Load (kg) ¹																					
Interval ID	Start Time	End Time	Duration (hours)	Total Flow (m ³)	Hfpo Dimer Acid	PFMOAA	PFO2HXA	PF030A	PFO4DA	PFO5DA	PMPA	PEPA	PS Acid	Hydro-PS Acid	R-PSDA	Hydrolyzed PSDA	R-PSDCA	SOHAN	EVE Acid	Hydro-EVE Acid	R-EVE	PES	PFECA B	PFECA-G	Total Attachment C ²	Total Table 3+ (17 compounds) ³	Total Table 3+ (20 compounds)
SeepD_2022_1_Q2	7/1/22 0:00	7/15/22 10:00	346	4,147	0.058	0.22	0.091	0.027	0.010	0.0006	0.030	0.010	0	0.0012	0.0041	0.010	0	0.0033	0	0.0050	0.0038	0	0	0	0.46	0.46	0.50
SeepD_2022_2_Q2	7/15/22 10:01	7/29/22 10:00	336	6,111	0.092	0.37	0.14	0.045	0.015	0.0010	0.045	0.016	0	0.0024	0	0.012	0	0.0042	0	0.0073	0.0052	0	0	0	0.73	0.73	0.73
SeepD_2022_3_Q2	7/29/22 10:01	8/15/22 10:00	408	6,302	0.095	0.31	0.12	0.042	0.013	0.00095	0.033	0.013	0	0.0020	0.0046	0.011	0	0.0052	0	0.0063	0.0047	0	0	0	0.63	0.63	0.63
SeepD_2022_4_Q2	8/15/22 10:01	8/30/22 6:00	356	4,402	0.062	0.23	0.11	0.029	0.0088	0.00048	0.033	0.012	0	0.0015	0.0024	0.0070	0	0.0033	0	0.0048	0.0028	0	0	0	0.48	0.48	0.48
SeepD_2022_5_Q2	8/30/22 6:01	9/14/22 18:00	372	5,564	0.12	0.27	0.13	0.039	0.014	0.00095	0.048	0.013	0.0016	0.0023	0.0056	0.017	0	0.0047	0.0067	0.010	0.0089	0.000067	0	0	0.61	0.67	0.67
SeepD_2022_6_Q2	9/14/22 18:01	9/30/22 23:59	390	9,633	0.15	0.55	0.25	0.083	0.022	0.0015	0.077	0.025	0	0.0035	0.010	0.025	0	0.0079	0	0.013	0.010	0	0	0	1.2	1.2	1.3
			Total	36,159	0.58	1.9	0.84	0.26	0.084	0.0055	0.27	0.089	0.0016	0.013	0.026	0.081	0	0.028	0.0067	0.047	0.035	0.000067	0	0	4.1	4.1	4.3

Notes:

1 - The calculated captured mass load is a product of the concentration difference in the influent and the effluent samples and total flow recorded at the influent for the sampling interval.

2 - Total Attachment C does not include Perfluorohepthanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include PFHpA, R-PSDA, Hydrolyzed PSDA, and R-EVE.

Where mass loads are equal to 0 kg, the compound was not detected above the reporting limit.

kg - kilogram

TABLE 5GGeosyntec CorSTORMWATER TREATMENT SYSTEM CAPTURED MASS LOAD
BY COMPOUND AND DATE - Q3 2022
Chemours Fayetteville Works, North Carolina

		Calculated Captured Mass Load (kg) ^{3,4}									
Date ¹	Total Flow (m ³) ²	HFPO-DA	PFMOAA	PMPA	Total of 3 Compounds ⁵						
7/8/22	458	0.033	0.0092	0.0010	0.044						
7/9/22	511	0.037	0.0102	0.0011	0.049						
7/10/22	547	0.040	0.0109	0.0012	0.05						
7/11/22	577	0.042	0.0115	0.0013	0.05						
7/12/22	611	0.045	0.0122	0.0013	0.058						
7/13/22	527	0.051	0.0090	0.0011	0.06						
7/14/22	244	0.023	0.0041	0.0005	0.028						
7/22/22	499	0.033	0.0044	0.0006	0.04						
7/23/22	701	0.047	0.0062	0.0008	0.05						
8/10/22	370	0.036	0.0056	0.0006	0.04						
8/12/22	223	0.017	0.0022	0.0003	0.02						
8/19/22	387	0.050	0.0034	0.0007	0.05						
8/20/22	93	0.012	0.0008	0.0002	0.01						
8/21/22	364	0.047	0.0032	0.0007	0.05						
8/22/22	51	0.007	0.0005	0.0001	0.01						
8/26/22	449	0.011	0.0025	0.0012	0.01						
9/8/22	324	0.028	0.0039	0.0003	0.03						
9/9/22	232	0.020	0.0028	0.0002	0.02						
9/30/22	348	0.013	0.0033	0.0013	0.018						
Total	7,516	0.59	0.11	0.01	0.71						

Notes:

1 - Listed dates are days when flow was recorded at the Stormwater Treatment System.

2 - Total daily flows were based on the volume recorded via a totalizer at the Stormwater Treatment System effluent.

3 - The calculated captured mass load is a product of the concentration difference in the influent and the effluent samples and total flow at the effluent for the sampling date.

4 - For days where only flow was recorded, the concentrations from the closest date was used to calculate mass loads.

5 - Only HFPO-DA, PFMOAA and PMPA are recorded at this location. Thus, the total captured mass load presented here is summed over these three compounds only.

TABLE 6 SUMMARY OF TOTAL PFAS MASS DISCHARGE AT TAR HEEL FERRY ROAD BRIDGE - Q3 2022 DATA Chemours Fayetteville Works, North Carolina

		Collection	Hours		Concentrations (ng/L)		Total Volume	Instantaneous	Mass Discharge (mg/s)			
Quarter	Field Sample ID	Date	Composited ¹	Total	Total Table 3+	Total Table 3+	$(ft^3)^4$	Flow Rate	Total	Total Table 3+	Total Table 3+	
		2400	Composited	Attachment C ²	(17 compounds) ³	(20 compounds)	(11)	$(\mathrm{ft}^3/\mathrm{s})^5$	Attachment C ²	(17 compounds) ³	(20 compounds)	
2022 Q3	CFR-TARHEEL-24-070422	7/4/22 23:01	24	0	0	0	91,053,000		0	0	0	
2022 Q3	CFR-TARHEEL-23-070822	7/8/22 23:01	24	15	15	15	160,470,000		0.82	0.82	0.82	
2022 Q3	CFR-TARHEEL-24-070922	7/9/22 23:01	24	38	45	67	269,050,000		3.5	4.1	6.2	
2022 Q3	CFR-TARHEEL-24-071122	7/11/22 23:01	24	27	35	42	284,920,000		2.6	3.4	4.0	
2022 Q3	CFR-TARHEEL-24-071422	7/14/22 23:01	24	47	53	63	121,110,000		1.9	2.2	2.6	
2022 Q3	CFR-TARHEEL-24-071822	7/18/22 23:01	24	47	53	65	187,740,000		3.0	3.4	4.1	
2022 Q3	CFR-TARHEEL-24-071822-D	7/18/22 23:01	24	47	53	74	187,740,000		3.0	3.4	4.7	
2022 Q3	CAP3Q22-CFR-TARHEEL-072022	7/20/22 15:35	0	45	50	58		1,530	1.9	2.2	2.5	
2022 Q3	CAP3Q22-CFR-TARHEEL-24-072122	7/21/22 23:01	24	28	28	28	98,271,000		0.94	0.94	0.94	
2022 Q3	CFR-TARHEEL-24-072122	7/21/22 23:01	24	37	37	37	98,271,000		1.2	1.2	1.2	
2022 Q3	CFR-TARHEEL-24-072522	7/25/22 23:01	24	45	45	52	75,630,000		1.2	1.2	1.3	
2022 Q3	CFR-TARHEEL-24-072822	7/28/22 23:01	24	31	35	35	77,677,000		0.82	0.94	0.94	
2022 Q3	CFR-TARHEEL-24-080122	8/1/22 23:01	24	48	48	53	74,948,000		1.2	1.2	1.4	
2022 Q3	CFR-TARHEEL-24-080422	8/4/22 23:01	24	31	31	31	251,410,000		2.7	2.6	2.6	
2022 Q3	CFR-TARHEEL-24-081022	8/10/22 23:01	24	47	52	62	67,881,000		1.1	1.2	1.4	
2022 Q3	CFR-TARHEEL-24-081022-D	8/10/22 23:01	24	41	41	41	67,881,000		0.95	0.95	0.95	
2022 Q3	CFR-TARHEEL-24-081222	8/12/22 23:01	24	36	36	36	65,344,000		0.80	0.80	0.80	
2022 Q3	CFR-TARHEEL-24-081522	8/15/22 23:01	24	29	38	48	92,313,000		0.91	1.2	1.5	
2022 Q3	CFR-TARHEEL-24-081822	8/18/22 23:01	24	30	30	30	96,372,000		0.99	0.97	0.97	
2022 Q3	CFR-TARHEEL-24-082222	8/22/22 23:01	24	25	36	36	122,440,000		1.0	1.5	1.5	
2022 Q3	CFR-TARHEEL-24-082522	8/25/22 23:01	24	6.8	6.8	6.8	146,070,000		0.34	0.34	0.34	
2022 Q3	CFR-TARHEEL-24-082922	8/29/22 23:01	24	26	26	26	87,507,000		0.78	0.77	0.77	
2022 Q3	CFR-TARHEEL-24-090122	9/1/22 23:01	24	53	64	69	74,268,000		1.3	1.6	1.7	
2022 Q3	CFR-TARHEEL-24-090522	9/5/22 23:01	24	51	59	64	68,400,000		1.2	1.4	1.5	
2022 Q3	CFR-TARHEEL-24-090822	9/8/22 23:01	24	41	53	53	77,748,000		1.1	1.4	1.4	
2022 Q3	CFR-TARHEEL-24-091222	9/12/22 23:01	24	3.0	3.0	3.0	406,030,000		0.42	0.42	0.42	
2022 Q3	CFR-TARHEEL-24-091222-D	9/12/22 23:01	24	5.8	5.8	5.8	406,030,000		0.80	0.80	0.80	
2022 Q3	CFR-TARHEEL-24-091522	9/15/22 23:01	24	25	28	52	115,160,000		0.98	1.1	2.0	
2022 Q3	CFR-TARHEEL-24-091922	9/19/22 23:01	24	59	63	80	80,476,000		1.6	1.7	2.2	
2022 Q3	CFR-TARHEEL-24-092222	9/22/22 23:01	24	18	29	35	63,672,000		0.39	0.64	0.76	
2022 Q3	CFR-TARHEEL-24-092622	9/26/22 23:01	24	31	37	51	61,141,000		0.65	0.76	1.1	
2022 Q3	CFR-TARHEEL-092922	9/29/22 11:15	0	77	84	91		677	1.5	1.6	1.7	

Notes:

1 - Samples with a compositing duration of zero (0) hours are grab samples.

2 - Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).

3 - Total Table 3+ (17 compounds) does not include PFHpA, R-PSDA, Hydrolyzed PSDA, and R-EVE.

4 - Total flow volume is determined based on measurements taken over the sample collection period.

5 - For samples with a duration of zero (0) hours, i.e., grab samples, the instantaneous flow rate was used to calculated the mass discharge.

-- - not applicable

ng/L - nanograms per liter

ft³ - cubic feet

mg/s - milligrams per second

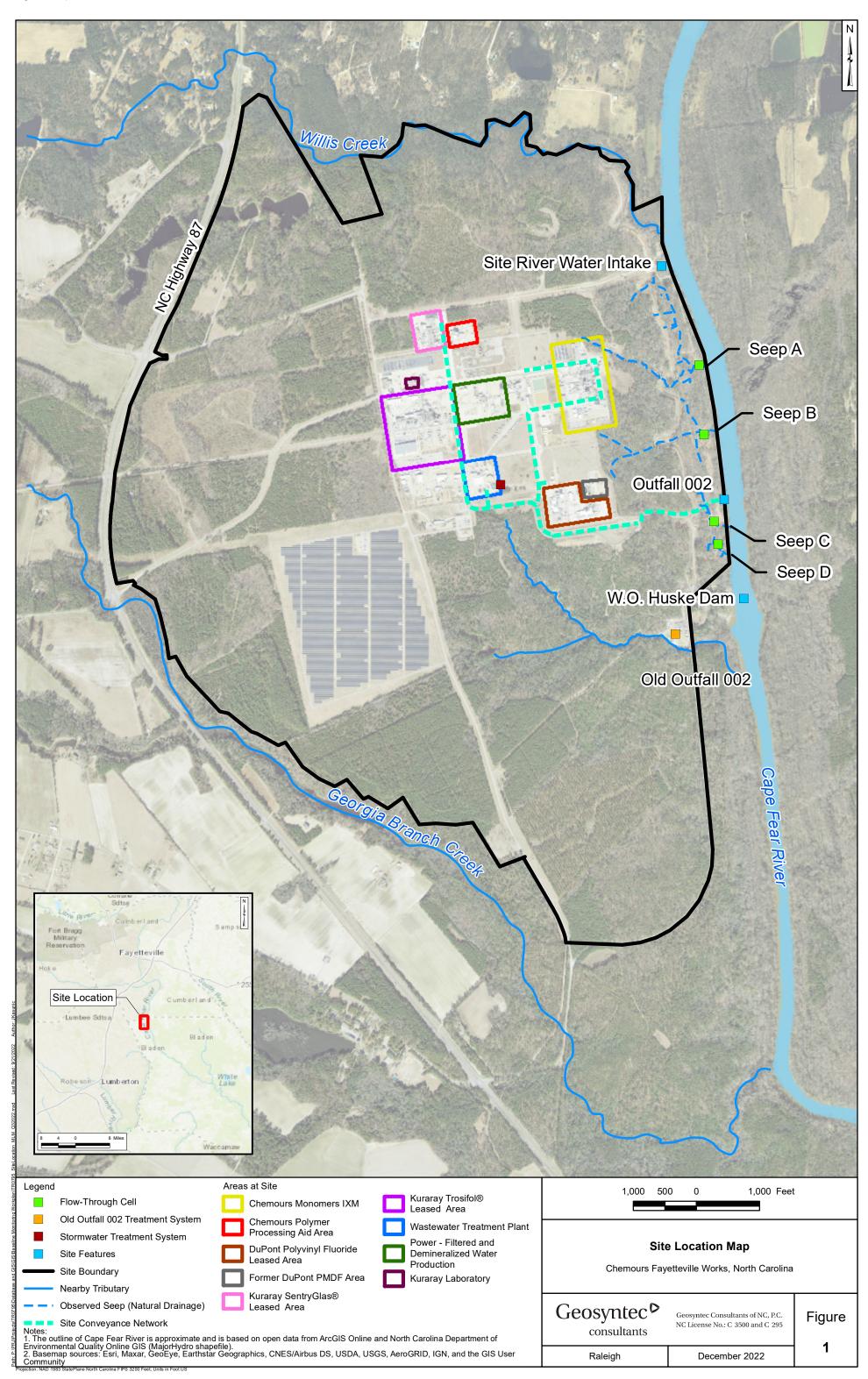
ft³/s - cubic feet per second

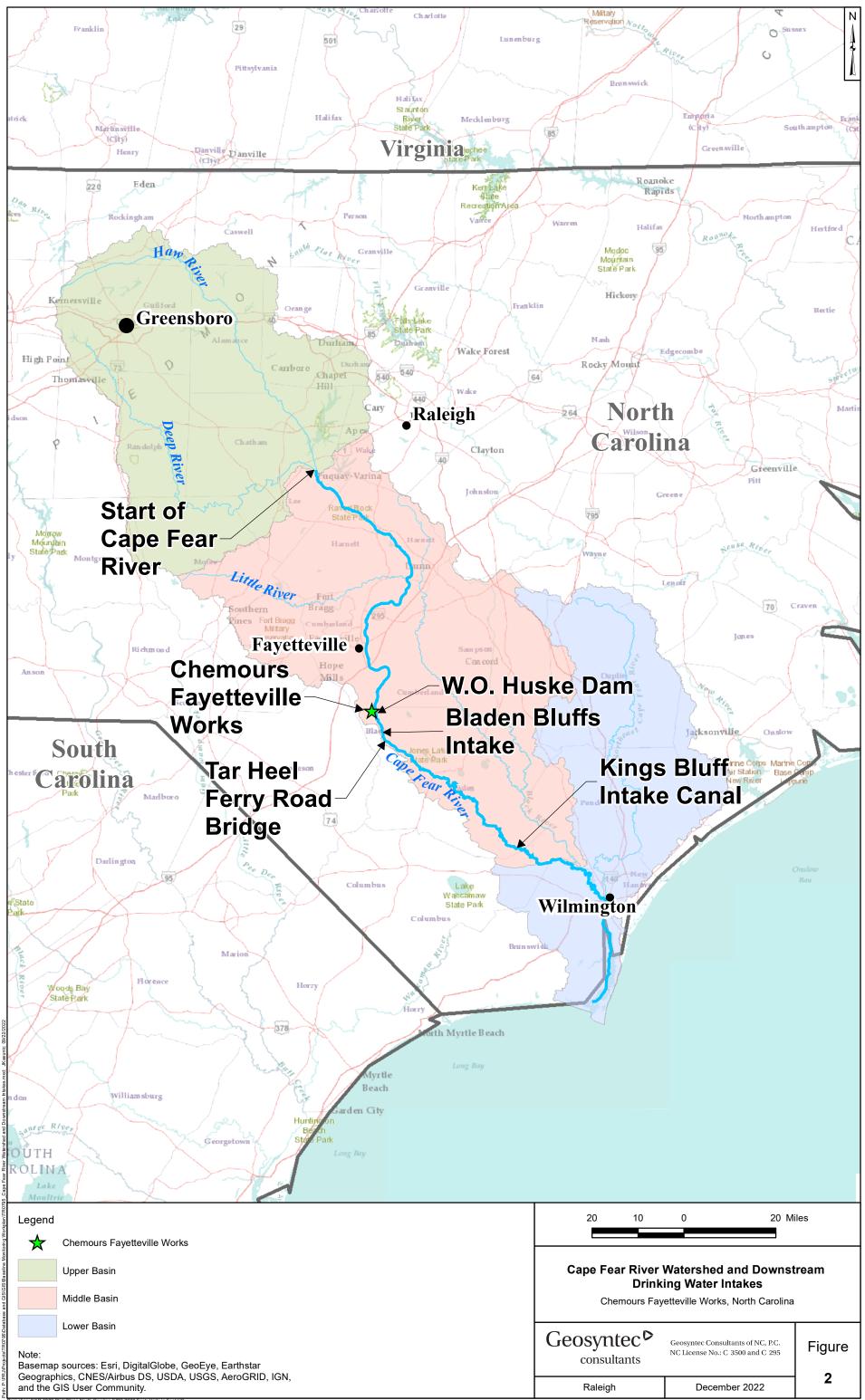


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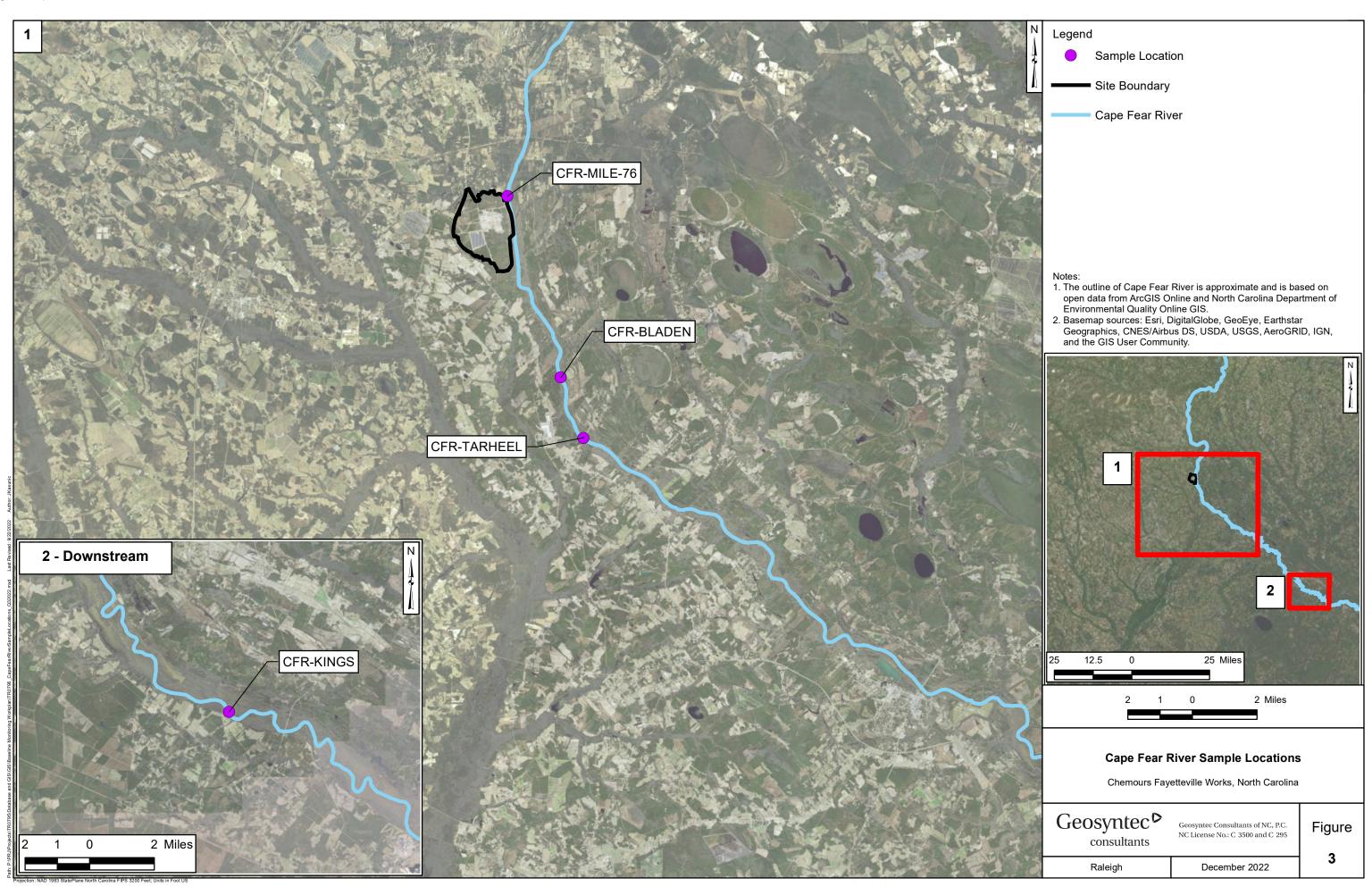
Figures

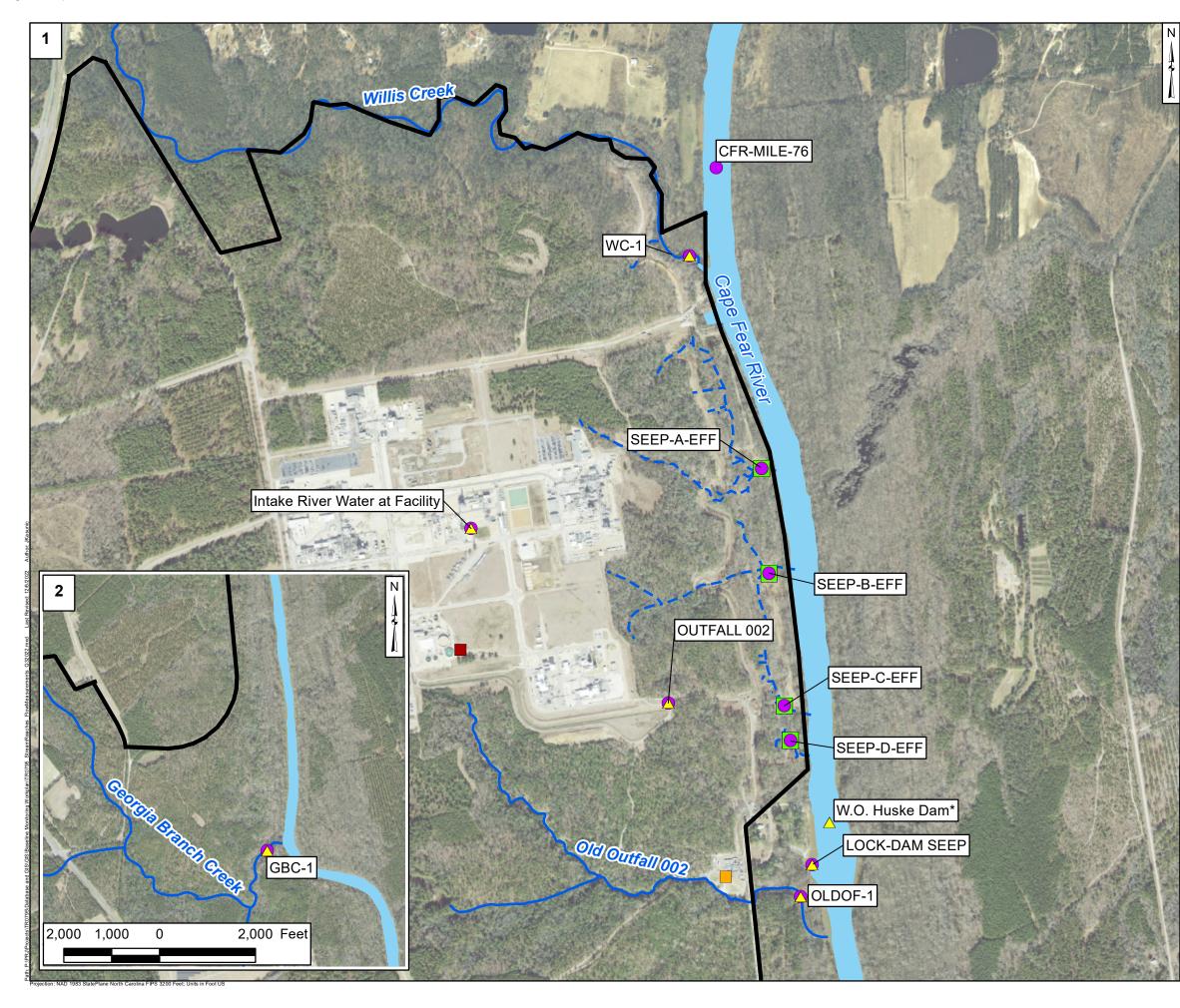
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Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US





Legend

- A Flow Measurement Location
- Sample Location
- Flow-Through Cell
- Old Outfall 002 Treatment System
- Stormwater Treatment System
- - Observed Seep
- Nearby Tributary
- Site Boundary

Notes:

- * Flow measurement was taken at W.O. Huske Dam USGS
- 1. Flows at Old Outfall 002, Willis Creek, and Georgia Branch Creek were measured using flow velocity method. 2. Flow at Lock and Dam Seep was measured using a sample
- bottle and timer.
- 3. Flow-Through Cell flow data were used for Seep A, B, C, and D.
- Results of estimated flow at these locations are provided in Table B3.
 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.
- Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

