



Geosyntec Consultants of NC, P.C.
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CAPE FEAR RIVER PFAS MASS LOADING ASSESSMENT – FIRST QUARTER 2024

Chemours Fayetteville Works

Prepared for

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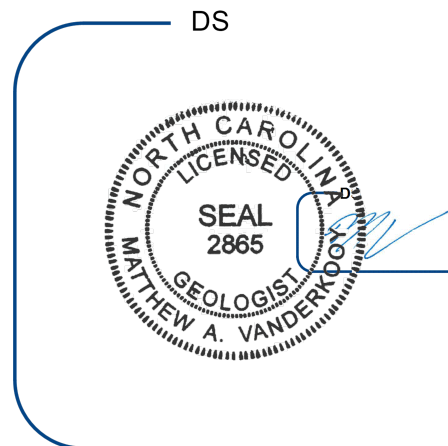


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LIST OF ABBREVIATIONS

cfs	cubic feet per second
CO	Consent Order
CO Addendum	Addendum to Consent Order Paragraph 12
DVM	Data Verification Module
FTC	flow through cell
GWTP	groundwater treatment plant
HDPE	high-density polyethylene
HFPO-DA	hexafluoropropylene oxide-dimer acid
lbs	pounds
LDPE	low-density polyethylene
MG	million gallons
mg/s	milligrams per second
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
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 - First Quarter 2024 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 17th 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.

Since October 2020,¹ Chemours installed multiple remedies to capture PFAS at the Site and to prevent PFAS from reaching the Cape Fear River. These remedies include two treatment systems, four on-site seeps interim flow-through cells (FTC), seep ex-situ capture systems, the groundwater extraction system, and the barrier wall remedy. The start date of operation of each remedy are as follows:

- Outfall 003 treatment system² (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) (June 30, 2021)³
- Groundwater Extraction (March 14, 2023)

¹ There have been numerous other interim and permanent actions taken to limit PFAS reaching the Cape Fear River, 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 Previously referred to as Old Outfall 002 treatment system

³ Diversion sumps in 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).

- Seep Ex-situ Capture Systems (April 20, 2023)
- Barrier wall (June 11, 2023)

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 2025), 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 first quarter 2024 (Q1 2024; January through March 2024) PFAS mass loading assessment of the Cape Fear River. The primary objectives of the 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 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.
3. Evaluate the decrease in the rolling four-quarter PFAS mass loads in the Cape Fear River established using composite samples at Tar Heel to the Cape Fear River baseline mass load.

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 3 and 4) that was conducted to estimate the PFAS loadings from the different PFAS transport pathways to the Cape Fear River, as identified in the conceptual site model (Figure 5) (Geosyntec, 2019). The estimated PFAS loadings were modeled for this current reporting period using the Q1 2024 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)⁴, Total Table 3+ (18 compounds), Total Table 3+ (21 compounds), and Total

⁴ Total Table 3+ PFAS concentrations are calculated and presented three ways in this report: (i) summing over 17 of the Table 3+ compounds “Total Table 3+ (17 compounds)”, i.e., excluding results of PFHpA, R-PSDA, Hydrolyzed PSDA, R-EVE, and PFPrA; (ii) summing over 18 of the Table 3+ compounds “Total Table 3+ (18 compounds)”, i.e., excluding results of PFHpA, R-PSDA, Hydrolyzed PSDA, and R-EVE; and (iii) summing over 21 of the Table 3+ compounds “Total Table 3+ (21 compounds)”, i.e., excluding results of PFHpA.

Attachment C (Geosyntec 2020b). Although the report tables include results for Total Attachment C, Total Table 3+ (18 compounds), and Total Table 3+ (21 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 results, the mass discharge calculations, and a comparison to the Total PFAS baseline mass load as described above.
- Section 5 provides a summary and conclusions of the Q1 2024 mass load assessment.

2 SAMPLING ACTIVITIES AND LABORATORY ANALYSIS

The field work associated with collecting data for this Q1 2024 mass load assessment was completed by Parsons of NC (Parsons) and Geosyntec from January 1 through March 31, 2024. 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.

2.1 Sampling Activities

In Q1 2024, 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 (Bladen Bluffs, Tar Heel, and Kings Bluff). 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 field parameters and associated flow measurements are provided in Table 2.

The twice weekly 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 22 primary composite samples and 3 field duplicate composite samples were collected from this location from January 3 through March 28, 2024. The duplicate samples were collected on January 9, February 12, and March 12, 2024.

During interruptions to the composite sampling program, the sampler was temporarily removed, and grab or partial composite samples were collected to continue a record of river concentrations over time. A total of 5 grab samples were collected from this location. The sampled dates during these interruptions and the reasonings are listed below:

- January 3, 5, and 30 due to equipment malfunction.
- January 10 to 16 due to a high-water stage that was predicted to flood the autosampler platform (i.e., the river gage eight at W.O. Huske Dam was predicted to exceed 10 feet).

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 January 24, 2024, and one from Kings Bluff (sample location CFR-KINGS) on January 25, 2024 (Table 2). The grab sample from Kings Bluff was collected one day after sampling conducted at Tar Heel and Bladen Bluffs to account for the estimated travel time between these locations.

For the remedies installed at Outfall 003 stream; Seeps A, B, C, and D; and Outfall 002, samples and flow measurements were collected at the influent and effluent stilling basins and at the Outfall 003 treatment system. The sampling methods for the Seeps are not part of the scope of the mass loading assessment but are provided in *CFR Long-Term Remedy Performance Monitoring Report #5* (Geosyntec, 2024).

2.2 Laboratory Analyses

Samples were sent to Eurofins Scientific (West Sacramento, California). The twice weekly samples from Tar Heel were analyzed for PFAS by Table 3+ using Method 537 Mod Max (22 compounds which includes PFHpA and PFPrA). The grab samples from Bladen Bluffs, Tar Heel, and Kings Bluff were analyzed for Table 3+ and other PFAS compounds using Method 537 Mod Max (56 compounds which includes PFPrA).

3 PFAS ANALYTICAL RESULTS

Table 3+ analytical results from samples collected at Bladen Bluffs, Tar Heel, and Kings Bluff in Q1 2024 are presented in Tables 3 and 4. During this quarter, all samples were within the acceptable temperature requirements for preservation during storage and shipping (i.e., between not frozen to 6°C with a target of 4°C) as outlined in the Chemours PFAS Program QAPP (AECOM, 2018). The analytical results for the Seeps influent and effluent (to estimate remedies) are provided in *CFR Long-Term Remedy Performance Monitoring Report #5* (Geosyntec 2024). 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

Laboratory analytical data for the samples collected during the Q1 2024 reporting period were reviewed using the Data Verification Module (DVM) within the Locus[™] Environmental Information Management (EIM) system, a commercial data management software program. Following the DVM process, a manual review of the data was conducted. The DVM and the manual review results were combined in a DVM narrative report for each set of sample results which is consistent with Stage 2b of the *USEPA Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (USEPA, 2009). The DVM 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
- Matrix spike/matrix spike duplicate recoveries and the relative percent differences (RPDs) between these spikes
- Laboratory control sample/laboratory control sample duplicate recoveries and the RPD between these spikes
- Surrogate spike recoveries for organic analyses
- RPD between field duplicate sample pairs

A manual review of the data was also conducted, which included visual inspection of sample chromatograms for appropriate integration and retention time, verification that detections in field or equipment blanks have been applied to all applicable samples, and review of temperature requirements for sample preservation during storage and shipping. Based on the results of the

DVM plus manual review, the following data evaluation qualifiers were applied to the analytical results as required:

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

The DVM narrative reports are provided in Appendix D. Overall, the DQOs were met for accuracy and precision. During this sampling event, all samples were within the acceptable temperature requirements for preservation during storage and shipping (i.e., between not frozen to 6°C with a target of 4°C) as outlined in the Chemours PFAS Program QAPP (AECOM, 2018). The data collected are believed to be complete, representative, and comparable, with the exception of R-PSDA, Hydrolyzed PSDA, and R-EVE; matrix interference studies have shown that quantitation these compounds is inaccurate due to interferences by the sample matrix (Geosyntec, 2020b). Results for these three analytes are J-qualified as estimated.

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. PFAS results for the primary and duplicate samples had relative percent differences less than 30% for the reported compounds.

3.2.1 Correction of PFPrA Concentrations

On April 23, 2024, Eurofins-Sacramento informed Chemours via email that a calculation error had been incorporated into the preparation of calibration standards for perfluoropropanoic acid (PFPrA) under the laboratory's 537 Mod Max methodology. The error resulted in a 36% low bias in PFPrA concentrations. The error affected Chemours samples collected on behalf of the Fayetteville Works Site between June 2023 and April 2024. Chemours informed NCDEQ of the PFPrA calculation error via telephone on May 15, 2024, and provided NCDEQ with Eurofins-Sacramento's memo describing their root cause analysis of the PFPrA calculation error on May 22, 2024.

PFPrA results that were calculated incorrectly have been corrected by Eurofins-Sacramento and provided to Chemours. These results fall into two categories: 1) results that were corrected before being reported to NCDEQ, and 2) results that were reported to NCDEQ before being corrected. The PFPrA results for Q1 2024 provided in this report fall into category 1). They are being reported here for the first time. PFPrA results from October 2023 to December 2023 that have been provided in previous reports in this sampling program fall into category 2). Appendix E of this report provides a table of the results in category 2) with corrected PFPrA concentration values.

Additional detail is provided in a letter submitted to NCDEQ by Chemours on June 18, 2024, which is provided in Appendix F.

3.3 Analytical Results

The Q1 2024 analytical results from the samples collected at Tar Heel are presented in Table 3. The Total Table 3+ (17 compounds) concentrations in Q1 2024 ranged from non-detect below the associated reporting limits to 25 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 (Geosyntec: 2020c,d,e; 2021b,c,d,e; 2022a,b,c,d,e; 2023a,b,c; 2024b).

The Q1 2024 Table 3+ analytical results from the grab samples collected at Bladen Bluffs, Tar Heel, and Kings Bluff are presented in Table 4 and the other PFAS analytical results are presented in Appendix B. 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 (million gallons [MG]) that flowed past the sampling point within the sampling time interval (pounds [lbs]); 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]).

4.1 PFAS Mass Load in the Cape Fear River and Comparison to Baseline Mass Load

In Q1 2024, the in-river Total Table 3+ (17 compounds) mass load measured at Tar Heel was 25 lbs and is based on 52 mass loading estimation intervals (Table 5). The rolling sums of Total Table 3+ (17 compounds) mass load at Tar Heel over the last four reporting quarters were calculated, starting from Q1 2022 through this quarterly report (Table 6). These quarterly loads are summed with the loads from the preceding three quarters to calculate a rolling four-quarter Total PFAS mass load at the Cape Fear River. A total rolling four-quarter mass load captures the dynamics and inherent variability among in-river PFAS concentrations, river flows, and weather conditions (i.e., rainfall), which is well represented within a four-quarter timeframe. This rolling four-quarter total (i.e. total from a set of four consecutive quarters) allows for a quarterly cadence of evaluating Total PFAS mass load reductions from baseline, rather than an annual cadence.

The percent reduction from the total four-quarter PFAS baseline mass load (947 lbs; Geosyntec, 2023d) are summarized below:

- For the rolling four-quarter total load ending in Q1 2024, the total in-river load was 103 lbs, which is an 89% reduction compared to the baseline load of 947 lbs.
- During the past eight consecutive report quarters, there has been a four-quarter rolling total reduction of 75% or greater from the total baseline mass load of 947 lbs, which is inclusive of 11 total quarters.

Rolling Four-Quarter Period	Sum of Total Table 3+ (17 Compounds) Rolling Four-Quarters River Mass Load (lbs)	Percent Reduction from Baseline
Q2 2020 to Q1 2021 (Baseline)	947	--
Q2 2021 to Q1 2022	373	61%
Q3 2021 to Q2 2022	237	75%
Q4 2021 to Q3 2022	171	82%
Q1 2022 to Q4 2022	167	82%
Q2 2022 to Q1 2023	146	85%
Q3 2022 to Q2 2023	138	85%
Q4 2022 to Q3 2023	139	85%
Q1 2023 to Q4 2023	130	86%
Q2 2023 to Q1 2024	103	89%

PFAS mass loads to the Cape Fear River have been reduced since the baseline period because of the multiple remedies that Chemours have implemented at the Site. This quarter, the PFAS mass load prevented from discharging to the Cape Fear River was estimated using analytical results measured from samples collected at the influent and effluent of the remedies and their respective flows. Due to the implementation of the groundwater extraction and barrier wall remedy, the flows at the Seep FTCs are much lower than quarters prior to the operation of the groundwater extraction system, and at times no flow was observed at the FTCs. As a result, the total PFAS mass load captured by the Seep FTCs are less than previous quarters prior to the operation of the groundwater extraction system. During the Q1 2024 reporting period, the remedies at Outfall 003, the Seeps, the 004 GWTP, and the SWTS prevented the following Total Table 3+ PFAS mass loads:

- For the seeps FTCs, a total of 3.0 lbs was captured and prevented from reaching the Cape Fear River with a total measured flow of 10.1 MG (Geosyntec, 2024a). These reductions are further discussed in the *CFR Long-Term Remedy Performance Monitoring Report #5* (Geosyntec 2024).
- The 004 Groundwater Treatment Plant (GWTP) captured 47.8 MG of water and removed a mass load of 50.5 lbs. This estimate was based on the mass loading estimates of flow rate data and PFAS concentration data collected between January through March 2024 (Geosyntec, 2024a). These reductions are further discussed in the *CFR Long-Term Remedy Performance Monitoring Report #5* (Geosyntec, 2024a).
- For the Outfall 003 treatment system, a total of 8.5 lbs of PFAS was captured and prevented from reaching the Cape Fear River with a total treated flow of 37.0 MG (Appendix B).
- 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 January 8 to March 29, 2024, was 0.31 lbs. This estimate was based on mass loading estimates for 24 days when flow was recorded at the SWTS in Q1 2024, with a total treated flow of about 3.0 MG (Appendix B). This captured total mass likely underestimates the mass of PFAS captured by the SWTS during Q1 2024 because the samples collected are analyzed for the three indicator compounds (HFPO-DA, PFMOAA, and PMPA) and not the full Table 3+ analyte list.

Remedy	Report Period (Jan – March 2024)		Reference
	Flow Captured/ Treated (MG)	Mass Removed (lbs)	
Interim Seeps FTCs	10.1	3.0	<i>CFR Long-Term Remedy Performance Monitoring Report #5 (Geosyntec, 2024)</i>
004 GWTP	47.8	50.5	<i>CFR Long-Term Remedy Performance Monitoring Report #5 (Geosyntec, 2024)</i>
Outfall 003 Treatment Plant	37.0	8.5	<i>Appendix B</i>
SWTS	3.0	0.31	<i>Appendix B</i>

4.2 PFAS Mass Discharge to the Cape Fear River

Mass discharge was calculated from 32 samples collected at Tar Heel and recorded flows at W.O. Huske Dam during Q1 2024. The Total Table 3+ (17 compounds) mass discharge among samples with detected Total Table 3+ (17 compounds) concentrations ranged from 0 to 4.7 mg/s (Table 7), with the median mass discharge being 1.1 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 March 31, 2024; Figure 6) and within the last 12 months (from April 1, 2023, to March 31, 2024; Figure 7).

During this quarter (Q1 2024), the Total Table 3+ (17 compounds) concentrations in the Cape Fear River were generally at low levels and within the range of the previous 12 months. The highest estimated mass discharge value of 4.7 mg/s (January 10, 2024, sample) corresponded to a 12-hour composite sample collected 4 hours after a rain event (precipitation: 1.58 inches) when the river gage height rose to 6.22 ft and had a Table 3+ PFAS (17 compounds) concentration of 19 ng/L, which was within the range of other river concentrations in the quarter. The following day, the river was flooded (>10 ft gage height) and a grab sample was collected at Tar Heel, which had a lower Total Table 3+ (17 compounds) concentration of 2.7 ng/L and a mass discharge of 1.7 mg/s. Another grab sample was collected five days later (January 16, 2024) while the river gage height was still flooded, and the Total Table 3+ (17 compounds) was non-detect and had a corresponding mass load of 0 mg/s. While the concentration of the January 10, 2024, the sample was well within

the range of quarterly concentrations, the mass discharge increased because the river flow and gage height were increasing quickly from the rain event.

The mass discharge values this quarter continued to remain lower than the mass discharges before Q3 2021, which corresponds to the time when the Outfall 003 treatment system, the Seep FTCs, SWTP and groundwater extraction and barrier wall remedy were implemented.

4.3 PFAS Mass Discharge at the Downstream River Locations

Total Table 3+ (17 compounds) concentrations at the three downstream river locations ranged from 2.2 ng/L (CFR-TARHEEL) to 5.2 ng/L (CFR-KINGS). The Tar Heel and Bladen Bluffs sampling locations are located within 2 miles of each other and have similar sample results. However, the Total Table 3+ (17 compounds) concentrations at all three locations are well within the range of previous quarters.

As per the *Cape Fear River Mass Loading Calculation Protocol Version 2* (Geosyntec, 2020a), CFR-KINGS was sampled one day 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. A total of 0.1 inches of rainfall was recorded during the estimated travel period (January 24 to 25, 2024).

The Total Table 3+ (17 compounds) mass discharge ranged from 0.68 mg/s (CFR-TARHEEL [grab]) to 1.7 mg/s (CFR-KINGS). The mass discharge across the three downstream river locations in Q1 2024 was within the range of previous quarters (Geosyntec: 2020c,d,e; 2021b,c,d,e; 2022a,b,c,d,e; 2023a,b,c,d; 2024b). Specifically, the mass discharges from Q4 2021 to Q1 2024 were 0.43 to 3.0 mg/s at CFR-BLADEN, non-detect to 3.0 mg/s at CFR-TARHEEL (grab samples), and 0.36 to 4.9 mg/s at CFR-KINGS (Geosyntec: 2022a,b,c,d; 2023a,b,c,d; 2024b). There is inherent variability associated with river sample collection due to changing flow rates, precipitation near the Site and along the river, and sample collection location which can lead to variability in the PFAS mass discharge at these three locations. However, the mass discharges at the downstream river locations remained consistently lower since Q4 2021 than in previous assessments, which reflects the reduced mass discharge from the Site due to implemented remedies described in Section 4.2.

The Total Table 3+ (17 compounds) concentrations and mass discharge values from the Q1 2024 event are summarized in the table below.

Sample Location	Sample Collection Method	Sample Collection Date	Flow Rate (cfs)	Total Table 3+ (17 Compounds)	
				Concentration (ng/L)	Mass Discharge (mg/s)
CFR-BLADEN	Grab	1/24/2024	10,800	2.3	0.70
CFR-TARHEEL	Grab	1/24/2024	10,900	2.2	0.68
CFR-KINGS	Grab	1/25/2024	11,200	5.2	1.7

4.4 Calculated Mass Discharge from the Mass Loading Model Assessment

This section presents the estimation of mass discharge from the identified PFAS transport pathways using the mass loading model and an assessment of the contributions by pathway. The results of the mass loading model assessment for Q1 2024 are briefly described below. Details on the mass loading model results and calculations are provided in Appendix A.

The table below summarizes the Total Table 3+ (17 compounds) mass discharge prior to the remedies (i.e., before the water passes through the remedies) by pathway from Q2 2020 to Q4 2022. The pathways with remedies (Seeps, Outfall 003 stream, Outfall 002, and onsite groundwater) have substantially lower mass discharges than the before remedies mass discharges.

Model Transport Pathway with Remedies	Historical Before Remedies Total Table 3+ (17 Compounds) Mass Discharge (mg/s) ¹			Q1 2024 Total Table 3+ (17 Compounds) Mass Discharge (mg/s)
	Min	Median	Max	
Seeps	3.0	5.4	8.4	0.08
Onsite Groundwater	1.5	3.6	9.6	0.04
Outfall 002	0.006	0.10	0.68	0.03
Outfall 003 stream	0.63	2.5	4.7	0.01
Total Across Nine Transport Pathways²	6.7	14	24	1.33

1 – Historical before remedies mass discharge values taken from mass loading model data sets from Q2 2020 to Q4 2022 which excludes measurements after the installation of the groundwater extraction and barrier wall remedy which significantly altered the hydrologic conditions at site.

2 – Total values for historical before remedies mass discharge come from individual mass loading model assessments and therefore do not equal the sum of the values above.

5 SUMMARY AND CONCLUSIONS

This Q1 2024 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 January 1, 2024, through March 31, 2024. Over this period, the in-river Total Table 3+ (17 compounds) mass load measured at Tar Heel was 25 lbs, and the Total Table 3+ (17 compounds) mass discharge values ranged from 0 to 4.7 mg/s (median: 1.1 mg/s). A rolling four-quarter Total PFAS mass load was calculated to assess reduction from the four-quarter baseline PFAS mass load of 947 lbs (Geosyntec, 2023d). A rolling four-quarter total reduction of 89% from the baseline mass load was achieved this quarter (Q2 2023 to Q1 2024). In the past eight consecutive reporting quarters (including this quarter), a rolling four-quarter total reduction of 75% or greater from the baseline mass load was achieved. PFAS mass loads to the Cape Fear River have been reduced since the baseline period because of the multiple remedies that Chemours has implemented at the Site, including the Seeps FTCs (3.0 lbs), 004 GWTP (50.5 lbs), Outfall 003 (8.5 lbs), and SWTS (0.31 lbs). Assessment of PFAS mass loads at Tar Heel and reductions from the remedies will continue in future reporting quarters.

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. Overall, the mass discharges measured at the downstream river locations were relatively consistent in Q1 2024 and have been consistently lower since Q4 2021, which corresponds to the time when the Outfall 003 treatment system, the Seep FTCs, SWTP and groundwater extraction and barrier wall remedy were implemented.

In January 2024 samples were collected from the PFAS transport pathways and were used to estimate the mass discharge and the contribution per transport pathway to the Cape Fear River. The model-estimated Total Table 3+ (17 compounds) mass discharge from the potential transport pathways during Q1 2024 is 1.33 mg/s. The implementation of remedies (i.e. Outfall 003 treatment system, Seeps FTCs, and the groundwater extraction and barrier wall remedy) for the three transport pathways (Outfall 003, Seeps and Onsite Groundwater) that historically contributed the bulk of PFAS mass load correspond to a significant mass discharge decrease in Q1 2024 compared to historical, pre-remediation ranges. Pathways with remedies have substantially lower mass discharges than the historical before remedies mass discharges, and the remaining PFAS transport pathways, which historically were minor contributors to the PFAS mass loads, (i.e., Willis Creek and Georgia Branch Creek) have mass discharges that are within the range of previous values.

Quarterly mass loading assessment sample collection was initiated in January 2022 and will continue for a period of 4 years (through Q4 2025). These future sampling events will assess PFAS mass loads 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

TABLE 1
PFAS ANALYTE LIST
Chemours Fayetteville Works, North Carolina

Common Name	PFAS Grouping ¹				Chemical Name	CASRN	Chemical Formula
	Attachment C	Table 3+ (17 compounds)	Table 3+ (18 compounds)	Table 3+ (21 compounds)			
HFPO-DA	✓	✓	✓	✓	Hexafluoropropylene oxide dimer acid	13252-13-6	C6HF11O3
PEPA	✓	✓	✓	✓	Perfluoro-2-ethoxypropionic 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	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
PMPA	✓	✓	✓	✓	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-trifluoroethyl)oxy]propan-2-yl)oxy)propionic 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-octafluoro-	2416366-22-6	C8H2F12O5
PFO5DA	✓	✓	✓	✓	Perfluoro-3,5,7,9,11-pentaaxadecanoic acid	39492-91-6	C7HF13O7
R-PSDA	--	--	--	✓	Pentanoic acid, 2,2,3,3,4,5,5-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-tetrafluoroethane	801209-99-4	C4H2F8O4S
PES	--	✓	✓	✓	Perfluoro-2-ethoxyethanesulfonic acid	113507-82-7	C4HF9O4S
PS Acid	✓	✓	✓	✓	Ethanesulfonic acid, 2-[1-[difluoro(1,2,2-trifluoroethyl)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-tetrafluoroethoxy)methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-	749836-20-2	C7H2F14O5S
PFPrA	--	--	✓	✓	Perfluoropropanoic acid	422-64-0	C3HF5O2
PFHpA	✓	--	--	--	Perfluoroheptanoic acid	375-85-9	C7HF13O2
PFBA	--	--	--	--	Perfluorobutanoic acid	375-22-4	C4HF7O2
PFPeA	--	--	--	--	Perfluoropentanoic acid	2706-90-3	C5HF9O2
PFHxA	--	--	--	--	Perfluorohexanoic acid	307-24-4	C6HF11O2
PFOA	--	--	--	--	Perfluoroctanoic acid	335-67-1	C8HF15O
PFNA	--	--	--	--	Perfluorononanoic acid	375-95-1	C9HF17O2
PFDA	--	--	--	--	Perfluorodecanoic acid	335-76-2	C10HF19O2
PFUnA	--	--	--	--	Perfluoroundecanoic acid	2058-94-8	C11HF21O2
PFDoA	--	--	--	--	Perfluorododecanoic acid	307-55-1	C12HF23O2
PFTrA	--	--	--	--	Perfluorotridecanoic acid	72629-94-8	C13HF25O2
PFTeA	--	--	--	--	Perfluorotetradecanoic acid	376-06-7	C14HF27O2
PFHxDA	--	--	--	--	Perfluorohexadecanoic acid	67905-19-5	C16HF31O2
PFODA	--	--	--	--	Perfluorooctadecanoic acid	16517-11-6	C18HF35O2
PFBS	--	--	--	--	Perfluorobutanesulfonic acid	375-73-5	C4HF9SO
PFPeS	--	--	--	--	Perfluoropentanesulfonic acid	2706-91-4	C5HF11O3S
PFHxS	--	--	--	--	Perfluorohexanesulfonic acid	355-46-4	C6HF13SO3
PFHpS	--	--	--	--	Perfluoroheptanesulfonic acid	375-92-8	C7HF15O3S
PFOS	--	--	--	--	Perfluorooctanesulfonic acid	1763-23-1	C8HF17SO3
PFNS	--	--	--	--	Perfluorononanesulfonic acid	68259-12-1	C9HF19O3S
PFDS	--	--	--	--	Perfluorodecanesulfonic acid	335-77-3	C10HF21O3S
PFDoDS	--	--	--	--	Perfluorododecanesulfonic acid	79780-39-5	C12HF25O3S
4:2 FTS	--	--	--	--	4:2 Fluorotelomer sulfonic acid	757124-72-4	C6H5F9O3S
6:2 FTS	--	--	--	--	6:2 Fluorotelomer sulfonic acid	27619-97-2	C8H5F13O3S
8:2 FTS	--	--	--	--	8:2 Fluorotelomer sulfonic acid	39108-34-4	C10H5F17O3S
10:2 FTS	--	--	--	--	10:2 Fluorotelomer sulfonic acid	120226-60-0	C12H5F21O3
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
PFOSA	--	--	--	--	Perfluorooctane sulfonamide	754-91-6	C8H2F17NO2S
F-53B Major	--	--	--	--	Perfluoro(2-((6-chlorohexyl)oxy)ethanesulfonic acid)	756426-58-1	C8HClF16O4S
F-53B Minor	--	--	--	--	Perfluoro(2-((8-chlorooctyl)oxy)ethanesulfonic acid)	763051-92-9	C10HClF20O4S
DONA	--	--	--	--	2,2,3-Trifluoro-3-(1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy)propanoic acid	919005-14-4	C7H2F12O4

Notes:

-- not included in the PFAS grouping

PFAS - Per- and Polyfluoroalkyl substances

1 - 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 Table 3+ compounds "Total Table 3+ (17 compounds)", i.e., does not include PFHpA, R-PSDA, Hydrolyzed PSDA, R-EVE, and PFPrA; (ii) the summation of 18 of the Table 3+ compounds "Total Table 3+ (18 compounds)", i.e., does not include PFHpA, R-PSDA, Hydrolyzed PSDA, and R-EVE; and (iii) the summation of 21 of the Table 3+ compounds "Total Table 3+ (21 compounds)".

TABLE 2
RIVER SAMPLES AT TAR HEEL AND DOWNSTREAM LOCATIONS - Q1 2024
Chemours Fayetteville Works, North Carolina

Location ID	Sample ID	QA/QC	Date and Time	Sample Collection								Flow Measurement			
				Method	Hours Composited	pH (S.U.)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Specific Conductivity (µS/cm)	Temperature (°C)	Method	Total Volume (MG) ²	Instantaneous Flow Rate (ft ³ /s) ³	
CFR-TARHEEL ⁴	CFR-TARHEEL-010324	--	1/3/24 13:05	Grab	0	6.80	9.02	42.30	32.90	205.44	14.23	USGS Data ⁸	--	4,990	
	CFR-TARHEEL-010524	--	1/5/24 11:35	Grab	0	6.75	9.67	145.30	51.80	187.16	12.98	USGS Data ⁸	--	7,600	
	CFR-TARHEEL-010924	--	1/9/24 23:01	Composite	24	7.59	9.54	154.40	72.20	98.94	14.16	USGS Data ⁷	6,060	--	
	CFR-TARHEEL-010924-D	Field Duplicate	1/9/24 23:01	Composite	24	7.59	9.54	154.40	72.20	98.94	14.16	USGS Data ⁷	6,060	--	
	CFR-TARHEEL-12-011024	--	1/10/24 11:01	Composite	12	NM	NM	NM	NM	NM	NM	NM	USGS Data ⁷	2,781	--
	CFR-TARHEEL-011124	--	1/11/24 15:30	Grab	0	8.70	10.03	122.80	298.00	6.72	17.07	USGS Data ⁸	--	22,700	
	CFR-TARHEEL-011624	--	1/16/24 11:20	Grab	0	7.12	11.09	118.30	245.02	196.36	11.53	USGS Data ⁸	--	19,500	
	CFR-TARHEEL-24-011824	--	1/18/24 23:01	Composite	24	8.11	9.84	9.60	75.50	314.26	11.03	USGS Data ⁷	9,714	--	
	CFR-TARHEEL-24-012024	--	1/20/24 23:01	Composite	24	NM	NM	NM	NM	NM	NM	NM	USGS Data ⁷	8,391	--
	CAPIQ24-CFR-TARHEEL-012424	--	1/24/2024 14:10	Grab	0	7.23	10.86	79.70	64.00	153.74	13.34	USGS Data ⁸	--	10,900	
	CFR-TARHEEL-24-012424	--	1/24/24 23:01	Composite	24	7.88	3.73	60.60	32.30	190154.00	22.23	USGS Data ⁷	7,162	--	
	CAPIQ24-CFR-TARHEEL-24-012524	--	1/25/2024 10:24	Composite	24	7.54	9.80	118.80	39.20	126.47	14.81	USGS Data ⁷	6,538	--	
	CFR-TARHEEL-013024	--	1/30/24 15:15	Grab	0	7.46	10.43	74.10	126.00	187.78	15.81	USGS Data ⁸	--	13,800	
	CFR-TARHEEL-24-020124	--	2/1/24 23:01	Composite	24	8.49	6.86	41.10	99.60	1199.00	18.45	USGS Data ⁷	6,502	--	
	CFR-TARHEEL-24-020524	--	2/5/24 23:01	Composite	24	8.51	5.44	-74.00	46.60	355.64	19.08	USGS Data ⁷	4,453	--	
	CFR-TARHEEL-24-020824	--	2/8/24 23:01	Composite	24	7.99	9.68	-19.40	40.30	462.57	10.84	USGS Data ⁷	2,432	--	
	CFR-TARHEEL-24-021224	--	2/12/24 23:01	Composite	24	8.17	9.63	-8.90	20.60	519.67	14.28	USGS Data ⁷	1,456	--	
	CFR-TARHEEL-24-021224-D	Field Duplicate	2/12/24 23:01	Composite	24	8.17	9.63	-8.90	20.60	519.67	14.28	USGS Data ⁷	1,456	--	
	CFR-TARHEEL-24-021324	--	2/13/24 23:01	Composite	24	8.58	10.22	-20.70	21.80	530.56	16.41	USGS Data ⁷	1,661	--	
	CFR-TARHEEL-24-021924	--	2/19/24 23:01	Composite	24	8.22	7.31	-2.40	17.50	223.55	19.00	USGS Data ⁷	2,140	--	
	CFR-TARHEEL-24-022224	--	2/22/24 23:01	Composite	24	NM	NM	NM	NM	NM	NM	NM	USGS Data ⁷	1,861	--
	CFR-TARHEEL-24-022624	--	2/26/24 23:01	Composite	24	8.30	8.78	20.00	15.90	382.36	14.78	USGS Data ⁷	1,681	--	
	CFR-TARHEEL-24-022924	--	2/29/24 23:01	Composite	24	8.40	7.74	-11.10	13.10	320.53	14.19	USGS Data ⁷	1,506	--	
	CFR-TARHEEL-24-030424	--	3/4/24 23:01	Composite	24	8.55	7.27	-40.90	93.30	682.74	24.87	USGS Data ⁷	6,318	--	
	CFR-TARHEEL-24-030724	--	3/7/24 23:01	Composite	24	NM	NM	NM	NM	NM	NM	NM	USGS Data ⁷	6,172	--
	CFR-TARHEEL-24-031224	--	3/12/24 23:01	Composite	24	8.10	7.16	14.60	55.30	321.27	17.63	USGS Data ⁷	5,894	--	
	CFR-TARHEEL-24-031224-D	Field Duplicate	3/12/24 23:01	Composite	24	8.10	7.16	14.60	55.30	321.27	17.63	USGS Data ⁷	5,894	--	
	CFR-TARHEEL-24-031424	--	3/14/24 23:01	Composite	24	7.12	8.54	29.20	60.50	111.29	17.48	USGS Data ⁷	5,819	--	
	CFR-TARHEEL-24-031824	--	3/18/24 23:01	Composite	24	7.22	8.38	68.30	25.20	887.83	11.79	USGS Data ⁷	3,160	--	
	CFR-TARHEEL-24-032124	--	3/21/24 23:01	Composite	24	7.23	9.65	36.40	15.40	155.55	13.98	USGS Data ⁷	1,899	--	
	CFR-TARHEEL-24-032524	--	3/25/24 23:01	Composite	24	6.84	9.49	144.80	13.00	113.99	16.23	USGS Data ⁷	1,666	--	
	CFR-TARHEEL-24-032824	--	3/28/24 23:01	Composite	24	7.57	9.89	30.00	85.10	161.34	15.59	USGS Data ⁷	3,007	--	
CFR-BLADEN ⁵	CAPIQ24-CFRBLADEN-012424	--	1/24/24 13:50	Grab	0	7.18	11.37	53.30	35.40	238.05	14.37	USGS Data ⁹	--	10,800	
CFR-KINGS ⁶	CAPIQ24-CFRKINGS-012524	--	1/25/24 12:07	Grab	0	7.97	10.52	46.50	38.20	130.17	15.30	USGS Data ¹⁰	--	11,200	

Notes

- not applicable
- °C - degrees Celsius
- ft³ - cubic feet
- ft³/s - cubic feet per second
- mg/L - milligrams per liter
- mV - millivolts
- NM - not measured; field parameters were not collected.
- NTU - nephelometric Turbidity Unit
- ORP - oxidation reduction potential
- QA/QC - Quality assurance/ quality control
- S.U. - Standard Units
- USGS - United States Geological Survey
- µS/cm - microsiemens per centimeter
- 1 - Samples with a compositing duration of zero (0) hours are grab samples.
- 2 - Total flow volume is determined based on measurements taken over the sample collection period.
- 3 - For samples with a duration of zero (0) hours, i.e., grab samples, the instantaneous flow rate was used.
- 4 - The sample location is along the Cape Fear River at Tar Heel Ferry Road Bridge.
- 5 - The sample location is along the Cape Fear River at Bladen Bluffs.
- 6 - The sample location is along the Cape Fear River at Kings Bluff.
- 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 the collection of the composite sample.
- 8 - 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.
- 9 - Flow rate measured at USGS gauging station #02105500 located at William O Huske Lock & Dam used to estimate flow rate at Bladen Bluffs during sample collection.
- 10 - 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.

TABLE 3
CAPE FEAR RIVER TAR HEEL ANALYTICAL RESULTS - Q1 2024
Chemours Fayetteville Works, North Carolina

Sampling Event	Q1 2024	Q1 2024	Q1 2024	Q1 2024
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-010324	CFR-TARHEEL-010524	CFR-TARHEEL-010924	CFR-TARHEEL-010924-D
Sample Date	1/3/2024	1/5/2024	1/9/2024	1/9/2024
Sample Type	Grab	Grab	Composite	Composite
Sample Start Date and Time	01/03/24 1:05 PM	01/05/24 11:35 AM	01/09/24 12:00 AM	01/09/24 12:00 AM
Sample Stop Date and Time	--	--	01/09/24 11:00 PM	01/09/24 11:00 PM
Composite Duration (hours) ¹	0	0	24	24
QA/QC				Field Duplicate
Sample Delivery Group (SDG)	320-108552-1	320-108552-1	320-108696-1	320-108696-1
Lab Sample ID	320-108552-1	320-108552-2	320-108696-1	320-108696-2
<i>Table 3+ (ng/L)</i>				
HFPO-DA	<4.0	<4.0	<4.0	<4.0
PFMOAA	2.4	<2.0	<2.0	<2.0
PFO2HxA	2.1	<2.0	<2.0	<2.0
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	3.0	<2.0	2.0	<2.0
PEPA	<2.0	<2.0	<2.0	<2.0
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	<3.0	<3.0	<3.0	<3.0
NVHOS	<3.0	<3.0	<3.0	<3.0
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
PFPrA	14	13	11	12
Perfluoroheptanoic Acid	2.6	3.1	3.6	3.9
Total Attachment C^{2,3}	7.5	ND	2.0	ND
Total Table 3+ (17 compounds)^{3,4}	7.5	ND	2.0	ND
Total Table 3+ (18 compounds)^{3,5}	22	13	13	12
Total Table 3+ (21 compounds)³	22	13	13	12

TABLE 3
CAPE FEAR RIVER TAR HEEL ANALYTICAL RESULTS - Q1 2024
Chemours Fayetteville Works, North Carolina

Sampling Event	Q1 2024	Q1 2024	Q1 2024	Q1 2024
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-12-011024	CFR-TARHEEL-011124	CFR-TARHEEL-011624	CFR-TARHEEL-24-011824
Sample Date	1/10/2024	1/11/2024	1/16/2024	1/18/2024
Sample Type	Composite	Grab	Grab	Composite
Sample Start Date and Time	01/10/24 12:00 AM	01/11/24 3:30 PM	01/16/24 11:20 AM	01/18/24 12:00 AM
Sample Stop Date and Time	01/10/24 11:01 AM	--	--	01/18/24 11:00 PM
Composite Duration (hours) ¹	12	0	0	24
QA/QC				
Sample Delivery Group (SDG)	320-109022-1	320-108696-1	320-109022-1	320-109022-1
Lab Sample ID	320-109022-1	320-108696-3	320-109022-2	320-109022-3
<i>Table 3+ (ng/L)</i>				
HFPO-DA	4.2 J	<4.0	<4.0	<4.0
PFMOAA	4.5 J	<2.0	<2.0	<2.0
PFO2HxA	4.0 J	<2.0	<2.0	<2.0
PFO3OA	<2.0 UJ	<2.0	<2.0	<2.0
PFO4DA	<2.0 UJ	<2.0	<2.0	<2.0
PFO5DA	<2.0 UJ	<2.0	<2.0	<2.0
PMPA	6.7 J	2.7	<2.0	<2.0
PEPA	<2.0 UJ	<2.0	<2.0	<2.0
PS Acid	<2.0 UJ	<2.0	<2.0	<2.0
Hydro-PS Acid	<2.0 UJ	<2.0	<2.0	<2.0
R-PSDA	<2.0 UJ	<2.0	<2.0	<2.0
Hydrolyzed PSDA	<2.0 UJ	<2.0	<2.0	<2.0
R-PSDCA	<3.0 UJ	<3.0	<3.0	<3.0
NVHOS	<3.0 UJ	<3.0	<3.0	<3.0
EVE Acid	<2.0 UJ	<2.0	<2.0	<2.0
Hydro-EVE Acid	<2.0 UJ	<2.0	<2.0	<2.0
R-EVE	<2.0 UJ	<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 UJ	<2.0	<2.0	<2.0
PFPPrA	17 J	5.9	7.2	8.1
Perfluoroheptanoic Acid	2.8 J	<2.0	<2.0	2.1
Total Attachment C^{2,3}	19	2.7	ND	ND
Total Table 3+ (17 compounds)^{3,4}	19	2.7	ND	ND
Total Table 3+ (18 compounds)^{3,5}	36	8.6	7.2	8.1
Total Table 3+ (21 compounds)³	36	8.6	7.2	8.1

TABLE 3
CAPE FEAR RIVER TAR HEEL ANALYTICAL RESULTS - Q1 2024
Chemours Fayetteville Works, North Carolina

Sampling Event	Q1 2024	Q1 2024	Q1 2024	Q1 2024
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-24-012024	CFR-TARHEEL-24-012424	CAP1Q24-CFR-TARHEEL-012424	CAP1Q24-CFR-TARHEEL-24-012524
Sample Date	1/20/2024	1/24/2024	1/24/2024	1/25/2024
Sample Type	Composite	Composite	Grab	Composite
Sample Start Date and Time	01/20/24 12:00 AM	01/24/24 12:00 AM	01/24/24 2:10 PM	01/24/24 11:24 AM
Sample Stop Date and Time	01/20/24 11:00 PM	01/24/24 11:00 PM	---	01/25/24 10:24 AM
Composite Duration (hours) ¹	24	24	0	24
QA/QC				
Sample Delivery Group (SDG)	320-109227-1	320-109227-1	320-109128-1	320-109127-1
Lab Sample ID	320-109227-1	320-109227-2	320-109128-6	320-109127-7
<i>Table 3+ (ng/L)</i>				
HFPO-DA	<4.0	<4.0	<4.0	<4.0
PFMOAA	<2.0	<2.0	<2.0	2.2
PFO2HxA	<2.0	<2.0	<2.0	<2.0
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	2.2	2.1	2.2	2.1
PEPA	<2.0	<2.0	<2.0	<2.0
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	
Hydrolyzed PSDA	<2.0	<2.0	<2.0	<2.0
R-PSDCA	<3.0	<3.0	<3.0	<3.0
NVHOS	<3.0	<3.0	<3.0	<3.0
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
PFPrA	10	12	12	12
Perfluoroheptanoic Acid	2.6	3.1	3.1	3.3
Total Attachment C^{2,3}	2.2	2.1	2.2	4.3
Total Table 3+ (17 compounds)^{3,4}	2.2	2.1	2.2	4.3
Total Table 3+ (18 compounds)^{3,5}	12	14	14	16
Total Table 3+ (21 compounds)³	12	14	14	16

TABLE 3
CAPE FEAR RIVER TAR HEEL ANALYTICAL RESULTS - Q1 2024
Chemours Fayetteville Works, North Carolina

Sampling Event	Q1 2024	Q1 2024	Q1 2024	Q1 2024
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-24-012624	CFR-TARHEEL-013024	CFR-TARHEEL-24-020124	CFR-TARHEEL-24-020524
Sample Date	1/26/2024	1/30/2024	2/1/2024	2/5/2024
Sample Type	Composite	Grab	Composite	Composite
Sample Start Date and Time	01/26/24 12:00 AM	01/30/24 3:15 PM	02/01/24 12:00 AM	02/05/24 12:00 AM
Sample Stop Date and Time	01/26/24 11:00 PM	--	02/01/24 11:00 PM	02/05/24 11:00 PM
Composite Duration (hours) ¹	24	0	24	24
QA/QC				
Sample Delivery Group (SDG)	320-109815-1	320-109476-1	320-109476-1	320-109634-1
Lab Sample ID	320-109815-1	320-109476-1	320-109476-2	320-109634-1
<i>Table 3+ (ng/L)</i>				
HFPO-DA	<4.0 UJ	<4.0	<4.0	<4.0
PFMOAA	2.3 J	<2.0	<2.0	2.6
PFO2HxA	<2.0 UJ	<2.0	<2.0	<2.0
PFO3OA	<2.0 UJ	<2.0	<2.0	<2.0
PFO4DA	<2.0 UJ	<2.0	<2.0	<2.0
PFO5DA	<2.0 UJ	<2.0	<2.0	<2.0
PMPA	2.1 J	<2.0	<2.0	2.3
PEPA	<2.0 UJ	<2.0	<2.0	<2.0
PS Acid	<2.0 UJ	<2.0	<2.0	<2.0 UJ
Hydro-PS Acid	<2.0 UJ	<2.0	<2.0	<2.0
R-PSDA	<2.0 UJ	<2.0	<2.0	<2.0
Hydrolyzed PSDA	<2.0 UJ	<2.0	<2.0	<2.0
R-PSDCA	<3.0 UJ	<3.0	<3.0	<3.0
NVHOS	<3.0 UJ	<3.0	<3.0	<3.0
EVE Acid	<2.0 UJ	<2.0	<2.0	<2.0
Hydro-EVE Acid	<2.0 UJ	<2.0	<2.0	<2.0
R-EVE	<2.0 UJ	<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 UJ	<2.0	<2.0	<2.0
PFPPrA	11 J	7.4	9.0	9.8
Perfluoroheptanoic Acid	3.0 J	<2.0	2.5	3.0
Total Attachment C^{2,3}	4.4	ND	ND	4.9
Total Table 3+ (17 compounds)^{3,4}	4.4	ND	ND	4.9
Total Table 3+ (18 compounds)^{3,5}	15	7.4	9.0	15
Total Table 3+ (21 compounds)³	15	7.4	9.0	15

TABLE 3
CAPE FEAR RIVER TAR HEEL ANALYTICAL RESULTS - Q1 2024
Chemours Fayetteville Works, North Carolina

Sampling Event	Q1 2024	Q1 2024	Q1 2024	Q1 2024
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-24-020824	CFR-TARHEEL-24-021224	CFR-TARHEEL-24-021224-D	CFR-TARHEEL-24-021324
Sample Date	2/8/2024	2/12/2024	2/12/2024	2/13/2024
Sample Type	Composite	Composite	Composite	Composite
Sample Start Date and Time	02/08/24 12:00 AM	02/12/24 12:00 AM	02/12/24 12:00 AM	02/13/24 12:00 AM
Sample Stop Date and Time	02/08/24 11:00 PM	02/12/24 11:00 PM	02/12/24 11:00 PM	02/13/24 11:00 PM
Composite Duration (hours) ¹	24	24	24	24
QA/QC			Field Duplicate	
Sample Delivery Group (SDG)	320-109634-1	320-109815-1	320-109815-1	320-109815-1
Lab Sample ID	320-109634-2	320-109815-2	320-109815-3	320-109815-4
<i>Table 3+ (ng/L)</i>				
HFPO-DA	<4.0	4.0	<4.0	4.7
PFMOAA	4.8	8.1	8.5	9.0
PFO2HxA	2.7	5.8	6.1	5.2
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	3.3	5.2	5.2	6.3
PEPA	<2.0	<2.0	<2.0	<2.0
PS Acid	<2.0 UJ	<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	<3.0	<3.0	<3.0	<3.0
NVHOS	<3.0	<3.0	<3.0	<3.0
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
PFPrA	12	17	17	20
Perfluoroheptanoic Acid	3.2	2.7	2.5	2.0
Total Attachment C^{2,3}	11	23	20	25
Total Table 3+ (17 compounds)^{3,4}	11	23	20	25
Total Table 3+ (18 compounds)^{3,5}	23	40	37	45
Total Table 3+ (21 compounds)³	23	40	37	45

TABLE 3
CAPE FEAR RIVER TAR HEEL ANALYTICAL RESULTS - Q1 2024
Chemours Fayetteville Works, North Carolina

Sampling Event	Q1 2024	Q1 2024	Q1 2024	Q1 2024
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-24-021924	CFR-TARHEEL-24-022224	CFR-TARHEEL-24-022624	CFR-TARHEEL-24-022924
Sample Date	2/19/2024	2/22/2024	2/26/2024	2/29/2024
Sample Type	Composite	Composite	Composite	Composite
Sample Start Date and Time	02/19/24 12:00 AM	02/22/24 12:00 AM	02/26/24 12:00 AM	02/29/24 12:00 AM
Sample Stop Date and Time	02/19/24 11:00 PM	02/22/24 11:00 PM	02/26/24 11:00 PM	02/29/24 11:00 PM
Composite Duration (hours) ¹	24	24	24	24
QA/QC				
Sample Delivery Group (SDG)	320-110015-1	320-110015-1	320-110211-1	320-110211-1
Lab Sample ID	320-110015-1	320-110015-2	320-110211-1	320-110211-2
<i>Table 3+ (ng/L)</i>				
HFPO-DA	<4.0	<4.0	<4.0	<4.0
PFMOAA	5.6	5.2	4.6 J	6.2 J
PFO2HxA	3.4	3.7	2.8 J	2.9 J
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	4.1	3.9	3.4	4.3
PEPA	<2.0	<2.0	<2.0	<2.0
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	<3.0	<3.0	<3.0	<3.0
NVHOS	<3.0	<3.0	<3.0	<3.0
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
PFPrA	17	17	19	20
Perfluoroheptanoic Acid	3.2	3.5	3.5	3.3
Total Attachment C^{2,3}	13	13	11	13
Total Table 3+ (17 compounds)^{3,4}	13	13	11	13
Total Table 3+ (18 compounds)^{3,5}	30	30	30	33
Total Table 3+ (21 compounds)³	30	30	30	33

TABLE 3

CAPE FEAR RIVER TAR HEEL ANALYTICAL RESULTS - Q1 2024
Chemours Fayetteville Works, North Carolina

Sampling Event	Q1 2024	Q1 2024	Q1 2024	Q1 2024
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-24-030424	CFR-TARHEEL-24-030724	CFR-TARHEEL-24-031224	CFR-TARHEEL-24-031224-D
Sample Date	3/4/2024	3/7/2024	3/12/2024	3/12/2024
Sample Type	Composite	Composite	Composite	Composite
Sample Start Date and Time	03/04/24 12:00 AM	03/07/24 12:00 AM	03/12/24 12:00 AM	03/12/24 12:00 AM
Sample Stop Date and Time	03/04/24 11:00 PM	03/07/24 11:00 PM	03/12/24 11:00 PM	03/12/24 11:00 PM
Composite Duration (hours) ¹	24	24	24	24
QA/QC				Field Duplicate
Sample Delivery Group (SDG)	320-110617-1	320-110617-1	320-110617-1	320-110617-1
Lab Sample ID	320-110617-1	320-110617-2	320-110617-3	320-110617-4
<i>Table 3+ (ng/L)</i>				
HFPO-DA	<4.0 UJ	<4.0	<4.0	<4.0
PFMOAA	2.1 J	2.9	2.6 J	3.6
PFO2HxA	<2.0 UJ	3.2	2.4	2.3
PFO3OA	<2.0 UJ	<2.0	<2.0	<2.0
PFO4DA	<2.0 UJ	<2.0	<2.0	<2.0
PFO5DA	<2.0 UJ	<2.0	<2.0	<2.0
PMPA	<3.8 UJ	<6.4	<81	<8.3
PEPA	<2.0 UJ	<2.0	<2.0	<2.0
PS Acid	<2.0 UJ	<2.0	<2.0	<2.0
Hydro-PS Acid	<2.0 UJ	<2.0	<2.0	<2.0
R-PSDA	<2.0 UJ	<2.0	<2.0	<2.0
Hydrolyzed PSDA	<2.0 UJ	<2.0	<2.0	<2.0
R-PSDCA	<3.0 UJ	<3.0	<3.0	<3.0
NVHOS	<3.0 UJ	<3.0	<3.0	<3.0
EVE Acid	<2.0 UJ	<2.0	<2.0	<2.0
Hydro-EVE Acid	<2.0 UJ	<2.0	<2.0	<2.0
R-EVE	<2.0 UJ	<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 UJ	<2.0	<2.0	<2.0
PFPPrA	9.9 J	14	10	10
Perfluoroheptanoic Acid	3.6 J	4.0	3.3	3.0
Total Attachment C^{2,3}	2.1	6.1	5.0	5.9
Total Table 3+ (17 compounds)^{3,4}	2.1	6.1	5.0	5.9
Total Table 3+ (18 compounds)^{3,5}	12	20	15	16
Total Table 3+ (21 compounds)³	12	20	15	16

TABLE 3

CAPE FEAR RIVER TAR HEEL ANALYTICAL RESULTS - Q1 2024
Chemours Fayetteville Works, North Carolina

Sampling Event	Q1 2024	Q1 2024	Q1 2024	Q1 2024
Location ID	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-24-031424	CFR-TARHEEL-24-031824	CFR-TARHEEL-24-032124	CFR-TARHEEL-24-032524
Sample Date	3/14/2024	3/18/2024	3/21/2024	3/25/2024
Sample Type	Composite	Composite	Composite	Composite
Sample Start Date and Time	03/14/24 12:00 AM	03/18/24 12:00 AM	03/21/24 12:00 AM	03/25/24 12:00 AM
Sample Stop Date and Time	03/14/24 11:00 PM	03/18/24 11:00 PM	03/21/24 11:00 PM	03/25/24 11:00 PM
Composite Duration (hours) ¹	24	24	24	24
QA/QC				
Sample Delivery Group (SDG)	320-110617-1	320-110617-1	320-111108-1	320-111108-1
Lab Sample ID	320-110617-5	320-110617-6	320-111108-1	320-111108-2
<i>Table 3+ (ng/L)</i>				
HFPO-DA	<4.0	<4.0	<4.0	4.5
PFMOAA	3.3	5.5	6.7	7.4
PFO2HxA	<2.0	2.6	2.9	3.2
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	<6.1	<8.1	7.3	10
PEPA	<2.0	<2.0	<2.0	<2.0
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	<3.0	<3.0	<3.0	<3.0
NVHOS	<3.0	<3.0	<3.0	<3.0
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
PFPPrA	8.9	13	15	18
Perfluoroheptanoic Acid	3.1	3.4	3.2	3.0
Total Attachment C^{2,3}	3.3	8.1	17	25
Total Table 3+ (17 compounds)^{3,4}	3.3	8.1	17	25
Total Table 3+ (18 compounds)^{3,5}	12	21	32	43
Total Table 3+ (21 compounds)³	12	21	32	43

TABLE 3
CAPE FEAR RIVER TAR HEEL ANALYTICAL RESULTS - Q1 2024
Chemours Fayetteville Works, North Carolina

Sampling Event	Q1 2024
Location ID	CFR-TARHEEL
Field Sample ID	CFR-TARHEEL-24-032824
Sample Date	3/28/2024
Sample Type	Composite
Sample Start Date and Time	03/28/24 12:00 AM
Sample Stop Date and Time	03/28/24 11:00 PM
Composite Duration (hours) ¹	24
QA/QC	
Sample Delivery Group (SDG)	320-111108-1
Lab Sample ID	320-111108-3
Table 3+ (ng/L)	
HFPO-DA	4.5
PFMOAA	5.8
PFO2HxA	4.1
PFO3OA	<2.0
PFO4DA	<2.0
PFO5DA	<2.0
PMPA	7.7
PEPA	<2.0
PS Acid	<2.0
Hydro-PS Acid	<2.0
R-PSDA	<2.0
Hydrolyzed PSDA	<2.0
R-PSDCA	<3.0
NVHOS	<3.0
EVE Acid	<2.0
Hydro-EVE Acid	<2.0
R-EVE	<2.0
PES	<2.0
PFECA B	<2.0
PFECA-G	<2.0
PFPrA	16
Perfluoroheptanoic Acid	2.7
Total Attachment C^{2,3}	22
Total Table 3+ (17 compounds)^{3,4}	22
Total Table 3+ (18 compounds)^{3,5}	38
Total Table 3+ (21 compounds)³	38

Notes:**Bold - Analyte detected above associated reporting limit.**

-- - not analyzed

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

UJ - Analyte not detected. Reporting limit may not be accurate or precise.

< - Analyte not detected above associated reporting limit.

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+ and Total Attachment C were calculated including J qualified data but not non-detect data. The sum is rounded to two significant figures.

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

5 - Total Table 3+ (18 compounds) does not include PFHpA, R-PSDA, Hydrolyzed PSDA, and R-EVE.

TABLE 4
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	CAP1Q24-CFR-BLADEN-012424	CAP1Q24-CFR-KINGS-012524	CAP1Q24-CFR-TARHEEL-012424	CAP1Q24-CFR-TARHEEL-24-012524
Sample Date and Time	01/24/2024	01/25/2024	01/24/2024	01/25/2024
QA/QC				
Sample Delivery Group (SDG)	320-109128-1	320-109128-1	320-109128-1	320-109127-1
Lab Sample ID	320-109128-5	320-109128-7	320-109128-6	320-109127-7
<i>Table 3+ (ng/L)</i>				
HFPO-DA	<4.0	<4.0	<4.0	<4.0
PFMOAA	<2.0	3.1	<2.0	2.2
PFO2HxA	<2.0	<2.0	<2.0	<2.0
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	2.3	2.1	2.2	2.1
PEPA	<2.0	<2.0	<2.0	<2.0
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	<3.0	<3.0	<3.0	<3.0
NVHOS	<3.0	<3.0	<3.0	<3.0
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
PFPrA	12	12	12	12
Perfluoroheptanoic Acid	3.4	2.6	3.1	3.3
Total Attachment C^{1,3}	2.3	5.2	2.2	4.3
Total Table 3+ (17 compounds)^{2,3}	2.3	5.2	2.2	4.3
Total Table 3+ (18 compounds)^{2,4}	14	17	14	16
Total Table 3+ (21 compounds)³	14	17	14	16

Notes:

- 1 - Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).
- 2 - Total Table 3+ (17 compounds) does not include PFHpA, R-PSDA, Hydrolyzed PSDA, R-EVE, and PFPrA.
- 3 - 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.
- 4 - Total Table 3+ (18 compounds) does not include PFHpA, R-PSDA, Hydrolyzed PSDA, and R-EVE.

Bold - Analyte detected above associated reporting limit

J - Analyte detected. Reported value may not be accurate or precise.

ND - no analytes were detected above the associated reporting limits.

ng/L - nanograms per liter

QA/QC - Quality assurance/ quality control

SDG - Sample Delivery Group

**TABLE 5
CAPE FEAR RIVER PFAS MASS LOAD BY COMPOUND AND TIME INTERVAL - Q1 2024
Chemours Fayetteville Works, North Carolina**

Interval Details			Calculated Mass Load ² (lbs)																								Total Attachment C ³	Total Table 3+ (17 Compounds) ⁴	Total Table 3+ (18 Compounds) ⁵	Total Table 3+ (21 Compounds)
Interval ID	Start Time ¹	End Time ¹	Total River Volume (MG)	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PS Acid	Hydro-PS Acid	R-PSDA	Hydrolyzed PSDA	R-PSDCA	NVHOS	EVE Acid	Hydro-EVE Acid	R-EVE	PES	PFECA B	PFECA-G	PFHpA	PFPrA					
2024_Q1_48	3/21/24 23:01	3/25/24 0:01	4,299	0.08	0.25	0.11	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.59	0.75	0.75	1.35	1.35
2024_Q1_49	3/25/24 0:01	3/25/24 23:01	1,585	0.06	0.10	0.04	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.24	0.33	0.33	0.57	0.57
2024_Q1_50	3/25/24 23:01	3/28/24 0:01	4,568	0.17	0.25	0.14	0.00	0.00	0.00	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.65	0.90	0.90	1.55	1.55	
2024_Q1_51	3/28/24 0:01	3/28/24 23:01	2,908	0.11	0.14	0.10	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.39	0.54	0.54	0.92	0.92	
2024_Q1_52	3/28/24 23:01	4/1/24 0:00	32,240	1.21	1.56	1.10	0.00	0.00	0.00	2.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.73	4.30	5.95	5.95	10.25	10.25	

Notes

- 1 - Start and end times are adjusted based on sampling times ± one hour to account for the total flow of the Cape Fear River.
- 2 - 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.
- 3 - Total Attachment C does not include Perfluoroheptanoic acid (PFHpA).
- 4 - Total Table 3+ (17 compounds) does not include PFHpA, R-PSDA, Hydrolyzed PSDA, R-EVE, and PFPrA.
- 5 - Total Table 3+ (18 compounds) does not include PFHpA, R-PSDA, Hydrolyzed PSDA, and R-EVE.

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

lbs - pounds
MG - million gallons

Cases:

- A - The interval has a corresponding composite sample for its full duration; concentration is taken from this sample.
- B - The interval does not have a composite or grab sample during any of the period; concentration is averaged from samples before and after the interval.
- C - The interval is between a composite and a grab sample (or between a grab sample and a composite sample); concentration is averaged from samples before and after the interval.
- D - The interval has two composite samples for some or all of its duration; concentration is calculated with a time weighted average using both samples.

TABLE 6
PERCENT REDUCTION LOAD FROM BASELINE PERIOD - Q2 2021 THROUGH Q1 2024
Chemours Fayetteville Works, North Carolina

Reporting Period After Baseline ¹	Total River volume (MG)	Total Table 3+ (17 Compounds) ²			
		Measured Load in Cape Fear River (lbs) ³	Total Measured Load Over Rolling Prior Four Quarters (lbs)	Total Baseline Load (lbs)	Percent Reduction Load from Baseline Projected Load
Q2 2021	184,977	170	--	--	--
Q3 2021	156,006	89	--	--	--
Q4 2021	73,532	42	--	--	--
Q1 2022	380,263	72	373	947	61%
Q2 2022	175,562	33	237	947	75%
Q3 2022	78,649	24	171	947	82%
Q4 2022	164,830	38	167	947	82%
Q1 2023	324,227	51	146	947	85%
Q2 2023	298,943	25	138	947	85%
Q3 2023	140,296	25	139	947	85%
Q4 2023	146,912	28	130	947	86%
Q1 2024	464,406	25	103	947	89%

Notes:

1 - The 12-month baseline period is between Q2 2020 through Q1 2021.

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

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

-- - not calculated

lbs - pounds

MG - million gallons

TABLE 7
SUMMARY OF TOTAL PFAS MASS DISCHARGE AT TAR HEEL FERRY ROAD BRIDGE - Q1 2024
Chemours Fayetteville Works, North Carolina

Field Sample ID	Collection Date	Hours Composited ¹	Concentrations (ng/L)				Total Volume (MG) ⁵	Instantaneous Flow Rate (ft ³ /s) ⁶	Mass Discharge (mg/s)			
			Total Attachment C ²	Total Table 3+ (17 compounds) ³	Total Table 3+ (18 compounds) ⁴	Total Table 3+ (21 compounds)			Total Attachment C ²	Total Table 3+ (17 compounds) ³	Total Table 3+ (18 compounds) ⁴	Total Table 3+ (21 compounds)
CFR-TARHEEL-010324	1/3/24 13:05	0	7.5	7.5	22	22	--	4,990	1.1	1.1	3.0	3.0
CFR-TARHEEL-010524	1/5/24 11:35	0	0	0	13	13	--	7,600	0	0	2.8	2.8
CFR-TARHEEL-010924	1/9/24 23:01	24	2.0	2.0	13	13	6,060	--	0.53	0.53	3.5	3.5
CFR-TARHEEL-010924-D	1/9/24 23:01	24	0	0	12	12	6,060	--	0	0	3.2	3.2
CFR-TARHEEL-12-011024	1/10/24 11:01	12	19	19	36	36	2,781	--	4.7	4.7	8.9	8.9
CFR-TARHEEL-011124	1/11/24 15:30	0	2.7	2.7	8.6	8.6	--	22,700	1.7	1.7	5.5	5.5
CFR-TARHEEL-011624	1/16/24 11:20	0	0	0	7.2	7.2	--	19,500	0	0	4.0	4.0
CFR-TARHEEL-24-011824	1/18/24 23:01	24	0	0	8.1	8.1	9,714	--	0	0	3.4	3.4
CFR-TARHEEL-24-012024	1/20/24 23:01	24	2.2	2.2	12	12	8,391	--	0.81	0.81	4.5	4.5
CAPIQ24-CFR-TARHEEL-012424	1/24/24 14:10	0	8.9	8.9	21	21	--	10,900	2.7	2.7	6.5	6.5
CFR-TARHEEL-24-012424	1/24/24 23:01	24	2.1	2.1	14	14	7,162	--	0.66	0.66	4.4	4.4
CAPIQ24-CFR-TARHEEL-24-012524	1/25/24 10:24	24	11	11	23	23	6,538	--	3.2	3.2	6.6	6.6
CFR-TARHEEL-013024	1/30/24 15:15	0	0	0	7.4	7.4	--	13,800	0	0	2.9	2.9
CFR-TARHEEL-24-020124	2/1/24 23:01	24	0	0	9.0	9.0	6,502	--	0	0	2.6	2.6
CFR-TARHEEL-24-020524	2/5/24 23:01	24	4.9	4.9	15	15	4,453	--	0.96	0.96	2.9	2.9
CFR-TARHEEL-24-020824	2/8/24 23:01	24	11	11	23	23	2,432	--	1.2	1.2	2.4	2.4
CFR-TARHEEL-24-021224	2/12/24 23:01	24	23	23	40	40	1,456	--	1.5	1.5	2.6	2.6
CFR-TARHEEL-24-021224-D	2/12/24 23:01	24	20	20	37	37	1,456	--	1.3	1.3	2.3	2.3
CFR-TARHEEL-24-021324	2/13/24 23:01	24	25	25	45	45	1,661	--	1.8	1.8	3.3	3.3
CFR-TARHEEL-24-021924	2/19/24 23:01	24	13	13	30	30	2,140	--	1.2	1.2	2.8	2.8
CFR-TARHEEL-24-022224	2/22/24 23:01	24	13	13	30	30	1,861	--	1.0	1.0	2.4	2.4
CFR-TARHEEL-24-022624	2/26/24 23:01	24	11	11	30	30	1,681	--	0.80	0.80	2.2	2.2
CFR-TARHEEL-24-022924	2/29/24 23:01	24	13	13	33	33	1,506	--	0.88	0.88	2.2	2.2
CFR-TARHEEL-24-030424	3/4/24 23:01	24	2.1	2.1	12	12	6,318	--	0.58	0.58	3.3	3.3
CFR-TARHEEL-24-030724	3/7/24 23:01	24	6.1	6.1	20	20	6,172	--	1.6	1.6	5.4	5.4
CFR-TARHEEL-24-031224	3/12/24 23:01	24	5.0	5.0	15	15	5,894	--	1.3	1.3	3.9	3.9
CFR-TARHEEL-24-031224-D	3/12/24 23:01	24	5.9	5.9	16	16	5,894	--	1.5	1.5	4.1	4.1
CFR-TARHEEL-24-031424	3/14/24 23:01	24	3.3	3.3	12	12	5,819	--	0.84	0.84	3.1	3.1
CFR-TARHEEL-24-031824	3/18/24 23:01	24	8.1	8.1	21	21	3,160	--	1.1	1.1	2.9	2.9
CFR-TARHEEL-24-032124	3/21/24 23:01	24	17	17	32	32	1,899	--	1.4	1.4	2.7	2.7
CFR-TARHEEL-24-032524	3/25/24 23:01	24	25	25	43	43	1,666	--	1.8	1.8	3.1	3.1
CFR-TARHEEL-24-032824	3/28/24 23:01	24	22	22	38	38	3,007	--	2.9	2.9	5.0	5.0

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, R-EVE, and PFPrA.
4 - Total Table 3+ (18 compounds) does not include PFHpA, R-PSDA, Hydrolyzed PSDA, and R-EVE.
5 - Total flow volume is determined based on measurements taken over the sample collection period.
6 - For samples with a duration of zero (0) hours, i.e., grab samples, the instantaneous flow rate was used to calculate the mass discharge.

-- - not applicable

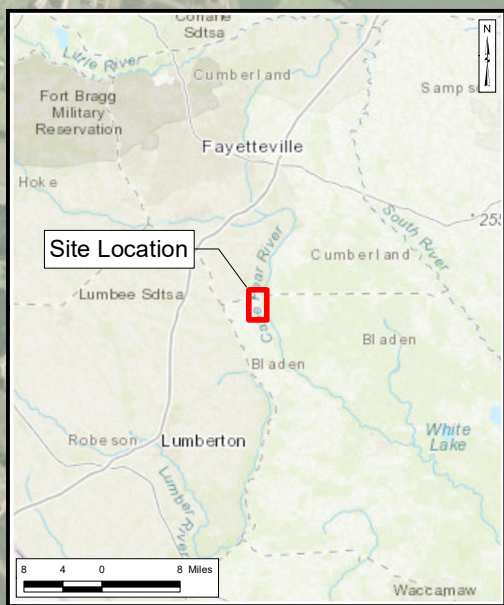
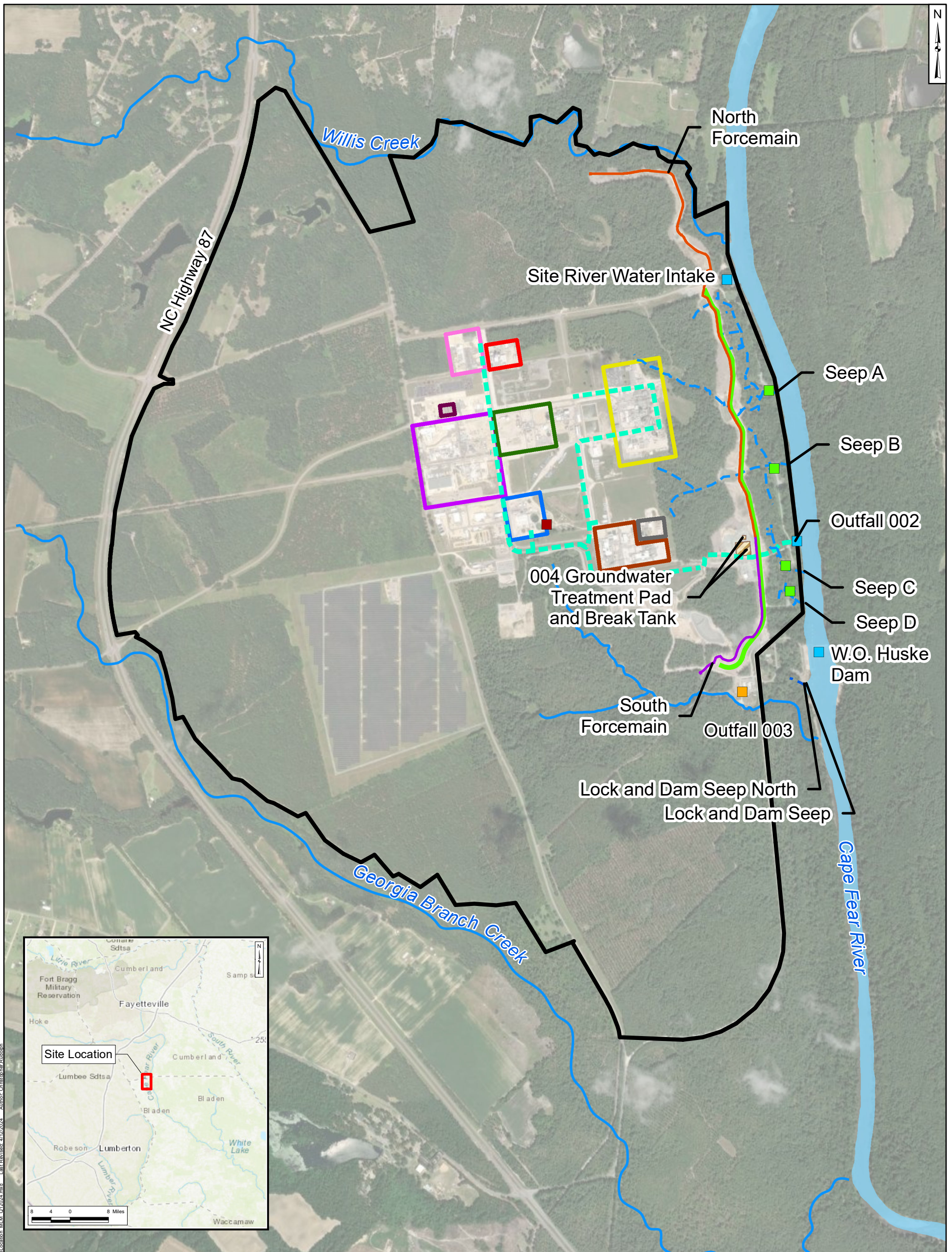
ft³/s - cubic feet per second

MG - million gallons

mg/s - milligrams per second

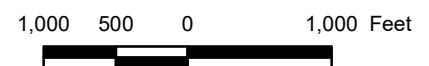
ng/L - nanograms per liter

Figures



Legend		Areas at Site	
■	Flow-Through Cell	 	Chemours Monomers IXM
■	Outfall 003 Treatment System	 	Chemours Polymer Processing Aid Area
■	Stormwater Treatment System	 	DuPont Polyvinyl Fluoride Leased Area
■	Site Features	 	Former DuPont PMDF Area
	Site Boundary	 	Kuraray SentryGlas® Leased Area
—	Nearby Tributary	 	Wastewater Treatment Plant
- - -	Observed Seep (Natural Drainage)	 	Power - Filtered and Demineralized Water Production
- - -	Site Conveyance Network	 	Kuraray Laboratory
—	North Forcemain		
—	South Forcemain		
—	Barrier Wall		
 	Groundwater Treatment Pad		

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, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Site Location Map
 Chemours Fayetteville Works, North Carolina

Geosyntec
 consultants

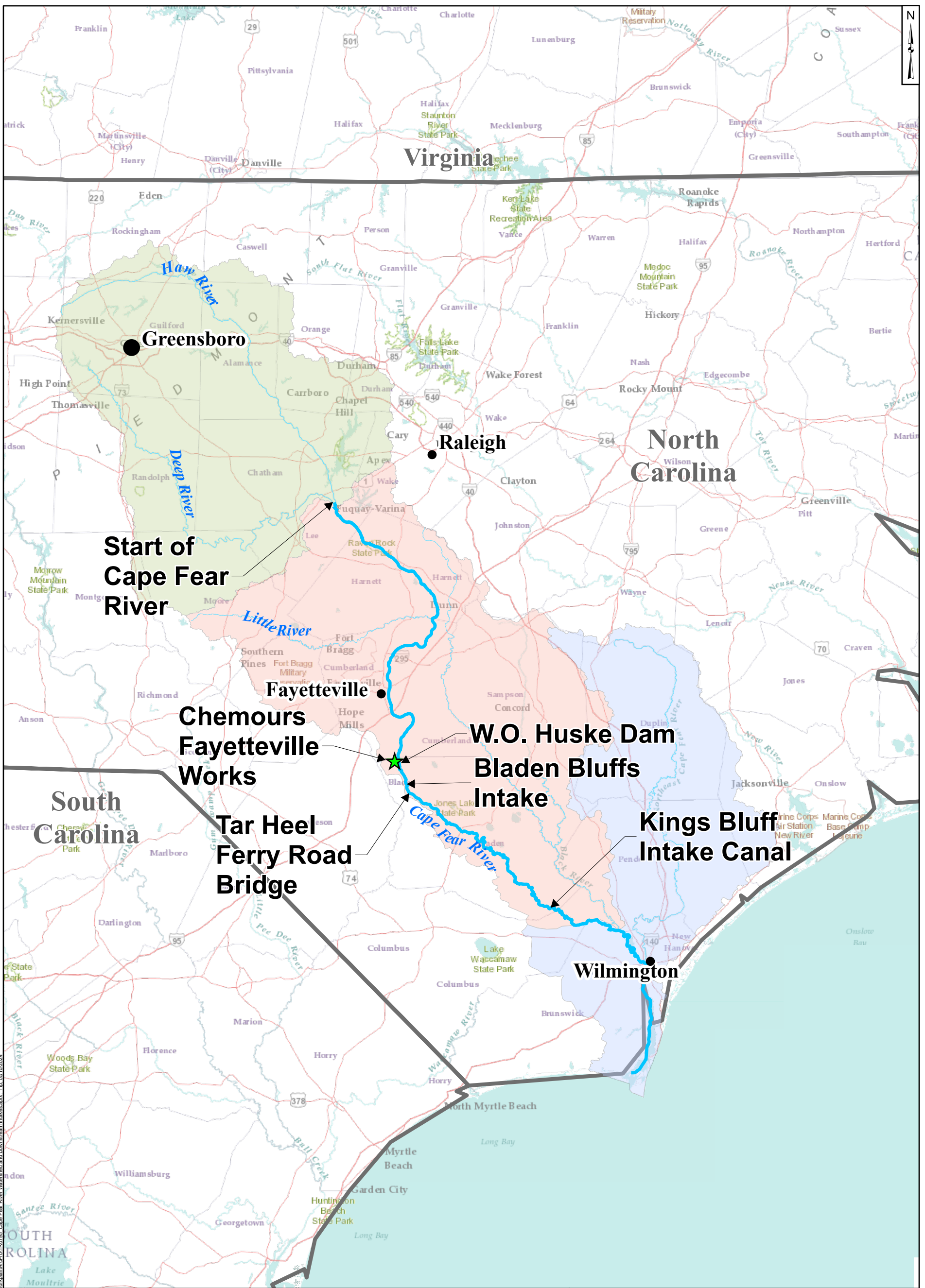
Geosyntec Consultants of NC, P.C.
 NC License No.: C 3500 and C 295

Raleigh

June 2024

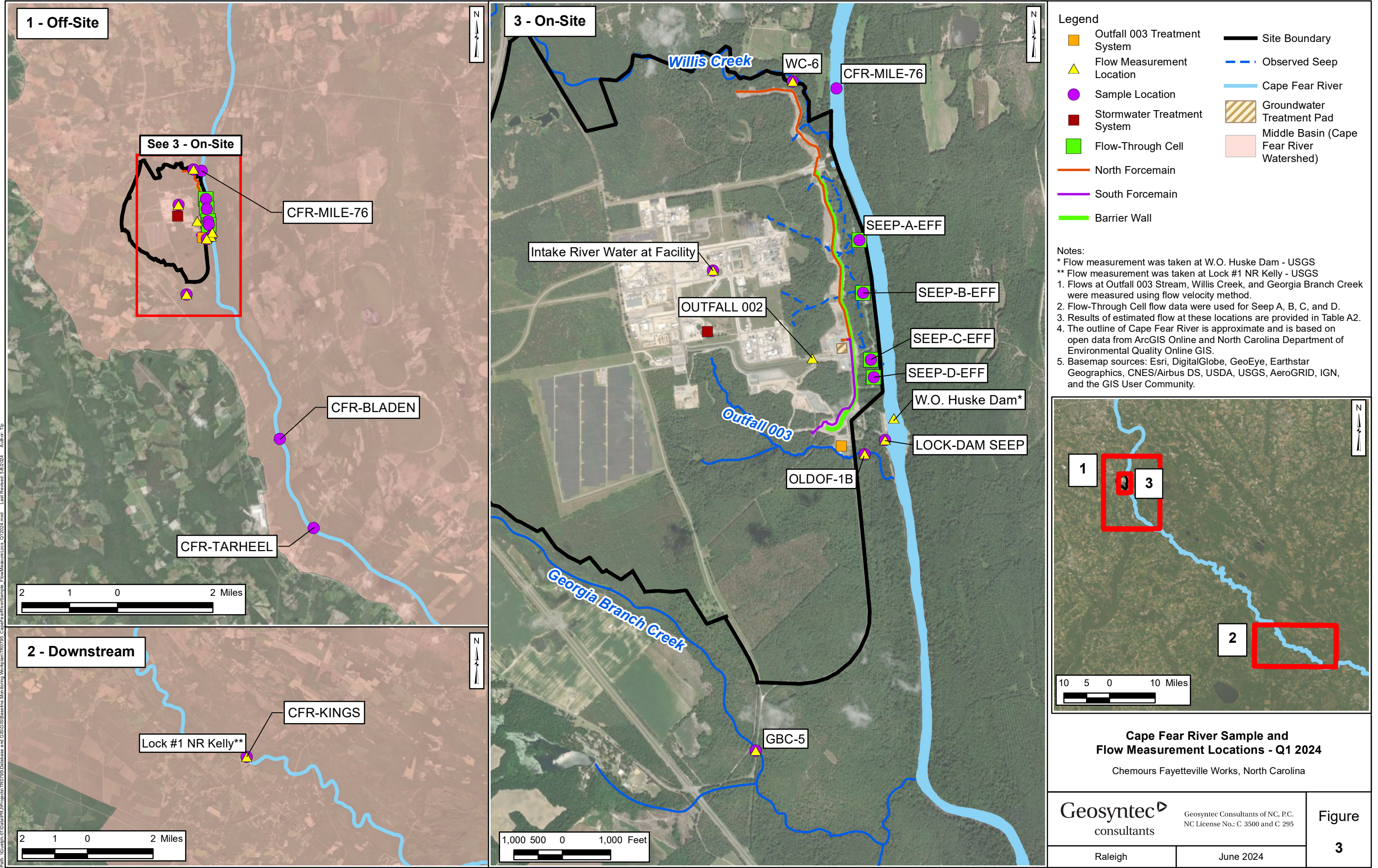
Figure

1



<p>Legend</p> <ul style="list-style-type: none"> ★ Chemours Fayetteville Works State Boundary Upper Basin Middle Basin Lower Basin 		<p>20 10 0 20 Miles</p>	
<p>Cape Fear River Watershed and Downstream Drinking Water Intakes Chemours Fayetteville Works, North Carolina</p>			
<p>Geosyntec consultants</p>		<p>Geosyntec Consultants of NC, P.C. NC License No.: C 3500 and C 295</p>	
<p>Basemap Sources: Esri, Garmin, USGS, NPS</p>		<p>Raleigh</p>	<p>June 2024</p>
			<p>Figure 2</p>

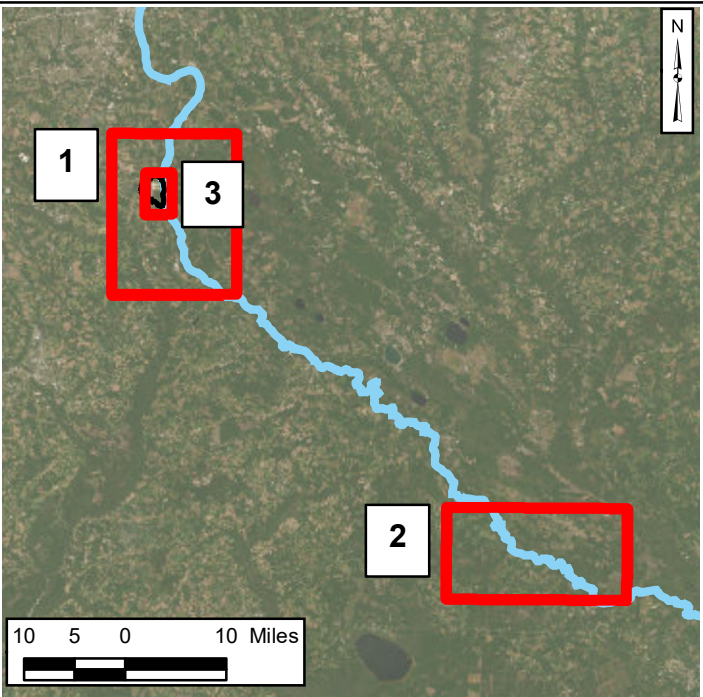
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Legend

- Outfall 003 Treatment System
- ▲ Flow Measurement Location
- Sample Location
- Stormwater Treatment System
- Flow-Through Cell
- North Forcemain
- South Forcemain
- Barrier Wall
- Site Boundary
- Observed Seep
- Cape Fear River
- Groundwater Treatment Pad
- Middle Basin (Cape Fear River Watershed)

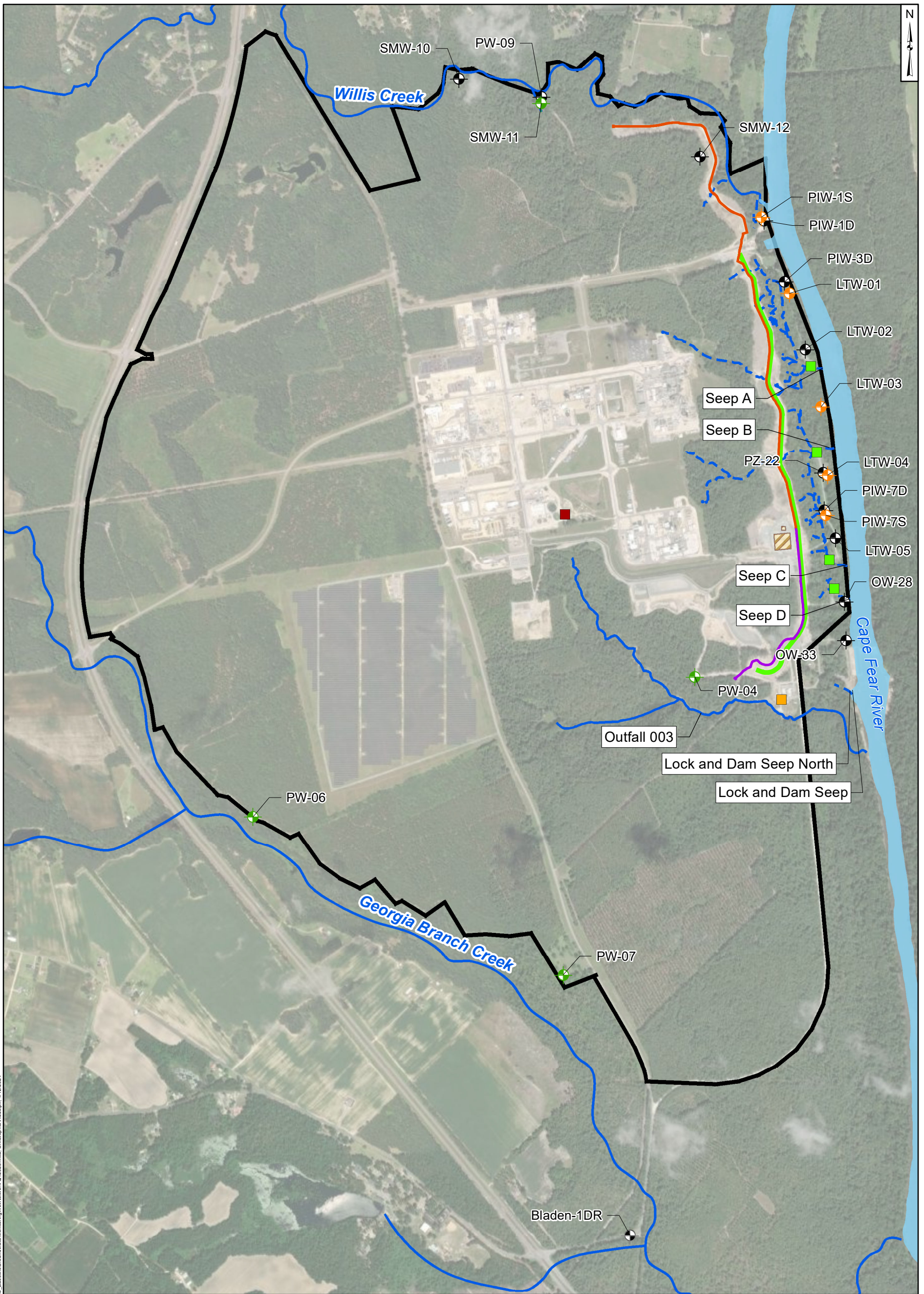
Notes:
 * Flow measurement was taken at W.O. Huske Dam - USGS
 ** Flow measurement was taken at Lock #1 NR Kelly - USGS
 1. Flows at Outfall 003 Stream, Willis Creek, and Georgia Branch Creek were measured using flow velocity method.
 2. Flow-Through Cell flow data were used for Seep A, B, C, and D.
 3. Results of estimated flow at these locations are provided in Table A2.
 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.



Cape Fear River Sample and Flow Measurement Locations - Q1 2024
 Chemours Fayetteville Works, North Carolina

Path: \\C:\geoph-01\Data\PE\Projects\TR07295\Monitoring\Workshop\TR07295_CapeFearRiverSample_FlowMeasurements_012024.mxd Last Revised: 5/8/2024 Author: Tip

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



Legend

Surficial Aquifer Monitoring Well	Flow-Through Cell	Observed Seep	North Forcemain
Floodplain Deposits Monitoring Well	Outfall 003 Treatment System	Nearby Tributary	South Forcemain
Black Creek Aquifer Monitoring Well	Stormwater Treatment System	Site Boundary	Barrier Wall
		Groundwater Treatment Pad and Break Tank	

Notes:

- Bladen-1D has been abandoned and replaced with Bladen-1DR during Q1 2023.
- 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.
- 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 source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

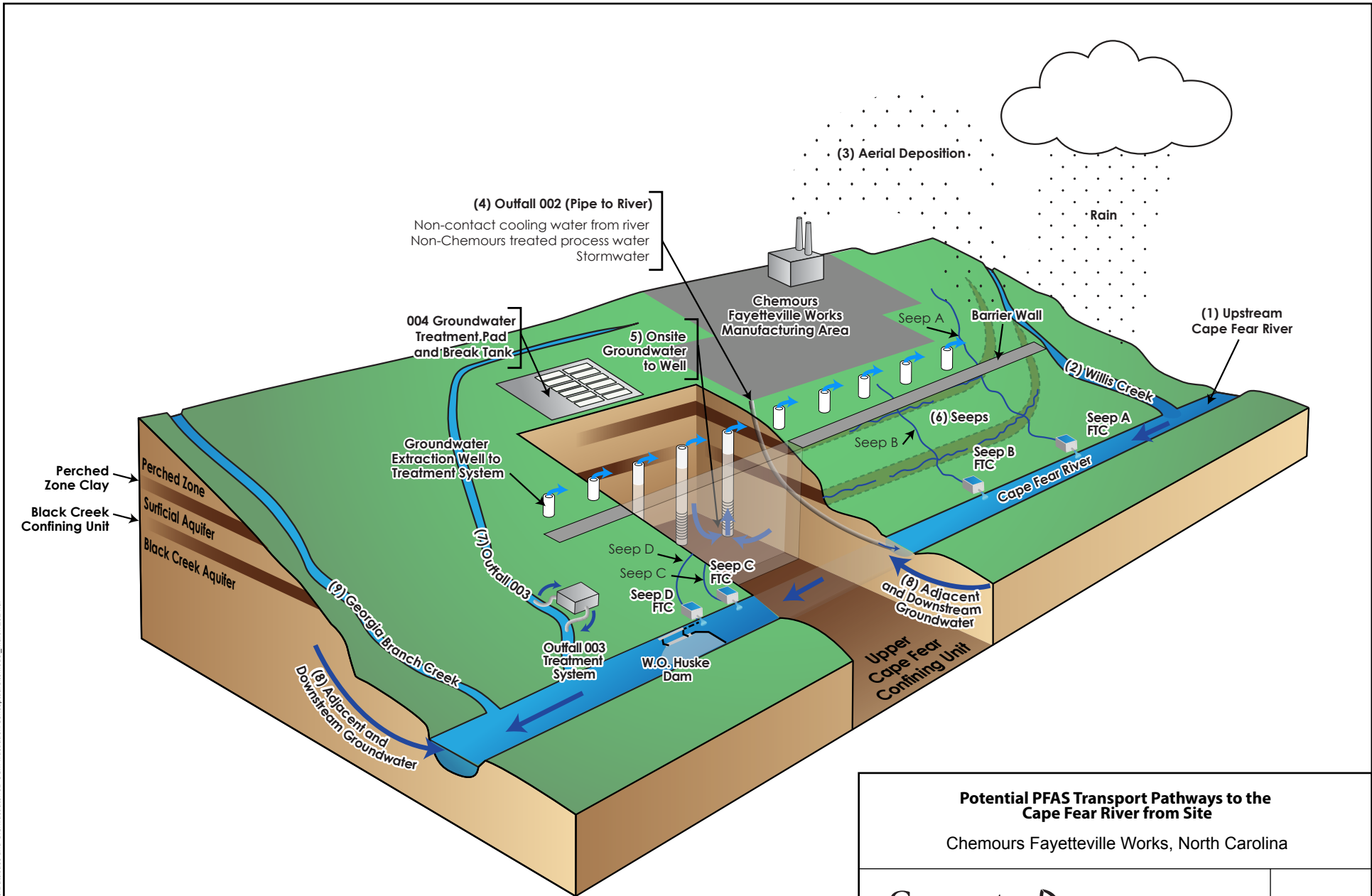
1,000 500 0 1,000 Feet

Groundwater Wells for Mass Loading Assessment
Chemours Fayetteville Works, North Carolina

	Geosyntec Consultants of NC, P.C. NC License No.: C 3500 and C 295	Figure 4
	Raleigh	

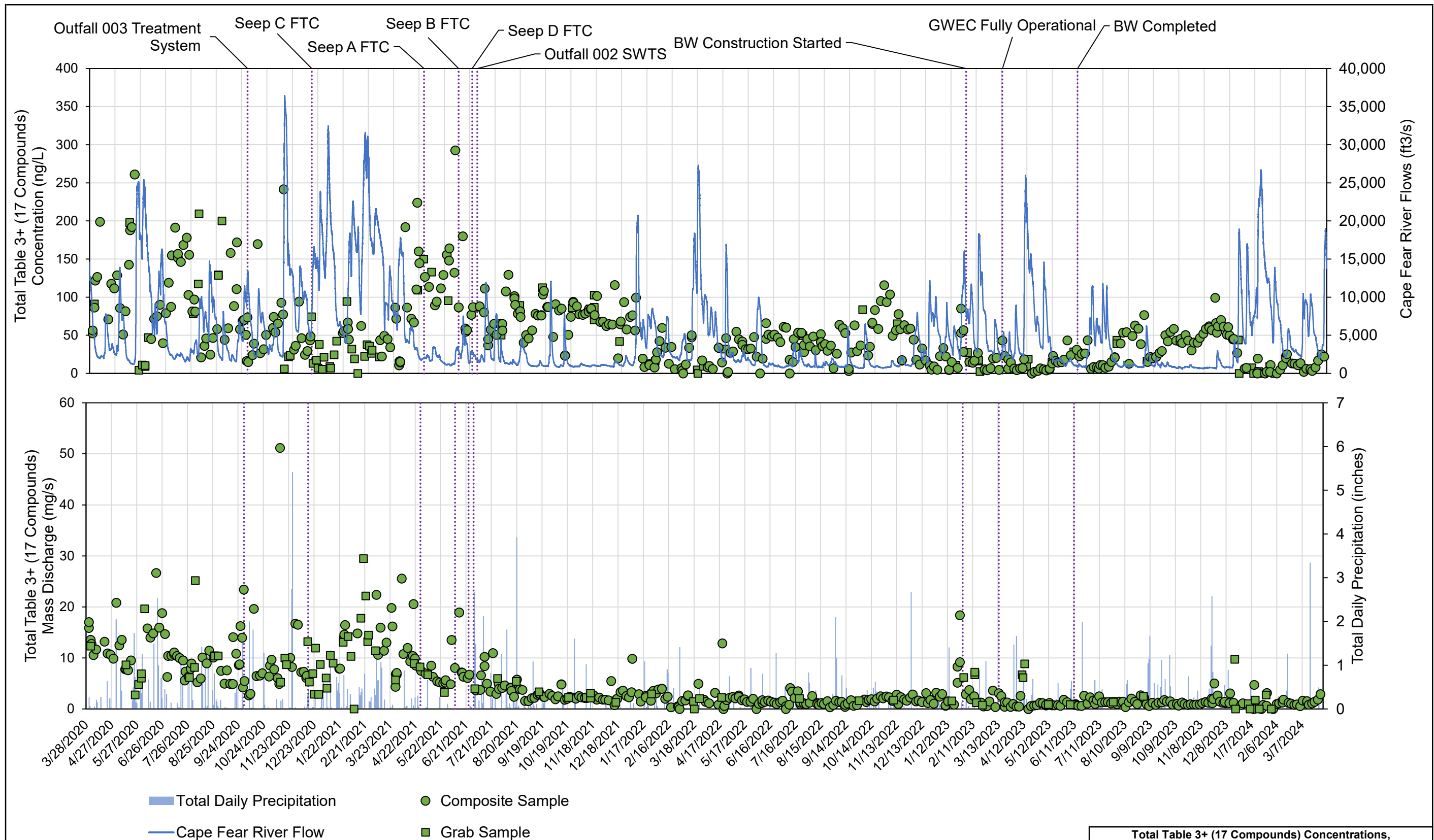
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Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet, Units in Foot US



Note:
FTC - Flow-through cell
Image is conceptual and is not to scale

Potential PFAS Transport Pathways to the Cape Fear River from Site		Figure 5
Chemours Fayetteville Works, North Carolina		
Geosyntec consultants	Geosyntec Consultants of NC, P.C. NC License No.: C 3500 and C 295	5
Raleigh, NC	June 2024	

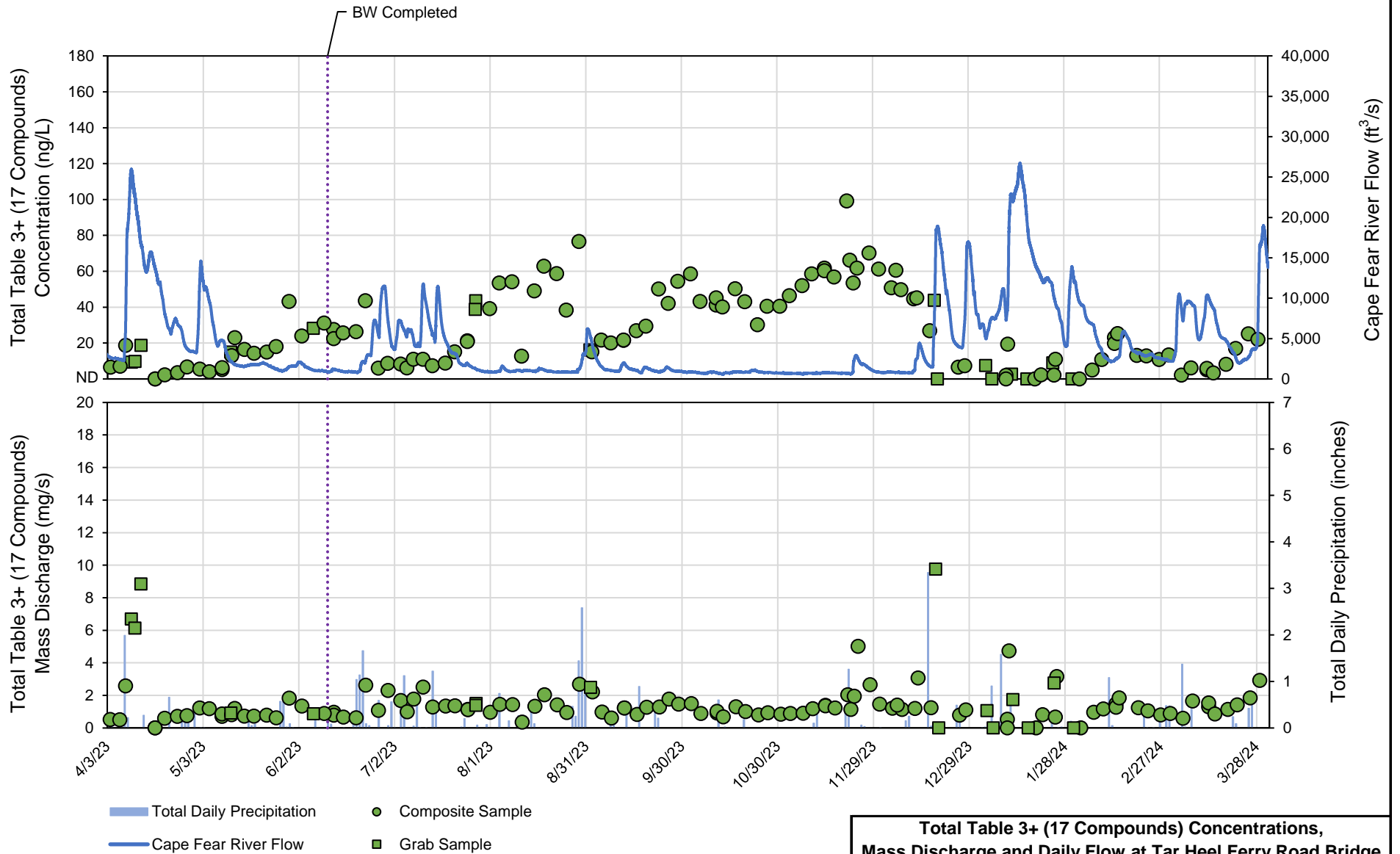


■ Total Daily Precipitation ● Composite Sample
— Cape Fear River Flow ■ Grab Sample

Notes:
 - A concentration of 0 ng/L and mass discharge of 0 mg/s indicate that all the compounds were not detected above the reporting limit.
 - Flow and precipitation data are from the USGS gauging station #02105500 located at the W.O. Huske Dam.
 - PFAS concentrations calculated by summing over Attachment C compounds and Table 3+ (21 compounds) are provided in Appendix B.

Abbreviations:
 BW - Barrier Wall mg/s - milligrams per second
 ft³/s - cubic feet per second ng/L - nanograms per liter
 FTC - Flow-through cell SWTS - Stormwater treatment system
 GWEC - Groundwater extraction and conveyance system

Total Table 3+ (17 Compounds) Concentrations, Mass Discharge 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	June 2024
Figure 6	




Notes:

- A concentration of 0 ng/L and mass discharge of 0 mg/s indicate that all the compounds were not detected above the reporting limit.
- PFAS concentrations calculated by summing over Attachment C compounds and Table 3+ (21 compounds) are provided in Appendix B.
- Flow and precipitation data are from the USGS gauging station #02105500 located at the W.O. Huske Dam.

Abbreviations:

- BW - Barrier Wall
- ft³/s - cubic feet per second
- GWEC - Groundwater extraction and conveyance system
- mg/s - milligrams per second
- ND - not detected above the detection limit
- ng/L - nanograms per liter

Total Table 3+ (17 Compounds) Concentrations, Mass Discharge and Daily Flow at Tar Heel Ferry Road Bridge (Previous 12 Months) Chemours Fayetteville Works, North Carolina		Figure 7
 Geosyntec Consultants of NC, P.C. NC License No.: C 3500 and C 295		
Raleigh	June 2024	