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

CORRECTIVE ACTION PLAN

Chemours Fayetteville Works

Prepared for

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

Prepared by

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

Geosyntec Project Number TR0795

December 2019

TABLE OF CONTENTS

EXECUTIVE SUMMARY xi

1 INTRODUCTION ... 1

2 SITE HISTORY AND DESCRIPTION ... 3
2.1 Site Location, Acreage, and Ownership ... 3
2.2 Site Description ... 3
2.3 Adjacent Property, Zoning, and Surrounding Land Uses ... 3
2.4 Adjacent Surface Water Bodies and Classifications ... 3
2.5 Permitted Activities and Permitted Wastes ... 4
2.6 Prior Site Investigations and Regulatory History ... 5

3 CONCEPTUAL SITE MODEL ... 10
3.1 Geology and Hydrogeology ... 10
3.2 Table 3+ PFAS ... 12
3.2.1 Summary of Fate and Transport Study ... 13
3.2.2 Measured K_{ow} and Calculated K_{oc} for Table 3+ Compounds ... 14
3.3 Site Related PFAS Sources ... 16
3.3.1 Emissions to Air ... 18
3.3.2 Releases of Process Water and Wastewater to Soil and Groundwater ... 18
3.3.3 Releases of Process Water to Surface Water ... 19
3.3.4 Secondary Sources ... 19
3.4 Monitoring Well Redevelopment and Resampling ... 20
3.5 Southwestern Offsite Seeps ... 21
3.6 PFAS Signatures and Distribution ... 22
3.6.1 Aerially Deposited PFAS Signature and Distribution ... 22
3.6.2 Combined Process Water PFAS Signature and Distribution ... 23
3.6.3 Comparison of Aerial vs. Process Water Signatures ... 23
3.7 Table 3+ PFAS Mass Distribution ... 25
3.8 Table 3+ PFAS Contaminant Retardation ... 27
3.9 Actions and PFAS Reductions to Date ... 29
3.10 Present PFAS Mass Loading to the Cape Fear River ... 30

4 RECEPTOR INFORMATION ... 34
4.1 Receptor Survey Results ... 34
4.1.1 Wells and Wellhead Protection Areas ... 34

4.1.2 Surface Water Receptors ... 35
4.1.3 Mitigation Measures/Point of Use Treatment ... 35
4.2 Human Health SLEA ... 35
4.2.1 Receptors and Exposure Pathways ... 36
4.2.2 Intake Characterization ... 36
4.2.3 Hazard Characterization ... 38
4.2.4 HH-SLEA Results ... 38
4.2.5 HH-SLEA Uncertainties ... 39
4.3 Ecological SLEA ... 40
4.3.1 Receptors and Exposure Pathways ... 41
4.3.2 Exposure Quantification ... 41
4.3.3 Ecological SLEA Results ... 41
4.3.4 Ecological SLEA Uncertainties ... 42

5 NUMERICAL MODEL ... 44
5.1 Study Objectives ... 44
5.2 Selection of Model ... 44
5.3 Model Construction ... 44
5.3.1 Calibration ... 44
5.4 Predictive Simulations ... 45

6 PROPOSED CORRECTIVE ACTIONS ... 48
6.1 Corrective Action Objectives ... 48
6.2 Cleanup Goals and Standards by Media ... 50
6.2.1 Cleanup Goal Factors ... 50
6.2.2 Cleanup Goals by Media / Surface Water Body ... 52
6.2.3 Potential Future Alternate Groundwater Cleanup Standards ... 56
6.2.4 Potential Future Alternate Groundwater Cleanup Standard 15A NCAC 02L .0106 (a) and (i) ... 56
6.2.5 Potential Future Alternate Groundwater Cleanup Standard 15A NCAC 02L .0106 (k) ... 58
6.2.6 Potential Future Risk-Based Remediation ... 60
6.3 Proposed Remedial Alternatives ... 60
6.3.1 Pathway: Direct Aerial Deposition ... 61
6.3.2 Pathway: Old Outfall 002 ... 62
6.3.3 Pathway: Groundwater Seeps ... 64

6.3.4 Pathway: Onsite Black Creek Aquifer Groundwater 70
6.3.5 Pathway: Outfall 002 75
6.3.6 Pathway: Loadings from Willis Creek and Georgia Branch Creek 75
6.3.7 Pathway: Offsite Groundwater... 76
6.4 Proposed Remediation Permits... 76
6.5 Proposed Remediation Schedule 77

7 PERFORMANCE MONITORING 81
7.1 Corrective Action Performance Monitoring 81
7.1.1 Old Outfall 002 Capture and Treatment Performance Monitoring 81
7.1.2 Onsite Groundwater Seeps Interim Actions................................. 82
7.1.3 Onsite Groundwater Seeps Interim Actions................................. 83
7.1.4 Onsite Groundwater Interim Actions 83
7.1.5 Onsite Groundwater Long-Term Remedial Actions 83
7.1.6 Replacement Drinking Water Supplies 84
7.2 Compliance with CO Paragraph 16(d) Performance Monitoring.............. 84
7.2.1 Paragraph 16(d) Baseline Monitoring 85
7.2.2 Paragraph 16(d) Reductions Monitoring...................................... 90
7.3 Onsite and Offsite Groundwater Quality Monitoring............................... 90

8 REFERENCES 91

LIST OF TABLES

Table 1: PFAS Focused Assessment Activities to Date 6
Table 2: Table 3+ Measured Log Kow and Calculated Log Koc Values 15
Table 3: Summary of well redevelopment and resampling 20
Table 4: PFAS Source Types 25
Table 5: Soil Property Values 28
Table 6: Calculated Groundwater PFAS Transport Retardation Factors 29
Table 7: Mass Loading Model Total Table 3+ PFAS including HFPO-DA Contributions per Pathway 33
Table 8: Predictive Model Simulations 45
Table 9: Summary of Remedial Alternatives Evaluation Process 49
Table 10: Cleanup Goals 53
Table 11: PFAS Loading from Seeps 65
Table 12: Schedule for Proposed Seep Actions 78
Table 13: Schedule for Proposed Groundwater Action 79
Table 14: Overall Estimated Reductions Plan Schedule and Reductions to Cape Fear River Total Table 3+ PFAS Loadings 80
Table 15: Baseline and Groundwater Monitoring Locations 86
Table 16: Baseline Monitoring Well Locations 88

LIST OF FIGURES

Figure 1: Primary PFAS Sources – Historical and Presently Controlled 17
Figure 2: PFAS Signatures by Primary Source 24
Figure 3: Total PFAS Mass Distribution in a Normalized Volume of the Saturated and Unsaturated Zones 27
Figure 4: Schematic Conceptual Site Model of the Site Including Geological Layers, and PFAS Transport Pathways 32
Figure 5. Old Outfall 002 Treatment System Process Flow Diagram 63
Figure 6: Location of Seep Remedial Alternatives 66
Figure 7: Conceptual Diagram of Seep Flow Through Passive Treatment 68
Figure 8: Conceptual Diagram of Seep French Drain Ex Situ Capture 69
Figure 9: Area with Process Water PFAS Signature and Barrier Wall Conceptual Diagram 73
Figure 10: Baseline Monitoring Well Locations 89

LIST OF APPENDICES

Appendix A: On and Offsite Assessment Tables
Appendix B: Additional Corrective Action Plan Tables and Figures
Appendix C: K_{ow}, K_{oc} and Mass Distribution Calculations
Appendix D: Southwestern Offsite Seeps Assessment
Appendix E: PFAS Signatures Assessment
Appendix F: Offsite Human Health Screening Level Exposure Assessment (SLEA) of Table 3+ PFAS
Appendix G: Ecological Screening Level Exposure Assessment of Table 3+ PFAS
Appendix H: Numerical Groundwater Modeling Report
Appendix I: Detailed Costs

LIST OF ABBREVIATIONS

%	percent
3D	three-dimensional
µg/s	micrograms per second
CAP	Corrective Action Plan
CO	Consent Order
CFPUA	Cape Fear Public Utility Authority
CFRW	Cape Fear River Watch
CSM	Conceptual Site Model
DFSA	Difluoro-sulfo-acetic acid
DWR	Division of Water Resources
E&SC	Erosion and Sediment Control
EAA	Engineering Alternatives Analysis
Ecological SLEA	Ecological Screening Level Exposure Assessment
EU	exposure unit
EVE-acid	perfluoroethoxypropionic acid
EVS	Earth Volumetric Studio
FEFLOW	Finite Element subsurface FLOW system
ft	feet
ft bgs	feet below ground surface
f_{oc}	fraction organic carbon
GAC	granular activated carbon
gabions	large wire basket like devices to hold media
gpm	gallons per minute
HDPE	high-density polyethylene
HFPO-DA	hexafluoropropylene oxide dimer acid
HH-SLEA	Human Health Screening Level Exposure Assessment
HQ	hazard quotient
Hydro-EVE acid	perfluoroethoxsypropanoic acid
K_d	soil-water partition coefficient
K_{OC}	organic carbon-water partition coefficient
K_{OW}	octanol-water partition coefficient
L/Kg	liter per kilogram
lbs/yr	pounds per year
MGD	millions of gallons per day
mg/kg-day	milligram per kilogram per day
MMF	Difluoromalonic acid
MTP	Perfluoro-2-methoxypropanoic acid
NCCW	non-contact cooling water
NCDEQ	North Carolina Department of Environmental Quality
NCDHHS	North Carolina Department of Health and Human Services
NC DWR	North Carolina Division of Water Resources
NPDES	National Pollutant Discharge Elimination System

LIST OF ABBREVIATIONS (CONTINUED)

NPV	net present value
NRMS	Normalized Root Mean Square
ng/L	nanogram per liter
NVHOS	perfluoroethoxysulfonic acid
NWP	Nationwide Permit
OOF2	Old Outfall 002
PEPA	perfluoroethoxypropyl carboxylic acid
PES	perfluoroethoxyethanesulfonic acid
PFAS	per- and polyfluoroalkyl substances
PFBS	Potassium perfluoro-1-butanesulfonate
PFECA B	perfluoro-3,6-dioxaheptanoic acid
PFECA-G	perfluoro-4-isopropoxybutanoic acid
PFESA-BP1	Byproduct 1
PFESA-BP2	Byproduct 2
PFMOAA	perfluoro-1-methoxyacetic acid
PFOA	Perfluoro-n-octanoic acid
PFOS	Sodium perfluoro-1-octanesulfonate
PFO2HxA	perfluoro(3,5-dioxahexanoic) acid
PFO3OA	perfluoro(3,5,7-trioxaoctanoic) acid
PFO4DA	perfluoro(3,5,7,9-tetraoxadecanoic) acid
PFO5DA	perfluoro-3,5,7,9,11-pentaoxadodecanoic acid
PMPA	perfluoromethoxypropyl carboxylic acid
PPA	polymer processing acid
PQL	practical quantitation limit
PVF	polyvinyl fluoride
RCRA	Resource Conservation and Recovery Act
RfDo	reference dose
RFI	RCRA Facility Investigation
RL	reporting limit
SLEA	Screening Level Exposure Assessment
SWPPP	Stormwater Pollution Prevention Plan
TDI	total daily intake
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WWTP	wastewater treatment plant

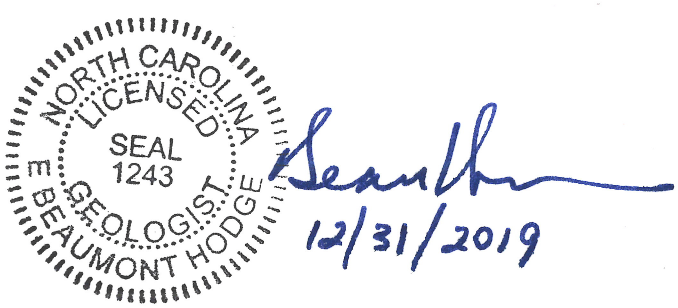
PROFESSIONAL SIGNATURES AND SEALS

Licensed Geologist

Name	NC Geologist License number	Expiration date
Beau Hodge	1243	6/30/2020
Telephone number	**FAX number**	**E-mail**
(919) 424-1828		BHodge@Geosyntec.com

DOCUMENT: **CORRECTIVE ACTION PLAN**
CHEMOURS FAYETTEVILLE WORKS

Seals, as applicable:



PROFESSIONAL SIGNATURES AND SEALS

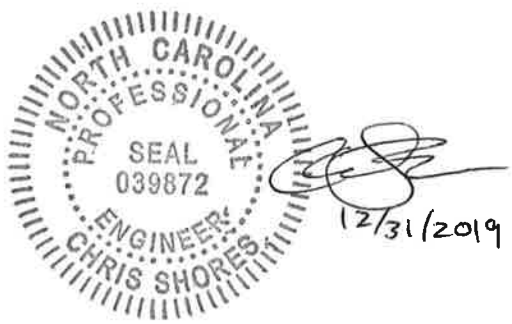
Professional Engineer

Name	NC Engineer License number	Expiration date
Christopher Shores	039872	12/31/2020
Telephone number	**FAX number**	**E-mail**
(919) 424-1836		CShores@Geosyntec.com

DOCUMENT:

CORRECTIVE ACTION PLAN
CHEMOURS FAYETTEVILLE WORKS

Seals, as applicable:



EXECUTIVE SUMMARY

This Corrective Action Plan (CAP), prepared by Geosyntec Consultants of NC, P.C. (Geosyntec) for The Chemours Company FC, LLC (Chemours), describes proposed remediation activities to address per- and polyfluoroalkyl substances (PFAS) in groundwater and surface waters at the Chemours Fayetteville Works Site (the Site). This CAP was prepared following North Carolina 2L Rules and Paragraph 16 of the executed Consent Order (CO) among Chemours, the North Carolina Department of Environmental Quality (NCDEQ), and Cape Fear River Watch (CFRW). The corrective actions proposed in this CAP were developed to comply with CO requirements and North Carolina 2L rules and to be protective of human health and the environment.

As summarized below and detailed in the body of the CAP, measures already taken by Chemours have addressed and abated almost entirely discharges of PFAS from Chemours's continuing operations at the Site. The remaining areas of PFAS contamination at the Site and associated discharges are almost entirely the legacy of pre-Chemours operations.

PFAS are an emerging class of contaminants; therefore, the understanding of fate and transport of this contaminant class as well as remedial technologies continue to advance and evolve. As such, remedial processes presented herein are intended to be flexible and adaptive so that new understandings, discoveries and technologies can be incorporated in the future. Further, promulgated toxicity criteria for PFAS are limited. However, based on a provisional hazard characterization predicated on exposure to hexafluoropropylene dimer acid (HFPO-DA), no significant human health hazards or negative impacts to ecological receptors were identified based on the projected concentrations to which relevant receptor populations are assumed to be exposed. Nonetheless, the CAP proposes a robust set of remedial actions that will further reduce offsite PFAS loadings, and thus potential exposure, from the Site.

Since 2017, numerous investigations and assessments focused on PFAS have been completed and reported on. These assessments have characterized the facility, surrounding topography, geology and surface water. These assessments served to identify target media for remediation to address CO requirements.

The Site is an active manufacturing facility and is located approximately 20 miles southeast of the city of Fayetteville along the Bladen-Cumberland county line in North Carolina. The Site is bounded by NC Highway 87 to the west, the Cape Fear River to the east, and on the north and south by forested areas, farmland and private residences. The Site has been active since the 1970s. The manufacturing facilities at the Site sit atop a plateau which leads to a bluff with a 100-foot elevation change to a floodplain area and the Cape Fear River. The Cape Fear River is a water source for a number of communities downstream of the Site. Raw water intakes are located at Bladen Bluffs and Kings Bluff Intake Canals, located approximately 5 miles and 55 miles downstream from the Site, respectively.

Historically there have been three release routes of PFAS from the Site to the environment:

1) emissions to air
2) releases of process water to subsurface soil and groundwater; and
3) releases of process wastewater to surface water (Cape Fear River) via the onsite Wastewater Treatment Plant (WWTP).

These release pathways are now being controlled by Chemours for its operations at the Site, but the releases have resulted in secondary sources of PFAS in the environment to groundwater and surface water receptors. This CAP describes actions to address these secondary, and primarily legacy, sources.

The PFAS that originate from the Site are referred to as Table 3+ PFAS. The Table 3+ analytical method was developed to analyze PFAS specific to the Site that were identified through non-targeted chemical analyses. Currently the Table 3+ method can quantitate for 20 PFAS compounds including HFPO-DA, i.e. "GenX". When examining PFAS at the Site, the sum of these compounds, i.e. total Table 3+ PFAS compounds, is often used to evaluate concentration trends and distributions.

The Table 3+ PFAS compounds are found onsite and offsite. The highest Table 3+ PFAS concentrations (by two to three orders of magnitude - i.e. 100 to 1000 times higher) are found onsite. Onsite the PFAS in many of the wells and surface water drainage features have a PFAS signature indicating the PFAS in these wells or surface water features originated from historical direct releases of process water. Onsite the process water signature is found over an area of approximately one square mile. Offsite Table 3+ PFAS in groundwater have an aerial deposition signature and a much lower and diffuse concentration of PFAS over a much larger area (70+ square miles) than the onsite process water signature. The Cape Fear River as it flows past the Site gains a process water PFAS signature indicating that transport pathways comprised of process water signature PFAS loading dominate the mass loading in the Cape Fear River.

Table 3+ PFAS mass loading to the Cape Fear River has been evaluated by measuring flow and Table 3+ PFAS concentrations in the Cape Fear River and the nine transport pathways that contribute Table 3+ PFAS mass loading to the Cape Fear River. The loading per pathway has been estimated using a Mass Loading Model which has been calibrated and evaluated against observed downstream river PFAS concentrations. Based on mass loading model results, the three pathways presently contributing the most Table

3+ PFAS mass to the Cape Fear River are the onsite groundwater seeps, the Old Outfall 002 and onsite groundwater.

Mass Loading Model Total Table 3+ PFAS including HFPO-DA Contributions per Pathway

Transport Pathway	Total Table 3+ Estimated Loading Percentage per Pathway per Event		
	May 2019 Event	June 2019 Event	Sept. 2019 Event
[1] Upstream River Water and Groundwater	4%	15%	8%
[2] Willis Creek	10%	4%	3%
[3] Aerial Deposition on the River	< 2%	< 2%	< 2%
[4] Outfall 002	4%	7%	4%
[5] Onsite Groundwater	22%	17%	14%
[6] Onsite Groundwater Seeps (Seeps A, B, C, D)	32%	24%	42%
[7] Old Outfall 002	23%	29%	27%
[8] Offsite Adjacent and Downstream Groundwater	< 2%	< 2%	< 2%
[9] Georgia Branch Creek	4%	3%	2%

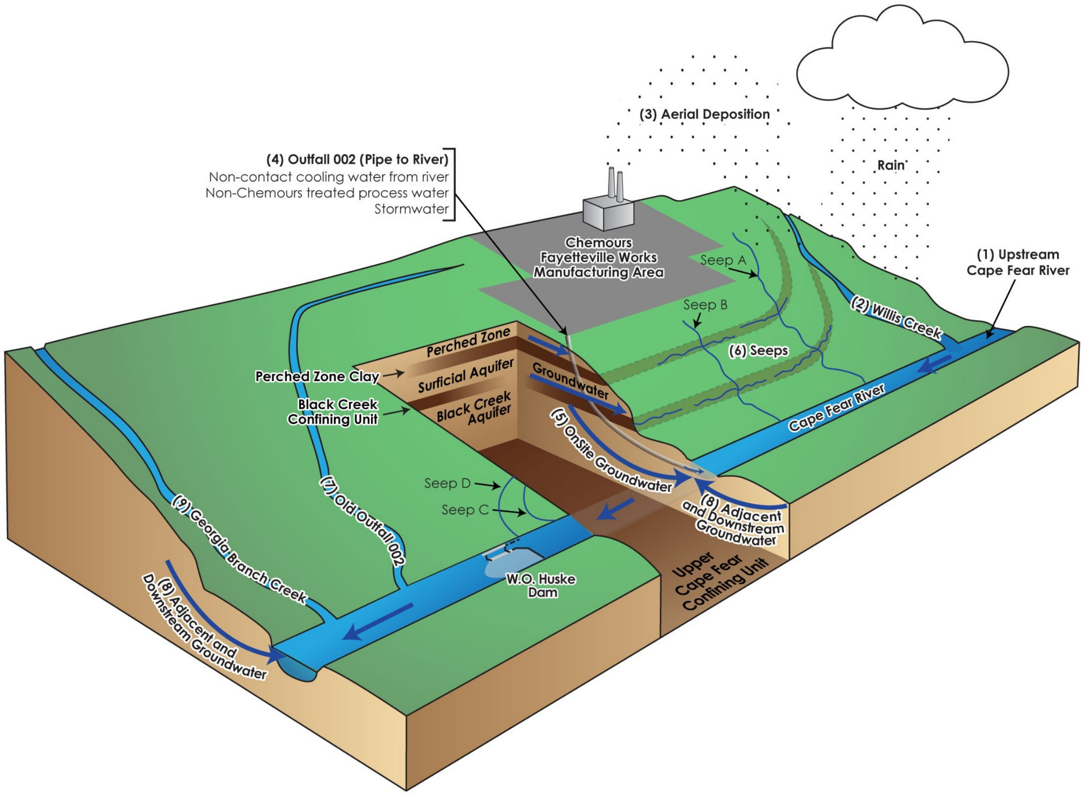


Figure ES1 – Schematic Conceptual Site Model of the Site including geological layers, and PFAS transport pathways

To address PFAS in the environment from past (i.e., legacy) releases, this CAP developed objectives and cleanup goals to guide the evaluation and selection of corrective actions. The CO's remedial and management goals for the Site are:

- Reduce the total loading of PFAS originating from the Site to the Cape Fear River by at least 75 percent (%) from baseline (CO paragraph 16);
- Provide whole building filtration units and reverse osmosis units to qualifying surrounding residents (CO paragraphs 19 and 20);
- Comply with 2L Rules (CO paragraph 16), including following the policy for the intention of the 2L Rules "to maintain and preserve the quality of the groundwaters, prevent and abate pollution and contamination of the water of the

state, protect public health, and permit management of the groundwaters for their best usage by the citizens of North Carolina" (15A NCAC 02L .0103)[1]; and

- Comply with other requirements of the CO.

To support evaluating the need for actions to protect public health and for the actions to reduce exposures, preliminary human health and ecological screening level exposure assessments (HH-SLEA and Ecological SLEA) were completed and are attached to the CAP as Appendices G and H.

The HH-SLEA quantifies exposures of offsite human receptors to released Table 3+ PFAS for several receptor-exposure scenarios and provides a provisional human health hazard characterization for HFPO-DA based on quantified intakes and the North Carolina Department of Health and Human Services (NC DHHS) 2017 draft oral reference dose (RfDo). Calculated hazards for HFPO-DA for all receptor-exposure scenarios evaluated in the HH-SLEA are less than 1 which, as defined by the United States Environmental Protection Agency (USEPA), indicates that adverse effects to human receptors, including sensitive subpopulations, are unlikely. Untreated well water was identified as the primary source of potential PFAS intake and hazard. Furthermore, the HH-SLEA demonstrates that supplying whole building filtration systems and reverse osmosis units for qualifying residents offsite reduces HFPO-DA (and Table 3+ PFAS) intake by over 92%, ensuring human receptor exposures remain below hazard limits for HFPO-DA, based on the NC DHHS draft RfDo. Last, human exposure to PFAS in environmental media will continue to decrease over time as a result of facility air emissions reductions and corrective actions proposed in this CAP. Therefore, based on the HH-SLEA findings, human receptor populations are not being exposed to HFPO-DA above the NC DHHS reference dose by the exposure pathways evaluated. Therefore, the HH-SLEA findings do not necessitate the formation of a cleanup goal.

An Ecological SLEA was also completed to quantify exposure of terrestrial and aquatic ecological receptors to Table 3+ PFAS and evaluate potential hazards related to HFPO-DA. Exposures to Table 3+ PFAS may potentially occur via surface soil, surface water and sediment, along with potential dietary exposures of Table 3+ PFAS that may accumulate in plants, invertebrates and fish. The Ecological SLEA field investigations included collection of onsite and offsite soils, invertebrates and offsite vegetation, and sediment, vegetation, fish and clams from the Cape Fear River for analysis of Table 3+ PFAS. The Ecological SLEA evaluates potential exposure of receptors to Table 3+ PFAS,

[1] The NC DHHS provisional health goal for GenX in drinking water assumes an individual receives 80% of the acceptable dose (i.e., the RfDo) via other sources, such as food. Hence, the provisional health goal was determined such that intake via drinking water does not exceed 20% of the RfDo.

including aquatic life in the Cape Fear River, aquatic dependent wildlife foraging in the Cape Fear River and banks, terrestrial plant and invertebrate communities, and herbivorous, and invertivore wildlife. The Ecological SLEA evaluation indicates there are no adverse effects expected from HFPO-DA exposures. At present, Ecological SLEA findings do not indicate the necessity to develop cleanup goals for HFPO-DA.

Because the results of the HH-SLEA and Ecological SLEA indicate that exposures to HFPO-DA in offsite environmental media do not pose a hazard to human health or the environment, site-specific, risk-based cleanup goals were not developed; rather, cleanup goals are based on CO and 2L rules. The CO requires a minimum of a 75% reduction of total Table 3+ PFAS mass loading originating from the facility to the Cape Fear River. For corrective action under 2L rules when no groundwater standard exists, groundwater must, to the extent technologically and economically feasible, be restored to practical quantitation limits (PQLs) except as otherwise provided in the rules. At present, restoring groundwater to PQLs onsite or offsite is technologically and economically infeasible.

The technical and economic infeasibility to remediate to PQLs is driven by two factors, (a) the area over which the PFAS are detected and (b) the lack of remedial technologies that are effective over large areas and effectively destroy PFAS mass in-situ at a technically achievable and affordable scale. To date, Table 3+ PFAS have been detected over an area of 70+ square miles (over 45,000 acres). The size of the area encompasses thousands of private land parcels and any remedial construction activities using currently available remedial technologies (excavation and groundwater extraction) would be very disruptive to the local community and this disruption would continue for a lengthy period of time. Any remedy which in principle could help make progress towards PQLs over this large area would cost in the billions to tens of billions of dollars. In addition, this hypothetical offsite remedy is unnecessary based on the results of the HH-SLEA and Ecological SLEA; the remedy would result in significant disruption and cost and would result in no meaningful increase in protectiveness. Based on this challenge, in the future NCDEQ and Chemours may need to consider alternate cleanup standards conceived under 15A NCAC 02L .0106 (a) and (i) together and 15A NCAC 02L .0106 (k) individually or risk-based remediation as described by N.C.G.S. § 130A-310.66 et seq.

Therefore, the cleanup goals which drove remedial action evaluation and selection were primarily:

- Achieve a minimum 75% Table 3+ PFAS mass loading reduction to the Cape Fear River;
- For offsite groundwater receptors, provide public water connections or whole building filtration units or reverse osmosis units to qualifying surrounding residents (CO paragraphs 19 and 20);

- For onsite groundwater, mitigate discharge of PFAS with a process water signature to the Cape Fear River and Willis Creek to support achieving the minimum 75% reduction of Table 3+ PFAS mass loading to the Cape Fear River.

Cleanup goals were developed for the Cape Fear River, onsite groundwater seeps, Willis Creek, Georgia Branch Creek and Old Outfall 002 per CO and 2L requirements. These goals are described in the CAP. All these goals support mitigating PFAS loads to the Cape Fear River to help achieve the 75% total Table 3+ PFAS loading reduction to the Cape Fear River.

Based on these goals, and actions proposed in prior CO submittals, a total of nine corrective actions and two interim actions are proposed. The overall schedule for implementation and expected reductions are shown below in Table ES2. These 11 actions include interim and long-term actions that will address at least 95% of the loadings from the onsite groundwater seeps (Seeps A, B, C and D), at least 99% of the loadings from the Old Outfall 002 channel, and significant loading reductions from current Outfall 002.

The CAP also addresses remediation of onsite groundwater and proposes an interim action of extraction of groundwater from existing monitoring wells in the Black Creek Aquifer and treatment prior to discharge. Concurrently, efforts will proceed in developing the detailed design, including collection of extensive pre-design data, for a long-term groundwater containment approach. At this time, the calibrated numerical model indicates the most effective means to mitigate flux of onsite groundwater is the installation of a barrier wall coupled with hydraulic containment of groundwater. The barrier wall component of the remedy would serve to cut off the interface between groundwater and river water and prevent the undesired extraction of river water at the extraction wells.

Extensive investigation, analysis, and numerical model refinement would be required to properly design a remedy of this scale, including but not limited to geotechnical borings, contamination distribution investigations, in-river flux analyses, and pilot testing. It is anticipated that in the course of two years, these activities would allow for model refinement and completion of the design and permitting effort. In the absence of this data, the proposed long-term groundwater remedy is still highly conceptual, and it is not presently possible to conclude with confidence whether this alternative is economically feasible. At the conclusion of the PDI, Chemours will either present a detailed onsite remedial design or a remedial alternative to DEQ for approval based upon achieving at least a 75% Table 3+ PFAS loading reduction and the other CO objectives.

The actions proposed in this Corrective Action Plan will be supported by performance monitoring. Additionally, select onsite and offsite groundwater wells will be monitored at least annually and more frequently for some wells. Last, the CO paragraph 16 requirement for a minimum of a 75% reduction in total Table 3+ PFAS mass loading will be evaluated quarterly. The best available and most representative data will be used to develop the baseline and evaluate reductions performance. These data will include empirically measured flows and concentrations from PFAS transport pathways. These data will include measurements such as flow and concentrations of PFAS in the creeks and in the Cape Fear River in addition to contextual information from groundwater wells including concentrations and groundwater potentiometric surface data. These data will produce direct measurements of PFAS mass loading in multiple pathways and more importantly in the Cape Fear River itself.

Table ES2: Overall Estimated Reductions Plan Schedule and Reductions to Cape Fear River Total Table 3+ PFAS Loadings

Proposed and Provisional Remedial Alternatives	Loading Reduction	Duration (Years)	Year					
			2019	2020	2021	2022	2023	2024
Air Abatement Controls and Thermal Oxidizer[1]	<2%	1	✓					
Conveyance Network Sediment Removal - Outfall 002[2]	NQ[3]	1	✓					
Capture and Treat Old Outfall 002	26%	1						
Terracotta Pipe Replacement - Outfall 002	0.1%	2						
Stormwater Pollution Prevention Plan - Outfall 002	NQ[3]	1						
Groundwater Intrusion Mitigation - Outfall 002	0.7%	2						
Interim Action - CFR Seeps	NQ[3]	2						
Interim Action - Onsite Groundwater	NQ[3]	1						
Targeted Stormwater Control - Outfall 002	1.3%	4						
Ex Situ Capture and Treatment - CFR Seeps[4]	33%	4						
Onsite Groundwater Treatment	18%	5						
Cumulative Estimated Total Table 3+ PFAS River Reductions to River[5]	79%	--	<2%	26%	27%	43%	60%	79%

Notes

- Schedule for multiple alternatives are dependent upon permitting requirements.
- Loading reductions to CFR based on average of May, June, Sep. 2019 data
- Duration listed for implementation

1 - Scheduled implementation is December 31, 2019.
2 - Completed October 2019.
3 - Anticipated reduction from action cannot be quantified at present.
4 - Assumed to be Ex Situ Capture as the permanent remedial alternative for seeps.
5 - Cumulative estimated reductions assumes:
a) that reductions are achieved at the end of the implementation period; and
b) that the time period for contingent actions is not needed.

Legend

Action Complete	✓
Planned Action Implementation Period	
Time Period for Contingent Actions	

1 INTRODUCTION

This Corrective Action Plan (CAP) was prepared by Geosyntec Consultants of NC, P.C. (Geosyntec) for The Chemours Company FC, LLC (Chemours) and describes proposed remediation activities to address per- and polyfluoroalkyl substances (PFAS) in groundwater and surface waters at the Chemours Fayetteville Works Site (the Site). This CAP was prepared following North Carolina 2L Rules and Paragraph 16 of the executed Consent Order (CO) among Chemours, the North Carolina Department of Environmental Quality (NCDEQ), and Cape Fear River Watch (CFRW).

The corrective actions proposed in this CAP have been developed to comply with CO requirements and North Carolina 2L Rules, including being protective of human health and the environment. The corrective actions proposed in this CAP will be refined over time as both remedial technologies and understanding advance. PFAS are an emerging class of contaminant, with the Table 3+ PFAS present at the Site from this facility one of the newer sets of PFAS being examined by the remediation industry. The state of knowledge regarding the fate and transport properties, toxicological characteristics, and potential remedial approaches for PFAS and Table 3+ PFAS are continuing to evolve and advance.

The corrective actions have been developed based on multiple investigations and assessments reported since 2017, including multiple actions taken in 2019. These assessments have characterized the facility, an active manufacturing facility, and the surrounding topography, geology, surface water, and groundwater. These assessments enable preparing this CAP by characterizing the Site, identifying which environmental media to target for remediation to reduce human and ecological exposures to PFAS, meet CO requirements, and adapt to Site access conditions such as active equipment, steeply sloping terrain and periodically inundated flood plains.

This CAP is organized into seven sections as follows:

- **Site History and Description** – describes the setting and use of the Site, permitted activities and wastes, and the assessment and regulatory history;
- **Conceptual Site Model** – describes the geology and hydrogeology of the Site, PFAS detected at the Site, the source of the PFAS and PFAS signatures, the distributions and travel times of PFAS in the subsurface and the present mass loading estimate of PFAS to the Cape Fear River;
- **Receptor Information** – describes receptors surrounding the Site and describes the results of both Human Health and Ecological Screening Level Exposure Assessments (SLEAs);

- **Numerical Model Summary** – describes the numerical model used to evaluate groundwater flow at the Site and support onsite groundwater remedy selection and costing;
- **Proposed Corrective Actions** – corrective action objectives, cleanup goals, potential and proposed remedial alternatives, estimated costs, schedules and permitting needs;
- **Performance Monitoring** – describes a baseline monitoring program, remedy performance monitoring, and Cape Fear River PFAS mass loading reductions monitoring;
- **References** – lists documents referenced in this CAP.

Many of the figures and tables referred to in this CAP are from the On and Offsite Assessment report (Geosyntec, 2019a) and herein are referred to by their original number, but with the prefix A, for instance Figure 1-1 becomes Figure A1-1. Tables and figures from the On and Offsite Assessment are provided in Appendix A.

Figures and many tables are embedded for ease of reading, and are ordered sequentially in order of first appearances, i.e. Figure 1, Figure 2, etc. Additional, supporting detail tables are provided in Appendix B and referred to sequentially in order of first mention.

2 SITE HISTORY AND DESCRIPTION

This section provides a brief description of the site location, history of property ownership and use, surrounding land use and adjacent surface water bodies, permitted site activities, assessment and regulatory history. The On and Offsite Assessment Report (Geosyntec 2019a) provides additional details.

2.1 Site Location, Acreage, and Ownership

The Site is located within a 2,177-acre property at 22828 NC Highway 87, approximately 20 miles southeast of the city of Fayetteville along the Bladen-Cumberland county line in North Carolina. Figure A2-1 presents an overview of the Site location. Figure A2-2 presents a regional topographic map and Figure A2-3 presents a higher resolution topographic map of the Site.

The Site property was originally purchased by E.I. du Pont de Nemours and Company (DuPont) in 1970 for production of nylon strapping and elastomeric tape. DuPont sold its Butacite® and SentryGlas® manufacturing units to Kuraray America Inc. (Kuraray) in June 2014 and subsequently spun off its specialty chemicals business to Chemours in July 2015. Chemours and its two tenants, Kuraray and DuPont, currently operate manufacturing areas on the Site, described below.

2.2 Site Description

Presently, the manufacturing area of the Site consists of five production areas (Figure A2-1): Chemours Monomers IXM; Chemours Polymer Processing Aid (PPA) Area; Kuraray Trosifol® Leased Area; Kuraray SentryGlas® Leased Area; and DuPont polyvinyl fluoride (PVF) Leased Area. Chemours also operates the wastewater treatment plant (WWTP) and Power Area at the Site; filtered water and demineralized water are produced in the Power Area. The manufacturing area is approximately 312 acres, as shown in Figure A2-1, the remaining areas are grassy areas, forests and wetlands.

2.3 Adjacent Property, Zoning, and Surrounding Land Uses

The Site is bounded by NC Highway 87 to the west, Cape Fear River to the east, and on the north and south by forested areas, farmland and private residences. Cumberland and Bladen County zoning maps indicate that the surrounding areas are zoned as residential, agricultural, conservation, industrial or commercial.

2.4 Adjacent Surface Water Bodies and Classifications

To the east of the Site is the Cape Fear River. The Cape Fear River and its entire watershed are located in the state of North Carolina (Figure A2-4). The Cape Fear River drains 9,164 square miles and empties into the Atlantic Ocean near the City of Wilmington, North

Carolina. The Site draws water from the Cape Fear River and returns over 95% of this water via Outfall 002 after being used primarily as non-contact cooling water. Two lock and dam systems with United States Geological Survey (USGS) stream gauges are located downstream of the Site: (1) W.O. Huske Lock and Dam, located 0.5 river miles from the Site (USGS 02105500); and (2) Cape Fear Lock and Dam #1, located 55 river miles downstream (USGS 02105769).

The Cape Fear River is a water source for communities downstream of the Site. Raw water intakes are located at Bladen Bluffs and Kings Bluff Intake Canals, located approximately 5 miles and 55 miles downstream from the Site, respectively. These intakes serve as Cape Fear River water intakes for the Lower Cape Fear Water and Sewer Authority, which in turn provides water to Cape Fear Public Utility Authority (CFPUA) and other water providers. Drinking water sourced from the Cape Fear River contains certain chemicals from multiple sources including:

- 1,4-dioxane from industrial activities not related to Chemours;
- trihalomethanes associated with bromide content from other industrial and agricultural sources (NC DWR, 2017) in raw river water,
- pharmaceuticals, personal care products, and endocrine disrupting chemicals primarily from treated municipal waste waters,
- and PFAS from the Site and other sources.

A brief description of these chemicals and their presence in the Cape Fear River was reported previously (Geosyntec, 2018a).

Two tributaries to the Cape Fear River, located to the north and south of the Site, are described in the Seeps and Creeks Investigation Report (Geosyntec, 2019b). To the north of the property is Willis Creek. During the Seeps and Creeks Investigation, Willis Creek was observed to have a flow rate of approximately 2,900 gallons per minute (gpm) in dry weather and 6,500 gpm following significant rainfall. Willis Creek reaches from Highway 87 to the Cape Fear River. To the south of the property is Georgia Branch Creek, which is offsite for its entire course. During the Seeps and Creeks Investigation, Georgia Branch Creek was observed to have flow rates ranging from 2,400 to 2,600 gpm in both wet and dry weather. Georgia Branch Creek runs northwest-southeast beside Highway 87 before turning east towards the Cape Fear River to the south of the Site. These creeks are shown in Figure A2-1.

2.5 Permitted Activities and Permitted Wastes

The Site received its initial Resource Conservation and Recovery Act (RCRA) Permit (NCD047368642) to operate a hazardous waste container storage area and tanks in February 1983, while under DuPont ownership. DuPont submitted an amended Part A application in 1991 to document upgrades to its fluorocarbon waste treatment and tank system. The RCRA Part B permit application submitted in August 1993 identified 71,750 gallons of container storage capacity at the container storage area. Stored waste included characteristic wastes (D001, D002, D003, D007, D009, and D029) and listed wastes (F002, F003, and F005). The Site's RCRA Permit was re-issued in January 1998 and September 2012.

The National Pollutant Discharge Elimination System (NPDES) permit for the Site (NC0003573) includes operations of Site tenants Kuraray and DuPont. There are permit limits for internal Outfall 001, after biological wastewater treatment, that includes the Kuraray and DuPont manufacturing processes, demineralized water neutralized regenerate, sanitary wastewater, and process area stormwater. Effluent limits for Outfall 002, the Site's discharge to the Cape Fear River, include the treated flow from Outfall 001, non-contact cooling water, cooling water discharge from thermal oxidizer cooling tower, stormwater, and boiler condensate blowdown.

In June 2017, Chemours began capturing certain process water from the Monomers IXM area for offsite disposal. Since November 2017, as directed by NCDEQ, all process wastewaters from Chemours's operation have been captured and transported for offsite disposal.

Chemours recently submitted a NPDES permit renewal application for the Site, which contemplates numerous actions, including: (i) continued shipping of Chemours process wastewater from the Monomers IXM and PPA areas offsite, (ii) the intent to build a treatment facility to treat captured baseflow originating from Old Outfall 002, and (iii) a thermal oxidizer with water discharges where no additional PFAS outside of those PFAS present in the river water intake are expected to be present. The recent permit application includes descriptions of recent extensive sampling at the Site for hexafluoropropylene oxide dimer acid (HFPO-DA) and perfluoro-1-methoxyacetic acid (PFMOAA), as well as a number of other PFAS.

On March 14, 2019, Chemours received a Title V Air Quality Permit No. 03735T44 from NCDEQ to construct and operate the emissions sources and associated air pollution control devices(s). This permit authorized Chemours to continue manufacturing operations and install a thermal oxidizer which, along with other air abatement measures, will dramatically reduce aerial PFAS emissions from the Site, with reduction of aerial HFPO-DA emissions by 99% starting in January 2020 compared to 2017 baseline, and expected comparable reductions for other PFAS.

2.6 Prior Site Investigations and Regulatory History

Since 1996, several stages of RCRA Facility Assessments and Investigations have been conducted and are detailed in the RCRA Facility Investigation (Parsons, 2014). The

RCRA Facility Investigation (RFI) process was performed for Site COCs identified in the 2014 RFI including multiple VOCs, metals, other inorganic compounds and perfluorooctanoic acid (PFOA). The RFI process did not include the Site Associated PFAS that are now analyzed by the Table 3+ SOP method; these compounds are listed in Table 2-1. The outcome of the RFI process was the *Corrective Measures Study Work Plan* submitted to NCDEQ on December 2, 2016 (Parsons, 2016). On February 8, 2017, NCDEQ approved Chemours Work Plan for preparing the Final Corrective Measures Study. On July 7, 2017, Chemours requested a delay in the completion of the Corrective Measures Study. The delay was requested as Chemours began voluntary additional sampling and characterization in response to state requests regarding identification and detection of additional PFAS present at the Site.

Since identifying the presence of the PFAS associated with the Site, Chemours has performed multiple investigations and assessments and is continuing to perform assessments that support corrective action for PFAS at the Site. On October 31, 2019, Chemours submitted an updated version of the On and Offsite Assessment report (Geosyntec, 2019a). The tables and figures from this report are attached to the CAP as Appendix A; references to these tables in the text of this CAP report are referred to by the prefix "A" before the table or figure number. The table below list assessments conducted and the second table lists assessments in-progress and planned. Many of these assessment have been required under the CO.

Table 1: PFAS Focused Assessment Activities to Date

Assessment	**Reference**
2018 Cape Fear River Sampling	Geosyntec, 2018a
2018 Stormwater Characterization	Geosyntec, 2018b
2019 On and Offsite Assessment	Geosyntec, 2019a
2019 Seeps and Creeks Investigation	Geosyntec, 2019b
2019 Fate and Transport Study	Geosyntec, 2019c
2019 Mass Loading Reductions Plan	Geosyntec, 2019d
2019 Outfall 002 Assessment	Geosyntec, 2019e
2019 Terracotta Pipe Section Grouting	Geosyntec, 2019f
2019 Mass Loading Model	Geosyntec, 2019g
2018 Post Florence Characterization	Geosyntec, 2019i
2019 Conveyance Network Sampling	Geosyntec, 2019j and 2019k

Assessment	**Reference**
2017 Groundwater Investigation	Parsons, 2017a
2017 Soil Investigation	Parsons, 2017b
2017 Surface Water Investigation	Parsons, 2017c
2018 Terracotta Pipe Investigation	Parsons, 2018a
2018 Additional Investigation	Parsons, 2018b
2018 VE South Sampling	Parsons, 2018c
2018 Old Outfall 002 Sampling	Parsons, 2018d
2018 Exclusion Zone Investigation	Parsons, 2018e
2018 Southeast Perched Zone Investigation	Parsons, 2018f
2018 - 2019 Private Well GAC Pilot	Parsons, 2018g
On-going Private Well Sampling	Parsons, 2019a
2019 PlumeStop™ Pilot Study	Parsons, 2019c
2019 Old Outfall 002 GAC Pilot Study	Parsons, 2019d
2019 Old Outfall Sampling Results	Parsons, 2019e

Ongoing PFAS Assessment and Planned Activities

Activity	Description and Status
Offsite Wells	Continued assessment of offsite soil and groundwater in addition to private well data; 20 wells installed. Wells have been redeveloped and resampled.
Private Well Delineation	By August 26, 2020 Chemours is required by CO Paragraph 21 to delineate the extent of private wells offsite with any PFAS on Attachment C of the CO present above 10 nanograms per liter (ng/L) within a quarter mile of other wells with similar detections.
Human Health Screening Level Exposure Assessment	Assessment of human receptor exposures to historically deposited PFAS from the Site. All samples collected and data generated are reported in conjunction with this CAP.
Ecological Screening Level Exposure Assessment	Assessment of ecological exposures to PFAS originating from the Site. Sampling was performed in part with the Human Heath SLEA sampling with dedicated Ecological SLEA sampling and are reported in conjunction with this CAP.
Empirical Laboratory Study	Assessment of Table 3+ PFAS empirical fate and transport characteristics. Portions of the study have begun. Components of assessment are reported in this CAP. The full set of data will be reported in 2020.
Onsite Characterization	Assessment of onsite groundwater levels and concentrations; in 2019, 42 wells installed. Data collected from new wells are reported in the On and Offsite Assessment Report (Geosyntec, 2019a) with redeveloped and resampled well data reported in this CAP.
Sediment Characterization	Chemours submitted the Sediment Characterization plan to NCDEQ on August 21, 2019 and received comments from DEQ dated November 20, 2019.
Quarterly Mass Loading Sampling	Assessment to evaluate mass loading to the Cape Fear River. Sampling and flow gauging performed quarterly in seeps, creeks, the Old Outfall 002,

Activity	Description and Status
	Outfall 002 and groundwater adjacent to surface water.
Numerical Groundwater Model	Quantitative assessment of groundwater at the Site to assess flow to surface water features and assess performance of potential remedies. Results of the numerical modeling are reported as part of this CAP.
Bimonthly PFAS Characterization Sampling	Bimonthly assessment of PFAS concentrations in the Site conveyance network. Data and interpretations are reported quarterly.

3 CONCEPTUAL SITE MODEL

This section describes multiple aspects of the Site including geology, hydrogeology, Table 3+ PFAS, PFAS signatures, distributions, travel times, mass loadings to the Cape Fear River and PFAS reduction actions Chemours has taken to date.

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

3.1 Geology and Hydrogeology

The geology at the Site consists of sands and clays. The geology and land use at the Site have influenced the hydrogeology of the Site. The geology of the Site is depicted in a series of cross sections identified in Figure A10-1 and presented in Figures A10-2 through A10-6. The list below describes geological features at Site from surface downward:

- Perched Zone. The Perched Zone is a relatively thin, spatially limited layer of groundwater present in silty sands to a depth of about 20 feet below ground surface (ft bgs) (Figures A10-2 to A10-6). Groundwater in the Perched Zone is recharged through precipitation onsite, and in the past, has received enhanced infiltration through unlined ditches and sedimentation ponds – the sedimentation ponds and the cooling water channel in the Monomers IXM Area have since been lined. Groundwater flows radially away from groundwater mounds in the Perched Zone. This leads to groundwater discharge to the east at seeps on the edge of the bluff, to the south toward the Old Outfall 002 and to the north and to the west downwards through the geological sequence towards the Surficial and Black Creek Aquifers. Based on groundwater extraction rates from the Perched Zone wells MW-24, NAF-03 and NAF-12, the Perched Zone does not produce sufficient or sustainable groundwater yields to be considered an aquifer.
- Perched Clay Unit. The Perched Clay Unit gives rise to the Perched Zone as it presents a barrier to direct downward groundwater infiltration. The Perched Clay is spatially limited at the Site. To the north it pinches out. To the east and south, it outcrops along the bluff face. To the west, it terminates and becomes absent (Figure A10-6). In cross sections through

the Site and observations of grainsizes and lithologic contact elevations from the boring logs, there suggest an erosional feature in the western portion of the geology underlying the manufacturing areas. This erosional surface, described later in this list, is interpreted to have eroded the Perched Clay Unit enabling downward migration of groundwater off the western edge of the Perched Zone.

- Surficial Aquifer. The Surficial Aquifer is an unconfined silty sand aquifer lying atop the Black Creek Confining Unit and is present beneath the Perched Clay Unit. Groundwater in the Surficial Aquifer flows towards the bluff faces at the Site – It flows both north, east and west toward surface water bodies (Willis Creek, Seeps, Old Outfall 002) and discharges into them as seeps. The Surficial Aquifer is interpreted to be in contact with the Black Creek Aquifer in places due to an erosional feature. This feature is labeled on the cross sections and is interpreted to have enabled downward cross formational groundwater flow. Based on North Carolina groundwater classifications (15A NCAC 02L .0201), the Surficial Aquifer is presently classified as a GA groundwater.

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

- Flood Plain Deposits. Surface soils in the flood plain immediately adjacent to the Cape Fear River are comprised of finer grained, likely more recently deposited sediments during river flood stages. These deposits have lower hydraulic conductivity than the Surficial and Black Creek Aquifers. The seeps at the Site cut into Floodplain Deposits as they flow towards the Cape Fear River.

- Black Creek Aquifer. The Black Creek Aquifer is comprised of fine to medium grained sands. The Black Creek Aquifer is in contact with the Surficial Aquifer under the western portion of the manufacturing area at the Site and then is separated from the Surficial Aquifer under most of the manufacturing area by the Black Creek confining unit. The Black Creek

Aquifer directly adjacent to the Cape Fear River is overlain by Flood Plain Deposits and the Black Creek Confining Unit. The Black Creek Aquifer is interpreted to be the only transmissive groundwater zone at Site in direct contact with the Cape Fear River. Groundwater in the Black Creek Aquifer flows from west to east towards the Cape Fear River. Based on North Carolina groundwater classifications (15A NCAC 02L .0201), the Black Creek Aquifer is presently classified as a GA groundwater.

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

- Erosional Feature. A paleo-era process appears to have eroded the Perched Clay Unit, portions of the Surficial Aquifer and the Black Creek Confining Unit in the geological sequence under the western portion of the manufacturing area. This erosional feature potentially enables cross formational flow of groundwater from the Perched Zone, through the Surficial Aquifer and into the Black Creek Aquifer. This feature is a likely controlling factor of the distribution of PFAS observed in the Surficial and Black Creek Aquifers at Site. At present there is no direct evidence to confirm this erosional feature does not cut through the Upper Cape Fear Confining Unit.

3.2 Table 3+ PFAS

This section provides a description of the physical and chemical properties of Table 3+ PFAS found at the Site. Pursuant to CO Paragraph 27, Chemours funded a study analyzing the fate and transport characteristics of identified PFAS compounds originating from the Site in air, surface water, and groundwater (Geosyntec, 2019c). This section summarizes the findings of this study and provides descriptions of empirical fate and transport measurements completed to date on Table 3+ PFAS, including values for the octanol-water partition coefficient (K_{ow}), organic carbon-water partition coefficient (K_{oc})

and surface tension of water containing Table 3+ PFAS. These fate and transport parameters enable a more quantitative estimate of transport times in groundwater and estimates of the partitioning between soil and groundwater these PFAS undergo (i.e. where is most of the mass located, sorbed to soils or dissolved in groundwater).

3.2.1 Summary of Fate and Transport Study

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

Most Site associated PFAS, i.e. Table 3+ PFAS, are fluoroethers: their structure includes two carbons connected by an oxygen atom to form an ether bond. PFAS with ether bonds are expected to be less volatile and more soluble in water than non-ether PFAS of equivalent chain length due to the polar oxygen atoms included in their structures. Table 3+ PFAS contain at least one polar head group and many contain additional polar head groups. The structural information for the Table 3+ PFAS is provided in Table A4-1. Also, more PFAS originating from the facility may be identified as part of the non-targeted analytical assessment being performed pursuant to paragraph 11(a) of the CO.

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

The tails of PFAS are made primarily of carbon atoms. They tend to be nonpolar and sorb to organic carbon species in soil and sediment (Higgins and Luthy 2006, Guelfo and Higgins, 2013). Because PFAS tails are also lipophobic, sorption to organic carbon tends to be weaker than that of alkanes. The sorption and retardation of PFAS will increase with increasing fluorinated tail length. For a given soil, sediment, or organic carbon type, the structure of the PFAS tail affects its interactions with organic carbon molecules. Branched isomers tend to have lower sorption affinity than linear isomers of equal chain length (Kärrman et al., 2011). Sorption of PFAS to charged particle surfaces in common soils and sediments is expected to be negligible relative to sorption to particulate organic carbon (Higgins and Luthy, 2006).

Current literature indicates that transformation of most PFAS in the environment is negligible. An important observed environmental transformation of PFAS has been the hydrolysis of some polyfluorinated precursors to form perfluorinated compounds (Mueller and Yingling, 2018) and the biotic degradation of trifluoroacetate (e.g., Visscher et al., 1994). Recently, researchers identified an *Acidimicrobium* microbial species that appears capable of defluorinating select PFOA and Perfluorooctane Sulfonate (PFOS) (Huang and Jaffe, 2019). Components of the Table 3+ PFAS that may be amenable to transformation reactions that degrade the tails of these compounds are ether bonds present in 21 of 24 Site associated PFAS, and carbon-hydrogen bonds present in 5 of 24 Site associated PFAS. (e.g., Weber et al., 2017; note, presently Table 3+ can quantitate 20 of the identified 24 PFAS compounds identified at the Site).

3.2.2 Measured K_{ow} and Calculated K_{oc} for Table 3+ Compounds

The process of retardation of organic compounds, including Table 3+ compounds, will influence their fate and transport in the subsurface. Retention in the saturated zone is controlled by sorption to the solid phase of porous media. Sorption by the solid phase is described by the soil-water distribution coefficient (K_d), which is related to K_{oc} by the fraction of organic carbon in the soil. K_{oc} and K_{ow} are often highly correlated. K_{ow} is a standard parameter used for estimating bioconcentration factors. In this section, a summary of log K_{oc} and log K_{ow} measurements or calculations are described along with a discussion of the impact of the values on Table 3+ compounds fate and transport. Details are provided in Appendix C. Other mechanisms of sorption can also include the potential for PFAS, including Table 3+ compounds to bioaccumulate in organisms. Bioaccumulation in potential receptors is discussed in Section 4.

Log K_{ow} measurements were performed using liquid chromatography retention times (OECD, 2004). Retention times for a set of 11 reference compounds with known log K_{ow} values were first determined, and a calibration curve of retention time versus log K_{ow} created. Then, the retention time for each Table 3+ compound was measured, and log K_{ow} calculated using the calibration curve. The measured Table 3+ log K_{ow} values are presented in Table 2.

To calculate K_{oc}, an equation was developed for the relationship between log K_{ow} and log K_{oc} using 20 reference compounds for which both K_{oc} and K_{ow} values were available. Using the measured log K_{ow} values, log K_{oc} values were calculated for Table 3+ compounds (Table 2).

As expected, log K_{ow} and log K_{oc} values are structure dependent where the longer the chain length, the higher the log K_{ow} and log K_{oc} values, indicating higher sorption and retardation. Branched isomers and increasing number of ether bonds results in lower log K_{ow} and log K_{oc} values, indicating lower sorption and retardation.

For comparative purposes, PFOA, a linear C8 PFAS, has log K_{ow} and log K_{oc} values of 5.3 and 2.35 liter per kilogram (L/kg), respectively, while HFPO-DA, a C6 branched PFAS, has log K_{ow} and log K_{oc} values of 4.24 and 1.69 L/kg, respectively. Also by comparison perfluoro-1-butanesulfonic acid (PFBS), a relatively mobile PFAS, has a measured K_{oc} of 1.0 L/kg. The results in Table 2 indicate that all Table 3+ compounds are more mobile and are expected to be less bio-accumulative than PFOA, with the exception of perfluoro-3,5,7,9,11-pentaoxadodecanoic acid (PFO5DA).

Table 2: Table 3+ Measured Log Kow and Calculated Log Koc Values

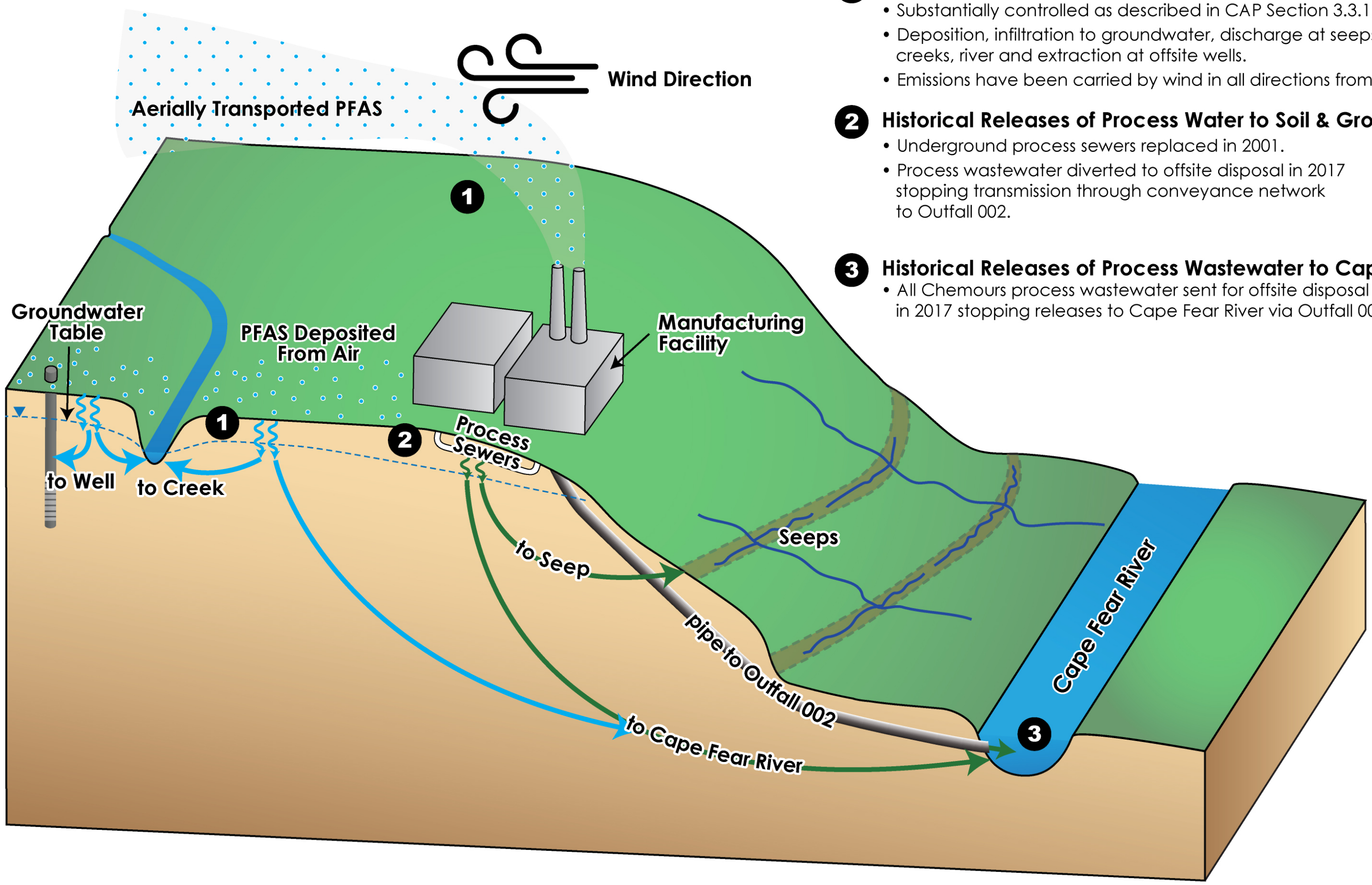
Table 3+ PFAS	Log K_{ow}[1] at pH 5	Log K_{ow}[2] at pH 8	Log K_{oc} (L/Kg)[2] at pH 5
MMF	<2.92 (1.08)*	<3.11 (1.09)*	--
DFSA	<2.90 (1.19)*	<3.11 (1.05)*	--
MTP	<2.90 (2.19)*	<3.11 (2.42)*	0.52
PPF	<2.93 (2.43)*	<2.98 (2.48)*	0.67
PFMOAA	<2.82 (2.45)*	<2.83 (2.43)*	0.89
NVHOS	2.92	2.93	0.95
R-EVE	3.04	3.14	1.01
PMPA	3.05	3.05	1.02
Byproduct 4	3.09	3.19	1.04
Byproduct 5	3.14	3.23	1.07
PFO2HxA	3.32	3.30	1.17
PEPA	3.63	3.60	1.35
PES	3.80	3.78	1.44
PFECA B	3.98	3.95	1.54
PFO3OA	4.17	4.13	1.65
HFPO-DA	4.24	4.23	1.69
Byproduct 6	4.61	4.57	1.90
Hydro-EVE Acid	4.68	4.66	1.94
Byproduct 2	4.72	4.68	1.96
PFECA-G	4.79	4.77	2.00
PFO4DA	4.98	4.95	2.11
PFESA-BP1	5.09	5.06	2.17
EVE Acid	5.10	5.06	2.17
PFO5DA	5.78	5.72	2.56

1 Measured by HPLC
2 Calculated by correlation

*Extrapolated values in parenthesis
-- Koc values for Difluoromalonic acid (MMF) and Difluoro-sulfo-acetic acid (DFSA) fell in the negative range of the calibration curve

3.3 Site Related PFAS Sources

Fluoroproduct manufacturing at the Site has resulted in three primary PFAS release routes to environmental media: (1) emissions to air, (2) releases of process water to soil and groundwater, and (3) releases of process water to surface water. These releases also resulted in secondary sources of PFAS in the environment to groundwater and surface water receptors. Primary PFAS releases have been identified and are being controlled. The primary and secondary sources are described in the following subsections.



1 Emissions to Air
- Substantially controlled as described in CAP Section 3.3.1.
- Deposition, infiltration to groundwater, discharge at seeps, creeks, river and extraction at offsite wells.
- Emissions have been carried by wind in all directions from Site.

2 Historical Releases of Process Water to Soil & Groundwater
- Underground process sewers replaced in 2001.
- Process wastewater diverted to offsite disposal in 2017 stopping transmission through conveyance network to Outfall 002.

3 Historical Releases of Process Wastewater to Cape Fear River
- All Chemours process wastewater sent for offsite disposal in 2017 stopping releases to Cape Fear River via Outfall 002.

Figure 1: Primary PFAS Sources – Historical Pathways and Present Controls

3.3.1 Emissions to Air

The facility operates multiple permitted air discharge stacks, blowers and vents as part of manufacturing activities. As part of CO compliance, the facility is implementing air control technology improvements that will reduce aerial HFPO-DA emissions by 99% starting in January 2020 compared to 2017 baseline, with expected comparable reductions for other PFAS. Prior to these in-progress reductions and other interim reductions achieved over the past two years, and subject to air abatement systems that had been in place previously, PFAS compounds had been emitted to air and subsequently deposited both onsite and in the area surrounding the Site. The locations of emissions to air and locations of past loading are presented in *Modeling Report: HFPO-DA Atmospheric Deposition and Screening Groundwater Effects* (ERM, 2018) and shown in Figure A4-1. Estimates of past loadings to air and surface water and reductions in loadings achieved are presented in the PFAS Loading Reductions Plan (Geosyntec, 2019d).

3.3.2 Releases of Process Water and Wastewater to Soil and Groundwater

On Site releases of PFAS to soil and groundwater occurred in the manufacturing areas. Known specific release pathways included (i) leakage from historical process water discharge lines, (ii) leakage of combined process water from the terracotta pipe and (iii) a manufacturing (scrubber) upset which occurred in October 2017. Each of these pathways is described below.

Historical process sewer system in Monomers IXM

In 2000, the facility replaced underground piping in the Monomers IXM area that conveyed process waters and wastewaters with aboveground piping (DuPont, 2006). Replacement with aboveground piping enabled routine inspections and the ability to perform more rapid leak detection and repair. The facility has identified one remaining underground pipe connecting the sump at Vinyl Ethers South to the Vinyl Ethers South retention basin. The basin ensures that the Vinyl Ethers South sump does not overflow during heavy rainstorm events.

Terracotta Pipe Leakage

The terracotta pipe was designed to convey wastewater from the various manufacturing areas to the WWTP (Figure A4-1). Prior to June 21, 2017, the facility transmitted PFAS containing process wastewater containing Table 3+ PFAS to the WWTP from the Monomers IXM Area via the terracotta pipe. Leaking of this process water from the terracotta pipe to groundwater is probable and these releases are likely the source of elevated PFAS detections at location PZ-18 and its replacement well, MW-24 (Parsons, 2018a). Chemours no longer transmits process water from the Monomers IXM Area to the WWTP. This process water is sent offsite for disposal. In 2018, Chemours grouted a portion of the terracotta pipe, and by 2021 Chemours and Kuraray plan to fully decommission and replace the terracotta pipe with above-ground piping (Geosyntec, 2019e, f).

October 2017 Scrubber Upset

In October 2017, a scrubber upset occurred in the Vinyl Ethers South area of the Monomers IXM Area (Arnold and Porter, 2017). This release resulted in process water containing PFAS contacting site soils and infrastructure in the Monomers IXM area. Subsequent to this release, Chemours removed soils from this area, replaced some roofing materials and re-lined the cooling water channel with new materials. The scrubber upset resulted in increased HFPO-DA concentrations in the Outfall 002 after rainfall events for up to seven months. As materials were replaced, soils were removed, and the area flushed, observed HFPO-DA concentrations diminished at Outfall 002.

3.3.3 Releases of Process Water to Surface Water

Prior to June 21, 2017, Chemours transmitted PFAS containing process water to the WWTP from the Monomers IXM Area via the terracotta pipe and then to Outfall 002 where this PFAS containing water was discharged to the Cape Fear River. As of November 29, 2017, Chemours diverted Chemours Monomers IXM Area process wastewater flows away from the WWTP and currently containerizes this wastewater for offsite disposal. PPA process water also contains PFAS, and this waste stream has always been collected and sent for offsite disposal since commissioning of the PPA Area.

3.3.4 Secondary Sources

Chemours has taken measures to mitigate releases of PFAS to groundwater, soil, and surface water. Chemours will be implementing air control technology improvements which will reduce aerial HFPO-DA emissions by 99% starting in January 2020 compared to 2017 baseline, with expected comparable reductions for other PFAS. Historical releases resulted in the following secondary sources of PFAS being present in the environment:

- PFAS in unsaturated soils from aerial deposition infiltrating to groundwater. Aerial deposition has resulted in a distributed, non-point source of PFAS in onsite and offsite soils that represent a secondary source to groundwater. Infiltrating rainfall has transported these PFAS downward to groundwater. The currently identified extent of this secondary PFAS source is shown in Figures 4-2A and 4-2B.
- PFAS in soils and groundwater from Site process water releases. Process water leaks in the manufacturing areas resulted in PFAS in Site soil and groundwater. Based on the hydrogeology of the Site, these PFAS are detected in the Perched Zone, Surficial Aquifer, or Black Creek Aquifer and then

migrate towards primarily the Cape Fear River and Old Outfall 002 with some component reaching Willis Creek.

3.4 Monitoring Well Redevelopment and Resampling

Between October 17 and November 8, 2019, a total of 17 wells were redeveloped and 45 wells were resampled (Table 3) based on the recommendations listed below from the Onsite and Offsite Assessment (Geosyntec, 2019a):

- Additional sampling of recently installed wells to evaluate consistency of results;
- Additional development prior to any sampling of wells reporting higher turbidity or perfluoromethoxypropyl carboxylic acid (PMPA) detections below 200 ng/L or non-detect PMPA values with reporting limits above 200 ng/L;

Table 3: Summary of well redevelopment and resampling

Location	No. Wells Redeveloped	No. Wells Resampled
Onsite	11	27
Offsite	6	18
Total	17	45

The list of wells redeveloped and resampled is provided in Appendix B, Table B-1 and Table B-2. Well redevelopment logs/field notes are provided in Appendix B. The results from the resampled wells are provided in the copy of the On and Offsite Assessment Tables A9-3 and A9-4 and in Table B-3.

The total Table 3+ concentrations in resampled wells collected between October 17 and November 8, 2019 were generally within ± 25% range (with some notable exceptions) compared to prior results from June and September 2019 with the following observations:

- Total Table 3+ PFAS concentrations from wells PW-02 and PW-14 were approximately 100 times lower in the resampled results compared to the original samples (15,000,000 to 140,000 ng/L and 18,000,000 to 160,000 ng/L respectively). Resampled total Table 3+ PFAS concentrations for both PW-02 and PW-14 are consistent and within the same order of magnitude as results from nearby onsite wells screened in the Surficial and Black Creek Aquifer, respectively. The concentrations in these wells will continue to be monitored as part of monitoring plan activities described in Section 7.

- For offsite wells where Table 3+ PFAS concentrations were close to detection limits in June, resampled Table 3+ PFAS concentrations were similar or lower in concentrations in October and November. Comparison of Table 3+ PFAS concentrations in offsite wells before and after redevelopment indicate that PMPA had the most notable decrease in concentrations following redevelopment and resampling. PMPA was previously detected in drill water at a concentration of 130 ng/L. Lower concentrations of PMPA in offsite wells may be indicative of well development completion and return to formation water.
- Total Table 3+ PFAS concentrations for wells PIW-7S and PW-06 following redevelopment and resampling were greater than previous results. For example, total Table 3+ PFAS concentrations for PW-06 increased from 3,000 ng/L to 4,400 ng/L while PIW-7S increased from 17,000 ng/L to 54,000 ng/L.

3.5 Southwestern Offsite Seeps

Groundwater seeps are common hydrogeological features in sloping terrain, such as the bluffs found at the Site in the areas around the Site, and much of the Cape Fear River watershed. Onsite there are four seep features with channelized flow that enter the Cape Fear River. In October 2019, ten offsite groundwater seeps - the Lock and Dam Seep and Seeps E to M - were identified on the west bank of the Cape Fear River to the south of the Site. The seeps were identified by performing a visual survey from a boat on the western side of the Cape Fear River between Old Outfall 002 and Georgia Branch Creek. Flow from these seeps ranged from seeping water from an embankment (i.e. trickles) to a visible small stream in one of the seeps. Results from samples collected from the seeps indicate Total Table 3+ PFAS concentrations ranged between 2,600 to 6,800 ng/L. The seven southernmost seeps (G to M) had similar concentrations to the mouth of Georgia Branch Creek sampled in September (2,100 ng/L). However, all offsite seeps had lower concentrations of Total Table 3+ compared to onsite seeps and Old Outfall 002 by one to two orders of magnitude. Similar to Georgia Branch Creek, all of the Southwestern Offsite Seeps had an aerial PFAS deposition signature indicating these PFAS originated from aerial deposition with subsequent infiltration to groundwater and discharge at these seeps.

As these offsite seeps are groundwater fed, their mass loading to the Cape Fear River was included in the offsite adjacent and downstream groundwater transport pathway described in detail in the August 2019 mass loading model report (Geosyntec, 2019) and later in Section 3.10. The offsite adjacent and downstream groundwater pathway was estimated to contribute less than 2% total Table 3+ PFAS loading to the Cape Fear River. Additional details regarding the identification, sampling and photographs of the Southwestern Offsite Seeps are provided in Appendix D.

3.6 PFAS Signatures and Distribution

Releases of PFAS at the Site have created two primary categories of PFAS signatures detected in groundwater and surface water: (1) An aerial deposition PFAS signature from emissions to air and (2) a combined process water PFAS signature from historical releases of process water to soil and groundwater. These primary signature categories are reflected in the PFAS signatures identified in the On and Offsite Assessment report (Geosyntec, 2019a). For this CAP, the data set used to examine PFAS signatures was expanded upon to include offsite private well data and samples from the Cape Fear River, onsite and offsite groundwater seeps, Willis Creek, Georgia Branch Creek, and Old Outfall 002 in addition to the prior use of onsite groundwater results. A hierarchical cluster analysis was performed similarly to the one performed for the On and Offsite Assessment with the exception that this cluster analysis used data for the 11 Table 3+ PFAS data on Attachment C of the CO. Private well data were analyzed for only the Attachment C PFAS and therefore this was the set of Table 3+ PFAS that could facilitate the identification and subsequent comparison of signatures between the samples of private well data and other data sets. The details of the analysis are described Appendix E and the results described below.

3.6.1 Aerially Deposited PFAS Signature and Distribution

The aerially deposited PFAS signature is predominantly found offsite at low concentrations (Figure 2, Table 4). Emissions to air were deposited on surface soils onsite and offsite and have over time infiltrated to groundwater, and in some cases, migrated in groundwater to surface water receptors including the Cape Fear River, Willis Creek and Georgia Branch Creek. Air emission controls will be reducing facility wide emissions of HFPO-DA by 99% compared to 2017 baseline, and are expected to produce a comparable decrease in aerial deposition for other PFAS.

The hierarchical cluster analysis identified two clusters of aerially deposited PFAS signatures. The first cluster (i.e. signature) identified was the 'Aerial – Mixture of PFAS' signature. This signature was a mixture of Table 3+ PFAS where PMPA is commonly the highest concentration with other Table 3+ PFAS (HFPO-DA, perfluoro(3,5-dioxahexanoic) acid [PFO2HxA], perfluoroethoxypropyl carboxylic acid [PEPA] and PFMOAA) detected in a substantial proportion in the samples. Both PMPA and HFPO-DA comprise a substantial proportion of the 'Aerial - mixture of PFAS' signature.

The second signature identified was 'Aerial – Predominant PMPA or HFPO-DA'. Here either PMPA or HFPO-DA dominate the concentration as a proportion of Table 3+ or one of HFPO-DA or PMPA were the only PFAS detected in the sample collected.

Onsite in the Monomers IXM Area, some groundwater wells with high concentrations exhibit a PFAS signature similar to the aerial PFAS signature. These wells are in areas where historically various process sewers were leaking before being replaced. These wells likely have an aerial PFAS signature due to individual historically leaking processes that generated a PFAS distribution similar to the aerial PFAS signature.

3.6.2 Combined Process Water PFAS Signature and Distribution

Among the wells that exhibit the process water PFAS signature, the highest Table 3+ PFAS concentration is PFMOAA, particularly for the combined process water component of the signature. Overall, HFPO-DA, PFMOAA, PFO2HxA, PMPA, and PEPA also comprise a substantial proportion of this signature.

The combined process water PFAS signature is found onsite at high concentrations. As described in the On and Offsite Assessment report (Geosyntec, 2019a), the combined process water signature is associated with release from where various process wastewaters were combined or where PFMOAA dominated the proportion of PFAS present in an individual process water stream. Offsite detections of the combined process wastewater signature were only observed where releases are presently discharging into the Old Outfall 002, the Cape Fear River and Willis Creek (Figure 2, Table 4). Leaking sewers, the terracotta pipe and other potential direct releases of process water onsite lead to infiltration of process water through soil onsite to groundwater with eventual discharge to onsite groundwater seeps, Old Outfall 002, Willis Creek and the Cape Fear River.

3.6.3 Comparison of Aerial vs. Process Water Signatures

Process water signatures are confined to detections onsite in groundwater while aerial signatures are found offsite and onsite (Figure 2 and Table 4). Process water signatures are associated with much higher concentrations over approximately one square mile. Meanwhile, the aerial PFAS signature are diffuse, at lower concentrations over a 70+ square mile area. The Cape Fear River downstream of the Site has a process water signature based on loading to the river primarily coming from pathways with a process water signature (onsite seeps, Old Outfall 002 and onsite groundwater); historical process water releases are estimated to account for between 76% to 86% of the Table 3+ PFAS detected in the Cape Fear River, with the remainder of 14% to 24% coming almost entirely from historical air process releases.

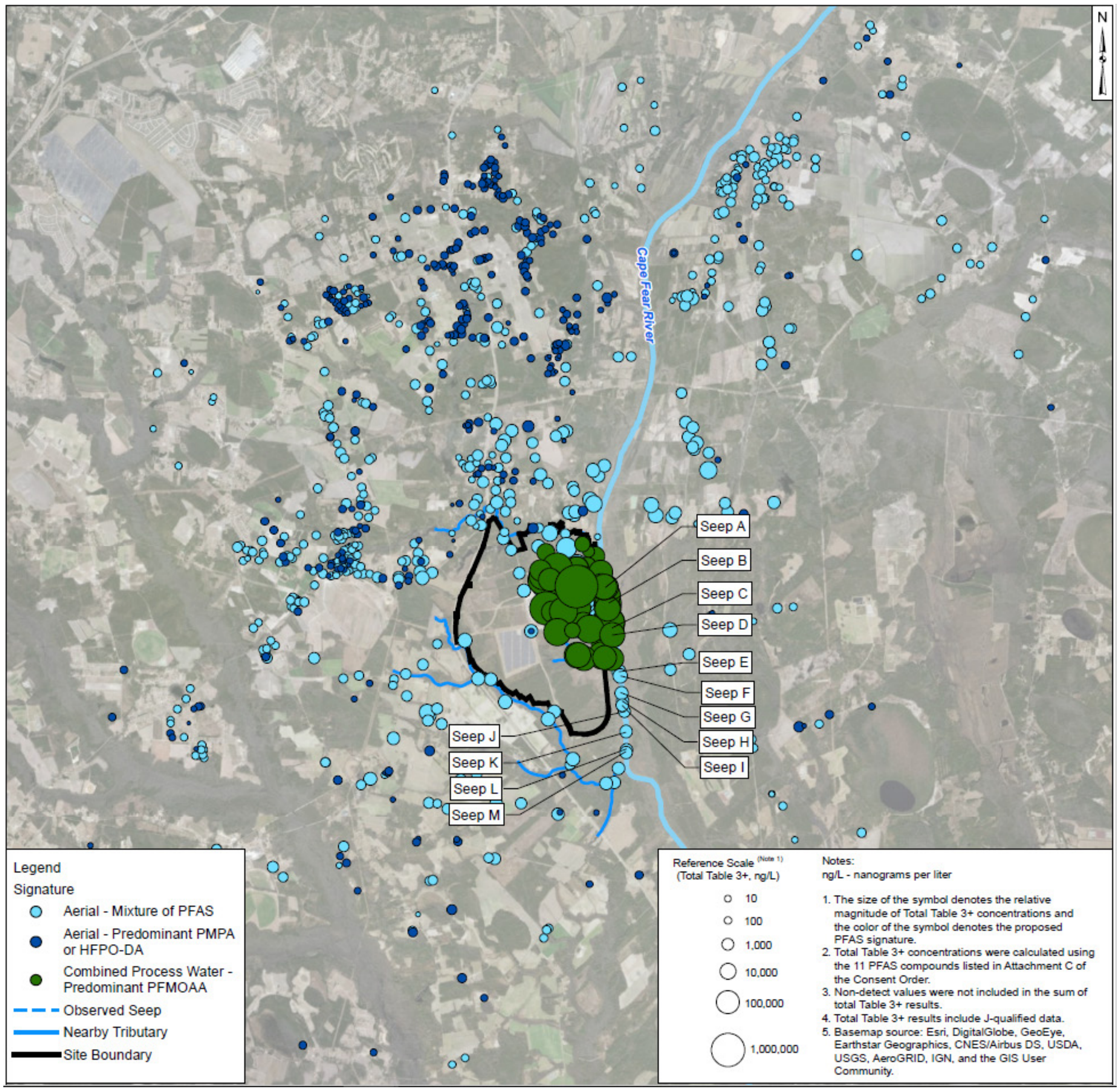


Figure 2: PFAS Signatures by Primary Source

Table 4: PFAS Source Types

Characteristic	Historical Source Type	
	Emissions to Air	**Process Water Releases**
PFAS Signature	Aerial	Process Water
Detected Onsite	Yes	Yes
Detected Offsite	Yes	No
Estimated Area over which Signature is Detected (mi^2)[1]	70+	1
Onsite Total Table 3+ Concentration Range of Detections (ng/L)[2,3]	15 to 13,000	2,900 to 18,000,000
Offsite Total Table 3+ Concentration Range of Detections (ng/L)[4]	10 to 4,500	NA
Percentage Table 3+ Loading to Cape Fear River	14% - 24%	76% - 86%

Notes:

1 - The estimated area with offsite Table 3+ PFAS detections may increase in the future as the offsite private well sampling program continues per CO Paragraph 21 requirements.
2 - For aerially deposited PFAS onsite, the range of detections considered wells located hydraulically upgradient from process water releases; some process water releases had similar PFAS patterns to aerially deposited PFAS. The low and high concentration wells identified were PW-12 and SMW-11, respectively.
3 - For process water PFAS releases onsite the low and high concentrations wells were MW-28 and PIW-14 respectively.
4 - For aerially deposited PFAS off site, low and high concentrations came from private well sampling data. No process water release signatures were detected in offsite groundwater.

3.7 <u>Table 3+ PFAS Mass Distribution</u>

An analysis was performed to determine if Table 3+ PFAS mass was primarily found in the unsaturated zone or in the saturated zone. This analysis was conducted to help evaluate the potential relative benefit between corrective action for unsaturated zone versus saturated zone.

The analysis indicated Table 3+ PFAS mass is predominantly found in the saturated zone at both onsite and offsite locations. This finding was developed by comparing the total mass in a normalized volume (i.e., one cubic meter) of the unsaturated zone (PFAS mass in pore water plus PFAS mass sorbed on unsaturated soil) to the total mass in the same normalized volume (one cubic meter) of the saturated zone (PFAS mass in groundwater plus PFAS mass sorbed on saturated soil) for samples taken from the same location.

The total Table 3+ PFAS mass in a normalized volume of one cubic meter was estimated as follows:

- In the unsaturated zone - the total Table 3+ PFAS mass was estimated using unsaturated soil sample data (unsaturated soil samples are assumed to include both PFAS sorbed on the soil material and PFAS in water content present in the soil sample at the time of collection);
- In the saturated zone - the total Table 3+ PFAS mass was estimated by summing Table 3+ PFAS mass in saturated soil and groundwater. The mass of PFAS in saturated soil was estimated from groundwater data and partitioning calculations. Measured fraction organic carbon (f_{oc}) values and calculated K_{oc} values were used to estimate the mass of PFAS sorbed to soil from which the groundwater sample originated. Values used for f_{oc} were the median value for each lithological unit for both onsite and offsite samples using data presented in the On and Offsite Assessment report (Geosyntec, 2019a). For this assessment, non-detect data were not included.

Results were divided into offsite and onsite locations (Figure 3). The total PFAS mass per cubic meter is higher, by up to almost 4 orders of magnitude (note the vertical axis is logarithmic), in the saturated zone than in the unsaturated zone, except at PW-12 and Cumberland-4S. The detailed calculations behind this assessment are provided in Appendix C. Overall, the results of this assessment indicate that the PFAS mass on and offsite is likely primarily located in the saturated zone.

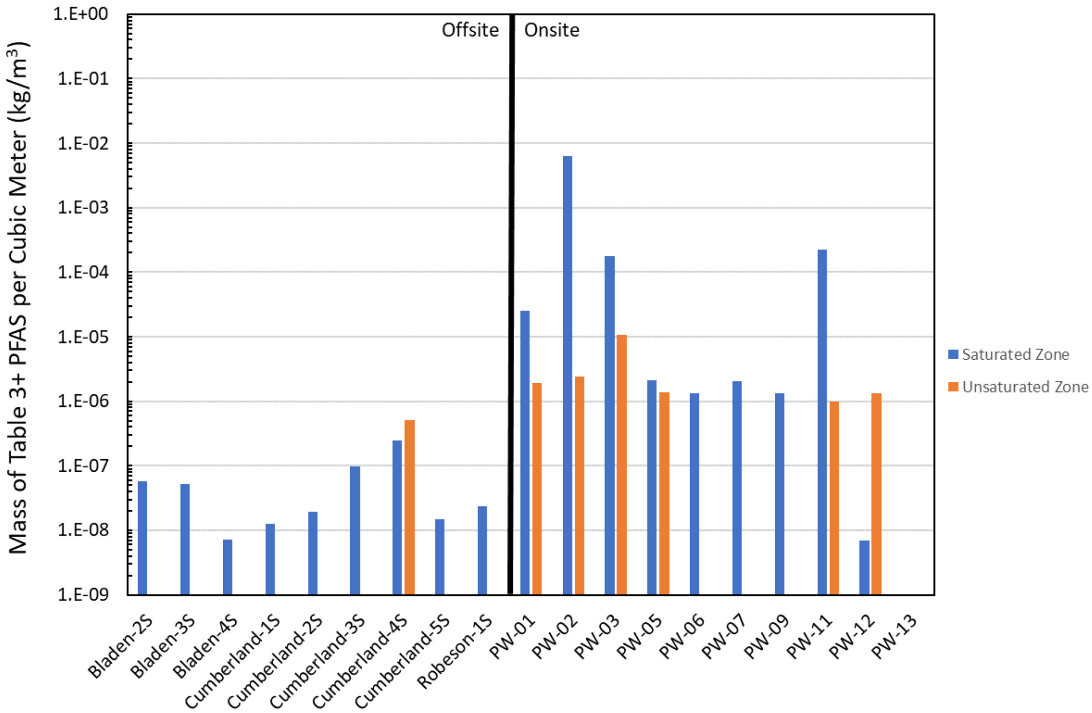


Figure 3: Total PFAS Mass Distribution in a Normalized Volume of the Saturated and Unsaturated Zones

3.8 Table 3+ PFAS Contaminant Retardation

Table 3+ PFAS transport in the subsurface will experience a certain degree of retardation, i.e. slower transport than groundwater as the compounds interact with the aquifer materials. The retardation factor describes how much slower transport will be for a compound compared to groundwater flow. For instance, a compound with a retardation factor of 2 is expected to be transported at only half the rate of groundwater flow (i.e. twice as slow). When combined with groundwater travel time estimates, retardation factors enable estimating travel times for compounds in the subsurface.

Retardation factors were estimated for compounds PFMOAA, PMPA, PEPA, HFPO-DA, PFESA-BP2 and PF5ODA in each of the three saturated zones at Site (Perched Zone, Surficial Aquifer and Black Creek Aquifer). These five compounds spanned the range of estimated K_{oc} values presented in section 3.2.2. Retardation factors were calculated only for saturated zone transport following the work of Brusseau et al., 2019. Chemours is developing and reviewing literature data sets to enable quantitative estimates of unsaturated zone transport retardation factors. The saturated zone retardation factors were calculated as follows:

$$R = 1 + \frac{K_d \rho_b}{\theta_w} = 1 + \frac{K_{oc} f_{oc} \rho_b}{\theta_w}$$

Where:

- R is the retardation factor;
- K_d is the soil-water distribution coefficient;
- K_{oc} is the organic carbon-water distribution coefficient;
- f_{oc} is the fraction of organic carbon in the soil;
- ρ_b is the soil bulk density; and
- θ_w is the volumetric water content (i.e. the fraction of soil porosity filled with water).

The f_{oc} , ρ_b and θ_w used in the calculation for each saturated zone unit are presented below in Table 5. The K_{oc} values used in the calculation and the estimated retardation factors are presented below in Table 6.

Table 5: Soil Property Values

Soil Property	Perched Zone	Surficial Aquifer	Black Creek Aquifer
Median f_{oc}	0.0013	0.0012	0.0034
Median ρ_b (kg/L)	1.45	1.50	1.56
θ_w	100%	100%	100%

The retardation factor estimates suggest in the saturated zone approximately half of the Table 3+ PFAS will experience minimal retardation where travel times will be similar to groundwater travel times; i.e. factors were close to 1. The largest estimated retardation coefficient was for PFO5DA with retardation coefficients calculated to range between 1.7 to 2.9, meaning transport in groundwater will be up to three times as slow as groundwater travel times. The variation in calculated retardation coefficients between aquifer units is primarily a result of differences in fraction of organic carbon values used in the calculations between the different saturated zones. A higher fraction of organic carbon results in a greater degree of retardation; there is more sportive material for the PFAS to interact with during transport. The variation in retardation coefficients between compounds is related to the degree of sorption the compound will experience as described by the K_{oc} value. Overall, the Table 3+ PFAS are estimated to be relatively mobile in saturated zone conditions. These retardation factor estimates can be refined using Site specific measurements of K_{oc} and K_d and evaluating the effects of matrix storage on retardation (i.e. dual phase porosity). These present and future refined estimates of retardation factors can be used to estimate groundwater travel times for flow paths of interest.

Table 6: Calculated Groundwater PFAS Transport Retardation Factors

Compound	**Log K_{oc} (L/kg)**	**Calculated Retardation Factor**		
		Perched Zone	**Surficial Aquifer**	**Black Creek Aquifer**
PFMOAA	0.89	1.0	1.0	1.0
PMPA	1.02	1.0	1.0	1.1
PEPA	1.35	1.0	1.0	1.1
HFPO-DA	1.69	1.1	1.1	1.3
Byproduct 2	1.96	1.2	1.2	1.5
PFO5DA	2.56	1.7	1.6	2.9

3.9 Actions and PFAS Reductions to Date

Actions already implemented by Chemours have reduced yearly HFPO-DA mass loadings from the facility to the environment by at minimum 5,150 pounds per year (lbs/yr) compared to pre-June 2017 emissions and discharges (Geosyntec 2019g). Air emission reductions to date, on an annualized basis for 2019, have resulted in an estimated yearly reduction of 2,150 pounds of HFPO-DA, a greater than 93% reduction. Cessation of Chemours process water discharge to Outfall 002 resulted in at minimum an estimated yearly reduction of 3,000 lbs/yr of HFPO-DA. These actions have reduced HFPO-DA mass loadings, through Outfall 002, by over 99% from June 2017 levels (Geosyntec 2019g). This has resulted in substantial reductions of HFPO-DA to the Cape Fear River. Present estimates of HFPO-DA mass loading to the Cape Fear River from all pathways are between 64 and 129 lbs/yr. This represents a 95% reduction in mass loading to the Cape Fear River from all pathways (Geosyntec 2019g) achieved with remedial measures implemented to date.

Chemours has also implemented multiple actions to further reduce loading of PFAS to the Cape Fear River as outlined in the Reduction Plan (Geosyntec, 2019d).

These reductions will be further enhanced by the operation of the Thermal Oxidizer, which will dramatically reduce aerial PFAS emissions from the Site, with reduction of aerial HFPO-DA emissions by 99% starting in January 2020 compared to 2017 baseline, and expected comparable reductions for other PFAS, and the actions proposed in this plan will further reduce HFPO-DA and other PFAS loadings to the environment.

Actions outlined in this CAP are intended to address PFAS that is present in soil and groundwater from historical operations.

3.10 Present PFAS Mass Loading to the Cape Fear River

Table 3+ PFAS originating from the Site may reach the Cape Fear River via nine possible pathways identified in the Cape Fear Mass Loading Model Report (Geosyntec, 2019g). These pathways are shown in Figure 4 and listed below as follows:

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

Transport Pathway 2: Willis Creek – Groundwater and stormwater discharge and aerial deposition to Willis Creek and then to the Cape Fear River

Transport Pathway 3: Direct aerial deposition of PFAS on the Cape Fear River;

Transport Pathway 4: Outfall 002 – Comprised of (i) water drawn from the Cape Fear River and used as non-contact cooling water, (ii) treated non-Chemours process water and (iii) Site stormwater which are then discharged through Outfall 002;

Transport Pathway 5: Onsite Groundwater – Direct upwelling of site groundwater to Cape Fear River from Black Creek Aquifer;

Transport Pathway 6: Seeps – Groundwater Seeps (currently identified seeps are A, B, C and D) above the Cape Fear River water level on the bluff face from the facility that discharge into the Cape Fear River;

Transport Pathway 7: Old Outfall 002 – Groundwater discharge to Old Outfall 002 and stormwater runoff flows into the Cape Fear River;

Transport Pathway 8: Adjacent and Downstream Groundwater – Offsite groundwater adjacent and downstream of the Site upwelling to the Cape Fear River; and,

Transport Pathway 9: Georgia Branch Creek – Groundwater, stormwater discharge and aerial deposition to Georgia Branch Creek and then to the Cape Fear River.

Total Table 3+ PFAS loading to the Cape Fear River has been estimated using a combination of measured and estimated data to develop mass loading estimates by pathway. Data inputs for the mass loading model were collected in May, June and September 2019. Results from the May and June sampling events were previously reported in the Cape Fear Mass Loading Model Report (Geosyntec, 2019g). The mass loading model was updated using the same framework as previously described (Geosyntec 2019 g) for the September mass loading sampling event. The analytical data and supporting figures presenting the September data are provided in Appendix B. The mass loading model reporting will be updated in 2020 to incorporate data from the numerical model and be part of the integrated monitoring and assessment activities described in Section 7.

The mass loading model is calibrated and evaluated against observed downstream river PFAS mass loadings. The mass loading model estimates that the Old Outfall 002 and Seeps (Transport Pathways 6 and 7 respectively) have the highest contribution of Table 3+ PFAS mass loading to the Cape Fear River. These two pathways (Transport Pathways 6 and 7) combined are estimated to contribute most of the loading to the Cape Fear River, with totals between 53% and 69% based on May, June and September results (Table 7). Onsite groundwater (Transport Pathway 5) is the next highest mass loading pathway to the Cape Fear River with estimated loading of between 14 and 22% based on May, June and September results.

Geosyntec consultants

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

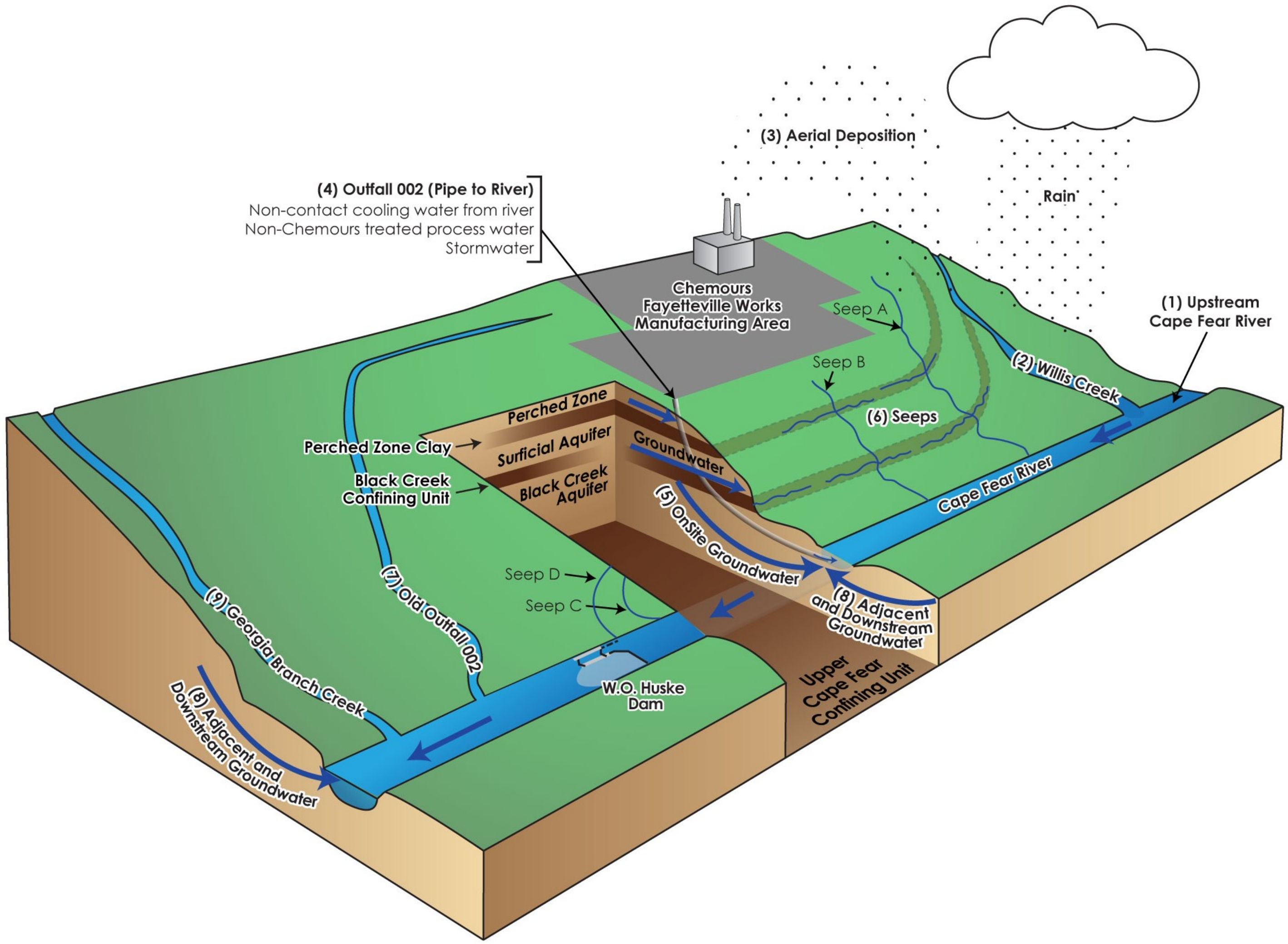


Figure 4: Schematic Conceptual Site Model of the Site Including Geological Layers, and PFAS Transport Pathways

Table 7: Mass Loading Model Total Table 3+ PFAS including HFPO-DA Contributions per Pathway

Pathway	Total Table 3+ Estimated Loading Percentage per Pathway per Event		
	May 2019 Event	Jun. 2019 Event	Sep. 2019 Event
[1] Upstream River Water and Groundwater	4%	15%	8%
[2] Willis Creek	10%	4%	3%
[3] Aerial Deposition on the River	< 2%	< 2%	< 2%
[4] Outfall 002	4%	7%	4%
[5] Onsite Groundwater	22%	17%	14%
[6] Onsite Groundwater Seeps (Seeps A, B, C, D)	32%	24%	42%
[7] Old Outfall 002	23%	29%	27%
[8] Offsite Adjacent and Downstream Groundwater	< 2%	< 2%	< 2%
[9] Georgia Branch Creek	4%	3%	2%

For the Transport Pathways, the loading estimates will vary over time due to a range of potential factors, including but not limited to:

- Detections of PFAS at or near analytical practical quantitation limits have more variability;
- Elevated method reporting limits;
- Standard uncertainty (often ± 20%) in analytical laboratory results;
- Flow rate estimates in the river, seeps, groundwater and creeks are over- or under-predicted compared to actual flow rates.

Chemours will continue to integrate additional sampling data to the mass loading model. Quarterly mass loading sampling will continue to be collected as part monitoring activities described later in Section 7.

4 RECEPTOR INFORMATION

In support of the CAP objectives, Chemours directed Geosyntec to perform a receptor survey as described in the On and Offsite Assessment (Geosyntec, 2019a), a Human Health SLEA, and an Ecological SLEA (SLEA: Screening Level Exposure Assessment). The SLEAs identify potentially complete exposure pathways by which human and ecological receptors may be exposed to PFAS in the environment and use intake models to calculate and rank exposure potential for exposure media such that future evaluations and/or risk management decisions are focused on the most significant contributors of overall human and ecological exposure. The human and ecological SLEAs are provided in Appendices G and H respectively. The following subsections describe the results of a receptor survey and the results from the SLEAs.

4.1 Receptor Survey Results

4.1.1 Wells and Wellhead Protection Areas

As reported in the On and Offsite Assessment (Geosyntec, 2019a), 75 public/community wells and 926 private wells have been identified in the counties surrounding the Site (see Figure A5-1). Community wells are those that serve more than one household. The full extent of offsite PFAS contamination originating from the Site is still being assessed. As such the number of identified private wells is expected to increase. There is limited availability of drilling records including logs and installation depths for many private wells. The geological and hydrogeological settings where these well receptors are present are described, to the extent possible, in Section 3.1. The offsite groundwater monitoring wells installed in August and September 2019 are described in the On and Offsite Assessment Report (Geosyntec, 2019a). Public/community wells identified are listed in Table A5-1, along with their locations, depths, usage, and distance from the Site. Private wells shown on Figure A5-1 are not included in Table A5-1 in order to protect the privacy of well owners. Surrounding property owners are similarly not identified for privacy reasons.

Wellhead protection areas, as defined in the Safe Drinking Water Act: 42 U.S. Code § 300h–7, surrounding the Site are identified in Figure A5-2. According to publicly available data, there is one wellhead protection area in the extent of Figure A5-2, including three municipal water supply wells (PWS ID 03-78-030). Daily water extraction from these wells taken together ranges from 0.18 to 0.30 million gallons per day (MGD). Further details available regarding these wells in the wellhead protection area is provided in Table A5-1.

4.1.2 Surface Water Receptors

Surface waters in the region surrounding the Site include the Cape Fear River, tributaries, ponds, swamps and marshes, and several small streams and ditches. Figure A5-3 identifies named surface water bodies from the USGS National Hydrography Dataset surrounding the Site. Sampling of the Cape Fear River and tributaries to the Cape Fear River has been performed as part of multiple site investigation activities. Sampling of ponds and tissues of fish from the Cape Fear River and one onsite pond has been performed for the Human Health and Ecological SLEAs. These SLEAs are described in the following sub-sections.

4.1.3 Mitigation Measures/Point of Use Treatment

Pursuant to CO Paragraphs 19 to 25 (Compliance Measures - Replacement Drinking Water Supplies), Chemours is implementing a Drinking Water Compliance Plan (Parsons, 2019a). Through this plan, Chemours is providing replacement drinking water to private residents whose drinking water wells are impacted by PFAS listed in Attachment C of the CO. Replacement drinking water is being provided through a range of options depending on the levels of PFAS found as required and defined in CO Paragraphs 19 and 20.

4.2 Human Health SLEA

An Offsite Human Health Screening Level Exposure Assessment (HH-SLEA) was completed to quantify exposure of offsite human receptors to Table 3+ PFAS. The HH-SLEA quantifies exposures of offsite human receptors to released Table 3+ PFAS for several receptor-exposure scenarios and provides a provisional human health hazard characterization for HFPO-DA based on quantified intakes and the North Carolina Department of Health and Human Services (NC DHHS) 2017 draft oral reference dose (RfDo). The HH-SLEA is attached to this document as Appendix F. The subsections below summarize the key components of the HH-SLEA.

Calculated hazards for HFPO-DA for all receptor-exposure scenarios evaluated in the SLEA were less than 1 which, as defined by the United States Environmental Protection Agency (USEPA), indicates adverse effects to human receptors are unlikely, including sensitive subpopulations. Untreated well water was identified as the primary source of potential PFAS intake and hazard. Additionally, when the HH-SLEA accounts for the effectiveness of the Chemours-provided drinking water treatment systems that are currently in-place, PFAS intake via drinking water and associated hazards are substantially reduced and may be as low as zero. While other media were not identified as significantly contributing to overall intake and hazard, human exposure to PFAS in environmental media will continue to decrease over time as a result of Facility air emissions reductions.

4.2.1 Receptors and Exposure Pathways

At the Site, human activities are limited to facilities operations and maintenance, office workers, and environmental monitoring activities. In the area surrounding the Site, there are a wide range of human and land use activities, including private residences, farms, commercial businesses, and recreational areas. Based on the Site setting, the HH-SLEA intake characterization quantifies Table 3+ PFAS intake for the receptor-exposure scenarios identified below. These exposure pathways are assumed to be complete for the purposes of the HH-SLEA but some or all related exposure pathways may be incomplete for an actual offsite receptor. For example, the HH-SLEA assumes gardeners and farmers only consume fruits and vegetables that are homegrown whereas, in reality, most people also (or exclusively) consume store-brought fruits and vegetables grown in a variety of locations. Based on the Site setting, the HH-SLEA intake characterization quantifies Table 3+ PFAS intake for the receptor-exposure scenarios identified below:

1. Residents (adult and child) were assumed to be exposed to surface soil via incidental ingestion; untreated well water as drinking water via ingestion; current conditions well water as drinking water via ingestion; and untreated Cape Fear River surface water from Bladen and Kings Bluffs intakes as drinking water via ingestion.

2. Farmers (adult and child) were assumed to be exposed to surface soil via incidental ingestion; untreated well water as drinking water via ingestion; current conditions well water as drinking water via ingestion; and, aboveground leafy vegetables (e.g., lettuce), aboveground fruits (e.g., tomatoes), and belowground vegetables (e.g., carrots) via ingestion.

3. Gardeners (adult and child) were assumed to be exposed to surface soil via incidental ingestion; untreated well water as drinking water via ingestion; current conditions well water as drinking water via ingestion; and, aboveground leafy vegetables (e.g., lettuce), aboveground fruits (e.g., tomatoes), and belowground vegetables (e.g., carrots) via ingestion.

4. Recreational Canoeists/Swimmers (adult and child) were assumed to be exposed to surface water via incidental ingestion.

5. Recreational Anglers (adult and child) were assumed to be exposed to fish tissue fillets via ingestion.

4.2.2 Intake Characterization

For the purposes of the HH-SLEA, the upland portion of the offsite study area was conceptualized as 12 exposure units (EUs). These EUs were defined by three concentric circles originating from the approximate center-point of the Facility that correspond to radial distances of 2.5, 5, and 10 km; these circles were then bisected north-to-south and east-to-west into four quadrants (see Figure 3 of the HH-SLEA). Five EUs were defined within the Cape Fear River: 10 miles upstream, site-adjacent, 4 miles downstream, 8 miles downstream (Bladen Bluffs), and 55 miles downstream (Kings Bluffs). Finally, an onsite pond and offsite pond were also identified as EUs for evaluation in the SLEA.

Potential PFAS intake from each medium for relevant receptors was estimated using standard regulatory risk assessment equations that combine receptor-specific exposure assumptions recommended by USEPA with media-specific exposure point concentrations (EPCs). Receptor-specific exposure assumptions represent a "reasonable maximum exposure" (RME) scenario and are detailed in Appendix F of the HH-SLEA. Two EPCs were calculated: a central tendency exposure (CTE) EPC represented by the mean concentration and an upper-bound, RME EPC represented by the 95% upper confidence limit on the mean (UCL). If the data did not support calculation of a UCL, the maximum detected concentration was selected as the EPC to support the RME condition.

EPCs for soil, well water, surface water and fish fillets were calculated using empirical data; EPCs for produce were calculated using approved USEPA models. The empirical data used to calculate EPCs in the HH-SLEA are summarized below and presented in Appendix B of the HH-SLEA report.

- *Soil*. The HH-SLEA evaluated offsite surface soil data collected between July and September 2019 from the 12 upland EUs. In each EU, 30 discrete soil aliquots were collected from 0 to 6 inches below ground surface and aggregated into a single composite sample submitted for laboratory analysis that is considered representative of the EU.

- *Well Water*. The HH-SLEA evaluated untreated well water collected between September 2017 and October 2019 from private residences located within the 12 upland EUs. The maximum concentration of each target analyte for each well was included in the HH-SLEA. In many cases, untreated well water is not representative of current drinking water conditions. Therefore, a Current Conditions well water exposure scenario was also quantified, which considers the requirements of the CO for providing replacement drinking water and treatment systems. The Current Conditions intake characterization scenario incorporates an assumption 70 ng/L total PFAS in untreated groundwater to address the scenario where no drinking water treatment may have been required; the Current Conditions hazard characterization incorporates an assumption of 10 ng/L HFPO-DA.

- *Surface Water*. The HH-SLEA evaluated surface water data collected by Chemours from the Cape Fear River between September 2017 and September 2019, from an onsite pond in July 2019, and an offsite pond in September 2019. Additionally, the HH-SLEA evaluated raw surface water data collected by the NC DEQ from the Bladen Bluffs intake point on the Cape Fear River between June and July 2017 and raw surface water data collected by the CFPUA from the Kings Bluffs intake point on the Cape Fear River between September 2018 and October 2019.

- *Fish Tissue*. The HH-SLEA evaluated fish fillet data collected by Chemours from the Cape Fear River and onsite pond between July and September 2019.

4.2.3 Hazard Characterization

The estimated intakes of HFPO-DA were also used to calculate provisional quantitative estimates of potential noncarcinogenic hazard based on the RfDo of 1E-04 milligram per kilogram per day (mg/kg-day) adopted by the NC DHHS. The ratio of intake to the RfDo is defined as the hazard quotient (HQ). An HQ greater than unity (1) was used as the benchmark for identifying potentially unacceptable hazard.

There are other published RfDo values available that may better reflect the toxicological profile of HFPO-DA but a detailed evaluation of the uncertainties associated with these values was outside the scope and objectives of the HH-SLEA. Therefore, the HH-SLEA relied upon the determination from the NC DHHS that, in a regulatory context, the RfDo is protective of human health. Because regulatory risk assessment generally "errs on the side of caution," it must be reiterated that this (or any) RfDo is not predictive of an actual health outcome. As additional toxicological data become available, it may be appropriate to review the hazard characterization results.

4.2.4 HH-SLEA Results

The results of the HH-SLEA intake characterization and provisional hazard characterization are presented in Table 3 of the HH-SLEA and summarized below.

The HH-SLEA identifies untreated well water as the primary source of potential PFAS intake, accounting for over 92% of RME intake for residents, farmers, and gardeners. Additionally, when the HH-SLEA accounted for the effectiveness of the Chemours-provided drinking water treatment systems that are currently in-place, PFAS intake via drinking water was substantially reduced and may be as low as zero. While other media were not identified as significantly contributing to overall intake, human exposure to PFAS in all environmental media will continue to decrease over time as a result of Facility air emissions reductions. As described further below, calculated hazards for HFPO-DA for all receptor-exposure scenarios evaluated in the HH-SLEA were less than 1 which, as defined by USEPA, indicates adverse effects to human receptors are unlikely, including sensitive subpopulations.

Calculated HQs were less than 1 for residents, farmers, and gardeners exposed to soil, produce, and well water in EU1 through EU12, indicating potential HFPO-DA exposure is unlikely to pose a hazard, even in the absence of drinking water treatment. The estimated HQ from untreated well water consumption accounted for 92% or more of total

RME hazard for each receptor. As stated previously, the use of untreated well water to calculate domestic use likely overstates the population's potential exposure, as treatment systems provided by Chemours have reduced PFAS in drinking water to below detection limits. HQ estimates based on an assumption of 10 ng/L of HFPO-DA in drinking water, which is the maximum concentration in well water that would not require a treatment system, range from 0.003 to 0.07 and, hence are more than an order of magnitude below a level of concern (unity or 1). This indicates that there are no hazards to populations of offsite residents, farmers, and gardeners under current conditions, based on HFPO-DA.

Calculated HQs are less than 1 for recreationalists exposed to surface water and fish tissue in the vicinity of the Site, indicating potential HFPO-DA exposure in the Cape Fear River and nearby ponds does not pose an unacceptable hazard to recreationalist populations. The highest HQs (0.08 to 0.1) were driven by consumption of fish from the downstream EU16 at Bladen Bluffs; otherwise, HQs were less than 0.01, indicating there are no hazards to recreationalist populations.

Calculated HQs were less than 1 for domestic use intakes of Cape Fear River untreated surface water from Bladen Bluffs (EU16) and Kings Bluffs (EU17), indicating potential HFPO-DA exposure in surface water does not pose a hazard to residential consumers.

4.2.5 HH-SLEA Uncertainties

Uncertainties are inherent in the process of quantifying exposure (and hazard) due to the use of environmental sampling results, assumptions regarding receptor behavior, and the quantitative representation of chemical toxicity. Therefore, assumptions used in the HH-SLEA aimed to provide additional conservatism where there was significant uncertainty. Key uncertainties identified for the HH-SLEA are summarized below and a more comprehensive list is provided in the HH-SLEA report.

- Toxicity Data. The SLEA provisional hazard characterization is based on the HFPO-DA RfDo of 1E-04 mg/kg-day adopted by the NC DHHS, which is predicated on liver toxicity endpoints from two subchronic studies in mice. There is inherent uncertainty in the use of animal toxicity data to characterize potential human health hazards and the RfDo could potentially change as new information becomes available. Others have used the available toxicological data to develop alternative toxicity values, including a probabilistic RfDo of 1E-02 mg/kg-day developed by Thompson, et al. (2019) and a draft RfDo of 8E-05 mg/kg-day developed by USEPA. Notably, RME hazard indices for the maximally-exposed populations for each EU that are predicated on use of the NC DHHS, USEPA and Thompson RfDo values are equal to or less than 1, indicating no exceedance of available health benchmarks or of USEPA's threshold for identifying a potential human health hazard, even in the absence of drinking water treatment. In addition to the uncertainty associated with the HFPO-DA RfDo, the lack of toxicity information for other Table 3+ PFAS also introduces uncertainty to the HH-SLEA but data are not available to evaluate the potential effect, if any, on the conclusions hazard characterization.

- Laboratory Analytical Limits. For groundwater and surface water, the reporting limits (RLs) for Table 3+ PFAS were below the State's provisional health goal for HFPO-DA in drinking water of 140 ng/L, indicating the method is sufficiently sensitive for identifying concentrations that may potential pose a human health hazard. The HH-SLEA also demonstrated that methods for analyzing HFPO-DA in soil and fish tissue are sufficiently sensitive to estimate exposures that could pose a potential human health hazard based on comparisons to the NC DHHS HFPO-DA RfDo.
- Media-Specific EPCs. The SLEA was prepared to provide a screening-level evaluation of intake on a regional basis. As such, the EPCs evaluated herein are not representative of a specific exposure point. Use of EPCs based on upper-bound estimates of concentration (i.e., 95% UCLs and maximum detected concentrations) reduces the likelihood that potential intake and hazard were underestimated.
- Well Water EPCs. The primary source of uncertainty associated with well water EPCs used in the HH-SLEA was the use of untreated well water data, which does not reflect current conditions; however, even this conservative evaluation of potential intake resulted in HQs less than 1. HQs calculated for current conditions are substantially lower.
- Soil EPCs. Reliance upon a single composite soil sample in each EU is a source of uncertainty but, given that incidental soil ingestion accounts for less than 1% of the total intake of Table 3+ PFAS, it is unlikely that this uncertainty affects the overall conclusions of the HHSLEA.

The HH-SLEA demonstrates no unacceptable hazards to human receptors are anticipated from current exposures to HFPO-DA in offsite environmental media. While there are uncertainties associated with the analyses supporting the HH-SLEA conclusions, where uncertainty is evident, conservative assumptions were used (e.g., use of untreated well water, upper-bound estimates of exposure, and toxicity estimates that are two orders of magnitude higher than those developed by others). Hence, the uncertainty assessment supports that the HH-SLEA can be used to inform risk management decisions.

4.3 Ecological SLEA

Chemours performed an Ecological Screening Level Exposure Assessment (Ecological SLEA) to quantify exposure of terrestrial and aquatic ecological receptors to Table 3+

PFAS and evaluate potential hazards related to HFPO-DA. The Ecological SLEA is attached to this document as Appendix G. The Ecological SLEA evaluation indicated there were no unacceptable adverse effects expected from HFPO-DA exposures. The full details of the Ecological SLEA are described in the *Ecological Screening Level Exposure Assessment (SLEA) of Table 3+ PFAS* report provided in Attachment F.

4.3.1 Receptors and Exposure Pathways

The ecological Conceptual Site Model (CSM) reflects the potential exposure of receptors to Table 3+ PFAS, including aquatic life in the Cape Fear River and tributaries, aquatic dependent wildlife foraging in the Cape Fear River and banks, terrestrial plant and invertebrate communities, and herbivorous and invertivore wildlife and carnivorous wildlife. Exposures may potentially occur to Table 3+ PFAS via surface soil, surface water and sediment, along with potential exposures via diet items for Table 3+ PFAS that may accumulate in plants, invertebrates and fish. Representative wildlife receptors were selected to represent various feeding guilds for terrestrial birds and mammals (herbivore, invertivore) and aquatic-dependent birds and mammals (herbivore, invertivore, piscivore).

4.3.2 Exposure Quantification

Field investigations included collection of onsite and offsite soils, invertebrates and offsite vegetation, and sediment, vegetation, fish and clams from the Cape Fear River for analysis of Table 3+ PFAS. These data were used to quantify exposures to selected mammalian and avian receptors and evaluate the potential for adverse effects to wildlife from current exposures to HFPO-DA. Site-specific doses for all Table 3+ PFAS were calculated for all terrestrial and aquatic-dependent wildlife receptors (birds and mammals). Ingested doses are presented in daily dose rates per unit of body weight (mg/kg-day) and referred to as total daily intake (TDI). Terrestrial wildlife was assumed to be exposed to Table 3+ PFAS via incidental ingestion of soil during foraging, consumption of surface water and consumption of food/prey items that have accumulated Table 3+ PFAS. Aquatic wildlife receptors were assumed to be exposed to Table 3+ PFAS via incidental ingestion of sediment, consumption of surface water and consumption of food/prey items that have accumulated Table 3+ PFAS. The estimated TDI for each receptor was calculated using generic dose formulas from the Wildlife Exposure Factors Handbook (USEPA, 1993), as well as receptor-specific exposure factors as discussed in the Ecological SLEA Section 3.

4.3.3 Ecological SLEA Results

The empirical data collected under the Ecological SLEA and HH-SLEA indicated 17 of 20 Table 3+ PFAS were present in detectable concentrations in onsite soils, invertebrates, terrestrial and aquatic vegetation and/or fish, with only two Table 3+ PFAS detected in sediment, benthic invertebrates and offsite soils. Samples collected from on-site locations had higher PFAS concentrations relative to samples collected from the Cape Fear River and offsite terrestrial areas. TDIs indicated predominant exposures are related to consumption of terrestrial and aquatic plants by herbivorous vertebrate wildlife like rabbits and muskrats. Terrestrial herbivores are primarily exposed to perfluoroethoxysulfonic acid (NVHOS) and PFMOAA. Aquatic herbivores in the Cape Fear River are primarily exposed to PFMOAA followed by Byproduct 4, Byproduct 5 and PMPA. Exposures for invertivores were lower than for herbivores, with exposures primarily associated with PMPA, Byproduct 4, Byproduct 5, and R-EVE offsite, and PFMOAA and Byproduct 4 onsite. Aquatic invertivores are not highly exposed based on the currently available dataset, and though exposure to aquatic piscivores does occur with exposed primarily associated with perfluoro(3,5,7,9-tetraoxadecanoic) acid (PFO4DA), PFMOAA and Byproduct 4.

No adverse hazards were identified to ecological receptors from current exposures to HFPO-DA. The Table 3+ PFAS with the highest exposures in the most-exposed ecological feeding guilds (herbivores) in both terrestrial and aquatic habitats were NVHOS, PFMOAA, PMPA, Byproduct4, and PFO2HxA. Fish-consuming receptors were most exposed to PFO4DA. As the primary exposures are related to the onsite seep areas and consumption of plants in the offsite area, source control of air emissions and discharges to the Cape Fear River will decrease exposures to ecological receptors.

4.3.4 Ecological SLEA Uncertainties

There are a number of uncertainties related to all SLEAs, based on the use of assumed parameters for ecological modeling, spatial variation of chemicals in media, and organism habitat use patterns, therefore the assumptions used in the Ecological SLEA aimed to provide additional conservatism, i.e., protectiveness where there was significant uncertainty. Specific key uncertainties in the Ecological SLEA include:

- Lack of Toxicity Information. This analysis was unable to assess hazards to exposed receptors for Table 3+ PFAS other than HFPO-DA due to the lack of Table 3+ PFAS specific TRVs (a testing program is presently in progress to evaluate toxicity of five additional Table 3+ PFAS [Chemours, 2019]);
- Use of practical quantitation limits (PQL) for Exposure Point Concentration. If a Table 3+ PFAS was detected in some media of an EU, it was carried forward in the quantification of exposures using the PQL as the EPC for media where that compound was not detected. The use of the PQLs as EPCs leads to overestimates of exposures.
- Large Carnivores. Larger ranging carnivores that consume small birds and mammals were not included in this evaluation as the collection of small bird and

mammal tissue samples to understand exposure to these receptors is a significant undertaking and was not feasible in the SLEA development timeframe.

- Sediment and Benthic Invertebrates. The sediment and benthic invertebrates (Asian clam) samples collected from the Cape Fear River were widely non-detect for Table 3+ PFAS. However, given the noted analytical sensitivities between soil and aqueous matrices and the lower organic carbon partitioning of Table 3+ PFAS, and that Asian clams are filter feeders with a lower level of sediment association than many other benthic invertebrates, there is uncertainty that this exposure route is under represented.

This Ecological SLEA demonstrates no adverse hazards to ecological receptors are anticipated from current exposures to HFPO-DA. This was done by including a number of conservative assumptions to address uncertainties when estimating exposure of ecological receptors to Table 3+ PFAS and estimating hazards from exposures to HFPO-DA.

5 NUMERICAL MODEL

5.1 Study Objectives

The objective of the numerical modeling of onsite groundwater was to develop a platform for use in the development and evaluation of remedial alternatives, including estimation of cost. In addition, the model in the future will aid in assessing the effectiveness of remedial implementation. The model is intended to be hydraulic only, to aid in assessment of pumping and recharge reduction approaches. Model details are provided in Appendix H.

5.2 Selection of Model

The model is required to simulate saturated and unsaturated flow behaviors at the Site. The steep topography surrounding the site is challenging to simulate, and therefore a finite element model was deemed to be more appropriate than a finite difference model. Various commercially available finite element models were assessed based on their ability to meet the study objectives, their maturity and acceptance in the scientific and regulatory communities, and the familiarity of the team with the code. Finite Element subsurface FLOW system (FEFLOW) (DHI-WASY) was the most suitable numerical model based on those criteria.

5.3 Model Construction

A three-dimensional (3D) hydrostratigraphic model of the Site was constructed using CTech Earth Volumetric Studio (EVS) software (https://www.ctech.com/products /earth-volumetric-studio/). The EVS model was developed to interpolate the hydrostratigraphic model, along the horizontal and vertical directions, and develop the model mesh for the numerical groundwater model.

The EVS geologic model was translated into a series of shape files representing each of the 7 hydrostratigraphic units. The shape files were assembled and meshed within FEFLOW using the triangle mesh generation algorithm. The mesh was further refined vertically to allow for more accurate simulation of vertical gradients and hydraulic processes in the vicinity of the bluffs leading to the Cape Fear River and Willis Creek. Overall the mesh contained 1,878,129 elements and 372,054 nodes. Details are presented in the incorporated modeling report.

5.3.1 Calibration

Calibration was performed using a sequenced trial and adjustment approach. Calibration variables consisted of rainfall recharge applied to the top boundary of the model, hydraulic conductivities of the Black Creek Aquifer, the Surficial Aquifer, the Perched

Clay, and the Perched Aquifer, as well as the formulation of the constant head condition on the western boundary.

Final model calibration resulted in a Normalized Root Mean Square (NRMS) error of 12.5%. This is considered satisfactory based on the scale of the model and its intended end use in costing and preliminary design focusing on hydraulics only (as opposed to contaminant fate and transport). The majority of the error in the calibrated model occurs in the Perched Zone and will have limited effect on the ability of the model to predict capture of groundwater discharge to the surface water bodies.

5.4 Predictive Simulations

The six most representative remedy simulations are presented below in Table 8. In total, 21 simulations were conducted using the calibrated model to aid in the evaluation of an appropriate groundwater remedy.

Table 8: Predictive Model Simulations

Simulation	Description	Total Extraction Rate (gpm)	Total Diverted Flow Rate (gpm)[1]	Number of Extraction Wells
1	Extraction wells at a 50-ft spacing (30 gpm) with no barrier wall	4,920	N/A	164
2	Extraction wells at a 200-ft spacing (20 gpm) with a barrier wall between the river and the extraction wells	820	569	41
3	Extraction wells at a 50-ft spacing (variable pumping between 20 to 40 gpm) with no barrier wall	4,430	N/A	164
4	Extraction wells at a 200-ft spacing (variable pumping between 20 to 30 gpm) with a barrier wall between the river and the extraction wells	930	491	41
5	Extraction wells at a 250-ft spacing (30 gpm) with a barrier wall between the river and the extraction wells	930	489	31
6	Extraction wells at a 250-ft spacing (variable pumping between 20 to 30 gpm) with a barrier wall between the river and the extraction wells	840	611	31

Notes:

N/A – not applicable.

[1] – Diverted flow accounts for the reduced discharge to the Cape Fear River due to the barrier wall.

The various simulations can be summarized as follows:

- Simulation 1 resulted in a large groundwater depression along the Cape Fear River in areas surrounding the pumping wells. A large portion of the extracted water was from the Cape Fear River.
- Simulation 2 resulted in minimal contributing flow from the Cape Fear River. Pumping wells create a groundwater depression in portions of the extraction wells.
- Simulation 3 reduced the groundwater depressions observed at higher pumping rates (simulation 1). Pumping wells still extract water from the Cape Fear River.
- Simulation 4 increased the groundwater capture along the extents of the barrier wall in comparison to simulation 2. The variable pumping rates minimized the groundwater depressions observed along portion of the extraction wells.
- Simulation 5 decreased the groundwater depressions observed along section of the barrier wall. However, in comparison to simulation 2 mounding was observed along section of the barrier wall. Also, a portion of the flow was not captured at the edges of the barrier wall.
- Simulation 6 increased pumping at the targeted extraction wells and increased the capture of flow at the extents of the barrier wall. However, in comparison to simulation 4 mounding was observed along section of the barrier wall.

The remedy modeling results indicate that without a barrier wall, the increase in total flow due to influx of Cape Fear River water makes these types of scenarios less feasible. The scenario that best meets the hydraulic containment objectives presented in Table 8 consists of an extraction well spacing of 200 feet, with pumping rates varying between 25 and 30 gpm per well. Ideally, there would be minimal drawdown to reduce the volume of water that requires treatment while also maintaining hydraulic containment. Additional aquifer tests would be required to assess the spacing and corresponding pumping rates.

The calibrated FEFLOW model meets the requirements of the NCDEQ 2007 Groundwater Modeling Policy (NCDEQ, 2007) and supports remedy evaluation, selection and design at the Site. The calibrated model is deemed sufficiently accurate for the modeling goals of this work however new data should be incorporated into both the conceptual and numerical models when it becomes available.

Numerical modeling is an effective technique for identifying areas of uncertainty in conceptual models and source-pathway-receptor models. Based on the results of the numerical modeling program, groundwater remedy development would be supported by reducing uncertainty regarding:

- Interactions between the Surficial Aquifer and the Black Creek Aquifer along the bluffs. Additionally; and
- Distribution of groundwater flows into surface water drainage features including onsite groundwater seeps, Willis Creek and Old Outfall 002.

A combination of additional simulations and targeted field investigations (aquifer testing) to address these uncertainties is recommended before selecting a final remedy for design.

6 PROPOSED CORRECTIVE ACTIONS

This section describes the proposed corrective actions to treat groundwater and surface water where these pathways are contributing PFAS loading to the Cape Fear River, including those actions proposed in the previous Paragraph 12 submittals: the August 2019 Reduction Plan and the November 2019 Reduction Plan – Supplemental Information Report. Together these corrective actions have been developed to meet the objectives and cleanup goals that are described in Section 6.1 and Section 6.2, respectively. The detailed development of potential remedial alternatives and evaluation of technical and economic feasibility that was provided in the Paragraph 12 submittals is not reproduced in this CAP, which rather focuses on further developing the groundwater and surface water remedies that were proposed for advancement. Table 9 provides a summary, by pathway, of the results of this screening process.

The remaining subsections below provide detailed discussion for these advanced groundwater and surface water alternatives in terms of design, construction, and operation; estimation of construction and operational costs; permits anticipated to be required; and sequencing and schedule. Performance monitoring of the remedies, compliance with CO Paragraph 16, and onsite and offsite groundwater quality monitoring are discussed in Section 7.

6.1 Corrective Action Objectives

The selection of corrective actions presented in this CAP is based on the CO's remedial requirements and management goals for the Site which are as follows:

- Reducing the total loading of PFAS originating from the Site to the Cape Fear River by at least 75 percent (%) from baseline (CO paragraph 16);
- Provide whole building filtration units and/or reverse osmosis units to qualifying surrounding residents (CO paragraphs 19 and 20);
- Comply with 2L Rules (CO paragraph 16), including following the policy for the intention of the 2L Rules "to maintain and preserve the quality of the groundwaters, prevent and abate pollution and contamination of the water of the state, protect public health, and permit management of the groundwaters for their best usage by the citizens of North Carolina" (15A NCAC 02L .0103); and
- Comply with other requirements of the CO.

Table 9: Summary of Remedial Alternatives Evaluation Process

Pathway	Retained for Further Development	Not Advanced in P12 Submittals
Direct Aerial Deposition	Air Emission Control Technologies	N/A
Old Outfall 002	Capture and Treat Old Outfall 002	N/A
Groundwater Seeps	*Interim and Long-Term*: Flow Through Cells and French Drains	PlumeStop^{TM} at CFR and Willis Creek Seeps
Onsite Black Creek Aquifer Groundwater	*Interim*: Pumping from Existing Wells *Long-Term*: Onsite Barrier Wall with Hydraulic Containment	*Interim*: Pumping from Additional Extraction Wells *Long-Term*: Hydraulic Containment
Outfall 002	Sediment Removal Stormwater Pollution Prevention Plan Targeted Stormwater Control Terracotta Pipe Decommissioning Mitigation of Groundwater Intrusion	Treat all stormwater at Outfall 002 Treat all flows at Outfall 002
Willis Creek and Georgia Branch Creek	Air Emission Control Technologies Onsite Barrier Wall with Hydraulic Containment	Treat all Flows at Mouths PlumeStop^{TM} along Creek Lengths
Offsite Groundwater	Air Emission Control Technologies	Offsite Barrier Wall with Hydraulic Containment

The Table 3+ PFAS compounds at the Site have only been recently considered for environmental remediation and the availability of treatment technologies is limited at this time. This is a rapidly evolving field and new technologies may become available. Chemours' implementation of actions for these goals may be refined as both remedial technologies for PFAS develop and a greater body of scientific understanding develops regarding PFAS originating from the Site.

6.2 Cleanup Goals and Standards by Media

Pursuant to the 2L Rules and CO requirements, this section describes the development of cleanup goals for surface water and groundwater on and offsite. This section begins by describing the factors influencing the developed clean up goals, then the cleanup goals by media are described, and lastly the potential need for alternative groundwater cleanup standards in the intermediate to long term future are discussed.

6.2.1 Cleanup Goal Factors

The cleanup goals were developed based on the following five factors:

- Time horizons (Near, Intermediate, Long-Term);
- Human health exposure considerations;
- Ecological exposure considerations;
- CO requirements; and
- 2L Rules.

First, cleanup goals were developed for near, intermediate and long-term time horizons. Near term goals reflect what can be accomplished in the next two years and have an emphasis on taking actions that lead to the greatest reduction in exposures to potential receptors. Intermediate goals reflect implementing long term remedial actions and reflect presently available technologies and approaches. Long term goals reflect the long-term operation and maintenance of remedial actions and recognize that advancements in the understanding of potential toxicity of compounds and abilities to remediate compounds may evolve and lead to refinement of cleanup goals.

Second, human health exposure considerations were considered. The HH-SLEA described in Section 4.2 demonstrated that at present human HFPO-DA exposures are estimated to be below the NC DHHS chronic, long-term exposure reference dose. Furthermore, the HH-SLEA demonstrated that supplying whole building filtration systems or reverse osmosis units for qualifying residents offsite is reducing HFPO-DA (and Table 3+ PFAS) intake by over 92% further ensuring human receptor exposures remain below hazard limits for HFPO-DA, based on the NC DHHS draft oral reference dose. Therefore, the current HH-SLEA findings do not necessitate the formation of a cleanup goal.

Third, ecological exposures were considered. The Ecological SLEA described in Section 4.3 demonstrated that present ecological exposures at and surrounding the Site to HFPO-DA are not expected to result in adverse effects to terrestrial and aquatic ecological receptors. Therefore, the current Ecological SLEA findings do not necessitate the formation of cleanup goals.

Fourth, CO paragraph 16 requires, at minimum, a 75% reduction in the loading of Table 3+ PFAS originating from facility to surface water (Old Outfall 002, Willis Creek, Georgia Branch Creek, and the Cape Fear River). The Cape Fear River receives discharge from Old Outfall 002, Willis Creek and Georgia Branch Creek, onsite seeps and onsite groundwater. Therefore, reducing Cape Fear River PFAS mass loading by at least 75 % was established as a cleanup goal. Corrective actions outlined in Paragraph 12 submittals and described in this CAP are estimated to lead to greater than 75% reduction in the mass loading of Total Table 3+ PFAS to the Cape Fear River.

Last, for Corrective Actions under the 2L Rules, 15A NCAC 02L .0106 (a), "Where groundwater quality has been degraded, the goal of any required corrective action shall be restoration to the level of the standards, or as closely thereto as is economically and technologically feasible as determined by the Department in accordance with this Rule." At present, no standards exist for Table 3+ PFAS under North Carolina law, and the 2L Rules, 15A NCAC 02L .0202(c) states such "substances…shall not be permitted in concentrations at or above the PQL in Class GA or Class GSA groundwaters." At present, reducing Table 3+ PFAS concentrations in onsite and offsite groundwater to below the PQL is not technologically or economically feasible as described later in section 6.2.4. In the future, groundwater cleanup standards based on scientific studies may be developed and improvements and breakthroughs in in situ treatment of PFAS and Table 3+ PFAS may occur. For example, in late December 2019 the EPA issued a preliminary remediation goal of 70 ppt for groundwater impacted with two PFAS compounds (PFOA and PFOS)[2], showing that the state of the science is advancing as a whole for PFAS and in future science based regulatory standards may become available for Table 3+ PFAS.

Together, both regulatory standards and PFAS treatment improvements may make remediation to 2L standards possible. Until that time, alternate cleanup standards may need to be considered as described in 15A NCAC 02L .0106 (a) and (i) together and 15A NCAC 02L .0106 (k). These potential alternate cleanup criteria are described in greater detail later in sub-section 6.2.3 as well as the possibility of performing risk-based remediation as described by N.C.G.S. § 130A-310.66 et seq.

[2] EPA, 2019. The preliminary remediation goal (PRG) was set as 70 ppt (the current lifetime drinking water health advisory level) for contaminated groundwater that is a current or potential source of drinking water, where no state or tribal MCL or other applicable or relevant and appropriate requirements (ARARs) are available or sufficiently protective. The guidance recommends using a screening level of 40 ppt to determine if PFOS and/or PFOA is present at a site and may warrant further investigation.

6.2.2 Cleanup Goals by Media / Surface Water Body

Cleanup Criteria are described in Table 10 of this subsection by describing the basis of the cleanup goals for media / pathway and then describing what the developed cleanup goals are on a Near Term (2 years), Intermediate Term (up to 5years) and Long Term (> 5 years) basis.

Table 10: Cleanup Goals

Media / Pathway	Cleanup Goal Basis	Near Term (2 years)	Intermediate Term (up to 5 years)	Long-Term (>5 years)
Cape Fear River	- CO paragraph 16: minimum 75% reduction of Table 3+ PFAS Loading - Reduce HFPO-DA and Table 3+ PFAS loading concentrations such that exposures continue to decrease as provided in SLEAs.	- Begin implementation of interim actions proposed in this CAP to decrease Table 3+ PFAS loading to the Cape Fear River.	- Complete implementation of interim actions and proposed corrective actions outlined here to reduce Table 3+ PFAS loading to the Cape Fear River by at least 75% from baseline.	- Achieve 75% Table 3+ PFAS Loading Reduction; - Maintain HFPO-DA and other Table 3+ PFAS in accordance with surface water standards in the Cape Fear River.
Old Outfall 002	- CO paragraph 12: capture dry weather flows of Outfall 002 and treat to 99% removal of HFPO-DA and PFMOAA before subsequent discharge. - Supports CO paragraph 16 requirement of minimum 75% Table 3+ PFAS loading reduction in Cape Fear River. - Comply with NPDES permit.	- Implement dry weather flows capture and treat system.	- Maintain dry weather flows capture and treat system as long as needed.	- Maintain dry weather flows capture and treat system as long as needed
Onsite Groundwater Seeps	- As per Paragraph 12 Cape Fear River PFAS Loading Reduction Plan reduce Total Table 3+ PFAS mass loading to Cape Fear River. - Supports CO paragraph 16 requirement of minimum 75% loading reduction in Cape Fear River.	- Begin implementing and optimizing interim actions and long-term remedies.	- Seep treatment remedy operating to reduce Table 3+ PFAS loading as long as needed	- Maintain seep treatment remedy as needed
Willis Creek	- Achieve economically and technically feasible reductions to support CO paragraph 16 requirement of minimum 75% Table 3+ PFAS mass loading reduction in Cape Fear River. - Reduce discharge to Willis Creek of onsite Table 3+ PFAS with a process water signature	- Implement thermal oxidizer and other air abatement controls to reduce offsite groundwater concentrations over time; offsite groundwater discharges to Willis Creek. - Design and begin construction process for onsite groundwater remedy which will reduce PFAS mass loading via the Black Creek Aquifer to Willis Creek.	- Maintain air abatement controls. - On Site Groundwater Remedy will address PFAS loading to Willis Creek.	- Maintain air abatement controls. - Maintain groundwater remedy as needed

Media / Pathway	Cleanup Goal Basis	Near Term (2 years)	Intermediate Term (up to 5 years)	Long-Term (>5 years)
Georgia Branch Creek	- Achieve economically and technically feasible reductions to support CO paragraph 16 requirement of minimum 75% Table 3+ PFAS mass loading reduction in Cape Fear River	- Implement thermal oxidizer and other air abatement controls to reduce offsite groundwater concentrations over time;	- Maintain air abatement controls.	- Maintain air abatement controls.
Onsite Groundwater	- Reduce discharge of PFAS with a PFAS process water signature to Cape Fear River and to Willis Creek to support CO paragraph 16 requirement of minimum 75% Table 3+ PFAS mass loading reduction in Cape Fear River (Process water signature discharge to Old Outfall 002 is addressed by Old Outfall 002 capture and treatment system; PFAS historically released in process water does not discharge to Georgia Branch Creek) - Comply with 2L Rules	- Implement interim actions. - Conduct pre-design investigations for on-site groundwater remedy and treatment.	- Implement groundwater remedy.	- Evaluate 2L cleanup standards based on potentially existing cleanup standards developed from newly available scientific studies and potentially more effective remedial approaches recently developed. Presently both technically and economically infeasible to cleanup onsite groundwater to PQLs.
Offsite Groundwater	- Provide replacement drinking water to surrounding residents where groundwater based on requirements of CO paragraphs 19 and 20 - Maintain human exposures to HFPO-DA below the North Carolina Department of Health and Human Services (NCDHHS) reference dose (achieved per HH-SLEA results and replacement drinking water actions)	- Provide replacement drinking water. - Implement thermal oxidizer and other air abatement controls to reduce offsite groundwater concentrations over time.	- Maintain provision of replacement drinking water as long as needed - Maintain air abatement controls.	- Maintain provision of replacement drinking water as long as needed - Maintain air abatement controls.

Media / Pathway	Cleanup Goal Basis	Near Term (2 years)	Intermediate Term (up to 5 years)	Long-Term (>5 years)
Onsite and Offsite Soils	- Maintain human exposures to HFPO-DA below the NCDHHS reference dose (achieved per HH-SLEA results and replacement drinking water actions) - Maintain ecological exposures below adverse effects levels (achieved per Ecological SLEA results) - 2L requires removal or control of secondary sources to groundwater such as contaminated soils. Per information presented in Section 3.6 much more mass is in groundwater than in soils suggesting soil remediation would have a reduced benefit.	- Implement thermal oxidizer and other air abatement controls to reduce PFAS deposition rates to on and offsite soils.	- Maintain thermal oxidizer and other air abatement controls to reduce PFAS deposition rates to on and offsite soils.	- Maintain thermal oxidizer and other air abatement controls to reduce PFAS deposition rates to on and offsite soils.
Outfall 002	- The NPDES permit will develop effluent limits for Outfall 002 - Outfall 002 actions proposed in Chemours CO paragraph 12 Cape Fear River PFAS Loading Reduction Plan	- Comply with NPDES permit - Begin implementing actions proposed in the Reduction Plan	- Comply with NPDES permit (permit is for 5 years) - Implement actions proposed in the Reduction Plan	- Re-apply for NPDES permit - Maintain actions proposed in the Reduction Plan

6.2.3 Potential Future Alternate Groundwater Cleanup Standards

In the future NCDEQ and Chemours may need to consider alternate cleanup standards conceived under 15A NCAC 02L .0106 (a) and (i) together and 15A NCAC 02L .0106 (k) individually or risk-based remediation as described by N.C.G.S. § 130A-310.66 et seq.

6.2.4 Potential Future Alternate Groundwater Cleanup Standard 15A NCAC 02L .0106 (a) and (i)

15A NCAC 02L .0106 (a) and (i) allows for consideration of alternate cleanup criteria when it states in (a) that the goal of corrective action is, "restoration to the level of the standards, or as closely thereto as is economically and technologically feasible". And (i) states that "the Secretary shall consider the extent of any violations, the extent of any threat to human health or safety, the extent of damage or potential adverse impact to the environment, technology available to accomplish restoration, the potential for degradation of the contaminants in the environment, the time and costs estimated to achieve groundwater quality restoration, and the public and economic benefits to be derived from groundwater quality restoration." All these factors are relevant to the Chemours Fayetteville Works Site and are examined below.

<u>Technical and Economic Infeasibility</u>

The technical and economic infeasibility of Table 3+ PFAS remediation is driven by two factors, (a) the large areal extent PFAS are detected and (b) the lack of remedial technologies that are effective over large areas and effectively destroy PFAS mass in-situ at a technically achievable and affordable scale. To date Table 3+ PFAS have been detected over an area of 70+ square miles (over 45,000 acres). The size of the area encompasses hundreds of private land parcels and any remedial construction activities using currently available remedial technologies (excavation and groundwater extraction) would be very disruptive to the local community and this disruption would continue for a lengthy period of time. Any remedy which in principle could help make progress towards PQLs over this large area would cost in the billions to tens of billions of dollars. However, at this time these hypothetical remedies are not considered necessary to protect human health or ecological receptors as presented in the HH-SLEA and Ecological SLEA reports.

Additionally, there are no currently available remedies that are expected to be able to meet PQLs over an area this large. There are two candidate remedial approaches (a) in situ sorption (i.e. PlumeStop™) or pumping and treating. PlumeStop™ leaves the PFAS in place in the aquifer and over time; with additional loading these PFAS would desorb from the emplaced PlumeStop™ and become mobile again. For PlumeStop™ to meet PQLs additional product would have to be applied to the entire aquifer system across the impacted 70+ square miles repeatedly until another technology is invented that destroys the PFAS mass in place – a logistically impossible (e.g. access agreements) and economically prohibitive task (lack of PlumeStop™ supply, cost in the tens of billions of dollars).

Meanwhile, though pump and treat systems do remove mass from the aquifers, they reach points of diminishing returns where aquifer concentrations stay constant and where the technology is applied to extremely large areas. Pump and treat systems are now conceived by the remediation industry as systems to control contaminant migration, not systems to remove contaminant mass and clean aquifers of contaminants. A pump and treat system applied at the Site with the goal of restoring groundwater to PQLs would cost an economically infeasible amount of over a billion dollars and would almost certainly not achieve PQLs and not achieve any additional benefit in loading reductions to the Cape Fear River greater than those already proposed in this CAP. Likewise an offsite pump and treat system would be technically challenging to infeasible and cost an estimated tens to hundred billion dollars and achieve limited to no benefit in reducing exposures and hazards than actions already proposed and in progress.

Extent of any violations

Chemours has entered into the CO to comprehensively address DEQs concerns. Chemours has and is working expeditiously with DEQ to address releases and emissions to the environment.

Extent of any threat to human health or safety

The HH-SLEA demonstrated that offsite human exposures, both in the surrounding area, and for downstream river water users, to historically deposited PFAS and PFAS in the Cape Fear River are below the NCDHHS reference dose. Further, for private well users, replacement drinking water will reduce HFPO-DA and Table 3+ PFAS intake by over 92% and for Cape Fear River water users' actions outlined in this CAP will lead to at minimum a 75% reduction in Table 3+ PFAS intake. These actions will provide further protectiveness to human health and safety.

Extent of damage or potential adverse impact to the environment

The Ecological SLEA (Appendix G) concluded no adverse hazards to ecological receptors are anticipated from current exposures to HFPO-DA.

Technology available to accomplish restoration

There does not exist any proven technologies for passive in situ PFAS degradation. In situ sorption can lead to desorption in the future, and ex situ treatment will become asymptotic and not achieve cleanup goals.

Potential for degradation of the contaminants in the environment

Table 3+ PFAS are not expected to degrade in a reasonable time period in the environment, and therefore this is not a mechanism that will support concentration reductions.

Time and costs estimated to achieve groundwater quality restoration

Based on professional opinion the costs for on and offsite remediation to PQLs would exceed billions to potentially tens of billions of dollars and the timeframe would be on the order of multiple decades.

Public and economic benefits to be derived from groundwater quality restoration

There are limited to no additional public or economic benefits to remedial actions outside of those already proposed in the CAP. This CAP describes replacement drinking water actions to reduce intake of the most exposed offsite residents by over 92% to Table 3+ PFAS and this CAP describes actions to reduce Cape Fear River PFAS mass loading by over 75%. Even in the most conservative, hypothetical scenarios evaluated these actions will maintain river HFPO-DA concentrations below 140 ng/L at potential downstream raw water intakes.

6.2.5 Potential Future Alternate Groundwater Cleanup Standard 15A NCAC 02L .0106 (k)

15A NCAC 02L .0106 (k) allows for alternate cleanup standards by demonstrating the following seven criteria. Each of them has or will be met here:

1. All sources of contamination and free product have been removed or controlled

As described in previous sections of this CAP, air emission sources are being controlled, including by a state-of-the-art thermal oxidizer that will reduce aerial HFPO-DA emissions by 99% starting in January 2020 compared to 2017 baseline, with expected comparable reductions for other PFAS. Chemours' process water is captured and shipped offsite and is not released through the WWTP and the Site Conveyance Network to the Cape Fear River. Sewers leaking process water were decommissioned and re-routed aboveground. There is no free product discharged, and all sources of contamination have been removed or are being substantially controlled and, as shown in Section 3, PFAS at the Site are mostly found in groundwater.

2. Time and direction of contaminant travel can be predicted with reasonable certainty

Travel times and directions for PFAS contamination present onsite and offsite can be estimated using a substantial data set and the numerical modeling work (Section 5) undertaken on behalf of Chemours. Specifically, the numerical model can be used to estimate groundwater travel times which can then be combined with the retardation coefficients presented in Section 3.8 of this CAP.

3. Contaminants have not and will not migrate onto adjacent properties, or such properties are served by an existing public water supply system dependent on surface waters or hydraulically isolated groundwater

Historical process water releases to groundwater are hydraulically isolated from private wells and the process water PFAS signatures have not been detected in any private or offsite wells, as described in Section 3 of this CAP. Where PFAS are present offsite at private wells, they originate from aerially deposited PFAS. Offsite groundwater wells that contain Table 3+ PFAS have PFAS signatures consistent with aerial deposition. With respect to those wells, offsite migration air abatement measures that have been installed by Chemours. including the thermal oxidizer, are mitigating PFAS air emissions that lead to offsite deposition. Moreover, parties using offsite groundwater wells for drinking water purposes, where they qualify, are being provided with replacement drinking water supplies by Chemours per CO criteria and requirements.

4. The standards specified in Rule .0202 of this Subchapter will be met at a location no closer than one year time of travel upgradient of an existing or foreseeable receptor, based on travel time and the natural attenuation capacity of subsurface materials or on a physical barrier to groundwater migration that exists or will be installed by the person making the request

As noted above, the existing receptors that have been the focus of abatement measures are the offsite drinking water wells, which may have residual PFAS from prior air emissions. The thermal oxidizer and other air abatement measures will substantially prevent further PFAS contamination from reaching these receptors. Where offsite migration via aerial emissions has occurred, private well receptors are being provided with replacement drinking water supplies by Chemours per CO criteria and requirements. Moreover, existing onsite groundwater contamination is not expected to travel to or impact receptors other than surface waters, which in turn is the subject of the next criterion.

5. If the contaminant plume is expected to intercept surface waters, the groundwater discharge will not possess contaminant concentrations that would result in violations of standards for surface waters contained in 15A NCAC 02B .0200

There are no 2B standards for Table 3+ PFAS, so there will not be violation of any such standards in surface water caused by any contaminant plume from the Site. There is a State health advisory level for HFPO-DA in drinking water, which is not a 2B standard. The health advisory has not been exceeded in the Cape Fear River since 2017 when Chemours began measures to control PFAS emissions and releases at the Site. Moreover, this CAP proposes active remediation actions to reduce Table 3+ PFAS loading to the Cape Fear River by greater than 75%.

6. Public notice of the request has been provided in accordance with Rule .0114(b) of this Section

DEQ is required to provide public notice of this CAP under the CO, so public notice will be provided. In addition, if necessary, a public notice can be made per Rule 0.114(b).

7. The proposed CAP would be consistent with all other environmental laws

Actions proposed in this CAP are fully consistent with all other environmental laws, including those requirements set forth in the CO and permits. For example, the air abatement measures are consistent with and have been permitted under the Clean Air Act.

6.2.6 Potential Future Risk-Based Remediation

North Carolina law as described in N.C.G.S. § 130A-310.66 et seq. allows for risk-based remediation. Specifically, the stated purpose of Risk-Based Remediation is:

> *It is the purpose of this Part to authorize the Department to approve the remediation of contaminated sites based on site-specific remediation standards in circumstances where site-specific remediation standards are adequate to protect public health, safety, and welfare and the environment and are consistent with protection of current and anticipated future use of groundwater and surface water affected or potentially affected by the contamination.*

As the corrective actions proposed in this CAP are completed and additional toxicity data and relative source contribution data (e.g. what percentage of HFPO-DA intake comes from drinking water) are gathered for Table 3+ PFAS, Chemours and NCDEQ can potentially evaluate the suitability of applying site-specific remediation standards and following the process outlined by N.C.G.S. § 130A-310.66 et seq.

6.3 Proposed Remedial Alternatives

The detailed development of remedial alternatives and evaluation of technical and economic feasibility that was provided in the Paragraph 12 submittals (Reduction Plan and the Supplemental Information Report) is not reproduced in this CAP. The feasibility study assessed and scored potential remedial alternatives based on five criteria (Protection of Public Health and the Environment through Reduction of PFAS Mass Loading; Adverse Environmental Effects; Technical Feasibility and Effectiveness; Timing; and Economic Feasibility). This CAP focuses on the groundwater and surface water remedial alternatives that were considered to satisfactorily meet these five criteria.

For groundwater and surface water remedies that were advanced, the following sections provide a detailed description, estimated reduction in PFAS that may be achievable, implementation schedule, and estimated cost. Construction and annual operating costs for each alternative have been estimated with a range of -30 % to +50 %, and the 20-year net present value (NPV) is estimated at a 3.5% discount rate; cost detail sheets are provided in Appendix J. Cost estimates are not intended for budgetary or future planning purposes; they have been prepared from the currently available information to facilitate an inter-alternative comparison. The final costs of any selected alternative will depend on final approved design, actual labor and material costs, and competitive variable factors.

As has been previously noted, Table 3+ PFAS at the Site are present in three aquifer units (Perched, Surficial and Black Creek) and over an extensive land area. PFAS are relatively recent compounds being considered for environmental remediation and as such there are few treatment technologies with full-scale demonstrations of effectiveness. PFAS remediation is a rapidly evolving field and new technologies may become available and suitable for the PFAS at the Site that would expand the set of alternatives available for consideration. Therefore, the set of remedial alternatives considered for this Site are subject to enhancement over time and re-evaluation of the technical and economic feasibility.

6.3.1 Pathway: Direct Aerial Deposition

Direct aerial deposition of PFAS emissions from the facility has the potential to result in mass loading to surface water bodies; however, the mass loading model estimated that aerial deposition contributed less than 2% of the mass loading observed in the Cape Fear River. Aerial deposition was identified as a pathway of concern primarily due to offsite drinking water wells. The remedial approach identified to mitigate impacts to offsite drinking water wells is a series of air emission control technologies, providing temporary alternate drinking water sources and long-term water treatment to effected households.

Pursuant to Paragraph 7 of the CO, Chemours completed a number of operational improvements to control air emissions. In November 2018, Chemours installed a packed bed scrubber to control emissions from the Division Waste Gas Scrubber and in December 2018 Chemours completed the tie-in of the Carbon Absorber unit for the Second Phase Scrubber at the Vinyl Ethers North Plant. By December 31, 2019, Chemours is completing installation of a Thermal Oxidizer to control air emissions of PFAS from process streams from the Monomers IXM Area. As required by the CO, the thermal oxidizer will dramatically reduce aerial PFAS emissions from the Site, with reduction of aerial HFPO-DA emissions by 99% starting in January 2020 compared to 2017 baseline, and expected comparable reductions for other PFAS. The reduction of PFAS emissions to air will over time result in lower concentrations of PFAS in offsite soils and groundwater and lead to reductions of loading to Willis Creek, Georgia Branch

Creek and the offsite Cape Fear River. The total construction cost for the thermal oxidizer is expected to be approximately $100 million or greater (a cost detail sheet is not provided in Appendix I as this remedy is near completion).

6.3.2 Pathway: Old Outfall 002

The Old Outfall 002 (OOF2) is a natural feature that discharges to the Cape Fear River. Perched zone and surficial aquifer groundwater also discharge to this feature. Since Site groundwater has elevated PFAS concentrations, OOF2 also has elevated PFAS levels. The results of the Mass Loading Model indicate OOF2 is one of the primary contributors of PFAS mass loading originating from the facility to the Cape Fear River, estimated to contribute about 26% of observed mass loading (average of the May, June, and September 2019 sampling data).

As described in Proposed Action 1 of the Reduction Plan, Chemours will continue to comply with the existing CO requirements by implementing an ex situ capture and treatment remedy for Old Outfall 002. This process is currently in the detailed design and permitting phase. Chemours provided details on the approach for treatment in the Old Outfall 002 Engineering Report (Parsons, 2019b) and Old Outfall 002 Engineering Alternatives Report (Parsons, 2019a). A process flow diagram of the treatment process is shown in Figure 5. Based on the most recent flow measurements, the dry weather baseflow is between 500 and 750 gpm; therefore, the facility is being designed to treat up to 750 gpm. The design of the treatment system is intended to be modular and scalable if additional capacity is needed.

The treatment system is required to be constructed and operational by September 30, 2020, assuming permits are issued in a timely manner. In order to continue and accelerate progress on implementing this remedy, Chemours is clearing the land where the Old Outfall 002 treatment system will be located and is arranging for power to be available at this location by early 2020. Chemours is currently soliciting bids from water treatment vendors to provide the treatment system.

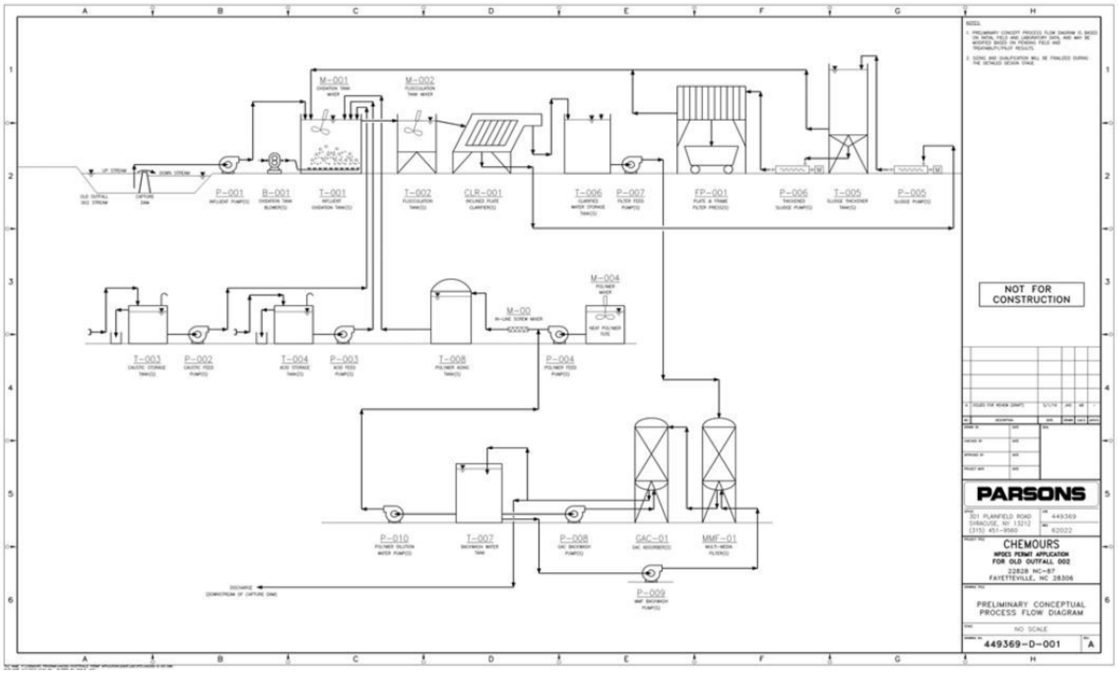


Figure 5. Old Outfall 002 Treatment System Process Flow Diagram

<u>Schedule</u>

Task	Duration (months)	2019				2020			
Geotechnical Investigation	2								
Electrical Enabling Package	3								
Electrical Upgrades (EMC)	6								
Prepare RFP for WTP	1								
Bidding and Award (WTP Only)	2								
Lift Station/Dam Design	2								
NPDES Permitting (1)	9								
Lift Station/Dam Construction	3								
WTP Design/Procurement	6								
Startup	1								

1 - Task timing is dependent upon agency approval timing

Cost

Costs for the OOF2 system have been previously presented in several submittals, including the Old Outfall 002 Engineering Alternatives Analysis (EAA) (Parsons, 2019b) and Reduction Plan Supplemental Information Report (Geosyntec, 2019h). Over time, the design of the system has progressed, and costs have been refined based on new flow measurements and data from the pilot treatment study (Parsons, 2019c). Chemours is currently evaluating the need for iron removal at the facility which would reduce the construction and operational requirements of the facility. The cost estimate was prepared without iron removal or a treatment building. Construction cost was estimated to be $7 to 15 million, annual O&M costs are estimated to be $1 to 2 million, and the 20-year NPV is $21 to 45 million.

It is noted that the total water balance for the comprehensive site remedies, as detailed in the following sections, may add additional water volume from the capture of seeps, Black Creek aquifer groundwater, and targeted stormwater. Based on engineering evaluations conducted to date, it appears to be more cost effective to consolidate all flows and convey captured water to the same location as the OOF2 system. Since the OOF2 system is likely to be sequenced first, a modular engineering approach will be employed, to which scaling up additional flow capacity over time is facilitated with skid-mount systems, a lack of fixed structures to the extent practical, and an overall adaptive management approach.

Presentation of cost estimates for seep, groundwater, and stormwater treatment in the following sections will note where applicable how incorporation of water treatment costs has been estimated relative to the baseline cost of the OOF2 system.

6.3.3 Pathway: Groundwater Seeps

Four groundwater seeps discharging from the bluff slope directly to the Cape Fear River were identified and described in the Seeps and Creeks Investigation report (Geosyntec, 2019b). The Mass Loading Model estimated that the onsite seeps discharging to the Cape Fear River contributed between 24% and 42% of PFAS mass load (on average, about 33% based on the May, June, and September 2019 sampling events).

Table 11: PFAS Loading from Seeps

Seeps	Flow Rate May 2019 (gpm)	T3+ PFAS May 2019 Concentration (ng/L)	Mass Loading (ug/s)
Seep A	120	300,000	2,270
Seep B	100	310,000	1,960
Seep C	30	350,000	660
Seep D	30	170,000	320
Total Cape Fear River Seeps	**280**	**N/A**	**5,200**

Notes:
Total Table 3+ PFAS concentrations come from the May 2019 sampling event for illustration purposes, as reported in the Seeps and Creeks Investigation (Geosyntec, 2019b). June 2019 and September 2019 sampling data not shown for clarity.
T3+ PFAS – Results of Table 3+ PFAS analytes summed
gpm – gallons per minute
ng/L – nanograms per liter
µg/s – micrograms per second

Interim Remedial Alternative for Seeps

As described in the Reduction Plan Supplemental Information Report, a combination of flow-through cells and ex situ capture using French drains is proposed as an interim remedial approach for the four onsite seeps. The approximate location of the seep remedies is shown below in Figure 6. The flow-through cell interim actions would start at Seep A with implementation progressing successively through Seeps B and C where lessons learned from the construction and operation of the flow-through cells at the prior seeps would be used to design and operate the subsequent flow-through cells.

An ex-situ capture French drain would be installed at Seep D. This method, while more power intensive and disruptive to habitats does have a higher certainty for water treatment capabilities and would serve as a pilot location of this option.

- *Seep A → Flow-Through cell – Phase 1*
- *Seep B → Flow-Through cell – Phase 2*
- *Seep C → Flow-Through cell – Phase 3*
- *Seep D → French Drain (to OOF2 treatment system)*

An adaptive management approach will be employed when implementing the above. For example, if flow-through cells in Seep A are determined to be ineffective or impractical to implement, while the French Drain in Seep D is performing as intended, then French

Drains may be installed in additional seeps. Detailed descriptions of the two types of seep remedies are provided in the following sections.

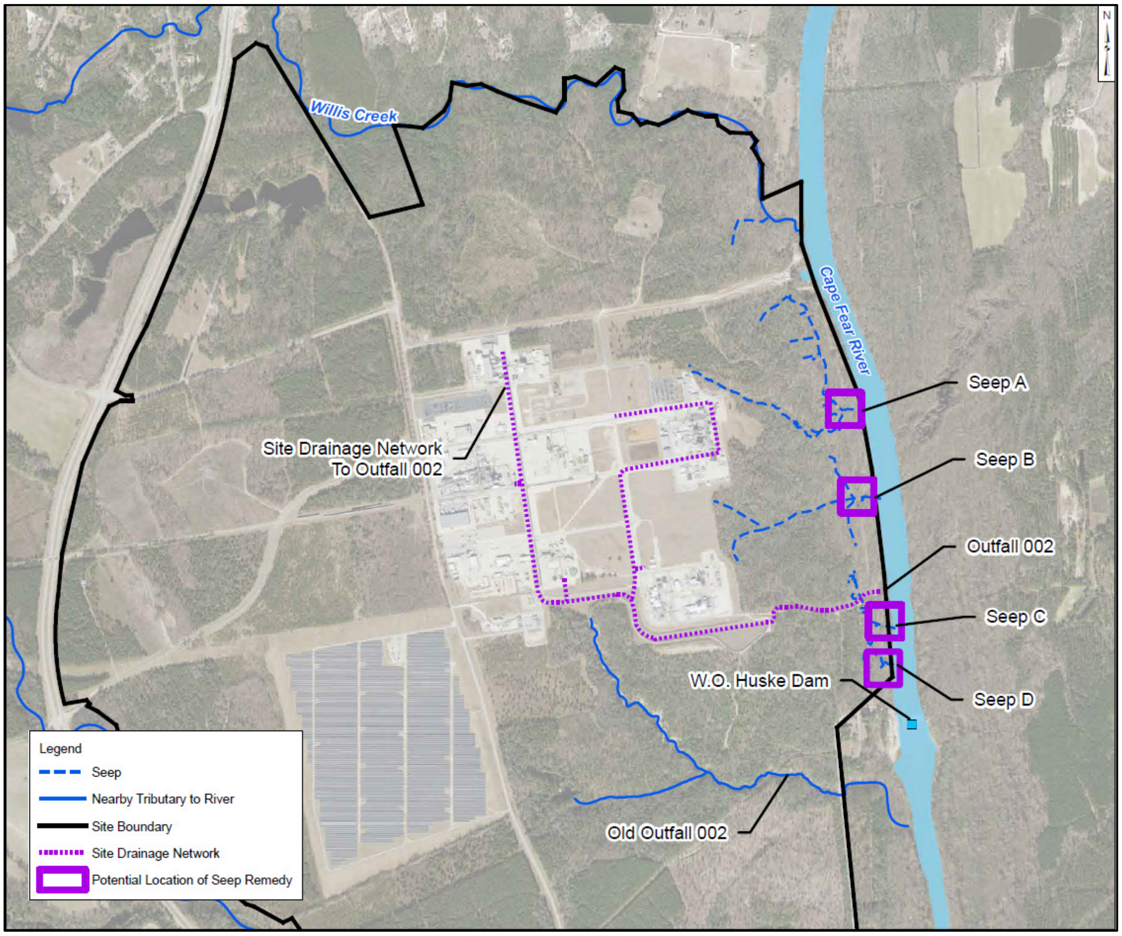


Figure 6: Location of Seep Remedial Alternatives

Flow-Through Cells

Interim application of flow-through cells would involve the installation of V-shaped sheet pile walls to guide seep water discharge through a controlled structure for on-location treatment. Large wire baskets (gabions), filled with granular activated carbon (GAC) would be installed in the discharge structures such that the water discharging from each seep location would flow through the GAC filled gabions. The PFAS compounds in the seep water would be sorbed by the GAC in the gabions and the treated water, containing much lower concentrations of PFAS compounds, would flow out the downhill side of the gabions.

Installation of the seep flow-through structures would commence after the river access road and all clearing and grubbing is complete. It is assumed that a total of 16 15-foot lengths of standard steel 22-inch wide sheet pile will be installed at each seep location. The sheet pile will be driven vertically into the ground to a depth of approximately 11 ft bgs to form a V-shaped sheet pile wall centered on and oriented perpendicular to the seep discharge channel. The center 2 sheet piles will be driven an additional approximate 3 ft to form a window in the middle of the sheet pile wall such that seep water can flow through the wall. A steel plate approximately 44-inches wide and 72-inches long will be placed flat side down in the sheet pile window and welded in place (to the sheet pile) to provide a flat stable surface for the GAC filled gabions.

Each gabion will be lined with geotextile fabric and filled with new, unused GAC. The geotextile fabric liner will then be fastened closed and the top of the gabions will be closed and fastened with steel wire such that the gabions can be moved. Three gabions will be installed first in the seep A structure as depicted in Figure 7 below using an excavator and load straps or equivalent. After installation, the gabions will be secured with sandbags to ensure they stay in place.

Construction of the flow-through cells is not anticipated to require regulatory approval via NPDES, as there is no discharge of waste, but would likely require approval from United States Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act. It is assumed that the permitting pathway would be similar to that obtained for the OOF2 structures, which were permitted under Nationwide Permit (NWP) 38 (Cleanup of Hazardous and Toxic Waste) in October 2019.

It is anticipated that the first structure will be constructed at Seep A, and operated for approximately 4-months during which performance and operational data will be collected to assess system performance. Lessons learned and performance upgrades developed during this time frame at Seep A will be incorporated as design modifications for potential application at subsequent seeps.

Ex Situ Capture French Drains

This interim remedial measure involves the installation of a French drain or equivalent sump to capture seep water discharge for subsequent conveyance to the planned treatment plant to be located at OOF2. The French drain would consist of a permeable trench excavated across the seep with perforated piping to collect the water, and a sump pump to convey the captured seep water to the river access road pipeline for subsequent conveyance to the planned OOF2 treatment system for treatment and subsequent disposal.

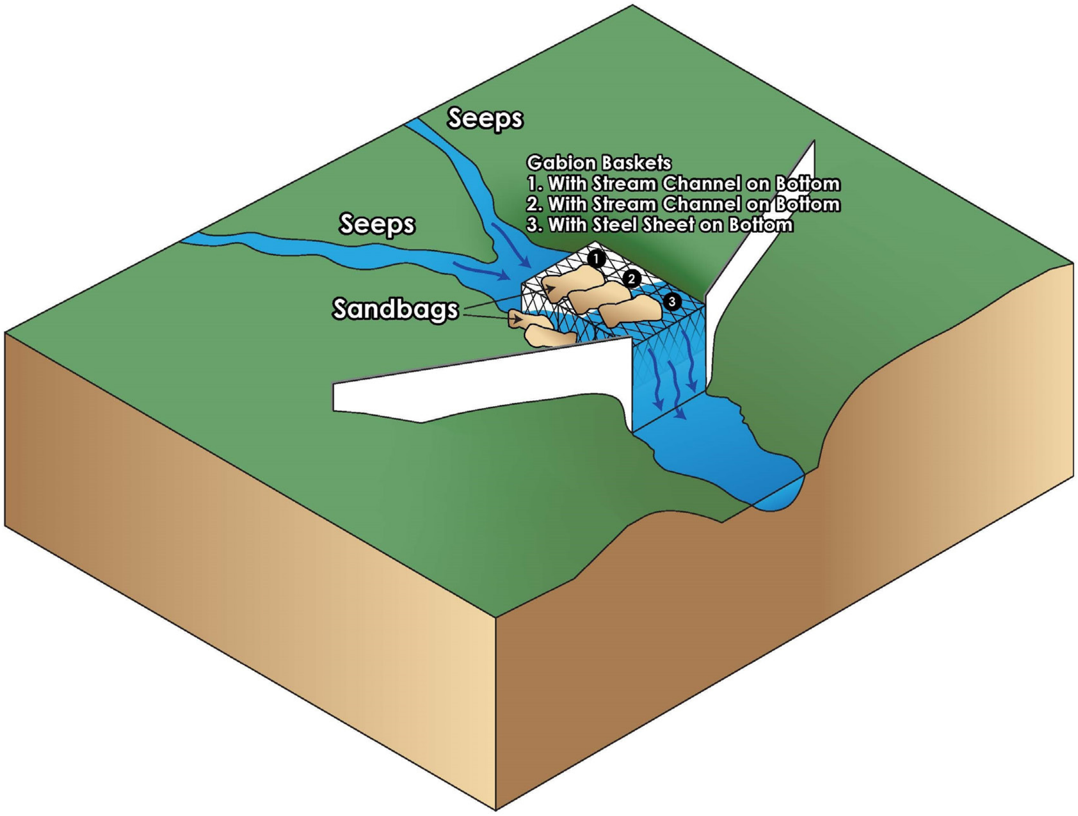


Figure 7: Conceptual Diagram of Seep Flow Through Passive Treatment

After supporting infrastructure is in place, including roads, power, and conveyance lines, a small catch basin will be excavated upstream from the planned French drain location. A portable pump with sufficient capacity for total seep flow will be placed in the basin with the pump discharge hose established to pipe water from the basin around the planned French drain location for subsequent discharge downstream from the construction area. Temporarily diverting seep discharge flow around the construction area will allow for safe and efficient French drain installation.

French drain construction is anticipated to consist of geotextile fabric lining, permeable backfill (2-inch diameter rocks), and a horizontal perforated pipe at the bottom and a vertical “sump” pipe at one end. The trench will be approximately 20-ft long and 6 ft deep with the bottom of the trench sloping to one end. After the piping is installed and the trench is backfilled, it will be armored at the ground surface with an additional layer of geotextile and concrete paver blocks to prevent erosion during storm events. A conceptual diagram is shown below in Figure 8.

After the French drain installation, a submersible pump will be installed in the vertical sump, wired to provide power, connected to the previously installed piping and function tested to ensure proper operation. The temporary seep water diversion pump and discharge hose will be removed, and the seep collection system will be put in operation.

Construction of the French drain is anticipated to require NPDES permit approval, or modification of the existing Site NPDES permit, due to the additional discharges of treated water. As with the flow-through cells, the French drains are anticipated to also require USACE NWP 38 permitting.

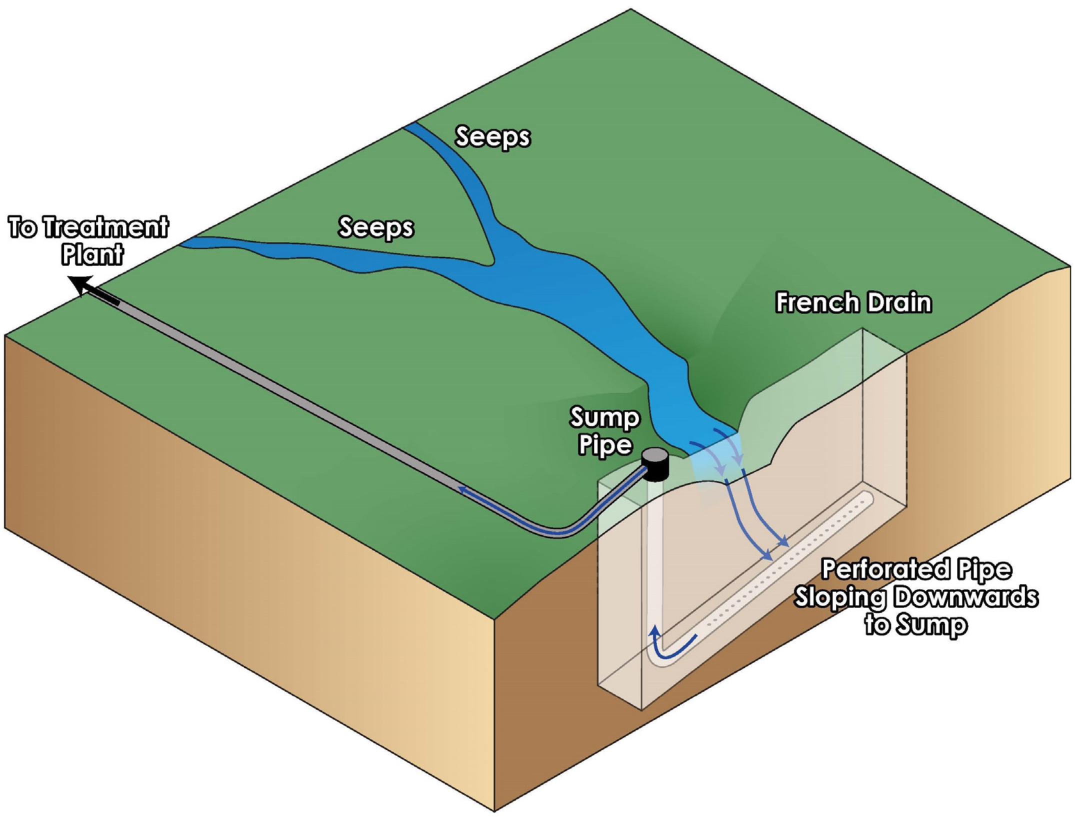


Figure 8: Conceptual Diagram of Seep French Drain Ex Situ Capture

<u>Cost</u>

The +50/-30% estimated construction cost for the interim application of flow-through cells for Seeps A through C and a French drain in Seep D is $980,000 to 2,100,000. The annual O&M cost is estimated to be between $400,000 to $870,000. Costing estimates are provided in Appendix I.

For simplicity, as interim measures are defined as implementable within two years, NPV calculations were not performed.

Long-Term Remedial Alternative for Seeps

It is anticipated to operate the interim seep actions discussed above for a period of two years during which the performance of each approach can be monitored and optimized, after which the long-term remedy will be selected. It cannot be predicted with certainty at this time which method will perform optimally at each seep.

For the purposes of this CAP, a low range cost estimate has been prepared, which assumes that the interim application of flow-through cells at Seeps A-C and a French drain at Seep D will perform as intended, and thus no additional construction costs would be required. As above, the +50/-30% estimated construction cost is $980,000 to 2,100,000, the annual O&M cost is estimated to be between $400,000 to $870,000, and the 20-year NPV is estimated to be $6.3 to 13.5 million.

In contrast, a high range cost estimate has been prepared, which assumes that the flow-through cells at Seeps A-C will not perform as intended, and that French drains will ultimately be required at all four seeps. In this scenario, the +50/-30% estimated construction cost is $8.9 to 19.1 million, the annual O&M cost is estimated to be between $400,000 to 840,000, and the 20-year NPV cost is estimated to be $15 to 32 million. Costing estimates are provided in Appendix I.

6.3.4 Pathway: Onsite Black Creek Aquifer Groundwater

The Black Creek Aquifer is interpreted to be the only transmissive groundwater zone at Site in contact with the Cape Fear River. The Mass Loading Model estimated that the Black Creek aquifer groundwater discharging to the Cape Fear River contributed between 14% and 22% of PFAS mass load (on average, about 18% based on the May, June, and September 2019 sampling events).

Interim Remedial Alternative for Black Creek Aquifer: Groundwater Extraction from Existing Monitoring Wells

As described in the Reduction Plan Supplemental Information Report, the interim remedial alternative advanced for groundwater consists of installing submersible electric pumps in seven existing black creek monitoring wells and pumping the water to the OOF2 treatment plant for treatment and discharge. Submersible electric pumps would be installed in seven site wells: BCA-01, BCA-02, PW-9D, PW-10DR, PW-11, PW-14, and PW-15R (as shown in Appendix B). Piping would be installed to convey the water to the proposed OOF2 treatment plant, potentially above-grade as a time-saving measure. Based on available information, it is anticipated that a sustained flow rate of 2 gpm from each well could be achieved. Therefore, the total flow would be 14 gpm. It is assumed that there will be sufficient excess capacity at the OOF2 treatment plant and that the discharge could be covered under the current NPDES permit application for that plant without additional modification.

Schedule

Task	Duration (months)	Year 1			
Detailed Design	2				
Contracting	1				
Installation and Operation	9				

Cost

Costs were estimated and considered to be accurate within the +50/-30 % range. The construction costs range from $560,000 to 1.2 million, annual O&M costs are $48,000 to 102,000. Costing estimates are provided in Appendix I. For simplicity, as interim measures are defined as implementable within two years, an NPV calculation was not performed.

Long-Term Remedial Alternative for Black Creek Aquifer: Barrier Wall and Groundwater Capture

At the time of the November 4 Reduction Plan Supplemental Information Report submittal, the numerical model had not been calibrated, so it was not yet clear what would be the most efficient method to mitigate the flux of onsite groundwater to the Cape Fear River. Based on the numerical modeling scenarios detailed in Section 5, it is anticipated that hydraulic containment coupled with a barrier wall will most efficiently capture the necessary component of the Black Creek aquifer without also drawing in the river.

Extensive investigation, analysis, and numerical model refinement would be required to properly design a remedy of this scale. A geotechnical investigation would be required along the alignment (anticipated boring frequency every 100 linear feet) to determine the depth and penetration resistance of the confining unit. Additional delineation consisting of borings, wells, and in-river flux analyses may also be utilized to properly target the optimal areas for containment needed to achieve the corrective action objectives. Finally, pilot testing, consisting of extraction well drilling and aquifer testing at multiple locations along the alignment, would be performed to determine the optimal well spacing and extraction rates. It is anticipated that in the course of two years, these activities would allow for model refinement and completion of design and permitting effort. In the absence of this pre-design data, the following discussion of a long-term groundwater remedy is still highly conceptual.

Figure 9 shows the area of groundwater with a process water PFAS signature that is potentially discharging to the Cape Fear River and Willis Creek. It is anticipated that hydraulic containment via extraction wells and a vertical barrier wall would be installed within this area, with the exact span and position to be determined after the pre-design investigations are complete. It is anticipated that the barrier wall would be constructed either with a one-pass trencher, as a soil-cement-bentonite slurry wall, or with steel sheet piles that are driven into the ground and interlocked. Both options are suitable means to mitigating the flow of groundwater, as slurry walls typically achieve a permeability of 10^{-7} centimeters/second.

While the slurry wall is considerably more cost-effective than steel, spoils management and sensitivity of disturbing the land surface near the river will require more detailed evaluation and potentially more site preparation to key in trenches that can manage the excess spoils that are generated during the mixing process. Nevertheless, it is anticipated that these measures can be adequately accounted for in the design process, and slurry walls will be considered the presumptive barrier method, with steel sheet piles as a contingency plan should further investigation indicate that the slurry walls cannot be managed appropriately in the field. A range of costs is provided for both options, as discussed later in this section.

Groundwater could be extracted from a series of vertical wells or horizontal wells. For the purpose of this analysis, vertical wells were assumed; however, the final design would utilize the most efficient option. The numerical model was utilized to estimate that the extraction well spacing behind a conceptual 8,500-foot long barrier wall would be 200 ft, and that extraction rates would vary from 20 to 30 gpm along the alignment, depending on localized hydrogeologic parameters (see Section 5 for more detail). This would result in approximately 930 gpm (1.3 MGD) of extracted groundwater.

It was assumed that the well pumps would feed into a common high-density polyethylene (HDPE) force main for distribution to the OOF2 treatment system location. Pipe sizing would range from 2 to 24 inches in diameter, depending on the estimated head loss, which is a factor of flow rate and distance from the system. It is assumed that the influent median PMPA and PFMOAA concentrations would be 8,200 and 150,000 ng/L, respectively. It is assumed that PFMOAA is the driving influent COC for GAC utilization, and that 99% removal would be the objective.

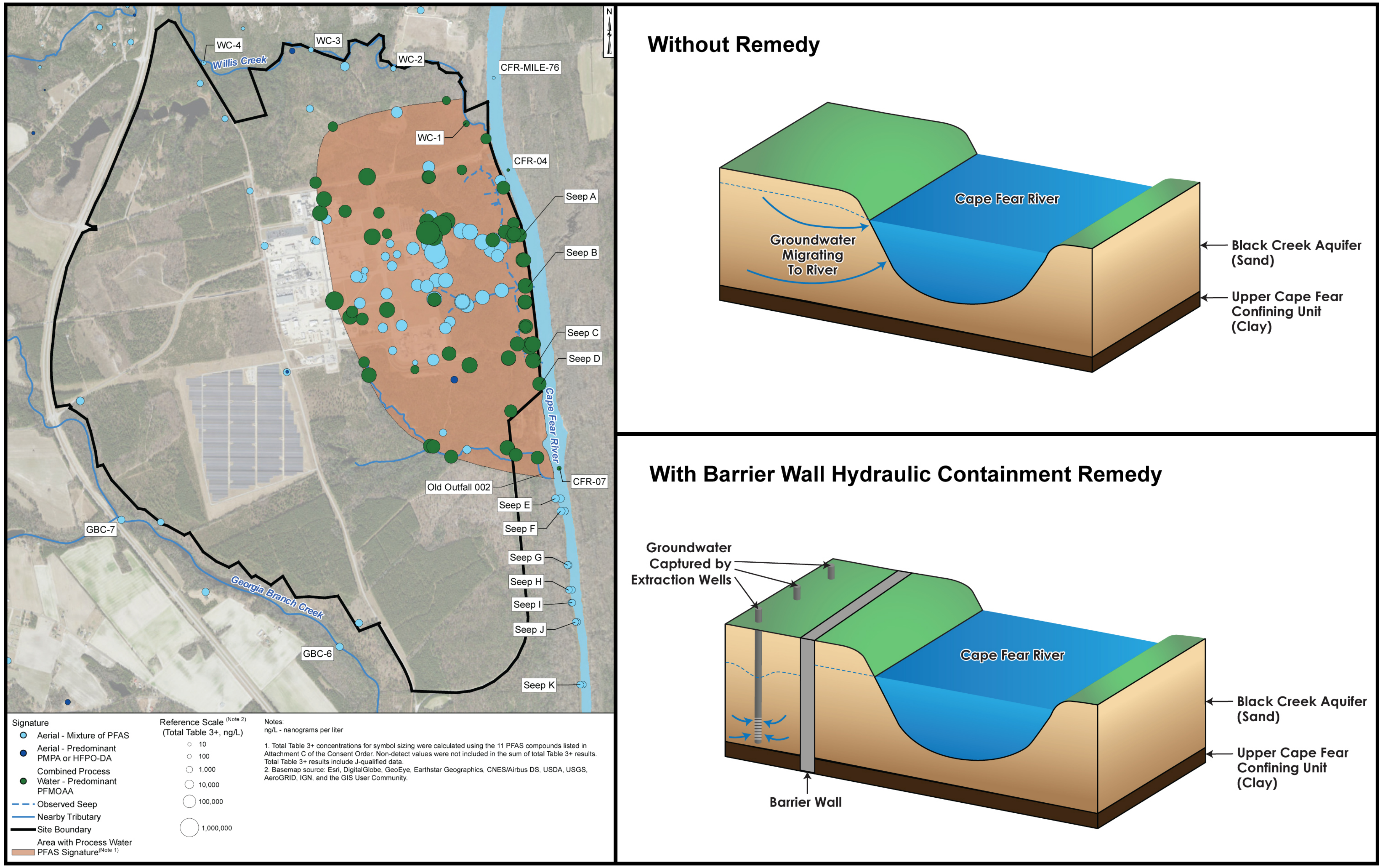


Figure 9: Area with Process Water PFAS Signature and Barrier Wall Conceptual Diagram

Cost

As discussed, many design details would still need to be determined, notably the barrier wall installation method (slurry wall vs. steel sheets), the most efficient method of incorporating flow into the Old Outfall 002 treatment system, and the exact alignment of the containment measures. For the purposes of this CAP, a low and high range cost were estimated as follows:

- Low Range: Slurry wall, with modular approach to incorporating flow into OOF2 treatment system (skid-mount systems installed with heat tracing, not within pre-fabricated building): The +50/-30% estimated construction cost is $19 to 41 million. The annual O&M cost is estimated to be $1.2 to 2.5 million. The 20-year NPV is estimated to be $36 to 77 million. Costing estimates are provided in Appendix I.
- High Range: Steel sheet pile wall, with pre-fabricated building to enclose the process equipment: The +50/-30% estimated construction cost is $34 to 74 million. The annual O&M cost is estimated to be $1.2 to 2.5 million. The 20-year NPV is estimated to be $51 to 110 million. Costing estimates are provided in Appendix I.

Path forward

The degree of PFAS loading that will be reduced by installation of the groundwater containment remedy described herein is uncertain, particularly its overall contribution to achieving a 75% Table 3+ PFAS loading reduction cost effectively. This remedy, if implemented, would reduce the PFAS loading to the river and, over time, reduce PFAS concentrations within the groundwater itself. On the other hand, the implementation of this remedy would be very costly and disruptive to the local ecological habitats.

The environmental benefits that would be realized from this remedy are at this point somewhat uncertain and based on data that have been limited by the short time frame in which the data needed to be assembled. For example, the September 2019 data show that the contributions to surface water loadings from this source may be as low as 14% of the total remaining loadings and are significantly less than the loadings from the two larger sources: groundwater seeps and Old Outfall 002. The September 2019 data show that those two sources alone could be up to 69% of the total remaining loadings. Yet, while the loadings from onsite groundwater may be only about a fifth of those for the top two sources, the costs to address onsite groundwater (see Appendix I) could be one and a half times as much as the total remedial costs for the groundwater seeps and Old Outfall 002.

With the information in hand, it is not presently possible to conclude with confidence whether this alternative is economically feasible. Accordingly, subject to DEQ approval, the best course of action is to proceed with the interim groundwater remedy described in Section, and at the same time proceed with a detailed pre-design investigation, a detailed remedy design and continued evaluation of PFAS mass loading to the Cape Fear River originating from the facility. This process of a pre-design investigation leading to a detailed design is consistent with prior remediation programs in North Carolina and the NCDEQ Guidelines (NCDEQ, 2017) that suggest CAPs include descriptions of "additional site characterization needed to support [the] proposed remedy".

Following an adaptive process allows the opportunity to further refine the understanding of PFAS mass loading from groundwater to the Cape Fear River, enabling a more detailed assessment of the technical and economic feasibility of the groundwater containment remedy. Additionally, this process will likely identify areas of higher PFAS mass discharge into the Cape Fear River from groundwater; and then remedial efforts can be focused to more expeditiously reduce loadings. Last, this process will enable adapting the scope and areas of groundwater treatment to reflect new information from other studies being conducted in support of the CO (e.g. total organic fluorine method development). Concurrent with the design effort, remedial alternative assessments will continue to evaluate the most cost-effective remedy that could achieve at least a 75% Table 3+ PFAS loading reduction and other CO objectives. The schedule for implementation of a groundwater remedy is included in Section 6.5 of this document; the pre-design investigation through detailed design and permitting is expected to take two years. At the conclusion of the effort, Chemours would present a detailed onsite remedial design to DEQ for approval.

6.3.5 Pathway: Outfall 002

Actions proposed for Outfall 002 in the previous Paragraph 12 submittals (i.e., the August 2019 Reduction Plan and the November 2019 Reduction Plan – Supplemental Information Report), which are summarized in Table 8 of Section 6, remain the same. The proposed path forward for the Outfall 002 remedies including the remedy descriptions, implementation schedules, and cost estimates can be accessed in the Supplemental Information Report (Geosyntec, 2019h).

6.3.6 Pathway: Loadings from Willis Creek and Georgia Branch Creek

While no offsite alternative was advanced for either creek, both creeks will over time have declining PFAS concentrations as a result of air control technology improvements that will reduce aerial HFPO-DA emissions by 99% starting in January 2020 compared to 2017 baseline, with expected comparable reductions for other PFAS, leading to offsite aerial deposition reductions and consequently reductions over time in groundwater that discharges to these creeks. Additionally, were the onsite Black Creek aquifer groundwater extraction remedy to be implemented as conceptualized above, which would include approximately 2,100 linear feet of containment along the northeastern reach of Willis Creek that is in connection with the Black Creek aquifer, present estimates indicate the mass loading to Willis Creek may be reduced up to 65%, which in turn would reduce the mass loading to the Cape Fear River by approximately 3.7%.

6.3.7 Pathway: Offsite Groundwater

Offsite, PFAS have been aerially deposited and exist as a distributed, diffuse source potentially present over an area of at least 70+ square miles where concentrations in groundwater gradually become lower further away from the Site. Ongoing air abatement measures and the installation and operation of the thermal oxidizer will lead to a reduction of aerial HFPO-DA emissions by 99% starting in January 2020 compared to 2017 baseline, and expected comparable reductions for other PFAS. Correspondingly, the deposition of PFAS to offsite soils will be reduced by 99% and over time concentrations will decline.

Mitigation measures for offsite water supply wells have been documented previously, including the On and Offsite Assessment (Geosyntec, 2019a). As discussed, pursuant to CO Paragraphs 19 to 25, Chemours is implementing a Drinking Water Compliance Plan (Parsons, 2019a). Through this plan, Chemours is providing replacement drinking water to private residents whose drinking water wells are impacted by PFAS listed on Attachment C of the CO. Replacement drinking water is being provided through a range of options depending on the levels of PFAS found. First residents are supplied bottled water as an interim measure. Then residents, should they accept, will receive either: (i) point of use reverse osmosis systems, (ii) whole house filtration systems, or (iii) connection to public water supplies. Pursuant to CO Paragraph 19, Chemours is working with NCDEQ to identify locations where public water is available and can be provided to private residents for less than $75,000 per affected party. Beyond this threshold, permanent water supplies will be provided through whole house filtration systems or reverse osmosis systems. Chemours is providing quarterly updates on implementation of the Drinking Water Compliance Plan to NCDEQ.

6.4 Proposed Remediation Permits

The thermal oxidizer, OOF2 treatment system, and sediment removal from the on-site non-contact cooling water (NCCW) and Outfall 002 activities are not discussed in this section as these remedies are already in the process of design and permitting or have already been completed. The terracotta pipe decommissioning and mitigation of groundwater intrusion into Outfall 002 remedies are also not discussed, as permits are not anticipated to be required. This section focuses on potential permits that may be required to construct the proposed interim and long-term remedies for seeps, onsite groundwater, and onsite stormwater.

The potential construction of flow-through cells, French drains, and a sheet pile barrier wall would likely require a comprehensive permitting approach, as segmented disturbances to natural features are typically required to be consolidated:

- Section 404 of the Clean Water Act as administered by the USACE. For the construction of the instream structures of OOF2, in October 2019, the USACE approved a NWP 38 - Cleanup of Hazardous and Toxic Waste. For the proposed construction of flow-through cells, French drains, and onsite barrier wall, it is anticipated that the USACE would concur that the NWP 38 similarly applies. Engagement with USACE, including an onsite review, could be required.
- Section 401 water quality certification as administered by the NCDEQ Division of Water Resources (DWR). The proposed installation of the flow-through cells, French drains, and onsite barrier wall would likely result in a disturbance to wetlands and streambeds that requires engagement with DWR and possible mitigation credits. As above with USACE, an onsite review would likely be required.
- NPDES as administered by NCDEQ. It is not anticipated that a NPDES permit would be required for the flow-through cells, as there is no point of discharge; however, engagement with NCDEQ to confirm may be warranted. For the seep French drains and for the barrier wall groundwater extraction, it is anticipated that modification of the draft NPDES permit may be required to either expand the OOF2 treatment system to accommodate this additional flow, and/or to permit the construction of a new treatment system and outfall. As NCDEQ has expressed a preference for a single NPDES permit for the Site, continued engagement with this agency will be required.
- Erosion and Sediment Control as administered by NCDEQ. For the construction of the seep and groundwater remedies, notably for the barrier wall which would require approximately 10 acres of disturbance, a comprehensive Erosion and Sediment Control (E&SC) Plan would be required, prepared in accordance with the latest revision to the E&SC Planning and Design Manual from 2013.

In addition to the above list, well construction permits will be required to install the extraction and monitoring wells. Building permits could also potentially be required for electrical connections to new treatment systems, if constructed.

6.5 Proposed Remediation Schedule

Detailed schedules for the Seeps and Onsite Groundwater remedies are provided below in Table 12 and Table 13. Table 14 describes the estimated performance and tentative schedule for proposed interim remedies and initial conceptual designs for long-term remedial strategies as both are closely integrated.

Table 12: Schedule for Proposed Seep Actions

Task	Duration (months)	Year 1	Year 2	Year 3	Year 4	Year 5
Bench Scale Testing and Lab Analysis	2					
Design, Work Planning and Permitting (1)	2					
Agency Approvals (2)	6					
Clearing and Grubbing	1					
Access Road Construction	1					
Electrical Service	3					
Seep A Flow Through Cell Construction and Pilot	6					
Seep D French Drain Construction and Pilot	6					
Seeps B and C Flow Through Cells Construction	6					
Evaluation of Initial Performance at Seeps A - D	6					
Optimization/Replacement of Cells/Drains as Needed	12					
Ongoing Operations and Maintenance	12					

1- Permits include but may not be limited to 404, 401, NPDES, and E&SC

2 - Task timing is dependent upon agency approval timing

Table 13: Schedule for Proposed Groundwater Action

Task	Duration (months)	Year 1				Year 2				Year 3				Year 4				Year 5			
Interim - Design and Work Planning for Pumping from Existing MWs	3	■																			
Interim - Installation and Operation	9		■	■	■																
Interim - Contingent Action Based on Performance Monitoring	12					■	■	■	■												
Pre-Design Investigation Work Planning and Contracting	3	■																			
Geotechnical Investigation and Analysis	3		■																		
Delineation Borings/Wells and In-River Flux Analyses	9		■	■	■																
Drilling and Aquifer Pump Testing	6			■	■																
Numerical Modeling Refinements	3				■																
30% Design	6			■	■																
Permitting Submittals (1)	12			■	■	■	■														
Permits/ Agency Approvals (2)	12					■ (blue)	■ (blue)	■ (blue)	■ (blue)												
60% Design	6					■	■														
90% Design	3							■													
100% Design and Contracting	3								■												
Mid-Implementation Review (3)	12					■ (yellow)	■ (yellow)	■ (yellow)	■ (yellow)												
Barrier Wall Installation (4)	20									■	■	■	■	■	■	■					
Site Work (Trenching, Piping, Electrical, Drilling, etc.)	24										■	■	■	■	■	■	■	■			
OOF2 System Upgrade (5)	24											■	■	■	■	■	■	■	■		
Testing and Commissioning	6																			■	■

1- Permits anticipated to potentially include but may not be limited to 404, 401, NPDES, and E&SC

2 - Task timing is dependent upon agency approval timing

3 - As the design and permitting process is advanced, there will be ongoing evaluation of the economical and technological feasibility of this remedial alternative, including analysis of new information that may become available over the next two years including any regulatory or permitting requirements, toxicological information, and other information concerning the condition and uses of the Cape Fear River. At the end of this two year period, Chemours would proceed with implementing this project, unless subsequent information shows that it is infeasible or if a more cost-effective alternative is available, in which case Chemours would seek DEQ approval.

4 - Material and method installation to be determined after pre-design investigation and design.

5 - Potential schedule assumes groundwater is conveyed to existing OOF2 system location and treatment train is upgraded to incorporate flow.

Table 14: Overall Estimated Reductions Plan Schedule and Reductions to Cape Fear River Total Table 3+ PFAS Loadings

Proposed and Provisional Remedial Alternatives	Loading Reduction	Duration (Years)	Year					
			2019	2020	2021	2022	2023	2024
Air Abatement Controls and Thermal Oxidizer[1]	<2%	1	✓					
Conveyance Network Sediment Removal - Outfall 002[2]	NQ[3]	1	✓					
Capture and Treat Old Outfall 002	26%	1						
Terracotta Pipe Replacement - Outfall 002	0.1%	2						
Stormwater Pollution Prevention Plan - Outfall 002	NQ[3]	1						
Groundwater Intrusion Mitigation - Outfall 002	0.7%	2						
Interim Action - CFR Seeps	NQ[3]	2						
Interim Action - Onsite Groundwater	NQ[3]	1						
Targeted Stormwater Control - Outfall 002	1.3%	4						
Ex Situ Capture and Treatment - CFR Seeps[4]	33%	4						
Onsite Groundwater Treatment	18%	5						
Cumulative Estimated Total Table 3+ PFAS River Reductions to River[5]	79%	--	<2%	26%	27%	43%	60%	79%

Notes

- Schedule for multiple alternatives are dependent upon permitting requirements.
- Loading reductions to CFR based on average of May, June, Sep. 2019 data
- Duration listed for implementation

1 - Scheduled implementation is December 31, 2019.
2 - Completed October 2019.
3 - Anticipated reduction from action cannot be quantified at present.
4 - Assumed to be Ex Situ Capture as the permanent remedial alternative for seeps.
5 - Cumulative estimated reductions assumes:
a) that reductions are achieved at the end of the implementation period; and
b) that the time period for contingent actions is not needed.

Legend

Action Complete	✓
Planned Action Implementation Period	
Time Period for Contingent Actions	

7 PERFORMANCE MONITORING

This section describes performance monitoring activities to accomplish the following objectives:

a) Corrective action performance monitoring;
b) Compliance with CO paragraph 16(d) performance monitoring;
c) On and Offsite groundwater quality monitoring.

The monitoring activities for objectives listed above are described in the following sections. These monitoring activities were developed concurrently with the CAP and may evolve during the course of pre-design investigations, pilot tests, preliminary results or other conditions. Monitoring locations, frequency and number of samples, analytical list and methods presented here may be modified to achieve objectives. Any potential recommended modifications to the monitoring plan will be presented in semi-annual monitoring data reports.

7.1 Corrective Action Performance Monitoring

Overall, the collective performance of the corrective actions will be assessed through PFAS mass loading reductions to the Cape Fear River as described in Sections 7.2 and 7.3 for Objectives (b) and (c) listed above. Individually the performance of corrective actions will be evaluated for both interim and long-term corrective actions proposed here and identified in the Reduction Plan Supplemental Information Report (Geosyntec, 2019h). Performance monitoring activities are described below for the following actions:

- Old Outfall 002
- Onsite Groundwater Seeps Interim Actions
  - Flow Through Cells
  - Capture and Treat (French Drains)
- Onsite Seeps Long-Term Actions
- Onsite Groundwater Interim Actions
- Onsite Groundwater Long-Term Actions

7.1.1 Old Outfall 002 Capture and Treatment Performance Monitoring

As required by the CO baseline surface water samples were collected from Old Outfall 002 for a six month period between March and August 2019 at locations indicated in Attachment A of the CO and analyzed for Table 3+ SOP and Modified EPA Method 537 compounds listed in Table 2. Performance monitoring for the treatment system will be performed according to the terms of the NPDES permit which in late 2019 had not yet been issued by NCDEQ.

7.1.2 Onsite Groundwater Seeps Interim Actions

Interim actions for groundwater Seeps A, B, C and D reaching the Cape Fear River at the Site include combination of flow-through cells and ex situ capture using French drains (Geosyntec, 2019h). The flow-through cell interim actions are proposed to start at Seep A with implementation progressing successively through Seeps B and C where lessons learned from the construction and operation of the flow-through cells at the prior seeps would be used to design and operate the subsequent flow-through cells. An ex-situ capture French drain would be installed at Seep D. A six-month pilot for both interim actions is recommended, followed by implementation of interim seep actions for a period of two years during which time the performance of each approach will be monitored and optimized. Operational and performance monitoring during pilot testing will be documented in pilot testing workplans. Monitoring efforts proposed during the two-year interim action implementation period are discussed below.

Flow-through cells

Visual inspections of flow-through cells will be performed to document and check the integrity and operation of the flow-through cell. Inspections shall be performed periodically or when circumstances beyond design limitations arise (e.g., excessive rainfall and flooding). Necessary repairs for continued operation and maintenance shall be documented including system down time, repairs/changes performed and other pertinent observations to operation of flow-through cell.

Table 3+ PFAS removal efficiency of the flow-through cell will be monitored by mass flux upstream and downstream of the cell. Mass flux will be measured by measuring flow and PFAS concentrations in surface water before it flows into the flow through structure and after it flows out. Flow rate measurement methods will be finalized following pre-design investigations. Performance sampling frequency is assumed to be at minimum quarterly during the start-up operational period of the flow-through cell. Spatial density and sampling frequency may be amended during pilot testing or under special circumstances including repair/carbon change out, flooding, etc.

Seep capture and ex situ treatment

Visual inspections of seep capture will be performed to evaluate the integrity and operation of the French drains periodically or when circumstances beyond design limitations arise. Necessary repairs for continued operation and maintenance shall be documented including system down time, repairs/changes performed and other pertinent observations to continued operation.

Capture efficiency of the seep capture remedy shall be assessed by monitoring influent seep flow rate, water levels in catchment basin and vertical sump and measuring sump pump rate. Treatment efficiency for this remedy is continuous operation of the collection pumps and the performance and proper operation of the treatment plant utilized. If flowing surface water is visibly expressed downgradient of the remedial system, samples may be collected for and analyzed for Table 3+ PFAS.

7.1.3 Onsite Groundwater Seeps Interim Actions

Based on operational and performance success one of the two interim remedial actions will be implemented at the Seeps as a long-term remedy (Geosyntec, 2019h). Operational and performance monitoring metrics identified for the interim actions are planned to be included in the long-term monitoring plan. Additional metrics identified during the interim operational period may be added to the long-term monitoring plan along with optimizing spatial density and temporal frequency of sampling. For the purpose of this plan, it is assumed that quarterly performance monitoring events will take place for the first two years of implementation followed by an optimization monitoring plan, which will be documented in monitoring data reports.

7.1.4 Onsite Groundwater Interim Actions

As an interim action groundwater will be extracted from seven existing onsite wells until a long-term remedy is operational unless otherwise improved, modified or demonstrated to be ineffective by subsequent analyses or evaluations. Periodic water levels will be collected from adjacent and surrounding monitoring wells to gauge a capture zone. Pumping rates will be periodically documented along with flow rate measurements in the conveyance piping to the treatment plant utilized. Treatment efficiency for this remedy is continuous operation of the collection pumps and the performance and proper operation of the treatment plant.

7.1.5 Onsite Groundwater Long-Term Remedial Actions

Monitoring actions presented here are preliminary pending pre-design investigations, pilot testing, final design, preliminary results and operational metrics or other conditions as described in Section 6.3.4. Monitoring locations and frequency and number of samples presented here may be modified to achieve the overall monitoring plan objectives.

Visual inspections of extraction wells, piping and other pertinent components will periodically be inspected to document and check the integrity and operation of the system or when circumstances beyond design limitations arise (e.g., flooding). Necessary repairs for continued operation and maintenance shall be documented including system down time, repairs/changes performed and other pertinent observations to operation of the system.

The effectiveness of the long-term groundwater remedial action will be assessed through water level measurement conducted with transducers in a network of extraction wells and monitoring wells. Transducer monitoring may also be periodically supplemented with manual water levels from representative wells in target aquifers. Water level data will be used to monitor temporal and spatial variations in hydraulic gradient magnitudes and direction to demonstrate hydraulic containment. The list of wells, including addition of new wells, will be identified during pre-design investigations and design reports. Appropriate sampling phasing and frequency may be re-evaluated during system startup and equilibration or if circumstances beyond design limitations arise. If necessary, the numerical groundwater model may be employed to perform a flow path analysis using measured water levels with particle tracking to demonstrate hydraulic capture.

7.1.6 Replacement Drinking Water Supplies

CO Section F contains requirements for Replacement Drinking Water Supplies that Chemours has been complying with, including a comprehensive program for testing private wells near the facility. Paragraph 21 states that Chemours shall perform annual retesting of private wells and "request incorporation of a plan to carry out this requirement in its Corrective Action Plan." Chemours set forth its plan for annual retesting of private wells in its April 26, 2019 Drinking Water Compliance Plan and its August 22, 2019 response to DEQ's comments on the Drinking Water Compliance Plan. Chemours hereby requests incorporation of that annual retesting plan into the CAP.

7.2 Compliance with CO Paragraph 16(d) Performance Monitoring

CO Paragraph 16(d) requires that Chemours:

> *"reduce PFAS loading to surface water (Old Outfall 002, Willis Creek, Georgia Branch, and the Cape Fear River), for the PFAS for which test methods and lab standards have been developed, by at least 75% from baseline.*

This subsection describes the performance monitoring activities to develop the baseline and evaluate reductions from baseline consistent with CO paragraph 16(d) requirements.

The best available and most representative data will be used to develop the baseline and evaluate reductions performance. These data will include empirically measured flows and concentrations from PFAS transport pathways described in Section 3.10. These data will include measurements such as flow and concentrations of PFAS in the creeks and in the Cape Fear River in addition to contextual information from groundwater wells including concentrations and potentiometric surface. These data will produce direct measurements of PFAS mass loading in multiple pathways and more importantly in the Cape Fear River itself. These data will be interpreted in conjunction with the Cape Fear River PFAS Mass

Loading Model (Geosyntec, 2019g) to facilitate standardized comparisons of mass loading between monitoring events.

Based on analyses presented in Section 5.4 of this CAP and the Reductions Plan Supplemental Information Report, the proposed corrective actions are intended to reduce the combined total Table 3+ PFAS mass loading reaching surface waters by 75%. Monitoring activities outlined here focus on developing additional data for the baseline of Table 3+ PFAS mass loadings to the Cape Fear River and evaluating the 75% reductions of PFAS mass loads in the Cape Fear River. While the mass loads in the other surface water bodies will be measured, only the Cape Fear River will be evaluated against 75% reductions for the following four reasons. First, all the Table 3+ PFAS mass loading to these surface waters reaches the Cape Fear River, and therefore it is a natural monitoring end point. Second, the Cape Fear River is the only surface water body listed in paragraph 16(d) that is used as a raw water intake. Third, both the human health and ecological SLEAs determined there were no presently identifiable hazards or adverse effects from HFPO-DA exposures on and offsite, including from surrounding surface waters. And fourth, as described in the Reduction Plan Supplemental Information report, reducing PFAS loading to Georgia Branch Creek and Willis Creek by over 75%, or in any other material way in the short term, is economically infeasible and technically challenging to infeasible.

The following two subsections describe how the baseline will be established and how performance monitoring towards the 75% Table 3+ PFAS mass loading reduction will be conducted.

7.2.1 Paragraph 16(d) Baseline Monitoring

The baseline monitoring program will collect additional data on flow rates and PFAS concentrations from the various potential PFAS transport pathways to the Cape Fear River, as identified in the mass loading model assessment (Geosyntec, 2019g). Specifically, Table 15 below lists transport pathways and sampling locations for where data will be collected:

The locations in the table above supplement and improve the ability to measure the PFAS mass loading baseline as described in Paragraph 16(c) of the CO:

> *"The baseline will be established using the average of the concentrations of the PFAS in groundwater monitoring wells for each surface water and LTWs along the Cape Fear River over the first four (4) quarters of sampling."*

Table 15: Baseline and Groundwater Monitoring Locations

Transport Pathway	Concentration	Flow
Willis Creek	✓	✓
Seep A	✓	✓
Seep B	✓	✓
Seep C	✓	✓
Seep D	✓	✓
Outfall 002	✓	✓
Old Outfall 002	✓	✓
Georgia Branch Creek	✓	✓
Groundwater Wells	✓	Water Levels
Cape Fear River	✓	✓

Paragraph 16(c) requires groundwater wells adjacent to Willis Creek, Old Outfall 002, Georgia Branch Creek and the Cape Fear River to facilitate developing baseline Table 3+ PFAS loadings. These wells already exist. Some of these wells pre-existed the CO and some were installed in 2019 as part of the onsite and offsite characterization programs. All the identified wells are listed in Table 16 and are adjacent to surface water bodies to fulfill paragraph 16(c) and (d) requirements. In total 22 monitoring wells, including the five LTW wells, will be monitored as part of the baseline monitoring activities. These wells are listed in Table 16 and shown on Figure 10.

Should interim or long-term corrective actions be complete at Groundwater Seeps, Old Outfall 002, or some other PFAS loading pathway before the additional monitoring data collection is complete, then the pre-treatment mass loading and/or collected Site data will be used to establish the baseline mass load. For instance, if the Old Outfall 002 treatment system is operational and removes 99% of all Table 3+ PFAS compounds, then the adjusted baseline mass loading in the river may be calculated as the measured mass loading in the river (river flow multiplied by river concentrations) plus the mass removed by the Old Outfall 002 treatment system (influent mass loading minus effluent mass loading).

The list of monitoring wells identified here, the temporal frequency of sampling, and the list of PFAS compounds analyzed, may evolve during the course of pre-design investigations, pilot tests, preliminary results or other conditions as necessary for developing the baseline. Any changes will be described, along with the rationale for the change in subsequent monitoring reports submitted to NCDEQ.

The baseline monitoring program will be completed over four quarters of sampling. After the data are received for each the first three quarters a quarterly baseline monitoring report will be prepared. After the fourth quarter of monitoring is complete a baseline monitoring report outlining the results of the program will be prepared.

The sampling activities for the first quarter of monitoring were completed between November and December 2019. Flow gauging and surface water sampling was conducted in November 2019; groundwater levels and samples were collected in December 2019. The first baseline quarterly reports will be prepared and submitted to NCDEQ in first quarter 2020.

Last, to develop a more continuous record of Table 3+ PFAS mass loading into the Cape Fear River, a pilot program will be undertaken and will be include collecting composite samples from the Cape Fear River downstream of the facility where the Cape Fear River is well mixed – about 5 miles downstream, provided required access agreements, etc., can be negotiated. These samples will enable a more consistent and continuous record of baseline Table 3+ PFAS mass loads in the Cape Fear River. Additionally, as composite samples, these samples will help attenuate the potential inherent natural variability possible when collecting and measuring samples in the Cape Fear River, a complex and dynamic system.

Table 16: Baseline Monitoring Well Locations

List Number	Well ID	Adjacent Surface Water Feature	Hydrogeological Unit
1	PIW-3D	Cape Fear River	Black Creek
2	PIW-7S	Cape Fear River	Floodplain
3	PIW-7D	Cape Fear River	Black Creek
4	LTW-01	Cape Fear River	Floodplain
5	LTW-02	Cape Fear River	Black Creek
6	LTW-03	Cape Fear River	Floodplain
7	LTW-04	Cape Fear River	Floodplain
8	LTW-05	Cape Fear River	Black Creek
9	PZ-22	Cape Fear River	Black Creek
10	PW-06	Georgia Branch Creek	Surficial
11	PW-07	Georgia Branch Creek	Surficial
12	PW-04	Old Outfall	Surficial
13	PW-11	Old Outfall	Black Creek
14	PW-09	Willis Creek	Black Creek
15	SMW-11	Willis Creek	Surficial
16	SMW-10	Willis Creek	Surficial
17	INSITU-02	Willis Creek	Surficial
18	SMW-12	Willis Creek	Black Creek
19	PIW-1S	Cape Fear River / Willis Creek	Floodplain
20	PIW-1D	Cape Fear River / Willis Creek	Surficial
21	Bladen-1S	Georgia Branch Creek	Surficial
22	Bladen-1D	Georgia Branch Creek	Black Creek

Notes:
1. Hydrogeologic units for existing wells determined based on boring log descriptions.
2. Samples to be collected quarterly, starting December 2019 through December 2020.
3. All samples to be analyzed for Table 3+ and Modified EPA Method 537.

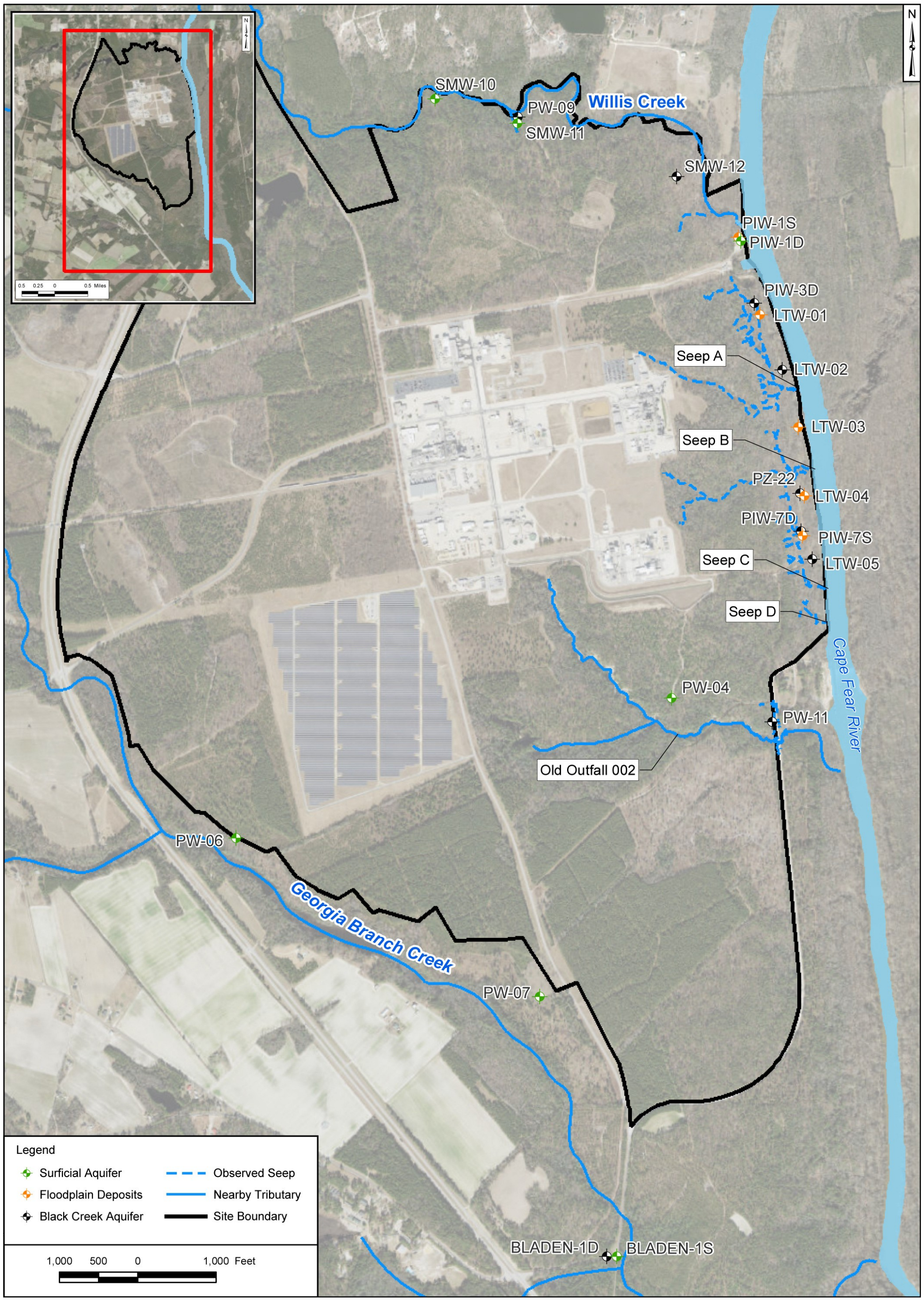


Figure 10: Baseline Monitoring Well Locations

7.2.2 Paragraph 16(d) Reductions Monitoring

Reductions in Table 3+ PFAS mass loading to the Cape Fear River will be evaluated relative to the baseline Table 3+ PFAS mass loading that will be developed during the baseline program. The reductions in the river Table 3+ PFAS loadings will be evaluated using the same set of monitoring locations identified for the baseline loading development. Potential adjustments to the reductions monitoring plan to increase its effectiveness will be outlined in the baseline monitoring report based on observations and outcomes from baseline monitoring.

A 75% reduction in Table 3+ PFAS mass loading to the Cape Fear River will be considered achieved when eight successive quarters of data show a 75% decrease in PFAS mass loads measured in the Cape Fear River. Consistent with CO paragraph 16(d) this observation will be supported using by (a) performance monitoring of the corrective actions showing successful reductions in concentrations, (b) measurements of loadings from the various PFAS transport pathways, and (c) evidence of reduction in groundwater PFAS mass loading to the Cape Fear River based on concentrations in LTW and the other groundwater wells and the groundwater gradients used to calculate flows to the surface water bodies and the Cape Fear River.

7.3 Onsite and Offsite Groundwater Quality Monitoring

Starting in 2020 in addition to the 22 wells being monitored quarterly as part of the paragraph 16(d) baseline and reduction monitoring programs, onsite and offsite wells installed by Chemours will be sampled annually between July 1st and September 30th (third quarter) for a period of three years. By March 31st each year a groundwater monitoring report will be prepared describing the results of the sampling from the prior year. After three years of sampling, the third annual groundwater monitoring report will evaluate if changes should be made to the sampling program such as reducing the number of wells sampled or abandoning certain wells. Some of the present wells at Site may be abandoned due to either construction issues or consistently dry wells screens before this sampling program is implemented.

Offsite private wells are presently being sampled on a routine bases as defined in the Drinking Water Compliance Plan (Parsons, 2019a).

8 REFERENCES

Arnold and Porter, 2017. Notice of Violation & Intent to Assess Civil Penalty, Chemours Fayetteville Works. November 27, 2017.

Brusseau, M.L., Yan, N., Van Glubt, S., Wang, Y., Chen, W., Lyu, Y., Dungan, B., Carroll, K.C. and Holguin, F.O., 2019. Comprehensive retention model for PFAS transport in subsurface systems. Water research, 148, pp.41-50.

Chemours, 2019. Chemours' Proposed Toxicity Study Work Plan Pursuant to Paragraph 14 of the Consent Order. Chemours Fayetteville Works. March 27, 2019.

DuPont CRG. June 2006. Phase II RFI Report. DuPont Fayetteville Works.

ERM, 2018. Modeling Report: HFPO-DA Atmospheric Deposition and Screening Groundwater Effects. April 27, 2018.

EPA, 2019. Interim Recommendations for Addressing Groundwater Contaminated with PFOA and PFOS. Accessed 19 December 2019 from: https://www.epa.gov/pfas/interim-recommendations-addressing-groundwater-contaminated-pfoa-and-pfos

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

Geosyntec, 2018b. Stormwater Sampling Report, Chemours Fayetteville Works. March 29, 2018.

Geosyntec, 2019. Sediment Characterization Plan. Chemours Fayetteville Works. August 2019.

Geosyntec, 2019a. On and Offsite Assessment (Version 2). October 31, 2019.

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

Geosyntec, 2019c. Site Associated PFAS Fate and Transport Study Pursuant to Consent Order Paragraph 27. June 24, 2019.

Geosyntec, 2019d. Cape Fear River PFAS Loading Reduction Plan. Chemours Fayetteville Works. 26 August 2019.

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

Geosyntec, 2019f. Summary of Grouting of East-West Section of Terracotta Pipe from Chemours Monomers IXM Area. August, 2019.

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

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

Geosyntec, 2019i. Post Hurricane Florence PFAS Characterization Chemours Fayetteville Works. April 12, 2019.

Geosyntec, 2019j. Submission of Quarterly Report #1 – Characterization of PFAS in Process and Non-Process Wastewater and Stormwater – Chemours Fayetteville Works, Fayetteville, NC. July 31, 2019.

Geosyntec, 2019k. Submission of Quarterly Report #2 – Characterization of PFAS in Process and Non-Process Wastewater and Stormwater – Chemours Fayetteville Works, Fayetteville, NC. October 31, 2019.

Geosyntec, 2019l. Offsite Screening Level Exposure Assessment (SLEA) of Site Associated PFAS. Chemours Fayetteville Works.

Geosyntec, 2019m. Offsite Screening Level Exposure Assessment (SLEA) of Site Associated PFAS – Workplan. Chemours Fayetteville Works. July 2019.

Guelfo, J. L. and C. P. Higgins, 2013. Subsurface Transport Potential of Perfluoroalkyl Acids at Aqueous Film-Forming Foam (AFFF)-Impacted Sites. Environmental Science & Technology 47(9): 4164-4171.

Higgins, C. P. and R. G. Luthy. 2006. Sorption of Perfluorinated Surfactants on Sediments. Environmental Science & Technology 40(23): 7251-7256.

Huang, S., & Jaffé, P. R., 2019. Defluorination of Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) by Acidimicrobium sp. Strain A6. Environmental science & technology.

Kärrman, A., Elgh-Dalgren, K., Lafossas, C., & Møskeland, T., 2011. Environmental levels and distribution of structural isomers of perfluoroalkyl acids after aqueous fire-fighting foam (AFFF) contamination. Environ. Chem, 8(4), 372-380.

Mueller, R. and V. Yingling, 2018. Environmental Fate and Transport for Per- and Polyfluoroalkyl Substances. Interstate Technology Regulatory Council.

North Carolina Department of Environmental Quality (NCDEQ) Division of Water Resources (DWR). 2017. Guidelines for the Investigation and Remediation of Soil and Groundwater Contamination.

North Carolina Division of Water Resources (NC DWR). 2017. 1,4-Dioxane and Bromide Monitoring Plan. Raleigh, North Carolina: North Carolina Department of Environmental Quality. https://files.nc.gov/ncdeq/Water%20Quality/Environmental%20Sciences/Dioxane/BromideDioxaneSamplingPlan20170328.pdf. Accessed 11 December 2019.

OECD, 2004. OECD Guidelines for the Testing of Chemicals. Partition Coefficient (n-octanol/water), High Performance Liquid Chromatography (HPLC) Method. April 13, 2004.

Parsons, 2014. Final RCRA Facility Investigation Report (Rev.1). DUPONT Fayetteville Works Site. RCRA Permit No. NCD047368642-R2. February 2014, Revised August 2014.

Parsons, 2016. Corrective Measures Study Work Plan. Chemours Fayetteville Works. December 2, 2019

Parsons, 2017a. Memorandum Supplemental Groundwater Sampling Memorandum Fayetteville Works Facility. November 3, 2017.

Parsons, 2017b. Additional Supplemental Soil and Surface Water Sampling Memorandum Fayetteville Works Facility. November 3, 2017.

Parsons, 2017c. Cape Fear River Surface Water Sampling Memorandum Fayetteville Works Facility. November 3, 2017.

Parsons, 2018a. Terracotta Sewer Pipe Area Investigation Report, Chemours Fayetteville Works. December 17, 2018.

Parsons, 2018b. Additional Site Investigation Report – Revised. Chemours Fayetteville Works Site. March 30, 2018.

Parsons, 2018c. Nafion® VE-South Investigation, Fayetteville Works Facility. March 29, 2018.

Parsons, 2018d. Former Outfall Sampling Investigation Memorandum, Fayetteville Works Facility, March 29, 2018.

Parsons, 2018e. Exclusion Zone Area Investigation Report, Chemours Fayetteville Works. January 15, 2019.

Parsons, 2018f. Southeast Perched Zone Investigation Report, Chemours Fayetteville Works. March 28, 2019.

Parsons, 2018g. The Chemours Company FC, LLC ("Chemours") Plan to Install Granular Activated Carbon Treatment on Residential Drinking Water Wells. January 11, 2018.

Parsons, 2019a. Drinking Water Compliance Plan. Chemours Fayetteville Works. RCRA PERMIT NO. NCD047368642-R2-M3. April 2019.

Parsons, 2019b. Chemours Fayetteville Engineering Alternatives Analysis (EAA) for NPDES Permit Application – Old Outfall 002 Discharge. July 2019.

Parsons, 2019c. PlumeStop Phase 1 Pilot Study at Old Outfall 002. Chemours Fayetteville Works. September 30, 2019.

Parsons, 2019d. Engineering Report Old Outfall 002 GAC Pilot Study Results. Chemours Fayetteville Works. September 30, 2019.

Parsons, 2019e. Old Outfall 002 Surface Water Sampling Results. Chemours Fayetteville Works. September 30, 2019.

Parsons, 2019f. Chemours Fayetteville Engineering Report on Wastewater Treatability. July 2019.

Thompson, Chad M., et al. "Development of an oral reference dose for the perfluorinated compound GenX." Journal of Applied Toxicology (2019).

USEPA. 1993. Wildlife Exposure Factors Handbook. Office of Research and Development, Washington, D.C. EPA/600/R 93/187a.

Visscher, P. T., C. W. Culbertson and R. S. Oremland, 1994. "Degradation of trifluoroacetate in oxic and anoxic sediments." Nature 369(6483): 729-731.

Weber, A. K., L. B. Barber, D. R. LeBlanc, E. M. Sunderland and C. D. Vecitis, 2017. "Geochemical and Hydrologic Factors Controlling Subsurface Transport of Poly- and Perfluoroalkyl Substances, Cape Cod, Massachusetts." Environmental Science & Technology 51(8): 4269-4279.

APPENDIX A
On and Offsite Assessment Tables

TABLES

TABLE A 2-1
SOIL AND GROUNDWATER ANALYTICAL METHODS - PFAS
Chemours Fayetteville Works, North Carolina

Analytical Method	Common Name	Chemical Name	CASN	Chemical Formula
Table 3+ Lab SOP	HFPO-DA*	Hexafluoropropylene oxide dimer acid	13252-13-6	C6HF11O3
	PFMOAA	Perfluoro-2-methoxyaceticacid	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
	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	39492-91-6	C7HF13O7
	PMPA	Perfluoromethoxypropyl carboxylic acid	13140-29-9	C4HF7O3
	PEPA	Perfluoroethoxypropyl carboxylic acid	267239-61-2	C5HF9O3
	PFESA-BP1	Byproduct 1	29311-67-9	C7HF13O5S
	PFESA-BP2	Byproduct 2	749836-20-2	C7H2F14O5S
	Byproduct 4	Byproduct 4	N/A	C7H2F12O6S
	Byproduct 5	Byproduct 5	N/A	C7H3F11O7S
	Byproduct 6	Byproduct 6	N/A	C6H2F12O4S
	NVHOS	Perfluoroethoxysulfonic acid	1132933-86-8	C4H2F8O4S
	EVE Acid	Perfluoroethoxypropionic acid	69087-46-3	C8HF13O4
	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	773804-62-9	C8H2F14O4
	R-EVE	R-EVE	N/A	C8H2F12O5
	PES	Perfluoroethoxyethanesulfonic acid	113507-82-7	C4HF9O4S
	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	151772-58-6	C5HF9O4
	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	801212-59-9	C12H9F9O3S
EPA Method 537 Mod	10:2 FTS	10:2-fluorotelomersulfonate acid	120226-60-0	C12H5F21O3
	8:2 FTS	8:2 fluorotelomersulfonic acid	39108-34-4	C10H5F17O3S
	4:2 FTS	4:2 fluorotelomersulfonic acid	757124-72-4	C6H5F9O3S
	NEtPFOSAE	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1691-99-2	C8F17SO2N(C2H5)CH2CH2OH
	NMePFOSAE	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	24448-09-7	C8F17SO2N(CH3)CH2CH2OH
	6:2 FTS	6:2 fluorotelomer sulfonate	27619-97-2	C8H5F13SO3
	ADONA	Ammonium 4,8-dioxa-3H-perfluorononanoate	958445-44-8	CF3O(CF2)3OCHFCF2COONH4
	NaDONA	Sodium 4,8-dioxa-3H-perfluorononanoate	EVS1361	CF3O(CF2)3OCHFCF2COONa
	NEtFOSAA	N-ethyl perfluorooctane sulfonamidoacetic acid	2991-50-6	C8F17SO2N(C2H5)CH2COOH
	NEtPFOSA	N-ethylperfluoro-1-octanesulfonamide	4151-50-2	C8F17SO2NHCH2CH3
	NMePFOSA	N-methyl perfluoro-1-octanesulfonamide	31506-32-8	C8F17SO2NHCH3
	NMeFOSAA	N-methyl perfluorooctane sulfonamidoacetic acid	2355-31-9	C8F17SO2N(CH3)CH2COOH
	PFBS	Perfluorobutane sulfonic acid	375-73-5	C4HF9SO
	PFBA	Perfluorobutanoic acid	375-22-4	C4HF7O2
	PFDS	Perfluorodecane sulfonic acid	335-77-3	C10HF21O3S
	PFDA	Perfluorodecanoic acid	335-76-2	C10HF19O2
	PFDOS	Perfluorododecane sulfonic acid	79780-39-5	C12HF25O3S
	PFDoA	Perfluorododecanoic acid	307-55-1	C12HF23O2
	PFHpS	Perfluoroheptane sulfonic acid	375-92-8	C7HF15O3S
	PFHpA	Perfluoroheptanoic acid	375-85-9	C7HF13O2
	PFHxDA	Perfluorohexadecanoic acid	67905-19-5	C16HF31O2
	PFHxS	Perfluorohexane sulfonic acid	355-46-4	C6HF13SO3
	PFHxA	Perfluorohexanoic acid	307-24-4	C6HF11O2
	PFNS	Perfluorononanesulfonic acid	68259-12-1	C9HF19O3S
	PFNA	Perfluorononanoic acid	375-95-1	C9HF17O2
	PFODA	Perfluorooctadecanoic acid	16517-11-6	C18HF35O2
	PFOSA	Perfluorooctane sulfonamide	754-91-6	C8H2F17NO2S
	PFPeS	Perfluoropentane sulfonic acid	2706-91-4	C5HF11O3S
	PFPeA	Perfluoropentanoic acid	2706-90-3	C5HF9O2
	PFTeA	Perfluorotetradecanoic acid	376-06-7	C14HF27O2
	PFTriA	Perfluorotridecanoic acid	72629-94-8	C13HF25O2
	PFUnA	Perfluoroundecanoic acid	2058-94-8	C11HF21O2
	PFOA	Perfluorooctanoic acid	335-67-1	C8HF15O
	PFOS	Perfluorooctane sulfonic acid	1763-23-1	C8HF17SO3
	F-53B Major	F-53B Major	73606-19-6	C8HClF16O4S
	F-53B Minor	F-53B Minor	83329-89-9	C10HClF20O4S

Notes:
*Depending on the laboratory, HFPO-DA may also appear on the EPA Method 537 Mod analyte list
EPA - Environmental Protection Agency
PFAS - per- and polyfluoroalkyl substances
SOP - Standard Operating Procedure

TABLE A 4-1
CLASSIFICATION OF TABLE 3+ PFAS
Chemours Fayetteville Works, North Carolina

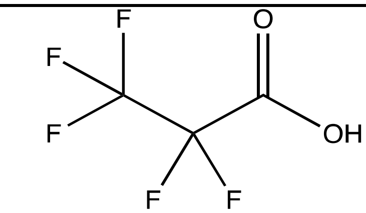
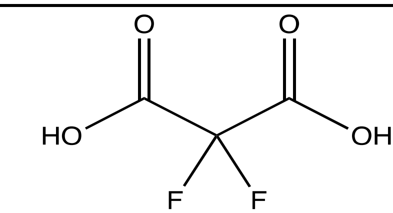
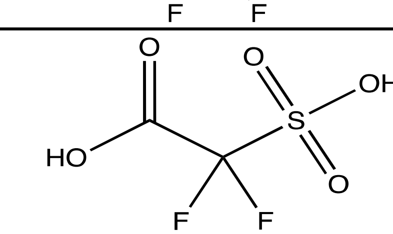
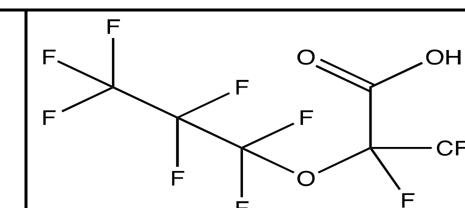
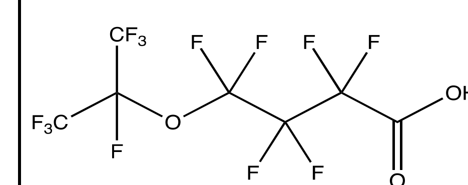
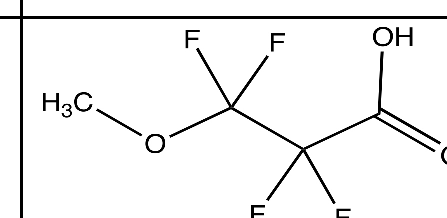
Common Name	Chemical Name	CAS #	Formula	Degree of Fluorination	Ether Bonds	Isomer type	Functional Groups			Diprotic[d]	Structure
							R-C=C[a]	R-CO$_2$H[b]	R-SO$_3$H[c]		
PFAS without ether linkages											
PPF Acid	Perfluoropropionic acid	422-64-0	$C_3HF_5O_2$	Per	0	Linear	--	✓	--	--	
MMF	Difluoromalonic acid	1514-85-8	$C_3H_2F_2O_4$	Per	0	Linear	--	✓	--	✓	
DFSA	Difluoro-sulfo-acetic acid	422-67-3	$C_2H_2F_2O_5S$	Per	0	Linear	--	✓	✓	✓	
Per- and polyfluoroalkyl ether carboxylic acids (PFECAs)											
HFPO-DA	Hexafluoropropylene oxide dimer acid	13252-13-6	$C_6HF_{11}O_3$	Per	1	Branched	--	✓	--	--	
PFECA-G	Perfluoro-4-isopropoxybutanoic acid	801212-59-9	$C_7H_1F_{13}O_1$	Per	1	Branched	--	✓	--	--	
MTP	Perfluoro-2-methoxypropanoic acid	93449-21-9	$C_4H_4F_4O_3$	Poly	1	Linear	--	✓	--	--	

TABLE A 4-1
CLASSIFICATION OF TABLE 3+ PFAS
Chemours Fayetteville Works, North Carolina

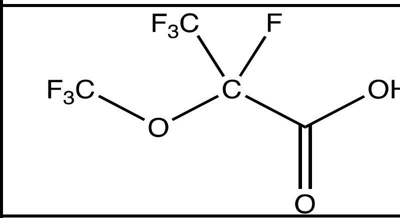
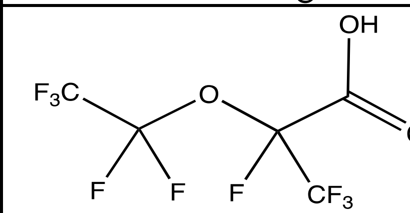
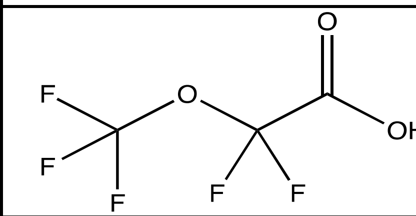
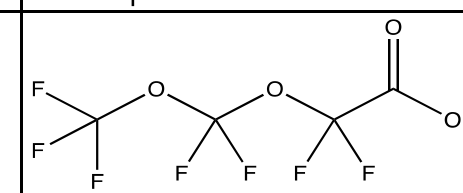
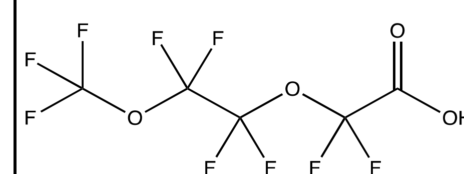
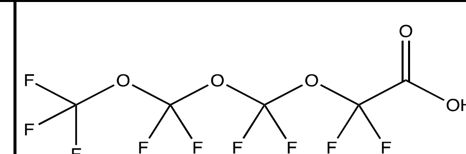
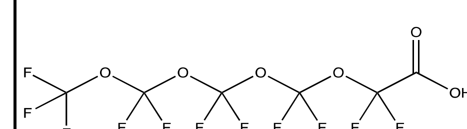
Common Name	Chemical Name	CAS #	Formula	Degree of Fluorination	Ether Bonds	Isomer type	Functional Groups			Diprotic[d]	Structure
							R-C=C[a]	R-CO_2H[b]	R-SO_3H[c]		
PMPA	Perfluoromethoxypropyl carboxylic acid	13140-29-9	$C_4HF_7O_3$	Per	1	Branched	--	✓	--	--	
PEPA	Perfluoroethoxypropyl carboxylic acid	267239-61-2	$C_5HF_9O_3$	Per	1	Branched	--	✓	--	--	
PFMOAA	Perfluoro-2-methoxyacetic acid	674-13-5	$C_3HF_5O_3$	Per	1	Linear	--	✓	--	--	
PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	39492-88-1	$C_4HF_7O_4$	Per	2	Linear	--	✓	--	--	
PFECA B	Perfluoro-3,6-dioxaheptanoic acid	151772-58-6	$C_5HF_9O_4$	Per	2	Linear	--	✓	--	--	
PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	39492-89-2	$C_5HF_9O_5$	Per	3	Linear	--	✓	--	--	
PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	39492-90-5	$C_6HF_{11}O_6$	Per	4	Linear	--	✓	--	--	

TABLE A 4-1
CLASSIFICATION OF TABLE 3+ PFAS
Chemours Fayetteville Works, North Carolina

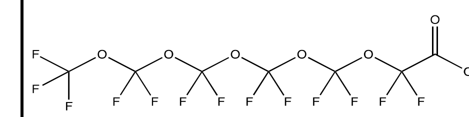
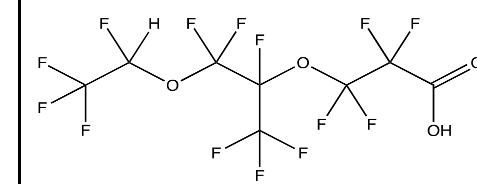
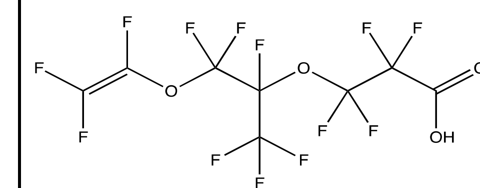
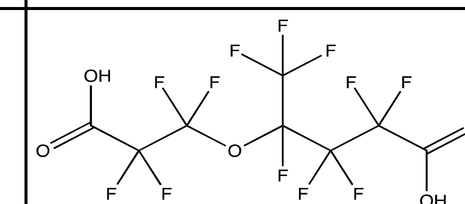
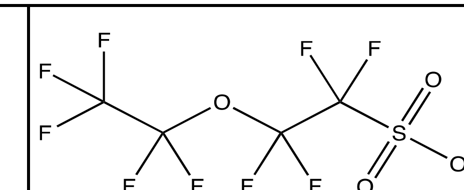
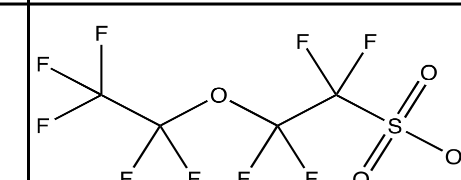
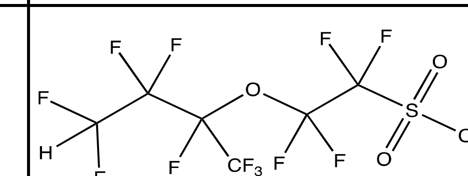
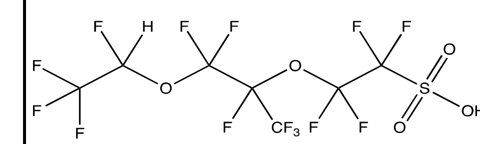
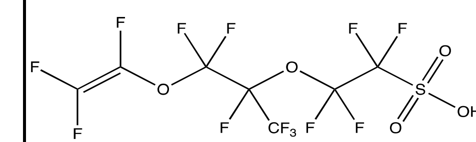
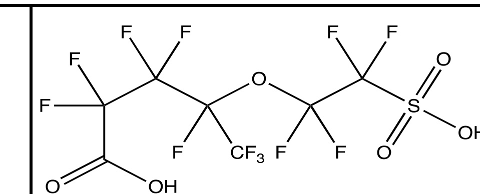
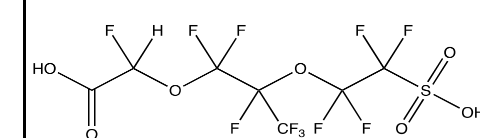
Common Name	Chemical Name	CAS #	Formula	Degree of Fluorination	Ether Bonds	Isomer type	Functional Groups			Diprotic[d]	Structure
							R-C=C[a]	R-CO_2H[b]	R-SO_3H[c]		
PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	39492-91-6	$C_7HF_{13}O_7$	Per	5	Linear	--	✓	--	--	
Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	773804-62-9	$C_8H_2F_{14}O_4$	Poly	2	Branched	--	✓	--	--	
EVE Acid	Perfluoroethoxypropionic acid	69087-46-3	$C_8HF_{13}O_4$	Per	2	Branched	✓	✓	--	--	
R-EVE	R-EVE	N/A	$C_8H_2F_{12}O_5$	Per	1	Branched	--	✓	--	✓	
Per- and polyfluoroalkyl ether sulfonic acids (PFESAs)											
PES	Perfluoroethoxyethanesulfonic acid	113507-82-7	$C_4HF_9O_4S$	Per	1	Linear	--	--	✓	--	
NVHOS	Perfluoroethoxysulfonic acid	1132933-86-8	$C_4H_2F_8O_4S$	Poly	1	Linear	--	--	✓	--	
Byproduct 6	Byproduct 6	N/A	$C_6H_2F_{12}O_4S$	Poly	1	Branched	--	--	✓	--	

TABLE A 4-1
CLASSIFICATION OF TABLE 3+ PFAS
Chemours Fayetteville Works, North Carolina

Common Name	Chemical Name	CAS #	Formula	Degree of Fluorination	Ether Bonds	Isomer type	Functional Groups			Diprotic[d]	Structure
							R-C=C[a]	$R-CO_2H$[b]	$R-SO_3H$[c]		
Byproduct 2	Byproduct 2	749836-20-2	$C_7H_2F_{14}O_5S$	Poly	2	Branched	--	--	✓	--	
PFESA-BP1	Byproduct 1	29311-67-9	$C_7HF_{13}O_5S$	Per	2	Branched	✓	--	✓	--	
Per- and polyfluoroalkyl ether sulfonic and carboxylic acids (PFES-CAs)											
Byproduct 4	Byproduct 4	N/A	$C_7H_2F_{12}O_6S$	Per	1	Branched	--	✓	✓	✓	
Byproduct 5	Byproduct 5	N/A	$C_7H_3F_{11}O_7S$	Poly	2	Branched	--	✓	✓	✓	

Notes:
[a] Carbon double bond functional group
[b] Carboxylic acid functional group
[c] Sulfonic acid functional group
[d] Compound with two acid functional groups

TABLE A 5-1
PUBLIC/ COMMUNITY WATER SUPPLY WELLS
Chemours Fayetteville Works, North Carolina

PWS ID	Location Name	Address	City	Location Description 1	Location Description 2	Depth (feet)	Distance from Site (miles)	Usage
0326127	BROOKWOOD COMM WTR SYSTEM	6902 SANDBRIDGE DRIVE	FAYETTEVILLE	SHENANDOAH, JUSTIN CT- 5718 JUSTIN COURT AWAY FROM FENCE.	OFFICE AT THE END OF BRYANSTONE WAY	80	14.9	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0326341	STONEY POINT WS/FAYETTEVILLE PWC	-	FAYETTEVILLE	STONEY POINT & ROUSE DR	SR 2986 OFF SR 1112	90	13.0	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
5026009	CRYSTAL SPRINGS CHAPEL	1400 CRYSTAL SPRINGS RD	FAYETTEVILLE	NEXT TO PARKING AREA	ON CRYSTAL SPRINGS ROAD APPROX 1/2MILES OIW CAMDEN ROAD	30	12.5	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326310	RAINTREE MHP	3580 STATE ST	FAYETTEVILLE	BEHIND MHP@PLAYGOURND	OFF CAMDEN RD AT END OF STATE STREET	100	12.1	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0326143	COPELAND ACRES S/D	583 REILLY RD	FAYETTEVILLE	OFF CRAMER IN POWER LINE EASEMENT	CAMDEN ROAD & ORION DRIVE - 1 MI EAST OF HOPE MILLS ROAD	75	12.1	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0326428	MACEDONIA BAPTIST CHURCH	5064 MACEDONIA CHURCH RD	FAYETTEVILLE	IN FRONT OF OLD FELLOWSHIP HALL	SR2013 .4MI N OIW NC210 - 5064 MACEDONIA CHURCH RD	-	11.9	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326924	KINGDOM HALL (SR-2008)	JUDSON CHURCH ROAD	FAYETTEVILLE	@ NW CORNER OF CH IN REAR, BELOW GRADE	SR2008 0.6MI NE OIW NC53L BEHIND JUDSON CH RD	-	11.8	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326548	FANTASY LAKE	5869 PERMASTONE DR	HOPE MILLS	AT EQUIPMENT SHED PAST LOCKED GATE, EAST SIDE OF LAKE	@END OF PERMASTONE DRIVE OFF GOLFVIEW DR W OF HOPE MILLS	323	11.5	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326955	STRICKLAND GROCERY NO 2	5205 NC HWY 210 S	STEDMAN	NEXT TO ROAD	AT THE Y OF NC210 & SR2018	-	11.5	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326411	CHURCH OF GOD OF PROPHECY	5371 NC 210 S	STEDMAN	N SIDE OF CH NEXT TO REAR DOOR TOWARDS PARKING LOT	NC 210- 0.1MI SE OIW SR2018	-	11.4	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
5026029	DOLLAR GENERRAL STORE #15984	2222 CEDAR CREEK RD	FAYETTEVILLE	FRONT RIGHT CORNER OF PARKING LOT	N ON GREEN ST RT ON GROVE ST RT ON CEDAR CREEK RD	33	11.4	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326143	COPELAND ACRES S/D	583 REILLY RD	FAYETTEVILLE	OFF BURGAW DRIVE	CAMDEN ROAD & ORION DRIVE - 1 MI EAST OF HOPE MILLS ROAD	85	11.4	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
5026017	ST JUDE BAPTIST CHURCH	3600 ACORDIA LN	HOPE MILLS	BESIDE CHURCH NEAR PARKING AREA	END OF ACORDIA LN OFF LEGION RD	91	11.2	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326342	TANGLEWOOD ESTATES S/D	HWY 301	FAYETTEVILLE	BACK OF DEVELOPMENT	HWY 301 PAST INTERSECTION WITH AIRPORT RD	75	11.0	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0326342	TANGLEWOOD ESTATES S/D	HWY 301	FAYETTEVILLE	FRONT OF DEVELOPMENT IN MH SALES LOT	HWY 301 PAST INTERSECTION WITH AIRPORT RD	120	11.0	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0326796	NC PRODUCTS OF FAYETTEVILLE	3960 CEDAR CREEK ROAD	FAYETTEVILLE	BACK OF SITE/ NORTH SIDE	NC 53 0.3 MI S OIW NC210 R	74	10.2	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
5326406	HERITAGE BIBLE FELLOWSHIP	4519 CALICO ST	HOPE MILLS	NORTH EAST CORNER OF LOT	ON CALICO ROAD 1/2 MILE OFF CAMDEN ROAD	-	9.9	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326776	THE ARC OF HOPE MILLS	4124 PEACAN DRIVE	HOPE MILLS	AT REAR OF REST HOME	ON CAMERON RD APPX 1/2 MILE FROM HOPE MILL CITY LIMITS	200	9.8	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0326302	LAZY ACRES CAMPGROUND	821 LAZY ACRES STREET	FAYETTEVILLE	BEHIND OFFICE	821 LAZY ACRES ST - OFF SR-2341 .3MI OIW SR-2219	69	9.7	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326701	VFW POST 670	3928 DOC BENNET	FAYETTEVILLE RD	REAR OF VFW LOT SE CORNER	2MI NO OIW NC 87 AND DOC BENNETTE RD NEAR AIRPORT	65	9.7	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326570	MT CALVARY MISSIONARY BAPTIST	3398 DOC BENNETT RD	FAYETTEVILLE	IN FRONT OF CHURCH	ON DOC BENNETT RD APPROX .1MI W OIW I-95 SOUTH -	-	9.4	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326516	SHORT STOP #63	-	FAYETTEVILLE	AT REAR OT STORE	HWY 53 IOW TABOR CHURCH RD	-	9.1	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326538	CEDAR CREEK BAPTIST CHURCH	4170 TABOR CHURCH ROAD	FAYETTEVILLE	NEXT TO BALL FIELD @OLD WELL	ON SR 2033 JUST OFF NC 53 INTER WITH THE CONVIENCE STORE - 4170 TABOR CHURCH RD	455	9.0	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
5326413	FED EX FREIGHT	-	HOPE MILLS	S OF BLDG NEXT TO FENCE	ON SERVICE RD OFF NC 301S SO OF HOPE MILLS EXIT NC 301	-	8.9	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326864	GREATER FIRST BAPTIST CHURCH	3398 MCKINNON RD	FAYETTEVILLE	E OF CH NEXT TO DRIVEWAY	OFF MCKINNIN RD 1/2 MILE FROM INTER WNC53 CEDAR CK COMM	-	8.8	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
5026028	NEW VISION CHRISTIAN CHURCH	6111 MCDONALD RD	PARKTON	IN FORNT OF CHURCH	ON MCDONALD RD, APPX 1 MILE W ON US 301	-	8.7	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326865	GREGORY POOLE EQUIPMENT CO	5663 US 301 S	HOPE MILLS	-	1 MILE S OIW US 301 & CHICKEN FOOT ROAD	78	8.7	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0378030	SAINT PAULS, TOWN OF	110 WEST MCLEAN ST	ST PAULS	ODOM RD	WATER TREATMENT PLANT	321	8.6	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0326687	UNION OAK AME ZION CHURCH	6142 HIGHWAY 301 SOUTH	HOPE MILLS	SOUTH OF CHURCH NEXT TO FIELD	NEAR CO LINE ON NC 301	-	8.5	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0378030	SAINT PAULS, TOWN OF	110 WEST MCLEAN ST	ST PAULS		WATER TREATMENT PLANT	142	8.4	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0309040	TAR HEEL WATER CORP	-	TAR HEEL	SR 2354 MAIN ST-0.2 M S OF ARMFIELD	OFF HWY 87 IN TARHEEL	135	8.3	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.

TABLE A 5-1
PUBLIC/ COMMUNITY WATER SUPPLY WELLS
Chemours Fayetteville Works, North Carolina

PWS ID	Location Name	Address	City	Location Description 1	Location Description 2	Depth (feet)	Distance from Site (miles)	Usage
0378030	SAINT PAULS, TOWN OF	110 WEST MCLEAN ST	ST PAULS	CLARK ST	WATER TREATMENT PLANT	340	8.1	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0326503	MT PISGAH BAPTIST CHURCH	3350 BUTLER NURSERY RD	FAYETTEVILLE	IN FRONT OF CHURCH IN OLD BRICK PUMP HOUSE.	3350 BUTLER NURSERY RD, NC 87S OF FAYETTEVILLE OVER RIVER RD TO RT FROM F-VILLE NC	-	7.9	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
5078003	MARSHLACK MHP #1	-	PARKTON	AT THE END OF SOUTHERN COMFORT DR	AT SOUTHERN COMFORT AIR RANCH LITTLE MARSH RD OFF HWY 301 SOUTH. ROBESON/CUMBERLAND CO LINE	100	7.8	(State Def) 2+ systems that are adjacent, owned or operated by same supplier of water, and together serve 15+ connections or 25+ people.
5078004	MARSHLACK MHP #2	ROBESON CUMBERLAND AND CO LINE	PARKTON	AT THE END OF SOUTHERN COMFORT DR	AT SOUTHERN COMFORT AIR RANCH LITTLE MARSH RD OFF HWY 301 SOUTH SOUTH SLIGHTLY NORTH WEST OF PROPERT	100	7.8	(State Def) 2+ systems that are adjacent, owned or operated by same supplier of water, and together serve 15+ connections or 25+ people.
0309040	TAR HEEL WATER CORP	-	TAR HEEL	HWY 87 JUST NORTH OF SCHOOL	OFF HWY 87 IN TARHEEL	115	7.5	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0326572	BAPTIST UNION MISSIONARY BAPTIST CHURCH	1483 SAND HILL RD	HOPE MILLS	REAR OF CHURCH IN BRICK WELLHOUSE	ON SR2238 SANDHILL RD APPX .5MI E OIW SR2239 SANDHILL RD	60	7.3	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0309523	CAPE FEAR SCOUT RESERVATION	13165 HWY 53 WEST	WHITE OAK	BEHIND RANGERS HOME	ON NC 53 APPROX 2 MILE N OF WHITE OAK	98	7.3	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0309527	SMITHFIELD FARMLAND CORP-TAR HEEL DIV	15855 NC 87 W - 9307	TAR HEEL	EAST OF PLANT	HWY 87 N OF TAR HEEL 1 M	410	7.1	Serves at least 25 of the same persons 6+ months per year. ex. schools, daycares, industries.
0309527	SMITHFIELD FARMLAND CORP-TAR HEEL DIV	15855 NC 87 W - 9307	TAR HEEL	AT REAR OF LAGOON BETWEEN W01 AND WO2	HWY 87 N OF TAR HEEL 1 M	400	7.0	Serves at least 25 of the same persons 6+ months per year. ex. schools, daycares, industries.
0309527	SMITHFIELD FARMLAND CORP-TAR HEEL DIV	15855 NC 87 W - 9307	TAR HEEL	SO OF PLANT BELOW LAGOON	HWY 87 N OF TAR HEEL 1 M	409	6.8	Serves at least 25 of the same persons 6+ months per year. ex. schools, daycares, industries.
0309527	SMITHFIELD FARMLAND CORP-TAR HEEL DIV	15855 NC 87 W - 9307	TAR HEEL	IN FRONT OF PLANT NEAR HWY 87	HWY 87 N OF TAR HEEL 1 M	-	6.8	Serves at least 25 of the same persons 6+ months per year. ex. schools, daycares, industries.
0326167	GRAY`S CREEK MHP	-	FAYETTEVILLE	BEHIND PUMMILL RESIDENCE	87 SOUTH 1MILE FROM SR 2238	70	6.5	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0326167	GRAY`S CREEK MHP	-	FAYETTEVILLE	AT FRONT BESIDE PRESSURE TANK	87 SOUTH 1MILE FROM SR 2238	63	6.5	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0326737	SHERWOOD PRESBYTERIAN CHURCH	4857 NC HWY 87 SOUTH	FAYETTEVILLE	FRONT OF CHURCH	NC87 0.3 MI S - SR2220 L - 4857 NC 87 S	-	6.4	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0309527	SMITHFIELD FARMLAND CORP-TAR HEEL DIV	15855 NC 87 W - 9307	TAR HEEL	BEHIND TRUCK SCALES, N SIDE OF PLANT	HWY 87 N OF TAR HEEL 1 M	410	6.4	Serves at least 25 of the same persons 6+ months per year. ex. schools, daycares, industries.
0378055	ROBESON COUNTY WATER SYSTEM	265 MCGIRT RD	MAXTON	HWY 20 0.5MI E OIW SR 1907	SR1308 OFF HWY 71 AT CAMPBELL SOUP PLANT	170	6.3	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0309527	SMITHFIELD FARMLAND CORP-TAR HEEL DIV	15855 NC 87 W - 9307	TAR HEEL	BEHIND CAROLINA COLD STORAGE ABOUT 300 FT W OF OLD W5A	HWY 87 N OF TAR HEEL 1 M	405	6.1	Serves at least 25 of the same persons 6+ months per year. ex. schools, daycares, industries.
0326445	TABOR UNITED METHODIST CHURCH	6112 TABOR CHURCH ROAD	FAYETTEVILLE	FRONT OF CHURCH, TOWARDS ROAD; BELOW GRADE	SR 2023 0.1 MI S OIW SR 2229	-	6.0	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326853	FIRST UNITED BAPT CH GRAYS CK	2002 CHICKEN FOOT RD	HOPE MILLS	FRONT LEFT OF CHURCH	HWY 59 1.5MI EAST OIW 301 SO ON RIGHT	-	6.0	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0309060	BLADEN CO WTR DIST-EAST BLADEN	-	WHITE LAKE	HWY 53 AT SR 1327	US 701 NTH SR 1796 OFFICE-AGRICULTURE RD ELIZTOWN	245	6.0	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0309527	SMITHFIELD FARMLAND CORP-TAR HEEL DIV	15855 NC 87 W - 9307	TAR HEEL	WEST SIDE OF HWY 87 N OF PLANT	HWY 87 N OF TAR HEEL 1 M	380	5.7	Serves at least 25 of the same persons 6+ months per year. ex. schools, daycares, industries.
0326973	MJ TAYLOR CATERING & PARADISE	1965 JOHN MCMILLIAN RD	HOPE MILLS	BEHIND HOME OFFICE @DRIVEWAY, IN OLD PASTURE AREA	3 MILES FROM I-95S JUST OFF CHICKEN FOOT RD ON SR 2242 JOHN MCMILLIAN RD	90	5.6	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
5009012	BLADEN BLUFFS WATER SYSTEM	17014 HWY 87	TAR HEEL	INSIDE THE PERIMETER WHERE PLANT IS LOCATED	HWY 87S TO TAR HEEL. THE PLANT IS ON THE OPPOSITE SIDE OF SMITHFIELD PLANT	-	5.5	Serves at least 25 of the same persons 6+ months per year. ex. schools, daycares, industries.
0309527	SMITHFIELD FARMLAND CORP-TAR HEEL DIV	15855 NC 87 W - 9307	TAR HEEL	EAST SIDE OF HWY 87 NORTH OF PLANT	HWY 87 N OF TAR HEEL 1 M	410	5.5	Serves at least 25 of the same persons 6+ months per year. ex. schools, daycares, industries.
0326682	SAVANNAH BAPTIST CHURCH	-	FAYETTEVILLE	FRONT OF CHURCH NEXT TO OLD WELL	SR2023 1.3MIL S OIW SR2230 L	-	5.1	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326536	GRAYS CREEK BAPTIST CHURCH	4750 GRAYS CREEK CHURCH RD	HOPE MILLS	FRONT OF CHURCH, NEXT TO PARKING AREA	NC HWY 875, LEFT ON BLOSSOM RD, RIGHT ON GRAYS CREEK CHURCH RD.	-	4.8	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326733	CUMBERLAND UNION BAPTIST CH	6957 TABOR CHURCH RD	FAYETTEVILLE	FRONT OF CH BELOW GROUND	SR2023 0.1 MI S OIW SR2228 L - 7096 TABOR CHURCH RD	-	4.7	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0378055	ROBESON COUNTY WATER SYSTEM	265 MCGIRT RD	MAXTON	4379NC20HWY(ACROSS FOR ROCCO)	SR1308 OFF HWY 71 AT CAMPBELL SOUP PLANT	146	4.4	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0378055	ROBESON COUNTY WATER SYSTEM	265 MCGIRT RD	MAXTON	HWY 20 BY RAILROAD TRACK	SR1308 OFF HWY 71 AT CAMPBELL SOUP PLANT	113	4.2	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.

TABLE A 5-1
PUBLIC/ COMMUNITY WATER SUPPLY WELLS
Chemours Fayetteville Works, North Carolina

PWS ID	Location Name	Address	City	Location Description 1	Location Description 2	Depth (feet)	Distance from Site (miles)	Usage
5026008	GRAY`S CREEK CHURCH OF GOD	4018 CHICKEN FOOT ROAD	ST. PAULS	NORTH SIDE OF CHURCH	CHICKEN FOOT RD, APPX 5 MILES S. OF HOPE MILLS	-	4.1	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0378055	ROBESON COUNTY WATER SYSTEM	265 MCGIRT RD	MAXTON	NC 20 PECAN ORCHARD	SR1308 OFF HWY 71 AT CAMPBELL SOUP PLANT	106	4.1	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0326860	SHORT TRIP	3634 CHICKENFOOT RD	HOPE MILLS	NEAR OLD WELL #2, BEHIND PINE TREES	ON CHICKEN FOOT ROAD	39	4.1	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326810	ALDERMAN ROAD ELEMENTARY	2860 ALDERMAN RD	FAYETTEVILLE	WEST SIDE OF SCHOOL	BETWEEN NC87 & SCHOOL RD	80	4.0	Serves at least 25 of the same persons 6+ months per year. ex. schools, daycares, industries.
0378055	ROBESON COUNTY WATER SYSTEM	265 MCGIRT RD	MAXTON	NC 20 HAYFIELD	SR1308 OFF HWY 71 AT CAMPBELL SOUP PLANT	110	4.0	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
0326627	GRAYS CREEK ELEM SCHOOL	GRAY`S CREEK SCHOOL ROAD	HOPE MILLS	RIGHT OF BLDG	2964 SCHOOL RD	84	4.0	Serves at least 25 of the same persons 6+ months per year. ex. schools, daycares, industries.
5009010	MURPHY-BROWN SANITATION-TARHEEL	1023 PURDE HALL RD	TAR HEEL	BEHIND HYDRO TANK HOUSE	OFF PURDE HALL RD S OF IO NC 20 AND PURDE HALL	-	3.9	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
5009010	MURPHY-BROWN SANITATION-TARHEEL	1023 PURDE HALL RD	TAR HEEL	NORTH OF WELL HOUSE EDGE OF SITE	OFF PURDE HALL RD S OF IO NC 20 AND PURDE HALL	-	3.9	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326974	THE CREEK BAR & GRILL	4351 CHICKENFOOT RD	ST PAULS	REAR OF RESTAURANT NW CORNER	6.6 MILES OFF I95 ON SR 2252 CHICKEN FOOT RD - 4351 CHICKENFOOT RD	-	3.9	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326571	MARVIN UNITED METHODIST CHURCH	6740 NC 87 SOUTH	FAYETTEVILLE	E OF CHURCH NEXT TO DRIVEWAY TOWARDS HIGHWAY	INTER OF NC 87 AND SR 1500 NEAR BALDEN CO. LINE	-	3.6	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0309055	BLADEN CO WTR DIST-WEST BLADEN	-272 SMITH CIRCLE	ELIZABETHTOWN	SR 1300 1 MI NORTH NORTH OIW HWY 20	WESTERN PART OF BLADEN CO	98	3.0	Serves 15+ connections or regularly serves 25+ year-round residents. ex. cities, towns, subdivisions.
5026014	CHARITY BAPTIST CHURCH	5923 SHILOAH CHURCH DRIVE	FAYETTEVILLE	IN FRONT OF CHURCH	JUST OFF NC 87 SOUTH OF FAYETTEVILLE SHILOAH CH DR	60	2.5	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326569	MT VERNON BAPTIST CHURCH	3184 COUNTY LINE RD	FAYETTEVILLE	FRONT OF CHURCH	ON CO. LINE ROAD APPX 3 MILES FROM CHICKENFOOT ROAD - 3184 COUNTY LINE RD	-	2.2	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.
0326735	WILLIS CREEK AME ZION CHURCH	-	FAYETTEVILLE	WITHIN 3' OF WELL #1	NC 87 SOUTH 4MI. OIW SR 2232	-	1.8	Serves 25+ people at least 60 days per year. ex. restaurants, churches, DOT rest areas.

Notes
1. Information provided by North Carolina Corporate Geographic Database, retrieved from NC OneMap on September 24, 2019.
2. Wells listed here correspond to public supply wells identified in Figure 5-1.
'-' - No data available

TABLE A 6-1
SUMMARY OF FINDINGS OF GEOLOGIC MAPPING STUDY
Chemours Fayetteville Works, North Carolina

Map ID	Station ID	Latitude	Longitude	Estimated Elevation (ft NAVD 88)	Unit	Outcrop Type	Thickness (ft)	Major Lithology	Minor Lithology	Strike	Dip	Type	Notes
1	1.1*	34.85156	-78.82931	77	Black Creek Confining Unit	Ledge	4	gray/black clay	lignite chips	320	4	Bedding	Ledge of dark gray, moderately plastic clay with lignite chips. No other outcrops were observed downstream.
	1.2*									219	56	Joint	
2	2.1*	34.85152	-78.82936	77	Black Creek Confining Unit	Ledge	3	gray/black clay	NA	50	7	Bedding	Ledge of fat gray clay with local orange discoloration and trace mica. Bedding is locally massive. Contact of sand observed above clay across creek.
	2.2*									50	21	Bedding	
	2.3*									49	24	Bedding	
3	3.1*	34.85151	-78.82937	76	Black Creek Confining Unit	Ledge w/ Waterfall	7	gray/black clay	NA	24	10	Bedding	Ledge/waterfall outcrop of tan, thinly bedded sand observed above dark gray clay. Local surficial weathering.
	3.2*									25	11	Bedding	
	3.3*									128	71	Joint	
4	4.1	34.84989	-78.82850	86	Surficial Aquifer	Bench	1	gray blue sandstone	NA	351	20	Bedding	Bench of quartz-rich, poorly graded, angular clasts, medium- to coarse-grained sand.
5	5.1	34.85442	-78.84142	65	Black Creek Confining Unit	Creek bed	1	gray/black clay	NA	NM	NM	NM	Dark gray, massive clay in creek bed.
6	6.1	34.85444	-78.84168	73	Black Creek Confining Unit	Creek bed	1	gray/black clay	NA	NM	NM	NM	Dark gray, massive clay in creek bed.
7	7.1	34.85437	-78.84213	73	Black Creek Confining Unit	Tree Root Ball	~10	gray/black clay	NA	NM	NM	NM	Outcrop inaccessible but appears to be dark gray, massive clay in creek bed.
8.1	8.1	34.85494	-78.83748	59	Black Creek Confining Unit	Creek bed	1	gray/black clay	NA	NM	NM	NM	Dark gray, massive clay in creek bed.
8.2	8.2	34.85515	-78.83779	55	Black Creek Confining Unit	Creek bed		gray/black clay	NA	NM	NM	NM	Dark gray, massive clay in creek bed.
9	9.1	34.83764	-78.83535	120	Perched Aquifer	Stream Cut Wall	1	sand	clay	81	7	Bedding	Reddish tan, fine- to medium-grained sand with 1 foot thick interbedded dark gray clay layer.
10	10.1	34.83678	-78.83484	105	Perched Clay	Stream Cut Wall	4	clay	NA	52	5	Bedding	Dark gray, thinly bedded clay with trace mica. First clay exposure since last station.
11	11.1	34.83559	-78.83350	90	Perched Clay	Stream Cut Wall	1.5	clay	NA	42	7	Bedding	Light gray (top 6 inches) and dark gray, fat clay. Lithology is similar to station 10.1 and 11.1.

TABLE A 6-1
SUMMARY OF FINDINGS OF GEOLOGIC MAPPING STUDY
Chemours Fayetteville Works, North Carolina

Map ID	Station ID	Latitude	Longitude	Estimated Elevation (ft NAVD 88)	Unit	Outcrop Type	Thickness (ft)	Major Lithology	Minor Lithology	Strike	Dip	Type	Notes
12	12.1	34.83540	-78.83321	89	Perched Clay	Stream Cut Wall	3.25	clay	NA	8	8	Bedding	Light gray (top 6 inches) and dark gray, fat clay. Lithology is similar to station 10.1.
13	13.1	34.83465	-78.83266	98	Surficial Aquifer	Stream Cut Wall	6.5	silty clay	NA	0	0	Bedding	Dark gray clay with silt component. Top 6 inches of outcrop is highly oxidized. Burrows observed.
14	14.1**	34.83402	-78.83176	78	Surficial Aquifer	Stream Cut Wall	5	organic rich silt	NA	0	0	Bedding	Dark black, lignite-rich silt with trace clay.
	14.2**						1.5	claystone	NA	NM	NM	NM	Interlayered dark and light gray clay. Station was observed across stream from station 14.1, approximately 15 to 20 feet below elevation of 14.1.
15	15.1	34.83339	-78.83075	77	Surficial Aquifer	Stream Cut Wall	4	sand	clay	NM	NM	NM	White, poorly graded sand with cm- to mm-scale interlayers of black clay.
16	16.1	34.83320	-78.83058	81	Black Creek Confining Unit	Stream Cut Wall	7	clay	sand	19	7	Bedding	Fat dark gray clay with mm- to cm-scale interlayers of sand. First large exposure of clay since 12.1 and 13.1. Appears to begin approximately 30 feet upstream of this station.
17	17.1*	34.83308	-78.83014	82	Black Creek Confining Unit	Stream Cut Wall	17	clay	NA	0	0	Bedding	Dark gray, thinly bedded to massive clay with local oxidized surficial staining.
	17.2*									7	85	Joint	
18	18.1	34.83301	-78.82951	81	Black Creek Confining Unit	Stream Cut Wall	10	clay	NA	0	0	Bedding	Light and dark gray, thinly bedded clay with local surficial staining.
19	19.1	34.83316	-78.82911	81	Black Creek Confining Unit	Stream Cut Wall	2	clay	NA	0	0	Bedding	Dark gray, thinly bedded clay.
20	20.1	34.83264	-78.82603	67	Black Creek Confining Unit	Stream Cut Wall		gray clay	NA	NM	NM	NM	Unable to access outcrop but appears to be dark gray, fat clay.
21	21.1	34.83292	-78.82626	69	Black Creek Confining Unit	Stream Cut Wall		light gray clay	NA	0	0	Bedding	Gray, fat clay and interbedded sand with trace mica and lignite chips. Pieces of petrified wood observed upstream.
22	22.1	34.83335	-78.82749	73	Black Creek Confining Unit	Stream Cut Wall		light gray clay	NA	0	0	Bedding	Light gray clay and interbedded fine-grained, angular sand with abundant lignite chips.
23	23.1*	34.83355	-78.82854	73	Black Creek Confining Unit	Stream Cut Wall	15-20	light to dark gray clay	NA	0	0	Bedding	Light to dark gray clay. Appears to be continuous from station 23.1. Multiple joint sets observed that show surficial weathering and horizontal bedding.
	23.2*									37	82	Joint	
	23.3*									320	89	Joint	

TABLE A 6-1
SUMMARY OF FINDINGS OF GEOLOGIC MAPPING STUDY
Chemours Fayetteville Works, North Carolina

Map ID	Station ID	Latitude	Longitude	Estimated Elevation (ft NAVD 88)	Unit	Outcrop Type	Thickness (ft)	Major Lithology	Minor Lithology	Strike	Dip	Type	Notes
24	24.1	34.83299	-78.82963	82	Black Creek Confining Unit	Stream Cut Wall		dark gray clay	NA	0	0	Bedding	Dark clay and interbedded fine-grained sand.
25	25.1	34.83689	-78.82464	61	Black Creek Confining Unit	NR	2	clay	NA	239	11	Bedding	Dark gray, thinly bedded clay. Identified as Seep D-D1 in Seep Investigation.
26	26.1	34.84158	-78.82854	99	Perched Clay	Waterfall	2	clay	NA	210	10	Bedding	Dark gray with orange surficial staining, thinly bedded to massive clay. First observed outcrop of clay in seep B.
27	27.1	34.84175	-78.82720	81	Black Creek Confining Unit	Ledge	2.5	clay	NA	NM	NM	NM	Gray, massive, fat clay. Large petrified boulder observed.
28	28.1*	34.84184	-78.82665	75	Black Creek Confining Unit	Waterfall	10	clay	NA	238	19	Bedding	Waterfall outcrop of dark gray, thinly bedded clay and interbedded fine-grained sand.
	28.2*									115	23	Bedding	
	28.3*									265	87	Joint	
29	29.1	34.84415	-78.82675	67	Black Creek Confining Unit	NR	2	clay	NA	224	9	Bedding	Dark gray, massive, lean clay, with iron-oxide surficial staining and small 1cm-scale interbedded sand laminations. First exposure observed on seep A. Seep A-6, A-1
30	30.1	34.84442	-78.82971	147	Perched Aquifer	NR		unconsolidated sand	clay	NM	NM	NM	Tan brown, fine- to medium-grained, unconsolidated sand. Identified as Seep A-7-B1 in Seep Investigation.
31	31.1	34.84424	-78.82683	68	Black Creek Confining Unit	NR	1		NA	0	0	Bedding	Dark gray clay with horizontal bedding. Identified as Seep A8 in Seep Investigation.
32	32.1	34.84505	-78.82794	99	Surficial Aquifer	NR	1	clayey sand	NA	NM	NM	NM	Red-brown, massive clayey sand with nodules of claystone and siltstone in dry creek bed.
33	33.1	34.84519	-78.82806	103	Surficial Aquifer	NR	4	sand	NA	NM	NM	NM	Red-brown, moist, fine- to coarse-grained sand with gravel sized quartz grains. Identified as Seep A-10.
34	34.1	34.84543	-78.82876	125	Perched Clay	NR	2-3	clay	NA	87	8	Bedding	Red-brown and orange, moist clay with interlayers of medium-grained sand.
35	35.1	34.84575	-78.82959	136	Perched Clay	NR	1	clay	sand	269	8		Reddish gray, clay overlying orange, medium- to coarse grained, hematite-rich sand and interbedded clay.
36	36.1	34.84860	-78.82790	62	Black Creek Confining Unit	NR	4	petrified wood	NA	NM	NM	NM	4 foot in diameter, petrified tree trunk and dark red to gray, massive fat clay. Identified as Seep A-5.

TABLE A 6-1
SUMMARY OF FINDINGS OF GEOLOGIC MAPPING STUDY
Chemours Fayetteville Works, North Carolina

Map ID	Station ID	Latitude	Longitude	Estimated Elevation (ft NAVD 88)	Unit	Outcrop Type	Thickness (ft)	Major Lithology	Minor Lithology	Strike	Dip	Type	Notes
37	37.1	34.84860	-78.82799	65	Black Creek Confining Unit	NR	0.5	clay	NA	NM	NM	NM	Dark red to gray, massive, fat clay.
38	38.1	32.84858	-78.82819	72	Black Creek Confining Unit	NR	6-7	clay	NA	NM	NM	NM	Dark to light gray, intricately layer/interbedded clay and fine- to medium-grained sand.
39	39.1	34.85524	-78.83652	53	Black Creek Confining Unit	NR	10	clay	NA	352	46	Joint	Light to dark gray clay with cm-scale, fine-grained sand lenses throughout with local lignite layers. Outcrop is approximately 100 feet in length.
40	40.1	34.85582	-78.83624	54	Black Creek Confining Unit	NR	3.5	clay	NA	0	0	Bedding	Light to dark gray clay with cm-scale, fine-grained sand lenses throughout with local lignite layers. Outcrop is approximately 70 feet in length.
41	41.1	34.85572	-78.83624	53	Black Creek Confining Unit	NR	10	clay	NA	0	0		Light to dark gray clay with cm-scale, fine-grained sand lenses throughout with local lignite layers. Outcrop is approximately 50 feet in length.

Notes:
1. * indicates multiple station ID's at the same outcrop.
2. ** indicates station locations at different outcrops but within the same vicinity.
3. Latitude and longitude were measured by Parson's field staff using Arc Collector in conjuction with the Garmin Glow GPS.
4. Elevations were estimated from 2018 USGS topographic map.
5. ft above MSL - feet above mean sea level.
6. Strikes and dips were measured using a Brunton compass.
7. Seep ID's are referenced from Geosyntec 2019, *Seeps and Creeks Investigation Report.* Chemours Fayetteville Works. 26 August 2019.
8. Soil classification are based off of Unified Soil Classification System

ft - feet
NAVD 88 - North American Vertical Datum of 1988
NA - not applicable
NM - not measured
NR - not recorded

TABLE A 6-2
BLACK CREEK AQUIFER HPT/EC AND SITE BORING LOCATIONS
Chemours Fayetteville Works, North Carolina

Location	Northing (ft NAD83)	Easting (ft NAD83)	Ground Surface Elevation (ft NAVD88)	Total depth (ft bgs)	Location notes
HP-1	400,542.77	2,051,769.54	53	45	co-located with PIW-1 soil boring
HP-2	399,790.41	2,050,646.37	142	62	co-located with BCA-01
HP-3	399,855.35	2,052,002.66	51	36	
HP-4	399,557.56	2,052,156.19	49	33	co-located with LTW-01
HP-5	399,072.61	2,052,255.15	49	41	
HP-6	398,840.96	2,052,354.26	48	47	co-located with LTW-02
HP-7	398,622.53	2,051,900.10	76	13.5	
HP-8	398,122.18	2,052,551.75	49	39	co-located with LTW-03, PIW-6 soil boring
HP-9	397,291.74	2,052,580.52	48	47	co-located with LTW-04
HP-10	396,797.17	2,052,590.10	45	44	co-located with PIW-7 soil boring
HP-11	396,461.16	2,052,738.02	48	48	co-located with LTW-05
HP-12	396,160.77	2,052,239.55	77	55	co-located with PIW-9D
HP-13	395,108.74	2,052,293.91	74	52	co-located with PIW-10 soil boring
HP-14	397,002.02	2,052,566.93	46	45	
HP-15	396,640.14	2,052,695.99	45	48	
HP-16	395,745.63	2,052,301.19	70	50	
HP-17	398,518.90	2,051,952.48	72	38	co-located with PIW-5S and PW-10
HP-18	398,293.08	2,052,261.92	46	44	
HP-19	397,889.29	2,052,569.27	50	47	
HP-20	398,154.53	2,052,324.27	47	45	
HP-21	398,820.85	2,052,095.97	48	46	
HP-22	398,965.01	2,052,327.94	50	37	
HP-23	399,254.49	2,052,205.62	50	35	
HP-24	399,707.38	2,052,092.32	50	32	co-located with PIW-3 soil boring
HP-25	400,010.14	2,051,444.05	90	44	
HP-26	400,478.43	2,051,814.36	55	44	
HP-27	399,929.02	2,051,252.78	92	44	co-located with PIW-2 soil boring
HP-28	399,842.95	2,050,933.40	118	42	
HP-29	395,470.22	2,052,350.89	70	45	
HP-30	395,945.14	2,052,345.55	69	43	
HP-32	396,411.92	2,052,674.49	44	45	co-located with PIW-8 soil boring
PIW-1 Soil Boring	400,540.61	2,051,792.59	50.78	42.5	
PIW-2 Soil Boring	399,922.75	2,051,317.64	98.16	79	
PIW-3 Soil Boring	399,711.75	2,052,088.80	50.51	30	
PIW-4 Soil Boring	398,817.36	2,052,102.82	50.37	40	
PIW-5 Soil Boring	398,520.38	2,051,951.26	72.68	45	
PIW-6 Soil Boring	398,118.14	2,052,540.57	49.85	40	
PIW-7 Soil Boring	396,787.00	2,052,589.49	45.81	50	
PIW-8 Soil Boring	396,403.38	2,052,682.02	45.92	40	
PIW-9 Soil Boring	396,148.11	2,052,251.10	76.80	49	
PIW-10 Soil Boring	395,104.67	2,052,297.04	73.32	59	

Notes:

1. Locations for HPT borings (HP-1 through HP-32) were not surveyed and are approximate. PIW-soil boring locations reported correspond to surveyed co-ordinates for a shallow well location where a shallow and a deep well were co-located. PIW-well locations are provided in Table 5.
2. Ground surface elevations for HPT borings are estimated from LIDAR ground surface elevations. LIDAR ground surface elevation from 20-Foot DEM Elevation Service collected by NC Floodplain Mapping Program and processed by NC DOT - GIS Unit.Service URL:https://services.nconemap.gov/secure/rest/services/Elevation/DEM20ft_DEM/ImageServer last accessed 6-19-2019 23:24
3. Ground surface elevations for PIW-soil borings correspond to surveyed co-ordinates for a shallow well location where a shallow and a deep well were co-located. PIW-well ground surface elevations are provided in Table 6-3.
4. LIDAR estimated ground surface elevations underestimate surveyed ground surface elevations by 0.4 - 1.0 feet.

ft bgs - feet below ground surface
ft - feet
NAD 83 - North America Datum 1983
NAVD 88 - North American Vertical Datum of 1988

TABLE A 6-3
WELL CONSTRUCTION DETAILS
Chemours Fayetteville Works, North Carolina

Area	Well ID	Northing (ft, NAD83)	Easting (ft, NAD83)	Installation Date	Casing Construction	Casing Diameter (in)	Well Casing Depth (ft)	Screened Interval (ft)	Filter Pack Interval (ft)	Bentonite Seal Interval (ft)	Grout Interval (ft)	Ground Elevation (ft NAVD88)	TOC Elevation (ft NAVD88)	Aquifer	Sampled Between Jun 1, 2019 and Sept. 20, 2019?
Onsite	BCA-01	399,780.06	2,050,662.22	11/20/2017	PVC	2	101.0	91 to 101	88 to 101	83 to 88	0 to 83	143.26	146.3	Black Creek Aquifer	Yes
Onsite	BCA-02	396,242.32	2,051,062.21	11/16/2017	PVC	2	102.0	92 to 102	89 to 102	84 to 89	0 to 84	145.20	148.42	Black Creek Aquifer	Yes
Onsite	BCA-03R	398,582.23	2,049,522.22	11/7/2018	PVC	2	98.0	88 to 98	85.1 to 98	98to 108/82.5to85.1	0 to 82.5	148.15	150.82	Black Creek Aquifer	Yes
Onsite	BCA-04	395,877.67	2,047,823.11	11/28/2017	PVC	2	104.0	94 to 104	91 to 104	84 to 91	0 to 84	147.07	150.24	Black Creek Aquifer	Yes
Onsite	FTA-01	397,907.50	2,049,373.61	11/14/2002	PVC	2	22.0	12.0-22.0	10.0-22.0	8.0-10.0	0.0-8.0	147.20	150.63	Perched Zone	Yes
Onsite	FTA-02	397,786.43	2,049,206.27	11/13/2002	PVC	2	12.0-22.0	11.5-21.5	9.5-21.5	7.5-21.5	0.0-7.5	NM	150.28	Perched Zone	Yes
Onsite	FTA-03	397,767.09	2,049,313.86	11/13/2002	PVC	2	22.0	12.0-22.0	10.0-22.0	8.0-10.0	0.0-8.0	147.58	151.08	Perched Zone	Yes
Onsite	INSITU-01	401,658.20	2,046,077.31	12/13/2005	PVC	3/4	17.0	7.0-17.0	7.0-17.0	NA	0.0-7.0	115.99	118.2	Surficial Aquifer	Yes
Onsite	INSITU-02	401,863.46	2,049,136.62	12/13/2005	PVC	3/4	17.0	7.0-17.0	7.0-17.0	NA	0.0-7.0	110.71	113.12	Surficial Aquifer	--
Onsite	LTW-01	399,566.17	2,052,149.95	1/16/2006	PVC	2	26.0	11.0-26.0	9.0-26.0	6.0-9.0	0.0-6.0	51.22	53.83	Floodplain Deposits	Yes
Onsite	LTW-02	398,848.36	2,052,354.37	1/16/2006	PVC	2	38.0	28.0-38.0	25.8-38.0	23.5-25.8	0.0-23.5	50.03	52.48	Black Creek Aquifer	Yes
Onsite	LTW-03	398,115.15	2,052,557.52	1/5/2006	PVC	2	30.0	15.0-30.0	13.0-30.0	11.0-13.0	0.0-11.0	50.33	52.91	Floodplain Deposits	Yes
Onsite	LTW-04	397,280.24	2,052,583.60	12/22/2005	PVC	2	27.0	12.0-27.0	9.5-27.0	7.5-9.5	0.0-7.5	49.34	51.86	Floodplain Deposits	Yes
Onsite	LTW-05	396,430.68	2,052,738.06	12/21/2005	PVC	2	44.0	29.0-44.0	27.0-44.0	25.0-27.0	0.0-25.0	49.29	52.01	Black Creek Aquifer	Yes
Onsite	MW-1S	397,080.31	2,049,120.73	2/28/1972	Stainless Steel	4	32.3	21.0-24.0	NA	NA	NA	149.13	149.93	Perched Zone	Yes
Onsite	MW-2S	396,934.75	2,049,321.85	2/30/72	Stainless Steel	4	29.3	19.0-23.0	NA	NA	NA	149.70	149.91	Perched Zone	Yes
Onsite	MW-7S	397,444.52	2,049,809.73	7/21/1983	Stainless Steel	2	15.6	NA	NA	NA	NA	NM	147.47	Perched Zone	Yes
Onsite	MW-8S	397,096.48	2,049,867.77	7/23/1983	Stainless Steel	2	14.9	NA	NA	NA	NA	NM	146.48	Perched Zone	--
Onsite	MW-9S	396,760.16	2,049,734.30	11/3/1983	PVC	2	22.5	17.5-22.5	15.0-22.5	14.0-15.0	0.0-14.0	151.77	154.39	Perched Zone	Yes
Onsite	MW-11	396,544.40	2,049,051.06	5/31/2005	PVC	2	21.5	11.5-21.5	9.3-21.5	7.3-9.3	0.0-7.3	145.44	148.53	Perched Zone	--
Onsite	MW-12S	397,253.60	2,049,273.89	11/1/1983	PVC	2	22.5	17.5-22.5	15.5-22.5	14.5-15.5	0.0-14.5	149.89	152.06	Perched Zone	Yes
Onsite	MW-13D	397,119.02	2,049,821.12	3/20/2013	PVC	2	67.0	57 to 67	54 to 67	50 to 54	0 to 50	145.77	148.65	Surficial Aquifer	Yes
Onsite	MW-14D	396,974.49	2,049,074.56	3/21/2013	PVC	2	72.0	62 to 72	60 to 72	53.5 to 60	0 to 53.5	146.48	149.73	Surficial Aquifer	Yes
Onsite	MW-15DRR	398,580.71	2,049,511.75	11/8/2018	PVC	2	62.5	52.5 to 62.5	49 to 62.5	44 to 49	0 to 44	148.05	150.92	Surficial Aquifer	Yes
Onsite	MW-16D	398,493.70	2,048,402.84	4/2/2013	PVC	2	82.0	72 to 82	69 to 82	82 to 87 / 65 to 69	0 to 65	145.84	148.41	Surficial Aquifer	Yes
Onsite	MW-17D	398,401.74	2,047,366.50	4/3/2013	PVC	2	67.0	57 to 67	54 to 70	70 to 77 / 51 to 54	0 to 51	145.80	146.117	Surficial Aquifer	Yes
Onsite	MW-18D	400,947.38	2,046,574.72	11/17/2017	PVC	2	60.0	50 to 60	47 to 60	40 to 47	0 to 40	104.81	107.57	Surficial Aquifer	Yes
Onsite	MW-19D	401,151.33	2,048,272.99	11/18/2017	PVC	2	56.0	46 to 56	43 to 56	38 to 43	0 to 38	136.30	139.55	Surficial Aquifer	Yes
Onsite	MW-20D	400,791.28	2,048,733.91	11/18/2017	PVC	2	75.0	65 to 75	62 to 73	58 to 62	0 to 58	133.97	137.18	Surficial Aquifer	Yes
Onsite	MW-21D	399,501.70	2,047,074.96	11/22/2017	PVC	2	82.0	72 to 82	68 to 82	62 to 68	0 to 62	148.05	151.384	Surficial Aquifer	Yes
Onsite	MW-22D	398,518.18	2,048,362.68	12/1/2017	PVC	6	72.0	52 to 72	49 to 72	43 to 49	0 to 49	146.57	149.06	Surficial Aquifer	Yes
Onsite	MW-23	396,237.61	2,051,063.25	7/26/2018	PVC	2	14.5	9.5 to 14.5	7.5 14.5	4 to 7.5	0 to 4	145.17	148.34	Perched Zone	Yes
Onsite	MW-24	397,303.94	2,048,767.69	7/26/2018	PVC	2	23.8	18.8 to 23.8	16 to 23.8	14 to 16	0 to 14	147.11	150.31	Perched Zone	Yes
Onsite	MW-25	396,753.37	2,050,989.82	10/23/2018	PVC	2	17.0	12 to 17	9 to 20	7 to 9	0 to 7	145.00	147.59	Perched Zone	Yes
Onsite	MW-26	396,265.18	2,051,484.67	10/22/2018	PVC	2	10.0	5 to 10	4 to 15	2 to 4	0 to 2	144.90	147.7	Perched Zone	--
Onsite	MW-27	396,010.33	2,051,472.00	10/22/2018	PVC	2	15.0	10 to 15	8 to 20	6 to 8	0 to 6	144.39	146.83	Perched Zone	Yes
Onsite	MW-28	395,719.79	2,051,165.93	10/22/2018	PVC	2	14.0	9 to 14	7 to 15	5 to 7	0 to 5	141.52	144.7	Perched Zone	Yes
Onsite	MW-30	397,340.79	2,050,776.09	10/23/2018	PVC	2	15.0	10 to 15	8 to 20	6 to 8	0 to 6	144.95	147.67	Perched Zone	Yes
Onsite	MW-31	396,390.50	2,049,622.88	4/17/2019	PVC	2	22.0	17-22	14-17	12-14	0-12	145.48	147.699	Perched Zone	Yes
Onsite	MW-32	396,359.58	2,049,651.79	4/16/2019	PVC	2	18.5	13-18.5	10-18.5	8-10	0-8	144.63	147.106	Perched Zone	Yes
Onsite	MW-33	396,337.51	2,049,678.56	4/16/2019	PVC	2	17.0	12-17	10-17	8-10	0-8	144.28	146.82	Perched Zone	Yes
Onsite	MW-34	396,352.90	2,049,619.09	4/17/2019	PVC	2	22.0	17-22	14-22	12-14	0-12	145.17	147.972	Perched Zone	Yes
Onsite	MW-35	396,332.94	2,049,631.16	4/16/2019	PVC	2	19.0	14-19	12-19	10-12	0-10	145.03	147.541	Perched Zone	Yes
Onsite	MW-36	396,320.09	2,049,651.17	4/16/2019	PVC	2	17.0	12-17	10-17	8-10	0-8	144.68	147.889	Perched Zone	Yes
Onsite	NAF-01	398,349.77	2,050,338.81	12/5/2002	PVC	2	15.0	5.0-15.0	4.0-15.0	2.0-4.0	0.0-2.0	146.61	149.66	Perched Zone	Yes
Onsite	NAF-02	398,662.80	2,050,640.86	12/4/2002	Stainless Steel	2	15.0	5.0-15.0	4.0-15.0	2.0-4.0	0.0-2.0	147.05	150.31	Perched Zone	Yes

TABLE A 6-3
WELL CONSTRUCTION DETAILS
Chemours Fayetteville Works, North Carolina

Area	Well ID	Northing (ft, NAD83)	Easting (ft, NAD83)	Installation Date	Casing Construction	Casing Diameter (in)	Well Casing Depth (ft)	Screened Interval (ft)	Filter Pack Interval (ft)	Bentonite Seal Interval (ft)	Grout Interval (ft)	Ground Elevation (ft NAVD88)	TOC Elevation (ft NAVD88)	Aquifer	Sampled Between Jun 1, 2019 and Sept. 20, 2019?
Onsite	NAF-03	398,580.65	2,050,755.43	12/4/2002	Stainless Steel	2	15.0	5.0-15.0	4.0-15.0	2.0-4.0	0.0-2.0	147.38	150.44	Perched Zone	Yes
Onsite	NAF-04	398,447.00	2,050,718.95	12/4/2002	Stainless Steel	2	15.0	5.0-15.0	4.0-15.0	2.0-4.0	0.0-2.0	147.90	148.1	Perched Zone	Yes
Onsite	NAF-05A	398,641.22	2,051,024.85	10/10/2005	Stainless Steel	2	NA	NA	NA	NA	NA	NA	NA	Perched Zone	--
Onsite	NAF-05B	398,660.23	2,051,021.81	10/12/2005	Stainless Steel	2	NA	NA	NA	NA	NA	NA	NA	Surficial Aquifer	--
Onsite	NAF-06	398,809.66	2,050,911.91	5/26/2005	Stainless Steel	2	12.75	2.75-12.75	2.0-12.75	0.25-2.0	0.0-0.25	143.17	146.43	Perched Zone	Yes
Onsite	NAF-07	398,899.33	2,050,616.50	5/20/2005	Stainless Steel	2	15.5	5.5-15.5	3.0-15.5	1.0-3.0	0.0-1.0	146.73	149.69	Perched Zone	Yes
Onsite	NAF-08A	398,097.99	2,050,886.62	6/1/2005	Stainless Steel	2	15.0	5.0-15.0	3.0-15.0	1.0-3.0	0.0-1.0	145.54	148.82	Perched Zone	Yes
Onsite	NAF-08B	398,095.64	2,050,879.94	6/1/2005	Stainless Steel	2	53.5	43.5-53.5	41.5-53.5	39.5-41.5	0.0-39.5	145.62	148.86	Surficial Aquifer	--
Onsite	NAF-09	397,711.09	2,050,806.52	5/19/2005	PVC	2	17.0	7.0-17.0	5.0-17.0	3.0-5.0	0.0-3.0	146.52	149.29	Perched Zone	Yes
Onsite	NAF-10	397,612.57	2,050,423.15	5/19/2005	PVC	2	18.25	8.25-18.25	6.25-18.25	4.25-6.25	0.0-4.25	146.94	150	Perched Zone	Yes
Onsite	NAF-11A	398,909.29	2,050,999.92	6/3/2005	PVC	2	7.5	2.5-7.5	2.0-7.5	0.5-2.0	0.0-0.5	137.55	140.59	Perched Zone	--
Onsite	NAF-11B	398,911.13	2,050,995.88	6/5/2005	PVC	2	43.5	33.5-43.5	31.5-43.5	26.5-31.5	0.0-26.5	137.55	140.74	Surficial Aquifer	--
Onsite	NAF-12	398,270.56	2,050,777.49	3/28/2013	PVC	2	23	18 to 23	16.2 to 23	13.1 to 16.2	0 to 13.1	NA	145.932	Perched Zone	Yes
Onsite	NAF-13	398,370.49	2,051,260.72	10/16/2018	PVC	2	16	11 to 16	8.5 to 20	5 to 8.5	0 to 5	149.64	152.29	Perched Zone	--
Onsite	PIW-1D	400,547.77	2,051,801.42	7/2/2019	PVC	2	29.5	24.5 to 29.5	23 - 30	20 - 23	0 - 20	49.53	52.33	Surficial Aquifer	Yes
Onsite	PIW-1S	400,540.61	2,051,792.59	6/28/2019	PVC	2	17.8	7.8 - 17.8	6 - 18	2 - 6	0 - 2	50.78	54.198	Floodplain Deposits	--
Onsite	PIW-2D	399,922.75	2,051,317.64	8/15/2019	PVC	2	50	40 - 50	38 - 50	36 - 38	0 - 36	98.16	100.85	Black Creek Aquifer	Yes
Onsite	PIW-3D	399,711.75	2,052,088.80	7/2/2019	PVC	2	24	19 - 24	17 - 24.8	15 - 17	0 - 15	50.51	53.315	Black Creek Aquifer	Yes
Onsite	PIW-4D	398,817.36	2,052,102.82	7/1/2019	PVC	2	37.3	32.3 - 37.3	30 - 38	28 - 30	0 - 28	50.37	53.041	Black Creek Aquifer	Yes
Onsite	PIW-5S	398,520.38	2,051,951.26	7/9/2019	PVC	2	19.8	9.8 - 19.8	8 - 20.2	6 - 8	0 - 6	72.68	75.188	Surficial Aquifer	Yes
Onsite	PIW-6S	398,118.14	2,052,540.57	6/28/2019	PVC	2	28	18 - 28	16 - 28.2	14 - 16	0 - 14	49.85	53.359	Floodplain Deposits	Yes
Onsite	PIW-7D	396,787.69	2,052,595.37	6/26/2019	PVC	2	34	29 - 34	26 - 34.2	22 - 26	0 - 22	45.78	48.597	Black Creek Aquifer	Yes
Onsite	PIW-7S	396,787.00	2,052,589.49	6/25/2019	PVC	2	17	7 - 17	5.2 - 18	2.2 - 5.2	0 - 2.2	45.81	48.392	Floodplain Deposits	Yes
Onsite	PIW-8D	396,403.38	2,052,682.02	6/26/2019	PVC	2	40.5	35.5 - 45.5	32 - 40.5	29 - 32	0 - 29	45.92	48.518	Black Creek Aquifer	Yes
Onsite	PIW-9D	396,155.97	2,052,250.91	7/2/2019	PVC	2	45	40 - 45	38.1 - 49	35.5 - 38.1	0 - 35.5	76.75	79.529	Black Creek Aquifer	Yes
Onsite	PIW-9S	396,148.11	2,052,251.10	6/26/2019	PVC	2	29.8	24.8 - 29.8	23 - 30	19 - 23	0 - 19	76.80	79.532	Surficial Aquifer	Yes
Onsite	PIW-10DR	395,093.99	2,052,297.30	8/16/2019	PVC	2	60.5	53 - 58	50.7 - 60.5	48 - 50.7	0 - 48	73.29	75.91	Black Creek Aquifer	Yes
Onsite	PIW-10S	395,104.67	2,052,297.04	6/25/2019	PVC	2	17	7 - 17	5.3 - 17.3	3 - 5.3	0 - 3	73.30	76.451	Surficial Aquifer	Yes
Onsite	PW-01	399,064.80	2,049,654.30	7/30/2019	PVC	2	21	11 - 21	9 - 21	7 - 9	0 - 7	146.63	149.547	Perched Zone	Yes
Onsite	PW-02	399,779.06	2,050,649.47	7/30/2019	PVC	2	60	50 - 60	47.5 - 60	45.5 - 47.5	0 - 45.5	143.76	146.431	Surficial Aquifer	Yes
Onsite	PW-03	397,339.81	2,050,765.32	7/23/2019	PVC	2	45	35 - 45	33 - 45	31 - 33	0 - 31	144.97	147.967	Surficial Aquifer	Yes
Onsite	PW-04	394,659.55	2,050,940.66	7/24/2019	PVC	2	27	17 - 27	15 - 27	13 - 15	0 - 13	94.74	97.751	Surficial Aquifer	Yes
Onsite	PW-05	395,873.10	2,047,812.93	7/26/2019	PVC	2	75	65 - 75	63 - 75	60.5 - 63	0 - 60.5	147.16	150.336	Surficial Aquifer	Yes
Onsite	PW-06	392,868.00	2,045,288.77	7/29/2019	PVC	2	29	19 - 29	17 - 29	15 - 17	0 - 15	144.76	147.691	Surficial Aquifer	Yes
Onsite	PW-07	390,847.71	2,049,258.26	7/24/2019	PVC	2	38	28 - 38	26 - 38	23.5 - 26	0 - 23.5	144.90	148.16	Surficial Aquifer	Yes
Onsite	PW-09	401,997.39	2,048,980.54	8/12/2019	PVC	2	54	44 - 54	42 - 54	40 - 42	0 - 40	74.76	72.03	Black Creek Aquifer	Yes
Onsite	PW-10R	398,516.12	2,051,936.59	8/9/2019	PVC	2	67	57 - 67	55 - 67	52 - 55	0 - 52	73.28	75.9	Black Creek Aquifer	Yes
Onsite	PW-11	394,354.36	2,052,226.72	7/25/2019	PVC	2	64	53 - 63	51 - 64	49 - 51	0 - 49	70.19	73.263	Black Creek Aquifer	Yes
Onsite	PW-12	399,500.45	2,047,063.51	8/1/2019	PVC	2	119	109 - 119	106 - 119	103 - 106	0 - 103	148.05	150.61	Black Creek Aquifer	Yes
Onsite	PW-13	397,584.26	2,048,029.18	8/23/2019	PVC	2	130	120 - 130	118 - 130	115 - 118	0 - 115	146.52	149.36	Black Creek Aquifer	Yes
Onsite	PW-14	397,325.65	2,050,766.36	8/27/2019	PVC	2	146	136 - 146	134 - 146	131 - 134	0 - 131	145.13	147.97	Black Creek Aquifer	Yes
Onsite	PW-15R	398,900.88	2,051,011.75	8/14/2019	PVC	2	120	110 - 120	108 - 120	105 - 108	0 - 105	133.33	136.14	Black Creek Aquifer	Yes
Onsite	PZ-11	398,646.25	2,049,820.94	3/12/2004	PVC	3/4	20	15-20	15-20	12-15	NA	148.48	151.03	Perched Zone	Yes
Onsite	PZ-12	399,094.96	2,048,981.78	3/12/2004	PVC	3/4	20.1	15.1-20.1	15.1-20.1	12.1-15.1	NA	148.31	150.91	Perched Zone	Yes
Onsite	PZ-13	397,708.07	2,050,991.73	3/17/2004	PVC	3/4	12.1	7.1-12.1	7.1-12.1	4.1-7.1	NA	146.69	149.2	Perched Zone	Yes
Onsite	PZ-14	397,589.92	2,050,618.27	3/11/2004	PVC	3/4	14	9.0-14.0	9.0-14.0	6.0-9.0	NA	146.75	148.38	Perched Zone	Yes

TABLE A 6-3
WELL CONSTRUCTION DETAILS
Chemours Fayetteville Works, North Carolina

Area	Well ID	Northing (ft, NAD83)	Easting (ft, NAD83)	Installation Date	Casing Construction	Casing Diameter (in)	Well Casing Depth (ft)	Screened Interval (ft)	Filter Pack Interval (ft)	Bentonite Seal Interval (ft)	Grout Interval (ft)	Ground Elevation (ft NAVD88)	TOC Elevation (ft NAVD88)	Aquifer	Sampled Between Jun 1, 2019 and Sept. 20, 2019?
Onsite	PZ-15	396,805.09	2,050,112.02	3/11/2004	PVC	3/4	15.2	10.2-15.2	10.2-15.2	7.2-10.2	NA	146.50	148.79	Perched Zone	Yes
Onsite	PZ-17	396,614.82	2,048,872.69	3/10/2004	PVC	3/4	26.1	21.1-26.1	21.1-26.1	18.1-21.1	NA	145.00	150.08	Perched Zone	--
Onsite	PZ-19R	397,998.66	2,049,919.52	4/25/2019	PVC	2	21	16-21	14-21	10-14	0-10	147.62	150.046	Perched Zone	Yes
Onsite	PZ-20R	398,185.81	2,049,784.60	4/25/2019	PVC	2	20	15-20	12-20	8.5-12	0-8.5	148.15	151.29	Perched Zone	Yes
Onsite	PZ-21R	398,445.16	2,049,883.13	4/29/2019	PVC	2	22	17-22	13-22	9-13	0-9	147.77	150.674	Perched Zone	Yes
Onsite	PZ-22	397,272.80	2,052,584.04	1/11/2006	PVC	3/4	46	36.0-46.0	34.0-46.0	32.0-34.0	0.0-32.0	49.03	51.81	Black Creek Aquifer	Yes
Onsite	PZ-24	396,117.94	2,050,744.07	10/18/2018	PVC	1	16	11 to 16	10 to 20	8 to 10	0 to 8	144.76	147.53	Perched Zone	Yes
Onsite	PZ-25	396,753.94	2,050,991.05	10/18/2018	PVC	1	19	14 to 19	12.5 to 40	8 to 12.5	0 to 8	145.00	147.59	Perched Zone	--
Onsite	PZ-26	396,059.78	2,050,382.35	10/18/2018	PVC	1	16	11 to 16	10 to 20	7 to 10	0 to 7	144.90	147.7	Perched Zone	Yes
Onsite	PZ-27	395,922.11	2,050,376.76	10/19/2018	PVC	1	17	12 to 17	11 to 20	8 to 11	0 to 8	145.02	147.17	Perched Zone	Yes
Onsite	PZ-28	396,304.55	2,049,933.79	10/18/2018	PVC	1	18	13 to 18	11 to 20	9 to 11	0 to 9	145.60	148.64	Perched Zone	Yes
Onsite	PZ-29	396,371.49	2,049,768.94	10/18/2018	PVC	1	18	13 to 18	10.5 to 20	8.5 to 10.5	0 to 8.5	145.07	147.74	Perched Zone	Yes
Onsite	PZ-31	396,428.73	2,049,594.36	4/23/2019	PVC	2	19	14-19	12-19	8.5-12	0-8.5	144.91	147.999	Perched Zone	Yes
Onsite	PZ-32	396,418.47	2,049,713.79	4/23/2019	PVC	2	18	13-18	12.5-18	10-12.5	0-10	145.36	148.471	Perched Zone	Yes
Onsite	PZ-33	396,308.92	2,049,707.66	4/15/2019	PVC	2	17.5	12.5-17.5	10-17.5	8-10	0-8	143.94	146.715	Perched Zone	Yes
Onsite	PZ-34	396,292.05	2,049,595.04	4/15/2019	PVC	2	13.5	13.5-18.5	11-18.5	9-11	0-9	144.94	147.695	Perched Zone	Yes
Onsite	PZ-35	398,232.64	2,050,020.49	4/29/2019	PVC	2	18	13-18	11-18	8-11	0-8	147.91	150.43	Perched Zone	Yes
Onsite	SMW-01	395,295.75	2,043,679.19	1/23/2003	PVC	2	15	5.0-15.0	4.0-15.0	2.0-4.0	0.0-2.0	NA	136.81	Surficial Aquifer	Yes
Onsite	SMW-02	399,983.75	2,050,654.77	1/23/2003	PVC	2	20	5.0-20.0	4.0-20.0	2.0-4.0	0.0-2.0	144.74	147.93	Perched Zone	Yes
Onsite	SMW-02B	399,983.48	2,050,660.48	10/6/2005	PVC	2	53	43.0-53.0	40.0-53.0	35.0-40.0	0.0-35.0	142.28	145.211	Surficial Aquifer	--
Onsite	SMW-03	399,778.25	2,049,445.96	6/4/2005	Stainless Steel	2	20	10.0-20.0	8.0-20.0	6.0-8.0	0.0-6.0	148.43	151.094	Perched Zone	--
Onsite	SMW-03B	399,785.75	2,049,421.54	4/4/2013	PVC	2	82	72 to 82	69 to 82	65.5 to 69	0 to 65.5	147.00	150.43	Black Creek Aquifer	Yes
Onsite	SMW-04A	399,668.71	2,048,387.57	6/4/2005	Stainless Steel	2	34.5	19.5-34.5	17.5-34.5	15.5-17.5	0.0-15.5	145.46	148.09	Perched Zone	--
Onsite	SMW-04B	399,667.12	2,048,390.30	10/5/2005	PVC	2	53	43.0-53.0	41.0-53.0	34.0-41.0	0.0-34.0	145.18	148.372	Surficial Aquifer	Yes
Onsite	SMW-05	399,334.07	2,048,557.33	10/10/2005	PVC	2	20	10.0-20.0	8.0-20.0	6.0-8.0	0.0-6.0	144.17	148.099	Perched Zone	--
Onsite	SMW-05P	399,338.61	2,048,559.26	2/21/2006	PVC	3/4	60	45.0-60.0	43.0-60.0	41.0-43.0	0.0-41.0	146.06	149.32	Surficial Aquifer	Yes
Onsite	SMW-06	399,172.35	2,048,759.48	10/10/2005	PVC	2	22	12.0-22.0	10.0-22.0	8.0-10.0	0.0-8.0	147.92	150.97	Perched Zone	--
Onsite	SMW-06B	399,144.74	2,048,764.94	4/3/2013	PVC	2	68	58 to 68	54.5 to 68	68 to 72 / 51 to 54.5	0 to 51	146.86	150.32	Surficial Aquifer	--
Onsite	SMW-07	398,932.91	2,048,611.16	10/10/2005	PVC	2	23	13.0-23.0	11.0-23.0	8.5-11.0	0.0-8.5	147.74	147.64	Perched Zone	Yes
Onsite	SMW-08	399,064.97	2,048,468.78	10/11/2005	PVC	2	31	21.0-31.0	18.5-21.0	14.5-18.5	0.0-14.5	147.93	151.017	Perched Zone	--
Onsite	SMW-08B	399,058.33	2,048,478.84	3/28/2013	PVC	2	68	58 to 68	56 to 68	52.5 to 56	0 to 52.5	146.75	148.81	Surficial Aquifer	Yes
Onsite	SMW-09	401,076.89	2,050,017.41	4/8/2013	PVC	2	62	52 to 62	49.5 to 62	62 to 67 / 45 to 49.5	0 to 45	138.16	141.43	Surficial Aquifer	Yes
Onsite	SMW-10	402,307.31	2,047,923.84	3/25/2013	PVC	2	49	39 to 49	36.5 to 49	33 to 36.5	0 to 33	73.09	76.26	Surficial Aquifer	Yes
Onsite	SMW-11	401,996.15	2,048,975.38	3/26/2013	PVC	2	23	13 to 23	11 to 23	8 to 11	0 to 8	69.04	71.95	Surficial Aquifer	Yes
Onsite	SMW-12	401,314.20	2,051,007.22	3/27/2013	PVC	2	98	88 to 98	86 to 98	83 to 86	0 to 83	113.723	118.22	Black Creek Aquifer	Yes
Offsite	Bladen-1S	387,516.28	2,050,234.78	8/14/2019	PVC	2	10.25	5 - 10	3 - 10.25	1 - 3	0 - 1	81.57	81.31	Surficial Aquifer	--
Offsite	Bladen-1D	387,519.56	2,050,248.83	8/13/2019	PVC	2	47.25	37 - 47	34 - 47.25	32 - 34	0 - 32	81.72	81.52	Black Creek Aquifer	Yes
Offsite	Bladen-2S	368,818.78	2,042,884.35	8/16/2019	PVC	2	20.6	10 - 20	8 - 20.6	43,624	0 - 6	143.01	142.62	Surficial Aquifer	Yes
Offsite	Bladen-2D	368,824.41	2,042,879.78	8/15/2019	PVC	2	75.25	70 - 75	67 - 75.25	66 - 67	0 - 66	143.11	142.85	Black Creek Aquifer	Yes
Offsite	Bladen-3S	396,859.62	2,059,014.36	8/20/2019	PVC	2	15.25	5 - 15	3 - 15.25	1 - 3	0 - 1	79.40	78.84	Surficial Aquifer	Yes
Offsite	Bladen-3D	396,854.29	2,059,007.99	8/19/2019	PVC	2	44	33.75 - 43.75	32 - 44	29 - 32	0 - 29	79.59	79.09	Black Creek Aquifer	Yes
Offsite	Bladen-4S	363,260.51	2,087,638.88	8/21/2019	PVC	2	15	4.75 - 14.75	43,539.00	1.5 - 3	0 - 1.5	64.65	64.26	Surficial Aquifer	Yes
Offsite	Bladen-4D	363,252.43	2,087,638.29	8/21/2019	PVC	2	52	46.75 - 51.75	44.5 - 51.75	41.5 - 44.5	0 - 41.5	64.67	64.23	Black Creek Aquifer	Yes
Offsite	Cumberland-1S	431,464.38	2,011,074.92	9/13/2019	PVC	2	25	15 - 25	13 - 25	11 - 13	0 - 13	179.70	179.41	Surficial Aquifer	Yes
Offsite	Cumberland-1D	431,457.26	2,011,072.83	9/12/2019	PVC	2	50	40 - 50	38 - 50	36 - 38	0 - 36	179.58	179.18	Black Creek Aquifer	Yes
Offsite	Cumberland-2S	449,976.40	2,074,022.29	9/12/2019	PVC	2	17	7 - 17	5 - 17	3 - 5	0 - 3	133.87	133.61	Surficial Aquifer	Yes

TABLE A 6-3
WELL CONSTRUCTION DETAILS
Chemours Fayetteville Works, North Carolina

Area	Well ID	Northing (ft, NAD83)	Easting (ft, NAD83)	Installation Date	Casing Construction	Casing Diameter (in)	Well Casing Depth (ft)	Screened Interval (ft)	Filter Pack Interval (ft)	Bentonite Seal Interval (ft)	Grout Interval (ft)	Ground Elevation (ft NAVD88)	TOC Elevation (ft NAVD88)	Aquifer	Sampled Between Jun 1, 2019 and Sept. 20, 2019?
Offsite	Cumberland-2D	449,984.84	2,074,020.57	9/12/2019	PVC	2	57	47 - 57	43 - 57	43 - 45	0 - 43	134.06	133.79	Black Creek Aquifer	Yes
Offsite	Cumberland-3S	423,251.95	2,060,414.73	9/12/2019	PVC	2	14	9 - 14	7 - 14	5 - 7	0 - 5	83.87	83.62	Surficial Aquifer	Yes
Offsite	Cumberland-3D	423,245.42	2,060,410.59	9/11/2019	PVC	2	27	22 - 27	20 - 27	18 - 20	0 - 18	83.59	83.34	Black Creek Aquifer	Yes
Offsite	Cumberland-4S	413,083.94	2,078,256.96	9/11/2019	PVC	2	20	10 - 20	8 - 20	6 - 8	0 - 6	124.15	123.93	Surficial Aquifer	Yes
Offsite	Cumberland-4D	413,093.08	2,078,251.38	9/10/2019	PVC	2	67	57 - 67	55 - 67	53 - 55	0 - 53	124.09	123.79	Black Creek Aquifer	Yes
Offsite	Cumberland-5S	405,623.27	2,138,233.37	9/11/2019	PVC	2	24	14 - 24	12 - 24	10 - 12	0 - 10	107.00	106.65	Surficial Aquifer	Yes
Offsite	Cumberland-5D	405,619.17	2,138,238.59	9/11/2019	PVC	2	57	52 - 57	49 - 57	47 - 49	0 - 49	107.02	106.67	Black Creek Aquifer	Yes
Offsite	Robeson-1S	381,405.51	2,020,158.29	9/9/2019	PVC	2	27	17 - 27	15 - 27	13 - 15	0 - 13	161.51	161.22	Surficial Aquifer	Yes
Offsite	Robeson-1D	381,413.60	2,020,160.37	9/4/2019	PVC	2	53	42.75 - 52.75	41 - 53	39 - 41	0 - 39	161.23	160.93	Black Creek Aquifer	Yes

Notes:
1. Survey completed by Freeland-Clinkscales & Associates of NC.
2. Northing and Easting provided in feet, State Plane Coordinates for North Carolina (zone 3200) in North American Datum of 1983.
3. Ground surface and top of casing elevation reported in North American Vertical Datum of 1988.
ft NAD83 - feet, State Plane Coordinate System North American Datum 1983
ft NAVD88 - feet, North American Vertical Datum of 1988
in - inches
ft - feet
ft bgs - feet below ground surface
NA - not available
NM - not measured

TABLE A 6-4
SUMMARY OF ESTIMATED HYDRAULIC CONDUCTIVITY
Chemours Fayetteville Works, North Carolina

Hydrogeologic Zone	Geometric Mean Hydraulic Conductivity, K		
	K (cm/s)	**K (ft/d)**	**Wells Included**
Floodplain Deposits	3.23×10^{-4}	0.9	LTW-01 [4], LTW-03 [4]
Black Creek Aquifer	9.89×10^{-3}	28.0	SMW-12, LTW-02, BCA-02, BCA-04, BCA-01
Partially Screened across Floodplain and Black Creek Aquifer	1.86×10^{-3}	5.3	LTW-05

Notes:

1. Detailed slug test results, AQTESOLV inputs, displacement time curves and AQTESOLV outputs used to summarize results are included in Appendix E.

2. Geometric means calculated from both pneumatic and manual slug test results. No method bias was observed. Pneumatic slug tests were performed only at locations where well screen was fully saturated. Manual slug tests were performed at all other well locations.
3. LTW-04 results not included in calculating geometric mean because initial displacement for all tests at this well suspected to display oscillatory response likely due to inertial effects from water table across well screen.
4. Initial displacement response curve suspected to display double-straight line effect due to drainage from filter pack. Analytical solutions are fit to the second-straight line displacement curve representing post-filter drainage, aquifer response.

cm/s - centimeters per second

ft/d - indicates feet per day

K - hydraulic conductivity

TABLE A 6-5
SURVEY OF TEMPERATURE DIFFERENTIALS IN CAPE FEAR RIVER
Chemours Fayetteville Works, North Carolina

Location	Date	Time of Readings	X-coordinate (ft)	Y-coordinate (ft)	Water Depth (ft)	6 Inches Above Sediment Surface (°C)	3 inches Above Sediment Surface (°C)	1 inch into Sediment Surface (°C)	Temperature Difference between Porewater and 6 inches Above Sediment Surface (°C)	Depth of Thalweg along Transect (ft)
1	8/7/2019	854	2051927.95	400688.81	24	28.48	28.5	28.54	0.06	25.25
2	8/6/2019	1633	2051867.71	400672.67	2.23	29.29	29.27	29.35	0.06	NM
3	8/9/2019	1508	2051864.40	400648.92	2.9	27.86	27.89	28	0.14	NM
4	8/6/2019	1626	2051869.61	400603.98	3.86	29.14	29.05	29.16	0.02	NM
5	8/7/2019	905	2051941.74	400569.49	22.73	28.49	28.45	28.54	0.05	25.25
6	8/6/2019	1620	2051902.25	400479.86	3.17	29.11	29.07	29.14	0.03	NM
7	8/7/2019	913	2051981.06	400450.18	20.92	28.62	28.48	28.58	0.04	21.65
8	8/6/2019	1612	2051926.53	400382.75	5.39	29.28	29.21	29.38	0.1	NM
9	8/7/2019	934	2052053.27	400327.71	24.25	28.51	28.47	28.56	0.05	24.35
10	8/6/2019	1605	2051943.54	400270.55	1.72	29.47	29.44	29.53	0.06	NM
11	8/7/2019	957	2052010.65	400241.65	22.3	28.56	28.53	28.62	0.06	NM
12	8/5/2019	1510	2052011.79	400163.91	8.5	28.78	28.73	28.82	0.04	NM
13	8/7/2019	1018	2052131.34	400119.72	24.5	28.63	28.56	28.6	0.03	NM
14	8/5/2019	1522	2052069.26	400062.48	11.5	28.86	28.8	28.89	0.03	NM
15	8/7/2019	1139	2052126.57	399998.68	23	28.81	28.63	28.79	0.02	27.35
16	8/5/2019	1531	2052117.71	399938.94	9.1	29.25	29.2	29.27	0.02	NM
17	8/7/2019	1154	2052179.91	399886.97	21.4	28.68	28.61	28.72	0.04	26.35
18	8/5/2019	1548	2052170.35	399811.83	2.4	29.26	29.24	29.41	0.15	NM
19	8/7/2019	1204	2052214.08	399811.78	22.1	28.7	28.63	28.74	0.04	26.35
20	8/5/2019	1646	2052225.50	399737.20	19.6	28.8	28.71	28.77	0.03	NM
21	8/7/2019	1211	2052256.29	399658.05	22.9	28.8	28.74	28.81	0.01	25.35
22	8/5/2019	1653	2052243.48	399624.04	9.13	29.08	29.1	29.17	0.09	NM

TABLE A 6-5
SURVEY OF TEMPERATURE DIFFERENTIALS IN CAPE FEAR RIVER
Chemours Fayetteville Works, North Carolina

Location	Date	Time of Readings	X-coordinate (ft)	Y-coordinate (ft)	Water Depth (ft)	6 Inches Above Sediment Surface (°C)	3 inches Above Sediment Surface (°C)	1 inch into Sediment Surface (°C)	Temperature Difference between Porewater and 6 inches Above Sediment Surface (°C)	Depth of Thalweg along Transect (ft)
23	8/7/2019	1222	2052276.72	399585.31	20.4	28.77	28.72	28.78	0.01	22.35
24	8/6/2019	821	2052276.14	399534.91	13.78	28.89	28.68	28.75	0.14	22.35
25	8/7/2019	1240	2052346.66	399454.93	24.22	28.76	28.68	28.77	0.01	25.35
26	8/6/2019	828	2052334.43	399409.60	12.13	28.73	28.7	28.8	0.07	NM
27	8/7/2019	1251	2052379.34	399359.14	20.15	28.81	28.75	28.82	0.01	25.95
28	8/6/2019	835	2052381.06	399286.39	5.57	28.74	28.72	28.78	0.04	NM
29	8/7/2019	1309	2052414.92	399258.49	20.86	28.76	28.72	28.81	0.05	25.85
30	8/6/2019	841	2052405.69	399207.92	8.53	28.81	28.76	28.84	0.03	NM
31	8/7/2019	1349	2052453.15	399143.02	20.3	28.94	29.04	29.07	0.13	25.35
32	8/6/2019	847	2052470.92	399026.46	9.19	28.73	28.7	28.79	0.06	NM
33	8/7/2019	1400	2052508.45	399016.99	20.1	28.96	28.92	28.98	0.02	22.95
34	8/6/2019	855	2052504.53	398929.07	11.2	28.83	28.76	28.79	0.04	NM
35	8/7/2019	1421	2052532.25	398900.49	20.2	28.93	28.89	28.97	0.04	24.5
36	8/6/2019	901	2052523.62	398840.41	6.42	28.65	28.61	28.75	0.1	23.35
37	8/7/2019	1421	2052555.07	398784.04	17.5	28.96	28.92	28.99	0.03	23.35
38	8/6/219	910	2052558.47	398724.32	6.8	28.88	28.94	28.82	0.06	NM
39	8/8/2019	920	2052599.58	398716.13	22.5	28.95	28.94	29.01	0.06	21.75
40	8/7/2019	1430	2052600.19	398696.34	22	28.78	28.9	28.98	0.2	21.65
41	8/8/2019	913	2052638.07	398694.60	20.7	28.94	28.94	29.01	0.07	22.5
42	8/8/2019	901	2052574.46	398657.64	11.42	28.98	29.04	29.05	0.07	24.15
43	8/8/2019	907	2052625.36	398651.56	21.7	28.9	28.95	29.01	0.11	24.15
44	8/6/2019	923	2052576.31	398616.16	1.95	27.9	25.88	24.45	3.45	NM

TABLE A 6-5
SURVEY OF TEMPERATURE DIFFERENTIALS IN CAPE FEAR RIVER
Chemours Fayetteville Works, North Carolina

Location	Date	Time of Readings	X-coordinate (ft)	Y-coordinate (ft)	Water Depth (ft)	6 Inches Above Sediment Surface (°C)	3 inches Above Sediment Surface (°C)	1 inch into Sediment Surface (°C)	Temperature Difference between Porewater and 6 inches Above Sediment Surface (°C)	Depth of Thalweg along Transect (ft)
45	8/6/2019	933	2052565.83	398609.02	0.82	24.27	20.5	20.62	3.65	NM
46	8/8/2019	925	2052634.22	398591.59	20.1	28.96	28.95	29.02	0.06	23.5
47	8/7/2019	1740	2052675.76	398528.44	19.6	29.23	29.34	29.38	0.15	23.35
48	8/8/2019	932	2052616.72	398516.34	15.7	28.97	28.97	29.02	0.05	22.75
49	8/6/2019	943	2052618.96	398477.23	11.66	28.55	28.29	28.24	0.31	NM
50	8/8/2019	943	2052643.92	398455.50	18.1	28.97	28.97	29.02	0.05	NM
51	8/8/2019	950	2052789.66	398448.77	19.3	28.95	28.93	29	0.05	23.55
52	8/7/2109	1735	2052718.88	398401.65	19.2	29.32	29.31	29.37	0.05	22.45
53	8/6/2019	949	2052605.12	398373.59	1.83	28.89	28.85	28.82	0.07	NM
54	8/8/2019	957	2052795.08	398347.82	20.8	28.93	28.94	29	0.07	21.65
55	8/7/2019	1728	2052737.13	398280.66	19.6	29.28	29.34	29.39	0.11	21.85
56	8/6/2019	956	2052638.10	398253.94	1.78	29.1	29.01	29.04	0.06	NM
57	8/8/2019	1004	2052837.14	398217.07	20.12	28.93	28.93	29.01	0.08	22.35
58	8/7/2019	1723	2052696.54	398176.49	18.6	29.28	29.28	29.32	0.04	21.45
59	8/6/2019	1004	2052654.44	398152.47	2.23	29.21	29.06	29.11	0.1	NM
60	8/8/2019	1010	2052815.45	398097.21	19.32	28.84	28.91	28.98	0.14	21.15
61	8/7/2019	1717	2052760.08	398064.46	18	29.26	29.19	29.29	0.03	21.45
62	8/6/2019	1016	2052680.39	397995.58	1.37	29.23	29.07	29.19	0.04	NM
63	8/8/2019	1017	2052854.15	397975.47	20.8	28.91	28.94	29	0.09	22.15
64	8/7/2019	1708	2052741.75	397951.82	20.2	29.17	29.24	29.27	0.1	20.65
65	8/6/2019	1030	2052705.78	397868.41	2.31	29	28.92	29.11	0.11	NM
66	8/7/219	1700	2052743.54	397845.88	20.1	29.29	29.31	29.31	0.02	21.85

TABLE A 6-5
SURVEY OF TEMPERATURE DIFFERENTIALS IN CAPE FEAR RIVER
Chemours Fayetteville Works, North Carolina

Location	Date	Time of Readings	X-coordinate (ft)	Y-coordinate (ft)	Water Depth (ft)	6 Inches Above Sediment Surface (°C)	3 inches Above Sediment Surface (°C)	1 inch into Sediment Surface (°C)	Temperature Difference between Porewater and 6 inches Above Sediment Surface (°C)	Depth of Thalweg along Transect (ft)
67	8/8/2019	1026	2052812.81	397827.23	18.22	28.89	28.99	29.05	0.16	22.65
68	8/6/2019	1039	2052729.84	397753.40	2.16	28.94	28.98	29.07	0.13	NM
69	8/7/2019	1657	2052779.36	397700.72	19.7	29.22	29.22	29.26	0.04	21.15
70	8-Aug	1035	2052721.38	397674.71	0.96	29.29	29.26	29.35	0.06	21.15
71	8/6/2019	1047	2052732.24	397632.42	1.17	28.96	29.07	29.18	0.22	NM
72	8/8/2019	1114	2052787.90	397628.95	21	29.02	28.99	29.04	0.02	22.65
73	8/8/2019	1132	2052727.29	397588.40	0.8	27.87	24.41	22.62	5.25	NM
74	8-Aug	1148	2052728.34	397586.32	0.9	29.61	29.46	29.39	0.22	NM
75	8/7/2019	1644	2052783.78	397572.91	20.9	29.08	29.21	29.12	0.04	23.5
76	8/8/2019	1119	2052773.98	397546.72	11.53	28.99	28.99	29.08	0.09	NM
77	8/6/2019	1332	2052754.05	397515.07	1.67	29.94	29.86	29.92	0.02	NM
78	8/7/2019	1633	2052789.22	397426.72	19.1	29.1	29.1	29.16	0.06	22.85
79	8/6/2019	1551	2052783.81	397365.65	7.84	29.26	29.18	29.3	0.04	NM
80	8/7/2019	1624	2052809.44	397289.03	22.6	29.18	29.16	29.17	0.01	23.95
81	8/6/2019	1444	2052780.80	397242.45	2.8	29.52	29.51	29.5	0.02	NM
82	8/7/2019	1616	2052817.47	397160.43	19	29.11	29.07	29.14	0.03	23.35
83	8/6/2019	1436	2052794.61	397107.69	1.32	29.53	29.54	29.6	0.07	NM
84	8/7/2019	1610	2052819.35	397061.10	13.1	29.1	29.08	29.13	0.03	22.35
85	8/6/2019	1429	2052815.50	396971.19	2.56	29.51	29.49	29.58	0.07	NM
86	8/7/2019	1603	2052836.75	396947.33	13.1	29.1	29.05	29.11	0.01	23.35
87	8/6/2019	1417	2052835.73	396883.71	4.7	29.17	29.07	29.28	0.11	NM
88	8/7/2019	1557	2052861.87	396840.00	20.79	28.98	28.94	29.02	0.04	24.5

TABLE A 6-5
SURVEY OF TEMPERATURE DIFFERENTIALS IN CAPE FEAR RIVER
Chemours Fayetteville Works, North Carolina

Location	Date	Time of Readings	X-coordinate (ft)	Y-coordinate (ft)	Water Depth (ft)	6 Inches Above Sediment Surface (°C)	3 inches Above Sediment Surface (°C)	1 inch into Sediment Surface (°C)	Temperature Difference between Porewater and 6 inches Above Sediment Surface (°C)	Depth of Thalweg along Transect (ft)
89	8/6/2019	1410	2052842.43	396784.31	5.71	29.27	29.16	29.28	0.01	NM
90	8/7/2019	1546	2052877.37	396741.11	23.27	28.96	28.92	29	0.04	23.95
91	8/6/2019	1403	2052853.13	396695.94	2.93	29.45	29.37	29.32	0.13	NM
92	8/7/2019	1535	2052880.52	396668.16	18.22	28.94	28.88	28.96	0.02	23.15
93	8/8/2019	1222	2052851.42	396630.08	1.34	29.72	29.7	29.75	0.03	NM
94	8/6/2019	1353	2052864.10	396606.77	4.42	29.68	29.48	29.37	0.31	NM
95	8/8/2019	1226	2052878.64	396604.32	12.42	29.21	29.22	29.22	0.01	NM
96	8/8/2019	1233	2052866.77	396581.15	1.22	29.61	29.59	29.65	0.04	NM
97	8/9/2019	14.57	2052891.16	396543.37	11.1	29.7	29.77	29.6	0.1	NM
98	8/8/2019	1245	2052916.85	396487.21	20.2	29.13	29.12	29.17	0.04	22.35
99	8/6/2019	1135	2052873.66	396478.63	1.8	30.08	29.83	29.47	0.61	NM
100	8/9/2019	1444	2052904.82	396390.59	14.75	29.53	29.66	29.69	0.16	22.45
101	8/6/2019	1144	2052892.59	396301.20	1.72	30.07	30.05	30.08	0.01	NM
102	8/9/2019	1431	2052917.29	396277.98	13.2	29.64	29.54	29.71	0.07	23.95
103	8/6/2019	1154	2052897.30	396173.56	1.68	29.8	29.74	29.66	0.14	NM
104	8/9/2019	1418	2052914.55	396158.69	6.05	29.63	29.62	29.35	0.28	23.35
105	8/8/2019	1328	2052902.18	396070.43	0.84	29.52	26.4	25.63	3.89	NM
106	8/8/2019	1346	2052906.18	396065.65	1.15	30	29.89	29.68	0.32	22.85
107	8/6/2019	1201	2052914.75	396065.35	3.78	29.3	29.25	29.29	0.01	NM
108	8/9/2019	1358	2052930.71	396018.09	11.94	29.38	29.5	29.51	0.13	21.85

TABLE A 6-5
SURVEY OF TEMPERATURE DIFFERENTIALS IN CAPE FEAR RIVER
Chemours Fayetteville Works, North Carolina

Location	Date	Time of Readings	X-coordinate (ft)	Y-coordinate (ft)	Water Depth (ft)	6 Inches Above Sediment Surface (ºC)	3 inches Above Sediment Surface (ºC)	1 inch into Sediment Surface (ºC)	Temperature Difference between Porewater and 6 inches Above Sediment Surface (ºC)	Depth of Thalweg along Transect (ft)
109	8/6/2019	1210	2052918.36	395957.91	3.88	29.28	29.19	29.3	0.02	NM
110	8/9/2019	1344	2052944.33	395923.99	12.69	29.63	29.57	29.46	0.17	22.35
111	8/6/2019	1220	2052926.60	395820.42	2	29.79	29.75	29.63	0.16	NM
112	8/9/2019	1336	2052947.62	395791.01	12.16	29.57	29.46	29.6	0.03	21.65
113	8/9/2019	1324	2052954.26	395729.04	13.55	29.31	29.29	29.33	0.02	21.95
114	8/6/2019	1229	2052927.99	395721.82	1.95	29.71	29.62	29.63	0.08	NM
115	8/9/2019	1305	2052920.02	395663.84	0.72	23.96	22.97	22.75	1.21	NM
116	8/8/2019	1410	2052925.27	395656.87	0.7	22.16	22.13	22.2	0.04	NM
117	8/9/2019	1240	2052961.84	395617.96	14.61	29.16	29.24	29.19	0.03	21.65
118	8/6/2019	1240	2052932.01	395590.98	4.84	29.23	29.11	29.15	0.08	NM
119	8/6/2019	1247	2052938.48	395491.44	2.5	29.42	29.3	29.37	0.05	NM

Notes:
ºC - celsius
ft - feet
NM - not measured
Green shading Indicates temperature differential > 0.5 ºC

TABLE A 7-1
ONSITE SOIL CHARACTERISTICS
Chemours Fayetteville Works, North Carolina

Sample ID	Well ID	Top (ft bgs)	Bottom (ft bgs)	Visual Description	USCS Classification	pH (s.u.)	Fraction Organic Carbon (g/g)	Specific Gravity	Liquid Limit of Soils	Plastic Limit of Soils	Plasticity Index (PI)	Percent Moisture (%)	Grain Size Distribution (%)				Porosity Calculation (%)	In Place Density (g/cc)	Void Ratio
													Clay	Silt	Sand	Gravel			
PIW-1-24-25-20190627	PIW-1	24	25	Fine to medium grained sand	SP-SC	4.6	0.0021	2.66	--	--	NP	17	9	2	89	0	35.6	1.7	0.6
PIW-1-41.5-42.5-20190627	PIW-1	41.5	42.5	Clay	CH	--	0.0053	2.66	57	27	30	17	67	16	17	0	47.9	1.4	0.9
PIW-2D-Soil-24-25-20190815	PIW-2D	24	25	Clay	CH	4.2	0.0220	2.68	92	35	57	39	45	27	28	0	59	1.1	1.4
PIW-2D-Soil-46-47-20190815	PIW-2D	46	47	Silty sand	SP-SM	4	0.0034	2.66	--	--	NP	27	4	7	89	0	41.5	1.6	0.7
PIW-3-14-15-20190702	PIW-3	14	15	Sand with fine to medium gravel	GP	--	0.0012	2.65	--	--	NP	14	3	2	46	49	18.7	2.2	0.2
PIW-3-24-25-20190702	PIW-3	24	25	Gravelly sand with clay	SP-SC	--	0.0100	2.63	--	--	NP	17	5	1	93	0	37	1.7	0.6
PIW-4-13-14-20190701	PIW-4	13	14	Sandy clay	CH	--	0.0120	2.66	102	43	59	27	48	30	22	0	54.1	1.2	1.2
PIW-4-33-34.2-20190701	PIW-4	33	34.2	Fine to medium grained sand	SP-SM	3.9	0.0024	2.67	--	--	NP	13	2	5	93	0	26.1	2.0	0.4
PIW-6-19-20-20190628	PIW-6	19	20	Clay with silt	CL	--	0.0011	2.69	48	29	19	23	38	39	24	0	40.5	1.6	0.7
PIW-7-24-25-20190625	PIW-7	24	25	Fine to medium grained sand	SP-SC	4.6	0.0013	2.64	39	18	21	20	12	5	83	0	39.6	1.6	0.7
PIW-7-37-38-20190625	PIW-7	37	38	Fine grained sand and silt	SP-SM	--	0.0016	2.65	--	--	NP	14	3	2	95	0	32	1.8	0.5
PIW-7-44-45-20190625	PIW-7	44	45	Clay	CH	--	0.0015	2.67	61	25	36	20	58	19	23	0	35.9	1.7	0.6
PIW-9-19-20-20190626	PIW-9	19	20	Sand	SP-SC	5.5	0.0006	2.66	--	--	NP	8	5	2	93	0	31.3	1.8	0.5
PIW-10-42-43-20190624	PIW-10	42	43	Clay	CH	--	0.0220	2.67	104	38	66	33	71	18	12	0	52.5	1.3	1.1
PW-01-SOIL-14-15-20190730	PW-01	14	15	Sand with silt	SP	5.6	0.0013	2.68	--	--	NP	24	2	3	95	0	44.7	1.5	0.8
PW-02-SOIL-14-15-20190729	PW-02	14	15	Clayey sand medium grained	SC	5.2	0.0012	2.68	--	--	NP	19	10	4	87	0	--	1.5	--
PW-02-SOIL-16-17-20190729	PW-02	16	17	Silty clay	CH	4.9	0.0012	2.69	89	31	58	20	58	28	14	0	--	1.3	--
PW-02-SOIL-35-36-20190729	PW-02	35	36	Clayey sand	SC	4.7	0.0008	2.71	--	--	NP	13	4	13	83	0	--	1.5	--
PW-03-SOIL-6.5-7-20190723	PW-03	6.5	7	Clayey sand	SC	5.7	0.0031	2.66	29	18	11	9	18	9	73	0	--	1.4	--
PW-03-SOIL-16-17-20190723	PW-03	16	17	Clay	CH	4.7	0.0020	2.71	80	33	47	27	64	14	22	0	--	1.1	--
PW-03-SOIL-43-44-20190723	PW-03	43	44	Silty sand	SM	4.1	0.0033	2.68	--	--	NP	33	10	7	83	0	--	1.4	--
PW-04-SOIL-23-24-20190724	PW-04	23	24	Silty sand	SM	3.1	0.0069	2.69	--	--	NP	16	10	12	78	0	--	1.4	--
PW-04-SOIL-29-29.5-20190724	PW-04	29	29.5	Clay	CH	3.7	0.0360	2.72	67	32	35	23	50	23	28	0	--	1.2	--
PW-05-Soil-12-13-20190726	PW-05	12	13	Clayey sand	SC	6.3	0.0011	2.67	38	23	15	9	18	14	69	0	--	1.5	--
PW-05-Soil-51-52-20190726	PW-05	51	52	Silty clay	CH	4.4	0.0650	2.62	60	31	29	36	54	27	18	0	--	1.2	--
PW-05-Soil-76-77-20190726	PW-05	76	77	Clay	CH	4.7	0.1000	2.66	90	37	53	56	51	42	7	0	--	1.0	--
PW-06-SOIL-16-17-20190726	PW-06	16	17	Sand with silt	SP	5.3	0.0012	2.65	--	--	NP	13	4	4	92	0	--	1.5	--
PW-07-SOIL-14-15-20190724	PW-07	14	15	Sand	SP-SC	5.2 J	<0.0011	2.65	--	--	--	9	5.3	3.2	91.5	0	--	1.6	--
PW-07-SOIL-44-45-20190724	PW-07	44	45	Clay with sand	CH	4.1 J	0.12	2.58	90	42	48	41.8	54.2	20.3	25.5	0	--	1.22	--
PW-09-SOIL-23-24-20190812	PW-09	23	24	Silty sand	CH	4.3	0.025	2.63	75	37	38	32.7	50	35.9	14.1	0	56.1	1.16	1.3
PW-09-SOIL-52-53-20190812	PW-09	52	53	Clayey sand with silt	SP-SM	6.1	0.0034	2.68	--	--	--	24.4	3.2	10.2	85.5	1.1	41.5	1.56	0.7
PW-10-SOIL-59-60-20190808	PW-10*	59	60	Silty clay	SC	5.4	0.0170	2.67	--	--	--	26	27	18	55	0	43.6	1.5	0.8
PW-11-SOIL-16-17-20190725	PW-11	16	17	Sand with silt	SW-SC	4.9	0.0007	2.68	--	--	NP	10	11	6	83	0	--	1.5	--
PW-11-SOIL-61-62-20190725	PW-11	61	62	Sand with silt	SC	4.1	0.0190	2.67	40	19	21	26	13	6	81	0	--	1.5	--
PW-12-SOIL-83-84-20190731	PW-12	83	84	Clay	CH	4.3	0.0370	2.67	93	40	53	27	61	30	9	0	58.2	1.1	1.4
PW-12-SOIL-110-111-20190731	PW-12	110	111	Sand with silt	SP-SC	4.8	0.0110	2.67	--	--	NP	25	6	4	90	0	43.4	1.5	0.8
PW-13-SOIL-25-26-20190821	PW-13	25	26	Sand	SP	5.2	0.0012	2.67	--	--	NP	14	3	4	93	0	45.6	1.5	0.8
PW-13-SOIL-73-74-20190821	PW-13	73	74	Clay	CH	4.5	0.0520	2.66	91	38	53	30	54	38	8	0	58.1	1.1	1.4
PW-13-SOIL-124-125-20190822	PW-13	124	125	Silty Sand	SM	6.8	0.0014	2.66	--	--	NP	18	7	8	85	0	45.3	1.5	0.8
PW-14-SOIL-144-145-20190826	PW-14	144	145	Clayey sand	SC	5.7	0.0028	2.66	--	--	NP	21	3	14	83	0	42.9	1.5	0.8
PW-15-SOIL-17.5-18-20190813	PW-15	17.5	18	Clay	CH	4.0	0.0290	2.63	100	52	48	37	49	48	3	0	65.1	0.9	1.9
PW-15-SOIL-38-39-20190813	PW-15	38	39	Silty sand	SM	4.1	0.0007	2.7	--	--	--	3	7	33	60	0	38.5	1.7	0.6
PW-15-SOIL-55-56-20190813	PW-15	55	56	Clay	CH	4.1	0.0530	2.67	68	33	35	35	54	33	14	0	53.2	1.3	1.1
PW-15-SOIL-112-113-20190813	PW-15	112	113	Silty sand	SM	4.1	0.0051	2.67	--	--	NP	18	7	12	81	0	36.2	1.7	0.6

TABLE A 7-1
ONSITE SOIL CHARACTERISTICS
Chemours Fayetteville Works, North Carolina

Sample ID	Well ID	Top (ft bgs)	Bottom (ft bgs)	Visual Description	USCS Classification	Coefficient of Uniformity (C_u)	Coefficient of Curvature (C_c)	K from Grain Size Geometric Mean (ft/d)	Lithologic Unit
PIW-1-24-25-20190627	PIW-1	24	25	Fine to medium grained sand	SP-SC	8.8	3.2	13.4	Surficial Aquifer
PIW-1-41.5-42.5-20190627	PIW-1	41.5	42.5	Clay	CH	4.1	0.7	0.8	Upper Cape Fear Confining Unit
PIW-2D-Soil-24-25-20190815	PIW-2D	24	25	Clay	CH	5.0	0.8	0.9	Black Creek Confining Unit
PIW-2D-Soil-46-47-20190815	PIW-2D	46	47	Silty sand	SP-SM	8.7	3.1	13.9	Black Creek Aquifer
PIW-3-14-15-20190702	PIW-3	14	15	Sand with fine to medium gravel	GP	52.3	0.2	46.4	Floodplain Deposit
PIW-3-24-25-20190702	PIW-3	24	25	Gravelly sand with clay	SP-SC	2.6	1.5	46.6	Black Creek Aquifer
PIW-4-13-14-20190701	PIW-4	13	14	Sandy clay	CH	4.4	0.7	0.9	Black Creek Confining Unit
PIW-4-33-34.2-20190701	PIW-4	33	34.2	Fine to medium grained sand	SP-SM	4.0	1.4	54.7	Black Creek Aquifer
PIW-6-19-20-20190628	PIW-6	19	20	Clay with silt	CL	4.6	0.8	0.9	Floodplain Deposit
PIW-7-24-25-20190625	PIW-7	24	25	Fine to medium grained sand	SP-SC	8.9	3.5	4.0	Floodplain Deposit
PIW-7-37-38-20190625	PIW-7	37	38	Fine grained sand and silt	SP-SM	3.1	1.2	69.4	Black Creek Aquifer
PIW-7-44-45-20190625	PIW-7	44	45	Clay	CH	4.5	0.8	0.9	Upper Cape Fear Confining Unit
PIW-9-19-20-20190626	PIW-9	19	20	Sand	SP-SC	3.2	1.1	43.5	Surficial Aquifer
PIW-10-42-43-20190624	PIW-10	42	43	Clay	CH	3.7	0.7	0.8	Black Creek Confining Unit
PW-01-SOIL-14-15-20190730	PW-01	14	15	Sand with silt	SP	2.1	1.2	27.4	Perched Zone
PW-02-SOIL-14-15-20190729	PW-02	14	15	Clayey sand medium grained	SC	13.3	5.8	12.0	Perched Zone
PW-02-SOIL-16-17-20190729	PW-02	16	17	Silty clay	CH	3.9	0.7	0.8	Perched Clay
PW-02-SOIL-35-36-20190729	PW-02	35	36	Clayey sand	SC	21.7	7.7	6.1	Surficial Aquifer
PW-03-SOIL-6.5-7-20190723	PW-03	6.5	7	Clayey sand	SC	16.5	1.6	2.7	Perched Zone
PW-03-SOIL-16-17-20190723	PW-03	16	17	Clay	CH	4.4	0.7	0.9	Perched Clay
PW-03-SOIL-43-44-20190723	PW-03	43	44	Silty sand	SM	3.9	1.9	6.6	Surficial Aquifer
PW-04-SOIL-23-24-20190724	PW-04	23	24	Silty sand	SM	6.5	2.6	3.1	Surficial Aquifer
PW-04-SOIL-29-29.5-20190724	PW-04	29	29.5	Clay	CH	4.9	0.8	0.9	Black Creek Confining Unit
PW-05-Soil-12-13-20190726	PW-05	12	13	Clayey sand	SC	25.8	0.6	2.2	Surficial Aquifer
PW-05-Soil-51-52-20190726	PW-05	51	52	Silty clay	CH	4.2	0.7	0.8	Clay Lens in Surficial Aquifer
PW-05-Soil-76-77-20190726	PW-05	76	77	Clay	CH	3.5	0.1	0.8	Black Creek Confining Unit
PW-06-SOIL-16-17-20190726	PW-06	16	17	Sand with silt	SP	4.5	1.7	36.7	Surficial Aquifer
PW-07-SOIL-14-15-20190724	PW-07	14	15	Sand	SP-SC	4.5	1.8	33.6	Surficial Aquifer
PW-07-SOIL-44-45-20190724	PW-07	44	45	Clay with sand	CH	4.7	0.8	0.9	Clay Lens in Surficial Aquifer
PW-09-SOIL-23-24-20190812	PW-09	23	24	Silty sand	CH	3.89	0.73	0.79	Black Creek Confining Unit
PW-09-SOIL-52-53-20190812	PW-09	52	53	Clayey sand with silt	SP-SM	13.7	5.36	12.76	Black Creek Aquifer
PW-10-SOIL-59-60-20190808	PW-10*	59	60	Silty clay	SC	28.9	0.3	1.0	Clay Lens in Black Creek Aquifer
PW-11-SOIL-16-17-20190725	PW-11	16	17	Sand with silt	SW-SC	8.5	2.8	2.7	Surficial Aquifer
PW-11-SOIL-61-62-20190725	PW-11	61	62	Sand with silt	SC	22.1	5.1	5.0	Black Creek Aquifer
PW-12-SOIL-83-84-20190731	PW-12	83	84	Clay	CH	3.6	0.7	0.8	Clay Lens in Black Creek Aquifer
PW-12-SOIL-110-111-20190731	PW-12	110	111	Sand with silt	SP-SC	3.9	1.9	16.7	Black Creek Aquifer
PW-13-SOIL-25-26-20190821	PW-13	25	26	Sand	SP	2.3	1.2	94.9	Surficial Aquifer
PW-13-SOIL-73-74-20190821	PW-13	73	74	Clay	CH	3.5	0.7	0.8	Black Creek Confining Unit
PW-13-SOIL-124-125-20190822	PW-13	124	125	Silty Sand	SM	9.1	3.6	8.6	Black Creek Aquifer
PW-14-SOIL-144-145-20190826	PW-14	144	145	Clayey sand	SC	23.8	4.8	6.0	Black Creek Aquifer
PW-15-SOIL-17.5-18-20190813	PW-15	17.5	18	Clay	CH	3.3	0.7	0.7	Perched Clay
PW-15-SOIL-38-39-20190813	PW-15	38	39	Silty sand	SM	23.8	0.5	1.0	Surficial Aquifer
PW-15-SOIL-55-56-20190813	PW-15	55	56	Clay	CH	3.8	0.7	0.8	Black Creek Confining Unit
PW-15-SOIL-112-113-20190813	PW-15	112	113	Silty sand	SM	20.3	2.9	4.7	Black Creek Aquifer

Notes:

1. * PW-10 was properly abandoned and replaced with PW-10R.
2. "USCS Classification" is the Unified Soil Classification System from the standard practice outlined in ASTM D2487-17.
3. Coefficient of Uniformity (C_u) = D_{60} / D_{10}
4. Coefficient of Curvature (C_c) = $(D_{30})^2$ / (D_{60} * D_{10})
5. Hydraulic Conductivity (K) from grain size calculated using HydrogeoSieveXL (Devlin, 2015).
6. Atterberg limits (Liquid Limit and Plastic Limit) are only tested for fine-grained materials.
7. Visual descriptions are transcribed from field logs.
8. USCS classifications are derived from laboratory data.

-- not measured
% - percent
cc - cubic centimeter
CH - fat clay
CL - lean clay
ft bgs - feet below ground surface
ft/d - feet per day
g - gram
NP - no plasticity
SC - clayey sand
SM - silty sand
SP - poorly graded sand
GP - poorly graded gravel
SW - well graded sand
USCS - Unified Soil Classification System

TABLE A 7-2
ONSITE SOIL ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Location	PW-01	PW-01	PW-02	PW-03
Field Sample ID	PW-01-SOIL-14-15-20190730	PW-01-SOIL-11-12-20190731	PW-02-SOIL-14-15-20190729	PW-03-SOIL-6.5-7-20190723
Sample Date	7/30/2019	7/31/2019	7/29/2019	7/23/2019
QA/QC	--	--	--	--
Vadose Zome Sample*	Y	Y	Y	Y
Depth (ft)	14-15	11-12	14-15	6.5-7
SDG	200-49879-2	200-49879-2	200-49846-2	200-49745-3
Lab Sample ID	200-49879-1	200-49879-3	200-49846-2	200-49745-1
Table 3+ Lab SOP (ng/kg)				
HFPO-DA (EPA Method 537 Mod)	**1,800**	**1,200**	**1,500**	**1,700**
PFMOAA	**1,300**	<1,000	<1,000 UJ	<1,000
PFO2HxA	**1,300**	<1,000	<1,000 UJ	1,290 U
PFO3OA	<1,000	<1,000	<1,000 UJ	<1,000
PFO4DA	<1,000	<1,000	<1,000 UJ	<1,000
PFO5DA	<1,000	<1,000	<1,000	1,160 U
PMPA	<1,000	<1,000	<1,000	2,460 U
PEPA	<1,000	<1,000	<1,000	<1,000
PFESA-BP1	<1,000	<1,000	<1,000	<1,000
PFESA-BP2	<1,000	<1,000	<1,000	<1,000
Byproduct 4	<1,000 UJ	<1,000 R	<1,000 R	<1,000 R
Byproduct 5	<1,000 UJ	<1,000 R	<1,000 R	<1,000 R
Byproduct 6	<1,000	<1,000	<1,000	<1,000
NVHOS	<1,000	<1,000	<1,000	<1,000
EVE Acid	<1,000	<1,000	<1,000	<1,000
Hydro-EVE Acid	<1,000	<1,000	<1,000 UJ	<1,000
R-EVE	<1,000 UJ	<1,000 R	<1,000 R	<1,000 R
PES	<1,000	<1,000	<1,000	<1,000
PFECA B	<1,000	<1,000	<1,000 UJ	<1,000
PFECA-G	<1,000	<1,000	<1,000 UJ	<1,000
Other PFAS (ng/kg)				
10:2 Fluorotelomer sulfonate	<200	<200	<200	<200
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2,000	<2,000	<2,000	<2,000
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<2,000	<2,000	<2,000	<2,000
6:2 Fluorotelomer sulfonate	<2,000	<2,000	<2,000	<2,000
ADONA	<210	<210	<210	<210
F-53B Major	<200	<200	<200	<200
F-53B Minor	<200	<200	<200	<200
NaDONA	<210	<210	<210	<210
N-ethyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000	<2,000
N-methyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000	<2,000
Perfluorobutane Sulfonic Acid	<200	<200	<200	<200
Perfluorobutanoic Acid	<200	<200	<200	<200
Perfluorodecane Sulfonic Acid	<200	<200	<200	<200
Perfluorodecanoic Acid	<200	<200	<200	<200
Perfluorododecane sulfonic acid (PFDoS)	<200	<200	<200	<200
Perfluorododecanoic Acid	<200	<200	<200	<200
Perfluoroheptane sulfonic acid (PFHpS)	<200	<200	<200	<200
Perfluoroheptanoic Acid	<200	<200	<200	<200
Perfluorohexadecanoic acid (PFHxDA)	<200	<200	<200	<200
Perfluorohexane Sulfonic Acid	<200	<200	<200	<200
Perfluorohexanoic Acid	<200	<200	<200	<200
Perfluorononanesulfonic acid	<200	<200	<200	<200
Perfluorononanoic Acid	<200	<200	<200	<200
Perfluorooctadecanoic acid	<200	<200	<200	<200
Perfluorooctane Sulfonamide	<200	<200	<200	<200
Perfluoropentane sulfonic acid (PFPeS)	<200	<200	<200	<200
Perfluoropentanoic Acid	<200	<200	<200	<200
Perfluorotetradecanoic Acid	<200	<200	<200	<200
Perfluorotridecanoic Acid	<200	<200	<200	<200
Perfluoroundecanoic Acid	<200	<200	<200	<200
PFOA	<200	<200	<200	<200
PFOS	<500	<500	<500	<500
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<1,000	<1,000	<1,000	<1,000
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<1,000	<1,000	<1,000	<1,000
N-ethylperfluoro-1-octanesulfonamide	<1,000	<1,000	<1,000	<1,000
N-methyl perfluoro-1-octanesulfonamide	<1,000	<1,000	<1,000	<1,000

Notes:
1. Associated equipment blank and field blank results reported in Table 7-3.
2. * Select soil samples collected from saturated zone for soil physical parameters were also inadvertently analyzed for PFAS.

Bold - Analyte detected above associated reporting limit
EPA - Environmental Protection Agency
ft - feet
J - Analyte detected. Reported value may not be accurate or precise
ng/kg - nanograms per kilogram
QA/QC - Quality assurance/ quality control
R - Result rejected based on QA/QC criteria
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.
-- - No data reported

TABLE A 7-2
ONSITE SOIL ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Location	PW-05	PW-06	PW-07	PW-07
Field Sample ID	PW-05 Soil-12-13-20190726	PW-06-SOIL-16-17-20190729	DUP1-072419	PW-07SOIL-14-15-20190724
Sample Date	7/26/2019	7/29/2019	7/24/2019	7/24/2019
QA/QC	--	--	Field Duplicate	--
Vadose Zone Sample*	Y	Y	Y	Y
Depth (ft)	12-13	16-17	14-15	14-15
SDG	200-49809-2	200-49846-2	200-49770-2	200-49770-2
Lab Sample ID	200-49809-1	200-49846-1	200-49770-5	200-49770-3
Table 3+ Lab SOP (ng/kg)				
HFPO-DA (EPA Method 537 Mod)	**850**	<250	<250	<250
PFMOAA	<1,000 R	<1,000	<1,000	<1,000
PFO2HxA	<1,000 UJ	<1,000	<1,000	<1,000
PFO3OA	<1,000 UJ	<1,000	<1,000	<1,000
PFO4DA	<1,000 UJ	<1,000	<1,000	<1,000
PFO5DA	<1,000 UJ	<1,000	<1,000	<1,000
PMPA	<1,000 UJ	<1,000	<1,000	<1,000
PEPA	<1,000 UJ	<1,000	<1,000	<1,000
PFESA-BP1	<1,000 UJ	<1,000	<1,000	<1,000
PFESA-BP2	<1,000 UJ	<1,000	<1,000	<1,000
Byproduct 4	<1,000 R	<1,000 R	<1,000 R	<1,000 R
Byproduct 5	<1,000 R	<1,000 R	<1,000 R	<1,000 R
Byproduct 6	<1,000 UJ	<1,000	<1,000	<1,000
NVHOS	<1,000 UJ	<1,000	<1,000	<1,000
EVE Acid	<1,000 UJ	<1,000	<1,000	<1,000
Hydro-EVE Acid	<1,000 UJ	<1,000	<1,000	<1,000
R-EVE	<1,000 R	<1,000 R	<1,000 R	<1,000 R
PES	<1,000 UJ	<1,000	<1,000	<1,000
PFECA B	<1,000 UJ	<1,000	<1,000	<1,000
PFECA-G	<1,000 UJ	<1,000	<1,000	<1,000
Other PFAS (ng/kg)				
10:2 Fluorotelomer sulfonate	<200 UJ	<200	<200	<200
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2,000 UJ	<2,000	<2,000	<2,000
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<2,000 UJ	<2,000	<2,000	<2,000
6:2 Fluorotelomer sulfonate	<2,000 UJ	<2,000	<2,000	<2,000
ADONA	<210	<210	<210	<210
F-53B Major	<200	<200	<200	<200
F-53B Minor	<200	<200	<200	<200
NaDONA	<210	<210	<210	<210
N-ethyl perfluorooctane sulfonamidoacetic acid	<2,000 UJ	<2,000	<2,000	<2,000
N-methyl perfluorooctane sulfonamidoacetic acid	<2,000 UJ	<2,000	<2,000	<2,000
Perfluorobutane Sulfonic Acid	<200	<200	<200	<200
Perfluorobutanoic Acid	<200	<200	<200	<200
Perfluorodecane Sulfonic Acid	<200	<200	<200	<200
Perfluorodecanoic Acid	<200	<200	<200	<200
Perfluorododecane sulfonic acid (PFDoS)	<200	<200	<200	<200
Perfluorododecanoic Acid	<200	<200	<200	<200
Perfluoroheptane sulfonic acid (PFHpS)	<200	<200	<200	<200
Perfluoroheptanoic Acid	<200	<200	<200	<200
Perfluorohexadecanoic acid (PFHxDA)	<200	<200	<200	<200
Perfluorohexane Sulfonic Acid	<200	<200	<200	<200
Perfluorohexanoic Acid	<200	<200	<200	<200
Perfluorononanesulfonic acid	<200	<200	<200	<200
Perfluorononanoic Acid	<200	<200	<200	<200
Perfluorooctadecanoic acid	<200	<200	<200	<200
Perfluorooctane Sulfonamide	<200	<200	<200	<200
Perfluoropentane sulfonic acid (PFPeS)	<200	<200	<200	<200
Perfluoropentanoic Acid	<200	<200	<200	<200
Perfluorotetradecanoic Acid	<200	<200	<200	<200
Perfluorotridecanoic Acid	<200	<200	<200	<200
Perfluoroundecanoic Acid	<200	<200	<200	<200
PFOA	<200	<200	<200	<200
PFOS	<500 UJ	<500	<500	<500
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<1,000	<1,000	<1,000	<1,000
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<1,000	<1,000	<1,000	<1,000
N-ethylperfluoro-1-octanesulfonamide	<1,000	<1,000	<1,000	<1,000
N-methyl perfluoro-1-octanesulfonamide	<1,000	<1,000	<1,000	<1,000

Notes:
1. Associated equipment blank and field blank results reported in Table 7-3.
2. * Select soil samples collected from saturated zone for soil physical parameters were also inadvertently analyzed for PFAS.

Bold - Analyte detected above associated reporting limit
EPA - Environmental Protection Agency
ft - feet
J - Analyte detected. Reported value may not be accurate or precise
ng/kg - nanograms per kilogram
QA/QC - Quality assurance/ quality control
R - Result rejected based on QA/QC criteria
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.
-- - No data reported

TABLE A 7-2
ONSITE SOIL ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Location	PW-09	PW-09	PW-10	PW-10
Field Sample ID	PW-09-SOIL-10-11-20190812	PW-09-SOIL-8.5-9-20190812	PW-10-SOIL-3.5-4-20190808	PW-10-SOIL-8-8.5-20190808
Sample Date	8/12/2019	8/12/2019	8/8/2019	8/8/2019
QA/QC	--	--	--	--
Vadose Zome Sample*	Y	Y	Y	Y
Depth (ft)	10-11	8.5-9	3.5-4	8-8.5
SDG	200-50062-2	200-50062-2	200-50014-2	200-50014-2
Lab Sample ID	200-50062-1	200-50062-2	200-50014-1	200-50014-2
Table 3+ Lab SOP (ng/kg)				
HFPO-DA (EPA Method 537 Mod)	<250	<250	**570**	**28,000**
PFMOAA	<1,000 UJ	<1,000 UJ	<1,000	**7,300**
PFO2HxA	<1,000 UJ	<1,000 UJ	<1,000	10,000 J
PFO3OA	<1,000 UJ	<1,000 UJ	<1,000	**4,000**
PFO4DA	<1,000 UJ	<1,000 UJ	<1,000	**4,700**
PFO5DA	<1,000 UJ	<1,000 UJ	1,260 U	**5,200**
PMPA	<1,000 UJ	<1,000 UJ	<1,000	27,000 J
PEPA	<1,000 UJ	<1,000 UJ	<1,000	13,000 J
PFESA-BP1	<1,000 UJ	<1,000 UJ	<1,000	<1,000
PFESA-BP2	<1,000 UJ	<1,000 UJ	<1,000	**1,400**
Byproduct 4	<1,000 R	<1,000 R	<1,000 R	<1,000 R
Byproduct 5	<1,000 R	<1,000 R	<1,000 R	<1,000 R
Byproduct 6	<1,000 UJ	<1,000 UJ	<1,000	<1,000
NVHOS	<1,000 UJ	<1,000 UJ	<1,000	<1,000
EVE Acid	<1,000 UJ	<1,000 UJ	<1,000	<1,000
Hydro-EVE Acid	<1,000 UJ	<1,000 UJ	<1,000	**1,500**
R-EVE	<1,000 R	<1,000 R	<1,000 R	<1,000 R
PES	<1,000 UJ	<1,000 UJ	<1,000	<1,000
PFECA B	<1,000 UJ	<1,000 UJ	<1,000	<1,000
PFECA-G	<1,000 UJ	<1,000 UJ	<1,000	<1,000
Other PFAS (ng/kg)				
10:2 Fluorotelomer sulfonate	<200	<200	<200	<200
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2,000	<2,000	<2,000	<2,000
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<2,000	<2,000	<2,000	<2,000
6:2 Fluorotelomer sulfonate	<2,000	<2,000	<2,000	<2,000
ADONA	<210	<210	<210	<210
F-53B Major	<200	<200	<200	<200
F-53B Minor	<200	<200	<200	<200
NaDONA	<210	<210	<210	<210
N-ethyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000	<2,000
N-methyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000	<2,000
Perfluorobutane Sulfonic Acid	<200	<200	<200	<200
Perfluorobutanoic Acid	<200	<200	<200	<200
Perfluorodecane Sulfonic Acid	<200	<200	<200	<200
Perfluorodecanoic Acid	<200	<200	<200	<200
Perfluorododecane sulfonic acid (PFDoS)	<200	<200	<200	<200
Perfluorododecanoic Acid	<200	<200	<200	<200
Perfluoroheptane sulfonic acid (PFHpS)	<200	<200	<200	<200
Perfluoroheptanoic Acid	<200	<200	<200	<200
Perfluorohexadecanoic acid (PFHxDA)	<200	<200	<200	<200
Perfluorohexane Sulfonic Acid	<200	<200	<200	<200
Perfluorohexanoic Acid	<200	<200	<200	<200
Perfluorononanesulfonic acid	<200	<200	<200	<200
Perfluorononanoic Acid	<200	<200	<200	<200
Perfluorooctadecanoic acid	<200	<200	<200	<200
Perfluorooctane Sulfonamide	<200	<200	<200	<200
Perfluoropentane sulfonic acid (PFPeS)	<200	<200	<200	<200
Perfluoropentanoic Acid	<200	<200	<200	**310**
Perfluorotetradecanoic Acid	<200	<200	<200	<200
Perfluorotridecanoic Acid	<200	<200	<200	<200
Perfluoroundecanoic Acid	<200	<200	<200	<200
PFOA	<200	<200	<200	<200
PFOS	<500	<500	<500	<500
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	<1,000	<1,000
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	<1,000	<1,000
N-ethylperfluoro-1-octanesulfonamide	--	--	<1,000	<1,000
N-methyl perfluoro-1-octanesulfonamide	--	--	<1,000	<1,000

Notes:
1. Associated equipment blank and field blank results reported in Table 7-3.
2. * Select soil samples collected from saturated zone for soil physical parameters were also inadvertently analyzed for PFAS.

Bold - Analyte detected above associated reporting limit
EPA - Environmental Protection Agency
ft - feet
J - Analyte detected. Reported value may not be accurate or precise
ng/kg - nanograms per kilogram
QA/QC - Quality assurance/ quality control
R - Result rejected based on QA/QC criteria
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.
-- - No data reported

TABLE A 7-2
ONSITE SOIL ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Location	PW-11	PW-12	PW-12	PW-13
Field Sample ID	**PW-11-SOIL-16-17-20190725**	**PW-12-SOIL-36-37-20190731**	**PW-12-SOIL-45-46-20190731**	**PW-13-Soil-25-26-20190821**
Sample Date	**7/25/2019**	**7/31/2019**	**7/31/2019**	**8/21/2019**
QA/QC	--	--	--	--
Vadose Zone Sample*	**Y**	**N**	**N**	**Y**
Depth (ft)	**16-17**	**36-37**	**45-46**	**25-26**
SDG	**200-49801-2**	**200-49879-2**	**200-49879-2**	**200-50221-2**
Lab Sample ID	**200-49801-1**	**200-49879-4**	**200-49879-5**	**200-50221-1**
Table 3+ Lab SOP (ng/kg)				
HFPO-DA (EPA Method 537 Mod)	**620**	**830**	<250	<250
PFMOAA	<1,000	<1,000	<1,000	<1,000
PFO2HxA	<1,000	<1,000	<1,000	<1,000
PFO3OA	<1,000	<1,000	<1,000	<1,000
PFO4DA	<1,000	<1,000	<1,000	<1,000
PFO5DA	<1,000	<1,000	<1,000	<1,000
PMPA	<1,000	<1,000	<1,000	<1,000
PEPA	<1,000	<1,000	<1,000	<1,000
PFESA-BP1	<1,000	<1,000	<1,000	<1,000
PFESA-BP2	<1,000	<1,000	<1,000	<1,000
Byproduct 4	<1,000 R	<1,000 R	<1,000 UJ	<1,000
Byproduct 5	<1,000 R	<1,000 R	<1,000 UJ	<1,000
Byproduct 6	<1,000	<1,000	<1,000	<1,000
NVHOS	<1,000	<1,000	<1,000	<1,000
EVE Acid	<1,000	<1,000	<1,000	<1,000
Hydro-EVE Acid	<1,000	<1,000	<1,000	<1,000
R-EVE	<1,000 R	<1,000 R	<1,000 R	<1,000
PES	<1,000	<1,000	<1,000	<1,000
PFECA B	<1,000	<1,000	<1,000	<1,000
PFECA-G	<1,000	<1,000	<1,000	<1,000
Other PFAS (ng/kg)				
10:2 Fluorotelomer sulfonate	<200	<200	<200 UJ	<200
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2,000	<2,000	<2,000	<2,000
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<2,000	<2,000	<2,000	<2,000
6:2 Fluorotelomer sulfonate	<2,000	<2,000	<2,000	<2,000
ADONA	<210	<210	<210	<210
F-53B Major	<200	<200	<200	<200
F-53B Minor	<200	<200	<200	<200
NaDONA	<210	<210	<210	<210
N-ethyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000	<2,000
N-methyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000	<2,000
Perfluorobutane Sulfonic Acid	<200	<200	<200	<200
Perfluorobutanoic Acid	<200	<200	<200	<200
Perfluorodecane Sulfonic Acid	<200	<200	<200	<200
Perfluorodecanoic Acid	<200	<200	<200	<200
Perfluorododecane sulfonic acid (PFDoS)	<200	<200	<200 UJ	<200
Perfluorododecanoic Acid	<200	<200	<200	<200
Perfluoroheptane sulfonic acid (PFHpS)	<200	<200	<200	<200
Perfluoroheptanoic Acid	<200	<200	<200	<200
Perfluorohexadecanoic acid (PFHxDA)	<200	<200	<200	<200
Perfluorohexane Sulfonic Acid	<200	<200	<200	<200
Perfluorohexanoic Acid	<200	<200	<200	<200
Perfluorononanesulfonic acid	<200	<200	<200	<200
Perfluorononanoic Acid	<200	<200	<200	<200
Perfluorooctadecanoic acid	<200	<200	<200	<200
Perfluorooctane Sulfonamide	<200	<200	<200	<200
Perfluoropentane sulfonic acid (PFPeS)	<200	<200	<200	<200
Perfluoropentanoic Acid	<200	<200	<200	<200
Perfluorotetradecanoic Acid	<200	<200	<200	<200
Perfluorotridecanoic Acid	<200	<200	<200	<200
Perfluoroundecanoic Acid	<200	<200	<200	<200
PFOA	<200	<200	<200	<200
PFOS	<500	<500	<500	<500
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<1,000	<1,000	<1,000	<1,000
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<1,000	<1,000	<1,000	<1,000
N-ethylperfluoro-1-octanesulfonamide	<1,000	<1,000	<1,000	<1,000
N-methyl perfluoro-1-octanesulfonamide	<1,000	<1,000	<1,000	<1,000

Notes:
1. Associated equipment blank and field blank results reported in Table 7-3.
2. * Select soil samples collected from saturated zone for soil physical parameters were also inadvertently analyzed for PFAS.

Bold - Analyte detected above associated reporting limit
EPA - Environmental Protection Agency
ft - feet
J - Analyte detected. Reported value may not be accurate or precise
ng/kg - nanograms per kilogram
QA/QC - Quality assurance/ quality control
R - Result rejected based on QA/QC criteria
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.
-- - No data reported

TABLE A 7-2
ONSITE SOIL ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Location	PW-15
Field Sample ID	PW-15-SOIL-38-39-20190813
Sample Date	8/13/2019
QA/QC	--
Vadose Zone Sample*	N
Depth (ft)	38-39
SDG	200-50083-2
Lab Sample ID	200-50083-2
Table 3+ Lab SOP (ng/kg)	
HFPO-DA (EPA Method 537 Mod)	<250
PFMOAA	<1,000
PFO2HxA	<1,000
PFO3OA	<1,000
PFO4DA	<1,000
PFO5DA	<1,000
PMPA	<1,000
PEPA	<1,000
PFESA-BP1	<1,000
PFESA-BP2	<1,000
Byproduct 4	<1,000
Byproduct 5	<1,000
Byproduct 6	<1,000
NVHOS	<1,000
EVE Acid	<1,000
Hydro-EVE Acid	<1,000
R-EVE	<1,000
PES	<1,000
PFECA B	<1,000
PFECA-G	<1,000
Other PFAS (ng/kg)	
10:2 Fluorotelomer sulfonate	<200
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2,000
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<2,000
6:2 Fluorotelomer sulfonate	<2,000
ADONA	<210
F-53B Major	<200
F-53B Minor	<200
NaDONA	<210
N-ethyl perfluorooctane sulfonamidoacetic acid	<2,000
N-methyl perfluorooctane sulfonamidoacetic acid	<2,000
Perfluorobutane Sulfonic Acid	<200
Perfluorobutanoic Acid	<200
Perfluorodecane Sulfonic Acid	<200
Perfluorodecanoic Acid	<200
Perfluorododecane sulfonic acid (PFDoS)	<200
Perfluorododecanoic Acid	<200
Perfluoroheptane sulfonic acid (PFHpS)	<200
Perfluoroheptanoic Acid	<200
Perfluorohexadecanoic acid (PFHxDA)	<200
Perfluorohexane Sulfonic Acid	<200
Perfluorohexanoic Acid	<200
Perfluorononanesulfonic acid	<200
Perfluorononanoic Acid	<200
Perfluorooctadecanoic acid	<200
Perfluorooctane Sulfonamide	<200
Perfluoropentane sulfonic acid (PFPeS)	<200
Perfluoropentanoic Acid	<200
Perfluorotetradecanoic Acid	<200
Perfluorotridecanoic Acid	<200
Perfluoroundecanoic Acid	<200
PFOA	<200
PFOS	<500
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<1,000
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<1,000
N-ethylperfluoro-1-octanesulfonamide	<1,000
N-methyl perfluoro-1-octanesulfonamide	<1,000

Notes:
1. Associated equipment blank and field blank results reported in Table 7-3.
2. * Select soil samples collected from saturated zone for soil physical parameters were also inadvertently analyzed for PFAS.

Bold - Analyte detected above associated reporting limit
EPA - Environmental Protection Agency
ft - feet
J - Analyte detected. Reported value may not be accurate or precise
ng/kg - nanograms per kilogram
QA/QC - Quality assurance/ quality control
R - Result rejected based on QA/QC criteria
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.
-- - No data reported

TABLE A 7-3
ONSITE SOIL ANALYTICAL RESULTS - QUALITY CONTROL SAMPLES
Chemours Fayetteville Works, North Carolina

Location	DRILL WATER*	EB	EB	EB
Field Sample ID	DRILL WATER-20190731	PW-EQBLK-1-20190725	PW-EQBLK-2-20190726	PW-EQBLK-3
Sample Date	7/31/2019	7/25/2019	7/26/2019	7/30/2019
QA/QC	--	Equipment Blank	Equipment Blank	Equipment Blank
Depth (ft)	-	-	-	-
SDG	200-49879-2	200-49801-2	200-49809-2	200-49879-2
Lab Sample ID	200-49879-8	200-49801-3	200-49809-4	200-49879-2
Table 3+ Lab SOP (ng/L)				
HFPO-DA (EPA Method 537 Mod)	**17**	<4	<3.6	<4
PFMOAA	<5	--	<5	<5
PFO2HxA	**10**	--	<2	<2
PFO3OA	<2	--	<2	<2
PFO4DA	<2	--	<2	<2
PFO5DA	<2	--	<2	<2
PMPA	**130**	--	<10	<10
PEPA	<20	--	<20	<20
PFESA-BP1	<2	--	<2	<2
PFESA-BP2	**6.7**	--	<2	<2
Byproduct 4	<2	--	<2	<2
Byproduct 5	<2	--	<2	<2
Byproduct 6	<2	--	<2	<2
NVHOS	<2	--	<2	<2
EVE Acid	<2	--	<2	<2
Hydro-EVE Acid	<2	--	<2	<2
R-EVE	<2	--	<2	<2
PES	<2	--	<2	<2
PFECA B	<2	--	<2	<2
PFECA-G	<2	--	<2	<2
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	<2	<2	<1.8	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<18	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<18	<20
6:2 Fluorotelomer sulfonate	<20	<20	<18	<20
ADONA	<2.1	<2.1	<1.9	<2.1
F-53B Major	<2	<2	<1.8	<2
F-53B Minor	<2	<2	<1.8	<2
NaDONA	<2.1	<2.1	<1.9	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<18	<20
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<18	<20
Perfluorobutane Sulfonic Acid	**2.2**	<2	<1.8	<2
Perfluorobutanoic Acid	<2	<2	**0.32**	<2
Perfluorodecane Sulfonic Acid	<2	<2	<1.8	<2
Perfluorodecanoic Acid	<2	<2	<1.8	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<1.8	<2
Perfluorododecanoic Acid	<2	<2	<1.8	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<1.8	<2
Perfluoroheptanoic Acid	<2	<2	<1.8	<2
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<1.8	<2
Perfluorohexane Sulfonic Acid	<2	<2	**0.24**	<2
Perfluorohexanoic Acid	<2	<2	**0.92**	<2
Perfluorononanesulfonic acid	<2	<2	<1.8	<2
Perfluorononanoic Acid	<2	<2	<1.8	<2
Perfluorooctadecanoic acid	<2	<2	<1.8	<2
Perfluorooctane Sulfonamide	<2	<2	<1.8	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<1.8	<2
Perfluoropentanoic Acid	<2	<2	<1.8	<2
Perfluorotetradecanoic Acid	<2	<2	<1.8	<2
Perfluorotridecanoic Acid	<2	<2	<1.8	<2
Perfluoroundecanoic Acid	<2	<2	<1.8	<2
PFOA	<2	<2	<1.8	<2
PFOS	<2	<2	<1.8	<2
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	--	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<2	--	<2	<2
N-ethylperfluoro-1-octanesulfonamide	<2	--	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	--	<2	<2

Notes:

1. Associated soil analytical results reported in Table 7-2.
2. * Drill Water was sourced from offsite fire hydrant. Water is from Bladen County Water System.

Bold - Analyte detected above associated reporting limit
EPA - Environmental Protection Agency
ft - feet
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.
-- - No data reported

TABLE A 7-4
OFFSITE SOIL CHARACTERISTICS
Chemours Fayetteville Works, North Carolina

Sample ID	Well ID	Top (ft bgs)	Bottom (ft bgs)	Visual Description	USCS Classification	pH (s.u.)	Fraction Organic Carbon (g/g)	Specific Gravity	Liquid Limit of Soils	Plastic Limit of Soils	Plasticity Index (PI)	Percent Moisture (%)
BLADEN-1S-081419	Bladen-1S	6	7	Fine to medium grained Silty Sand	SC	4.0	0.0025	2.67	0	0	NP	20.3
BLADEN-2D-081519-72-73	Bladen-2D	72	73	Medium grained sand trace mica	SP-SM	4.2	0.0023	4.66	0	0	NP	33.8
BLADEN-3D-Soil-081919-42-43	Bladen-3D	42	43	Sand with clay	SC	6.0	0.0086	2.69	0	0	NP	22.6
Bladen-3S-Soil-082019-5-6	Bladen-3S	5	6	Coarse grained sand	SW	--	--	--	--	--	--	8.7
Bladen-4S-Soil-082119-5-6	Bladen-4S	5	6	Medium to coarse sand with gravel	SP-SM	7.8	0.0005	2.65	0	0	NP	20.1
CUMBERLAND-1D-46-47-20190912	Cumberland-1D	46	47	Fine Grained Sand	SP	4.4 J	0.0077	2.67	--	--	--	27.5
CUMBERLAND-1S-6-7-20190913	Cumberland-1S	6	7	Medium grained sand with silt	SP	5.2 J	0.0021	2.66	--	--	--	7.1
Cumberland-2D-soil-49-50-0912	Cumberland-2D	49	50	Fine to medium grained sand	SP	5.6	0.0068	2.69	--	--	--	23.9
Cumberland-2S-soil-5-6-0912	Cumberland-2S	5	6	Fine grained clayey sand	SP-SM	5.3	0.0080	2.65	--	--	--	19.3
Cumberland-3D-24-25-20190911	Cumberland-3D	24	25	Medium to coarse grained sand	SP-SM	5.0	0.0028	2.66	--	--	--	11.7
Cumberland-4S-soil-5-6-0911	Cumberland-4S	5	6	Fine to medium grained sand	SP-SC	4.7	0.0018	2.68	--	--	--	14.3
Cumberland-5D-54-55-20190911	Cumberland-5D	54	55	Fine grained sand	SP-SM	4.9	0.0160	2.63	--	--	--	17.8
Robeson-1S-soil-15-16-20190909	Robeson-1S	15	16	Fine grained silty sand	SP-SM	8.2	0.0012	2.67	0	0	NP	18.4

Notes:

1. Laboratory results available as of 09/24/2019 are reported. Additional data will be presented in an addendum to this report.
2. "USCS Classification" is the Unified Soil Classification System from the standard practice outlined in ASTM D2487-17.
3. Coefficient of Uniformity (C_u) = D_{60} / D_{10}
4. Coefficient of Curvature (C_c) = $(D_{30})^2$ / (D_{60} * D_{10})
5. Hydraulic Conductivity (K) from grain size calculated using HydrogeoSieveXL (Devlin, 2015).
6. Atterberg limits (Liquid Limit and Plastic Limit) are only tested for fine-grained materials.
7. Visual descriptions are transcribed from field logs.
8. USCS classifications are derived from laboratory data.

-- not measured
% - percent
cc - cubic centimeter
NP - no plasticity
ft/d - feet per day
g - gram
USCS - Unified Soil Classification System
ft bgs - feet below ground surface
CH - fat clay
CL - lean clay
SC - clayey sand
SM - silty sand
SP - poorly graded sand
SW - well graded sand

TABLE A 7-4
OFFSITE SOIL CHARACTERISTICS
Chemours Fayetteville Works, North Carolina

Sample ID	Well ID	Top (ft bgs)	Bottom (ft bgs)	Visual Description	USCS Classification	Grain Size Distribution (%)				Porosity Calculation (%)	In Place Density (g/cc)	Void Ratio	Coefficient of Uniformity (C_u)
						Clay	Silt	Sand	Gravel				
BLADEN-1S-081419	Bladen-1S	6	7	Fine to medium grained Silty Sand	SC	9.2	8.6	81.7	0.5	39.6	1.61	0.7	10.18
BLADEN-2D-081519-72-73	Bladen-2D	72	73	Medium grained sand trace mica	SP-SM	2.9	9.1	88	0	39.1	1.62	0.6	9.17
BLADEN-3D-Soil-081919-42-43	Bladen-3D	42	43	Sand with clay	SC	10.6	7.3	82.1	0	46.2	1.44	0.9	5.89
Bladen-3S-Soil-082019-5-6	Bladen-3S	5	6	Coarse grained sand	SW	--	--	--	--	--	--	--	--
Bladen-4S-Soil-082119-5-6	Bladen-4S	5	6	Medium to coarse sand with gravel	SP-SM	2.6	8.8	88.6	0	42	1.54	0.7	4.71
CUMBERLAND-1D-46-47-20190912	Cumberland-1D	46	47	Fine Grained Sand	SP	6.2	3.2	90.6	0	42.9	1.52	0.8	3.52
CUMBERLAND-1S-6-7-20190913	Cumberland-1S	6	7	Medium grained sand with silt	SP	3.3	16.1	80.6	0	36.6	1.69	0.6	17.48
Cumberland-2D-soil-49-50-0912	Cumberland-2D	49	50	Fine to medium grained sand	SP	1.3	-0.03	94.6	4.1	44.7	1.48	0.8	1.61
Cumberland-2S-soil-5-6-0912	Cumberland-2S	5	6	Fine grained clayey sand	SP-SM	7.8	14.8	77.4	0	40.7	1.57	0.7	19.12
Cumberland-3D-24-25-20190911	Cumberland-3D	24	25	Medium to coarse grained sand	SP-SM	1.2	6.7	91.2	1	47.3	1.4	0.9	2.43
Cumberland-4S-soil-5-6-0911	Cumberland-4S	5	6	Fine to medium grained sand	SP-SC	7.9	3.3	88.8	0	39	1.63	0.6	6.34
Cumberland-5D-54-55-20190911	Cumberland-5D	54	55	Fine grained sand	SP-SM	5.5	10.7	83.8	0	54.9	1.19	1.2	5.3
Robeson-1S-soil-15-16-20190909	Robeson-1S	15	16	Fine grained silty sand	SP-SM	2.6	7.1	90.3	0	41.9	1.55	0.7	2.53

Notes:

1. Laboratory results available as of 09/24/2019 are reported. Additional data will be presented in an addendum to this report.
2. "USCS Classification" is the Unified Soil Classification System from the standard practice outlined in ASTM D2487-17.
3. Coefficient of Uniformity (C_u) = D_{60} / D_{10}
4. Coefficient of Curvature (C_c) = $(D_{30})^2$ / (D_{60} * D_{10})
5. Hydraulic Conductivity (K) from grain size calculated using HydrogeoSieveXL (Devlin, 2015).
6. Atterberg limits (Liquid Limit and Plastic Limit) are only tested for fine-grained materials.
7. Visual descriptions are transcribed from field logs.
8. USCS classifications are derived from laboratory data.

-- not measured
% - percent
cc - cubic centimeter
NP - no plasticity
ft/d - feet per day
g - gram
USCS - Unified Soil Classification System
ft bgs - feet below ground surface
CH - fat clay
CL - lean clay
SC - clayey sand
SM - silty sand
SP - poorly graded sand
SW - well graded sand

TABLE A 7-4
OFFSITE SOIL CHARACTERISTICS
Chemours Fayetteville Works, North Carolina

Sample ID	Well ID	Top (ft bgs)	Bottom (ft bgs)	Visual Description	USCS Classification	Coefficient of Curvature (C_c)	K from Grain Size Geometric Mean (ft/d)	Lithologic Unit
BLADEN-1S-081419	Bladen-1S	6	7	Fine to medium grained Silty Sand	SC	3.26	4.24	Surficial Aquifer
BLADEN-2D-081519-72-73	Bladen-2D	72	73	Medium grained sand trace mica	SP-SM	3.03	13.33	Black Creek Aquifer
BLADEN-3D-Soil-081919-42-43	Bladen-3D	42	43	Sand with clay	SC	3.49	4.4	Black Creek Aquifer
Bladen-3S-Soil-082019-5-6	Bladen-3S	5	6	Coarse grained sand	SW	--	--	Surficial Aquifer
Bladen-4S-Soil-082119-5-6	Bladen-4S	5	6	Medium to coarse sand with gravel	SP-SM	2.22	12.8	Surficial Aquifer
CUMBERLAND-1D-46-47-20190912	Cumberland-1D	46	47	Fine Grained Sand	SP	1.8	26.35	Black Creek Aquifer
CUMBERLAND-1S-6-7-20190913	Cumberland-1S	6	7	Medium grained sand with silt	SP	5.57	5.96	Surficial Aquifer
Cumberland-2D-soil-49-50-0912	Cumberland-2D	49	50	Fine to medium grained sand	SP	1.06	128.36	Black Creek Aquifer
Cumberland-2S-soil-5-6-0912	Cumberland-2S	5	6	Fine grained clayey sand	SP-SM	6.85	4.42	Surficial Aquifer
Cumberland-3D-24-25-20190911	Cumberland-3D	24	25	Medium to coarse grained sand	SP-SM	1.19	88.21	Black Creek Aquifer
Cumberland-4S-soil-5-6-0911	Cumberland-4S	5	6	Fine to medium grained sand	SP-SC	3.38	7.81	Surficial Aquifer
Cumberland-5D-54-55-20190911	Cumberland-5D	54	55	Fine grained sand	SP-SM	2.69	5.5	Black Creek Aquifer
Robeson-1S-soil-15-16-20190909	Robeson-1S	15	16	Fine grained silty sand	SP-SM	1.56	18.18	Surficial Aquifer

Notes:

1. Laboratory results available as of 09/24/2019 are reported. Additional data will be presented in an addendum to this report.
2. "USCS Classification" is the Unified Soil Classification System from the standard practice outlined in ASTM D2487-17.
3. Coefficient of Uniformity (C_u) = D_{60} / D_{10}
4. Coefficient of Curvature (C_c) = $(D_{30})^2$ / (D_{60} * D_{10})
5. Hydraulic Conductivity (K) from grain size calculated using HydrogeoSieveXL (Devlin, 2015).
6. Atterberg limits (Liquid Limit and Plastic Limit) are only tested for fine-grained materials.
7. Visual descriptions are transcribed from field logs.
8. USCS classifications are derived from laboratory data.

-- not measured
% - percent
cc - cubic centimeter
NP - no plasticity
ft/d - feet per day
g - gram
USCS - Unified Soil Classification System
ft bgs - feet below ground surface
CH - fat clay
CL - lean clay
SC - clayey sand
SM - silty sand
SP - poorly graded sand
SW - well graded sand

TABLE A 7-5
OFFSITE SOIL ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Location	BLADEN-1S	BLADEN-1S	BLADEN-2S	BLADEN-3S
Field Sample ID	BLADEN-1S-081419	DUP-1-081419	BLADEN-2S-081619-9.5-10.5	Bladen-3S-Soil-082019-5-6
Sample Date	8/14/2019	8/14/2019	8/16/2019	8/20/2019
QA/QC	--	Field Duplicate	--	--
Vadose Zone Sample*	N	N	N	N
Depth (ft)	6-7	6-7	9.5-10.5	5-6
SDG	200-50099-2	200-50099-2	200-50148-2	200-50185-2
Lab Sample ID	200-50099-1	200-50099-2	200-50148-2	200-50185-2
Table 3+ Lab SOP (ng/kg)				
HFPO-DA (EPA Method 537 Mod)	<250	<250	<250	<250 UJ
PFMOAA	<1,000	<1,000	<1,000 UJ	<1,000
PFO2HxA	<1,000	<1,000	<1,000 UJ	<1,000
PFO3OA	<1,000	<1,000	<1,000 UJ	<1,000
PFO4DA	<1,000	<1,000	<1,000	<1,000
PFO5DA	<1,000	<1,000	<1,000	<1,000
PMPA	<1,000	<1,000	<1,000	<1,000
PEPA	<1,000	<1,000	<1,000	<1,000
PFESA-BP1	<1,000	<1,000	<1,000	<1,000
PFESA-BP2	<1,000	<1,000	<1,000	<1,000
Byproduct 4	<1,000 UJ	<1,000 UJ	<1,000 R	<1,000 R
Byproduct 5	<1,000 UJ	<1,000 UJ	<1,000 R	<1,000 R
Byproduct 6	<1,000	<1,000	<1,000	<1,000
NVHOS	<1,000	<1,000	<1,000	<1,000
EVE Acid	<1,000	<1,000	<1,000	<1,000
Hydro-EVE Acid	<1,000	<1,000	<1,000 UJ	<1,000
R-EVE	<1,000 R	<1,000 R	<1,000 R	<1,000 R
PES	<1,000	<1,000	<1,000	<1,000
PFECA B	<1,000	<1,000	<1,000 UJ	<1,000
PFECA-G	<1,000	<1,000	<1,000 UJ	<1,000
Other PFAS (ng/kg)				
10:2 Fluorotelomer sulfonate	<200 UJ	<200	<200	<200 UJ
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2,000	<2,000	<2,000	<2,000 UJ
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<2,000	<2,000	<2,000	<2,000 UJ
6:2 Fluorotelomer sulfonate	<2,000	<2,000	<2,000	<2,000 UJ
ADONA	<210	<210	<210	<210 UJ
F-53B Major	<200	<200	<200	<200 UJ
F-53B Minor	<200 UJ	<200	<200	<200 UJ
NaDONA	<210	<210	<210	<210 UJ
N-ethyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000	<2,000 UJ
N-methyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000	<2,000 UJ
Perfluorobutane Sulfonic Acid	<420	**340**	<200 UJ	<200 UJ
Perfluorobutanoic Acid	<200	<200	<200	<200 UJ
Perfluorodecane Sulfonic Acid	<200	<200	<200	<200 UJ
Perfluorodecanoic Acid	<200	<200	<200	<200 UJ
Perfluorododecane sulfonic acid (PFDoS)	<200 UJ	<200	<200	<200 UJ
Perfluorododecanoic Acid	<200	<200	<200	<200 UJ
Perfluoroheptane sulfonic acid (PFHpS)	<200	<200	<200	<200 UJ
Perfluoroheptanoic Acid	<200	<200	<200	<200 UJ
Perfluorohexadecanoic acid (PFHxDA)	<200	<200	<200	<200 UJ
Perfluorohexane Sulfonic Acid	<200	<200	<200	<200 UJ
Perfluorohexanoic Acid	<200	<200	<200	<200 UJ
Perfluorononanesulfonic acid	<200	<200	<200	<200 UJ
Perfluorononanoic Acid	<200	<200	<200	<200 UJ
Perfluorooctadecanoic acid	<200	<200	<200	<200 UJ
Perfluorooctane Sulfonamide	<200	<200	<200	<200 UJ
Perfluoropentane sulfonic acid (PFPeS)	<200	<200	<200	<200 UJ
Perfluoropentanoic Acid	<200	<200	<200	<200 UJ
Perfluorotetradecanoic Acid	<200	<200	<200	<200 UJ
Perfluorotridecanoic Acid	<200	<200	<200	<200 UJ
Perfluoroundecanoic Acid	<200	<200	<200	<200 UJ
PFOA	<200	<200	<200	<200 UJ
PFOS	<500	<500	<500	<500 UJ
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<200	<200	<200 UJ	<200 UJ
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<200	<200	<200 UJ	<200 UJ
N-ethylperfluoro-1-octanesulfonamide	<200	<200	<200	<200 UJ
N-methyl perfluoro-1-octanesulfonamide	<200	<200	<200	<200 UJ
Other				
Percent Moisture	20.3	11.3	12.2	8.7
Percent Solids	--	88.7	87.8	91.3

Notes:
1. Associated equipment blank and field blank results reported in Table 7-6.
2. * Select soil samples collected from saturated zone for soil physical parameters were also inadvertently analyzed for PFAS.

Bold - Analyte detected above associated reporting limit
EPA - Environmental Protection Agency
ft - feet
ng/kg - nanograms per kilogram
QA/QC - Quality assurance/ quality control
R - Result rejected based on QA/QC criteria
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.
-- - No data reported

TABLE A 7-5
OFFSITE SOIL ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Location	BLADEN-4S	CUMBERLAND-1S	CUMBERLAND-2S
Field Sample ID	**Bladen-4S-Soil-082119-5-6**	**CUMBERLAND-1S-6-7-20190913**	**Cumberland-2S-soil-5-6-0912**
Sample Date	**8/21/2019**	**9/13/2019**	**9/12/2019**
QA/QC	--	--	--
Vadose Zone Sample*	**N**	**N**	**N**
Depth (ft)	**5-6**	**6-7**	**5-6**
SDG	**200-50202-2**	**200-50567-2**	**200-50537-2**
Lab Sample ID	**200-50202-1**	**200-50567-2**	**200-50537-2**
Table 3+ Lab SOP (ng/kg)			
HFPO-DA (EPA Method 537 Mod)	<250	<250	<250
PFMOAA	<1,000	<1,000	<1,000 UJ
PFO2HxA	<1,000	<1,000	<1,000 UJ
PFO3OA	<1,000	<1,000	<1,000 UJ
PFO4DA	<1,000	<1,000	<1,000 UJ
PFO5DA	<1,000	<1,000	<1,000 UJ
PMPA	<1,000	<1,000	<1,000 UJ
PEPA	<1,000	<1,000	<1,000 UJ
PFESA-BP1	<1,000	<1,000	<1,000 UJ
PFESA-BP2	<1,000	<1,000	<1,000 UJ
Byproduct 4	<1,000	<1,000	<1,000 R
Byproduct 5	<1,000	<1,000	<1,000 UJ
Byproduct 6	<1,000	<1,000	<1,000 UJ
NVHOS	<1,000	<1,000	<1,000 UJ
EVE Acid	<1,000	<1,000	<1,000 UJ
Hydro-EVE Acid	<1,000	<1,000	<1,000 UJ
R-EVE	<1,000	<1,000	<1,000 UJ
PES	<1,000	<1,000	<1,000 UJ
PFECA B	<1,000	<1,000	<1,000 UJ
PFECA-G	<1,000	<1,000	<1,000 UJ
Other PFAS (ng/kg)			
10:2 Fluorotelomer sulfonate	<200	<200	<200
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2,000	<2,000	<2,000
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<2,000	<2,000	<2,000
6:2 Fluorotelomer sulfonate	<2,000	<2,000	<2,000
ADONA	<210	<210	<210
F-53B Major	<200	<200	<200
F-53B Minor	<200	<200	<200
NaDONA	<210	<210	<210
N-ethyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000
N-methyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000
Perfluorobutane Sulfonic Acid	<200	<200	<200
Perfluorobutanoic Acid	<200	<200	<200
Perfluorodecane Sulfonic Acid	<200	<200	<200
Perfluorodecanoic Acid	<200	<200	<200
Perfluorododecane sulfonic acid (PFDoS)	<200	<200	<200
Perfluorododecanoic Acid	<200	<200	<200
Perfluoroheptane sulfonic acid (PFHpS)	<200	<200	<200
Perfluoroheptanoic Acid	<200	<200	<200
Perfluorohexadecanoic acid (PFHxDA)	<200	<200	<200
Perfluorohexane Sulfonic Acid	<200	<200	<200
Perfluorohexanoic Acid	<200	<200	<200
Perfluorononanesulfonic acid	<200	<200	<200
Perfluorononanoic Acid	<200	<200	<200
Perfluorooctadecanoic acid	<200	<200	<200
Perfluorooctane Sulfonamide	<200	<200	<200
Perfluoropentane sulfonic acid (PFPeS)	<200	<200	<200
Perfluoropentanoic Acid	<200	<200	<200
Perfluorotetradecanoic Acid	<200	<200	<200
Perfluorotridecanoic Acid	<200	<200	<200
Perfluoroundecanoic Acid	<200	<200	<200
PFOA	<200	<200	<200
PFOS	<500	<500	<500
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<200	<200	<200
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<200	<200	<200
N-ethylperfluoro-1-octanesulfonamide	<200	<200	<200
N-methyl perfluoro-1-octanesulfonamide	<200	<200	<200
Other			
Percent Moisture	20.1	7.1	19.3
Percent Solids	--	--	--

Notes:
1. Associated equipment blank and field blank results reported in Table 7-6.
2. * Select soil samples collected from saturated zone for soil physical parameters were also inadvertently analyzed for PFAS.

Bold - Analyte detected above associated reporting limit
EPA - Environmental Protection Agency
ft - feet
ng/kg - nanograms per kilogram
QA/QC - Quality assurance/ quality control
R - Result rejected based on QA/QC criteria
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.
-- - No data reported

TABLE A 7-5
OFFSITE SOIL ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Location	CUMBERLAND-3S	CUMBERLAND-4S	CUMBERLAND-4S
Field Sample ID	Cumberland-3S-soil-6-7-0912	Cumberland-4S-soil-5-6-0911	Dup1-20190911
Sample Date	9/12/2019	9/11/2019	9/11/2019
QA/QC	--	--	Field Duplicate
Vadose Zone Sample*	N	N	N
Depth (ft)	6-7	5-6	5-6
SDG	200-50537-2	200-50518-2	200-50518-2
Lab Sample ID	200-50537-4	200-50518-1	200-50518-2
Table 3+ Lab SOP (ng/kg)			
HFPO-DA (EPA Method 537 Mod)	<320	**320**	**390**
PFMOAA	<1,000	<1,000	<1,000
PFO2HxA	<1,000	<1,000	<1,000
PFO3OA	<1,000	<1,000	<1,000
PFO4DA	<1,000	<1,000	<1,000
PFO5DA	<1,000	<1,000	<1,000
PMPA	<1,000	<1,000	<1,000
PEPA	<1,000	<1,000	<1,000
PFESA-BP1	<1,000	<1,000	<1,000
PFESA-BP2	<1,000	<1,000	<1,000
Byproduct 4	<1,000	<1,000 R	<1,000 R
Byproduct 5	<1,000	<1,000 R	<1,000 R
Byproduct 6	<1,000	<1,000	<1,000
NVHOS	<1,000	<1,000	<1,000
EVE Acid	<1,000	<1,000	<1,000
Hydro-EVE Acid	<1,000	<1,000	<1,000
R-EVE	<1,000	<1,000 R	<1,000 R
PES	<1,000	<1,000	<1,000
PFECA B	<1,000	<1,000	<1,000
PFECA-G	<1,000	<1,000	<1,000
Other PFAS (ng/kg)			
10:2 Fluorotelomer sulfonate	<200	<200	<200
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2,000	<2,000	<2,000
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<2,000	<2,000	<2,000
6:2 Fluorotelomer sulfonate	<2,000	<2,000	<2,000
ADONA	<210	<210	<210
F-53B Major	<200	<200	<200
F-53B Minor	<200	<200	<200
NaDONA	<210	<210	<210
N-ethyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000
N-methyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000
Perfluorobutane Sulfonic Acid	<200	<200	<200
Perfluorobutanoic Acid	<200	<200	<200
Perfluorodecane Sulfonic Acid	<200	<200	<200
Perfluorodecanoic Acid	<200	<200	<200
Perfluorododecane sulfonic acid (PFDoS)	<200	<200	<200
Perfluorododecanoic Acid	<200	<200	<200
Perfluoroheptane sulfonic acid (PFHpS)	<200	<200	<200
Perfluoroheptanoic Acid	<200	<200	<200
Perfluorohexadecanoic acid (PFHxDA)	<200	<200	<200
Perfluorohexane Sulfonic Acid	<200	<200	<200
Perfluorohexanoic Acid	<200	<200	<200
Perfluorononanesulfonic acid	<200	<200	<200
Perfluorononanoic Acid	<200	<200	<200
Perfluorooctadecanoic acid	<200	<200	<200
Perfluorooctane Sulfonamide	<200	<200	<200
Perfluoropentane sulfonic acid (PFPeS)	<200	<200	<200
Perfluoropentanoic Acid	<200	<200	<200
Perfluorotetradecanoic Acid	<200	<200	<200
Perfluorotridecanoic Acid	<200	<200	<200
Perfluoroundecanoic Acid	<200	<200	<200
PFOA	<200	<200	<200
PFOS	<500	<500	<500
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<200	<200	<200
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<200	<200	<200
N-ethylperfluoro-1-octanesulfonamide	<200	<200	<200
N-methyl perfluoro-1-octanesulfonamide	<200	<200	<200
Other			
Percent Moisture	3.7	14.3	16.1
Percent Solids	96.3	--	83.9

Notes:

1. Associated equipment blank and field blank results reported in Table 7-6.
2. * Select soil samples collected from saturated zone for soil physical parameters were also inadvertently analyzed for PFAS.

Bold - Analyte detected above associated reporting limit
EPA - Environmental Protection Agency
ft - feet
ng/kg - nanograms per kilogram
QA/QC - Quality assurance/ quality control
R - Result rejected based on QA/QC criteria
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.
-- - No data reported

TABLE A 7-5
OFFSITE SOIL ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Location	CUMBERLAND-5S	ROBESON-1S	ROBESON-1S
Field Sample ID	Cumberland-5S-3-4-20190911	Robeson-1S-soil-15-16-20190909	Robeson-1S-soil-5-6-20190909
Sample Date	9/11/2019	9/9/2019	9/9/2019
QA/QC	--	--	--
Vadose Zone Sample*	N	N	N
Depth (ft)	3-4	15-16	5-6
SDG	200-50518-2	200-50460-2	200-50460-2
Lab Sample ID	200-50518-4	200-50460-1	200-50460-2
Table 3+ Lab SOP (ng/kg)			
HFPO-DA (EPA Method 537 Mod)	<250	<250	<250
PFMOAA	<1,000	<1,000	<1,000 UJ
PFO2HxA	<1,000	<1,000	<1,000 UJ
PFO3OA	<1,000 UJ	<1,000	<1,000 UJ
PFO4DA	<1,000	<1,000	<1,000 UJ
PFO5DA	<1,000	<1,000	<1,000
PMPA	<1,000	<1,000	<1,000
PEPA	<1,000	<1,000	<1,000
PFESA-BP1	<1,000	<1,000	<1,000
PFESA-BP2	<1,000	<1,000	<1,000
Byproduct 4	<1,000	<1,000 R	<1,000 R
Byproduct 5	<1,000	<1,000 R	<1,000 R
Byproduct 6	<1,000	<1,000	<1,000
NVHOS	<1,000	<1,000	<1,000
EVE Acid	<1,000	<1,000	<1,000
Hydro-EVE Acid	<1,000	<1,000	<1,000
R-EVE	<1,000 UJ	<1,000 R	<1,000 R
PES	<1,000	<1,000	<1,000
PFECA B	<1,000	<1,000	<1,000 UJ
PFECA-G	<1,000	<1,000	<1,000 UJ
Other PFAS (ng/kg)			
10:2 Fluorotelomer sulfonate	<200	<200	<200
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2,000	<2,000	<2,000
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<2,000	<2,000	<2,000
6:2 Fluorotelomer sulfonate	<2,000	<2,000	<2,000
ADONA	<210	<210	<210
F-53B Major	<200	<200	<200
F-53B Minor	<200	<200	<200
NaDONA	<210	<210	<210
N-ethyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000
N-methyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000
Perfluorobutane Sulfonic Acid	<200	<200	<200
Perfluorobutanoic Acid	<200	<200	<200
Perfluorodecane Sulfonic Acid	<200	<200	<200
Perfluorodecanoic Acid	<200	<200	<200
Perfluorododecane sulfonic acid (PFDoS)	<200	<200	<200
Perfluorododecanoic Acid	<200	<200	<200
Perfluoroheptane sulfonic acid (PFHpS)	<200	<200	<200
Perfluoroheptanoic Acid	<200	<200	<200
Perfluorohexadecanoic acid (PFHxDA)	<200	<200	<200
Perfluorohexane Sulfonic Acid	<200	<200	<200
Perfluorohexanoic Acid	<200	<200	<200
Perfluorononanesulfonic acid	<200	<200	<200
Perfluorononanoic Acid	<200	<200	<200
Perfluorooctadecanoic acid	<200	<200	<200
Perfluorooctane Sulfonamide	<200	<200	<200
Perfluoropentane sulfonic acid (PFPeS)	<200	<200	<200
Perfluoropentanoic Acid	<200	<200	<200
Perfluorotetradecanoic Acid	<200	<200	<200
Perfluorotridecanoic Acid	<200	<200	<200
Perfluoroundecanoic Acid	<200	<200	<200
PFOA	<200	<200	<200
PFOS	<500	<500	<500
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<200	<1,000	<1,000
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<200	<1,000	<1,000
N-ethylperfluoro-1-octanesulfonamide	<200	<1,000	<1,000
N-methyl perfluoro-1-octanesulfonamide	<200	<1,000	<1,000
Other			
Percent Moisture	18.2	18.4 J	12.3
Percent Solids	81.8	--	87.7

Notes:

1. Associated equipment blank and field blank results reported in Table 7-6.
2. * Select soil samples collected from saturated zone for soil physical parameters were also inadvertently analyzed for PFAS.

Bold - Analyte detected above associated reporting limit
EPA - Environmental Protection Agency
ft - feet
ng/kg - nanograms per kilogram
QA/QC - Quality assurance/ quality control
R - Result rejected based on QA/QC criteria
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.
-- - No data reported

TABLE A 7-6
OFFSITE SOIL ANALYTICAL RESULTS - QUALITY CONTROL SAMPLES
Chemours Fayetteville Works, North Carolina

Location	EB	EQBLK	FBLK	FBLK
Field Sample ID	BLADEN-2S-SOIL-EQBLK-RINSATE	BLADEN-SOIL-EQBLK-1-RINSATE	BLADEN-SOIL-EQBLK-1-FIELD	BLADEN-2S-SOIL-EQBLK-FIELD BLA
Sample Date	8/16/2019	8/14/2019	8/14/2019	8/16/2019
QA/QC	Equipment Blank	Equipment Blank	Field Blank	Field Blank
Depth (ft)	--	--	--	--
SDG	200-50148-2	200-50099-2	200-50099-2	200-50148-2
Lab Sample ID	200-50148-4	200-50099-3	200-50099-4	200-50148-3
Table 3+ Lab SOP (ng/L)				
HFPO-DA (EPA Method 537 Mod)	<4	<4	<4	<4
PFMOAA	<5	<5	<5	<5
PFO2HxA	<2	<2	<2	<2
PFO3OA	<2	<2	<2	<2
PFO4DA	<2	<2	<2	<2
PFO5DA	<2	<2	<2	<2
PMPA	<10	<10	<10	<10
PEPA	<20	<20	<20	<20
PFESA-BP1	<2	<2	<2	<2
PFESA-BP2	<2	<2	<2	<2
Byproduct 4	<2	<2	<2	<2
Byproduct 5	<2	<2	<2	<2
Byproduct 6	<2	<2	<2	<2
NVHOS	<2	<2	<2	<2
EVE Acid	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2
R-EVE	<2	<2	<2	<2
PES	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	<2	<2	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<4	<4
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20
ADONA	<2.1	<2.1	<2.1	<2.1
F-53B Major	<2	<2	<2	<2
F-53B Minor	<2	<2	<2	<2
NaDONA	<2.1	<2.1	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2
Perfluorobutanoic Acid	<2	<2	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	**2.5**
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2
Perfluoroheptanoic Acid	<2	<2	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<2	<2
Perfluorohexane Sulfonic Acid	<2	<2	<2	<2
Perfluorohexanoic Acid	<2	<2	<2	<2
Perfluorononanesulfonic acid	<2	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2
Perfluoropentanoic Acid	<2	<2	<2	<2
Perfluorotetradecanoic Acid	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2
PFOA	<2	<2	<2	<2
PFOS	<2	<2	<2	<2
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--

Notes:
1. Associated soil analytical results reported in Table 7-5.
Bold - Analyte detected above associated reporting limit
EPA - Environmental Protection Agency
ft - feet
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.
-- - No data reported

TABLE A 9-1
GROUNDWATER ELEVATIONS
Chemours Fayetteville Works, North Carolina

Area	Aquifer	Well ID	Gauging Date	Northing (ft, SPCS NAD83)	Easting (ft, SPCS NAD83)	Screened Interval (ft bgs)	TOC Elevation (ft NAVD 88)	Depth to Water (ft, from TOC)	Groundwater Elevation (ft NAVD88)
Onsite	Black Creek Aquifer	BCA-01	15-Oct-19	399,780.06	2,050,662.22	91 - 101	146.30	58.92	87.38
Onsite	Black Creek Aquifer	BCA-02	15-Oct-19	396,242.32	2,051,062.21	92 - 102	148.42	73.87	74.55
Onsite	Black Creek Aquifer	BCA-03R	15-Oct-19	398,582.23	2,049,522.22	88 - 98	150.82	49.55	101.27
Onsite	Black Creek Aquifer	BCA-04	15-Oct-19	395,877.67	2,047,823.11	94 - 104	150.24	28.69	121.55
Onsite	Perched Zone	FTA-01	15-Oct-19	397,907.50	2,049,373.61	12.0 - 22.0	150.63	17.02	133.61
Onsite	Perched Zone	FTA-02	15-Oct-19	397,786.43	2,049,206.27	11.5 - 21.5	150.28	18.00	132.28
Onsite	Perched Zone	FTA-03	15-Oct-19	397,767.09	2,049,313.86	12.0 - 22.0	151.08	18.18	132.90
Onsite	Surficial Aquifer	INSITU-01	15-Oct-19	401,658.20	2,046,077.31	7.0 - 17.0	118.20	6.46	111.74
Onsite	Surficial Aquifer	INSITU-02	15-Oct-19	401,863.46	2,049,136.62	7.0 - 17.0	113.12	DRY	--
Onsite	Floodplain Deposits	LTW-01	15-Oct-19	399,566.17	2,052,149.95	11.0 - 26.0	53.83	16.53	37.30
Onsite	Black Creek Aquifer	LTW-02	15-Oct-19	398,848.36	2,052,354.37	28.0 - 38.0	52.48	10.29	42.19
Onsite	Floodplain Deposits	LTW-03	15-Oct-19	398,115.15	2,052,557.52	15.0 - 30.0	52.91	13.20	39.71
Onsite	Floodplain Deposits	LTW-04	15-Oct-19	397,280.24	2,052,583.60	12.0 - 27.0	51.86	9.31	42.55
Onsite	Black Creek Aquifer	LTW-05	15-Oct-19	396,430.68	2,052,738.06	29.0 - 44.0	52.01	9.66	42.35
Onsite	Perched Zone	MW-11	15-Oct-19	396,544.40	2,049,051.06	11.5 - 21.5	148.53	23.40	125.13
Onsite	Perched Zone	MW-12S	15-Oct-19	397,253.60	2,049,273.89	17.5 - 22.5	152.06	20.45	131.61
Onsite	Surficial Aquifer	MW-13D	15-Oct-19	397,119.02	2,049,821.12	57 - 67	148.65	44.32	104.33
Onsite	Surficial Aquifer	MW-14D	15-Oct-19	396,974.49	2,049,074.56	62 - 72	149.73	40.06	109.67
Onsite	Surficial Aquifer	MW-15DRR	15-Oct-19	398,580.71	2,049,511.75	52.5 - 62.5	150.92	47.55	103.37
Onsite	Surficial Aquifer	MW-16D	15-Oct-19	398,493.70	2,048,402.84	72 - 82	148.41	35.39	113.02
Onsite	Surficial Aquifer	MW-17D	15-Oct-19	398,401.74	2,047,366.50	57 - 67	146.12	29.03	117.09
Onsite	Surficial Aquifer	MW-18D	15-Oct-19	400,947.38	2,046,574.72	50 - 60	107.57	20.29	87.28
Onsite	Surficial Aquifer	MW-19D	15-Oct-19	401,151.33	2,048,272.99	46 - 56	139.55	51.31	88.24
Onsite	Perched Zone	MW-1S	15-Oct-19	397,080.31	2,049,120.73	21.0-24.0	149.93	19.24	130.69
Onsite	Surficial Aquifer	MW-20D	15-Oct-19	400,791.28	2,048,733.91	65 - 75	137.18	47.67	89.51
Onsite	Surficial Aquifer	MW-21D	15-Oct-19	399,501.70	2,047,074.96	72 - 82	151.38	45.67	105.71
Onsite	Surficial Aquifer	MW-22D	15-Oct-19	398,518.18	2,048,362.68	52 - 72	149.06	35.24	113.82
Onsite	Perched Zone	MW-23	15-Oct-19	396,237.61	2,051,063.25	9.5 - 14.5	148.34	14.41	133.93
Onsite	Perched Zone	MW-24	15-Oct-19	397,303.94	2,048,767.69	18.8 - 23.8	150.31	NM	--
Onsite	Perched Zone	MW-25	15-Oct-19	396,753.37	2,050,989.82	12 - 17	147.59	14.30	133.29
Onsite	Perched Zone	MW-26	15-Oct-19	396,265.18	2,051,484.67	5 - 10	147.70	11.71	135.99
Onsite	Perched Zone	MW-27	15-Oct-19	396,010.33	2,051,472.00	10 - 15	146.83	14.84	131.99
Onsite	Perched Zone	MW-28	15-Oct-19	395,719.79	2,051,165.93	9 - 14	144.70	14.50	130.20
Onsite	Perched Zone	MW-2S	15-Oct-19	396,934.75	2,049,321.85	19.0 - 23.0	149.91	19.55	130.36
Onsite	Perched Zone	MW-30	15-Oct-19	397,340.79	2,050,776.09	10 - 15	147.67	14.66	133.01
Onsite	Perched Zone	MW-31	15-Oct-19	396,390.50	2,049,622.88	17-22	147.70	15.72	131.98
Onsite	Perched Zone	MW-32	15-Oct-19	396,359.58	2,049,651.79	13-18.5	147.11	14.75	132.36
Onsite	Perched Zone	MW-33	15-Oct-19	396,337.51	2,049,678.56	12-17	146.82	14.26	132.56
Onsite	Perched Zone	MW-34	15-Oct-19	396,352.90	2,049,619.09	17-22	147.97	15.78	132.19
Onsite	Perched Zone	MW-35	15-Oct-19	396,332.94	2,049,631.16	14-19	147.54	15.25	132.29
Onsite	Perched Zone	MW-36	15-Oct-19	396,320.09	2,049,651.17	12-17	147.89	15.81	132.08
Onsite	Perched Zone	MW-7S	15-Oct-19	397,444.52	2,049,809.73	NA	147.47	11.36	136.11
Onsite	Perched Zone	MW-8S	15-Oct-19	397,096.48	2,049,867.77	NA	146.48	DRY	--
Onsite	Perched Zone	MW-9S	15-Oct-19	396,760.16	2,049,734.30	17.5-22.5	154.39	21.58	132.81
Onsite	Perched Zone	NAF-01	15-Oct-19	398,349.77	2,050,338.81	5.0-15.0	149.66	10.25	139.41
Onsite	Perched Zone	NAF-02	15-Oct-19	398,662.80	2,050,640.86	5.0-15.0	150.31	10.88	139.43
Onsite	Perched Zone	NAF-03	15-Oct-19	398,580.65	2,050,755.43	5.0-15.0	150.44	NM	--
Onsite	Perched Zone	NAF-04	15-Oct-19	398,447.00	2,050,718.95	5.0-15.0	148.10	8.11	139.99
Onsite	Perched Zone	NAF-05A	15-Oct-19	398,641.22	2,051,024.85	NA	NA	exclusion zone	--
Onsite	Surficial Aquifer	NAF-05B	15-Oct-19	398,660.23	2,051,021.81	NA	NA	exclusion zone	--
Onsite	Perched Zone	NAF-06	15-Oct-19	398,809.66	2,050,911.91	2.75 - 12.75	146.43	11.95	134.48
Onsite	Perched Zone	NAF-07	15-Oct-19	398,899.33	2,050,616.50	5.5 - 15.5	149.69	10.77	138.92
Onsite	Perched Zone	NAF-08A	15-Oct-19	398,097.99	2,050,886.62	5.0 - 15.0	148.82	10.28	138.54
Onsite	Surficial Aquifer	NAF-08B	15-Oct-19	398,095.64	2,050,879.94	43.5 - 53.5	148.86	52.87	95.99
Onsite	Perched Zone	NAF-09	15-Oct-19	397,711.09	2,050,806.52	7.0 - 17.0	149.29	12.91	136.38
Onsite	Perched Zone	NAF-10	15-Oct-19	397,612.57	2,050,423.15	8.25 - 18.25	150.00	14.24	135.76
Onsite	Perched Zone	NAF-11A	15-Oct-19	398,909.29	2,050,999.92	2.5 - 7.5	140.59	10.01	130.58
Onsite	Surficial Aquifer	NAF-11B	15-Oct-19	398,911.13	2,050,995.88	33.5 - 43.5	140.74	46.50	94.24
Onsite	Perched Zone	NAF-12	15-Oct-19	398,270.56	2,050,777.49	18 - 23	145.93	NM	--
Onsite	Perched Zone	NAF-13	15-Oct-19	398,370.49	2,051,260.72	11 - 16	152.29	17.35	134.94
Onsite	Black Creek Aquifer	PIW-10DR	15-Oct-19	395,093.99	2,052,297.30	53 - 58	75.91	14.63	61.28
Onsite	Surficial Aquifer	PIW-10S	15-Oct-19	395,104.67	2,052,297.04	7 - 17	76.45	18.79	57.66
Onsite	Surficial Aquifer	PIW-1D	15-Oct-19	400,547.77	2,051,801.42	24.5 - 29.5	52.33	19.52	32.81
Onsite	Floodplain Deposits	PIW-1S	15-Oct-19	400,540.61	2,051,792.59	7.8 - 17.8	54.20	21.61	32.59
Onsite	Black Creek Aquifer	PIW-2D	15-Oct-19	399,922.75	2,051,317.64	40 - 50	100.85	36.30	64.55
Onsite	Black Creek Aquifer	PIW-3D	15-Oct-19	399,711.75	2,052,088.80	19 - 24	53.32	17.51	35.80
Onsite	Black Creek Aquifer	PIW-4D	15-Oct-19	398,817.36	2,052,102.82	32.3 - 37.3	53.04	11.36	41.68
Onsite	Surficial Aquifer	PIW-5S	15-Oct-19	398,520.38	2,051,951.26	9.8 - 19.8	75.19	14.73	60.46
Onsite	Floodplain Deposits	PIW-6S	15-Oct-19	398,118.14	2,052,540.57	18 - 28	53.36	14.76	38.60
Onsite	Black Creek Aquifer	PIW-7D	15-Oct-19	396,787.69	2,052,595.37	29 - 34	48.60	5.91	42.69
Onsite	Floodplain Deposits	PIW-7S	15-Oct-19	396,787.00	2,052,589.49	7 - 17	48.39	5.88	42.51
Onsite	Black Creek Aquifer	PIW-8D	15-Oct-19	396,403.38	2,052,682.02	35.5 - 45.5	48.52	7.41	41.11
Onsite	Black Creek Aquifer	PIW-9D	15-Oct-19	396,155.97	2,052,250.91	40 - 45	79.53	37.45	42.08
Onsite	Surficial Aquifer	PIW-9S	15-Oct-19	396,148.11	2,052,251.10	24.8 - 29.8	79.53	30.47	49.06
Onsite	Perched Zone	PW-01	15-Oct-19	399,064.80	2,049,654.30	11 - 21	149.55	16.00	133.55
Onsite	Surficial Aquifer	PW-02	15-Oct-19	399,779.06	2,050,649.47	50 - 60	146.43	56.38	90.05
Onsite	Surficial Aquifer	PW-03	15-Oct-19	397,339.81	2,050,765.32	35 - 45	147.97	42.40	105.57
Onsite	Surficial Aquifer	PW-04	15-Oct-19	394,659.55	2,050,940.66	17 - 27	97.75	27.85	69.90
Onsite	Surficial Aquifer	PW-05	15-Oct-19	395,873.10	2,047,812.93	65 - 75	150.34	29.09	121.25
Onsite	Surficial Aquifer	PW-06	15-Oct-19	392,868.00	2,045,288.77	19 - 29	147.69	19.50	128.19
Onsite	Surficial Aquifer	PW-07	15-Oct-19	390,847.71	2,049,258.26	28 - 38	148.16	39.49	108.67
Onsite	Black Creek Aquifer	PW-09	15-Oct-19	401,997.39	2,048,980.54	44 - 54	77.49	25.25	52.24
Onsite	Black Creek Aquifer	PW-10R	15-Oct-19	398,516.12	2,051,936.59	57 - 67	75.90	27.76	48.15
Onsite	Black Creek Aquifer	PW-11	15-Oct-19	394,354.36	2,052,226.72	53 - 63	73.26	33.66	39.60
Onsite	Black Creek Aquifer	PW-12	15-Oct-19	399,500.45	2,047,063.51	109 - 119	150.61	57.96	92.65
Onsite	Black Creek Aquifer	PW-13	15-Oct-19	397,584.26	2,048,029.18	120 - 130	149.36	29.57	119.79
Onsite	Black Creek Aquifer	PW-14	15-Oct-19	397,325.65	2,050,766.36	136 - 146	147.97	61.11	86.86
Onsite	Black Creek Aquifer	PW-15R	15-Oct-19	398,900.88	2,051,011.75	110 - 120	136.14	59.18	76.96
Onsite	Perched Zone	PZ-11	15-Oct-19	398,646.25	2,049,820.94	15 - 20	151.03	14.01	137.02
Onsite	Perched Zone	PZ-12	15-Oct-19	399,094.96	2,048,981.78	15.1 - 20.1	150.91	20.17	130.74
Onsite	Perched Zone	PZ-13	15-Oct-19	397,708.07	2,050,991.73	7.1 - 12.1	149.20	12.47	136.73
Onsite	Perched Zone	PZ-14	15-Oct-19	397,589.92	2,050,618.27	9.0 - 14.0	148.38	16.26	132.12
Onsite	Perched Zone	PZ-15	15-Oct-19	396,805.09	2,050,112.02	10.2 - 15.2	148.79	13.67	135.12
Onsite	Perched Zone	PZ-17	15-Oct-19	396,614.82	2,048,872.69	21.1 - 26.1	150.08	28.27	121.81
Onsite	Perched Zone	PZ-19R	15-Oct-19	397,998.66	2,049,919.52	16 - 21	150.05	14.51	135.54
Onsite	Perched Zone	PZ-20R	15-Oct-19	398,185.81	2,049,784.60	15 - 20	151.29	15.82	135.47
Onsite	Perched Zone	PZ-21R	15-Oct-19	398,445.16	2,049,883.13	17 - 22	150.67	14.45	136.22
Onsite	Black Creek Aquifer	PZ-22	15-Oct-19	397,272.80	2,052,584.04	36.0 - 46.0	51.81	7.75	44.06

TABLE A 9-1
GROUNDWATER ELEVATIONS
Chemours Fayetteville Works, North Carolina

Area	Aquifer	Well ID	Gauging Date	Northing (ft, SPCS NAD83)	Easting (ft, SPCS NAD83)	Screened Interval (ft bgs)	TOC Elevation (ft NAVD 88)	Depth to Water (ft, from TOC)	Groundwater Elevation (ft NAVD88)
Onsite	Perched Zone	PZ-24	15-Oct-19	396,117.94	2,050,744.07	11 - 16	147.53	14.17	133.36
Onsite	Perched Zone	PZ-25	15-Oct-19	396,753.94	2,050,991.05	14 - 19	147.59	21.35	126.24
Onsite	Perched Zone	PZ-26	15-Oct-19	396,059.78	2,050,382.35	11 - 16	147.70	12.90	134.80
Onsite	Perched Zone	PZ-27	15-Oct-19	395,922.11	2,050,376.76	12 - 17	147.17	13.20	133.97
Onsite	Perched Zone	PZ-28	15-Oct-19	396,304.55	2,049,933.79	13 - 18	148.64	13.50	135.14
Onsite	Perched Zone	PZ-29	15-Oct-19	396,371.49	2,049,768.94	13 - 18	147.74	14.45	133.29
Onsite	Perched Zone	PZ-31	15-Oct-19	396,428.73	2,049,594.36	14 - 19	148.00	17.30	130.70
Onsite	Perched Zone	PZ-32	15-Oct-19	396,418.47	2,049,713.79	13 - 18	148.47	15.31	133.16
Onsite	Perched Zone	PZ-33	15-Oct-19	396,308.92	2,049,707.66	12.5 - 17.5	146.72	14.00	132.72
Onsite	Perched Zone	PZ-34	15-Oct-19	396,292.05	2,049,595.04	13.5 - 18.5	147.70	15.81	131.88
Onsite	Perched Zone	PZ-35	15-Oct-19	398,232.64	2,050,020.49	13 - 18	150.43	14.11	136.32
Onsite	Surficial Aquifer	SMW-01	15-Oct-19	395,295.75	2,043,679.19	5.0 - 15.0	136.81	13.30	123.51
Onsite	Perched Zone	SMW-02	15-Oct-19	399,983.75	2,050,654.77	5.0 - 20.0	147.93	15.98	131.95
Onsite	Surficial Aquifer	SMW-02B	15-Oct-19	399,983.48	2,050,660.48	43.0 - 53.0	145.21	DRY	--
Onsite	Perched Zone	SMW-03	15-Oct-19	399,778.25	2,049,445.96	10.0 - 20.0	151.09	DRY	--
Onsite	Black Creek Aquifer	SMW-03B	15-Oct-19	399,785.75	2,049,421.54	72 - 82	150.43	57.03	93.40
Onsite	Perched Zone	SMW-04A	15-Oct-19	399,668.71	2,048,387.57	19.5 - 34.5	148.09	37.11	110.98
Onsite	Surficial Aquifer	SMW-04B	15-Oct-19	399,667.12	2,048,390.30	43.0 - 53.0	148.37	45.43	102.94
Onsite	Perched Zone	SMW-05	15-Oct-19	399,334.07	2,048,557.33	10.0 - 20.0	148.10	23.05	125.05
Onsite	Surficial Aquifer	SMW-05P	15-Oct-19	399,338.61	2,048,559.26	45.0 - 60.0	149.32	44.01	105.31
Onsite	Perched Zone	SMW-06	15-Oct-19	399,172.35	2,048,759.48	12.0 - 22.0	150.97	24.93	126.04
Onsite	Surficial Aquifer	SMW-06B	15-Oct-19	399,144.74	2,048,764.94	58 - 68	150.32	47.17	103.15
Onsite	Perched Zone	SMW-07	15-Oct-19	398,932.91	2,048,611.16	13.0 - 23.0	147.64	19.66	127.98
Onsite	Perched Zone	SMW-08	15-Oct-19	399,064.97	2,048,468.78	21.0 - 31.0	151.02	DRY	--
Onsite	Surficial Aquifer	SMW-08B	15-Oct-19	399,058.33	2,048,478.84	58 - 68	148.81	40.52	108.29
Onsite	Surficial Aquifer	SMW-09	15-Oct-19	401,076.89	2,050,017.41	52 - 62	141.43	56.23	85.20
Onsite	Black Creek Aquifer	SMW-10	15-Oct-19	402,307.31	2,047,923.84	39 - 49	76.26	29.57	46.69
Onsite	Surficial Aquifer	SMW-11	15-Oct-19	401,996.15	2,048,975.38	13 - 23	71.95	14.08	57.87
Onsite	Black Creek Aquifer	SMW-12	15-Oct-19	401,314.20	2,051,007.22	88 - 98	118.22	84.78	33.44
Offsite	Black Creek Aquifer	Bladen-1D	15-Oct-19	387,519.56	2,050,248.83	37 - 47	81.52	19.72	61.80
Offsite	Surficial Aquifer	Bladen-1S	15-Oct-19	387,516.28	2,050,234.78	5 - 10	81.31	10.14	71.17
Offsite	Black Creek Aquifer	Bladen-2D	15-Oct-19	368,824.41	2,042,879.78	70 - 75	142.85	20.50	122.35
Offsite	Surficial Aquifer	Bladen-2S	15-Oct-19	368,818.78	2,042,884.35	10 - 20	142.62	6.99	135.63
Offsite	Black Creek Aquifer	Bladen-3D	15-Oct-19	396,854.29	2,059,007.99	33.75 - 43.75	79.09	10.32	68.77
Offsite	Surficial Aquifer	Bladen-3S	15-Oct-19	396,859.62	2,059,014.36	5 - 15	78.84	9.51	69.33
Offsite	Black Creek Aquifer	Bladen-4D	15-Oct-19	363,252.43	2,087,638.29	46.75 - 51.75	64.23	1.43	62.80
Offsite	Surficial Aquifer	Bladen-4S	15-Oct-19	363,260.51	2,087,638.88	4.75 - 14.75	64.26	5.84	58.42
Offsite	Black Creek Aquifer	Cumberland-1D	15-Oct-19	431,477.66	2,011,002.07	40 - 50	179.18	7.27	171.91
Offsite	Surficial Aquifer	Cumberland-1S	15-Oct-19	431,477.66	2,011,002.07	15 - 25	179.41	7.16	172.25
Offsite	Black Creek Aquifer	Cumberland-2D	15-Oct-19	450,054.48	2,074,001.35	47 - 57	133.79	5.68	128.11
Offsite	Surficial Aquifer	Cumberland-2S	15-Oct-19	450,054.48	2,074,001.35	7 - 17	133.61	5.91	127.70
Offsite	Black Creek Aquifer	Cumberland-3D	15-Oct-19	423,131.53	2,060,380.35	22 - 27	83.34	8.17	75.17
Offsite	Surficial Aquifer	Cumberland-3S	15-Oct-19	423,131.53	2,060,380.35	9 - 14	83.62	8.73	74.89
Offsite	Black Creek Aquifer	Cumberland-4D	15-Oct-19	413,160.26	2,078,233.75	57 - 67	123.79	13.82	109.97
Offsite	Surficial Aquifer	Cumberland-4S	15-Oct-19	413,160.26	2,078,233.75	10 - 20	123.93	7.51	116.42
Offsite	Black Creek Aquifer	Cumberland-5D	15-Oct-19	405,673.82	2,138,069.54	52 - 57	106.67	8.38	98.29
Offsite	Surficial Aquifer	Cumberland-5S	15-Oct-19	405,673.82	2,138,069.54	14 - 24	106.65	4.77	101.88
Offsite	Black Creek Aquifer	Robeson-1D	15-Oct-19	381,338.72	2,020,239.81	42.75 - 52.75	160.93	13.74	147.19
Offsite	Surficial Aquifer	Robeson-1S	15-Oct-19	381,338.72	2,020,239.81	17 - 27	161.22	18.15	143.07

Notes:

1. Area - refers to location of well within site property boundary (“Onsite”) and outside property boundary (“Offsite”)
2. Aquifer - refers to primary aquifer unit well screen is estimated to be screened within
3. DRY - Water levels could not be calculated because well was dry.
4. NM - Not Measured. Water levels were not measured because well location was not accessible at the time of measurement due to well located within the "blast zone" or well was pumping (NAF-03, NAF-12 and M
5. -- - Groundwater elevation data not available because well was either dry, not accessible or was pumping at the time of measurement
6. NAF-05A and NAF-05B located in exclusion zone - Well location not safely accessible at the time of measurement.
7. Water levels were measured during a single synoptic event over a continuous 24-hour period.
8. Survey completed by Freeland-Clinkscales & Associates of NC.
9. Northing and Easting provided in North Carolina State Plane System (zone 3200), North American Datum 1983.
10. Vertical datum is North American Vertical Datum of 1988.

ft bgs - feet below ground surface
NAVD88 - North American Vertical Datum of 1988
TOC - Top of Casing
ft SPCS NAD83 - feet State Plane Coordinate System, North American Datum of 1983

TABLE A 9-2
VERTICAL GRADIENTS
Chemours Fayetteville Works, North Carolina

	Aquifer	Well Pair ID	Well ID	Gauging Date	Northing (NAD 83)	Easting (NAD 83)	Screened Interval (ft bgs)	Ground Elevation (ft NAVD88)	TOC Elevation (ft NAVD88)	Shallow/Deep	Groundwater Elevation (ft-NAVD88)	Vertical Gradient (feet/feet)	Direction
Perched / Surficial	Perched Zone	WP1	NAF-11A	10/15/2019	398,909.29	2,050,999.92	2.5 - 7.5	137.55	140.59	s	130.58	36.34	Downward
	Surficial Aquifer		NAF-11B	10/15/2019	398,911.13	2,050,995.88	33.5 - 43.5	137.55	140.74	d	94.24		(NAF-11A to NAF-11B)
	Perched Zone	WP2	SMW-06	10/15/2019	399,172.35	2,048,759.48	12.0 - 22.0	147.92	150.97	s	126.04	22.89	Downward
	Surficial Aquifer		SMW-06B	10/15/2019	399,144.74	2,048,764.94	58.0 - 68.0	NA	150.32	d	103.15		(SMW-06 to SMW-06B)
	Perched Zone	WP3	SMW-04A	10/15/2019	399,668.71	2,048,387.57	19.5 - 34.5	145.46	148.09	s	110.98	8.04	Downward
	Surficial Aquifer		SMW-04B	10/15/2019	399,667.12	2,048,390.30	43.0 - 53.0	145.18	148.37	d	102.94		(SMW-04A to SMW-04B)
	Perched Zone	WP4	SMW-05	10/15/2019	399,334.07	2,048,557.33	10.0 - 20.0	144.17	148.10	s	125.05	19.74	Downward
	Surficial Aquifer		SMW-05P	10/15/2019	399,338.61	2,048,559.26	45.0 - 60.0	146.06	149.32	d	105.31		(SMW-05 to SMW-05P)
	Perched Zone	WP5	MW-30	10/15/2019	397,340.79	2,050,776.09	10 - 15	144.95	147.67	s	133.01	27.44	Downward
	Surficial Aquifer		PW-03	10/15/2019	397,339.81	2,050,765.32	35 - 45	144.97	147.97	d	105.57		(MW-30 to PW-03)
	Perched Zone	WP6	NAF-08A	10/15/2019	398,097.99	2,050,886.62	5.0 - 15.0	145.54	148.82	s	138.54	42.55	Downward
	Surficial Aquifer		NAF-08B	10/15/2019	398,095.64	2,050,879.94	43.5 - 53.5	145.62	148.86	d	95.99		(NAF-08A to NAF-08B)
Perched / Black Creek	Perched Zone	WP7	MW-23	10/15/2019	396,233.43	2,051,061.52	9.5 - 14.5	145.17	148.34	s	133.93	59.38	Downward
	Black Creek Aquifer		BCA-02	10/15/2019	396,242.32	2,051,062.21	92.0 - 102.0	145.20	148.42	d	74.55		(MW-23 to BCA-02)
Surficial / Black Creek	Surficial Aquifer	WP8	PIW-9S	10/15/2019	396,148.11	2,052,251.10	24.75 - 29.75	76.80	79.53	s	49.06	6.98	Downward
	Black Creek Aquifer		PIW-9D	10/15/2019	396,155.97	2,052,250.91	40.0 - 45.0	76.75	79.53	d	42.08		(PIW-9S to PIW-9D)
	Surficial Aquifer	WP9	PIW-10S	10/15/2019	395,104.67	2,052,297.04	7.0 - 17.0	73.30	76.45	s	57.66	-3.62	Upward
	Black Creek Aquifer		PIW-10DR	10/15/2019	395,098.79	2,052,293.84	53.0 - 58.0	73.34	75.91	d	61.28		(PIW-10S to PIW-10DR)
	Surficial Aquifer	WP10	PIW-5S	10/15/2019	398,520.38	2,051,951.26	9.8 - 19.8	72.68	75.19	s	60.46	12.31	Downward
	Black Creek Aquifer		PW-10R	10/15/2019	398,516.12	2,051,936.59	57 - 67	73.28	75.90	d	48.15		(PIW-5S to PW-10R)
	Surficial Aquifer	WP11	PW-02	10/15/2019	399,779.06	2,050,649.47	50 - 60	143.76	146.43	s	90.05	2.67	Downward
	Black Creek Aquifer		BCA-01	10/15/2019	399,780.06	2,050,662.22	91 - 101	143.26	146.30	d	87.38		(PW-02 to BCA-01)
	Surficial Aquifer	WP12	SMW-11	10/15/2019	401,996.15	2,048,975.38	13 - 23	69.04	71.95	s	57.87	5.63	Downward
	Black Creek Aquifer		PW-09	10/15/2019	401,997.39	2,048,980.54	44 - 54	74.76	77.49	d	52.24		(SMW-11 to PW-09)
	Surficial Aquifer	WP13	MW-21D	10/15/2019	399,501.70	2,047,074.96	72 - 82	148.05	151.38	s	105.71	13.06	Downward
	Black Creek Aquifer		PW-12	10/15/2019	399,500.45	2,047,063.51	109 - 119	148.31	150.61	d	92.65		(MW-21D to PW-12)
	Surficial Aquifer	WP14	PW-05	10/15/2019	395,873.10	2,047,812.93	65 - 75	147.16	150.34	s	121.25	-0.30	Upward
	Black Creek Aquifer		BCA-04	10/15/2019	395,877.67	2,047,823.11	94 - 104	147.07	150.24	d	121.55		(BCA-04 to PW-05)
	Surficial Aquifer	WP15	PW-03	10/15/2019	397,339.81	2,050,765.32	35 - 45	144.97	147.97	s	105.57	18.71	Downward
	Black Creek Aquifer		PW-14	10/15/2019	397,325.65	2,050,766.36	136 - 146	145.13	147.97	d	86.86		(PW-03 to PW-14)
Floodplain / Surficial	Floodplain	WP16	PIW-1S	10/15/2019	400,540.61	2,051,792.59	7.8 - 17.8	50.78	54.20	s	32.59	-0.22	Upward
	Surficial Aquifer		PIW-1D	10/15/2019	400,547.77	2,051,801.42	24.5 - 29.5	49.53	52.33	d	32.81		(PIW-1S to PIW-1D)
Floodplain/ Black Creek	Floodplain	WP17	PIW-7S	10/15/2019	396,787.00	2,052,589.49	7.0 - 17.0	45.81	48.39	s	42.51	-0.18	Upward
	Black Creek Aquifer		PIW-7D	10/15/2019	396,787.69	2,052,595.37	29.0 - 34.0	45.78	48.60	d	42.69		(PIW-7S to PIW-7D)
	Floodplain	WP18	LTW-04	10/15/2019	397,280.24	2,052,583.60	12.0 - 27.0	49.34	51.86	s	42.55	-1.51	Upward
	Black Creek Aquifer		PZ-22	10/15/2019	397,272.80	2,052,584.04	36.0 - 46.0	49.03	51.81	d	44.06		(LTW-04 to PZ-22)
Other	Perched Zone	WP19	MW-25	10/15/2019	396,753.37	2,050,989.82	12.0 - 17.0	145.00	147.59	s	133.29	7.05	Downward
	Perched Zone		PZ-25	10/15/2019	396,753.94	2,050,991.05	14.0 - 19.0	145.00	147.59	s	126.24		(MW-25 to PZ-25)
	Old Outfall 002	WP20	Old Outfall 002	6/7/2019	--	--	--	40.25	--	s	40.63	1.03	Downward
	Black Creek Aquifer		PW-11	10/15/2019	394,354.00	2,052,227.00	53.0 - 63.0	70.19	73.26	d	39.60		(Old Outfall 002 to PW-11)

TABLE A 9-2
VERTICAL GRADIENTS
Chemours Fayetteville Works, North Carolina

	Aquifer	Well Pair ID	Well ID	Gauging Date	Northing (NAD 83)	Easting (NAD 83)	Screened Interval (ft bgs)	Ground Elevation (ft NAVD88)	TOC Elevation (ft NAVD88)	Shallow/Deep	Groundwater Elevation (ft-NAVD88)	Vertical Gradient (feet/feet)	Direction
Offsite	Surficial Aquifer	WP21	Bladen-1S	10/15/2019	387,516.28	2,050,234.78	5 - 10	81.57	81.31	s	71.17	9.37	Downward (Bladen-1S to Bladen-1D)
	Black Creek Aquifer		Bladen-1D	10/15/2019	387,519.56	2,050,248.83	37 - 47	81.72	81.52	d	61.80		
	Surficial Aquifer	WP22	Bladen-2S	10/15/2019	368,818.78	2,042,884.35	10 - 20	143.01	142.62	s	135.63	13.28	Downward (Bladen-2S to Bladen-2D)
	Black Creek Aquifer		Bladen-2D	10/15/2019	368,824.41	2,042,879.78	70 - 75	143.11	142.85	d	122.35		
	Surficial Aquifer	WP23	Bladen-3S	10/15/2019	396,859.62	2,059,014.36	5 - 15	79.40	78.84	s	69.33	0.56	Downward (Bladen-3S to Bladen-3D)
	Black Creek Aquifer		Bladen-3D	10/15/2019	396,854.29	2,059,007.99	33.75 - 43.75	79.59	79.09	d	68.77		
	Surficial Aquifer	WP24	Bladen-4S	10/15/2019	363,260.51	2,087,638.88	4.75 - 14.75	64.65	64.26	s	58.42	-4.38	Upward (Bladen-4D to Bladen-4S)
	Black Creek Aquifer		Bladen-4D	10/15/2019	363,252.43	2,087,638.29	46.75 - 51.75	64.67	64.23	d	62.80		
	Surficial Aquifer	WP25	Cumberland-1S	10/15/2019	431,477.66	2,011,002.07	15 - 25	179.70	179.41	s	172.25	0.34	Downward (Cumberland-1S to Cumberland-1D)
	Black Creek Aquifer		Cumberland-1D	10/15/2019	431,477.66	2,011,002.07	40 - 50	179.58	179.18	d	171.91		
	Surficial Aquifer	WP26	Cumberland-2S	10/15/2019	450,054.48	2,074,001.35	7 - 17	133.87	133.61	s	127.70	-0.41	Upward (Cumberland-2D to Cumberland-2S)
	Black Creek Aquifer		Cumberland-2D	10/15/2019	450,054.48	2,074,001.35	47 - 57	134.06	133.79	d	128.11		
	Surficial Aquifer	WP27	Cumberland-3S	10/15/2019	423,131.53	2,060,380.35	9 - 14	83.87	83.62	s	74.89	-0.28	Upward (Cumberland-3D to Cumberland-3S)
	Black Creek Aquifer		Cumberland-3D	10/15/2019	423,131.53	2,060,380.35	22 - 27	83.59	83.34	d	75.17		
	Surficial Aquifer	WP28	Cumberland-4S	10/15/2019	413,160.26	2,078,233.75	10 - 20	124.15	123.93	s	116.42	6.45	Downward (Cumberland-4S to Cumberland-4D)
	Black Creek Aquifer		Cumberland-4D	10/15/2019	413,160.26	2,078,233.75	57 - 67	124.09	123.79	d	109.97		
	Surficial Aquifer	WP29	Cumberland-5S	10/15/2019	405,673.82	2,138,069.54	14 - 24	107.00	106.65	s	101.88	3.59	Downward (Cumberland-5S to Cumberland-5D)
	Black Creek Aquifer		Cumberland-5D	10/15/2019	405,673.82	2,138,069.54	52 - 57	107.02	106.67	d	98.29		
	Surficial Aquifer	WP30	Robeson-1S	10/15/2019	381,338.72	2,020,239.81	17 - 27	161.51	161.22	s	143.07	-4.12	Upward (Robeson-1D to Robeson-1S)
	Black Creek Aquifer		Robeson-1D	10/15/2019	381,338.72	2,020,239.81	42.75 - 52.75	161.23	160.93	d	147.19		

Notes:
1. Well pairs only include locations where depth to water level in both wells were synoptically measured in October 2019.
2. Calculated negative vertical gradient values represent potential for upward flow and positive vertical gradient values represent potential for downward flows.
3. "s" and "d" represent shallower and deeper well screens between the wells in each pair.
4. Direction indicates potential for upward or downward groundwater flow in each well pair.
5. Water column depth from Old Outfall 002 channel bottom presented. Measurements collected during volumetric flow measurements presented in the *Seeps and Creeks Investigation Report* (Geosyntec, 2019).

NAD83 - North American Datum of 1983; horizontal control datum
NAVD88 - North American Vertical Datum of 1988; vertical control datum established in 1991
ft bgs - feet below ground surface
TOC - top of casing
-- data not available

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	BCA-01	BCA-02	BCA-02	BCA-03R
Field Sample ID	GW0619-BCA-01	GW0619-BCA-02-D	GW0619-BCA-02	BCA-03R-091219
Sample Date	7/8/2019	7/9/2019	7/9/2019	9/12/2019
QA/QC	--	Field Duplicate	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	Liquid
SDG	320-52171-1	320-52149-1	320-52149-1	320-54314-1
Lab Sample ID	320-52171-4	320-52149-6	320-52149-5	320-54314-1
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**9,700**	**12,000 J**	**18,000 J**	**12,000**
PFMOAA	**70,000**	**110,000**	**120,000**	**330,000**
PFO2HxA	**22,000**	**26,000**	**29,000**	**69,000**
PFO3OA	**3,000**	**8,600**	**8,600**	**15,000**
PFO4DA	**79**	**3,300**	**4,000**	**1,200**
PFO5DA	<34	**610**	**590**	<170
PMPA	**5,900**	**6,700**	**7,300**	**29,000**
PEPA	**1,400**	**2,300**	**2,500**	**7,100**
PFESA-BP1	<27	**60**	**80**	**200**
PFESA-BP2	<30	**420**	**520**	**160**
Byproduct 4	**300**	**720**	**810**	**2,000**
Byproduct 5	**1,100**	**2,000**	**2,100**	**19,000**
Byproduct 6	<15	**18**	**19**	<77
NVHOS	**570**	**1,000**	**1,100**	**2,400**
EVE Acid	<24	**24**	**27**	<120
Hydro-EVE Acid	<28	**1,400**	**1,600**	**200**
R-EVE	**230**	**500**	**560**	**730**
PES	<46	<46	<46	<230
PFECA B	<60	<60	<60	<300
PFECA-G	<41	<41	<41	<200
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	--	<2
11Cl-PF3OUdS	--	--	--	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	<4
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20
9Cl-PF3ONS	--	--	--	<2
ADONA	--	--	--	<2.1
NaDONA	--	--	--	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	<2
N-methyl perfluoro-1-octanesulfonamide	--	--	--	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	**2.9**	**2.8**	<2
Perfluorobutanoic Acid	**70**	**120**	**120**	**160**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	**3.8**	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2
Perfluoroheptanoic Acid	**8.7**	**46**	**46**	**72**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	<2
Perfluorohexane Sulfonic Acid	<2	**5.2**	**5**	<2
Perfluorohexanoic Acid	**7.9**	**24**	**25**	**24**
Perfluorononanesulfonic acid	<2	<2	<2	<2
Perfluorononanoic Acid	<2	**11**	**10**	<2
Perfluorooctadecanoic acid	<2	<2	<2 UJ	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2
Perfluoropentanoic Acid	**280**	**170**	**170**	**600**
Perfluorotetradecanoic Acid	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	**2**	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2
PFOA	<2	**32**	**30**	**5.8**
PFOS	<2	**4.2**	**3.4**	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Perched Zone	Perched Zone	Perched Zone	Surficial Aquifer
Location ID	BCA-04	FTA-01	FTA-02	FTA-03	INSITU-01
Field Sample ID	GW0619-BCA-04	GW0619-FTA-01	GW0619-FTA-02	GW0619-FTA-03	GW0619-INSITU-01
Sample Date	7/9/2019	6/27/2019	6/27/2019	6/27/2019	6/20/2019
QA/QC	--	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-52149-1	320-51903-1	320-51903-1	320-51903-1	320-51662-1
Lab Sample ID	320-52149-4	320-51903-3	320-51903-1	320-51903-2	320-51662-3
Table 3+ Lab SOP (ng/L)					
Hfpo Dimer Acid	**6.9**	**520**	**22,000**	**13,000**	**580**
PFMOAA	<5	<210 UJ	**11,000 J**	**3,200 J**	**210 J**
PFO2HxA	<2	**390 J**	**8,800 J**	**6,500 J**	**460 J**
PFO3OA	<2	**58 J**	**2,000 J**	**780 J**	**36 J**
PFO4DA	<2	<79 UJ	**1,700 J**	**820 J**	**5.1 J**
PFO5DA	<2	**77 J**	**2,400 J**	**1,200 J**	<5 UJ
PMPA	**20**	**1,500 J**	**6,400 J**	**6,500 J**	**800 J**
PEPA	<20	**290 J**	**2,400 J**	**2,200 J**	**230 J**
PFESA-BP1	<2	<27 UJ	**1,300 J**	**550 J**	<2 UJ
PFESA-BP2	<2	**32 J**	**3,500 J**	**610 J**	**17 J**
Byproduct 4	<2	<160 UJ	**1,500 J**	**1,400 J**	**38 J**
Byproduct 5	<2	<58 UJ	**950 J**	**1,100 J**	<2 UJ
Byproduct 6	<2	<15 UJ	**19 J**	<15 UJ	<2 UJ
NVHOS	<2	<54 UJ	**450 J**	**170 J**	**5 J**
EVE Acid	<2	<24 UJ	**24,000 J**	**97 J**	<2 UJ
Hydro-EVE Acid	<2	<28 UJ	**1,100 J**	**150 J**	<2 UJ
R-EVE	<2	<70 UJ	**560 J**	**2,100 J**	**25 J**
PES	<2	<46 UJ	<46 UJ	<46 UJ	<2 UJ
PFECA B	<2	<60 UJ	<60 UJ	<60 UJ	<2 UJ
PFECA-G	<2	<41 UJ	<41 UJ	<41 UJ	<2 UJ
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	--	--	--	--	--
11Cl-PF3OUdS	--	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	<2 UJ
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	<2 UJ
6:2 Fluorotelomer sulfonate	<20	<20	**120**	<20	--
9Cl-PF3ONS	--	--	--	--	--
ADONA	--	--	--	--	--
NaDONA	--	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--	<2 UJ
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--	<2 UJ
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	--
Perfluorobutane Sulfonic Acid	<2	<2	**2.5**	<2	<2
Perfluorobutanoic Acid	<2	**11**	**140**	**68**	--
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	--
Perfluorodecanoic Acid	<2	<2	**2.9**	**2.2**	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	--
Perfluorododecanoic Acid	<2	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	**2.1**	<2	--
Perfluoroheptanoic Acid	<2	**5.1**	**87**	**21**	<2
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--	--
Perfluorohexane Sulfonic Acid	<2	**2.1**	**21**	**5.1**	<2
Perfluorohexanoic Acid	<2	**4.5**	**110**	**15**	**4.1**
Perfluorononanesulfonic acid	<2	<2	<2	<2	--
Perfluorononanoic Acid	<2	<2	**17**	**11**	<2
Perfluorooctadecanoic acid	<2	<2	<2	<2	--
Perfluorooctane Sulfonamide	<2	<2	<2	<2	--
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	**2.1**	<2	--
Perfluoropentanoic Acid	<2	**15**	**270**	**87**	**11**
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2	<2
PFOA	<2	**6.7**	**83**	**51**	<2
PFOS	<2	**3.8**	**24**	**9.9**	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Floodplain Deposits	Black Creek Aquifer	Floodplain Deposits	Floodplain Deposits
Location ID	**LTW-01**	**LTW-02**	**LTW-03**	**LTW-04**
Field Sample ID	**GW0619-LTW-01**	**GW0619-LTW-02**	**GW0619-LTW-03**	**GW0619-LTW-04**
Sample Date	**7/17/2019**	**7/17/2019**	**7/17/2019**	**7/17/2019**
QA/QC	**--**	**--**	**--**	**--**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-52454-1**	**320-52454-1**	**320-52454-1**	**320-52454-1**
Lab Sample ID	**320-52454-1**	**320-52454-2**	**320-52454-4**	**320-52454-6**
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**19,000**	**9,500**	**12,000**	**16,000**
PFMOAA	**45,000**	**38,000**	**150,000**	**96,000**
PFO2HxA	**30,000**	**16,000**	**34,000**	**31,000**
PFO3OA	**6,100**	**3,000**	**4,900**	**5,400**
PFO4DA	**1,200**	**250**	**160**	**620**
PFO5DA	**210**	<34	<34	**36**
PMPA	**23,000**	**6,500**	**9,300**	**19,000**
PEPA	**8,300**	**2,100**	**2,400**	**7,100**
PFESA-BP1	<27	<27	<27	<27
PFESA-BP2	**260**	**30**	**33**	**160**
Byproduct 4	**1,200**	**490 J**	**600**	**2,000**
Byproduct 5	**970**	**1,200**	**2,600**	**4,300**
Byproduct 6	<15	<15	<15	<15
NVHOS	**490**	**370**	**1,000**	**1,600**
EVE Acid	<24	<24	<24	<24
Hydro-EVE Acid	**140**	**45**	**42**	**510**
R-EVE	**720**	**420**	**480**	**2,300**
PES	<46	<46	<46	<46
PFECA B	<60	<60	<60	<60
PFECA-G	<41	<41	<41	<41
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	--	--
11Cl-PF3OUdS	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<47	<45	<46	<46
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20
9Cl-PF3ONS	--	--	--	--
ADONA	--	--	--	--
NaDONA	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<28	<27	<27	<27
Perfluorobutane Sulfonic Acid	**2.4**	<2	<2	<2
Perfluorobutanoic Acid	**170**	**71**	**140**	**440**
Perfluorodecane Sulfonic Acid	<2.9	<2.7	<2.8	<2.8
Perfluorodecanoic Acid	<2.8	<2.7	<2.7	<2.7
Perfluorododecane sulfonic acid (PFDoS)	<4	<3.9	<4	<4
Perfluorododecanoic Acid	<4.9	<4.7	<4.9	<4.9
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2
Perfluoroheptanoic Acid	**43**	**13**	**19**	**68**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--
Perfluorohexane Sulfonic Acid	**4.6**	<2	<2	**2.9**
Perfluorohexanoic Acid	**28**	**10**	**15**	**44**
Perfluorononanesulfonic acid	<2	<2	<2	<2
Perfluorononanoic Acid	<2.4	<2.3	<2.4	<2.4
Perfluorooctadecanoic acid	<4.1	<3.9	<4.1	<4.1
Perfluorooctane Sulfonamide	<3.1	<3	<3.1	<3.1
Perfluoropentane sulfonic acid (PFPeS)	<2.7	<2.6	<2.7	<2.7
Perfluoropentanoic Acid	**420**	**290**	**700**	**1,500**
Perfluorotetradecanoic Acid	<2.6	<2.5	<2.6	<2.6
Perfluorotridecanoic Acid	<12	<11	<12	<12
Perfluoroundecanoic Acid	<9.9	<9.4	<9.8	<9.7
PFOA	**37**	<7.3	<7.5	**8**
PFOS	**11**	<4.6	<4.8	<4.8

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	**Black Creek Aquifer**	**Perched Zone**	**Surficial Aquifer**	**Surficial Aquifer**
Location ID	**LTW-05**	**MW-12S**	**MW-13D**	**MW-14D**
Field Sample ID	**GW0619-LTW-05**	**GW0619-MW-12S**	**GW0619-MW-13D**	**GW0619-MW-14D**
Sample Date	**7/16/2019**	**7/8/2019**	**7/11/2019**	**7/11/2019**
QA/QC	**--**	**--**	**--**	**--**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-52322-1**	**320-52171-1**	**320-52282-1**	**320-52282-1**
Lab Sample ID	**320-52322-4**	**320-52171-3**	**320-52282-5**	**320-52282-4**
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**26,000 B**	**17,000**	**37,000 J**	**9,700**
PFMOAA	**240,000**	**6,600**	**180,000**	**180,000**
PFO2HxA	**68,000**	**9,600**	**66,000**	**35,000**
PFO3OA	**22,000**	**1,500**	**16,000**	**8,600**
PFO4DA	**2,900**	**980**	**5,200**	**3,000**
PFO5DA	<340	**980**	**400**	**700**
PMPA	<5,700	**10,000**	**21,000**	**7,900**
PEPA	<470	**3,900**	**5,900**	**3,100**
PFESA-BP1	<270	<27	<270	**660**
PFESA-BP2	**310**	**540**	**2,100**	**450**
Byproduct 4	**1,600**	**540**	**1,600**	<1,600
Byproduct 5	**3,100**	**63**	**3,000 J**	**2,300**
Byproduct 6	<150	<15	<150	<150
NVHOS	**1,900**	**140**	**1,500**	**1,700**
EVE Acid	<240	<24	<240	<240
Hydro-EVE Acid	**1,400**	**120**	**1,700**	**540**
R-EVE	**2,100**	**330**	**2,800**	<700
PES	<460	<46	<460	<460
PFECA B	<600	<60	<600	<600
PFECA-G	<410	<41	<410	<410
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	--	--
11Cl-PF3OUdS	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	**38**
9Cl-PF3ONS	--	--	--	--
ADONA	--	--	--	--
NaDONA	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2
Perfluorobutanoic Acid	**330**	**130**	**590**	**160**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	**3.8**	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2
Perfluoroheptanoic Acid	**360**	**30**	**270**	**120**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--
Perfluorohexane Sulfonic Acid	<2	**2**	**2.8**	**3.3**
Perfluorohexanoic Acid	**100**	**23**	**120**	**90**
Perfluorononanesulfonic acid	<2	<2	<2	<2
Perfluorononanoic Acid	<2	**16**	**5.8**	**11**
Perfluorooctadecanoic acid	<2	<2	<2 UJ	<2 UJ
Perfluorooctane Sulfonamide	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2
Perfluoropentanoic Acid	**2,600**	**150**	**2,400**	**560**
Perfluorotetradecanoic Acid	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	**6.9**	<2	<2
PFOA	**3.6**	**63**	**29**	**400**
PFOS	<2	**7.7**	<2	**7.3**

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer
Location ID	MW-15DRR	MW-16D	MW-17D	MW-18D
Field Sample ID	MW-15DRR-091119	GW0619-MW-16D	GW0619-MW-17D	GW0619-MW-18D
Sample Date	9/12/2019	7/15/2019	7/15/2019	7/15/2019
QA/QC	--	--	--	--
Sample Matrix	Liquid	LIQUID	LIQUID	LIQUID
SDG	320-54317-1	320-52288-1	320-52288-1	320-52288-1
Lab Sample ID	320-54317-3	320-52288-2	320-52288-3	320-52288-6
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**3,500**	**1,300**	**690**	**810**
PFMOAA	**31,000**	**500**	**260**	**58**
PFO2HxA	**6,300**	**430 J**	**490**	**110**
PFO3OA	**940**	**76 J**	**81 J**	**4.6 J**
PFO4DA	**320**	**39**	**14**	<2
PFO5DA	**130**	**12 J**	<2	<2
PMPA	**3,600**	**1,300**	**1,700**	**430**
PEPA	**1,000**	**330**	**510**	**100**
PFESA-BP1	**8,800**	**38**	<2	<2
PFESA-BP2	**1,200**	**22**	**20**	<2
Byproduct 4	**960**	**31**	**25**	**4.1**
Byproduct 5	**21,000**	**65**	<2.9	<2
Byproduct 6	**30**	<2	<2	<2
NVHOS	**320**	**12**	**7.4**	**2.9**
EVE Acid	**1,100**	<2	<2	<2
Hydro-EVE Acid	**370**	**12**	**5.9**	<2
R-EVE	**170**	**17**	**10**	**2.1**
PES	<46	<2.3	<2.3	<2
PFECA B	<60	<3	<3	<2
PFECA-G	<41	<2	<2	<2
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	<2	--	--	--
11Cl-PF3OUdS	<2	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20
9Cl-PF3ONS	<2	--	--	--
ADONA	<2.1	--	--	--
NaDONA	<2.1	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	--	--	--
N-methyl perfluoro-1-octanesulfonamide	<2	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	**8.2**	<2	<2	<2
Perfluorobutanoic Acid	**41**	**10**	**11**	**3.8**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2
Perfluorodecanoic Acid	**3.3**	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2
Perfluoroheptanoic Acid	**18**	**3.9**	**2.9**	<2
Perfluorohexadecanoic acid (PFHxDA)	<2	--	--	--
Perfluorohexane Sulfonic Acid	**13**	<2	<2	<2
Perfluorohexanoic Acid	**18**	**4.2**	**4.1**	<2
Perfluorononanesulfonic acid	<2	<2	<2	<2
Perfluorononanoic Acid	**5.8**	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2 UJ	<2 UJ	<2 UJ
Perfluorooctane Sulfonamide	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2
Perfluoropentanoic Acid	**85**	**13**	**16**	**9**
Perfluorotetradecanoic Acid	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2
PFOA	**62**	**21**	**3.6**	<2
PFOS	**35**	<2	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Perched Zone	Surficial Aquifer	Surficial Aquifer
Location ID	MW-19D	MW-1S	MW-20D	MW-21D
Field Sample ID	GW0619-MW-19D	GW0619-MW-1S	GW0619-MW-20D	GW0619-MW-21D
Sample Date	7/9/2019	6/28/2019	7/9/2019	7/11/2019
QA/QC	--	--	--	--
Sample Matrix	LIQUID	Liquid	LIQUID	LIQUID
SDG	320-52149-1	320-51904-1	320-52149-1	320-52282-1
Lab Sample ID	320-52149-1	320-51904-3	320-52149-2	320-52282-3
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**1,100**	**14,000**	**1,900**	**380**
PFMOAA	**720**	**21,000**	**14,000**	**110**
PFO2HxA	**830**	**11,000**	**3,300**	**290**
PFO3OA	**170**	**1,600**	**600**	**28**
PFO4DA	**78**	**1,300 J**	**120**	<2
PFO5DA	<2	**1,300**	<34	<2
PMPA	**1,100**	**9,700**	**2,700**	**860**
PEPA	**360**	**3,300**	**650**	**290**
PFESA-BP1	<2	**48**	<27	<2
PFESA-BP2	**15**	**1,000**	<30	**6.1**
Byproduct 4	**27**	**620**	<160	**8.3 J**
Byproduct 5	<2	**430**	**87**	<2
Byproduct 6	<2	<15	<15	<2
NVHOS	**12**	**210**	**110**	**6**
EVE Acid	<2	<24	<24	<2
Hydro-EVE Acid	**4.8**	**230**	<28	<2
R-EVE	**18**	**370**	**82**	**4.6**
PES	<2	<46	<46	<2
PFECA B	<2	<60	<60	<2
PFECA-G	<2	<41	<41	<2
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	--	--
11Cl-PF3OUdS	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20
9Cl-PF3ONS	--	--	--	--
ADONA	--	--	--	--
NaDONA	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2
Perfluorobutanoic Acid	**11**	**140**	**21**	**7.1**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	**18**	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2
Perfluoroheptanoic Acid	**4.7**	**50**	**11**	<2
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--
Perfluorohexane Sulfonic Acid	<2	**2.3**	<2	<2
Perfluorohexanoic Acid	**5.6**	**26**	**13**	**2.4**
Perfluorononanesulfonic acid	<2	<2	<2	<2
Perfluorononanoic Acid	<2	**62**	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2	<2 UJ
Perfluorooctane Sulfonamide	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2
Perfluoropentanoic Acid	**21**	**290**	**44**	**11**
Perfluorotetradecanoic Acid	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	**10**	<2	<2
PFOA	**21**	**94**	**68**	<2
PFOS	<2	**13**	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	**Surficial Aquifer**	**Perched Zone**	**Perched Zone**	**Perched Zone**	**Perched Zone**
Location ID	**MW-22D**	**MW-23**	**MW-24**	**MW-25**	**MW-27**
Field Sample ID	**GW0619-MW-22D**	**GW0619-MW-23**	**GW0619-MW-24**	**GW0619-MW-25**	**GW0619-MW-27**
Sample Date	**7/15/2019**	**6/25/2019**	**7/17/2019**	**6/25/2019**	**6/25/2019**
QA/QC	**--**	**--**	**--**	**--**	**--**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-52288-1**	**320-51746-1**	**320-52464-1**	**320-51746-1**	**320-51746-1**
Lab Sample ID	**320-52288-1**	**320-51746-2**	**320-52464-6**	**320-51746-11**	**320-51746-5**
Table 3+ Lab SOP (ng/L)					
Hfpo Dimer Acid	**1,800**	**17,000**	**15,000**	**17,000**	**11,000**
PFMOAA	**290**	**790 J**	**720,000**	**2,700 J**	**240,000 J**
PFO2HxA	**580**	**2,200 J**	**130,000**	**8,100 J**	**62,000 J**
PFO3OA	**83 J**	**180 J**	**31,000**	**1,400 J**	**17,000 J**
PFO4DA	**49**	**250 J**	**7,400**	**1,400 J**	**4,500 J**
PFO5DA	**5.5 J**	**130 J**	**1,400**	**750 J**	**260 J**
PMPA	**1,400**	**4,400 J**	**8,100**	**25,000 J**	**7,800 J**
PEPA	**450**	**1,600 J**	**3,200**	**9,800 J**	**2,900 J**
PFESA-BP1	<2	<27 UJ	**1,400**	<27 UJ	<53 UJ
PFESA-BP2	**18**	**150 J**	**1,200**	**410 J**	**550 J**
Byproduct 4	**29**	**450 J**	**2,100**	**1,700 J**	**570 J**
Byproduct 5	<2.9	<58 UJ	**8,200**	**360 J**	**810 J**
Byproduct 6	<2	<15 UJ	<150	<15 UJ	**35 J**
NVHOS	**12**	<54 UJ	**7,100**	**180 J**	**3,100 J**
EVE Acid	<2	<24 UJ	<240	<24 UJ	<49 UJ
Hydro-EVE Acid	**11**	**41 J**	**420**	**190 J**	**240 J**
R-EVE	**17**	**290 J**	<700	**1,400 J**	**220 J**
PES	<2.3	<46 UJ	<460	<46 UJ	<92 UJ
PFECA B	<3	<60 UJ	<600	<60 UJ	<120 UJ
PFECA-G	<2	<41 UJ	<410	<41 UJ	<82 UJ
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	--	--	--	--	--
11Cl-PF3OUdS	--	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20
9Cl-PF3ONS	--	--	--	--	--
ADONA	--	--	--	--	--
NaDONA	--	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2	<2
Perfluorobutanoic Acid	**12**	**45**	**200**	**190**	**110**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	**5.5**	**7.7**	**110**	**33**	**23**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--	--
Perfluorohexane Sulfonic Acid	<2	<2	<2	**2.4**	**2.8**
Perfluorohexanoic Acid	**5.7**	**6.5**	**21**	**15**	**16**
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2
Perfluorononanoic Acid	<2	<2	**16**	**4.2**	<2
Perfluorooctadecanoic acid	<2 UJ	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	**16**	**35**	**1,100**	**160**	**130**
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	**6.1**	<2	<2
PFOA	**20**	**23**	**89**	**80**	**23**
PFOS	<2	<2	**2.2**	**4.2**	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Perched Zone	Perched Zone	Perched Zone	Perched Zone	Perched Zone
Location ID	MW-28	MW-2S	MW-30	MW-7S	MW-9S
Field Sample ID	GW0619-MW-28	GW0619-MW-2S	GW0619-MW-30	GW0619-MW-7S	GW0619-MW-9S
Sample Date	6/26/2019	7/10/2019	7/2/2019	7/10/2019	6/25/2019
QA/QC	--	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-51904-1	320-52165-1	320-52030-1	320-52165-1	320-51746-1
Lab Sample ID	320-51904-1	320-52165-1	320-52030-2	320-52165-2	320-51746-4
Table 3+ Lab SOP (ng/L)					
Hfpo Dimer Acid	**2,900**	**17,000**	**18,000**	**17,000**	**5,600**
PFMOAA	<210 UJ	**28,000**	**3,300**	**4,600**	**1,600 J**
PFO2HxA	<81 UJ	**12,000**	**9,400**	**8,700**	**2,700 J**
PFO3OA	<58 UJ	**2,500**	**1,000 J**	**1,500**	**360 J**
PFO4DA	<79 UJ	**1,600**	**1,600 J**	**1,200**	**360 J**
PFO5DA	<34 UJ	**2,500**	**2,100 J**	**1,800**	**220 J**
PMPA	<570 UJ	**12,000**	**29,000**	**13,000**	**7,000 J**
PEPA	<47 UJ	**4,100**	**11,000**	**5,200**	**2,800 J**
PFESA-BP1	<27 UJ	**27 J**	<27	**58 J**	**38 J**
PFESA-BP2	<30 UJ	**2,100**	**480**	**830**	**200 J**
Byproduct 4	<160 UJ	**730 J**	**640**	**1,400**	**310 J**
Byproduct 5	<58 UJ	**320**	<58	**650**	<58 UJ
Byproduct 6	<15 UJ	**19**	<15	**17**	<15 UJ
NVHOS	<54 UJ	**290**	**95**	**260**	<54 UJ
EVE Acid	<24 UJ	<24	<24	<24	<24 UJ
Hydro-EVE Acid	<28 UJ	**450**	**150**	**270**	**53 J**
R-EVE	<70 UJ	**510**	**270**	**1,100**	**170 J**
PES	<46 UJ	<46	<46	<46	<46 UJ
PFECA B	<60 UJ	<60	<60	<60	<60 UJ
PFECA-G	<41 UJ	<41	<41	<41	<41 UJ
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	--	--	--	--	--
11Cl-PF3OUdS	--	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20
9Cl-PF3ONS	--	--	--	--	--
ADONA	--	--	--	--	--
NaDONA	--	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2	<2
Perfluorobutanoic Acid	**28**	**200**	**190**	**130**	**140**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	**9**	<2	**6.2**	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	**7.3**	**77**	**33**	**43**	**10**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--	--
Perfluorohexane Sulfonic Acid	<2	**4.2**	<2	**2.8**	<2
Perfluorohexanoic Acid	**4.3**	**40**	**10**	**22**	**5.1**
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2
Perfluorononanoic Acid	<2	**75**	**6.3**	**15**	**2.2**
Perfluorooctadecanoic acid	<2	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	**35**	**340**	**160**	**160**	**61**
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	**4.7**	<2	<2	<2
PFOA	**20**	**86**	**61**	**82**	**16**
PFOS	<2	**14**	**3**	**7.8**	**2.7**

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Perched Zone	Perched Zone	Perched Zone	Perched Zone	Perched Zone
Location ID	NAF-01	NAF-02	NAF-03	NAF-04	NAF-06
Field Sample ID	GW0619-NAF-01	GW0619-NAF-02	GW0619-NAF-03	GW0619-NAF-04	GW0619-NAF-06
Sample Date	7/10/2019	6/27/2019	6/27/2019	7/15/2019	7/11/2019
QA/QC	--	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-52165-1	320-51904-1	320-51904-1	320-52288-1	320-52282-1
Lab Sample ID	320-52165-3	320-51904-4	320-51904-2	320-52288-5	320-52282-1
Table 3+ Lab SOP (ng/L)					
Hfpo Dimer Acid	**22,000**	**160,000 J**	**54,000 J**	**270,000 J**	**100,000 J**
PFMOAA	**20,000**	**2,900,000 J**	**260,000 J**	**240,000**	**810,000**
PFO2HxA	**20,000**	**780,000 J**	**110,000 J**	**420,000**	**300,000**
PFO3OA	**5,000**	**240,000 J**	**39,000 J**	**110,000 J**	**120,000**
PFO4DA	**6,200**	**100,000 J**	**21,000 J**	**49,000**	**66,000**
PFO5DA	**6,000 J**	**36,000 J**	**19,000 J**	**32,000 J**	**45,000 J**
PMPA	**17,000**	**74,000 J**	**47,000 J**	**85,000**	**47,000**
PEPA	**7,400**	**32,000 J**	**23,000 J**	**28,000**	**20,000**
PFESA-BP1	**840**	**23,000 J**	**57,000 J**	**1,100,000**	**78,000 J**
PFESA-BP2	**2,900**	**17,000 J**	**9,200 J**	**110,000**	**29,000**
Byproduct 4	**2,700**	**21,000 J**	**6,000 J**	**100,000**	**6,800**
Byproduct 5	**1,700**	**210,000 J**	**37,000 J**	**1,200,000**	**92,000**
Byproduct 6	**70**	<770 UJ	**600 J**	**6,500**	**600**
NVHOS	**750**	**27,000 J**	**4,900 J**	**60,000**	**8,600**
EVE Acid	**480**	**7,300 J**	**6,800 J**	**340,000**	**6,100**
Hydro-EVE Acid	**820**	**14,000 J**	**3,300 J**	**160,000**	**5,500**
R-EVE	**5,600**	**12,000 J**	**4,400 J**	**36,000**	**4,700 J**
PES	<46	<2,300 UJ	<230 UJ	<920	<230
PFECA B	<60	<3,000 UJ	<300 UJ	<1,200	<300
PFECA-G	<41	<2,000 UJ	<200 UJ	<820	<200
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	--	--	--	--	--
11Cl-PF3OUdS	--	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<170	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<450	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	<170	<20
9Cl-PF3ONS	--	--	--	--	--
ADONA	--	--	--	--	--
NaDONA	--	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<160	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<270	<20
Perfluorobutane Sulfonic Acid	**2.4**	**2.4**	<2	<17	**2.3**
Perfluorobutanoic Acid	**490**	**3,300**	**1,100**	**4,800**	**1,400**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<27	<2
Perfluorodecanoic Acid	**6.8**	**48**	**18**	**77**	**20**
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<39	<2
Perfluorododecanoic Acid	**2.4**	**41**	**6.8**	<47	**4.3**
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<16	<2
Perfluoroheptanoic Acid	**73**	**1,000**	**140**	**7,700**	**480**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--	--
Perfluorohexane Sulfonic Acid	**2.9**	**2.9**	<2	<15	**3.2**
Perfluorohexanoic Acid	**54**	**610**	**190**	**980**	**350**
Perfluorononanesulfonic acid	<2	<2	<2	<14	<2
Perfluorononanoic Acid	**49**	**400**	**47**	**1,900**	**270**
Perfluorooctadecanoic acid	<2	<2	<2	<39 UJ	<2 UJ
Perfluorooctane Sulfonamide	<2	<2	<2	<30	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<26	<2
Perfluoropentanoic Acid	**330**	**8,000**	**870**	**34,000 J**	**2,300**
Perfluorotetradecanoic Acid	<2	<2	<25	<25	<2
Perfluorotridecanoic Acid	<2	**44**	<2	<110	<2
Perfluoroundecanoic Acid	**10**	**170**	**46**	<94	**39**
PFOA	**130**	**260**	**140**	**540**	**230**
PFOS	**8.5**	**6.5**	**2.7**	<46	**12**

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Perched Zone	Perched Zone	Perched Zone	Perched Zone	Perched Zone
Location ID	NAF-07	NAF-08A	NAF-09	NAF-10	NAF-12
Field Sample ID	GW0619-NAF-07	GW0619-NAF-08A	GW0619-NAF-09	GW0619-NAF-10	GW0619-NAF-12
Sample Date	6/27/2019	7/15/2019	7/2/2019	7/3/2019	7/17/2019
QA/QC	--	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-51903-1	320-52288-1	320-52028-1	320-52030-1	320-52464-1
Lab Sample ID	320-51903-6	320-52288-4	320-52028-4	320-52030-3	320-52464-4
Table 3+ Lab SOP (ng/L)					
Hfpo Dimer Acid	**37,000 J**	**37,000 J**	**42,000 J**	**23,000**	**120,000 J**
PFMOAA	**93,000 J**	**7,400**	**5,900**	**4,700**	**230,000**
PFO2HxA	**46,000 J**	**17,000**	**22,000**	**10,000**	**400,000**
PFO3OA	**14,000 J**	**5,100 J**	**9,400**	**1,600 J**	**160,000**
PFO4DA	**7,800 J**	**4,400**	**11,000**	**1,200**	**90,000**
PFO5DA	**4,300 J**	**2,700 J**	**2,200 J**	**1,000 J**	**59,000**
PMPA	**26,000 J**	**200,000**	**54,000**	**28,000**	**330,000**
PEPA	**10,000 J**	**110,000**	**35,000**	**9,800**	**31,000**
PFESA-BP1	**610 J**	**5,500**	**480**	**88**	**670,000**
PFESA-BP2	**2,000 J**	**2,100**	**1,100**	**740**	**230,000**
Byproduct 4	**5,100 J**	**3,000**	**1,100 J**	**2,700**	**200,000**
Byproduct 5	**32,000 J**	**21,000**	**1,300**	**410**	**1,100,000**
Byproduct 6	**63 J**	<77	**42**	**21**	**11,000**
NVHOS	**1,800 J**	**790**	**800**	**470**	**560,000**
EVE Acid	**270 J**	**4,400**	**52**	**67**	**710,000**
Hydro-EVE Acid	**850 J**	**2,600**	**520**	**480**	**380,000**
R-EVE	**2,400 J**	**1,800**	**860**	**1,600**	**120,000**
PES	<46 UJ	<230	<46	<46	<460
PFECA B	<60 UJ	<300	<60	<60	<600
PFECA-G	<41 UJ	<200	<41	<41	<410
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	--	--	--	--	--
11Cl-PF3OUdS	--	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20
9Cl-PF3ONS	--	--	--	--	--
ADONA	--	--	--	--	--
NaDONA	--	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	**2.4**	<2	**10**	**4.6**	<2
Perfluorobutanoic Acid	**220**	**3,300**	**1,300**	**240**	**6,500 J**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	**8.8**	**4.3**	**7**	**4.1**	**220**
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	**110**	**200**	**120**	**46**	**9,300**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--	--
Perfluorohexane Sulfonic Acid	**2.6**	**2.2**	**4.4**	<2	**5.3 J**
Perfluorohexanoic Acid	**60**	**89**	**85**	**24**	**1,700 J**
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2
Perfluorononanoic Acid	**34**	**38**	**19**	**16**	**4,600 J**
Perfluorooctadecanoic acid	<2	<2 UJ	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	**430**	**1,300**	**610**	**270**	**18,000 J**
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	**3.8**	**3.8**	<2	<2	**42 J**
PFOA	**110**	**54**	**100**	**99**	**750 J**
PFOS	**12**	**7.6**	**10**	**11**	**42**

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Black Creek Aquifer	Surficial Aquifer
Location ID	PIW-10DR	PIW-10DR	PIW-10S
Field Sample ID	PIW-10DR-091019	GW4Q19-PIW-10DR-103019	GW0619-PIW-10S
Sample Date	9/10/2019	10/30/2019	7/22/2019
QA/QC	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID
SDG	320-54176-1	320-55860-1	320-52621-1
Lab Sample ID	320-54176-1	320-55860-2	320-52621-3
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	**19,000**	**15,000**	**4,400**
PFMOAA	**45,000**	**47,000**	**1,500**
PFO2HxA	**19,000**	**19,000**	**3,000**
PFO3OA	**6,000**	**6,500**	**520**
PFO4DA	**1,200 J**	**1,200**	**210**
PFO5DA	<34 UJ	<34	<34
PMPA	**9,100**	**10,000**	**5,700**
PEPA	**3,400**	**3,600**	**2,100**
PFESA-BP1	<27	<27	<27
PFESA-BP2	**160 J**	**200**	**150**
Byproduct 4	**1,500**	**1,200**	**190**
Byproduct 5	**6,400 J**	**5,600**	<58
Byproduct 6	**15**	**18**	<15
NVHOS	**510**	**490**	<54
EVE Acid	<24	<24	<24
Hydro-EVE Acid	**790 J**	**870**	<28
R-EVE	**1,200**	**980 J**	**130**
PES	<46	<46	<46
PFECA B	<60	<60	<60
PFECA-G	<41	<41	<41
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	<2	--	--
11Cl-PF3OUdS	<2	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	--	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	--	<24
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	--	--
6:2 Fluorotelomer sulfonate	**34**	--	<20
9Cl-PF3ONS	<2	--	--
ADONA	<2.1	--	--
NaDONA	<2.1	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	--	<20
N-ethylperfluoro-1-octanesulfonamide	<2	--	--
N-methyl perfluoro-1-octanesulfonamide	<2	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	--	<20
Perfluorobutane Sulfonic Acid	<2	--	<2
Perfluorobutanoic Acid	**240**	--	**49**
Perfluorodecane Sulfonic Acid	<2	--	<2
Perfluorodecanoic Acid	<2	--	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	--	<2.1
Perfluorododecanoic Acid	<2	--	<2.6
Perfluoroheptane sulfonic acid (PFHpS)	<2	--	<2
Perfluoroheptanoic Acid	**120**	--	**7.9**
Perfluorohexadecanoic acid (PFHxDA)	<2	--	--
Perfluorohexane Sulfonic Acid	<2	--	<2
Perfluorohexanoic Acid	**56**	--	**6.6**
Perfluorononanesulfonic acid	<2	--	<2
Perfluorononanoic Acid	<2	--	<2
Perfluorooctadecanoic acid	<2	--	<2.1
Perfluorooctane Sulfonamide	<2	--	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	--	<2
Perfluoropentanoic Acid	**750**	--	**47**
Perfluorotetradecanoic Acid	<2	--	<2
Perfluorotridecanoic Acid	<2	--	<6.1
Perfluoroundecanoic Acid	<2	--	<5.1
PFOA	**2.9**	--	**12**
PFOS	<2	--	<2.5

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer
Location ID	PIW-10S	PIW-1D	PIW-1D	PIW-1D
Field Sample ID	GW4Q19-PIW-10S-102919	GW0619-PIW-1D-D	GW0619-PIW-1D	GW4Q19-PIW-1D-102919
Sample Date	10/29/2019	7/19/2019	7/19/2019	10/29/2019
QA/QC	--	Field Duplicate	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-55854-1	320-52621-1	320-52621-1	320-55854-1
Lab Sample ID	320-55854-9	320-52621-2	320-52621-1	320-55854-4
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**3,600**	**8,700 J**	**11,000 J**	**9,500**
PFMOAA	**1,800**	**15,000**	**14,000**	**14,000**
PFO2HxA	**2,400**	**9,700**	**9,700**	**8,200**
PFO3OA	**450**	**1,800**	**1,800**	**1,300**
PFO4DA	**160**	**320**	**300**	**260**
PFO5DA	**17**	<34	<34	<6.7
PMPA	**5,700**	**10,000**	**9,900**	**9,300**
PEPA	**1,900**	**3,600**	**3,600**	**2,900**
PFESA-BP1	<2.7	<27	<27	<5.3
PFESA-BP2	**93**	**51**	**48**	**52**
Byproduct 4	**200**	**480**	**420**	**400**
Byproduct 5	<5.8	<58	<58	<12
Byproduct 6	<2	<15	<15	<3.1
NVHOS	**22**	**160**	**150**	**130**
EVE Acid	<2.4	<24	<24	<4.9
Hydro-EVE Acid	**12**	**33**	**37**	**30**
R-EVE	**110**	**350 J**	**290 J**	**270**
PES	<4.6	<46	<46	<9.2
PFECA B	<6	<60	<60	<12
PFECA-G	<4.1	<41	<41	<8.2
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	--	--
11Cl-PF3OUdS	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<20	<20	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<24	<46	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
6:2 Fluorotelomer sulfonate	--	<20	<20	--
9Cl-PF3ONS	--	--	--	--
ADONA	--	--	--	--
NaDONA	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20	<20	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	<20	<27	--
Perfluorobutane Sulfonic Acid	--	<2	<2	--
Perfluorobutanoic Acid	--	**70**	**70**	--
Perfluorodecane Sulfonic Acid	--	<2	<2.8	--
Perfluorodecanoic Acid	--	<2	<2.7	--
Perfluorododecane sulfonic acid (PFDoS)	--	<2.1	<4	--
Perfluorododecanoic Acid	--	<2.6	<4.9	--
Perfluoroheptane sulfonic acid (PFHpS)	--	<2	<2	--
Perfluoroheptanoic Acid	--	**14**	**14**	--
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--
Perfluorohexane Sulfonic Acid	--	<2	<2	--
Perfluorohexanoic Acid	--	**11**	**11**	--
Perfluorononanesulfonic acid	--	<2	<2	--
Perfluorononanoic Acid	--	<2	<2.4	--
Perfluorooctadecanoic acid	--	<2.2	<4.1	--
Perfluorooctane Sulfonamide	--	<2	<3.1	--
Perfluoropentane sulfonic acid (PFPeS)	--	<2	<2.6	--
Perfluoropentanoic Acid	--	**140**	**140**	--
Perfluorotetradecanoic Acid	--	<2	<2.6	--
Perfluorotridecanoic Acid	--	<6.1	<11	--
Perfluoroundecanoic Acid	--	<5.1	<9.7	--
PFOA	--	**4.4**	<7.5	--
PFOS	--	<2.5	<4.8	--

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	**Black Creek Aquifer**	**Black Creek Aquifer**	**Black Creek Aquifer**	**Black Creek Aquifer**
Location ID	**PIW-2D**	**PIW-2D**	**PIW-2D**	**PIW-3D**
Field Sample ID	**PIW-2D-091219**	**PIW-2D-091219-Z**	**GW4Q19-PIW-2D-110119**	**GW0619-PIW-3D**
Sample Date	**9/12/2019**	**9/12/2019**	**11/1/2019**	**7/18/2019**
QA/QC	**--**	**--**	**--**	**--**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-54314-1**	**320-54316-1**	**320-56112-1**	**320-52464-1**
Lab Sample ID	**320-54314-2**	**320-54316-1**	**320-56112-3**	**320-52464-2**
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**1,800**	**1,800**	**1,600**	**9,600**
PFMOAA	**14,000**	**13,000**	**19,000**	**5,400**
PFO2HxA	**2,900**	**3,000**	**3,500**	**9,100**
PFO3OA	**100**	**100**	**140**	**1,700**
PFO4DA	<79	<79	<16	**780**
PFO5DA	<34	<34	<6.7	**95**
PMPA	**1,300**	**1,200**	**1,100**	**12,000**
PEPA	**92**	**89**	**76**	**4,400**
PFESA-BP1	<27	<27	<5.3	<2.7
PFESA-BP2	<30	<30	<6.1	**150**
Byproduct 4	<160	<160	**44**	**500**
Byproduct 5	<58	<58	**16**	<5.8
Byproduct 6	<15	<15	<3.1	**5.1**
NVHOS	**110 J**	**130**	**140**	**83**
EVE Acid	<24	<24	<4.9	<2.4
Hydro-EVE Acid	<28	<28	<5.6	**52**
R-EVE	<70	<70	**40 J**	**290**
PES	<46	<46	<9.2	<4.6
PFECA B	<60	<60	<12	<6
PFECA-G	<41	<41	<8.2	<4.1
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	<2	<2	--	--
11Cl-PF3OUdS	<3.2	<3.2	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	--	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<52	<52	--	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<8.5	<8.5	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<14	<14	--	--
6:2 Fluorotelomer sulfonate	<20	<20	--	<20
9Cl-PF3ONS	<2.4	<2.4	--	--
ADONA	<2.1	<2.1	--	--
NaDONA	<2.1	<2.1	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	--	<20
N-ethylperfluoro-1-octanesulfonamide	<8.7	<8.7	--	--
N-methyl perfluoro-1-octanesulfonamide	<4.3	<4.3	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<31	<31	--	<20
Perfluorobutane Sulfonic Acid	<2	<2	--	**2.2**
Perfluorobutanoic Acid	**18**	**19**	--	**84**
Perfluorodecane Sulfonic Acid	<3.2	<3.2	--	<2
Perfluorodecanoic Acid	<3.1	<3.1	--	<2
Perfluorododecane sulfonic acid (PFDoS)	<4.5	<4.5	--	<2
Perfluorododecanoic Acid	<5.5	<5.5	--	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	--	<2
Perfluoroheptanoic Acid	<2.5	<2.5	--	**30**
Perfluorohexadecanoic acid (PFHxDA)	<8.9	<8.9	--	--
Perfluorohexane Sulfonic Acid	**3**	**3.5**	--	**3.1**
Perfluorohexanoic Acid	<5.8	<5.8	--	**21**
Perfluorononanesulfonic acid	<2	<2	--	<2
Perfluorononanoic Acid	<2.7	<2.7	--	**4.2**
Perfluorooctadecanoic acid	<4.6	<4.6	--	<2
Perfluorooctane Sulfonamide	<3.5	<3.5	--	<2
Perfluoropentane sulfonic acid (PFPeS)	<3	<3	--	<2
Perfluoropentanoic Acid	**70**	**76**	--	**130**
Perfluorotetradecanoic Acid	<2.9	**3.1**	--	<2
Perfluorotridecanoic Acid	<13	<13	--	<2
Perfluoroundecanoic Acid	<11	<11	--	<2
PFOA	<8.5	<8.5	--	**35**
PFOS	<5.4	<5.4	--	**9.5**

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	PIW-3D	PIW-4D	PIW-4D
Field Sample ID	GW4Q19-PIW-3D-102819	PIW-04D-091119	PIW-4D-091119-Z
Sample Date	10/28/2019	9/11/2019	9/11/2019
QA/QC	--	--	--
Sample Matrix	LIQUID	Liquid	Liquid
SDG	320-55757-1	320-54317-1	320-54319-1
Lab Sample ID	320-55757-6	320-54317-2	320-54319-2
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	**11,000**	**6.7**	**6.7**
PFMOAA	**5,200**	<210	<210
PFO2HxA	**7,900**	<81	<81
PFO3OA	**1,400**	<58	<58
PFO4DA	**700**	<79	<79
PFO5DA	**97**	<34	<34
PMPA	**10,000**	<570	<570
PEPA	**3,600**	<47	<47
PFESA-BP1	<5.3	<27	<27
PFESA-BP2	**140**	<30	<30
Byproduct 4	**390**	<160	<160
Byproduct 5	<12	<58	<58
Byproduct 6	**5.2**	<15	<15
NVHOS	**72**	<54	<54
EVE Acid	<4.9	<24	<24
Hydro-EVE Acid	**48**	<28	<28
R-EVE	**220 J**	<70	<70
PES	<9.2	<46	<46
PFECA B	<12	<60	<60
PFECA-G	<8.2	<41	<41
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	<2	<2
11Cl-PF3OUdS	--	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	<4	<4
6:2 Fluorotelomer sulfonate	--	<20	<20
9Cl-PF3ONS	--	<2	<2
ADONA	--	<2.1	<2.1
NaDONA	--	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	<2	<2
N-methyl perfluoro-1-octanesulfonamide	--	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	--	<20	<20
Perfluorobutane Sulfonic Acid	--	<2	<2
Perfluorobutanoic Acid	--	<2	<2
Perfluorodecane Sulfonic Acid	--	<2	<2
Perfluorodecanoic Acid	--	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	--	<2	<2
Perfluorododecanoic Acid	--	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	--	<2	<2
Perfluoroheptanoic Acid	--	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	--	<2	<2
Perfluorohexane Sulfonic Acid	--	<2	<2
Perfluorohexanoic Acid	--	<2	<2
Perfluorononanesulfonic acid	--	<2	<2
Perfluorononanoic Acid	--	<2	<2
Perfluorooctadecanoic acid	--	<2	<2
Perfluorooctane Sulfonamide	--	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	--	<2	<2
Perfluoropentanoic Acid	--	<2	<2
Perfluorotetradecanoic Acid	--	<2	<2
Perfluorotridecanoic Acid	--	<2	<2
Perfluoroundecanoic Acid	--	<2	<2
PFOA	--	<2	<2
PFOS	--	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	**Black Creek Aquifer**	**Black Creek Aquifer**	**Surficial Aquifer**
Location ID	**PIW-4D**	**PIW-4D**	**PIW-5S**
Field Sample ID	**GW4Q19-PIW-4D-103119-Dup**	**GW4Q19-PIW-4D-103119**	**GW0619-PIW-5S**
Sample Date	**10/31/2019**	**10/31/2019**	**7/19/2019**
QA/QC	**Field Duplicate**	**--**	**--**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-55909-1**	**320-55909-1**	**320-52624-1**
Lab Sample ID	**320-55909-2**	**320-55909-1**	**320-52624-5**
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	**2.9 B**	**3.6 B**	**79,000 J**
PFMOAA	<5	<5	**35,000**
PFO2HxA	**2.1**	**2.3**	**38,000**
PFO3OA	<2	<2	**10,000**
PFO4DA	<2	<2	**8,700**
PFO5DA	<2	<2	**4,800**
PMPA	<10	<10	**100,000**
PEPA	<20	<20	**44,000**
PFESA-BP1	<2	<2	**4,300**
PFESA-BP2	<2	<2	**1,300**
Byproduct 4	<2	<2	**4,700**
Byproduct 5	<2	<2	**16,000**
Byproduct 6	<2	<2	**65**
NVHOS	<2	<2	**770**
EVE Acid	<2	<2	**1,800**
Hydro-EVE Acid	<2	<2	**1,600**
R-EVE	<2 UJ	<2 UJ	**3,000**
PES	<2	<2	<46
PFECA B	<2	<2	<60
PFECA-G	<2	<2	<41
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
11Cl-PF3OUdS	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	<180
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	<470
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
6:2 Fluorotelomer sulfonate	--	--	<180
9Cl-PF3ONS	--	--	--
ADONA	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	<170
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	<280
Perfluorobutane Sulfonic Acid	--	--	<18
Perfluorobutanoic Acid	--	--	**1,100**
Perfluorodecane Sulfonic Acid	--	--	<29
Perfluorodecanoic Acid	--	--	<28
Perfluorododecane sulfonic acid (PFDoS)	--	--	<41
Perfluorododecanoic Acid	--	--	<50
Perfluoroheptane sulfonic acid (PFHpS)	--	--	<17
Perfluoroheptanoic Acid	--	--	**140**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	--	--	<15
Perfluorohexanoic Acid	--	--	**58**
Perfluorononanesulfonic acid	--	--	<14
Perfluorononanoic Acid	--	--	<24
Perfluorooctadecanoic acid	--	--	<42
Perfluorooctane Sulfonamide	--	--	<32
Perfluoropentane sulfonic acid (PFPeS)	--	--	<27
Perfluoropentanoic Acid	--	--	**910**
Perfluorotetradecanoic Acid	--	--	<26
Perfluorotridecanoic Acid	--	--	<120
Perfluoroundecanoic Acid	--	--	<99
PFOA	--	--	<77
PFOS	--	--	<49

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Floodplain Deposits	Floodplain Deposits	Black Creek Aquifer
Location ID	PIW-5S	PIW-6S	PIW-6S	PIW-7D
Field Sample ID	GW4Q19-PIW-5S-102919	GW0619-PIW-6S	GW4Q19-PIW-6S-102919	GW0619-PIW-7D
Sample Date	10/29/2019	7/17/2019	10/29/2019	7/19/2019
QA/QC	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-55854-1	320-52454-1	320-55854-1	320-52624-1
Lab Sample ID	320-55854-2	320-52454-5	320-55854-3	320-52624-3
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**41,000**	**13,000**	**10,000**	**11,000**
PFMOAA	**61,000**	**160,000**	**190,000**	**150,000**
PFO2HxA	**33,000**	**35,000**	**33,000**	**27,000**
PFO3OA	**7,600**	**5,000**	**4,400**	**2,400**
PFO4DA	**4,700**	**150**	<160	**570**
PFO5DA	**1,900**	<34	<67	<34
PMPA	**76,000**	**8,700**	**9,000**	**3,500**
PEPA	**31,000**	**2,300**	**2,300**	**530**
PFESA-BP1	**1,300**	<27	<53	<27
PFESA-BP2	**580**	**31**	<61	**53**
Byproduct 4	**2,900**	**470**	**720**	**280**
Byproduct 5	**5,000**	**1,700**	**1,900**	**690**
Byproduct 6	**41**	<15	<31	<15
NVHOS	**680**	**1,100**	**1,100**	**810**
EVE Acid	**570**	<24	<49	<24
Hydro-EVE Acid	**820**	**43**	<56	**170 J**
R-EVE	**2,700**	**490**	**610**	**350 J**
PES	<46	<46	<92	<46
PFECA B	<60	<60	<120	<60
PFECA-G	<41	<41	<82	<41
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	--	--
11Cl-PF3OUdS	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<20	--	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<47	--	<44
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
6:2 Fluorotelomer sulfonate	--	<20	--	<20
9Cl-PF3ONS	--	--	--	--
ADONA	--	--	--	--
NaDONA	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20	--	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	<28	--	<26
Perfluorobutane Sulfonic Acid	--	<2	--	<2
Perfluorobutanoic Acid	--	**150**	--	**100**
Perfluorodecane Sulfonic Acid	--	<2.9	--	<2.7
Perfluorodecanoic Acid	--	<2.8	--	<2.6
Perfluorododecane sulfonic acid (PFDoS)	--	<4.1	--	<3.8
Perfluorododecanoic Acid	--	<5	--	<4.6
Perfluoroheptane sulfonic acid (PFHpS)	--	<2	--	<2
Perfluoroheptanoic Acid	--	**18**	--	**41**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--
Perfluorohexane Sulfonic Acid	--	<2	--	<2
Perfluorohexanoic Acid	--	**16**	--	**14**
Perfluorononanesulfonic acid	--	<2	--	<2
Perfluorononanoic Acid	--	<2.4	--	<2.3
Perfluorooctadecanoic acid	--	<4.2	--	<3.9
Perfluorooctane Sulfonamide	--	<3.2	--	<2.9
Perfluoropentane sulfonic acid (PFPeS)	--	<2.7	--	<2.5
Perfluoropentanoic Acid	--	**830**	--	**820**
Perfluorotetradecanoic Acid	--	<2.6	--	<2.4
Perfluorotridecanoic Acid	--	<12	--	<11
Perfluoroundecanoic Acid	--	<9.9	--	<9.2
PFOA	--	<7.7	--	<7.1
PFOS	--	<4.9	--	<4.5

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Floodplain Deposits	Floodplain Deposits	Black Creek Aquifer
Location ID	PIW-7D	PIW-7S	PIW-7S	PIW-8D
Field Sample ID	GW4Q19-PIW-7D-103019	GW0619-PIW-7S	GW4Q19-PIW-7S-103019	GW0619-PIW-8D
Sample Date	10/30/2019	7/19/2019	10/30/2019	7/19/2019
QA/QC	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-55860-1	320-52624-1	320-55860-1	320-52624-1
Lab Sample ID	320-55860-10	320-52624-4	320-55860-1	320-52624-2
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**9,400**	**1,400**	**6,600**	**54,000 J**
PFMOAA	**170,000**	**12,000**	**31,000**	**400,000**
PFO2HxA	**27,000**	**2,400**	**8,000**	**140,000**
PFO3OA	**2,900**	**180**	**1,500**	**51,000**
PFO4DA	**590**	<79	**96**	**7,200**
PFO5DA	<34	<34	<34	<340
PMPA	**3,300**	**1,100**	**3,800**	**15,000**
PEPA	**510**	<47	**1,200**	**4,500**
PFESA-BP1	<27	<27	<27	<270
PFESA-BP2	**67**	<30	**77**	**770**
Byproduct 4	**300**	<160	**740**	**4,400**
Byproduct 5	**560**	<58	<58	**10,000**
Byproduct 6	<15	<15	<15	<150
NVHOS	**830**	**88**	**350**	**3,600**
EVE Acid	<24	<24	<24	<240
Hydro-EVE Acid	**200**	<28	**110**	**3,700**
R-EVE	**380**	**130**	**810**	**4,500**
PES	<46	<46	<46	<460
PFECA B	<60	<60	<60	<600
PFECA-G	<41	<41	<41	<410
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	--	--
11Cl-PF3OUdS	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<20	--	<38
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<20	--	<98
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
6:2 Fluorotelomer sulfonate	--	<20	--	<38
9Cl-PF3ONS	--	--	--	--
ADONA	--	--	--	--
NaDONA	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20	--	<36
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	<20	--	<58
Perfluorobutane Sulfonic Acid	--	<2	--	<3.8
Perfluorobutanoic Acid	--	**26**	--	**930**
Perfluorodecane Sulfonic Acid	--	<2	--	<6
Perfluorodecanoic Acid	--	<2	--	<5.8
Perfluorododecane sulfonic acid (PFDoS)	--	<2	--	<8.5
Perfluorododecanoic Acid	--	<2	--	<10
Perfluoroheptane sulfonic acid (PFHpS)	--	<2	--	<3.6
Perfluoroheptanoic Acid	--	<2	--	**920**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--
Perfluorohexane Sulfonic Acid	--	<2	--	<3.2
Perfluorohexanoic Acid	--	<2	--	**290**
Perfluorononanesulfonic acid	--	<2	--	<3
Perfluorononanoic Acid	--	<2	--	<5.1
Perfluorooctadecanoic acid	--	<2	--	<8.7
Perfluorooctane Sulfonamide	--	<2	--	<6.6
Perfluoropentane sulfonic acid (PFPeS)	--	<2	--	<5.6
Perfluoropentanoic Acid	--	**130**	--	**3,900**
Perfluorotetradecanoic Acid	--	<2	--	<5.5
Perfluorotridecanoic Acid	--	<2	--	<24
Perfluoroundecanoic Acid	--	<2	--	<21
PFOA	--	<2	--	<16
PFOS	--	<2	--	<10

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Surficial Aquifer
Location ID	**PIW-8D**	**PIW-9D**	**PIW-9D**	**PIW-9S**
Field Sample ID	**GW4Q19-PIW-8D-103019**	**GW0619-PIW-9D**	**GW4Q19-PIW-9D-102319**	**GW0619-PIW-9S**
Sample Date	**10/30/2019**	**7/23/2019**	**10/23/2019**	**7/18/2019**
QA/QC	--	--	--	--
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-55860-1**	**320-52722-1**	**320-55683-1**	**320-52464-1**
Lab Sample ID	**320-55860-9**	**320-52722-1**	**320-55683-3**	**320-52464-1**
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**65,000**	**33,000**	**20,000**	**7,300**
PFMOAA	**400,000**	**150,000**	**200,000**	**150,000**
PFO2HxA	**110,000**	**41,000**	**40,000**	**34,000**
PFO3OA	**45,000**	**12,000**	**11,000**	**8,400**
PFO4DA	**6,700**	**3,100**	**2,300**	**1,500**
PFO5DA	<130	**84**	<170	<34
PMPA	**15,000**	**9,900**	**8,500**	**7,500**
PEPA	**4,200**	**3,400**	**3,000**	**2,700**
PFESA-BP1	<110	**29**	<130	<27
PFESA-BP2	**860**	**370**	**330**	**170**
Byproduct 4	**3,300 J**	**1,900 J**	<790	**800**
Byproduct 5	**7,200**	**2,700**	**1,900 J**	**800**
Byproduct 6	**120**	**18**	<77	<15
NVHOS	**3,200**	**1,700**	**1,700**	**1,500**
EVE Acid	<97	<24	<120	<24
Hydro-EVE Acid	**3,900**	**1,600**	**1,600**	**690**
R-EVE	**4,900**	**1,700**	**630**	**650**
PES	<180	<46	<230	<46
PFECA B	<240	<60	<300	<60
PFECA-G	<160	<41	<200	<41
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	--	--
11Cl-PF3OUdS	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<20	--	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<20	--	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
6:2 Fluorotelomer sulfonate	--	<20	--	<20
9Cl-PF3ONS	--	--	--	--
ADONA	--	--	--	--
NaDONA	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20	--	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	<20	--	<20
Perfluorobutane Sulfonic Acid	--	<2	--	<2
Perfluorobutanoic Acid	--	**240**	--	**120**
Perfluorodecane Sulfonic Acid	--	<2	--	<2
Perfluorodecanoic Acid	--	<2	--	<2
Perfluorododecane sulfonic acid (PFDoS)	--	<2	--	<2
Perfluorododecanoic Acid	--	<2	--	<2
Perfluoroheptane sulfonic acid (PFHpS)	--	<2	--	<2
Perfluoroheptanoic Acid	--	**100**	--	**43**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--
Perfluorohexane Sulfonic Acid	--	<2	--	<2
Perfluorohexanoic Acid	--	**81**	--	**23**
Perfluorononanesulfonic acid	--	<2	--	<2
Perfluorononanoic Acid	--	<2	--	<2
Perfluorooctadecanoic acid	--	<2 UJ	--	<2
Perfluorooctane Sulfonamide	--	<2	--	<2
Perfluoropentane sulfonic acid (PFPeS)	--	<2	--	<2
Perfluoropentanoic Acid	--	**790**	--	**250**
Perfluorotetradecanoic Acid	--	<2	--	<2
Perfluorotridecanoic Acid	--	<2	--	<2
Perfluoroundecanoic Acid	--	<2	--	<2
PFOA	--	**17**	--	**13**
PFOS	--	<2	--	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Perched Zone	Perched Zone	Perched Zone
Location ID	**PIW-9S**	**PW-01**	**PW-01**	**PW-01**
Field Sample ID	**GW4Q19-PIW-9S-102319**	**PW-01-090919-D**	**PW-01-090919**	**GW4Q19-PW-01-101819**
Sample Date	**10/23/2019**	**9/9/2019**	**9/9/2019**	**10/18/2019**
QA/QC	**--**	**Field Duplicate**	**--**	**--**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-55683-1**	**320-54217-1**	**320-54217-1**	**320-55686-1**
Lab Sample ID	**320-55683-6**	**320-54217-2**	**320-54217-1**	**320-55686-1**
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**9,700**	**7,500**	**8,300**	**7,500**
PFMOAA	**190,000**	**23,000**	**25,000**	**23,000**
PFO2HxA	**35,000**	**9,400**	**10,000**	**10,000**
PFO3OA	**8,300**	**1,900**	**2,000 J**	**2,300**
PFO4DA	**1,400**	**960**	**1,000 J**	**1,200**
PFO5DA	<34	**540**	**660 J**	**930**
PMPA	**7,500**	**3,600**	**4,100 J**	**3,800**
PEPA	**2,500**	**1,200**	**1,300**	**1,300**
PFESA-BP1	<27	**410**	**490**	**480**
PFESA-BP2	**200**	**400**	**490 J**	**530**
Byproduct 4	**960**	**470**	**610**	**410**
Byproduct 5	**1,000**	**880 J**	**900 J**	**700 J**
Byproduct 6	<15	<15	<15	**13**
NVHOS	**1,700**	**270**	**280 J**	**270**
EVE Acid	<24	**100**	**110 J**	**95**
Hydro-EVE Acid	**740**	**110**	**130 J**	**120**
R-EVE	**900**	**260**	**310**	**260**
PES	<46	<46	<46	<9.2
PFECA B	<60	<60	<60	<12
PFECA-G	<41	<41	<41	<8.2
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	<2	<2	--
11Cl-PF3OUdS	--	<2	<2	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<20	<20	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<20	<20	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	<2	<2	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	<4	<4	--
6:2 Fluorotelomer sulfonate	--	<20	<20	--
9Cl-PF3ONS	--	<2	<2	--
ADONA	--	<2.1	<2.1	--
NaDONA	--	<2.1	<2.1	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20	<20	--
N-ethylperfluoro-1-octanesulfonamide	--	<2	<2	--
N-methyl perfluoro-1-octanesulfonamide	--	<2	<2	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	<20	<20	--
Perfluorobutane Sulfonic Acid	--	<2	<2	--
Perfluorobutanoic Acid	--	**58**	**61**	--
Perfluorodecane Sulfonic Acid	--	<2	<2	--
Perfluorodecanoic Acid	--	<2	<2	--
Perfluorododecane sulfonic acid (PFDoS)	--	<2	<2	--
Perfluorododecanoic Acid	--	<2	<2	--
Perfluoroheptane sulfonic acid (PFHpS)	--	<2	<2	--
Perfluoroheptanoic Acid	--	**25**	**25**	--
Perfluorohexadecanoic acid (PFHxDA)	--	<2	<2	--
Perfluorohexane Sulfonic Acid	--	<2	<2	--
Perfluorohexanoic Acid	--	**12**	**13**	--
Perfluorononanesulfonic acid	--	<2	<2	--
Perfluorononanoic Acid	--	**6.4**	**6.4**	--
Perfluorooctadecanoic acid	--	<2	<2	--
Perfluorooctane Sulfonamide	--	<2	<2	--
Perfluoropentane sulfonic acid (PFPeS)	--	<2	<2	--
Perfluoropentanoic Acid	--	**100**	**110**	--
Perfluorotetradecanoic Acid	--	<2	<2	--
Perfluorotridecanoic Acid	--	<2	<2	--
Perfluoroundecanoic Acid	--	<2	<2	--
PFOA	--	**100**	**95**	--
PFOS	--	**6.4**	**6.6**	--

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer
Location ID	PW-02	PW-02	PW-02	PW-03
Field Sample ID	PW-02-091119	PW-02-091119-Z	GW4Q19-PW-02-110419	PW-03-091119
Sample Date	9/11/2019	9/11/2019	11/4/2019	9/11/2019
QA/QC	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-54274-1	320-54278-1	320-56112-1	320-54317-1
Lab Sample ID	320-54274-1	320-54278-1	320-56112-7	320-54317-1
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**7,400**	**8,100**	**7,800**	**78,000**
PFMOAA	**9,500,000**	**9,900,000**	**89,000**	**5,900**
PFO2HxA	**2,800,000**	**3,000,000**	**22,000**	**18,000**
PFO3OA	**750,000**	**800,000**	**6,200**	**5,800**
PFO4DA	**250,000**	**270,000**	**2,300**	**1,800**
PFO5DA	**90,000**	**85,000**	**950**	**46**
PMPA	**470,000**	**520,000**	**4,200**	**130,000**
PEPA	**180,000**	**180,000**	**1,500**	**76,000**
PFESA-BP1	**35,000**	**39,000**	**480**	**130**
PFESA-BP2	**43,000**	**40,000**	**550**	**750**
Byproduct 4	**75,000**	**78,000**	**740**	**11,000**
Byproduct 5	**250,000**	**270,000**	**3,000**	**47,000**
Byproduct 6	**1,900**	**2,600**	**20**	**93**
NVHOS	**110,000**	**110,000**	**970**	**8,000**
EVE Acid	**2,200**	**3,600**	**25**	**520**
Hydro-EVE Acid	**18,000**	**19,000**	**220**	**4,900**
R-EVE	**36,000**	**33,000**	**580**	**12,000**
PES	<2,300	<4,600	<46	<46
PFECA B	<3,000	<6,000	<60	<60
PFECA-G	<2,000	<4,100	<41	<41
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	<2	<2	--	<2
11Cl-PF3OUdS	<2	<2	--	<3.2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	--	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	--	<52
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	--	<8.5
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	--	<14
6:2 Fluorotelomer sulfonate	<20	<20	--	<20
9Cl-PF3ONS	<2	<2	--	<2.4
ADONA	<2.1	<2.1	--	<2.1
NaDONA	<2.1	<2.1	--	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	--	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2	--	<8.7
N-methyl perfluoro-1-octanesulfonamide	<2	<2	--	<4.3
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	--	<31
Perfluorobutane Sulfonic Acid	<2	<2	--	<2
Perfluorobutanoic Acid	**68**	**82**	--	**5,400**
Perfluorodecane Sulfonic Acid	<2	<2	--	<3.2
Perfluorodecanoic Acid	<2	<2	--	<3.1
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	--	<4.5
Perfluorododecanoic Acid	<2	<2	--	<5.5
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	--	<2
Perfluoroheptanoic Acid	**26**	**31**	--	**310**
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	--	<8.9
Perfluorohexane Sulfonic Acid	<2	<2	--	**3.3**
Perfluorohexanoic Acid	**13**	**16**	--	**150**
Perfluorononanesulfonic acid	<2	<2	--	<2
Perfluorononanoic Acid	**4.7**	**5.4**	--	<2.7
Perfluorooctadecanoic acid	<2	<2	--	<4.6
Perfluorooctane Sulfonamide	<2	<2	--	<3.5
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	--	<3
Perfluoropentanoic Acid	**120**	**140**	--	**3,700**
Perfluorotetradecanoic Acid	<2	<2	--	<2.9
Perfluorotridecanoic Acid	<2	<2	--	<13
Perfluoroundecanoic Acid	<2	<2	--	<11
PFOA	**85**	**100**	--	**16**
PFOS	**3.6**	**2.3**	--	<5.4

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer
Location ID	PW-03	PW-03	PW-04	PW-04
Field Sample ID	PW-03-091119-Z	GW4Q19-PW-03-110619	PW-04-091119	PW-04-091119-Z
Sample Date	9/11/2019	11/6/2019	9/11/2019	9/11/2019
QA/QC	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-54319-1	320-56117-1	320-54294-1	320-54294-1
Lab Sample ID	320-54319-1	320-56117-6	320-54294-4	320-54294-5
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**54,000**	**61,000**	**940**	**880**
PFMOAA	**5,100**	**6,300**	**270**	**320**
PFO2HxA	**16,000**	**18,000**	**770**	**870**
PFO3OA	**5,200**	**5,700**	**280**	**310**
PFO4DA	**1,400**	**1,700**	**66**	**68**
PFO5DA	<34	<34	<2	<2
PMPA	**120,000**	**150,000**	**710**	**790**
PEPA	**69,000**	**76,000**	**310**	**340**
PFESA-BP1	**93**	**94**	<2	<2
PFESA-BP2	**460**	**800**	**8.4**	**4.3**
Byproduct 4	**9,600**	**10,000**	**120**	**160 J**
Byproduct 5	**42,000**	**37,000**	**4.4**	**4.4 J**
Byproduct 6	**69**	**110**	<2	<2
NVHOS	**7,100**	**8,400**	**6.7**	**8**
EVE Acid	**440**	**500**	<2	<2
Hydro-EVE Acid	**3,600**	**5,300**	**5.9**	**5**
R-EVE	**11,000**	**12,000**	**47**	**64**
PES	<46	<46	<2	<2
PFECA B	<60	<60	<2	<2
PFECA-G	<41	<41	<2	<2
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	<2	--	<2	<2
11Cl-PF3OUdS	<3.2	--	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	--	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<52	--	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<8.5 UJ	--	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<14 UJ	--	<4	<4
6:2 Fluorotelomer sulfonate	<20	--	<20	<20
9Cl-PF3ONS	<2.4	--	<2	<2
ADONA	<2.1	--	<2.1	<2.1
NaDONA	<2.1	--	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	--	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<8.7	--	<2 UJ	<2
N-methyl perfluoro-1-octanesulfonamide	<4.3	--	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<31	--	<20	<20
Perfluorobutane Sulfonic Acid	<2	--	<2	<2
Perfluorobutanoic Acid	**4,700**	--	**11**	**11**
Perfluorodecane Sulfonic Acid	<3.2	--	<2	<2
Perfluorodecanoic Acid	<3.1	--	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<4.5	--	<2	<2
Perfluorododecanoic Acid	<5.5	--	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	--	<2	<2
Perfluoroheptanoic Acid	**260**	--	**5.1**	**6.1**
Perfluorohexadecanoic acid (PFHxDA)	<8.9	--	<2	<2
Perfluorohexane Sulfonic Acid	**3.6**	--	<2	<2
Perfluorohexanoic Acid	**120**	--	**3.5**	**3.7**
Perfluorononanesulfonic acid	<2	--	<2	<2
Perfluorononanoic Acid	<2.7	--	<2	<2
Perfluorooctadecanoic acid	<4.6	--	<2	<2
Perfluorooctane Sulfonamide	<3.5	--	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<3	--	<2	<2
Perfluoropentanoic Acid	**3,400**	--	**17**	**17**
Perfluorotetradecanoic Acid	<2.9	--	<2	<2
Perfluorotridecanoic Acid	<13	--	<2	<2
Perfluoroundecanoic Acid	<11	--	<2	<2
PFOA	**13**	--	<2	<2
PFOS	<5.4	--	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer
Location ID	PW-04	PW-05	PW-05	PW-06
Field Sample ID	GW4Q19-PW-04-103019	PW-05-090919	GW4Q19-PW-05-103019	PW-06-091019
Sample Date	10/30/2019	9/9/2019	10/30/2019	9/10/2019
QA/QC	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-55860-1	320-54174-1	320-55860-1	320-54231-1
Lab Sample ID	320-55860-4	320-54174-1	320-55860-3	320-54231-1
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**1,000**	**1,600**	**1,200**	**950**
PFMOAA	**360 J**	<210	**230**	<210
PFO2HxA	**950**	**730**	**690**	**510**
PFO3OA	**330**	**73**	**73**	**74**
PFO4DA	**70**	**130**	**120**	<79
PFO5DA	<2	<34 UJ	<2 UJ	<34
PMPA	**1,100**	**1,600**	**1,300**	**1,100**
PEPA	**450**	**430**	**410**	**380**
PFESA-BP1	<2	<27	<2	<27
PFESA-BP2	**16**	**50**	**59**	<30
Byproduct 4	**200 J**	<160	**36**	<160
Byproduct 5	**3.6 J**	<58	<2	<58
Byproduct 6	<2	<15	<2	<15
NVHOS	**10**	<54	**6.4**	<54
EVE Acid	<2	<24	<2	<24
Hydro-EVE Acid	**10**	<28	**17**	<28
R-EVE	**65 J**	<70	**17**	<70
PES	<2	<46	<2	<46
PFECA B	<2	<60	<2	<60
PFECA-G	<2	<41	<2	<41
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	<2	--	<2
11Cl-PF3OUdS	--	<2	--	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<20	--	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<20	--	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	<2	--	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	<4	--	<4
6:2 Fluorotelomer sulfonate	--	<20	--	<20
9Cl-PF3ONS	--	<2	--	<2
ADONA	--	<2.1	--	<2.1
NaDONA	--	<2.1	--	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20	--	<20
N-ethylperfluoro-1-octanesulfonamide	--	<2	--	<2
N-methyl perfluoro-1-octanesulfonamide	--	<2	--	<2
N-methyl perfluorooctane sulfonamidoacetic acid	--	<20	--	<20
Perfluorobutane Sulfonic Acid	--	<2	--	<2
Perfluorobutanoic Acid	--	**13**	--	**8.8**
Perfluorodecane Sulfonic Acid	--	<2	--	<2
Perfluorodecanoic Acid	--	<2	--	<2
Perfluorododecane sulfonic acid (PFDoS)	--	<2	--	<2
Perfluorododecanoic Acid	--	<2	--	<2
Perfluoroheptane sulfonic acid (PFHpS)	--	<2	--	<2
Perfluoroheptanoic Acid	--	**4.5**	--	**3.7**
Perfluorohexadecanoic acid (PFHxDA)	--	<2	--	<2
Perfluorohexane Sulfonic Acid	--	<2	--	<2
Perfluorohexanoic Acid	--	**3**	--	**3**
Perfluorononanesulfonic acid	--	<2	--	<2
Perfluorononanoic Acid	--	<2	--	<2
Perfluorooctadecanoic acid	--	<2	--	<2
Perfluorooctane Sulfonamide	--	<2	--	<2
Perfluoropentane sulfonic acid (PFPeS)	--	<2	--	<2
Perfluoropentanoic Acid	--	**15**	--	**12**
Perfluorotetradecanoic Acid	--	<2	--	<2
Perfluorotridecanoic Acid	--	<2	--	<2
Perfluoroundecanoic Acid	--	<2	--	<2
PFOA	--	**7.7**	--	**4.1**
PFOS	--	<2	--	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer
Location ID	PW-06	PW-07	PW-07	PW-07
Field Sample ID	GW4Q19-PW-06-102919	PW-07-091319	PW-07-091319-Z	GW4Q19-PW-07-110819
Sample Date	10/29/2019	9/13/2019	9/13/2019	11/8/2019
QA/QC	--	--	--	--
Sample Matrix	Liquid	Liquid	Liquid	LIQUID
SDG	320-55854-1	320-54328-1	320-54328-1	320-56173-1
Lab Sample ID	320-55854-1	320-54328-2	320-54328-3	320-56173-7
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**1,300**	**1,100**	**1,000**	**790 J**
PFMOAA	**250**	**400**	**360**	**310 J**
PFO2HxA	**690**	**1,000**	**960**	**880**
PFO3OA	**110**	**140**	**140**	**110**
PFO4DA	**71**	**87**	**81**	**54**
PFO5DA	<2 UJ	<2	<2	**5.7**
PMPA	**1,400**	**1,400**	**1,300**	**1,400**
PEPA	**490**	**440**	**420**	**380 J**
PFESA-BP1	<2	<2	<2	<2
PFESA-BP2	**40**	**5.1**	**3.1**	**7.4**
Byproduct 4	**50**	**41**	**59 J**	**23**
Byproduct 5	<2	<2	<2	**9.1**
Byproduct 6	<2	<2	<2	<2
NVHOS	**7.5**	**9.1**	**8.8**	**9.1**
EVE Acid	<2	<2	<2	<2
Hydro-EVE Acid	**9.3**	**6.4**	**6**	**6.5**
R-EVE	**22**	**13**	**16 J**	**9.5 J**
PES	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	<2	<2	--
11Cl-PF3OUdS	--	<2	<2	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<20	<20	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<20	<20	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	<2	<2	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	<4	<4	--
6:2 Fluorotelomer sulfonate	--	<20	<20	--
9Cl-PF3ONS	--	<2	<2	--
ADONA	--	<2.1	<2.1	--
NaDONA	--	<2.1	<2.1	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20	<20	--
N-ethylperfluoro-1-octanesulfonamide	--	<2	<2	--
N-methyl perfluoro-1-octanesulfonamide	--	<2	<2	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	<20	<20	--
Perfluorobutane Sulfonic Acid	--	<2	<2	--
Perfluorobutanoic Acid	--	**33**	**32**	--
Perfluorodecane Sulfonic Acid	--	<2	<2	--
Perfluorodecanoic Acid	--	<2	<2	--
Perfluorododecane sulfonic acid (PFDoS)	--	<2	<2	--
Perfluorododecanoic Acid	--	<2	<2	--
Perfluoroheptane sulfonic acid (PFHpS)	--	<2	<2	--
Perfluoroheptanoic Acid	--	**6.2**	**4.4**	--
Perfluorohexadecanoic acid (PFHxDA)	--	<2	<2	--
Perfluorohexane Sulfonic Acid	--	<2	<2	--
Perfluorohexanoic Acid	--	**4.7**	**4.2**	--
Perfluorononanesulfonic acid	--	<2	<2	--
Perfluorononanoic Acid	--	<2	<2	--
Perfluorooctadecanoic acid	--	<2	<2	--
Perfluorooctane Sulfonamide	--	<2	<2	--
Perfluoropentane sulfonic acid (PFPeS)	--	<2	<2	--
Perfluoropentanoic Acid	--	**21**	**21**	--
Perfluorotetradecanoic Acid	--	<2	<2	--
Perfluorotridecanoic Acid	--	<2	<2	--
Perfluoroundecanoic Acid	--	<2	<2	--
PFOA	--	**2.7**	<2	--
PFOS	--	<2	<2	--

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	**PW-09**	**PW-09**	**PW-09**	**PW-10R**
Field Sample ID	**PW-09-091119**	**PW-09-091119-Z**	**GW4Q19-PW-09-103019**	**GW0619-PW-10R**
Sample Date	**9/11/2019**	**9/11/2019**	**10/30/2019**	**9/19/2019**
QA/QC	--	--	--	--
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-54274-1**	**320-54278-1**	**320-55860-1**	**320-54522-1**
Lab Sample ID	**320-54274-2**	**320-54278-2**	**320-55860-5**	**320-54522-1**
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	<4	<4	<2	**9,900**
PFMOAA	<210	<210	<5	**130,000**
PFO2HxA	**170 J**	**160**	<2	**23,000**
PFO3OA	<58	<58	<2	**1,100**
PFO4DA	<79	<79	<2	<79
PFO5DA	<34	<34	<2	<34
PMPA	**1,600**	**1,900**	<10	**3,200**
PEPA	**220**	**160**	<20	**440**
PFESA-BP1	**160 J**	**79**	<2	<27
PFESA-BP2	**81**	**37**	<2	<30
Byproduct 4	<160	<160	<2	<160
Byproduct 5	**94**	**65 J**	<2	**160**
Byproduct 6	<15	<15	<2	<15
NVHOS	<54	<54	<2	**680**
EVE Acid	<24	<24	<2	<24
Hydro-EVE Acid	<28	<28	<2	<28
R-EVE	<70	<70	<2	**230**
PES	<46	<46	<2	<46
PFECA B	<60	<60	<2	<60
PFECA-G	<41	<41	<2	<41
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	<2	<2	--	<22
11Cl-PF3OUdS	<2	<2	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	--	<230
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	--	<600
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	--	<97
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	--	<160
6:2 Fluorotelomer sulfonate	<20	<20	--	<230
9Cl-PF3ONS	<2	<2	--	--
ADONA	<2.1	<2.1	--	--
NaDONA	<2.1	<2.1	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	--	<220
N-ethylperfluoro-1-octanesulfonamide	<2	<2	--	<37
N-methyl perfluoro-1-octanesulfonamide	<2	<2	--	<49
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	--	<350
Perfluorobutane Sulfonic Acid	<2	<2	--	**130**
Perfluorobutanoic Acid	<2	<2	--	**66**
Perfluorodecane Sulfonic Acid	<2	<2	--	<37
Perfluorodecanoic Acid	<2	<2	--	<35
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	--	<52
Perfluorododecanoic Acid	<2	<2	--	<63
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	--	<22
Perfluoroheptanoic Acid	<2	<2	--	<29
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	--	<100
Perfluorohexane Sulfonic Acid	<2	<2	--	<19
Perfluorohexanoic Acid	<2	<2	--	<66
Perfluorononanesulfonic acid	<2	<2	--	<18
Perfluorononanoic Acid	<2	<2	--	<31
Perfluorooctadecanoic acid	<2	<2	--	<53
Perfluorooctane Sulfonamide	<2	<2	--	<40
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	--	<34
Perfluoropentanoic Acid	<2	<2	--	**530**
Perfluorotetradecanoic Acid	<2	<2	--	<33
Perfluorotridecanoic Acid	<2	<2	--	<150
Perfluoroundecanoic Acid	<2	<2	--	<130
PFOA	<2	<2	--	<97
PFOS	<2	<2	--	<62

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	PW-10R	PW-10R	PW-11	PW-11
Field Sample ID	GW0619-PW-10R-Z	GW4Q19-PW-10R-110419	PW-11-091019	PW-11-091019-Z
Sample Date	9/19/2019	11/4/2019	9/10/2019	9/10/2019
QA/QC	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-54524-1	320-56112-1	320-54231-1	320-54229-1
Lab Sample ID	320-54524-1	320-56112-4	320-54231-2	320-54229-1
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**8,400**	**5,200**	**16,000**	**20,000**
PFMOAA	**120,000**	**150,000**	**280,000**	**310,000**
PFO2HxA	**22,000**	**24,000**	**56,000 J**	**59,000**
PFO3OA	**980**	**1,000**	**32,000 J**	**33,000**
PFO4DA	<79	<79	**16,000**	**16,000**
PFO5DA	<34	**34**	**670 J**	**480**
PMPA	**3,100**	**3,500**	**8,200**	**9,000**
PEPA	**440**	**490**	**3,100**	**3,200**
PFESA-BP1	<27	<27	**410**	**320**
PFESA-BP2	<30	<30	**910**	**720**
Byproduct 4	<160	<160	**1,400**	**1,700**
Byproduct 5	**160**	**170**	**3,200**	**3,300**
Byproduct 6	<15	<15	**93**	**78**
NVHOS	**640**	**820**	**3,000**	**3,100**
EVE Acid	<24	<24	<120	<120
Hydro-EVE Acid	<28	<28	**940**	**820**
R-EVE	**210**	**150**	**540**	**640**
PES	<46	<46	<230	<230
PFECA B	<60	<60	<300	<300
PFECA-G	<41	<41	<200	<200
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	<19	--	<2	<2
11Cl-PF3OUdS	--	--	<3.1	<2.9
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<200	--	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<530	--	<500	<48
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<87	--	<82	<7.8
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<140	--	<13	<13
6:2 Fluorotelomer sulfonate	<200	--	**21**	<20
9Cl-PF3ONS	--	--	<2.3	<2.2
ADONA	--	--	<2.1	<2.1
NaDONA	--	--	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<190	--	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<37	--	<84	<7.9
N-methyl perfluoro-1-octanesulfonamide	<35	--	<4.1	<3.9
N-methyl perfluorooctane sulfonamidoacetic acid	<320	--	<300	<28
Perfluorobutane Sulfonic Acid	**95**	--	<2	**3.2**
Perfluorobutanoic Acid	**67**	--	**150**	**150**
Perfluorodecane Sulfonic Acid	<33	--	<3.1	<2.9
Perfluorodecanoic Acid	<32	--	<3	<2.8
Perfluorododecane sulfonic acid (PFDoS)	<46	--	<4.3	<4.1
Perfluorododecanoic Acid	<56	--	<5.3	<5
Perfluoroheptane sulfonic acid (PFHpS)	<19	--	<2	<2
Perfluoroheptanoic Acid	<26	--	**430**	**410**
Perfluorohexadecanoic acid (PFHxDA)	<91	--	<8.6	<8.1
Perfluorohexane Sulfonic Acid	<17	--	**3.5**	**5.1**
Perfluorohexanoic Acid	<59	--	**39**	**35**
Perfluorononanesulfonic acid	<16	--	<2	<2
Perfluorononanoic Acid	<28	--	**4.2**	**3.1**
Perfluorooctadecanoic acid	<47	--	<4.4	<4.2
Perfluorooctane Sulfonamide	<36	--	<3.4	<3.2
Perfluoropentane sulfonic acid (PFPeS)	<31	--	<2.9	<2.7
Perfluoropentanoic Acid	**560**	--	**1,300**	**1,400**
Perfluorotetradecanoic Acid	<30	--	<2.8	<2.6
Perfluorotridecanoic Acid	<130	--	<13	<12
Perfluoroundecanoic Acid	<110	--	<11	<10
PFOA	<87	--	**25**	**23**
PFOS	<55	--	<5.2	<4.9

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	**PW-11**	**PW-12**	**PW-12**	**PW-12**
Field Sample ID	**GW4Q19-PW-11-102319**	**PW-12-091119**	**PW-12-091119-Z**	**GW4Q19-PW-12-110519**
Sample Date	**10/23/2019**	**9/11/2019**	**9/11/2019**	**11/5/2019**
QA/QC	**--**	**--**	**--**	**--**
Sample Matrix	**LIQUID**	**Liquid**	**Liquid**	**LIQUID**
SDG	**320-55683-1**	**320-54299-1**	**320-54299-1**	**320-56112-1**
Lab Sample ID	**320-55683-2**	**320-54299-4**	**320-54299-5**	**320-56112-10**
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**12,000**	<4	<4	<2
PFMOAA	**190,000**	<5	<5	<5
PFO2HxA	**36,000**	<2	<2	<2
PFO3OA	**18,000**	<2	<2	<2
PFO4DA	**11,000**	<2	<2	<2
PFO5DA	**1,100**	<2	<2	<2
PMPA	**6,000**	**15**	<10	<10
PEPA	**2,400**	<20	<20	<20
PFESA-BP1	**440**	<2	<2	<2
PFESA-BP2	**980**	<2	<2	<2
Byproduct 4	**1,100**	<2	<2	<2
Byproduct 5	**2,000 J**	<2	<2	<2
Byproduct 6	<77	<2	<2	<2
NVHOS	**1,800**	<2	<2	<2
EVE Acid	<120	<2	<2	<2
Hydro-EVE Acid	**590**	<2	<2	<2
R-EVE	<350	<2	<2	<2
PES	<230	<2	<2	<2
PFECA B	<300	<2	<2	<2
PFECA-G	<200	<2	<2	<2
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	<2	<2	--
11Cl-PF3OUdS	--	<2	<2	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<20	<20	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<20	<20	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	<2	<2	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	<4	<4	--
6:2 Fluorotelomer sulfonate	--	<20	<20	--
9Cl-PF3ONS	--	<2	<2	--
ADONA	--	<2.1	<2.1	--
NaDONA	--	<2.1	<2.1	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20	<20	--
N-ethylperfluoro-1-octanesulfonamide	--	<2	<2	--
N-methyl perfluoro-1-octanesulfonamide	--	<2	<2	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	<20	<20	--
Perfluorobutane Sulfonic Acid	--	<2	<2	--
Perfluorobutanoic Acid	--	<2	<2	--
Perfluorodecane Sulfonic Acid	--	<2	<2	--
Perfluorodecanoic Acid	--	<2	<2	--
Perfluorododecane sulfonic acid (PFDoS)	--	<2	<2	--
Perfluorododecanoic Acid	--	<2	<2	--
Perfluoroheptane sulfonic acid (PFHpS)	--	<2	<2	--
Perfluoroheptanoic Acid	--	<2	<2	--
Perfluorohexadecanoic acid (PFHxDA)	--	<2 UJ	<2 UJ	--
Perfluorohexane Sulfonic Acid	--	<2	<2	--
Perfluorohexanoic Acid	--	<2	<2	--
Perfluorononanesulfonic acid	--	<2	<2	--
Perfluorononanoic Acid	--	<2	<2	--
Perfluorooctadecanoic acid	--	<2 UJ	<2 UJ	--
Perfluorooctane Sulfonamide	--	<2	<2	--
Perfluoropentane sulfonic acid (PFPeS)	--	<2	<2	--
Perfluoropentanoic Acid	--	<2	<2	--
Perfluorotetradecanoic Acid	--	<2	<2	--
Perfluorotridecanoic Acid	--	<2	<2	--
Perfluoroundecanoic Acid	--	<2	<2	--
PFOA	--	<2	<2	--
PFOS	--	<2	<2	--

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	PW-13	PW-13	PW-13	PW-14
Field Sample ID	PW-13-091019	PW-13-091019-Z	GW4Q19-PW-13-110819	PW-14-091119
Sample Date	9/10/2019	9/10/2019	11/8/2019	9/11/2019
QA/QC	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-54231-1	320-54229-1	320-56173-1	320-54274-1
Lab Sample ID	320-54231-3	320-54229-2	320-56173-8	320-54274-3
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	<15	<15	<2	**22,000**
PFMOAA	<210	<2,100	<5	**9,500,000**
PFO2HxA	<81	<810	<2	**3,400,000**
PFO3OA	<58	<580	<2	**1,100,000**
PFO4DA	<79	<790	<2	**610,000**
PFO5DA	<34	<340	<2	**390,000**
PMPA	<570	<5,700	<10	**1,400,000**
PEPA	<47	<470	<20	**390,000**
PFESA-BP1	<27	<270	<2	**6,000**
PFESA-BP2	<30	<300	<2	**250,000**
Byproduct 4	<160	<1,600	<2	**150,000**
Byproduct 5	<58	<580	<2	**190,000**
Byproduct 6	<15	<150	<2	**5,000**
NVHOS	<54	<540	<2	**96,000**
EVE Acid	<24	<240	<2	<2,400
Hydro-EVE Acid	<28	<280	<2	**210,000**
R-EVE	<70	<700	<2	**130,000**
PES	<46	<460	<2	<4,600
PFECA B	<60	<600	<2	<6,000
PFECA-G	<41	<410	<2	<4,100
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	<2	<2	--	<2
11Cl-PF3OUdS	<3.2	<3.2	--	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	--	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<52	<52	--	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<8.5	<8.5	--	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<14	<14	--	<4
6:2 Fluorotelomer sulfonate	<20	**38**	--	<20
9Cl-PF3ONS	<2.4	<2.4	--	<2
ADONA	<2.1	<2.1	--	<2.1
NaDONA	<2.1	<2.1	--	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	--	<20
N-ethylperfluoro-1-octanesulfonamide	<8.7	<8.7	--	<2
N-methyl perfluoro-1-octanesulfonamide	<4.3	<4.3	--	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<31	<31	--	<20
Perfluorobutane Sulfonic Acid	<2	**16**	--	<2
Perfluorobutanoic Acid	<3.5	<3.5	--	**420**
Perfluorodecane Sulfonic Acid	<3.2	<3.2	--	<2
Perfluorodecanoic Acid	<3.1	<3.1	--	**2.4**
Perfluorododecane sulfonic acid (PFDoS)	<4.5	<4.5	--	<2
Perfluorododecanoic Acid	<5.5	<5.5	--	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	--	<2
Perfluoroheptanoic Acid	<2.5	<2.5	--	**280**
Perfluorohexadecanoic acid (PFHxDA)	<8.9	<8.9	--	<2
Perfluorohexane Sulfonic Acid	**2.3**	**2.1**	--	**4.2**
Perfluorohexanoic Acid	<5.8	<5.8	--	**130**
Perfluorononanesulfonic acid	<2	<2	--	<2
Perfluorononanoic Acid	<2.7	<2.7	--	**190**
Perfluorooctadecanoic acid	<4.6	<4.6	--	<2
Perfluorooctane Sulfonamide	<3.5	<3.5	--	<2
Perfluoropentane sulfonic acid (PFPeS)	<3	<3	--	<2
Perfluoropentanoic Acid	<4.9	<4.9	--	**1,300**
Perfluorotetradecanoic Acid	<2.9	**4.8**	--	<2
Perfluorotridecanoic Acid	<13	<13	--	<2
Perfluoroundecanoic Acid	<11	<11	--	<2
PFOA	<8.5	<8.5	--	**120**
PFOS	<5.4	<5.4	--	**16**

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	PW-14	PW-15R	PW-15R
Field Sample ID	GW4Q19-PW-14-102319	GW0619-PW-15R-D	GW0619-PW-15R
Sample Date	10/23/2019	9/19/2019	9/19/2019
QA/QC	--	Field Duplicate	--
Sample Matrix	LIQUID	LIQUID	LIQUID
SDG	320-55683-1	320-54519-1	320-54519-1
Lab Sample ID	320-55683-8	320-54519-2	320-54519-1
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	**17,000**	**11,000 J**	**8,700 J**
PFMOAA	**95,000**	**340,000**	**330,000**
PFO2HxA	**27,000**	**64,000**	**63,000**
PFO3OA	**8,100**	**14,000**	**14,000**
PFO4DA	**4,800**	**2,200**	**2,200**
PFO5DA	**2,900**	<67	<67
PMPA	**13,000**	**36,000**	**36,000**
PEPA	**3,400**	**9,300**	**8,900**
PFESA-BP1	**52**	**4,100**	**3,300**
PFESA-BP2	**2,500**	**670**	**640 J**
Byproduct 4	**1,200**	**1,800 J**	**1,500 J**
Byproduct 5	**2,400 J**	**21,000**	**19,000**
Byproduct 6	**42**	**34**	**270**
NVHOS	**840**	**3,500**	**3,500**
EVE Acid	**25**	**190**	**250 J**
Hydro-EVE Acid	**2,000**	**510**	**550 J**
R-EVE	**1,200**	**560**	**700 J**
PES	<46	<92	**210**
PFECA B	<60	<120	**220**
PFECA-G	<41	<82	**210**
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	<18	<28
11Cl-PF3OUdS	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<180	<180
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<480	<470
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	<78	**240**
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	<130	**270**
6:2 Fluorotelomer sulfonate	--	<180	<180
9Cl-PF3ONS	--	--	--
ADONA	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<180	<170
N-ethylperfluoro-1-octanesulfonamide	--	<75	**210**
N-methyl perfluoro-1-octanesulfonamide	--	<40	**220**
N-methyl perfluorooctane sulfonamidoacetic acid	--	<290	<280
Perfluorobutane Sulfonic Acid	--	**20**	<33
Perfluorobutanoic Acid	--	**140**	**170**
Perfluorodecane Sulfonic Acid	--	<30	<36
Perfluorodecanoic Acid	--	<29	<36
Perfluorododecane sulfonic acid (PFDoS)	--	<42	<41
Perfluorododecanoic Acid	--	<51	<50
Perfluoroheptane sulfonic acid (PFHpS)	--	<18	<31
Perfluoroheptanoic Acid	--	**56 J**	**94 J**
Perfluorohexadecanoic acid (PFHxDA)	--	<82	<81
Perfluorohexane Sulfonic Acid	--	<16	<32
Perfluorohexanoic Acid	--	<54	<60
Perfluorononanesulfonic acid	--	<15	<30
Perfluorononanoic Acid	--	<25	<39
Perfluorooctadecanoic acid	--	<42	<42
Perfluorooctane Sulfonamide	--	<32	<32
Perfluoropentane sulfonic acid (PFPeS)	--	<28	<33
Perfluoropentanoic Acid	--	**580**	**660**
Perfluorotetradecanoic Acid	--	<27	<36
Perfluorotridecanoic Acid	--	<120	<120
Perfluoroundecanoic Acid	--	<100	<100
PFOA	--	<78	<77
PFOS	--	<50	<49

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Black Creek Aquifer	Perched Zone	Perched Zone
Location ID	PW-15R	PW-15R	PZ-11	PZ-11
Field Sample ID	GW4Q19-PW-15R-110619-D	GW4Q19-PW-15R-110619	GW0619-PZ-11-D	GW0619-PZ-11
Sample Date	11/6/2019	11/6/2019	7/16/2019	7/16/2019
QA/QC	Field Duplicate	--	Field Duplicate	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-56117-1	320-56117-1	320-52322-1	320-52322-1
Lab Sample ID	320-56117-5	320-56117-4	320-52322-2	320-52322-1
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**11,000**	**11,000**	**6,200 B**	**4,900 B**
PFMOAA	**460,000**	**450,000**	**7,500**	**7,100**
PFO2HxA	**77,000**	**76,000**	**5,000**	**4,800**
PFO3OA	**17,000**	**16,000**	**910**	**830**
PFO4DA	**2,300**	**2,000**	**710**	**650**
PFO5DA	<170	<170	**920**	**800**
PMPA	**50,000**	**50,000**	**3,600**	**3,300**
PEPA	**11,000**	**11,000**	**1,200**	**1,100**
PFESA-BP1	**2,400**	**2,300**	**560**	**530**
PFESA-BP2	**480**	**470**	**350**	**320**
Byproduct 4	**2,400**	**2,200**	**260**	**220**
Byproduct 5	**27,000**	**27,000**	**1,200**	**1,200**
Byproduct 6	<77	<77	<15	<15
NVHOS	**4,800**	**4,600**	**130**	**140**
EVE Acid	<120	<120	**30**	**29**
Hydro-EVE Acid	**430**	**400**	**110**	**120**
R-EVE	**890**	**930**	**110 J**	**110 J**
PES	<230	<230	<46	<46
PFECA B	<300	<300	<60	<60
PFECA-G	<200	<200	<41	<41
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	--	--
11Cl-PF3OUdS	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
6:2 Fluorotelomer sulfonate	--	--	<20	<20
9Cl-PF3ONS	--	--	--	--
ADONA	--	--	--	--
NaDONA	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	<20	<20
Perfluorobutane Sulfonic Acid	--	--	**2.6**	**2.8**
Perfluorobutanoic Acid	--	--	**43**	**43**
Perfluorodecane Sulfonic Acid	--	--	<2	<2
Perfluorodecanoic Acid	--	--	**3.2**	**3**
Perfluorododecane sulfonic acid (PFDoS)	--	--	<2	<2
Perfluorododecanoic Acid	--	--	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	--	--	<2	<2
Perfluoroheptanoic Acid	--	--	**23**	**23**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--
Perfluorohexane Sulfonic Acid	--	--	**4.9**	**5.2**
Perfluorohexanoic Acid	--	--	**20**	**20**
Perfluorononanesulfonic acid	--	--	<2	<2
Perfluorononanoic Acid	--	--	**6**	**6.2**
Perfluorooctadecanoic acid	--	--	<2	<2
Perfluorooctane Sulfonamide	--	--	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	--	--	<2	<2
Perfluoropentanoic Acid	--	--	**65**	**64**
Perfluorotetradecanoic Acid	--	--	<2	<2
Perfluorotridecanoic Acid	--	--	<2	<2
Perfluoroundecanoic Acid	--	--	<2	**2.2**
PFOA	--	--	**43**	**42**
PFOS	--	--	**15**	**16**

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	**Perched Zone**	**Perched Zone**	**Perched Zone**	**Perched Zone**	**Perched Zone**
Location ID	**PZ-12**	**PZ-13**	**PZ-14**	**PZ-15**	**PZ-19R**
Field Sample ID	**GW0619-PZ-12**	**GW0619-PZ-13**	**GW0619-PZ-14**	**GW0619-PZ-15**	**GW0619-PZ-19R**
Sample Date	**7/11/2019**	**6/25/2019**	**7/3/2019**	**6/25/2019**	**7/1/2019**
QA/QC	**--**	**--**	**--**	**--**	**--**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-52282-1**	**320-51746-1**	**320-52030-1**	**320-51746-1**	**320-52028-1**
Lab Sample ID	**320-52282-2**	**320-51746-6**	**320-52030-4**	**320-51746-3**	**320-52028-2**
Table 3+ Lab SOP (ng/L)					
Hfpo Dimer Acid	**6,800**	**44,000 J**	**32,000**	**10,000**	**6,500**
PFMOAA	**63,000 J**	**8,000 J**	**5,300**	**2,800 J**	**3,000**
PFO2HxA	**13,000**	**20,000 J**	**14,000**	**9,000 J**	**6,100**
PFO3OA	**3,000**	**3,200 J**	**2,800 J**	**1,300 J**	**720**
PFO4DA	**990**	**3,300 J**	**2,100 J**	**1,100 J**	**740**
PFO5DA	**360**	**4,600 J**	**3,100 J**	**1,000 J**	**450 J**
PMPA	**5,300**	**110,000 J**	**48,000**	**19,000 J**	**4,400**
PEPA	**1,200**	**62,000 J**	**17,000**	**7,600 J**	**1,900**
PFESA-BP1	**7,600**	**320 J**	<27	<27 UJ	**31**
PFESA-BP2	**770**	**1,300 J**	**620**	**550 J**	**230**
Byproduct 4	**480**	**3,200 J**	**980**	**970 J**	**390**
Byproduct 5	**5,800 J**	**1,600 J**	**72**	**180 J**	**70**
Byproduct 6	**18**	**28 J**	**22**	<15 UJ	**5**
NVHOS	**450**	**290 J**	**380**	**130 J**	**76**
EVE Acid	**150**	**200 J**	<24	<24 UJ	**23**
Hydro-EVE Acid	**210**	**320 J**	**410**	**140 J**	**57**
R-EVE	**200 J**	**2,300 J**	**280**	**620 J**	**250**
PES	<46	<46 UJ	<46	<46 UJ	<4.6
PFECA B	<60	<60 UJ	<60	<60 UJ	<6
PFECA-G	<41	<41 UJ	<41	<41 UJ	<4.1
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	--	--	--	--	--
11Cl-PF3OUdS	--	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20
9Cl-PF3ONS	--	--	--	--	--
ADONA	--	--	--	--	--
NaDONA	--	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2	**4.2**
Perfluorobutanoic Acid	**67**	**2,400**	**460**	**160**	**63**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	**3.1**	<2	<2	**3.7**
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	**38**	**120**	**52**	**27**	**34**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--	--
Perfluorohexane Sulfonic Acid	**3.2**	<2	<2	<2	**6.9**
Perfluorohexanoic Acid	**24**	**55**	**22**	**11**	**31**
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2
Perfluorononanoic Acid	**4.4**	**55**	**20**	**5.2**	**7.5**
Perfluorooctadecanoic acid	<2 UJ	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	**150**	**910**	**310**	**160**	**90**
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	**3.5**	<2	<2	<2
PFOA	**120**	**78**	**130**	**44**	**32**
PFOS	**8.9**	**6.9**	**6.5**	**4.9**	**16**

Notes:

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Perched Zone	Perched Zone	Black Creek Aquifer	Perched Zone	Perched Zone
Location ID	PZ-20R	PZ-21R	PZ-22	PZ-24	PZ-26
Field Sample ID	GW0619-PZ-20R	GW0619-PZ-21R	GW0619-PZ-22	GW0619-PZ-24	GW0619-PZ-26
Sample Date	7/1/2019	7/2/2019	7/23/2019	6/25/2019	6/25/2019
QA/QC	--	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-52028-1	320-52030-1	320-52722-1	320-51746-1	320-51746-1
Lab Sample ID	320-52028-1	320-52030-1	320-52722-2	320-51746-10	320-51746-9
Table 3+ Lab SOP (ng/L)					
Hfpo Dimer Acid	**3,500**	**2,100**	**10,000**	**36,000**	**240**
PFMOAA	**820**	**920**	**180,000**	**1,300 J**	<210 UJ
PFO2HxA	**2,600**	**1,800**	**38,000**	**4,100 J**	**190 J**
PFO3OA	**240**	**190 J**	**3,800**	**810 J**	<58 UJ
PFO4DA	**190**	**220 J**	**340**	**710 J**	<79 UJ
PFO5DA	**160 J**	**150 J**	<67	**190 J**	**58 J**
PMPA	**2,000**	**1,000**	**4,700**	**14,000 J**	<570 UJ
PEPA	**870**	**410**	**1,100**	**5,200 J**	**140 J**
PFESA-BP1	<2	**4.3**	<53	<27 UJ	<27 UJ
PFESA-BP2	**98**	**97**	<61	**180 J**	<30 UJ
Byproduct 4	**75**	**88**	**760 J**	**330 J**	<160 UJ
Byproduct 5	**3.2**	**15 J**	**1,900**	<58 UJ	<58 UJ
Byproduct 6	<2	**2.3**	<31	<15 UJ	<15 UJ
NVHOS	**20**	**22**	**1,200**	**93 J**	<54 UJ
EVE Acid	<2	**12**	<49	<24 UJ	<24 UJ
Hydro-EVE Acid	**17**	**20**	**130**	**82 J**	<28 UJ
R-EVE	**38**	**41**	**680**	**280 J**	<70 UJ
PES	<2.3	<2.3	<92	<46 UJ	<46 UJ
PFECA B	<3	<3	<120	<60 UJ	<60 UJ
PFECA-G	<2	<2	<82	<41 UJ	<41 UJ
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	--	--	--	--	--
11Cl-PF3OUdS	--	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20
9Cl-PF3ONS	--	--	--	--	--
ADONA	--	--	--	--	--
NaDONA	--	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	**5**	**4**	<2	**2.3**	**5.5**
Perfluorobutanoic Acid	**28**	**20**	**140**	**140**	**15**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	**6**	**4**	<2	<2	**4.4**
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	**36**	**27**	**33**	**25**	**19**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--	--
Perfluorohexane Sulfonic Acid	**8.2**	**7.1**	<2	<2	**7.6**
Perfluorohexanoic Acid	**38**	**29**	**43**	**16**	**27**
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2
Perfluorononanoic Acid	**5.8**	**6.9**	<2	**2.4**	**3.2**
Perfluorooctadecanoic acid	<2	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	**67**	**46**	**810**	**110**	**28**
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2	<2
PFOA	**24**	**28**	**4**	**160**	**14**
PFOS	**22**	**19**	<2	**3.9**	**23**

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Perched Zone	Perched Zone	Perched Zone	Surficial Aquifer	Perched Zone
Location ID	PZ-27	PZ-28	PZ-35	SMW-01	SMW-02
Field Sample ID	GW0619-PZ-27	GW0619-PZ-28	GW0619-PZ-35	GW0619-SMW-01	GW0619-SMW-02
Sample Date	6/25/2019	6/25/2019	7/2/2019	6/25/2019	7/17/2019
QA/QC	--	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-51746-1	320-51746-1	320-52028-1	320-51746-1	320-52454-1
Lab Sample ID	320-51746-8	320-51746-7	320-52028-3	320-51746-12	320-52454-3
Table 3+ Lab SOP (ng/L)					
Hfpo Dimer Acid	**500**	**1,400**	**1,600**	**2,100**	**18,000**
PFMOAA	**5,800 J**	**460 J**	**560**	**360 J**	**2,900**
PFO2HxA	**1,300 J**	**1,300 J**	**1,500**	**980 J**	**20,000**
PFO3OA	**310 J**	**160 J**	**260**	**210 J**	**3,200**
PFO4DA	**150 J**	**190 J**	**390**	**54 J**	**1,100**
PFO5DA	**120 J**	**46 J**	**410 J**	**3.1 J**	**56**
PMPA	**660 J**	**3,200 J**	**1,100**	**1,700 J**	**21,000**
PEPA	**270 J**	**1,100 J**	**530**	**570 J**	**9,900**
PFESA-BP1	**29 J**	<2 UJ	**11**	<2 UJ	<27
PFESA-BP2	**180 J**	**54 J**	**140**	**55 J**	**120**
Byproduct 4	<160 UJ	**150 J**	**92 J**	**110 J**	**810**
Byproduct 5	**440 J**	<2.9 UJ	**33 J**	<2 UJ	<58
Byproduct 6	<15 UJ	<2 UJ	**2.1**	<2 UJ	**17**
NVHOS	**110 J**	**30 J**	**18**	**11 J**	**320**
EVE Acid	<24 UJ	<2 UJ	**6.1**	<2 UJ	<24
Hydro-EVE Acid	<28 UJ	**16 J**	**29**	**4.9 J**	**67**
R-EVE	<70 UJ	**82 J**	**53 J**	**43 J**	**510**
PES	<46 UJ	<2.3 UJ	<2	<2 UJ	<46
PFECA B	<60 UJ	<3 UJ	<2	<2 UJ	<60
PFECA-G	<41 UJ	<2 UJ	<2	<2 UJ	<41
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	--	--	--	--	--
11Cl-PF3OUdS	--	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<46
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20
9Cl-PF3ONS	--	--	--	--	--
ADONA	--	--	--	--	--
NaDONA	--	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<27
Perfluorobutane Sulfonic Acid	**3.6**	<2	**3.7**	**2**	**2.1**
Perfluorobutanoic Acid	**12**	**28**	**23**	**17**	**88**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2.8
Perfluorodecanoic Acid	<2	**2.6**	**4**	<2	<2.7
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<4
Perfluorododecanoic Acid	<2	<2	<2	<2	<4.9
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	**11**	**11**	**24**	**9.2**	**41**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--	--
Perfluorohexane Sulfonic Acid	**5.2**	**3**	**5.5**	<2	<2
Perfluorohexanoic Acid	**13**	**11**	**26**	**6.2**	**22**
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2
Perfluorononanoic Acid	**2**	**4.3**	**9**	<2	<2.4
Perfluorooctadecanoic acid	<2	<2	<2	<2	<4.1
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<3.1
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2.7
Perfluoropentanoic Acid	**27**	**35**	**43**	**25**	**230**
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2.6
Perfluorotridecanoic Acid	<2	<2	<2	<2	<12
Perfluoroundecanoic Acid	<2	<2	<2	<2	<9.7
PFOA	**13**	**14**	**26**	**9.9**	**34**
PFOS	**12**	**8.9**	**16**	**2.9**	<4.8

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Surficial Aquifer	Surficial Aquifer	Perched Zone
Location ID	SMW-03B	SMW-04B	SMW-05P	SMW-07
Field Sample ID	GW0619-SMW-03B	GW0619-SMW-04B	GW0619-SMW-05P	GW0619-SMW-07
Sample Date	7/12/2019	7/12/2019	7/25/2019	7/8/2019
QA/QC	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-52285-1	320-52285-1	320-52722-1	320-52171-1
Lab Sample ID	320-52285-2	320-52285-3	320-52722-3	320-52171-5
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**12,000**	**13,000**	**19,000**	**12,000**
PFMOAA	**460,000**	**41,000**	**220,000**	**750**
PFO2HxA	**72,000**	**7,000**	**45,000**	**2,200**
PFO3OA	**10,000 J**	**1,600 J**	**13,000**	**220**
PFO4DA	<790	**430**	**4,700**	**280**
PFO5DA	<340	**61 J**	**460**	**72 J**
PMPA	**56,000**	**4,800**	**27,000**	**2,700**
PEPA	**11,000**	**990**	**5,100**	**770**
PFESA-BP1	**430**	**46**	**1,200**	<27
PFESA-BP2	<300	**56**	**210**	**150**
Byproduct 4	**2,200**	**180**	**1,300 J**	**180**
Byproduct 5	**27,000**	**550**	**6,500**	<58
Byproduct 6	<150	<15	**40**	<15
NVHOS	**4,800**	**450**	**3,100**	<54
EVE Acid	<240	<24	**240**	<24
Hydro-EVE Acid	<280	**64**	**390**	**43**
R-EVE	**710**	**89**	**500**	**130**
PES	<460	<46	<92	<46
PFECA B	<600	<60	<120	<60
PFECA-G	<410	<41	<82	<41
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	--	--
11Cl-PF3OUdS	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<24	<24	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20
9Cl-PF3ONS	--	--	--	--
ADONA	--	--	--	--
NaDONA	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	**2.4**	**2.9**	**3.4**	**5**
Perfluorobutanoic Acid	**210**	**42**	**120**	**25**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2.1	<2.1	<2	<2
Perfluorododecanoic Acid	<2.6	<2.6	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2
Perfluoroheptanoic Acid	**41**	**46**	**140**	**48**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--
Perfluorohexane Sulfonic Acid	<2	**4.2**	**3.5**	**25**
Perfluorohexanoic Acid	**45**	**36**	**120**	**23**
Perfluorononanesulfonic acid	<2	<2	<2	<2
Perfluorononanoic Acid	<2	<2	**4.9**	<2
Perfluorooctadecanoic acid	<2.2	<2.2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	**3.9**
Perfluoropentanoic Acid	**600**	**95**	**260**	**27**
Perfluorotetradecanoic Acid	<2	<2	<2	<2
Perfluorotridecanoic Acid	<6.1	<6.1	<2	<2
Perfluoroundecanoic Acid	<5.2	<5.2	<2	<2
PFOA	**120**	**5,800**	**6,900**	**1,300**
PFOS	<2.5	<2.5	**2.7**	**2.2**

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Surficial Aquifer	Black Creek Aquifer	Surficial Aquifer
Location ID	SMW-08B	SMW-09	SMW-10	SMW-11
Field Sample ID	GW0619-SMW-08B	GW0619-SMW-09	GW0619-SMW-10	GW0619-SMW-11
Sample Date	7/16/2019	7/11/2019	6/27/2019	6/26/2019
QA/QC	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-52322-1	320-52282-1	320-51903-1	320-51903-1
Lab Sample ID	320-52322-3	320-52282-6	320-51903-4	320-51903-7
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	**8,700 B**	**14,000**	<4	**4,000**
PFMOAA	**260,000**	**1,800**	<210 UJ	**1,600 J**
PFO2HxA	**47,000**	**3,100**	<81 UJ	**2,400 J**
PFO3OA	**12,000**	**920**	<58 UJ	**400 J**
PFO4DA	**2,900**	**890**	<79 UJ	**190 J**
PFO5DA	**540**	**66**	**51 J**	**62 J**
PMPA	**7,700**	**4,800**	**780 J**	**2,900 J**
PEPA	**2,800**	**1,400**	<47 UJ	**760 J**
PFESA-BP1	**550**	**22,000**	<27 UJ	<27 UJ
PFESA-BP2	<300	**560**	<30 UJ	**72 J**
Byproduct 4	<1,600	**2,000**	<160 UJ	**180 J**
Byproduct 5	**4,400**	**54,000 J**	<58 UJ	<58 UJ
Byproduct 6	<150	**88**	<15 UJ	<15 UJ
NVHOS	**2,900**	**260**	<54 UJ	<54 UJ
EVE Acid	<240	**610**	<24 UJ	<24 UJ
Hydro-EVE Acid	**300**	**2,000**	<28 UJ	**30 J**
R-EVE	<700	**360 J**	<70 UJ	**140 J**
PES	<460	<46	<46 UJ	<46 UJ
PFECA B	<600	<60	<60 UJ	<60 UJ
PFECA-G	<410	<41	<41 UJ	<41 UJ
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	--	--
11Cl-PF3OUdS	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20
9Cl-PF3ONS	--	--	--	--
ADONA	--	--	--	--
NaDONA	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	**3.1**	**3.1**	<2	<2
Perfluorobutanoic Acid	**110**	**340**	<2	**24**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2
Perfluoroheptanoic Acid	**81**	**66**	<2	**9.8**
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--
Perfluorohexane Sulfonic Acid	**4.9**	**16**	<2	<2
Perfluorohexanoic Acid	**34**	**79**	<2	**7.8**
Perfluorononanesulfonic acid	<2	<2	<2	<2
Perfluorononanoic Acid	**4.2**	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2 UJ	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	**2.6**	<2	<2
Perfluoropentanoic Acid	**550**	**200**	<2	**29**
Perfluorotetradecanoic Acid	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2
PFOA	**360**	**91**	<2	**34**
PFOS	**6.1**	<2	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	--	--
Location ID	SMW-12	EB	EB
Field Sample ID	GW0619-SMW-12	GW0619-EQBLK-062719	GW0619-EQBLK-070819
Sample Date	7/11/2019	6/27/2019	7/8/2019
QA/QC	--	Equipment Blank	Equipment Blank
Sample Matrix	LIQUID	LIQUID	LIQUID
SDG	320-52290-1	320-51903-1	320-52171-1
Lab Sample ID	320-52290-1	320-51903-5	320-52171-1
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	**1,700**	<4	<4
PFMOAA	**3,900**	<210 UJ	<5
PFO2HxA	**1,300**	<81 UJ	<2
PFO3OA	**53**	<58 UJ	<2
PFO4DA	<7.9	<79 UJ	<2
PFO5DA	<3.4	<34 UJ	<2
PMPA	**1,900**	<570 UJ	<10
PEPA	**440**	<47 UJ	<20
PFESA-BP1	<2.7	<27 UJ	<2
PFESA-BP2	<3	<30 UJ	<2
Byproduct 4	**120**	<160 UJ	<2
Byproduct 5	<5.8	<58 UJ	<2
Byproduct 6	<2	<15 UJ	<2
NVHOS	**38**	<54 UJ	<2
EVE Acid	<2.4	<24 UJ	<2
Hydro-EVE Acid	<2.8	<28 UJ	<2
R-EVE	**110**	<70 UJ	<2
PES	<4.6	<46 UJ	<2
PFECA B	<6	<60 UJ	<2
PFECA-G	<4.1	<41 UJ	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
11Cl-PF3OUdS	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20
9Cl-PF3ONS	--	--	--
ADONA	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2
Perfluorobutanoic Acid	**19**	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2
Perfluoroheptanoic Acid	<2	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	<2	<2	<2
Perfluorohexanoic Acid	<2	<2	<2
Perfluorononanesulfonic acid	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2
Perfluoropentanoic Acid	**41**	<2	<2
Perfluorotetradecanoic Acid	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2
PFOA	<2	<2	<2
PFOS	<2	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--
Location ID	**EB**	**EB**	**EB**
Field Sample ID	**GW0619-EQBLK-070819-02**	**GW0619-EQBLK-070919**	**GW0619-EQBLK-071019**
Sample Date	**7/8/2019**	**7/9/2019**	**7/10/2019**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-52171-1**	**320-52149-1**	**320-52165-1**
Lab Sample ID	**320-52171-2**	**320-52149-3**	**320-52165-4**
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	<4	<4	<4
PFMOAA	<5	**6.7**	<5
PFO2HxA	<2	<2	<2
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2	<2
PMPA	<10	<10	<10
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	<2	<2
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
11Cl-PF3OUdS	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20
9Cl-PF3ONS	--	--	--
ADONA	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2
Perfluorobutanoic Acid	<2	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2
Perfluoroheptanoic Acid	<2	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	<2	<2	<2
Perfluorohexanoic Acid	<2	<2	<2
Perfluorononanesulfonic acid	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2
Perfluoropentanoic Acid	<2	<2	<2
Perfluorotetradecanoic Acid	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2
PFOA	<2	<2	<2
PFOS	<2	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--	--
Location ID	**EB**	**EB**	**EB**	**EB**
Field Sample ID	**GW0619-EB-02-071119**	**GW0619-EB-071119**	**GW0619-EB-071219**	**GW0619-EB-02-071519**
Sample Date	**7/11/2019**	**7/11/2019**	**7/12/2019**	**7/15/2019**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-52290-1**	**320-52290-1**	**320-52285-1**	**320-52285-1**
Lab Sample ID	**320-52290-3**	**320-52290-2**	**320-52285-1**	**320-52285-5**
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	<4	<4	<4	<4
PFMOAA	<5	<5	<5	<5
PFO2HxA	<2	<2	<2	<2
PFO3OA	<2	<2	<2	<2
PFO4DA	<2	<2	<2	<2
PFO5DA	<2	<2	<2	<2 UJ
PMPA	<10	<10	<10	<10
PEPA	<20	<20	<20	<20
PFESA-BP1	<2	<2	<2	<2
PFESA-BP2	<2	<2	<2	<2
Byproduct 4	<2	<2	<2	<2
Byproduct 5	<2	<2	<2	<2
Byproduct 6	<2	<2	<2	<2
NVHOS	<2	<2	<2	<2
EVE Acid	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2
R-EVE	<2	<2	<2	<2
PES	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	--	--
11Cl-PF3OUdS	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20
9Cl-PF3ONS	--	--	--	--
ADONA	--	--	--	--
NaDONA	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2
Perfluorobutanoic Acid	<2	<2	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2
Perfluoroheptanoic Acid	<2	<2	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--
Perfluorohexane Sulfonic Acid	<2	<2	<2	<2
Perfluorohexanoic Acid	<2	<2	<2	<2
Perfluorononanesulfonic acid	<2	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2
Perfluoropentanoic Acid	<2	<2	<2	<2
Perfluorotetradecanoic Acid	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2
PFOA	<2	<2	<2	<2
PFOS	<2	<2	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--	--
Location ID	**EB**	**EB**	**EB**	**EB**
Field Sample ID	**GW0619-EB-071519**	**GW0619-EB-01-071619**	**GW0619-EB-02-071619**	**GW0619-EB-071719**
Sample Date	**7/15/2019**	**7/16/2019**	**7/16/2019**	**7/17/2019**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-52285-1**	**320-52322-1**	**320-52322-1**	**320-52464-1**
Lab Sample ID	**320-52285-4**	**320-52322-5**	**320-52322-6**	**320-52464-5**
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	<4	**72**	<4	<4
PFMOAA	<5	<5	<5	<5
PFO2HxA	<2	<2	<2	<2
PFO3OA	<2	<2	<2	<2
PFO4DA	<2	<2	<2	<2
PFO5DA	<2	<2	<2	<2
PMPA	<10	<10	<10	<10
PEPA	<20	<20	<20	<20
PFESA-BP1	<2	<2	<2	<2
PFESA-BP2	<2	<2	<2	<2
Byproduct 4	<2	<2	<2	<2
Byproduct 5	<2	<2	<2	<2
Byproduct 6	<2	<2	<2	<2
NVHOS	<2	<2	<2	<2
EVE Acid	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2
R-EVE	<2	<2	<2	<2
PES	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	--	--
11Cl-PF3OUdS	--	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20
9Cl-PF3ONS	--	--	--	--
ADONA	--	--	--	--
NaDONA	--	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2
Perfluorobutanoic Acid	<2	<2	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2
Perfluoroheptanoic Acid	<2	<2	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	--
Perfluorohexane Sulfonic Acid	<2	<2	<2	<2
Perfluorohexanoic Acid	<2	<2	<2	<2
Perfluorononanesulfonic acid	<2	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2
Perfluoropentanoic Acid	<2	<2	<2	<2
Perfluorotetradecanoic Acid	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2
PFOA	<2	<2	<2	<2
PFOS	<2	<2	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--	--
Location ID	**EB**	**EB**	**EB**	**EB**
Field Sample ID	**GW0619-EB-071819**	**GW0619-EB-071919**	**GW0619-EQBLK-072219**	**EQBLK-090919-01**
Sample Date	**7/18/2019**	**7/19/2019**	**7/22/2019**	**9/9/2019**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-52464-1**	**320-52624-1**	**320-52621-1**	**320-54174-1**
Lab Sample ID	**320-52464-3**	**320-52624-1**	**320-52621-4**	**320-54174-2**
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	<4	<4	<4	<4
PFMOAA	<5	<210	<210	<210
PFO2HxA	<2	<81	<81	<81
PFO3OA	<2	<58	<58	<58
PFO4DA	<2	<79	<79	<79
PFO5DA	<2	<34	<34	<34 UJ
PMPA	<10	<570	<570	<570
PEPA	<20	<47	<47	<47
PFESA-BP1	<2	<27	<27	<27
PFESA-BP2	<2	<30	<30	<30
Byproduct 4	<2	<160	<160	<160
Byproduct 5	<2	<58	<58	<58
Byproduct 6	<2	<15	<15	<15
NVHOS	<2	<54	<54	<54
EVE Acid	<2	<24	<24	<24
Hydro-EVE Acid	<2	<28	<28	<28
R-EVE	<2	<70	<70	<70
PES	<2	<46	<46	<46
PFECA B	<2	<60	<60	<60
PFECA-G	<2	<41	<41	<41
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	--	<2
11Cl-PF3OUdS	--	--	--	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	<4
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20
9Cl-PF3ONS	--	--	--	<2
ADONA	--	--	--	<2.1
NaDONA	--	--	--	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	<2
N-methyl perfluoro-1-octanesulfonamide	--	--	--	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2
Perfluorobutanoic Acid	<2	<2	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2
Perfluoroheptanoic Acid	<2	<2	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	<2
Perfluorohexane Sulfonic Acid	<2	<2	<2	<2
Perfluorohexanoic Acid	<2	<2	<2	<2
Perfluorononanesulfonic acid	<2	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2
Perfluoropentanoic Acid	<2	<2	<2	<2
Perfluorotetradecanoic Acid	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2
PFOA	<2	<2	<2	<2
PFOS	<2	<2	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	**--**	**--**	**--**	**--**
Location ID	**EB**	**EB**	**EB**	**EB**
Field Sample ID	**EQBLK-090919-02**	**EQBLK-091019-01**	**EQBLK-091019-02**	**EB-091919**
Sample Date	**9/9/2019**	**9/10/2019**	**9/10/2019**	**9/19/2019**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-54174-1**	**320-54176-1**	**320-54176-1**	**320-54522-1**
Lab Sample ID	**320-54174-3**	**320-54176-2**	**320-54176-3**	**320-54522-2**
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	<4	<4	<4	<4
PFMOAA	<210	<210	<210	<5
PFO2HxA	<81	<81	<81	<2
PFO3OA	<58	<58	<58	<2
PFO4DA	<79	<79	<79	<2
PFO5DA	<34 UJ	<34	<34 UJ	<2
PMPA	<570	**780**	**570**	<10
PEPA	<47	<47	<47	<20
PFESA-BP1	<27	<27	<27	<2
PFESA-BP2	<30	<30	<30	<2
Byproduct 4	<160	<160	<160	<2
Byproduct 5	<58	<58	<58	<2
Byproduct 6	<15	<15	<15	<2
NVHOS	<54	<54	<54	<2
EVE Acid	<24	<24	<24	<2
Hydro-EVE Acid	<28	<28	<28	<2
R-EVE	<70	<70	<70	<2
PES	<46	<46	<46	<2
PFECA B	<60	<60	<60	<2
PFECA-G	<41	<41	<41	<2
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	<2	<2	<2	<2
11Cl-PF3OUdS	<2	<2	<2	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<4	<4
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20
9Cl-PF3ONS	<2	<2	<2	--
ADONA	<2.1	<2.1	<2.1	--
NaDONA	<2.1	<2.1	<2.1	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2
Perfluorobutanoic Acid	<2	<2	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2
Perfluoroheptanoic Acid	<2	<2	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<2	<2
Perfluorohexane Sulfonic Acid	<2	<2	<2	<2
Perfluorohexanoic Acid	<2	<2	<2	<2
Perfluorononanesulfonic acid	<2	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2
Perfluoropentanoic Acid	<2	<2	<2	<2
Perfluorotetradecanoic Acid	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2
PFOA	<2	<2	<2	<2
PFOS	<2	<2	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	**--**	**--**	**--**
Location ID	**EB**	**EB**	**EB**
Field Sample ID	**GW4Q19-EQBLK-01-102319**	**GW4Q19-EQBLK-02-102319**	**GW4Q19-EQBLK-01-102919**
Sample Date	**10/23/2019**	**10/23/2019**	**10/29/2019**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-55683-1**	**320-55683-1**	**320-55854-1**
Lab Sample ID	**320-55683-9**	**320-55683-4**	**320-55854-7**
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	<86	<86	<2
PFMOAA	<210	<210	<5
PFO2HxA	<81	<81	<2
PFO3OA	<58	<58	<2
PFO4DA	<79	<79	<2
PFO5DA	<34	<34	<2
PMPA	<570	<570	<10
PEPA	<47	<47	<20
PFESA-BP1	<27	<27	<2
PFESA-BP2	<30	<30	<2
Byproduct 4	<160	<160	<2
Byproduct 5	<58	<58	<2
Byproduct 6	<15	<15	<2
NVHOS	<54	<54	<2
EVE Acid	<24	<24	<2
Hydro-EVE Acid	<28	<28	<2
R-EVE	<70	<70	<2
PES	<46	<46	<2
PFECA B	<60	<60	<2
PFECA-G	<41	<41	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
11Cl-PF3OUdS	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
6:2 Fluorotelomer sulfonate	--	--	--
9Cl-PF3ONS	--	--	--
ADONA	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	--
Perfluorobutane Sulfonic Acid	--	--	--
Perfluorobutanoic Acid	--	--	--
Perfluorodecane Sulfonic Acid	--	--	--
Perfluorodecanoic Acid	--	--	--
Perfluorododecane sulfonic acid (PFDoS)	--	--	--
Perfluorododecanoic Acid	--	--	--
Perfluoroheptane sulfonic acid (PFHpS)	--	--	--
Perfluoroheptanoic Acid	--	--	--
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	--	--	--
Perfluorohexanoic Acid	--	--	--
Perfluorononanesulfonic acid	--	--	--
Perfluorononanoic Acid	--	--	--
Perfluorooctadecanoic acid	--	--	--
Perfluorooctane Sulfonamide	--	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--	--
Perfluoropentanoic Acid	--	--	--
Perfluorotetradecanoic Acid	--	--	--
Perfluorotridecanoic Acid	--	--	--
Perfluoroundecanoic Acid	--	--	--
PFOA	--	--	--
PFOS	--	--	--

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--
Location ID	EB	EB	EB
Field Sample ID	GW4Q19-EQBLK-02-102919	GW4Q19-EQBLK-01-103019	GW4Q19-EQBLK-02-103019
Sample Date	10/29/2019	10/30/2019	10/30/2019
QA/QC	Equipment Blank	Equipment Blank	Equipment Blank
Sample Matrix	LIQUID	LIQUID	LIQUID
SDG	320-55854-1	320-55860-1	320-55860-1
Lab Sample ID	320-55854-8	320-55860-7	320-55860-8
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	<2	<2	<2
PFMOAA	<5	<5	<5
PFO2HxA	<2	<2	<2
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2	<2
PMPA	<10	<10	<10
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	<2	<2
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
11Cl-PF3OUdS	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
6:2 Fluorotelomer sulfonate	--	--	--
9Cl-PF3ONS	--	--	--
ADONA	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	--
Perfluorobutane Sulfonic Acid	--	--	--
Perfluorobutanoic Acid	--	--	--
Perfluorodecane Sulfonic Acid	--	--	--
Perfluorodecanoic Acid	--	--	--
Perfluorododecane sulfonic acid (PFDoS)	--	--	--
Perfluorododecanoic Acid	--	--	--
Perfluoroheptane sulfonic acid (PFHpS)	--	--	--
Perfluoroheptanoic Acid	--	--	--
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	--	--	--
Perfluorohexanoic Acid	--	--	--
Perfluorononanesulfonic acid	--	--	--
Perfluorononanoic Acid	--	--	--
Perfluorooctadecanoic acid	--	--	--
Perfluorooctane Sulfonamide	--	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--	--
Perfluoropentanoic Acid	--	--	--
Perfluorotetradecanoic Acid	--	--	--
Perfluorotridecanoic Acid	--	--	--
Perfluoroundecanoic Acid	--	--	--
PFOA	--	--	--
PFOS	--	--	--

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--
Location ID	**EB**	**EB**	**EB**
Field Sample ID	**GW4Q19-EQBLK-01-103119**	**GW4Q19-EQBLK-02-103119**	**GW4Q19-EQBLK-01-110119**
Sample Date	**10/31/2019**	**10/31/2019**	**11/1/2019**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-55909-1**	**320-55909-1**	**320-56112-1**
Lab Sample ID	**320-55909-5**	**320-55909-6**	**320-56112-2**
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	2.4	<2	<2
PFMOAA	<5	<5	<5
PFO2HxA	<2	<2	<2
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2	<2 UJ
PMPA	<10	<10	<10
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	<2	<2
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
11Cl-PF3OUdS	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
6:2 Fluorotelomer sulfonate	--	--	--
9Cl-PF3ONS	--	--	--
ADONA	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	--
Perfluorobutane Sulfonic Acid	--	--	--
Perfluorobutanoic Acid	--	--	--
Perfluorodecane Sulfonic Acid	--	--	--
Perfluorodecanoic Acid	--	--	--
Perfluorododecane sulfonic acid (PFDoS)	--	--	--
Perfluorododecanoic Acid	--	--	--
Perfluoroheptane sulfonic acid (PFHpS)	--	--	--
Perfluoroheptanoic Acid	--	--	--
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	--	--	--
Perfluorohexanoic Acid	--	--	--
Perfluorononanesulfonic acid	--	--	--
Perfluorononanoic Acid	--	--	--
Perfluorooctadecanoic acid	--	--	--
Perfluorooctane Sulfonamide	--	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--	--
Perfluoropentanoic Acid	--	--	--
Perfluorotetradecanoic Acid	--	--	--
Perfluorotridecanoic Acid	--	--	--
Perfluoroundecanoic Acid	--	--	--
PFOA	--	--	--
PFOS	--	--	--

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--
Location ID	EB	EB	EB
Field Sample ID	GW4Q19-EQBLK-02-110419	GW4Q19-EQBLK-02-110519	GW4Q19-EQBLK-02-110619
Sample Date	11/4/2019	11/5/2019	11/6/2019
QA/QC	Equipment Blank	Equipment Blank	Equipment Blank
Sample Matrix	LIQUID	LIQUID	LIQUID
SDG	320-56112-1	320-56112-1	320-56117-1
Lab Sample ID	320-56112-5	320-56112-9	320-56117-2
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	<2	<2	<2
PFMOAA	<5	<5	<5
PFO2HxA	<2	<2	<2
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2	<2
PMPA	<10	<10	<10
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	<2	<2
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
11Cl-PF3OUdS	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
6:2 Fluorotelomer sulfonate	--	--	--
9Cl-PF3ONS	--	--	--
ADONA	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	--
Perfluorobutane Sulfonic Acid	--	--	--
Perfluorobutanoic Acid	--	--	--
Perfluorodecane Sulfonic Acid	--	--	--
Perfluorodecanoic Acid	--	--	--
Perfluorododecane sulfonic acid (PFDoS)	--	--	--
Perfluorododecanoic Acid	--	--	--
Perfluoroheptane sulfonic acid (PFHpS)	--	--	--
Perfluoroheptanoic Acid	--	--	--
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	--	--	--
Perfluorohexanoic Acid	--	--	--
Perfluorononanesulfonic acid	--	--	--
Perfluorononanoic Acid	--	--	--
Perfluorooctadecanoic acid	--	--	--
Perfluorooctane Sulfonamide	--	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--	--
Perfluoropentanoic Acid	--	--	--
Perfluorotetradecanoic Acid	--	--	--
Perfluorotridecanoic Acid	--	--	--
Perfluoroundecanoic Acid	--	--	--
PFOA	--	--	--
PFOS	--	--	--

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--
Location ID	EB	EB	EB
Field Sample ID	GW4Q19-EQBLK-03-110619	GW4Q19-EQBLK-02-110819	GW4Q19-EQBLK-04-110819
Sample Date	11/6/2019	11/8/2019	11/8/2019
QA/QC	Equipment Blank	Equipment Blank	Equipment Blank
Sample Matrix	LIQUID	LIQUID	LIQUID
SDG	320-56117-1	320-56173-1	320-56173-1
Lab Sample ID	320-56117-3	320-56173-5	320-56173-6
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	<2	<2	<2
PFMOAA	<5	<5	<5
PFO2HxA	<2	<2	<2
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2	<2
PMPA	<10	<10	<10
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	<2	<2
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
11Cl-PF3OUdS	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
6:2 Fluorotelomer sulfonate	--	--	--
9Cl-PF3ONS	--	--	--
ADONA	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	--
Perfluorobutane Sulfonic Acid	--	--	--
Perfluorobutanoic Acid	--	--	--
Perfluorodecane Sulfonic Acid	--	--	--
Perfluorodecanoic Acid	--	--	--
Perfluorododecane sulfonic acid (PFDoS)	--	--	--
Perfluorododecanoic Acid	--	--	--
Perfluoroheptane sulfonic acid (PFHpS)	--	--	--
Perfluoroheptanoic Acid	--	--	--
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	--	--	--
Perfluorohexanoic Acid	--	--	--
Perfluorononanesulfonic acid	--	--	--
Perfluorononanoic Acid	--	--	--
Perfluorooctadecanoic acid	--	--	--
Perfluorooctane Sulfonamide	--	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--	--
Perfluoropentanoic Acid	--	--	--
Perfluorotetradecanoic Acid	--	--	--
Perfluorotridecanoic Acid	--	--	--
Perfluoroundecanoic Acid	--	--	--
PFOA	--	--	--
PFOS	--	--	--

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--
Location ID	**EQBLK**	**EQBLK**	**EQBLK**
Field Sample ID	**GW0619-EQBLK-061919**	**GW0619-EQBLK-062019**	**GW0619-EQBLK-062119**
Sample Date	**6/19/2019**	**6/20/2019**	**6/21/2019**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-51662-1**	**320-51662-1**	**320-51662-1**
Lab Sample ID	**320-51662-4**	**320-51662-5**	**320-51662-6**
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	<4	<4	<4
PFMOAA	<5 UJ	<5 UJ	<5 UJ
PFO2HxA	<2 UJ	<2 UJ	<2 UJ
PFO3OA	<2 UJ	<2 UJ	<2 UJ
PFO4DA	<2 UJ	<2 UJ	<2 UJ
PFO5DA	<5 UJ	<5 UJ	<5 UJ
PMPA	<10 UJ	<10 UJ	<10 UJ
PEPA	<20 UJ	<20 UJ	<20 UJ
PFESA-BP1	<2 UJ	<2 UJ	<2 UJ
PFESA-BP2	<2 UJ	<2 UJ	<2 UJ
Byproduct 4	<2 UJ	<2 UJ	<2 UJ
Byproduct 5	<2 UJ	<2 UJ	<2 UJ
Byproduct 6	<2 UJ	<2 UJ	<2 UJ
NVHOS	<2 UJ	<2 UJ	<2 UJ
EVE Acid	<2 UJ	<2 UJ	<2 UJ
Hydro-EVE Acid	<2 UJ	<2 UJ	<2 UJ
R-EVE	<2 UJ	<2 UJ	<2 UJ
PES	<2 UJ	<2 UJ	<2 UJ
PFECA B	<2 UJ	<2 UJ	<2 UJ
PFECA-G	<2 UJ	<2 UJ	<2 UJ
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
11Cl-PF3OUdS	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2 UJ	<2 UJ	<2 UJ
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<2 UJ	<2 UJ	<2 UJ
6:2 Fluorotelomer sulfonate	--	--	--
9Cl-PF3ONS	--	--	--
ADONA	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	--
N-ethylperfluoro-1-octanesulfonamide	<2 UJ	<2 UJ	<2 UJ
N-methyl perfluoro-1-octanesulfonamide	<2 UJ	<2 UJ	<2 UJ
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	--
Perfluorobutane Sulfonic Acid	<2	<2	<2
Perfluorobutanoic Acid	--	--	--
Perfluorodecane Sulfonic Acid	--	--	--
Perfluorodecanoic Acid	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	--	--	--
Perfluorododecanoic Acid	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	--	--	--
Perfluoroheptanoic Acid	<2	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	<2	<2	<2
Perfluorohexanoic Acid	<2	<2	<2
Perfluorononanesulfonic acid	--	--	--
Perfluorononanoic Acid	<2	<2	<2
Perfluorooctadecanoic acid	--	--	--
Perfluorooctane Sulfonamide	--	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--	--
Perfluoropentanoic Acid	<2	<2	<2
Perfluorotetradecanoic Acid	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2
PFOA	<2	<2	<2
PFOS	<2	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--
Location ID	**EQBLK**	**EQBLK**	**EQBLK**
Field Sample ID	**GW0619-EQBLK**	**GW0619-EQBLK-062619**	**GW0619-EQBLK-062819**
Sample Date	**6/25/2019**	**6/26/2019**	**6/28/2019**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-51746-1**	**320-51904-1**	**320-51904-1**
Lab Sample ID	**320-51746-1**	**320-51904-5**	**320-51904-6**
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	<4	<4	<4
PFMOAA	<5 UJ	<210 UJ	<210
PFO2HxA	<2 UJ	<81 UJ	<81
PFO3OA	<2 UJ	<58 UJ	<58
PFO4DA	<2 UJ	<79 UJ	<79
PFO5DA	<2 UJ	**58 J**	**59**
PMPA	<10 UJ	<570 UJ	<570
PEPA	<20 UJ	<47 UJ	<47
PFESA-BP1	<2 UJ	<27 UJ	<27
PFESA-BP2	<2 UJ	<30 UJ	<30
Byproduct 4	<2 UJ	<160 UJ	<160
Byproduct 5	<2 UJ	<58 UJ	<58
Byproduct 6	<2 UJ	<15 UJ	<15
NVHOS	<2 UJ	<54 UJ	<54
EVE Acid	<2 UJ	<24 UJ	<24
Hydro-EVE Acid	<2 UJ	<28 UJ	<28
R-EVE	<2 UJ	<70 UJ	<70
PES	<2 UJ	<46 UJ	<46
PFECA B	<2 UJ	<60 UJ	<60
PFECA-G	<2 UJ	<41 UJ	<41
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
11Cl-PF3OUdS	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20
9Cl-PF3ONS	--	--	--
ADONA	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2
Perfluorobutanoic Acid	<2	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2
Perfluoroheptanoic Acid	<2	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	<2	<2	<2
Perfluorohexanoic Acid	<2	<2	<2
Perfluorononanesulfonic acid	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2
Perfluoropentanoic Acid	<2	<2	<2
Perfluorotetradecanoic Acid	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2
PFOA	<2	<2	<2
PFOS	<2	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	**--**	**--**	**--**
Location ID	**EQBLK**	**EQBLK**	**EQBLK**
Field Sample ID	**GW0619-EQBLK-070119**	**GW0619-EQBLK-070219**	**GW0619-EQBLK-070319**
Sample Date	**7/1/2019**	**7/2/2019**	**7/3/2019**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-52028-1**	**320-52028-1**	**320-52030-1**
Lab Sample ID	**320-52028-5**	**320-52028-6**	**320-52030-5**
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	<4	<4	<4
PFMOAA	<5	<5	<5
PFO2HxA	<2	<2	<2
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2	<2 UJ
PMPA	<10	<10	<10
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	<2	<2
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
11Cl-PF3OUdS	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
6:2 Fluorotelomer sulfonate	<20	<20	<20
9Cl-PF3ONS	--	--	--
ADONA	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2
Perfluorobutanoic Acid	<2	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2
Perfluoroheptanoic Acid	<2	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	<2	<2	<2
Perfluorohexanoic Acid	<2	<2	<2
Perfluorononanesulfonic acid	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2
Perfluoropentanoic Acid	<2	<2	<2
Perfluorotetradecanoic Acid	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2
PFOA	<2	<2	<2
PFOS	<2	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--	--
Location ID	**EQBLK**	**EQBLK**	**EQBLK**	**EQBLK**
Field Sample ID	**GW0619-EB-02-072319**	**GW0619-EB-072519**	**EB-09119-01**	**EB-09119-02**
Sample Date	**7/23/2019**	**7/25/2019**	**9/11/2019**	**9/11/2019**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-52722-1**	**320-52722-1**	**320-54299-1**	**320-54299-1**
Lab Sample ID	**320-52722-5**	**320-52722-6**	**320-54299-2**	**320-54299-3**
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	<4	<4	<4	<4
PFMOAA	<210	<210	<5	<5
PFO2HxA	<81	<81	<2	<2
PFO3OA	<58	<58	<2	<2
PFO4DA	<79	<79	<2	<2
PFO5DA	<34	<34	<2	<2
PMPA	<570	<570	<10	<10
PEPA	<47	<47	<20	<20
PFESA-BP1	<27	<27	<2	<2
PFESA-BP2	<30	<30	<2	<2
Byproduct 4	<160	<160	<2	<2
Byproduct 5	<58	<58	<2	<2
Byproduct 6	<15	<15	<2	<2
NVHOS	<54	<54	<2	<2
EVE Acid	<24	<24	<2	<2
Hydro-EVE Acid	<28	<28	<2	<2
R-EVE	<70	<70	<2	<2
PES	<46	<46	<2	<2
PFECA B	<60	<60	<2	<2
PFECA-G	<41	<41	<2	<2
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	<2	<2
11Cl-PF3OUdS	--	--	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	<4	<4
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20
9Cl-PF3ONS	--	--	<2	<2
ADONA	--	--	<2.1	<2.1
NaDONA	--	--	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	<2	<2
N-methyl perfluoro-1-octanesulfonamide	--	--	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2
Perfluorobutanoic Acid	<2	<2	<2	<2
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2
Perfluorodecanoic Acid	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2
Perfluoroheptanoic Acid	<2	<2	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	--	--	<2	<2
Perfluorohexane Sulfonic Acid	<2	<2	<2	<2
Perfluorohexanoic Acid	<2	<2	<2	<2
Perfluorononanesulfonic acid	<2	<2	<2	<2
Perfluorononanoic Acid	<2	<2	<2	<2
Perfluorooctadecanoic acid	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2
Perfluoropentanoic Acid	<2	<2	<2	<2
Perfluorotetradecanoic Acid	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2	<2	<2	<2
Perfluoroundecanoic Acid	<2	<2	<2	<2
PFOA	<2	<2	<2	<2
PFOS	<2	<2	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--	--
Location ID	**EQBLK**	**EQBLK**	**EQBLK**	**EQBLK**
Field Sample ID	**EB-091219-01**	**EB-091219-02**	**EB-091319**	**GW4Q19-EQBLK-01-101819**
Sample Date	**9/12/2019**	**9/12/2019**	**9/13/2019**	**10/18/2019**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Matrix	**LIQUID**	**LIQUID**	**Liquid**	**LIQUID**
SDG	**320-54294-1**	**320-54294-1**	**320-54328-1**	**320-55686-1**
Lab Sample ID	**320-54294-1**	**320-54294-2**	**320-54328-1**	**320-55686-2**
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	<4	<4	<4	2.3
PFMOAA	<5	<5	<5	<5
PFO2HxA	<2	<2	<2	<2
PFO3OA	<2	<2	<2	<2
PFO4DA	<2	<2	<2	<2
PFO5DA	<2	<2	<2	<2
PMPA	<10	<10	<10	<10
PEPA	<20	<20	<20	<20
PFESA-BP1	<2	<2	<2	<2
PFESA-BP2	<2	<2	<2	<2
Byproduct 4	<2	<2	<2	<2
Byproduct 5	<2	<2	<2	<2
Byproduct 6	<2	<2	<2	<2
NVHOS	<2	<2	<2	<2
EVE Acid	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2
R-EVE	<2	<2	<2	<2
PES	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	<2	<2	<2	--
11Cl-PF3OUdS	<2	<2	<2	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<2	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<4	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	--
9Cl-PF3ONS	<2	<2	<2	--
ADONA	<2.1	<2.1	<2.1	--
NaDONA	<2.1	<2.1	<2.1	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	--
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<2	--
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<2	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	--
Perfluorobutane Sulfonic Acid	<2	<2	<2	--
Perfluorobutanoic Acid	<2	<2	<2	--
Perfluorodecane Sulfonic Acid	<2	<2	<2	--
Perfluorodecanoic Acid	<2	<2	<2	--
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	--
Perfluorododecanoic Acid	<2	<2	<2	--
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	--
Perfluoroheptanoic Acid	<2	<2	<2	--
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<2	--
Perfluorohexane Sulfonic Acid	<2	<2	<2	--
Perfluorohexanoic Acid	<2	<2	<2	--
Perfluorononanesulfonic acid	<2	<2	<2	--
Perfluorononanoic Acid	<2	<2	<2	--
Perfluorooctadecanoic acid	<2	<2	<2	--
Perfluorooctane Sulfonamide	<2	<2	<2	--
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	--
Perfluoropentanoic Acid	<2	<2	<2	--
Perfluorotetradecanoic Acid	<2	<2	<2	--
Perfluorotridecanoic Acid	<2	<2	<2	--
Perfluoroundecanoic Acid	<2	<2	<2	--
PFOA	<2	<2	<2	--
PFOS	<2	<2	<2	--

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--	--
Location ID	EQBLK	EQBLK	FBLK	FBLK
Field Sample ID	GW4Q19-EQBLK-01-102819	GW4Q19-EQBLK-02-102819	GW0619-FB-01-072319	FBLK-090919
Sample Date	10/28/2019	10/28/2019	7/23/2019	9/9/2019
QA/QC	Equipment Blank	Equipment Blank	Field Blank	Field Blank
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-55757-1	320-55757-1	320-52722-1	320-54174-1
Lab Sample ID	320-55757-1	320-55757-2	320-52722-4	320-54174-4
Table 3+ Lab SOP (ng/L)				
Hfpo Dimer Acid	2.1	3.7	<4	<4
PFMOAA	<5	<5	<210	<210
PFO2HxA	<2	<2	<81	<81
PFO3OA	<2	<2	<58	<58
PFO4DA	<2	<2	<79	<79
PFO5DA	<2	<2	<34	<34 UJ
PMPA	<10	<10	<570	<570
PEPA	<20	<20	<47	<47
PFESA-BP1	<2	<2	<27	<27
PFESA-BP2	<2	<2	<30	<30
Byproduct 4	<2	<2	<160	<160
Byproduct 5	<2	<2	<58	<58
Byproduct 6	<2	<2	<15	<15
NVHOS	<2	<2	<54	<54
EVE Acid	<2	<2	<24	<24
Hydro-EVE Acid	<2	<2	<28	<28
R-EVE	<2	<2	<70	<70
PES	<2	<2	<46	<46
PFECA B	<2	<2	<60	<60
PFECA-G	<2	<2	<41	<41
Other PFAS (ng/L)				
10:2 Fluorotelomer sulfonate	--	--	--	<2
11Cl-PF3OUdS	--	--	--	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	<4
6:2 Fluorotelomer sulfonate	--	--	<20	<20
9Cl-PF3ONS	--	--	--	<2
ADONA	--	--	--	<2.1
NaDONA	--	--	--	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	<20	<20
N-ethylperfluoro-1-octanesulfonamide	--	--	--	<2
N-methyl perfluoro-1-octanesulfonamide	--	--	--	<2
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	<20	<20
Perfluorobutane Sulfonic Acid	--	--	<2	<2
Perfluorobutanoic Acid	--	--	<2	<2
Perfluorodecane Sulfonic Acid	--	--	<2	<2
Perfluorodecanoic Acid	--	--	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	--	--	<2	<2
Perfluorododecanoic Acid	--	--	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	--	--	<2	<2
Perfluoroheptanoic Acid	--	--	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	--	--	--	<2
Perfluorohexane Sulfonic Acid	--	--	<2	<2
Perfluorohexanoic Acid	--	--	<2	<2
Perfluorononanesulfonic acid	--	--	<2	<2
Perfluorononanoic Acid	--	--	<2	<2
Perfluorooctadecanoic acid	--	--	<2	<2
Perfluorooctane Sulfonamide	--	--	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	--	--	<2	<2
Perfluoropentanoic Acid	--	--	<2	<2
Perfluorotetradecanoic Acid	--	--	<2	<2
Perfluorotridecanoic Acid	--	--	<2	<2
Perfluoroundecanoic Acid	--	--	<2	<2
PFOA	--	--	<2	<2
PFOS	--	--	<2	<2

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--	--	--
Location ID	**FBLK**	**FBLK**	**FBLK**	**FBLK**	**FBLK**
Field Sample ID	**FB-091019-01**	**FB-091119**	**FB-091219**	**FB-091319**	**GW4Q19-FBLK-01-101819**
Sample Date	**9/10/2019**	**9/11/2019**	**9/12/2019**	**9/13/2019**	**10/18/2019**
QA/QC	**Field Blank**	**Field Blank**	**Field Blank**	**Field Blank**	**Field Blank**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**	**Liquid**	**LIQUID**
SDG	**320-54176-1**	**320-54299-1**	**320-54294-1**	**320-54328-1**	**320-55686-1**
Lab Sample ID	**320-54176-4**	**320-54299-1**	**320-54294-3**	**320-54328-4**	**320-55686-3**
Table 3+ Lab SOP (ng/L)					
Hfpo Dimer Acid	<4	<4	<4	<4	4.8
PFMOAA	<210	<5	<5	<5	<5
PFO2HxA	<81	<2	<2	<2	<2
PFO3OA	<58	<2	<2	<2	<2
PFO4DA	<79	<2	<2	<2	<2
PFO5DA	<34	<2	<2	<2	<2
PMPA	**570**	<10	<10	<10	<10
PEPA	<47	<20	<20	<20	<20
PFESA-BP1	<27	<2	<2	<2	<2
PFESA-BP2	<30	<2	<2	<2	<2
Byproduct 4	<160	<2	<2	<2	<2
Byproduct 5	<58	<2	<2	<2	<2
Byproduct 6	<15	<2	<2	<2	<2
NVHOS	<54	<2	<2	<2	<2
EVE Acid	<24	<2	<2	<2	<2
Hydro-EVE Acid	<28	<2	<2	<2	<2
R-EVE	<70	<2	<2	<2	<2
PES	<46	<2	<2	<2	<2
PFECA B	<60	<2	<2	<2	<2
PFECA-G	<41	<2	<2	<2	<2
Other PFAS (ng/L)					
10:2 Fluorotelomer sulfonate	<2	<2	<2	<2	--
11Cl-PF3OUdS	<2	<2	<2	<2	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<2	<2	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<4	<4	--
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	--
9Cl-PF3ONS	<2	<2	<2	<2	--
ADONA	<2.1	<2.1	<2.1	<2.1	--
NaDONA	<2.1	<2.1	<2.1	<2.1	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	--
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<2	<2	--
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<2	<2	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	--
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2	--
Perfluorobutanoic Acid	<2	<2	<2	<2	--
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	--
Perfluorodecanoic Acid	<2	<2	<2	<2	--
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	--
Perfluorododecanoic Acid	<2	<2	<2	<2	--
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	--
Perfluoroheptanoic Acid	<2	<2	<2	<2	--
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<2	<2	--
Perfluorohexane Sulfonic Acid	<2	<2	<2	<2	--
Perfluorohexanoic Acid	<2	<2	<2	<2	--
Perfluorononanesulfonic acid	<2	<2	<2	<2	--
Perfluorononanoic Acid	<2	<2	<2	<2	--
Perfluorooctadecanoic acid	<2	<2	<2	<2	--
Perfluorooctane Sulfonamide	<2	<2	<2	<2	--
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	--
Perfluoropentanoic Acid	<2	<2	<2	<2	--
Perfluorotetradecanoic Acid	<2	<2	<2	<2	--
Perfluorotridecanoic Acid	<2	<2	<2	<2	--
Perfluoroundecanoic Acid	<2	<2	<2	<2	--
PFOA	<2	<2	<2	<2	--
PFOS	<2	<2	<2	<2	--

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	**--**	**--**	**--**
Location ID	**FBLK**	**FBLK**	**FBLK**
Field Sample ID	**GW4Q19-FBLK-01-102319**	**GW4Q19-FBLK-01-102819**	**GW4Q19-FBLK-01-102919**
Sample Date	**10/23/2019**	**10/28/2019**	**10/29/2019**
QA/QC	**Field Blank**	**Field Blank**	**Field Blank**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-55683-1**	**320-55757-1**	**320-55854-1**
Lab Sample ID	**320-55683-10**	**320-55757-5**	**320-55854-6**
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	<86	<2	<2
PFMOAA	<210	<5	<5
PFO2HxA	<81	<2	<2
PFO3OA	<58	<2	<2
PFO4DA	<79	<2	<2
PFO5DA	<34	<2	<2 UJ
PMPA	<570	<10	<10
PEPA	<47	<20	<20
PFESA-BP1	<27	<2	<2
PFESA-BP2	<30	<2	<2
Byproduct 4	<160	<2	<2
Byproduct 5	<58	<2	<2
Byproduct 6	<15	<2	<2
NVHOS	<54	<2	<2
EVE Acid	<24	<2	<2
Hydro-EVE Acid	<28	<2	<2
R-EVE	<70	<2	<2
PES	<46	<2	<2
PFECA B	<60	<2	<2
PFECA-G	<41	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
11Cl-PF3OUdS	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
6:2 Fluorotelomer sulfonate	--	--	--
9Cl-PF3ONS	--	--	--
ADONA	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	--
Perfluorobutane Sulfonic Acid	--	--	--
Perfluorobutanoic Acid	--	--	--
Perfluorodecane Sulfonic Acid	--	--	--
Perfluorodecanoic Acid	--	--	--
Perfluorododecane sulfonic acid (PFDoS)	--	--	--
Perfluorododecanoic Acid	--	--	--
Perfluoroheptane sulfonic acid (PFHpS)	--	--	--
Perfluoroheptanoic Acid	--	--	--
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	--	--	--
Perfluorohexanoic Acid	--	--	--
Perfluorononanesulfonic acid	--	--	--
Perfluorononanoic Acid	--	--	--
Perfluorooctadecanoic acid	--	--	--
Perfluorooctane Sulfonamide	--	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--	--
Perfluoropentanoic Acid	--	--	--
Perfluorotetradecanoic Acid	--	--	--
Perfluorotridecanoic Acid	--	--	--
Perfluoroundecanoic Acid	--	--	--
PFOA	--	--	--
PFOS	--	--	--

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--
Location ID	FBLK	FBLK	FBLK
Field Sample ID	GW4Q19-FBLK-01-103019	GW4Q19-FBLK-01-103119	GW4Q19-FBLK-01-110119
Sample Date	10/30/2019	10/31/2019	11/1/2019
QA/QC	Field Blank	Field Blank	Field Blank
Sample Matrix	LIQUID	LIQUID	LIQUID
SDG	320-55860-1	320-55909-1	320-56112-1
Lab Sample ID	320-55860-6	320-55909-7	320-56112-1
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	<2	<2	<2
PFMOAA	<5	<5	<5
PFO2HxA	<2	<2	<2
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2	<2 UJ
PMPA	<10	<10	<10
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	<2	<2
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
11Cl-PF3OUdS	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
6:2 Fluorotelomer sulfonate	--	--	--
9Cl-PF3ONS	--	--	--
ADONA	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	--
Perfluorobutane Sulfonic Acid	--	--	--
Perfluorobutanoic Acid	--	--	--
Perfluorodecane Sulfonic Acid	--	--	--
Perfluorodecanoic Acid	--	--	--
Perfluorododecane sulfonic acid (PFDoS)	--	--	--
Perfluorododecanoic Acid	--	--	--
Perfluoroheptane sulfonic acid (PFHpS)	--	--	--
Perfluoroheptanoic Acid	--	--	--
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	--	--	--
Perfluorohexanoic Acid	--	--	--
Perfluorononanesulfonic acid	--	--	--
Perfluorononanoic Acid	--	--	--
Perfluorooctadecanoic acid	--	--	--
Perfluorooctane Sulfonamide	--	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--	--
Perfluoropentanoic Acid	--	--	--
Perfluorotetradecanoic Acid	--	--	--
Perfluorotridecanoic Acid	--	--	--
Perfluoroundecanoic Acid	--	--	--
PFOA	--	--	--
PFOS	--	--	--

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	**--**	**--**	**--**
Location ID	**FBLK**	**FBLK**	**FBLK**
Field Sample ID	**GW4Q19-FBLK-01-110419**	**GW4Q19-FBLK-01-110519**	**GW4Q19-FBLK-01-110619**
Sample Date	**11/4/2019**	**11/5/2019**	**11/6/2019**
QA/QC	**Field Blank**	**Field Blank**	**Field Blank**
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-56112-1**	**320-56112-1**	**320-56117-1**
Lab Sample ID	**320-56112-6**	**320-56112-8**	**320-56117-1**
Table 3+ Lab SOP (ng/L)			
Hfpo Dimer Acid	<2 UJ	<2	<2
PFMOAA	<5	<5	<5
PFO2HxA	<2	<2	<2
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2	<2
PMPA	<10	<10	<10
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	<2	<2
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
11Cl-PF3OUdS	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
6:2 Fluorotelomer sulfonate	--	--	--
9Cl-PF3ONS	--	--	--
ADONA	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	--
Perfluorobutane Sulfonic Acid	--	--	--
Perfluorobutanoic Acid	--	--	--
Perfluorodecane Sulfonic Acid	--	--	--
Perfluorodecanoic Acid	--	--	--
Perfluorododecane sulfonic acid (PFDoS)	--	--	--
Perfluorododecanoic Acid	--	--	--
Perfluoroheptane sulfonic acid (PFHpS)	--	--	--
Perfluoroheptanoic Acid	--	--	--
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	--	--	--
Perfluorohexanoic Acid	--	--	--
Perfluorononanesulfonic acid	--	--	--
Perfluorononanoic Acid	--	--	--
Perfluorooctadecanoic acid	--	--	--
Perfluorooctane Sulfonamide	--	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--	--
Perfluoropentanoic Acid	--	--	--
Perfluorotetradecanoic Acid	--	--	--
Perfluorotridecanoic Acid	--	--	--
Perfluoroundecanoic Acid	--	--	--
PFOA	--	--	--
PFOS	--	--	--

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

TABLE 9-3
ONSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	**--**
Location ID	**FBLK**
Field Sample ID	**GW4Q19-FBLK-01-110819**
Sample Date	**11/8/2019**
QA/QC	**Field Blank**
Sample Matrix	**LIQUID**
SDG	**320-56173-1**
Lab Sample ID	**320-56173-4**
Table 3+ Lab SOP (ng/L)	
Hfpo Dimer Acid	<2
PFMOAA	<5
PFO2HxA	<2
PFO3OA	<2
PFO4DA	<2
PFO5DA	<2
PMPA	<10
PEPA	<20
PFESA-BP1	<2
PFESA-BP2	<2
Byproduct 4	<2
Byproduct 5	<2
Byproduct 6	<2
NVHOS	<2
EVE Acid	<2
Hydro-EVE Acid	<2
R-EVE	<2
PES	<2
PFECA B	<2
PFECA-G	<2
Other PFAS (ng/L)	
10:2 Fluorotelomer sulfonate	--
11Cl-PF3OUdS	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--
6:2 Fluorotelomer sulfonate	--
9Cl-PF3ONS	--
ADONA	--
NaDONA	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--
N-ethylperfluoro-1-octanesulfonamide	--
N-methyl perfluoro-1-octanesulfonamide	--
N-methyl perfluorooctane sulfonamidoacetic acid	--
Perfluorobutane Sulfonic Acid	--
Perfluorobutanoic Acid	--
Perfluorodecane Sulfonic Acid	--
Perfluorodecanoic Acid	--
Perfluorododecane sulfonic acid (PFDoS)	--
Perfluorododecanoic Acid	--
Perfluoroheptane sulfonic acid (PFHpS)	--
Perfluoroheptanoic Acid	--
Perfluorohexadecanoic acid (PFHxDA)	--
Perfluorohexane Sulfonic Acid	--
Perfluorohexanoic Acid	--
Perfluorononanesulfonic acid	--
Perfluorononanoic Acid	--
Perfluorooctadecanoic acid	--
Perfluorooctane Sulfonamide	--
Perfluoropentane sulfonic acid (PFPeS)	--
Perfluoropentanoic Acid	--
Perfluorotetradecanoic Acid	--
Perfluorotridecanoic Acid	--
Perfluoroundecanoic Acid	--
PFOA	--
PFOS	--

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	**BLADEN-1D**	**BLADEN-1D**	**BLADEN-1D**
Field Sample ID	**BLADEN-1D-082719**	**DUP-1-082719**	**GW4Q19-BLADEN-1D-110719**
Sample Date	**8/27/2019**	**8/27/2019**	**11/7/2019**
QA/QC	**--**	**Field Duplicate**	**--**
Sample Delivery Group	**280-127778-1**	**280-127778-1**	**320-56173-1**
Lab Sample ID	**280-127778-1**	**280-127778-2**	**320-56173-3**
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	**180**	**190**	**140**
PFMOAA	**33**	**30**	**24 J**
PFO2HxA	**81**	**80**	**87**
PFO3OA	**6.2**	**6.2**	**7.3**
PFO4DA	<2	<2	<2
PFO5DA	<2	<2	<2
PMPA	**330**	**330**	**370**
PEPA	**110**	**110**	**110**
PFESA-BP1	<2	<2	<2
PFESA-BP2	**0.48 J**	**0.48 J**	<2
Byproduct 4	**13 J**	**11 J**	**7**
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	**2.2**	**1.9 J**	**2**
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	**0.31 J**	<2
R-EVE	**6.2**	**5.7**	**4.2**
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	<1.7	<1.7	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<17	<17	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<17	<17	--
6:2 Fluorotelomer sulfonate	<17	<17	--
ADONA	<1.7	<1.7	--
F-53B Major	<1.7	<1.7	--
F-53B Minor	<1.7	<1.7	--
NaDONA	<1.7	<1.7	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<17	<17	--
N-methyl perfluorooctane sulfonamidoacetic acid	<17	<17	--
Perfluorobutane Sulfonic Acid	**0.43 J**	**0.39 J**	**--**
Perfluorobutanoic Acid	**3.6**	**3.6**	**--**
Perfluorodecane Sulfonic Acid	<1.7	<1.7	--
Perfluorodecanoic Acid	<1.7	<1.7	--
Perfluorododecane sulfonic acid (PFDoS)	<1.7	<1.7	--
Perfluorododecanoic Acid	<1.7	<1.7	--
Perfluoroheptane sulfonic acid (PFHpS)	<1.7	<1.7	--
Perfluoroheptanoic Acid	**0.27 J**	**0.26 J**	**--**
Perfluorohexadecanoic acid (PFHxDA)	<1.7	<1.7	--
Perfluorohexane Sulfonic Acid	**0.33 B**	**0.32 B**	**--**
Perfluorohexanoic Acid	**1.1 J**	**1.1 J**	**--**
Perfluorononanesulfonic acid	<1.7	<1.7	--
Perfluorononanoic Acid	<1.7	<1.7	--
Perfluorooctadecanoic acid	<1.7	<1.7	--
Perfluorooctane Sulfonamide	**0.48 J**	<1.7	**--**
Perfluoropentane sulfonic acid (PFPeS)	<1.7	<1.7	--
Perfluoropentanoic Acid	**3.9**	**3.8**	**--**
Perfluorotetradecanoic Acid	**0.36 B**	<1.7	**--**
Perfluorotridecanoic Acid	<1.7	<1.7	--
Perfluoroundecanoic Acid	<1.7	<1.7	--
PFOA	<1.7	<1.7	--
PFOS	<1.7	<1.7	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<1.7	<1.7	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<3.3	<3.3	--
N-ethylperfluoro-1-octanesulfonamide	<1.7	<1.7	--
N-methyl perfluoro-1-octanesulfonamide	<1.7	<1.7	--

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Surficial Aquifer	Black Creek Aquifer
Location ID	BLADEN-2S	BLADEN-2S	BLADEN-2D
Field Sample ID	BLADEN-2S-082719	GW4Q19-BLADEN-2S-102219	BLADEN-2D-082719
Sample Date	8/27/2019	10/22/2019	8/27/2019
QA/QC	--	--	--
Sample Delivery Group	280-127778-1	320-55686-1	280-127778-1
Lab Sample ID	280-127778-3	320-55686-4	280-127778-4
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	**4.6**	**8.5 B**	**11**
PFMOAA	**11**	**22 J**	<5
PFO2HxA	**19 J**	**31**	**6.3**
PFO3OA	**1.8 J**	<2	**0.96 J**
PFO4DA	**1.5 J**	<2	<2
PFO5DA	**0.53**	<2	<2
PMPA	**68**	**60**	**77 J**
PEPA	**6.8 J**	<20	**12 J**
PFESA-BP1	<2	<2	<2
PFESA-BP2	**14**	**11**	**3.9**
Byproduct 4	<2	**5.2**	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	**1.5 J**	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	**0.36**	<2	<2
R-EVE	<2	**3.5**	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	<1.7	--	<1.7
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<17	--	<17
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<17	--	<17
6:2 Fluorotelomer sulfonate	<17	--	<17
ADONA	<1.8	--	<1.8
F-53B Major	<1.7	--	<1.7
F-53B Minor	<1.7	--	<1.7
NaDONA	<1.8	--	<1.8
N-ethyl perfluorooctane sulfonamidoacetic acid	<17	--	<17
N-methyl perfluorooctane sulfonamidoacetic acid	<17	--	<17
Perfluorobutane Sulfonic Acid	**1.3 J**	--	**1.5 J**
Perfluorobutanoic Acid	**3.4**	--	**2.1 J**
Perfluorodecane Sulfonic Acid	<1.7	--	<1.7
Perfluorodecanoic Acid	<1.7	--	<1.7
Perfluorododecane sulfonic acid (PFDoS)	<1.7	--	<1.7
Perfluorododecanoic Acid	<1.7	--	<1.7
Perfluoroheptane sulfonic acid (PFHpS)	**0.26 J**	--	<1.7
Perfluoroheptanoic Acid	**0.43 J**	--	**0.22 J**
Perfluorohexadecanoic acid (PFHxDA)	<1.7	--	<1.7
Perfluorohexane Sulfonic Acid	**1.1 B**	--	**0.52 B**
Perfluorohexanoic Acid	**0.62 J**	--	<1.7
Perfluorononanesulfonic acid	<1.7	--	<1.7
Perfluorononanoic Acid	<1.7	--	<1.7
Perfluorooctadecanoic acid	<1.7	--	<1.7
Perfluorooctane Sulfonamide	**0.48 J**	--	<1.7
Perfluoropentane sulfonic acid (PFPeS)	<1.7	--	<1.7
Perfluoropentanoic Acid	**0.98 J**	--	**0.46 J**
Perfluorotetradecanoic Acid	**0.24 B**	--	<1.7
Perfluorotridecanoic Acid	<1.7	--	<1.7
Perfluoroundecanoic Acid	<1.7	--	<1.7
PFOA	**1.3 J**	--	<1.7
PFOS	**3.7**	--	**0.6 J**
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<1.7	--	<1.7
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<3.4	--	<3.4
N-ethylperfluoro-1-octanesulfonamide	<1.7	--	<1.7
N-methyl perfluoro-1-octanesulfonamide	<1.7	--	<1.7

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Surficial Aquifer	Surficial Aquifer
Location ID	BLADEN-2D	BLADEN-3S	BLADEN-3S
Field Sample ID	GW4Q19-Bladen-2D-102919	BLADEN-3S-082819	GW4Q19-BLADEN-3S-102819
Sample Date	10/29/2019	8/28/2019	10/28/2019
QA/QC	--	--	--
Sample Delivery Group	320-55854-1	280-127778-1	320-55757-1
Lab Sample ID	320-55854-5	280-127778-5	320-55757-3
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	<2	**12**	**29**
PFMOAA	<5	**15**	**21**
PFO2HxA	<2	**31**	**59**
PFO3OA	<2	**3.8**	**5.7**
PFO4DA	<2	**3.1**	**3.9**
PFO5DA	<2 UJ	**0.98 J**	<2
PMPA	<10	**39**	**93**
PEPA	<20	**5.6 J**	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	**3.6**	**8.3**
Byproduct 4	<2	**1.9 J**	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	**0.46 J**	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	<1.7	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<17	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<17	--
6:2 Fluorotelomer sulfonate	--	<17	--
ADONA	--	<1.8	--
F-53B Major	--	<1.7	--
F-53B Minor	--	<1.7	--
NaDONA	--	<1.8	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<17	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	<17	--
Perfluorobutane Sulfonic Acid	**--**	**0.26 J**	**--**
Perfluorobutanoic Acid	**--**	**2.1**	**--**
Perfluorodecane Sulfonic Acid	--	<1.7	--
Perfluorodecanoic Acid	--	<1.7	--
Perfluorododecane sulfonic acid (PFDoS)	--	<1.7	--
Perfluorododecanoic Acid	--	<1.7	--
Perfluoroheptane sulfonic acid (PFHpS)	--	<1.7	--
Perfluoroheptanoic Acid	**--**	**0.81 J**	**--**
Perfluorohexadecanoic acid (PFHxDA)	--	<1.7	--
Perfluorohexane Sulfonic Acid	**--**	**0.27 B**	**--**
Perfluorohexanoic Acid	**--**	**0.65 J**	**--**
Perfluorononanesulfonic acid	--	<1.7	--
Perfluorononanoic Acid	--	**0.38 J**	--
Perfluorooctadecanoic acid	--	<1.7	--
Perfluorooctane Sulfonamide	**--**	**0.33 J**	**--**
Perfluoropentane sulfonic acid (PFPeS)	--	<1.7	--
Perfluoropentanoic Acid	**--**	**0.93 J**	**--**
Perfluorotetradecanoic Acid	**--**	<1.7	**--**
Perfluorotridecanoic Acid	--	<1.7	--
Perfluoroundecanoic Acid	--	<1.7	--
PFOA	--	**2**	--
PFOS	--	**2.2**	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	<1.7	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	<3.4	--
N-ethylperfluoro-1-octanesulfonamide	--	<1.7	--
N-methyl perfluoro-1-octanesulfonamide	--	<1.7	--

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	**Black Creek Aquifer**	**Black Creek Aquifer**	**Surficial Aquifer**
Location ID	**BLADEN-3D**	**BLADEN-3D**	**BLADEN-4S**
Field Sample ID	**BLADEN-3D-082819**	**GW4Q19-BLADEN-3D-102819**	**BLADEN-4S-082819**
Sample Date	**8/28/2019**	**10/28/2019**	**8/28/2019**
QA/QC	**--**	**--**	**--**
Sample Delivery Group	**280-127778-1**	**320-55757-1**	**280-127778-1**
Lab Sample ID	**280-127778-6**	**320-55757-4**	**280-127778-10**
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	**2.2 J**	<2	<3.7
PFMOAA	<5	<5	<5
PFO2HxA	**1.3 J**	<2	**3**
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2	<2
PMPA	**14**	<10	**12**
PEPA	**2.1 J**	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	**0.63 J**	<2	**1.5 J**
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	<1.8	--	<1.8
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<18	--	<18
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<18	--	<18
6:2 Fluorotelomer sulfonate	<18	--	<18
ADONA	<1.9	--	<1.9
F-53B Major	<1.8	--	<1.8
F-53B Minor	<1.8	--	<1.8
NaDONA	<1.9	--	<1.9
N-ethyl perfluorooctane sulfonamidoacetic acid	<18	--	<18
N-methyl perfluorooctane sulfonamidoacetic acid	<18	--	<18
Perfluorobutane Sulfonic Acid	**0.33 J**	--	**0.5 J**
Perfluorobutanoic Acid	<1.8	--	**1.1 J**
Perfluorodecane Sulfonic Acid	<1.8	--	<1.8
Perfluorodecanoic Acid	<1.8	--	<1.8
Perfluorododecane sulfonic acid (PFDoS)	<1.8	--	<1.8
Perfluorododecanoic Acid	<1.8	--	<1.8
Perfluoroheptane sulfonic acid (PFHpS)	<1.8	--	<1.8
Perfluoroheptanoic Acid	<1.8	--	**0.48 J**
Perfluorohexadecanoic acid (PFHxDA)	<1.8	--	<1.8
Perfluorohexane Sulfonic Acid	**0.26 B**	--	**0.76 B**
Perfluorohexanoic Acid	<1.8	--	**0.75 J**
Perfluorononanesulfonic acid	<1.8	--	<1.8
Perfluorononanoic Acid	<1.8	--	<1.8
Perfluorooctadecanoic acid	<1.8	--	<1.8
Perfluorooctane Sulfonamide	<1.8	--	<1.8
Perfluoropentane sulfonic acid (PFPeS)	<1.8	--	<1.8
Perfluoropentanoic Acid	<1.8	--	**0.8 J**
Perfluorotetradecanoic Acid	<1.8	--	<1.8
Perfluorotridecanoic Acid	<1.8	--	<1.8
Perfluoroundecanoic Acid	<1.8	--	<1.8
PFOA	<1.8	--	**1.5 J**
PFOS	<1.8	--	**4.8**
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<1.8	--	<1.8
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<3.5	--	<3.7
N-ethylperfluoro-1-octanesulfonamide	<1.8	--	<1.8
N-methyl perfluoro-1-octanesulfonamide	<1.8	--	<1.8

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	BLADEN-4S	BLADEN-4D	BLADEN-4D
Field Sample ID	GW4Q19-BLADEN-4S-102219	BLADEN-4D-082819	GW4Q19-BLADEN-4D-102519
Sample Date	10/22/2019	8/28/2019	10/25/2019
QA/QC	--	--	--
Sample Delivery Group	320-55686-1	280-127778-1	320-55754-1
Lab Sample ID	320-55686-6	280-127778-7	320-55754-1
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	**2.7 B**	<3.6	<2
PFMOAA	<5 UJ	<5 UJ	<5 UJ
PFO2HxA	**3.1**	<2	<2
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2 UJ	<2
PMPA	<10	**9.2 J**	<10
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	<2	<2
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	<1.8	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<18	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<18	--
6:2 Fluorotelomer sulfonate	--	<18	--
ADONA	--	<1.9	--
F-53B Major	--	<1.7	--
F-53B Minor	--	<1.7	--
NaDONA	--	<1.9	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<18	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	<18	--
Perfluorobutane Sulfonic Acid	--	<1.8	--
Perfluorobutanoic Acid	--	<1.8	--
Perfluorodecane Sulfonic Acid	--	<1.8	--
Perfluorodecanoic Acid	--	<1.8	--
Perfluorododecane sulfonic acid (PFDoS)	--	<1.8	--
Perfluorododecanoic Acid	--	<1.8	--
Perfluoroheptane sulfonic acid (PFHpS)	--	<1.8	--
Perfluoroheptanoic Acid	--	<1.8	--
Perfluorohexadecanoic acid (PFHxDA)	--	<1.8	--
Perfluorohexane Sulfonic Acid	--	**0.26 B**	--
Perfluorohexanoic Acid	--	<1.8	--
Perfluorononanesulfonic acid	--	<1.8	--
Perfluorononanoic Acid	--	<1.8	--
Perfluorooctadecanoic acid	--	<1.8	--
Perfluorooctane Sulfonamide	--	<0.57	--
Perfluoropentane sulfonic acid (PFPeS)	--	<1.8	--
Perfluoropentanoic Acid	--	<1.8	--
Perfluorotetradecanoic Acid	--	<1.8	--
Perfluorotridecanoic Acid	--	<1.8	--
Perfluoroundecanoic Acid	--	<1.8	--
PFOA	--	<1.8	--
PFOS	--	<1.8	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	<1.7	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	<3.4	--
N-ethylperfluoro-1-octanesulfonamide	--	<1.7	--
N-methyl perfluoro-1-octanesulfonamide	--	<1.7	--

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	CUMBERLAND-1S	CUMBERLAND-1S	CUMBERLAND-1D
Field Sample ID	CUMBER-1S-09162019	GW4Q19-CUMBERLAND-1S-102419	CUMBER-1D-09162019
Sample Date	9/16/2019	10/24/2019	9/16/2019
QA/QC	--	--	--
Sample Delivery Group	320-54439-1	320-55761-1	320-54439-1
Lab Sample ID	320-54439-1	320-55761-3	320-54439-2
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	<3.7	<2	<3.8
PFMOAA	<5	<5 UJ	<5 UJ
PFO2HxA	**11**	**8.5**	<2
PFO3OA	**1.9 J**	<2	<2
PFO4DA	**0.81 J**	<2	<2
PFO5DA	<2 UJ	<2	<2 UJ
PMPA	**13**	**16**	<10
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	**1.8 J**	**2.3**	<2
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	<1.9	--	<1.9
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<19	--	<19
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<19	--	<19
6:2 Fluorotelomer sulfonate	<19	--	<19
ADONA	<2	--	<2
F-53B Major	<1.9	--	<1.9
F-53B Minor	<1.9	--	<1.9
NaDONA	<2	--	<2
N-ethyl perfluorooctane sulfonamidoacetic acid	<19	--	<19
N-methyl perfluorooctane sulfonamidoacetic acid	<19	--	<19
Perfluorobutane Sulfonic Acid	**35**	--	<1.9
Perfluorobutanoic Acid	**7**	--	**0.52 J**
Perfluorodecane Sulfonic Acid	<1.9	--	<1.9
Perfluorodecanoic Acid	<1.9	--	<1.9
Perfluorododecane sulfonic acid (PFDoS)	<1.9	--	<1.9
Perfluorododecanoic Acid	<1.9	--	<1.9
Perfluoroheptane sulfonic acid (PFHpS)	**0.32 J**	--	<1.9
Perfluoroheptanoic Acid	**4.4**	--	**0.47 J**
Perfluorohexadecanoic acid (PFHxDA)	<1.9	--	<1.9
Perfluorohexane Sulfonic Acid	**2.8**	--	**0.6 B**
Perfluorohexanoic Acid	**6.4**	--	**0.87 J**
Perfluorononanesulfonic acid	<1.9	--	<1.9
Perfluorononanoic Acid	**0.93 J**	--	<1.9
Perfluorooctadecanoic acid	<1.9	--	<1.9
Perfluorooctane Sulfonamide	**1 B**	--	**0.88 B**
Perfluoropentane sulfonic acid (PFPeS)	**0.35 J**	--	<1.9
Perfluoropentanoic Acid	**6.5**	--	<1.9
Perfluorotetradecanoic Acid	<1.9	--	<1.9
Perfluorotridecanoic Acid	<1.9	--	<1.9
Perfluoroundecanoic Acid	<1.9	--	<1.9
PFOA	**13**	--	<1.9
PFOS	**15**	--	**0.61 J**
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<1.9	--	<1.9
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<3.7	--	<3.8
N-ethylperfluoro-1-octanesulfonamide	<1.9	--	<1.9
N-methyl perfluoro-1-octanesulfonamide	<1.9	--	<1.9

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Surficial Aquifer
Location ID	**CUMBERLAND-1D**	**CUMBERLAND-1D**
Field Sample ID	**GW4Q19-CUMBERLAND-1D-102419**	**GW4Q19-CUMBERLAND-1D-102419-D**
Sample Date	**10/24/2019**	**10/24/2019**
QA/QC	**--**	**Field Duplicate**
Sample Delivery Group	**320-55761-1**	**320-55761-1**
Lab Sample ID	**320-55761-1**	**320-55761-2**
Table 3+ Lab SOP (ng/L)		
HFPO-DA (EPA Method 537 Mod)	**5**	**4.8**
PFMOAA	<5	<5
PFO2HxA	<2	<2
PFO3OA	<2	<2
PFO4DA	<2	<2
PFO5DA	<2	<2
PMPA	<10	<10
PEPA	<20	<20
PFESA-BP1	<2	<2
PFESA-BP2	<2	<2
Byproduct 4	<2	<2
Byproduct 5	**2.5 J**	**2.4 J**
Byproduct 6	<2	<2
NVHOS	<2	<2
EVE Acid	<2	<2
Hydro-EVE Acid	<2	<2
R-EVE	<2 UJ	<2
PES	<2	<2
PFECA B	<2	<2
PFECA-G	<2	<2
Other PFAS (ng/L)		
10:2 Fluorotelomer sulfonate	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--
6:2 Fluorotelomer sulfonate	--	--
ADONA	--	--
F-53B Major	--	--
F-53B Minor	--	--
NaDONA	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--
Perfluorobutane Sulfonic Acid	--	--
Perfluorobutanoic Acid	--	--
Perfluorodecane Sulfonic Acid	--	--
Perfluorodecanoic Acid	--	--
Perfluorododecane sulfonic acid (PFDoS)	--	--
Perfluorododecanoic Acid	--	--
Perfluoroheptane sulfonic acid (PFHpS)	--	--
Perfluoroheptanoic Acid	--	--
Perfluorohexadecanoic acid (PFHxDA)	--	--
Perfluorohexane Sulfonic Acid	--	--
Perfluorohexanoic Acid	--	--
Perfluorononanesulfonic acid	--	--
Perfluorononanoic Acid	--	--
Perfluorooctadecanoic acid	--	--
Perfluorooctane Sulfonamide	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--
Perfluoropentanoic Acid	--	--
Perfluorotetradecanoic Acid	--	--
Perfluorotridecanoic Acid	--	--
Perfluoroundecanoic Acid	--	--
PFOA	--	--
PFOS	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	CUMBERLAND-2S	CUMBERLAND-2S	CUMBERLAND-2D
Field Sample ID	Cumber-2S-09162019	GW4Q19-CUMBERLAND-2S-102319	Cumber-2D-09162019
Sample Date	9/16/2019	10/23/2019	9/16/2019
QA/QC	--	--	--
Sample Delivery Group	320-54378-1	320-55683-1	320-54378-1
Lab Sample ID	320-54378-7	320-55683-1	320-54378-8
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	<4 UJ	<86	<4 UJ
PFMOAA	**22**	<210	<5
PFO2HxA	**4.3**	<81	<2
PFO3OA	<2	<58	<2
PFO4DA	<2	<79	<2
PFO5DA	<2	**38**	<2
PMPA	**20**	<570	**10**
PEPA	<20	<47	<20
PFESA-BP1	<2	<27	<2
PFESA-BP2	<2	<30	<2
Byproduct 4	<2	<160	<2
Byproduct 5	<2	<58	<2
Byproduct 6	<2	<15	<2
NVHOS	<2	<54	<2
EVE Acid	<2	<24	<2
Hydro-EVE Acid	<2	<28	<2
R-EVE	<2	<70	<2
PES	<2	<46	<2
PFECA B	<2	<60	<2
PFECA-G	<2	<41	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	<2	--	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	--	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	--	<470
6:2 Fluorotelomer sulfonate	<20	--	<20
ADONA	<2.1	--	<2.1
F-53B Major	<2	--	<2
F-53B Minor	<2	--	<2
NaDONA	<2.1	--	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	--	<20
N-methyl perfluorooctane sulfonamidoacetic acid	<20	--	<20
Perfluorobutane Sulfonic Acid	<2	--	<2
Perfluorobutanoic Acid	**2.9**	--	<2
Perfluorodecane Sulfonic Acid	<2	--	<2
Perfluorodecanoic Acid	<2	--	<2
Perfluorododecane sulfonic acid (PFDoS)	<2	--	<2
Perfluorododecanoic Acid	<2	--	<2
Perfluoroheptane sulfonic acid (PFHpS)	<2	--	<2
Perfluoroheptanoic Acid	**2.9**	--	**2.7**
Perfluorohexadecanoic acid (PFHxDA)	<2	--	<2
Perfluorohexane Sulfonic Acid	**2.1**	--	**2.9**
Perfluorohexanoic Acid	**3.8**	--	**4.3**
Perfluorononanesulfonic acid	<2	--	<2
Perfluorononanoic Acid	<2	--	<2
Perfluorooctadecanoic acid	<2	--	<2
Perfluorooctane Sulfonamide	<2	--	<2
Perfluoropentane sulfonic acid (PFPeS)	<2	--	<2
Perfluoropentanoic Acid	**3.9**	--	**3.8**
Perfluorotetradecanoic Acid	<2	--	<2
Perfluorotridecanoic Acid	<2	--	<2
Perfluoroundecanoic Acid	<2	--	<2
PFOA	**5**	--	**2.1**
PFOS	**4.3**	--	**4.4**
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	--	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	--	<4
N-ethylperfluoro-1-octanesulfonamide	<2	--	<2
N-methyl perfluoro-1-octanesulfonamide	<2	--	<2

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Surficial Aquifer
Location ID	CUMBERLAND-2D	CUMBERLAND-3S
Field Sample ID	GW4Q19-CUMBERLAND-2D-102519	Cumber-3S-09162019
Sample Date	10/25/2019	9/16/2019
QA/QC	--	--
Sample Delivery Group	320-55754-1	320-54378-1
Lab Sample ID	320-55754-2	320-54378-5
Table 3+ Lab SOP (ng/L)		
HFPO-DA (EPA Method 537 Mod)	<2	**10 J**
PFMOAA	<5	**30**
PFO2HxA	<2	**63**
PFO3OA	<2	**9.8 J**
PFO4DA	<2	**8.7**
PFO5DA	<2	**7.6**
PMPA	<10	**44**
PEPA	<20	<20
PFESA-BP1	<2	<2
PFESA-BP2	<2	**4**
Byproduct 4	<2	**20 J**
Byproduct 5	<2	<2
Byproduct 6	<2	<2
NVHOS	<2	<2
EVE Acid	<2	<2
Hydro-EVE Acid	<2	<2
R-EVE	<2	**11 J**
PES	<2	<2
PFECA B	<2	<2
PFECA-G	<2	<2
Other PFAS (ng/L)		
10:2 Fluorotelomer sulfonate	--	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<470
6:2 Fluorotelomer sulfonate	--	<20
ADONA	--	<2.1
F-53B Major	--	<2
F-53B Minor	--	<2
NaDONA	--	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20
N-methyl perfluorooctane sulfonamidoacetic acid	--	<20
Perfluorobutane Sulfonic Acid	--	<2
Perfluorobutanoic Acid	--	**5.6**
Perfluorodecane Sulfonic Acid	--	<2
Perfluorodecanoic Acid	--	<2
Perfluorododecane sulfonic acid (PFDoS)	--	<2
Perfluorododecanoic Acid	--	<2
Perfluoroheptane sulfonic acid (PFHpS)	--	<2
Perfluoroheptanoic Acid	--	**5**
Perfluorohexadecanoic acid (PFHxDA)	--	<2
Perfluorohexane Sulfonic Acid	--	**2.9**
Perfluorohexanoic Acid	--	**5.3**
Perfluorononanesulfonic acid	--	<2
Perfluorononanoic Acid	--	**2.2**
Perfluorooctadecanoic acid	--	<2
Perfluorooctane Sulfonamide	--	<2
Perfluoropentane sulfonic acid (PFPeS)	--	<2
Perfluoropentanoic Acid	--	**6.2**
Perfluorotetradecanoic Acid	--	<2
Perfluorotridecanoic Acid	--	<2
Perfluoroundecanoic Acid	--	<2
PFOA	--	**10**
PFOS	--	**16**
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	<4
N-ethylperfluoro-1-octanesulfonamide	--	<2
N-methyl perfluoro-1-octanesulfonamide	--	<2

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	CUMBERLAND-3S	CUMBERLAND-3D
Field Sample ID	GW4Q19-CUMBERLAND-3S-102219	Cumber-3D-09162019
Sample Date	10/22/2019	9/16/2019
QA/QC	--	--
Sample Delivery Group	320-55686-1	320-54378-1
Lab Sample ID	320-55686-5	320-54378-6
Table 3+ Lab SOP (ng/L)		
HFPO-DA (EPA Method 537 Mod)	**16 B**	<4 UJ
PFMOAA	**13 J**	**17 J**
PFO2HxA	**40**	<2
PFO3OA	**3**	<2
PFO4DA	<2	<2
PFO5DA	<2	<2
PMPA	**61**	**12**
PEPA	<20	<20
PFESA-BP1	<2	<2
PFESA-BP2	**5.1**	<2
Byproduct 4	<2	<2
Byproduct 5	<2	<2
Byproduct 6	<2	<2
NVHOS	<2	<2
EVE Acid	<2	<2
Hydro-EVE Acid	<2	<2
R-EVE	**2.3**	<2
PES	<2	<2
PFECA B	<2	<2
PFECA-G	<2	<2
Other PFAS (ng/L)		
10:2 Fluorotelomer sulfonate	--	<18
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<190
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<480
6:2 Fluorotelomer sulfonate	--	<190
ADONA	--	<2.1
F-53B Major	--	<2
F-53B Minor	--	<2
NaDONA	--	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20
N-methyl perfluorooctane sulfonamidoacetic acid	--	<20
Perfluorobutane Sulfonic Acid	--	<2
Perfluorobutanoic Acid	--	<2
Perfluorodecane Sulfonic Acid	--	<2
Perfluorodecanoic Acid	--	<2
Perfluorododecane sulfonic acid (PFDoS)	--	<2
Perfluorododecanoic Acid	--	<2
Perfluoroheptane sulfonic acid (PFHpS)	--	<2
Perfluoroheptanoic Acid	--	**2.2**
Perfluorohexadecanoic acid (PFHxDA)	--	<2
Perfluorohexane Sulfonic Acid	--	<2
Perfluorohexanoic Acid	--	**3.4**
Perfluorononanesulfonic acid	--	<2
Perfluorononanoic Acid	--	<2
Perfluorooctadecanoic acid	--	<2
Perfluorooctane Sulfonamide	--	<2
Perfluoropentane sulfonic acid (PFPeS)	--	<2
Perfluoropentanoic Acid	--	**2.9**
Perfluorotetradecanoic Acid	--	<2
Perfluorotridecanoic Acid	--	<2
Perfluoroundecanoic Acid	--	<2
PFOA	--	<2
PFOS	--	**2.6**
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	<4
N-ethylperfluoro-1-octanesulfonamide	--	<2
N-methyl perfluoro-1-octanesulfonamide	--	<2

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Surficial Aquifer
Location ID	CUMBERLAND-3D	CUMBERLAND-4S
Field Sample ID	GW4Q19-CUMBERLAND-3D-102319	Cumber-4S-09162019
Sample Date	10/23/2019	9/16/2019
QA/QC	--	--
Sample Delivery Group	320-55683-1	320-54378-1
Lab Sample ID	320-55683-5	320-54378-2
Table 3+ Lab SOP (ng/L)		
HFPO-DA (EPA Method 537 Mod)	<86	**110 J**
PFMOAA	<210	**39**
PFO2HxA	<81	**110**
PFO3OA	<58	**18**
PFO4DA	<79	**5.1**
PFO5DA	<34	<2
PMPA	<570	**140**
PEPA	<47	**42**
PFESA-BP1	<27	<2
PFESA-BP2	<30	**4.8**
Byproduct 4	<160	**74 J**
Byproduct 5	<58	<2
Byproduct 6	<15	<2
NVHOS	<54	**2.1**
EVE Acid	<24	<2
Hydro-EVE Acid	<28	<2
R-EVE	<70	**18 J**
PES	<46	<2
PFECA B	<60	<2
PFECA-G	<41	<2
Other PFAS (ng/L)		
10:2 Fluorotelomer sulfonate	--	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<20
6:2 Fluorotelomer sulfonate	--	<20
ADONA	--	<2.1
F-53B Major	--	<2
F-53B Minor	--	<2
NaDONA	--	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20
N-methyl perfluorooctane sulfonamidoacetic acid	--	<20
Perfluorobutane Sulfonic Acid	--	<2
Perfluorobutanoic Acid	--	**8.6**
Perfluorodecane Sulfonic Acid	--	<2
Perfluorodecanoic Acid	--	<2
Perfluorododecane sulfonic acid (PFDoS)	--	<2
Perfluorododecanoic Acid	--	<2
Perfluoroheptane sulfonic acid (PFHpS)	--	<2
Perfluoroheptanoic Acid	--	**2.9**
Perfluorohexadecanoic acid (PFHxDA)	--	<2 UJ
Perfluorohexane Sulfonic Acid	--	<2
Perfluorohexanoic Acid	--	**3.1**
Perfluorononanesulfonic acid	--	<2
Perfluorononanoic Acid	--	<2
Perfluorooctadecanoic acid	--	<2 UJ
Perfluorooctane Sulfonamide	--	<2
Perfluoropentane sulfonic acid (PFPeS)	--	<2
Perfluoropentanoic Acid	--	**5.2**
Perfluorotetradecanoic Acid	--	<2
Perfluorotridecanoic Acid	--	<2
Perfluoroundecanoic Acid	--	<2
PFOA	--	**6**
PFOS	--	**5.9**
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	<4
N-ethylperfluoro-1-octanesulfonamide	--	<2
N-methyl perfluoro-1-octanesulfonamide	--	<2

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	CUMBERLAND-4S	CUMBERLAND-4D
Field Sample ID	GW4Q19-CUMBERLAND-4S-102519	Cumber-4D-09162019
Sample Date	10/25/2019	9/16/2019
QA/QC	--	--
Sample Delivery Group	320-55761-1	320-54378-1
Lab Sample ID	320-55761-5	320-54378-1
Table 3+ Lab SOP (ng/L)		
HFPO-DA (EPA Method 537 Mod)	**76**	<4 UJ
PFMOAA	**15 J**	<5
PFO2HxA	**78 J**	<2
PFO3OA	**14**	<2
PFO4DA	**7.3**	<2
PFO5DA	<2	<2
PMPA	**120 J**	**12**
PEPA	**31**	<20
PFESA-BP1	<2	<2
PFESA-BP2	**5.6**	<2
Byproduct 4	**30 J**	**2.7 J**
Byproduct 5	<2	<2
Byproduct 6	<2	<2
NVHOS	<2	<2
EVE Acid	<2	<2
Hydro-EVE Acid	<2	<2
R-EVE	**7.6 J**	<2
PES	<2	<2
PFECA B	<2	<2
PFECA-G	<2	<2
Other PFAS (ng/L)		
10:2 Fluorotelomer sulfonate	--	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<20
6:2 Fluorotelomer sulfonate	--	**29 J**
ADONA	--	<2.1
F-53B Major	--	<2
F-53B Minor	--	<2
NaDONA	--	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20
N-methyl perfluorooctane sulfonamidoacetic acid	--	<20
Perfluorobutane Sulfonic Acid	--	<2
Perfluorobutanoic Acid	--	<2
Perfluorodecane Sulfonic Acid	--	<2
Perfluorodecanoic Acid	--	<2
Perfluorododecane sulfonic acid (PFDoS)	--	<2
Perfluorododecanoic Acid	--	<2
Perfluoroheptane sulfonic acid (PFHpS)	--	<2
Perfluoroheptanoic Acid	--	**2.5**
Perfluorohexadecanoic acid (PFHxDA)	--	<2
Perfluorohexane Sulfonic Acid	--	<2
Perfluorohexanoic Acid	--	**3.4**
Perfluorononanesulfonic acid	--	<2
Perfluorononanoic Acid	--	<2
Perfluorooctadecanoic acid	--	<2
Perfluorooctane Sulfonamide	--	<2
Perfluoropentane sulfonic acid (PFPeS)	--	<2
Perfluoropentanoic Acid	--	**3.4**
Perfluorotetradecanoic Acid	--	<2
Perfluorotridecanoic Acid	--	<2
Perfluoroundecanoic Acid	--	<2
PFOA	--	<2
PFOS	--	**2.7**
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	<4
N-ethylperfluoro-1-octanesulfonamide	--	<2
N-methyl perfluoro-1-octanesulfonamide	--	<2

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Surficial Aquifer
Location ID	CUMBERLAND-4D	CUMBERLAND-5S
Field Sample ID	GW4Q19-CUMBERLAND-4D-102419	Cumber-5S-09162019
Sample Date	10/24/2019	9/16/2019
QA/QC	--	--
Sample Delivery Group	320-55761-1	320-54378-1
Lab Sample ID	320-55761-4	320-54378-4
Table 3+ Lab SOP (ng/L)		
HFPO-DA (EPA Method 537 Mod)	<2	<4 UJ
PFMOAA	<5	**22**
PFO2HxA	<2	<2
PFO3OA	<2	<2
PFO4DA	<2	<2
PFO5DA	<2	<2
PMPA	<10	**14**
PEPA	<20	<20
PFESA-BP1	<2	<2
PFESA-BP2	<2	<2
Byproduct 4	<2	<2
Byproduct 5	<2	<2
Byproduct 6	<2	<2
NVHOS	<2	<2
EVE Acid	<2	<2
Hydro-EVE Acid	<2	<2
R-EVE	<2	<2
PES	<2	<2
PFECA B	<2	<2
PFECA-G	<2	<2
Other PFAS (ng/L)		
10:2 Fluorotelomer sulfonate	--	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<480
6:2 Fluorotelomer sulfonate	--	<20
ADONA	--	<2.1
F-53B Major	--	<2
F-53B Minor	--	<2
NaDONA	--	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20
N-methyl perfluorooctane sulfonamidoacetic acid	--	<20
Perfluorobutane Sulfonic Acid	--	<2
Perfluorobutanoic Acid	--	<2
Perfluorodecane Sulfonic Acid	--	<2
Perfluorodecanoic Acid	--	<2
Perfluorododecane sulfonic acid (PFDoS)	--	<2
Perfluorododecanoic Acid	--	<2
Perfluoroheptane sulfonic acid (PFHpS)	--	<2
Perfluoroheptanoic Acid	--	<2
Perfluorohexadecanoic acid (PFHxDA)	--	<2
Perfluorohexane Sulfonic Acid	--	<2
Perfluorohexanoic Acid	--	<2
Perfluorononanesulfonic acid	--	<2
Perfluorononanoic Acid	--	<2
Perfluorooctadecanoic acid	--	<2
Perfluorooctane Sulfonamide	--	<2
Perfluoropentane sulfonic acid (PFPeS)	--	<2
Perfluoropentanoic Acid	--	<2
Perfluorotetradecanoic Acid	--	<2
Perfluorotridecanoic Acid	--	<2
Perfluoroundecanoic Acid	--	<2
PFOA	--	<2
PFOS	--	<2
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	<4
N-ethylperfluoro-1-octanesulfonamide	--	<2
N-methyl perfluoro-1-octanesulfonamide	--	<2

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Black Creek Aquifer	Surficial Aquifer
Location ID	**CUMBERLAND-5S**	**CUMBERLAND-5D**	**ROBESON-1S**
Field Sample ID	**GW4Q19-CUMBERLAND-5S-102319**	**Cumber-5D-09162019**	**ROBESON-1S-091219**
Sample Date	**10/23/2019**	**9/16/2019**	**9/12/2019**
QA/QC	**--**	**--**	**--**
Sample Delivery Group	**320-55683-1**	**320-54378-1**	**280-128413-1**
Lab Sample ID	**320-55683-7**	**320-54378-3**	**280-128413-1**
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	<86	<4 UJ	<4 UJ
PFMOAA	<210	<5	**6.3**
PFO2HxA	<81	<2	**6.2**
PFO3OA	<58	<2	<2
PFO4DA	<79	<2	<2
PFO5DA	**50**	<2	<2 UJ
PMPA	<570	<10	**34**
PEPA	<47	<20	<20
PFESA-BP1	<27	<2	<2
PFESA-BP2	<30	<2	**7.1**
Byproduct 4	<160	<2	<2
Byproduct 5	<58	<2	<2
Byproduct 6	<15	<2	<2
NVHOS	<54	<2	<2
EVE Acid	<24	<2	<2
Hydro-EVE Acid	<28	<2	<2
R-EVE	<70	<2	<2
PES	<46	<2	<2
PFECA B	<60	<2	<2
PFECA-G	<41	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<20	<20
6:2 Fluorotelomer sulfonate	--	<20	<20
ADONA	--	<2.1	<2.1
F-53B Major	--	<2	<2
F-53B Minor	--	<2	<2
NaDONA	--	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20	<20
N-methyl perfluorooctane sulfonamidoacetic acid	--	<20	<20
Perfluorobutane Sulfonic Acid	--	<2	<2
Perfluorobutanoic Acid	--	<2	<2
Perfluorodecane Sulfonic Acid	--	<2	<2
Perfluorodecanoic Acid	--	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	--	<2	<2
Perfluorododecanoic Acid	--	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	--	<2	<2
Perfluoroheptanoic Acid	--	<2	<2
Perfluorohexadecanoic acid (PFHxDA)	--	<2	<2
Perfluorohexane Sulfonic Acid	--	<2	<2
Perfluorohexanoic Acid	--	<2	<2
Perfluorononanesulfonic acid	--	<2	<2
Perfluorononanoic Acid	--	<2	<2
Perfluorooctadecanoic acid	--	<2	<2
Perfluorooctane Sulfonamide	--	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	--	<2	<2
Perfluoropentanoic Acid	--	<2	<2
Perfluorotetradecanoic Acid	--	<2	<2
Perfluorotridecanoic Acid	--	<2	<2
Perfluoroundecanoic Acid	--	<2	<2
PFOA	--	<2	<2
PFOS	--	<2	**3.5**
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	<4	<4
N-ethylperfluoro-1-octanesulfonamide	--	<2 UJ	<2
N-methyl perfluoro-1-octanesulfonamide	--	<2	<2

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	Surficial Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	ROBESON-1S	ROBESON-1D	ROBESON-1D
Field Sample ID	GW4Q19-ROBESON-1S-103119	ROBESON-1D-091219	GW4Q19-ROBESON-1D-103119
Sample Date	10/31/2019	9/12/2019	10/31/2019
QA/QC	--	--	--
Sample Delivery Group	320-55909-1	280-128413-1	320-55909-1
Lab Sample ID	320-55909-4	280-128413-2	320-55909-3
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	<2	**6 J**	**3.6 B**
PFMOAA	**7.4**	<5	<5
PFO2HxA	**4.9**	**2.8**	<2
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2 UJ	<2
PMPA	**18**	**35**	**11**
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	**8.7**	**3**	<2
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	<2	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<20	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<20	--
6:2 Fluorotelomer sulfonate	--	<20	--
ADONA	--	<2.1	--
F-53B Major	--	<2	--
F-53B Minor	--	<2	--
NaDONA	--	<2.1	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<20	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	<20	--
Perfluorobutane Sulfonic Acid	--	<2	--
Perfluorobutanoic Acid	--	<2	--
Perfluorodecane Sulfonic Acid	--	<2	--
Perfluorodecanoic Acid	--	<2	--
Perfluorododecane sulfonic acid (PFDoS)	--	<2	--
Perfluorododecanoic Acid	--	<2	--
Perfluoroheptane sulfonic acid (PFHpS)	--	<2	--
Perfluoroheptanoic Acid	--	<2	--
Perfluorohexadecanoic acid (PFHxDA)	--	<2	--
Perfluorohexane Sulfonic Acid	--	<2	--
Perfluorohexanoic Acid	--	**2.3**	--
Perfluorononanesulfonic acid	--	<2	--
Perfluorononanoic Acid	--	<2	--
Perfluorooctadecanoic acid	--	<2	--
Perfluorooctane Sulfonamide	--	<2	--
Perfluoropentane sulfonic acid (PFPeS)	--	<2	--
Perfluoropentanoic Acid	--	**2**	--
Perfluorotetradecanoic Acid	--	<2	--
Perfluorotridecanoic Acid	--	<2	--
Perfluoroundecanoic Acid	--	<2	--
PFOA	--	<2	--
PFOS	--	<2	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	<2	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	<4	--
N-ethylperfluoro-1-octanesulfonamide	--	<2	--
N-methyl perfluoro-1-octanesulfonamide	--	<2	--

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--
Location ID	**EB**	**EB**	**EB**
Field Sample ID	**EquipBlank1-20190912**	**GW4Q19-EQBLK-01-102319**	**GW4Q19-EQBLK-02-102319**
Sample Date	**9/12/2019**	**10/23/2019**	**10/23/2019**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Delivery Group	**200-50537-2**	**320-55683-1**	**320-55683-1**
Lab Sample ID	**200-50537-3**	**320-55683-9**	**320-55683-4**
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	<4	<86	<86
PFMOAA	<5	<210	<210
PFO2HxA	<2	<81	<81
PFO3OA	<2	<58	<58
PFO4DA	<2	<79	<79
PFO5DA	<2	<34	<34
PMPA	<10	<570	<570
PEPA	<20	<47	<47
PFESA-BP1	<2	<27	<27
PFESA-BP2	<2	<30	<30
Byproduct 4	<2	<160	<160
Byproduct 5	<2	<58	<58
Byproduct 6	<2	<15	<15
NVHOS	<2	<54	<54
EVE Acid	<2	<24	<24
Hydro-EVE Acid	<2	<28	<28
R-EVE	<2	<70	<70
PES	<2	<46	<46
PFECA B	<2	<60	<60
PFECA-G	<2	<41	<41
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	<2	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	--	--
6:2 Fluorotelomer sulfonate	<20	--	--
ADONA	<2.1	--	--
F-53B Major	<2	--	--
F-53B Minor	<2	--	--
NaDONA	<2.1	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	--	--
Perfluorobutane Sulfonic Acid	<2	--	--
Perfluorobutanoic Acid	<2	--	--
Perfluorodecane Sulfonic Acid	<2	--	--
Perfluorodecanoic Acid	<2	--	--
Perfluorododecane sulfonic acid (PFDoS)	<2	--	--
Perfluorododecanoic Acid	<2	--	--
Perfluoroheptane sulfonic acid (PFHpS)	<2	--	--
Perfluoroheptanoic Acid	<2	--	--
Perfluorohexadecanoic acid (PFHxDA)	<2	--	--
Perfluorohexane Sulfonic Acid	<2	--	--
Perfluorohexanoic Acid	<2	--	--
Perfluorononanesulfonic acid	<2	--	--
Perfluorononanoic Acid	<2	--	--
Perfluorooctadecanoic acid	<2	--	--
Perfluorooctane Sulfonamide	<2	--	--
Perfluoropentane sulfonic acid (PFPeS)	<2	--	--
Perfluoropentanoic Acid	<2	--	--
Perfluorotetradecanoic Acid	<2	--	--
Perfluorotridecanoic Acid	<2	--	--
Perfluoroundecanoic Acid	<2	--	--
PFOA	<2	--	--
PFOS	<2	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	--	--
N-ethylperfluoro-1-octanesulfonamide	<2	--	--
N-methyl perfluoro-1-octanesulfonamide	<2	--	--

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	**--**	**--**	**--**
Location ID	**EB**	**EB**	**EB**
Field Sample ID	**GW4Q19-EQBLK-02-102419**	**GW4Q19-EBLK-01-102519**	**GW4Q19-EQBLK-01-102519**
Sample Date	**10/24/2019**	**10/25/2019**	**10/25/2019**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Delivery Group	**320-55761-1**	**320-55754-1**	**320-55754-1**
Lab Sample ID	**320-55761-6**	**320-55754-5**	**320-55754-3**
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	<2	<2	**2.9**
PFMOAA	<5	<5	<5
PFO2HxA	<2	<2	<2
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2	<2
PMPA	<10	<10	<10
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	<2	<2
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	--
6:2 Fluorotelomer sulfonate	--	--	--
ADONA	--	--	--
F-53B Major	--	--	--
F-53B Minor	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	--
Perfluorobutane Sulfonic Acid	--	--	--
Perfluorobutanoic Acid	--	--	--
Perfluorodecane Sulfonic Acid	--	--	--
Perfluorodecanoic Acid	--	--	--
Perfluorododecane sulfonic acid (PFDoS)	--	--	--
Perfluorododecanoic Acid	--	--	--
Perfluoroheptane sulfonic acid (PFHpS)	--	--	--
Perfluoroheptanoic Acid	--	--	--
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	--	--	--
Perfluorohexanoic Acid	--	--	--
Perfluorononanesulfonic acid	--	--	--
Perfluorononanoic Acid	--	--	--
Perfluorooctadecanoic acid	--	--	--
Perfluorooctane Sulfonamide	--	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--	--
Perfluoropentanoic Acid	--	--	--
Perfluorotetradecanoic Acid	--	--	--
Perfluorotridecanoic Acid	--	--	--
Perfluoroundecanoic Acid	--	--	--
PFOA	--	--	--
PFOS	--	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--
Location ID	EB	EB	EB
Field Sample ID	GW4Q19-EQBLK-02-102519	GW4Q19-EQBLK-01-102919	GW4Q19-EQBLK-02-102919
Sample Date	10/25/2019	10/29/2019	10/29/2019
QA/QC	Equipment Blank	Equipment Blank	Equipment Blank
Sample Delivery Group	320-55754-1	320-55854-1	320-55854-1
Lab Sample ID	320-55754-4	320-55854-7	320-55854-8
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	**7.9**	<2	<2
PFMOAA	**6.1**	<5	<5
PFO2HxA	**2.5**	<2	<2
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2	<2
PMPA	<10	<10	<10
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	<2	<2
Byproduct 4	**8.1**	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	**3.6**	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	--
6:2 Fluorotelomer sulfonate	--	--	--
ADONA	--	--	--
F-53B Major	--	--	--
F-53B Minor	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	--
Perfluorobutane Sulfonic Acid	--	--	--
Perfluorobutanoic Acid	--	--	--
Perfluorodecane Sulfonic Acid	--	--	--
Perfluorodecanoic Acid	--	--	--
Perfluorododecane sulfonic acid (PFDoS)	--	--	--
Perfluorododecanoic Acid	--	--	--
Perfluoroheptane sulfonic acid (PFHpS)	--	--	--
Perfluoroheptanoic Acid	--	--	--
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	--	--	--
Perfluorohexanoic Acid	--	--	--
Perfluorononanesulfonic acid	--	--	--
Perfluorononanoic Acid	--	--	--
Perfluorooctadecanoic acid	--	--	--
Perfluorooctane Sulfonamide	--	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--	--
Perfluoropentanoic Acid	--	--	--
Perfluorotetradecanoic Acid	--	--	--
Perfluorotridecanoic Acid	--	--	--
Perfluoroundecanoic Acid	--	--	--
PFOA	--	--	--
PFOS	--	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--
Location ID	EB	EB	EB
Field Sample ID	GW4Q19-EQBLK-01-103119	GW4Q19-EQBLK-02-103119	GW4Q19-EQBLK-01-110719
Sample Date	10/31/2019	10/31/2019	11/7/2019
QA/QC	Equipment Blank	Equipment Blank	Equipment Blank
Sample Delivery Group	320-55909-1	320-55909-1	320-56173-1
Lab Sample ID	320-55909-5	320-55909-6	320-56173-1
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	**2.4**	<2	<2
PFMOAA	<5	<5	<5
PFO2HxA	<2	<2	<2
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2	<2
PMPA	<10	<10	<10
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	<2	<2
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	--
6:2 Fluorotelomer sulfonate	--	--	--
ADONA	--	--	--
F-53B Major	--	--	--
F-53B Minor	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	--
Perfluorobutane Sulfonic Acid	--	--	--
Perfluorobutanoic Acid	--	--	--
Perfluorodecane Sulfonic Acid	--	--	--
Perfluorodecanoic Acid	--	--	--
Perfluorododecane sulfonic acid (PFDoS)	--	--	--
Perfluorododecanoic Acid	--	--	--
Perfluoroheptane sulfonic acid (PFHpS)	--	--	--
Perfluoroheptanoic Acid	--	--	--
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	--	--	--
Perfluorohexanoic Acid	--	--	--
Perfluorononanesulfonic acid	--	--	--
Perfluorononanoic Acid	--	--	--
Perfluorooctadecanoic acid	--	--	--
Perfluorooctane Sulfonamide	--	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--	--
Perfluoropentanoic Acid	--	--	--
Perfluorotetradecanoic Acid	--	--	--
Perfluorotridecanoic Acid	--	--	--
Perfluoroundecanoic Acid	--	--	--
PFOA	--	--	--
PFOS	--	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--

Notes:

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--
Location ID	**EQBLK**	**EQBLK**	**EQBLK**
Field Sample ID	**BLADEN EQBLK-1**	**BLADEN EQBLK-2**	**GW4Q19-EQBLK-01-102219**
Sample Date	**8/28/2019**	**8/28/2019**	**10/22/2019**
QA/QC	**Equipment Blank**	**Equipment Blank**	**Equipment Blank**
Sample Delivery Group	**280-127778-1**	**280-127778-1**	**320-55686-1**
Lab Sample ID	**280-127778-8**	**280-127778-9**	**320-55686-8**
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	<3.8	<3.8	<2
PFMOAA	<2.1	<2.1	<5
PFO2HxA	<0.8	<0.8	<2
PFO3OA	<0.6	<0.6	<2
PFO4DA	<0.8	<0.8	<2
PFO5DA	<0.3	<0.3	<2
PMPA	<5.7	<5.7	<10
PEPA	<0.5	<0.5	<20
PFESA-BP1	<0.3	<0.3	<2
PFESA-BP2	<0.3	<0.3	<2
Byproduct 4	<1.6	<1.6	<2
Byproduct 5	<0.6	<0.6	<2
Byproduct 6	<0.2	<0.2	<2
NVHOS	<0.5	<0.5	<2
EVE Acid	<0.2	<0.2	<2
Hydro-EVE Acid	<0.3	<0.3	<2
R-EVE	<0.7	<0.7	<2
PES	<0.5	<0.5	<2
PFECA B	<0.6	<0.6	<2
PFECA-G	<0.4	<0.4	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	<1.9	<1.9	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<19	<19	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<19	<19	--
6:2 Fluorotelomer sulfonate	<19	<19	--
ADONA	<2	<2	--
F-53B Major	<1.9	<1.9	--
F-53B Minor	<1.9	<1.9	--
NaDONA	<2	<2	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<19	<19	--
N-methyl perfluorooctane sulfonamidoacetic acid	<19	<19	--
Perfluorobutane Sulfonic Acid	<1.9	<1.9	--
Perfluorobutanoic Acid	<1.9	<1.9	--
Perfluorodecane Sulfonic Acid	<1.9	<1.9	--
Perfluorodecanoic Acid	<1.9	<1.9	--
Perfluorododecane sulfonic acid (PFDoS)	<1.9	<1.9	--
Perfluorododecanoic Acid	<1.9	<1.9	--
Perfluoroheptane sulfonic acid (PFHpS)	<1.9	<1.9	--
Perfluoroheptanoic Acid	<1.9	<1.9	--
Perfluorohexadecanoic acid (PFHxDA)	<1.9	<1.9	--
Perfluorohexane Sulfonic Acid	**0.34 J**	**0.26 J**	--
Perfluorohexanoic Acid	<1.9	<1.9	--
Perfluorononanesulfonic acid	<1.9	<1.9	--
Perfluorononanoic Acid	<1.9	<1.9	--
Perfluorooctadecanoic acid	<1.9	<1.9	--
Perfluorooctane Sulfonamide	<1.9	<1.9	--
Perfluoropentane sulfonic acid (PFPeS)	<1.9	<1.9	--
Perfluoropentanoic Acid	<1.9	<1.9	--
Perfluorotetradecanoic Acid	**0.3 J**	<1.9	--
Perfluorotridecanoic Acid	<1.9	<1.9	--
Perfluoroundecanoic Acid	<1.9	<1.9	--
PFOA	<1.9	<1.9	--
PFOS	<1.9	<1.9	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<1.9	<1.9	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<3.8	<3.8	--
N-ethylperfluoro-1-octanesulfonamide	<1.9	<1.9	--
N-methyl perfluoro-1-octanesulfonamide	<1.9	<1.9	--

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--
Location ID	EQBLK	EQBLK	EQBLK
Field Sample ID	GW4Q19-EQBLK-02-102219	GW4Q19-EQBLK-01-102819	GW4Q19-EQBLK-02-102819
Sample Date	10/22/2019	10/28/2019	10/28/2019
QA/QC	Equipment Blank	Equipment Blank	Equipment Blank
Sample Delivery Group	320-55686-1	320-55757-1	320-55757-1
Lab Sample ID	320-55686-7	320-55757-1	320-55757-2
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	**3.6**	**2.1**	**3.7**
PFMOAA	<5	<5	<5
PFO2HxA	<2	<2	<2
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2	<2
PMPA	<10	<10	<10
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	<2	<2
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	--
6:2 Fluorotelomer sulfonate	--	--	--
ADONA	--	--	--
F-53B Major	--	--	--
F-53B Minor	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	--
Perfluorobutane Sulfonic Acid	--	--	--
Perfluorobutanoic Acid	--	--	--
Perfluorodecane Sulfonic Acid	--	--	--
Perfluorodecanoic Acid	--	--	--
Perfluorododecane sulfonic acid (PFDoS)	--	--	--
Perfluorododecanoic Acid	--	--	--
Perfluoroheptane sulfonic acid (PFHpS)	--	--	--
Perfluoroheptanoic Acid	--	--	--
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	--	--	--
Perfluorohexanoic Acid	--	--	--
Perfluorononanesulfonic acid	--	--	--
Perfluorononanoic Acid	--	--	--
Perfluorooctadecanoic acid	--	--	--
Perfluorooctane Sulfonamide	--	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--	--
Perfluoropentanoic Acid	--	--	--
Perfluorotetradecanoic Acid	--	--	--
Perfluorotridecanoic Acid	--	--	--
Perfluoroundecanoic Acid	--	--	--
PFOA	--	--	--
PFOS	--	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--
Location ID	FBLK	FBLK	FBLK
Field Sample ID	FIELDBLK-20190913	GW4Q19-FBLK-01-102219	GW4Q19-FBLK-01-102319
Sample Date	9/13/2019	10/22/2019	10/23/2019
QA/QC	Field Blank	Field Blank	Field Blank
Sample Delivery Group	200-50567-2	320-55686-1	320-55683-1
Lab Sample ID	200-50567-3	320-55686-9	320-55683-10
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	**9.2**	**25**	<86
PFMOAA	<5	<5	<210
PFO2HxA	<2	<2	<81
PFO3OA	<2	<2	<58
PFO4DA	<2	<2	<79
PFO5DA	<2	<2	<34
PMPA	<10	<10	<570
PEPA	<20	<20	<47
PFESA-BP1	<2	<2	<27
PFESA-BP2	<2	<2	<30
Byproduct 4	<2	<2	<160
Byproduct 5	<2	<2	<58
Byproduct 6	<2	<2	<15
NVHOS	<2	<2	<54
EVE Acid	<2	<2	<24
Hydro-EVE Acid	<2	<2	<28
R-EVE	<2	<2	<70
PES	<2	<2	<46
PFECA B	<2	<2	<60
PFECA-G	<2	<2	<41
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	<2	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	--	--
6:2 Fluorotelomer sulfonate	<20	--	--
ADONA	<2.1	--	--
F-53B Major	<2	--	--
F-53B Minor	<2	--	--
NaDONA	<2.1	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<20	--	--
Perfluorobutane Sulfonic Acid	<2	--	--
Perfluorobutanoic Acid	<2	--	--
Perfluorodecane Sulfonic Acid	<2	--	--
Perfluorodecanoic Acid	<2	--	--
Perfluorododecane sulfonic acid (PFDoS)	<2	--	--
Perfluorododecanoic Acid	<2	--	--
Perfluoroheptane sulfonic acid (PFHpS)	<2	--	--
Perfluoroheptanoic Acid	<2	--	--
Perfluorohexadecanoic acid (PFHxDA)	<2	--	--
Perfluorohexane Sulfonic Acid	<2	--	--
Perfluorohexanoic Acid	<2	--	--
Perfluorononanesulfonic acid	<2	--	--
Perfluorononanoic Acid	<2	--	--
Perfluorooctadecanoic acid	<2	--	--
Perfluorooctane Sulfonamide	<2	--	--
Perfluoropentane sulfonic acid (PFPeS)	<2	--	--
Perfluoropentanoic Acid	<2	--	--
Perfluorotetradecanoic Acid	<2	--	--
Perfluorotridecanoic Acid	<2	--	--
Perfluoroundecanoic Acid	<2	--	--
PFOA	<2	--	--
PFOS	<2	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	--	--
N-ethylperfluoro-1-octanesulfonamide	<2	--	--
N-methyl perfluoro-1-octanesulfonamide	<2	--	--

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--	--
Location ID	FBLK	FBLK	FBLK
Field Sample ID	GW4Q19-FBLK-01-102419	GW4Q19-FBLK-01-102819	GW4Q19-FBLK-01-102919
Sample Date	10/24/2019	10/28/2019	10/29/2019
QA/QC	Field Blank	Field Blank	Field Blank
Sample Delivery Group	320-55761-1	320-55757-1	320-55854-1
Lab Sample ID	320-55761-7	320-55757-5	320-55854-6
Table 3+ Lab SOP (ng/L)			
HFPO-DA (EPA Method 537 Mod)	<2	<2	<2
PFMOAA	<5	<5	<5
PFO2HxA	<2	<2	<2
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2	<2 UJ
PMPA	<10	<10	<10
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	<2	<2
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Other PFAS (ng/L)			
10:2 Fluorotelomer sulfonate	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--	--
6:2 Fluorotelomer sulfonate	--	--	--
ADONA	--	--	--
F-53B Major	--	--	--
F-53B Minor	--	--	--
NaDONA	--	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--	--
Perfluorobutane Sulfonic Acid	--	--	--
Perfluorobutanoic Acid	--	--	--
Perfluorodecane Sulfonic Acid	--	--	--
Perfluorodecanoic Acid	--	--	--
Perfluorododecane sulfonic acid (PFDoS)	--	--	--
Perfluorododecanoic Acid	--	--	--
Perfluoroheptane sulfonic acid (PFHpS)	--	--	--
Perfluoroheptanoic Acid	--	--	--
Perfluorohexadecanoic acid (PFHxDA)	--	--	--
Perfluorohexane Sulfonic Acid	--	--	--
Perfluorohexanoic Acid	--	--	--
Perfluorononanesulfonic acid	--	--	--
Perfluorononanoic Acid	--	--	--
Perfluorooctadecanoic acid	--	--	--
Perfluorooctane Sulfonamide	--	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--	--
Perfluoropentanoic Acid	--	--	--
Perfluorotetradecanoic Acid	--	--	--
Perfluorotridecanoic Acid	--	--	--
Perfluoroundecanoic Acid	--	--	--
PFOA	--	--	--
PFOS	--	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--	--

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

TABLE A 9-4
OFFSITE GROUNDWATER ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Aquifer	--	--
Location ID	FBLK	FBLK
Field Sample ID	GW4Q19-FBLK-01-103119	GW4Q19-FBLK-01-110719
Sample Date	10/31/2019	11/7/2019
QA/QC	Field Blank	Field Blank
Sample Delivery Group	320-55909-1	320-56173-1
Lab Sample ID	320-55909-7	320-56173-2
Table 3+ Lab SOP (ng/L)		
HFPO-DA (EPA Method 537 Mod)	<2	<2
PFMOAA	<5	<5
PFO2HxA	<2	<2
PFO3OA	<2	<2
PFO4DA	<2	<2
PFO5DA	<2	<2
PMPA	<10	<10
PEPA	<20	<20
PFESA-BP1	<2	<2
PFESA-BP2	<2	<2
Byproduct 4	<2	<2
Byproduct 5	<2	<2
Byproduct 6	<2	<2
NVHOS	<2	<2
EVE Acid	<2	<2
Hydro-EVE Acid	<2	<2
R-EVE	<2	<2
PES	<2	<2
PFECA B	<2	<2
PFECA-G	<2	<2
Other PFAS (ng/L)		
10:2 Fluorotelomer sulfonate	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	--
6:2 Fluorotelomer sulfonate	--	--
ADONA	--	--
F-53B Major	--	--
F-53B Minor	--	--
NaDONA	--	--
N-ethyl perfluorooctane sulfonamidoacetic acid	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	--	--
Perfluorobutane Sulfonic Acid	--	--
Perfluorobutanoic Acid	--	--
Perfluorodecane Sulfonic Acid	--	--
Perfluorodecanoic Acid	--	--
Perfluorododecane sulfonic acid (PFDoS)	--	--
Perfluorododecanoic Acid	--	--
Perfluoroheptane sulfonic acid (PFHpS)	--	--
Perfluoroheptanoic Acid	--	--
Perfluorohexadecanoic acid (PFHxDA)	--	--
Perfluorohexane Sulfonic Acid	--	--
Perfluorohexanoic Acid	--	--
Perfluorononanesulfonic acid	--	--
Perfluorononanoic Acid	--	--
Perfluorooctadecanoic acid	--	--
Perfluorooctane Sulfonamide	--	--
Perfluoropentane sulfonic acid (PFPeS)	--	--
Perfluoropentanoic Acid	--	--
Perfluorotetradecanoic Acid	--	--
Perfluorotridecanoic Acid	--	--
Perfluoroundecanoic Acid	--	--
PFOA	--	--
PFOS	--	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--
N-ethylperfluoro-1-octanesulfonamide	--	--
N-methyl perfluoro-1-octanesulfonamide	--	--

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

TABLE A 9-5
SELECT MONITORING WELL LOCATIONS SHOWING PROPSOED PFAS SIGNATURES
Chemours Fayetteville Works, North Carolina

Proposed PFAS Signature	Area	Aquifer	Location ID	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	Byproduct 4	Byproduct 5	Byproduct 6	NVHOS	EVE Acid	Hydro-EVE Acid	R-EVE	Total Table 3+ (ng/L)
Aerial - Predominant PMPA	Offsite	Black Creek Aquifer	BLADEN-2D	10%	0%	6%	1%	0%	0%	69%	11%	0%	4%	0%	0%	0%	0%	0%	0%	0%	110
Aerial - Predominant PMPA	Offsite	Surficial Aquifer	BLADEN-2S	4%	9%	15%	1%	1%	0%	53%	5%	0%	11%	0%	0%	0%	1%	0%	0%	0%	130
Aerial - Predominant PMPA	Onsite	Black Creek Aquifer	PW-12	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15
Aerial - Mixture of PFAS	Offsite	Black Creek Aquifer	BLADEN-1D	24%	4%	11%	1%	0%	0%	43%	14%	0%	0%	2%	0%	0%	0%	0%	0%	1%	760
Aerial - Mixture of PFAS	Offsite	Surficial Aquifer	BLADEN-3S	10%	13%	27%	3%	3%	1%	33%	5%	0%	3%	2%	0%	0%	0%	0%	0%	0%	120
Aerial - Mixture of PFAS	Offsite	Surficial Aquifer	CUMBERLAND-3S	5%	14%	30%	5%	4%	4%	21%	0%	0%	2%	10%	0%	0%	0%	0%	0%	5%	210
Aerial - Mixture of PFAS	Offsite	Surficial Aquifer	CUMBERLAND-4S	20%	7%	20%	3%	1%	0%	25%	7%	0%	1%	13%	0%	0%	0%	0%	0%	3%	560
Aerial - Mixture of PFAS	Onsite	Perched Zone	FTA-02	24%	12%	10%	2%	2%	3%	7%	3%	1%	4%	2%	1%	0%	0%	27%	1%	1%	90,000
Aerial - Mixture of PFAS	Onsite	Surficial Aquifer	MW-18D	53%	4%	7%	0%	0%	0%	28%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1,500
Aerial - Mixture of PFAS	Onsite	Perched Zone	NAF-04	6%	6%	10%	3%	1%	1%	2%	1%	25%	3%	2%	28%	0%	1%	8%	4%	1%	4,300,000
Aerial - Mixture of PFAS	Onsite	Perched Zone	NAF-12	2%	4%	7%	3%	2%	1%	6%	1%	12%	4%	4%	20%	0%	10%	13%	7%	2%	5,400,000
Aerial - Mixture of PFAS	Onsite	Surficial Aquifer	PW-03	20%	1%	5%	1%	0%	0%	33%	19%	0%	0%	3%	12%	0%	2%	0%	1%	3%	400,000
Combined Process Water - Predominant PFMOAA	Onsite	Black Creek Aquifer	LTW-05	7%	65%	18%	6%	1%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	1%	370,000
Combined Process Water - Predominant PFMOAA	Onsite	Surficial Aquifer	MW-14D	4%	71%	14%	3%	1%	0%	3%	1%	0%	0%	0%	1%	0%	1%	0%	0%	0%	250,000
Combined Process Water - Predominant PFMOAA	Onsite	Perched Zone	MW-24	2%	77%	14%	3%	1%	0%	1%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	940,000
Combined Process Water - Predominant PFMOAA	Onsite	Perched Zone	MW-27	3%	68%	18%	5%	1%	0%	2%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	350,000
Combined Process Water - Predominant PFMOAA	Onsite	Perched Zone	NAF-02	3%	62%	17%	5%	2%	1%	2%	1%	0%	0%	0%	5%	0%	1%	0%	0%	0%	4,700,000
Combined Process Water - Predominant PFMOAA	Onsite	Surficial Aquifer	PIW-9S	3%	69%	16%	4%	1%	0%	3%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	220,000
Combined Process Water - Predominant PFMOAA	Onsite	Black Creek Aquifer	PW-15R	2%	67%	13%	3%	0%	0%	7%	2%	1%	0%	0%	4%	0%	1%	0%	0%	0%	490,000
Combined Process Water - Predominant PFMOAA	Onsite	Surficial Aquifer	SMW-08B	2%	74%	13%	3%	1%	0%	2%	1%	0%	0%	0%	1%	0%	1%	0%	0%	0%	350,000
Combined Process Water - Mixture of PFAS	Onsite	Surficial Aquifer	MW-15DRR	4%	38%	8%	1%	0%	0%	4%	1%	11%	1%	1%	26%	0%	0%	1%	0%	0%	81,000
Combined Process Water - Mixture of PFAS	Onsite	Black Creek Aquifer	PIW-10DR	17%	40%	17%	5%	1%	0%	8%	3%	0%	0%	1%	6%	0%	0%	0%	1%	1%	110,000
Combined Process Water - Mixture of PFAS	Onsite	Perched Zone	PZ-11	19%	27%	18%	3%	2%	3%	13%	4%	2%	1%	1%	5%	0%	1%	0%	0%	0%	26,000

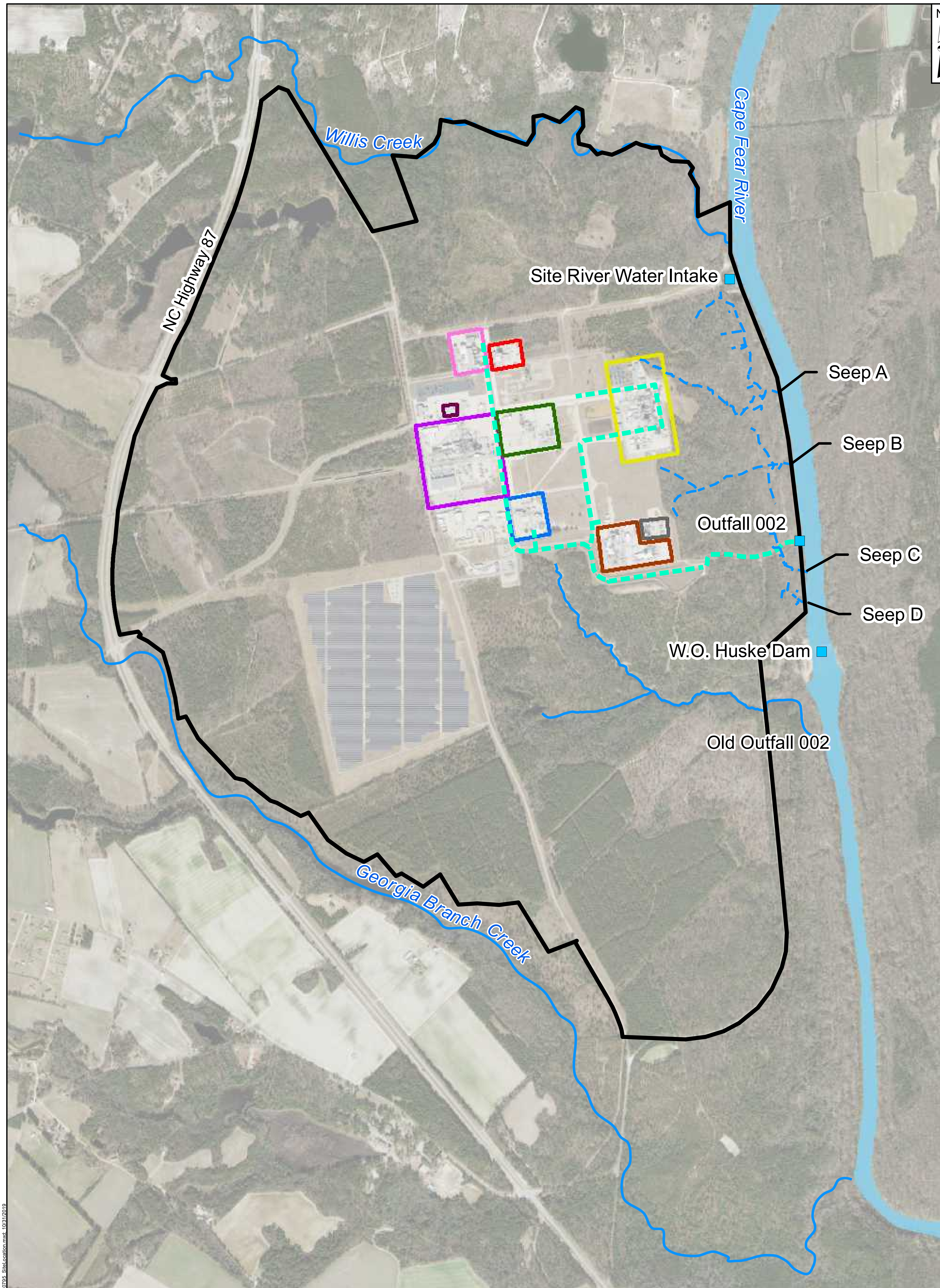
Notes:
ng/L - nanograms per liter
Table 3+ compounds reported as percentage of Total Table 3+ concentrations.
PES, PFECA B, and PFECA-G had no detections and are therefore omitted from this table.

TABLE A 10-1
COMPARISON OF PROPOSED PFAS SIGNATURES TO SELECTED LOCATIONS
Chemours Fayetteville Works, North Carolina

Location ID	Sample Date	Proposed PFAS Signature	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	Byproduct 4	Byproduct 5	Byproduct 6	NVHOS	EVE Acid	Hydro-EVE Acid	R-EVE	Total Table 3+ (ng/L)
OLDOF-1	2/1/2019	Combined Process Water - Predominant PFMOAA	4%	72%	13%	4%	1%	1%	4%	1%	0%	0%	0%	1%	0%	1%	0%	0%	0%	130,000
OLDOF-2	2/1/2019	Combined Process Water - Predominant PFMOAA	4%	66%	13%	4%	1%	1%	4%	1%	0%	0%	0%	1%	0%	1%	0%	0%	0%	140,000
OLDOF-2L	2/2/2019	Combined Process Water - Predominant PFMOAA	4%	69%	14%	4%	1%	1%	4%	1%	0%	0%	0%	1%	0%	1%	0%	0%	0%	150,000
OLDOF-3	2/2/2019	Combined Process Water - Predominant PFMOAA	4%	68%	14%	3%	1%	0%	4%	1%	0%	0%	0%	1%	0%	1%	0%	0%	0%	160,000
OLDOF-4	2/2/2019	Combined Process Water - Predominant PFMOAA	3%	70%	13%	4%	1%	1%	4%	1%	0%	0%	0%	1%	0%	1%	0%	0%	0%	200,000
OLDOF-5	2/2/2019	Combined Process Water - Predominant PFMOAA	3%	69%	13%	4%	2%	1%	3%	1%	1%	0%	0%	1%	0%	1%	0%	0%	0%	290,000
OLDOF-5K	2/2/2019	Combined Process Water - Predominant PFMOAA	16%	41%	14%	3%	3%	1%	12%	4%	0%	1%	1%	0%	0%	1%	0%	1%	1%	39,000
OLDOF-2J*	2/2/2019	Aerial - Mixture of PFAS	14%	6%	15%	3%	0%	0%	43%	15%	0%	1%	2%	0%	0%	0%	0%	0%	1%	8,700
SEEP-C-1	2/5/2019	Combined Process Water - Predominant PFMOAA	8%	58%	19%	6%	1%	0%	5%	2%	0%	0%	0%	1%	0%	1%	0%	1%	1%	340,000
SEEP-C-1-E2	2/5/2019	Combined Process Water - Predominant PFMOAA	7%	63%	15%	4%	1%	0%	5%	2%	0%	0%	0%	1%	0%	1%	0%	0%	0%	260,000
SEEP-D-1	5/30/2019	Combined Process Water - Predominant PFMOAA	11%	54%	17%	5%	1%	0%	5%	2%	0%	0%	1%	2%	0%	0%	0%	1%	1%	170,000
SEEP-A-1	2/7/2019	Combined Process Water - Mixture of PFAS	4%	37%	18%	6%	4%	2%	11%	4%	2%	1%	1%	10%	0%	0%	0%	1%	1%	230,000
SEEP-A-10	2/7/2019	Combined Process Water - Mixture of PFAS	12%	16%	12%	5%	4%	5%	10%	4%	9%	1%	1%	13%	0%	1%	5%	2%	1%	530,000
SEEP-A-11	2/7/2019	Combined Process Water - Mixture of PFAS	10%	17%	12%	5%	4%	4%	9%	4%	10%	1%	1%	14%	0%	1%	4%	2%	1%	540,000
SEEP-A-12	2/7/2019	Combined Process Water - Mixture of PFAS	17%	13%	25%	4%	4%	3%	18%	7%	0%	1%	2%	0%	0%	0%	0%	0%	1%	120,000
SEEP-A-2	2/7/2019	Combined Process Water - Mixture of PFAS	11%	34%	17%	6%	3%	2%	10%	4%	2%	1%	1%	10%	0%	0%	0%	1%	1%	240,000
SEEP-A-3	2/7/2019	Combined Process Water - Mixture of PFAS	6%	36%	17%	6%	4%	3%	10%	4%	2%	1%	1%	10%	0%	0%	0%	1%	1%	220,000
SEEP-A-4	2/7/2019	Combined Process Water - Mixture of PFAS	11%	31%	18%	5%	3%	3%	18%	8%	0%	1%	1%	4%	0%	0%	0%	1%	0%	160,000
SEEP-A-5	2/7/2019	Combined Process Water - Mixture of PFAS	10%	17%	16%	5%	4%	3%	23%	11%	1%	1%	1%	6%	0%	0%	0%	1%	1%	180,000
SEEP-A-6	2/7/2019	Combined Process Water - Mixture of PFAS	13%	12%	14%	4%	4%	3%	27%	13%	1%	1%	1%	5%	0%	0%	0%	1%	1%	140,000
SEEP-A-7	2/7/2019	Combined Process Water - Mixture of PFAS	13%	20%	16%	5%	4%	3%	21%	10%	1%	1%	1%	6%	0%	0%	0%	1%	1%	220,000
SEEP-A-8	2/7/2019	Combined Process Water - Mixture of PFAS	9%	12%	14%	5%	5%	4%	27%	14%	1%	1%	1%	4%	0%	0%	0%	1%	1%	140,000
SEEP-A-9	2/7/2019	Combined Process Water - Mixture of PFAS	11%	15%	12%	5%	4%	3%	10%	4%	8%	1%	2%	16%	0%	1%	4%	2%	1%	510,000
SEEP-B-1	2/5/2019	Combined Process Water - Mixture of PFAS	7%	42%	12%	3%	1%	0%	12%	5%	1%	0%	1%	11%	0%	1%	2%	1%	1%	350,000
SEEP-B-2	2/5/2019	Aerial - Mixture of PFAS	12%	3%	5%	1%	1%	0%	20%	10%	5%	1%	4%	25%	0%	2%	8%	2%	3%	310,000
SEEP-B-3	2/6/2019	Aerial - Mixture of PFAS	11%	1%	4%	1%	1%	0%	19%	10%	6%	1%	4%	26%	0%	2%	9%	2%	3%	380,000
SEEP-B-3-A1	2/6/2019	Aerial - Mixture of PFAS	13%	1%	4%	1%	1%	0%	17%	9%	7%	1%	3%	26%	0%	2%	10%	2%	3%	460,000
SEEP-B-3-E4	2/6/2019	Aerial - Mixture of PFAS	22%	4%	13%	2%	3%	1%	36%	14%	0%	1%	2%	0%	0%	0%	0%	0%	1%	45,000
SEEP-B-4	2/6/2019	Aerial - Mixture of PFAS	12%	1%	3%	1%	1%	0%	17%	9%	8%	1%	4%	26%	0%	2%	11%	2%	3%	670,000
SEEP-B-4-A3	2/6/2019	Aerial - Mixture of PFAS	7%	1%	4%	1%	1%	1%	17%	8%	9%	1%	4%	22%	0%	1%	15%	2%	4%	430,000
GBC-1	5/29/2019	Aerial - Mixture of PFAS	19%	0%	16%	3%	0%	0%	50%	12%	0%	1%	0%	0%	0%	0%	0%	0%	0%	2,600
GBC-2	5/29/2019	Aerial - Mixture of PFAS	25%	0%	14%	3%	0%	0%	46%	11%	0%	1%	0%	0%	0%	0%	0%	0%	0%	2,600
GBC-3	5/29/2019	Aerial - Mixture of PFAS	23%	0%	15%	2%	0%	0%	47%	10%	0%	1%	0%	0%	0%	0%	0%	0%	0%	3,000
GBC-5	5/29/2019	Aerial - Mixture of PFAS	28%	5%	17%	3%	0%	0%	35%	11%	0%	1%	0%	0%	0%	0%	0%	0%	0%	4,600
GBC-6	5/29/2019	Aerial - Mixture of PFAS	29%	0%	17%	3%	0%	0%	39%	11%	0%	1%	0%	0%	0%	0%	0%	0%	0%	4,900
GBC-7	5/29/2019	Aerial - Mixture of PFAS	29%	0%	19%	3%	0%	1%	38%	10%	0%	1%	0%	0%	0%	0%	0%	0%	0%	4,200
WC-1	5/30/2019	Combined Process Water - Mixture of PFAS	17%	29%	15%	3%	0%	1%	25%	5%	0%	0%	0%	5%	0%	0%	0%	0%	0%	4,800
CFR-MILE-76	6/7/2019	Aerial - Mixture of PFAS	10%	0%	6%	0%	0%	0%	25%	0%	0%	0%	11%	32%	0%	10%	0%	0%	6%	72
CFR-BLADEN	5/22/2019	Combined Process Water - Mixture of PFAS	10%	45%	14%	3%	1%	0%	11%	0%	0%	0%	3%	11%	0%	2%	0%	0%	1%	290
CFR-KINGS	5/23/2019	Combined Process Water - Mixture of PFAS	12%	6%	21%	5%	2%	0%	21%	0%	0%	0%	14%	5%	0%	4%	0%	0%	7%	140

Notes:
ng/L - nanograms per liter
Table 3+ compounds reported as percentage of Total Table 3+ concentrations.
PES, PFECA B, and PFECA-G had no detections and are therefore omitted from this table.
* - Sample was collected from seep water, not Old Outfall water.

FIGURES



Legend

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

Areas at Site

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

2,000 1,000 0 2,000 Feet

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

Site Location Map

Chemours Fayetteville Works, North Carolina

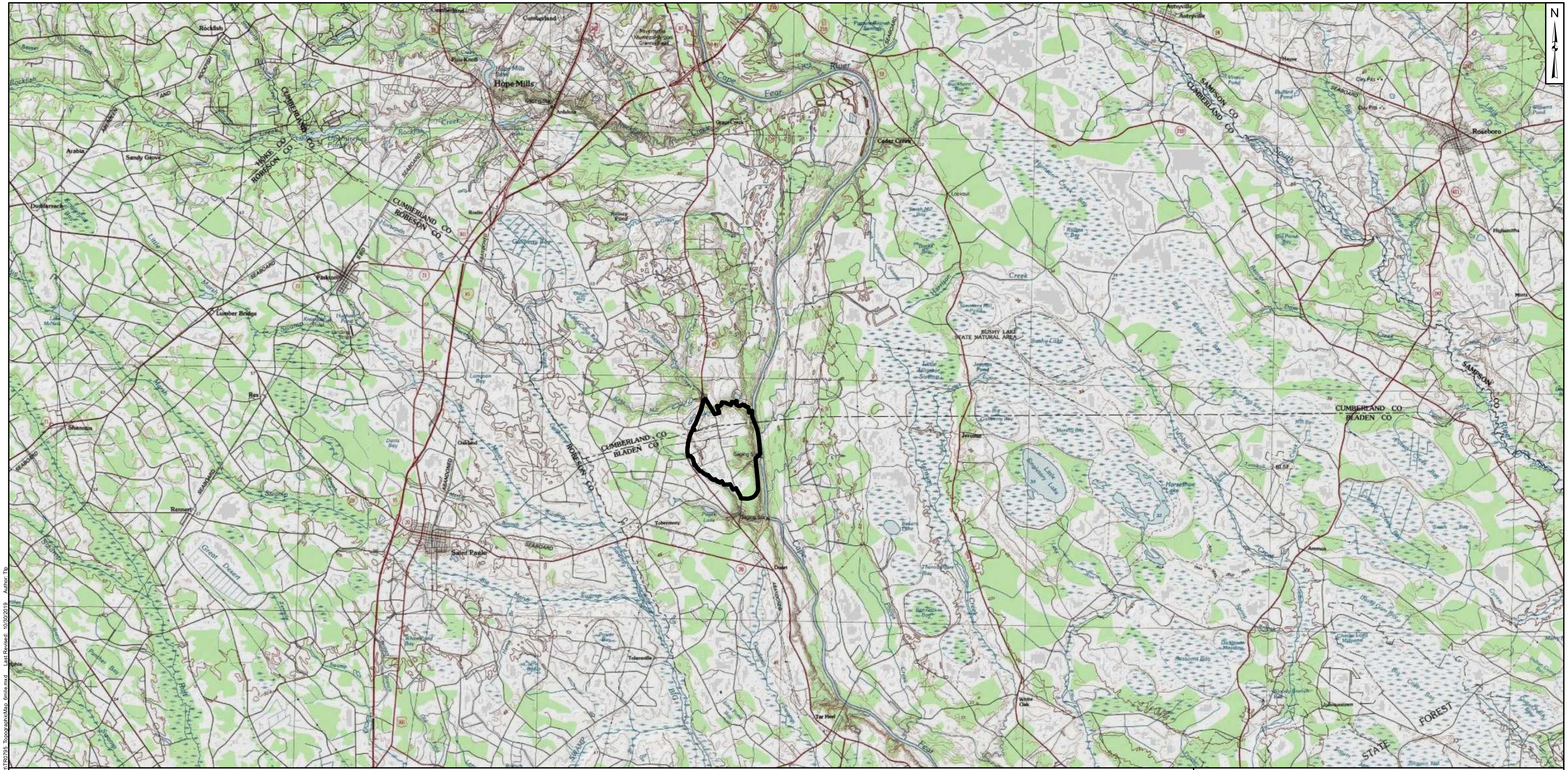
Geosyntec consultants

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

Raleigh | October 2019

Figure A2-1

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_SiteLocation.mxd; 10/31/2019



Legend

Site Boundary

Notes:
1. For topographic map symbols, please refer to this document: https://pubs.usgs.gov/gip/TopographicMapSymbols/topomapsymbols.pdf
2. Basemap source: © 2013 National Geographic Society, i-cubed

2 1 0 2 Miles

Regional Topographic Map

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure

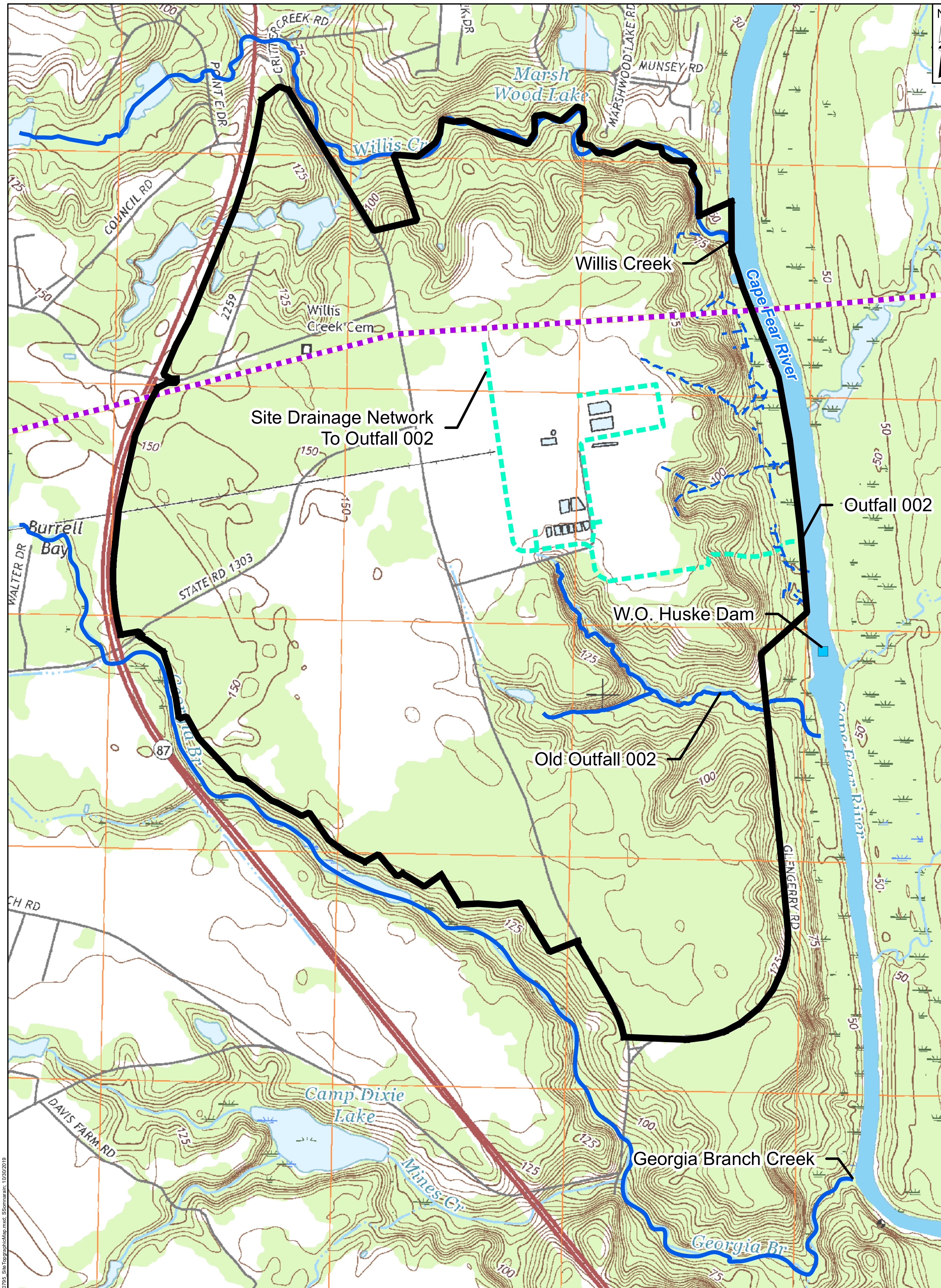
A2-2

Raleigh

October 2019

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_TopographicMap_6mile.mxd Last Revised: 10/30/2019 Author: Ttp

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



Legend

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

Notes:
Basemap sources: Esri, Garmin, USGS, NPS (World Terrain Reference); Esri, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community (World Hillshade)

2,000 1,000 0 2,000 Feet

Site Topographic Map

Chemours Fayetteville Works, North Carolina

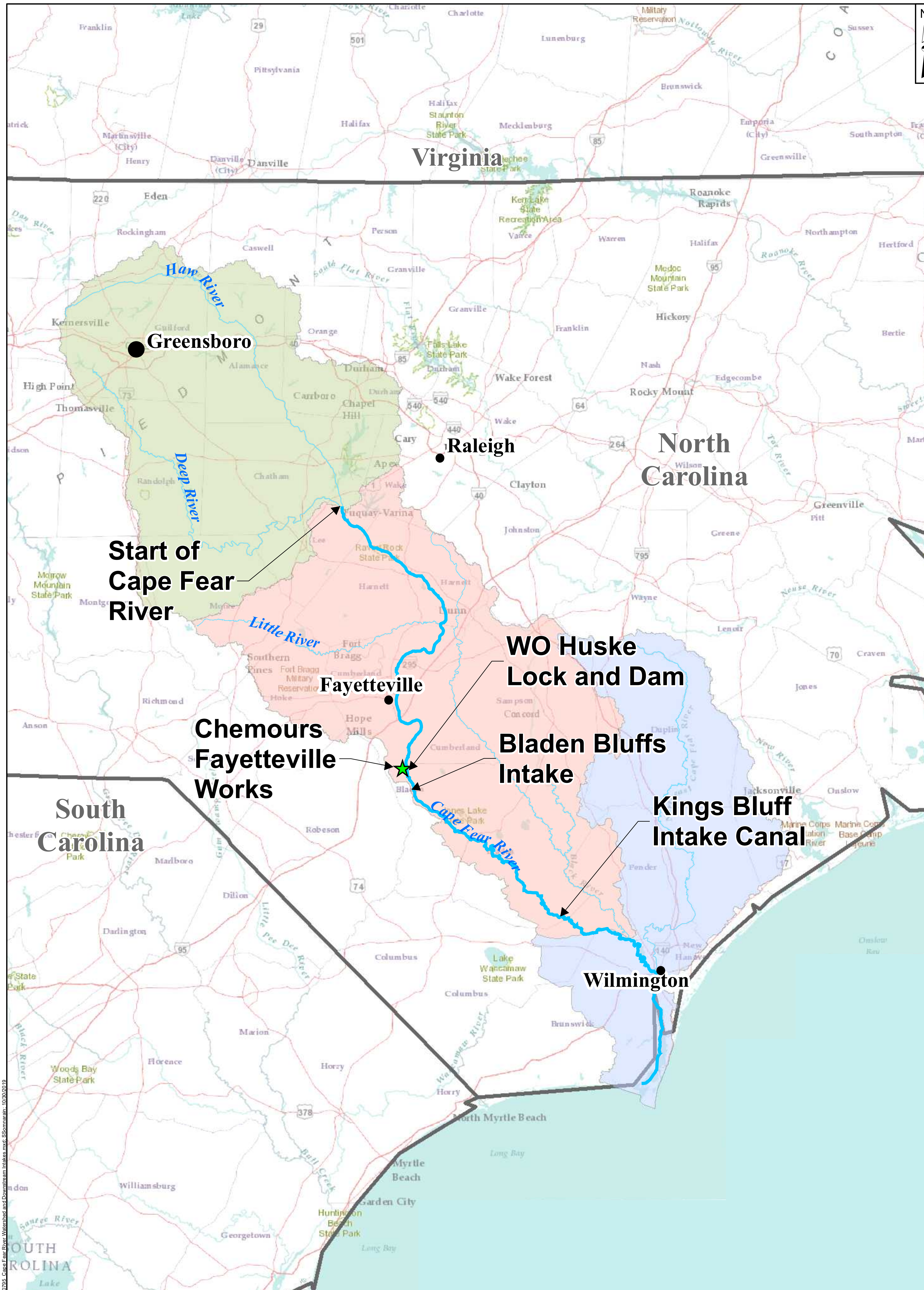
Geosyntec consultants

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

Figure

A2-3

Raleigh | October 2019



Legend

- ★ Chemours Fayetteville Works
- Upper Basin
- Middle Basin
- Lower Basin

Notes:
Basemap Source: Esri, Garmin, USGS, NPS

20 10 0 20 Miles

Cape Fear River Watershed and Downstream Drinking Water Intakes

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

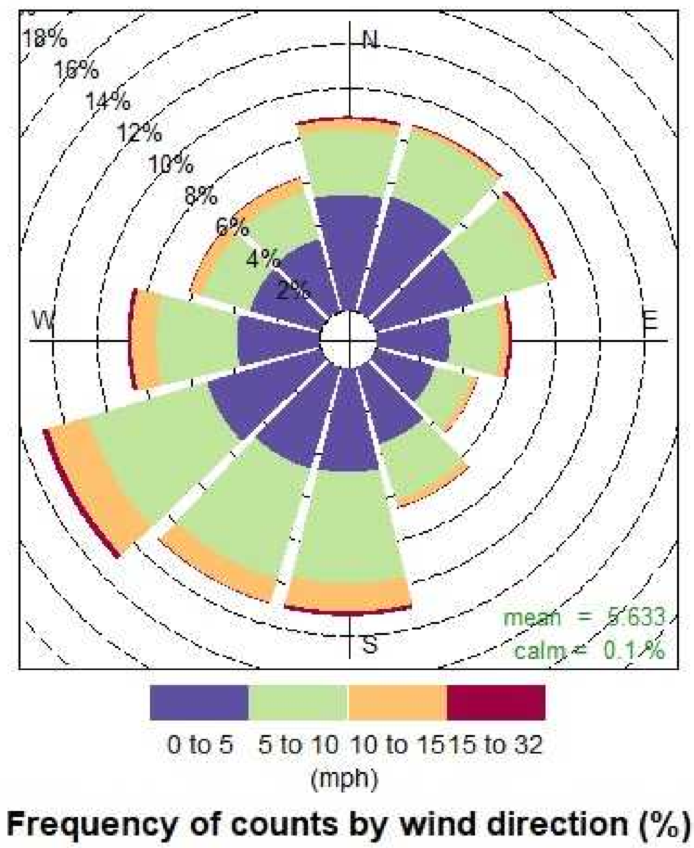
Figure A2-4

Raleigh | October 2019

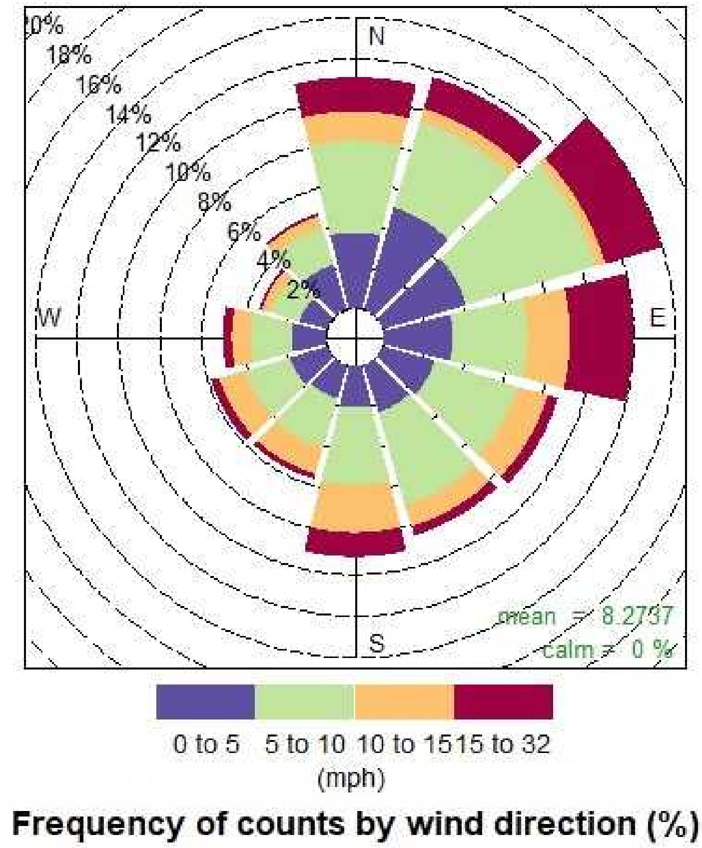
Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_Cape Fear River Watershed and Downstream Intakes.mxd; SSomlarain; 10/30/2019

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

Wind Rose for Full Data Set



Wind Rose for Rain Events



Notes:

mph - miles per hour

1. Wind measurements collected at the Site for the period from 1 January 2018 to 15 May 2019.
2. Concentric circles indicate the relative proportion of winds from a given direction and speed.
3. Wedges represent the direction the winds are coming from.
4. Color indicates wind speed.
5. 575 total hours (5%) of rain and 10,738 total hours (95%) without rain at the Site for the period from1 January 2018 to 15 May 2019.

Wind Rose Measurements (January 2018- May 2019)

Chemours Fayetteville Works, North Carolina

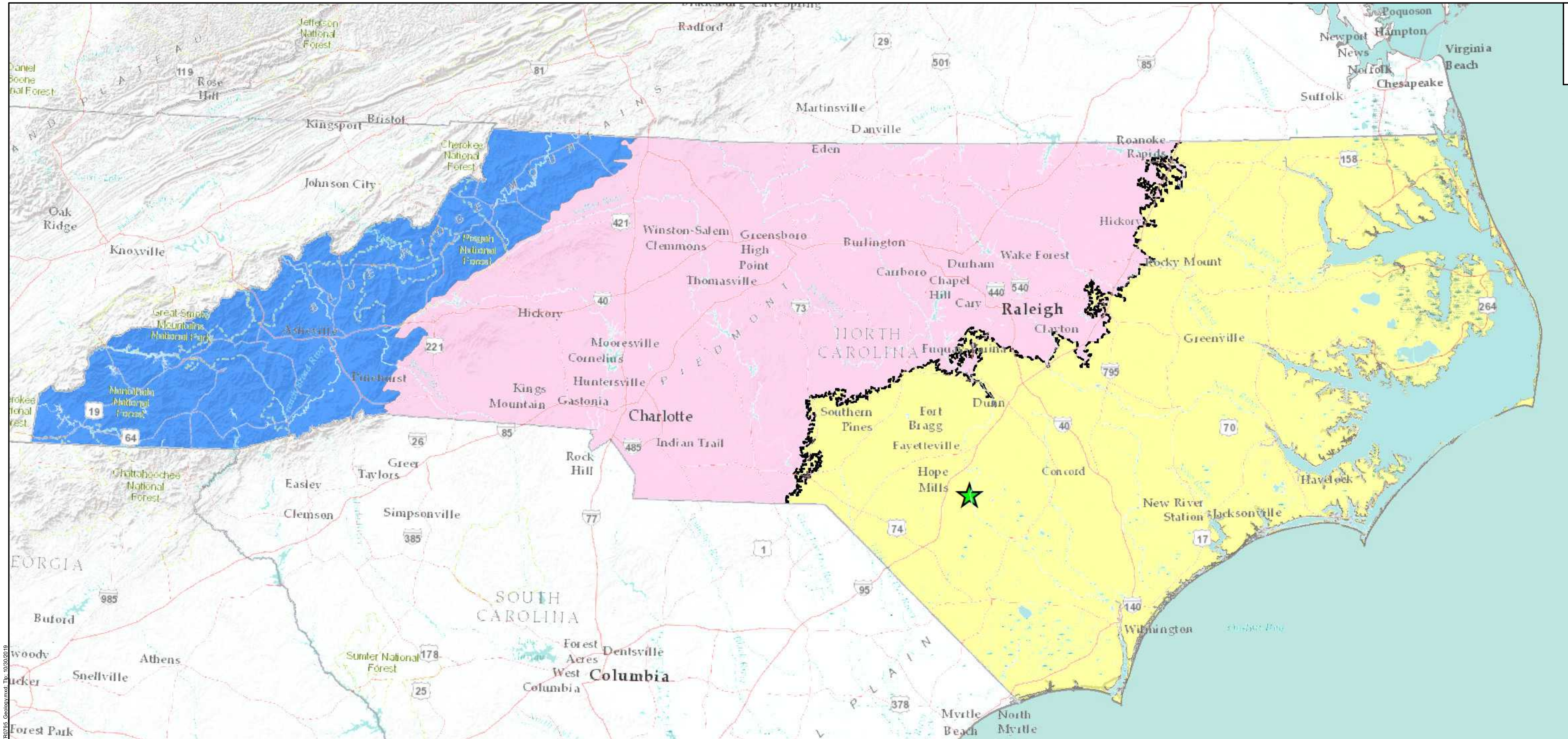
Geosyntec consultants

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

Figure

A2-5

Raleigh | October 2019



Legend

- Chemours Fayetteville Works
- Blue Ridge
- Piedmont
- Coastal Plain
- Fall Line

Notes:
1. Physiography layer obtained fromNorth Carolina Geological Survey (NCGS).
2. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

40 20 0 40 Miles

Physiographic Provinces of North Carolina

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

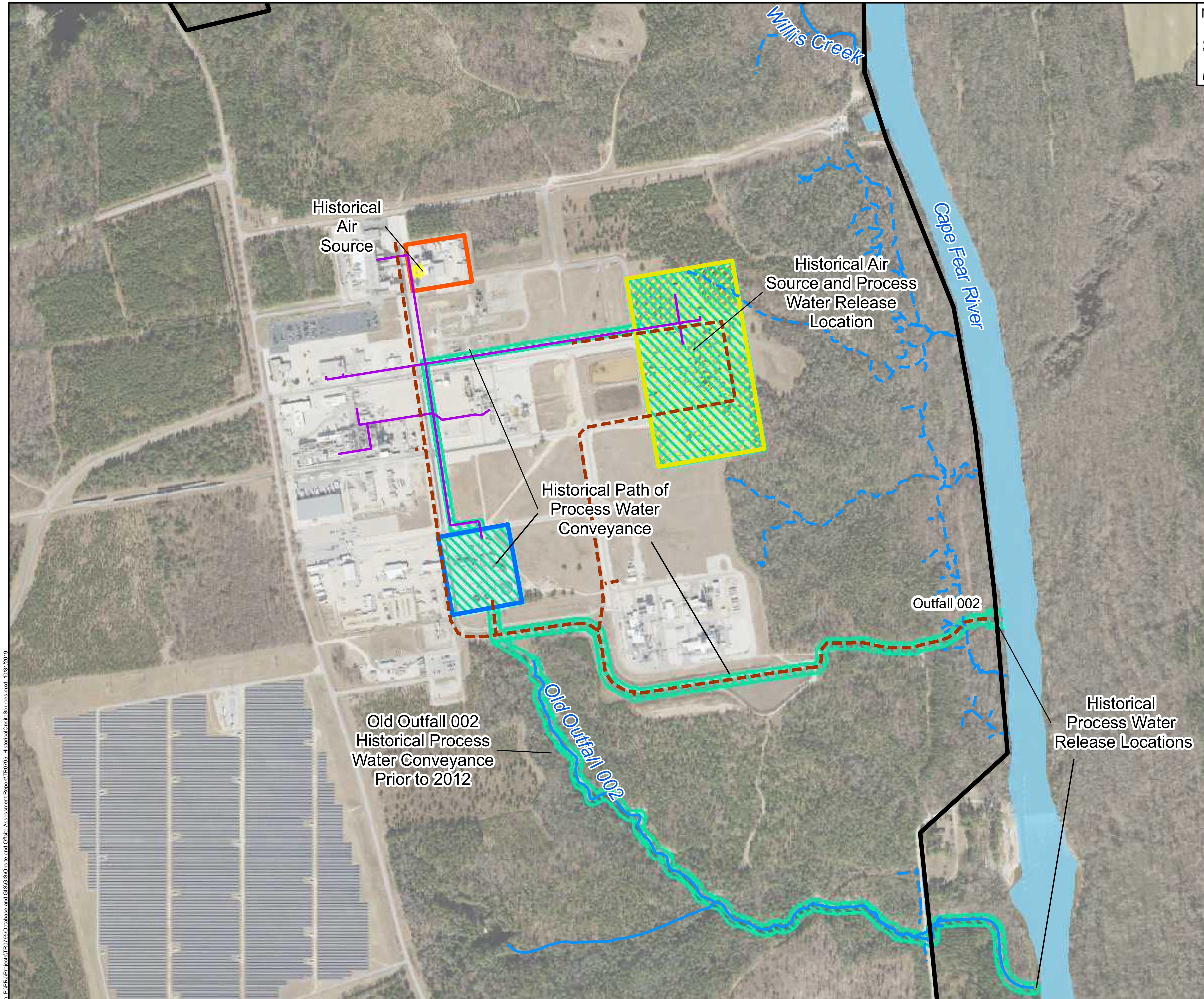
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure

A3-1

Raleigh | October 2019

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



Legend
- Site Conveyance Network
- Site Boundary
- Nearby Tributary
- Observed Seep (Natural Drainage)
- Terracotta Pipe

Areas at Site
- Chemours Monomers IXM Area
- Chemours Polymer Processing Aid Area
- Wastewater Treatment Plant Area

Historical Onsite Sources
- Air
- Water

Notes:
1. Historical air sources are manufacturing areas where PFAS were emitted to air. The Site by December 31, 2019 will be operating a Thermal Oxidizer that in combination with other control technologies reduces facility wide air emissions of PFAS by 99%.
2. Historical water sources are areas where process water was released to soil and groundwater. Site infrastructure upgrades and offsite disposal of process water has mitigated these sources.

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

1,000 500 0 1,000 Feet

Historical Sources of PFAS

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

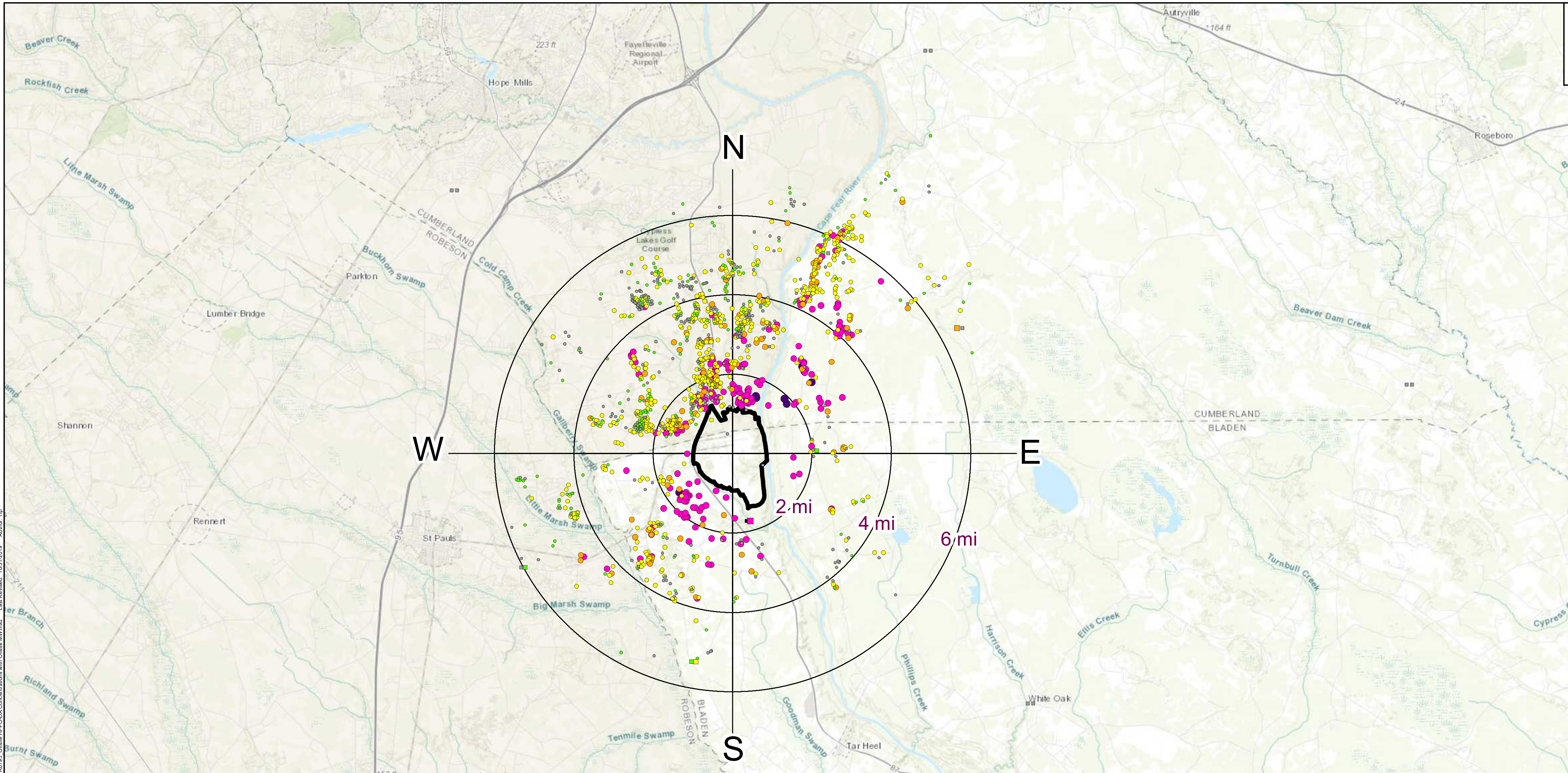
Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Figure A4-1

Raleigh | October 2019

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_HistoricalOnsiteSources.mxd; 10/31/2019

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



Legend

HFPO-DA Concentrations (ng/L)

- Dry
- Non-detect
- < 10
- 10 - 70
- 70 - 140
- 140 - 1,400
- > 1,400

- Offsite Monitoring Well
- Offsite Private Well
- Site Boundary

Notes:
ng/L - nanograms per liter
1. Black lines represent cardinal directions (N, E, S, W)
2. Basemap sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

2 1 0 2 Miles

HFPO-DA Concentrations in Offsite Wells

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

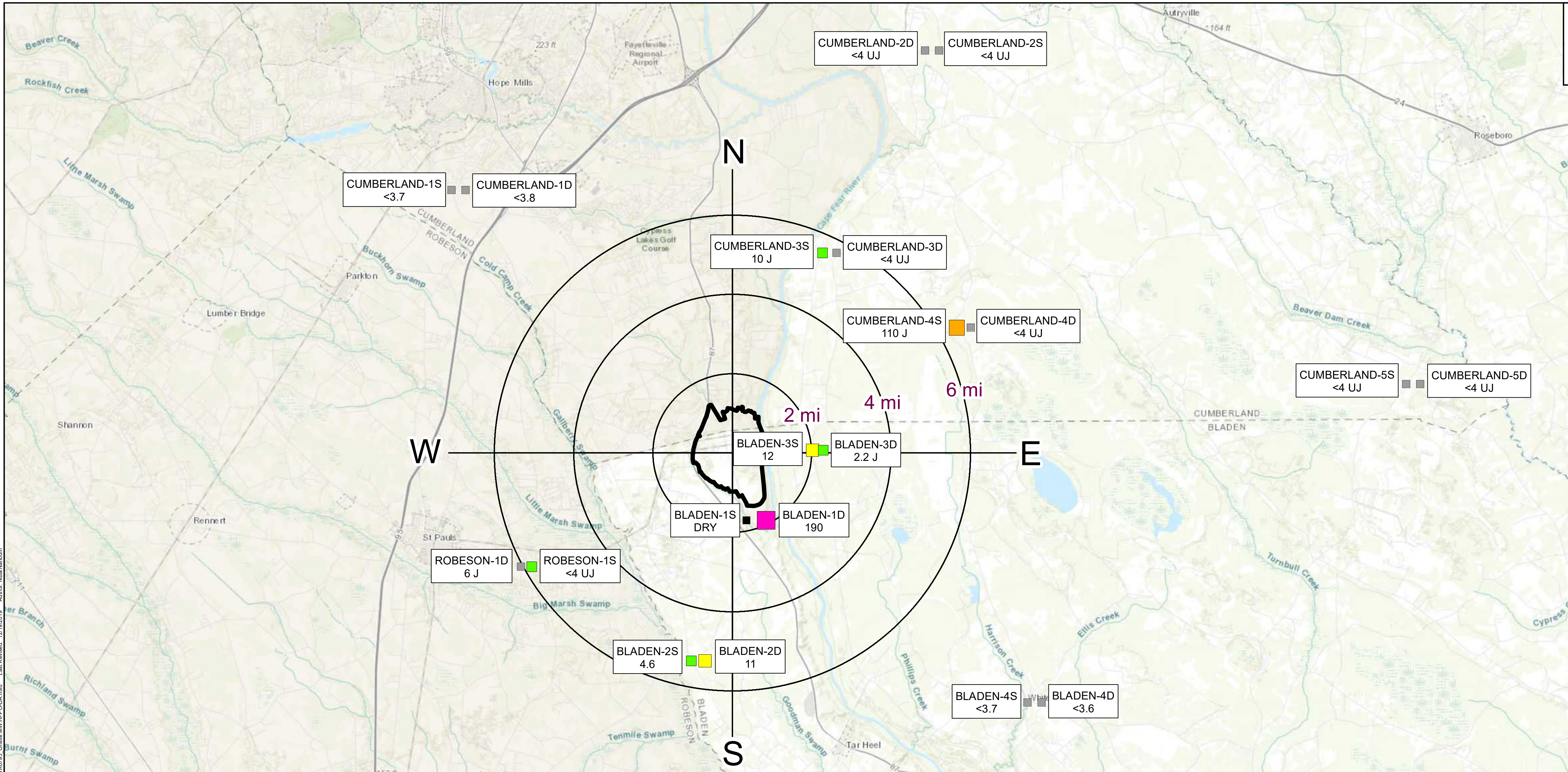
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Raleigh | October 2019

Figure **A4-2A**

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_Offsite HFPO-DA Concentrations with Offsite MW.mxd Last Revised: 10/31/2019 Author: Tlp

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



Legend
HFPO-DA Concentrations (ng/L)
- Dry
- Non detect
- < 10
- 10 - 70
- 70 - 140
- 140 - 1,400
- Site Boundary

Notes:
ng/L - nanograms per liter
< - Analyte not detected above associated reporting limit.
J - Analyte detected. Reported value may not be accurate or precise.
UJ - Analyte not detected. Reporting limit may not be accurate or precise.
1. Black lines represent cardinal directions (N, E, S, W)
2. The locations of Cumberland and Robeson well pairs are approximate.
3. 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.
4. Basemap sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

2 1 0 2 Miles

HFPO-DA Concentrations in Offsite Groundwater Monitoring Wells

Chemours Fayetteville Works, North Carolina

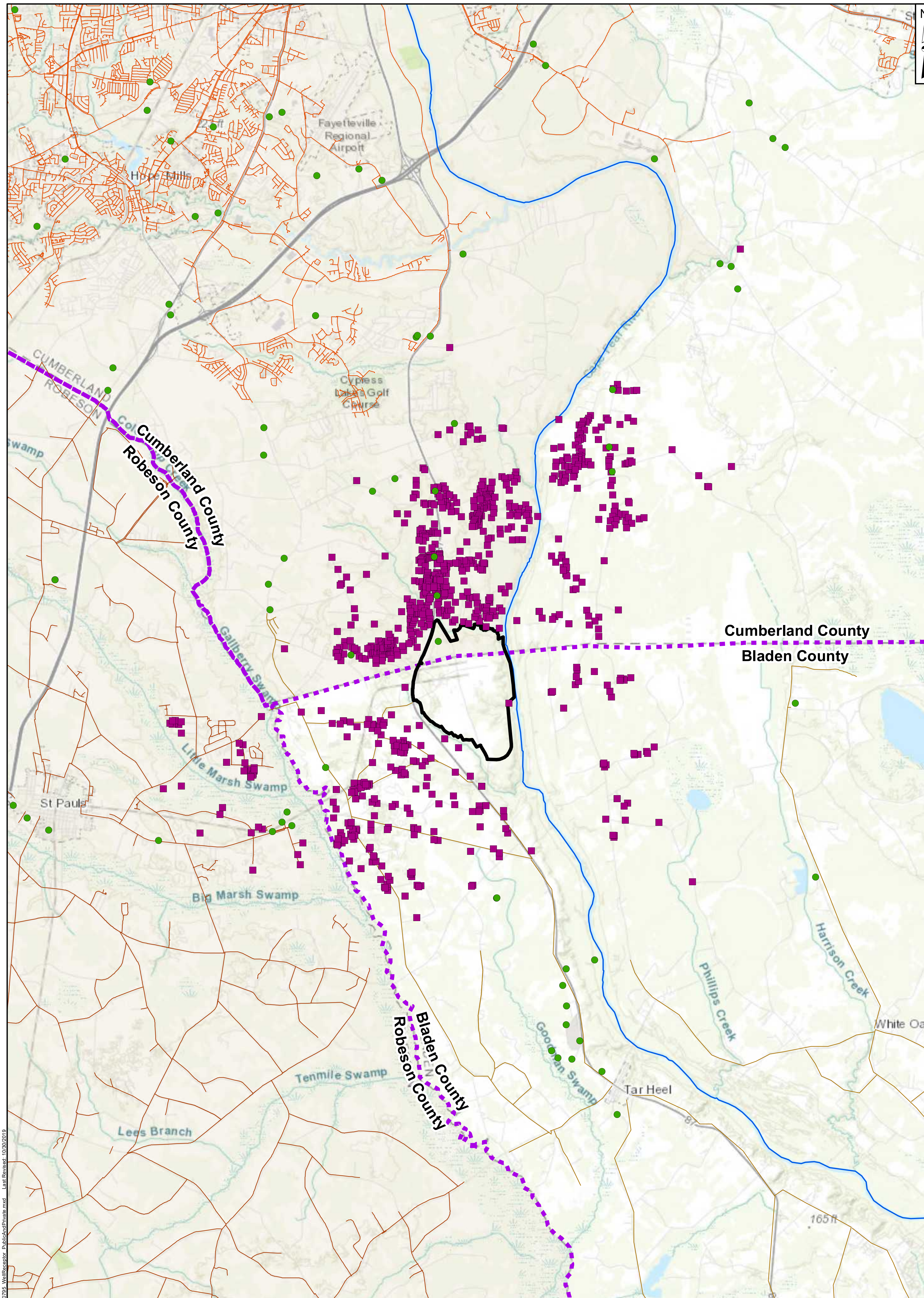
Geosyntec consultants

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

Figure **A4-2B**

Raleigh | December 2019

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



Legend

- Presently Identified Private Well
- Public Community Well
- Cape Fear River
- Site Boundary
- County Boundary

Existing water lines

- Bladen County (2017 data)
- Robeson County (2018 data)
- Cumberland County (2018 data)

2 1 0 2 Miles

Identified Well Receptor Locations

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

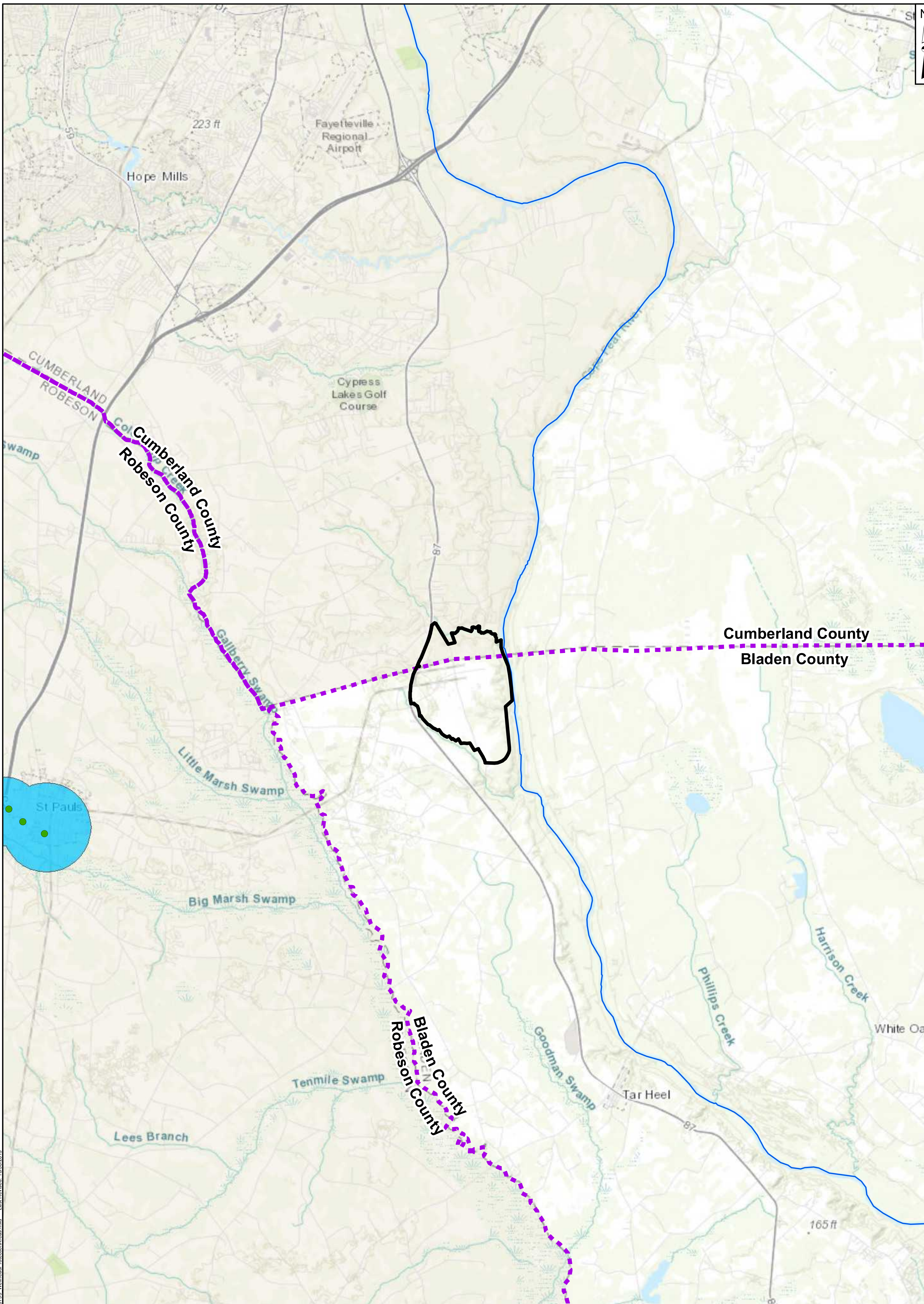
Figure **A5-1**

Raleigh | October 2019

Notes:
1. Delineation of offsite private wells containing PFAS listed in Attachment C of the Consent Order is on-going. Additional private wells are expected to be identified.
2. Locations from public wells were sourced from the North Carolina Corporate Geographic Database. Earlier versions of this dataset may exist. Retrieved from NC OneMap on September 24, 2019.
3. Basemap Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community.

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

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_WellReceptor_PublicAndPrivate.mxd   Last Revised: 10/30/2019



Legend

- Public Well within Wellhead Protection Area; PWS ID 0378030
- Wellhead Protection Area
- Cape Fear River
- Site Boundary
- County Boundary

2 1 0 2 Miles

Notes:
1. The source of the Public Well layer is the North Carolina Corporate Geographic Database. Earlier versions of this dataset may exist. Retrieved from NC OneMap on September 24, 2019.
2. Wellhead Protection Areas last updated on 10/27/2016. The data was downloaded from ArcGIS Online, and was provided by North Carolina Department of Environmental Quality.
3. Basemap Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community.

Wellhead Protection Areas

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

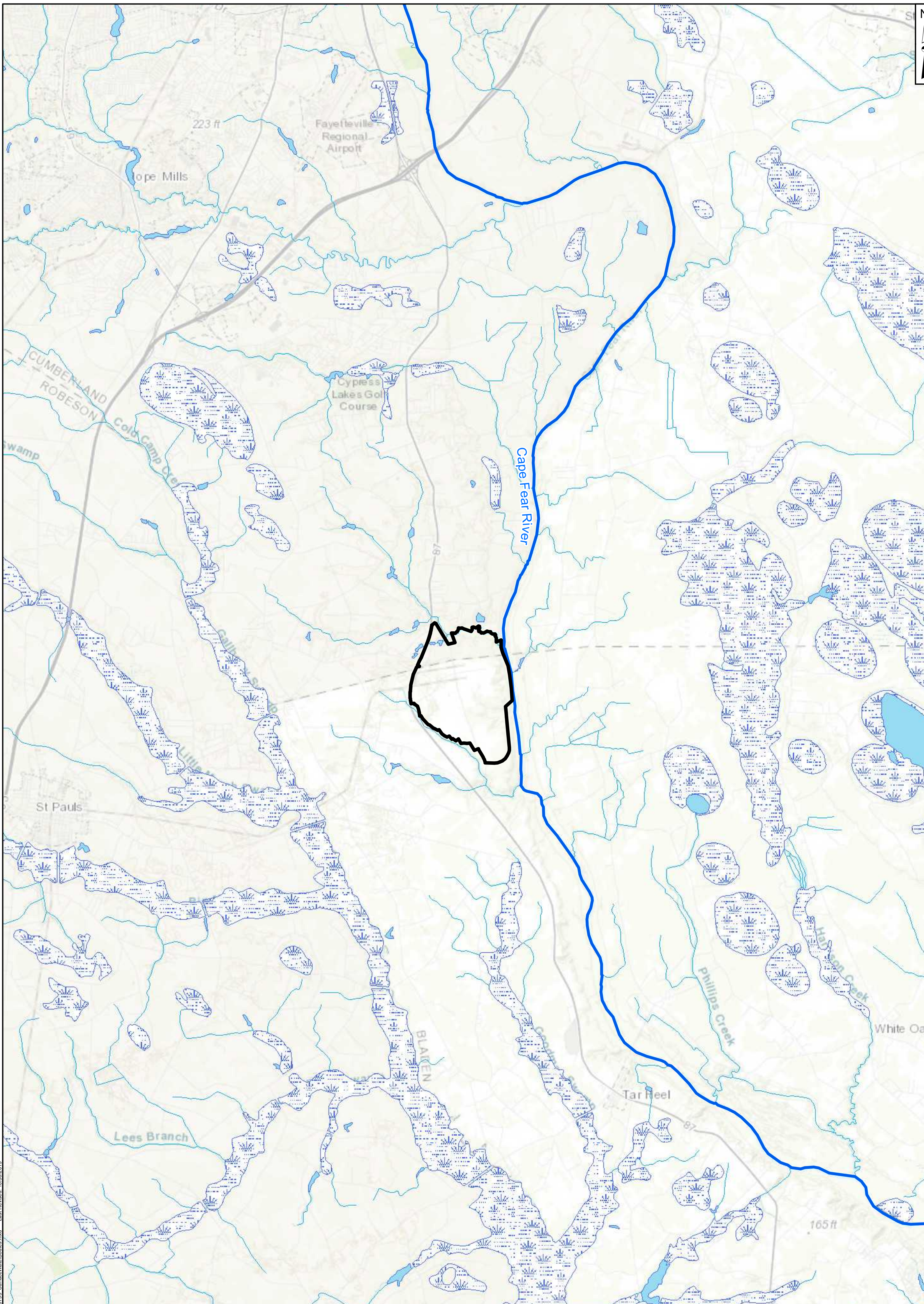
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure **A5-2**

Raleigh | October 2019

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_WellheadProtectionAreas.mxd Last Revised: 10/30/2019

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



Legend

- Lake/Pond
- Wetland
- Stream/River
- Site Boundary

Notes:

1. Surface water layers obtained from National Hydrography Dataset - USGS (www.nhd.usgs.gov)
2. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

2 1 0 2 Miles

Surface Water Bodies in Region Around Site

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

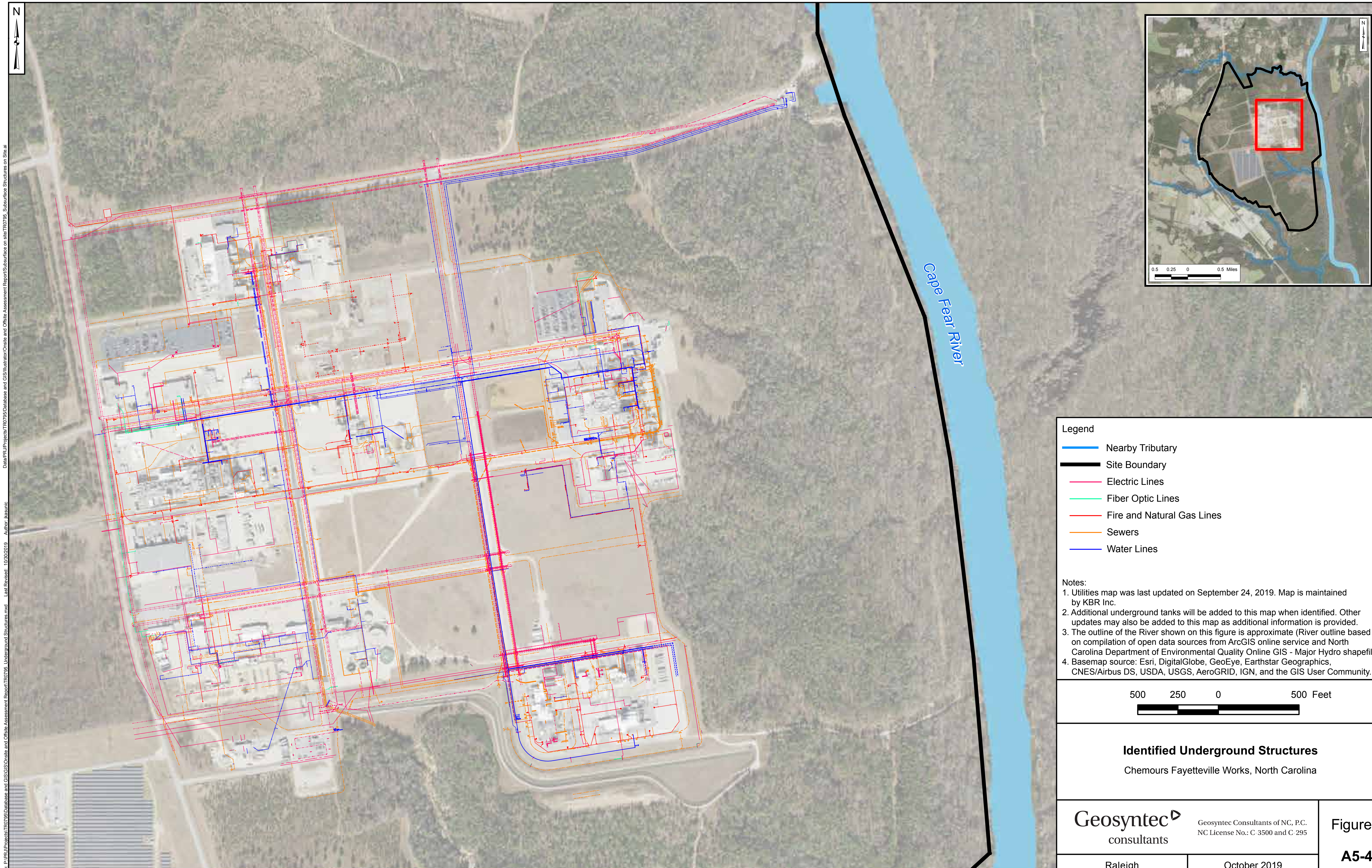
Figure

A5-3

Raleigh | October 2019

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_SurfaceWaterBodies.mxd Last Revised: 10/30/2019

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



Legend

- Nearby Tributary
- Site Boundary
- Electric Lines
- Fiber Optic Lines
- Fire and Natural Gas Lines
- Sewers
- Water Lines

Notes:
1. Utilities map was last updated on September 24, 2019. Map is maintained by KBR Inc.
2. Additional underground tanks will be added to this map when identified. Other updates may also be added to this map as additional information is provided.
3. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
4. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

500 250 0 500 Feet

Identified Underground Structures

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

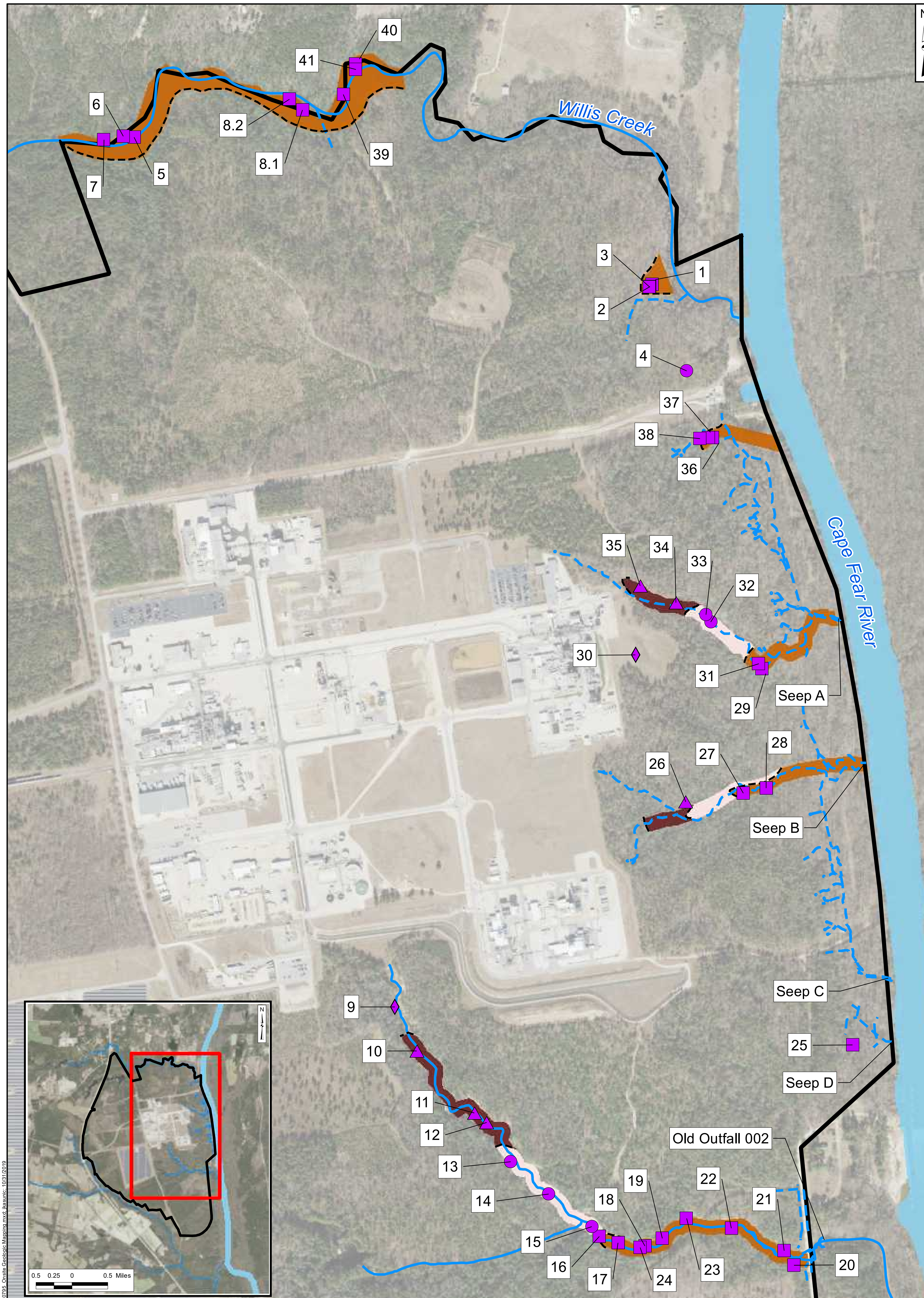
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure **A5-4**

Raleigh | October 2019

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_Underground Structures.mxd Last Revised: 10/30/2019 Author: ikasunic Data/PRJ/Projects/TR0795/Database and GIS/Illustrator/Onsite and Offsite Assessment Report/Subsurface on site/TR0795_Subsurface Structures on Site.ai

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



Legend

Station Locations

- Perched Zone
- Perched Clay
- Surficial
- Black Creek Confining Unit

- Inferred Lithologic Contacts
- Observed Seep
- Nearby Tributary
- Site Boundary

Observed Exposed Lithologies

- Black Creek Confining Unit
- Surficial
- Perched Zone

Notes:
1. Station Locations correspond to locations where outcrop exposures were visible and safely accessible. Additional information provided in Table 6-1.
2. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
3. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

1,000 500 0 1,000 Feet

Summary of Geologic Mapping Observations

Chemours Fayetteville Works, North Carolina

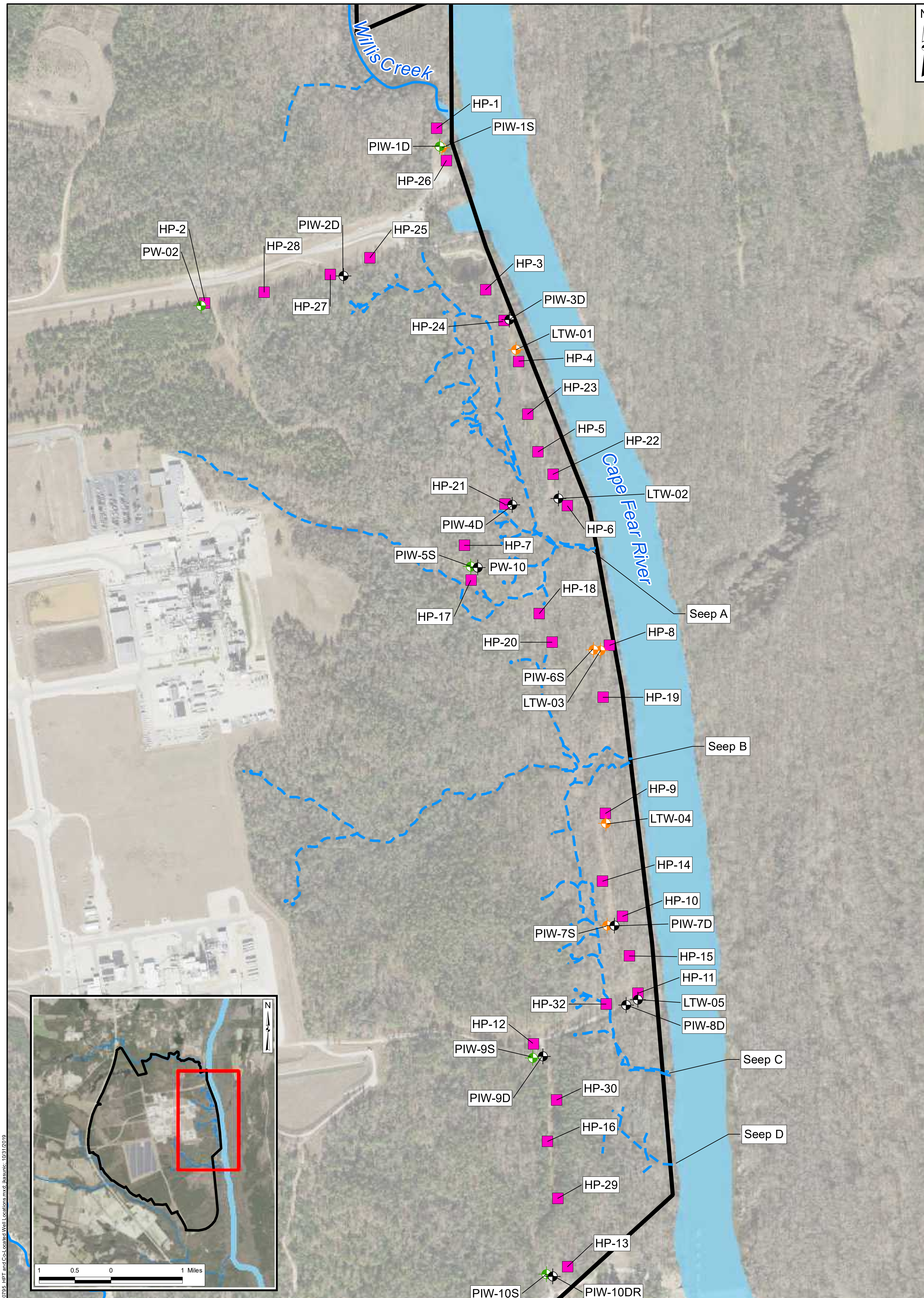
Geosyntec consultants

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

Raleigh | October 2019

Figure A6-1

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



Legend
Well Type

- Surficial Aquifer
- Floodplain Deposits
- Black Creek Aquifer
- HPT/EC Boring
- Observed Seep
- Nearby Tributary
- Site Boundary

Notes:
HPT - Hydraulic Profiling Tool
EC - Electrical Conductivity
1. Due to the scale of the map, pairs of wells that are in close proximity have been offset for visibility. Therefore, the placement of these wells on this map may not exactly reflect their true geographic coordinates.
2. HP- locations were not surveyed and considered approximate.
3. PIW and PW-well locations were sureyed by a licensed North Carolina Surveyor.
4. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
5. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

500 250 0 500 Feet

HPT and Well Locations

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

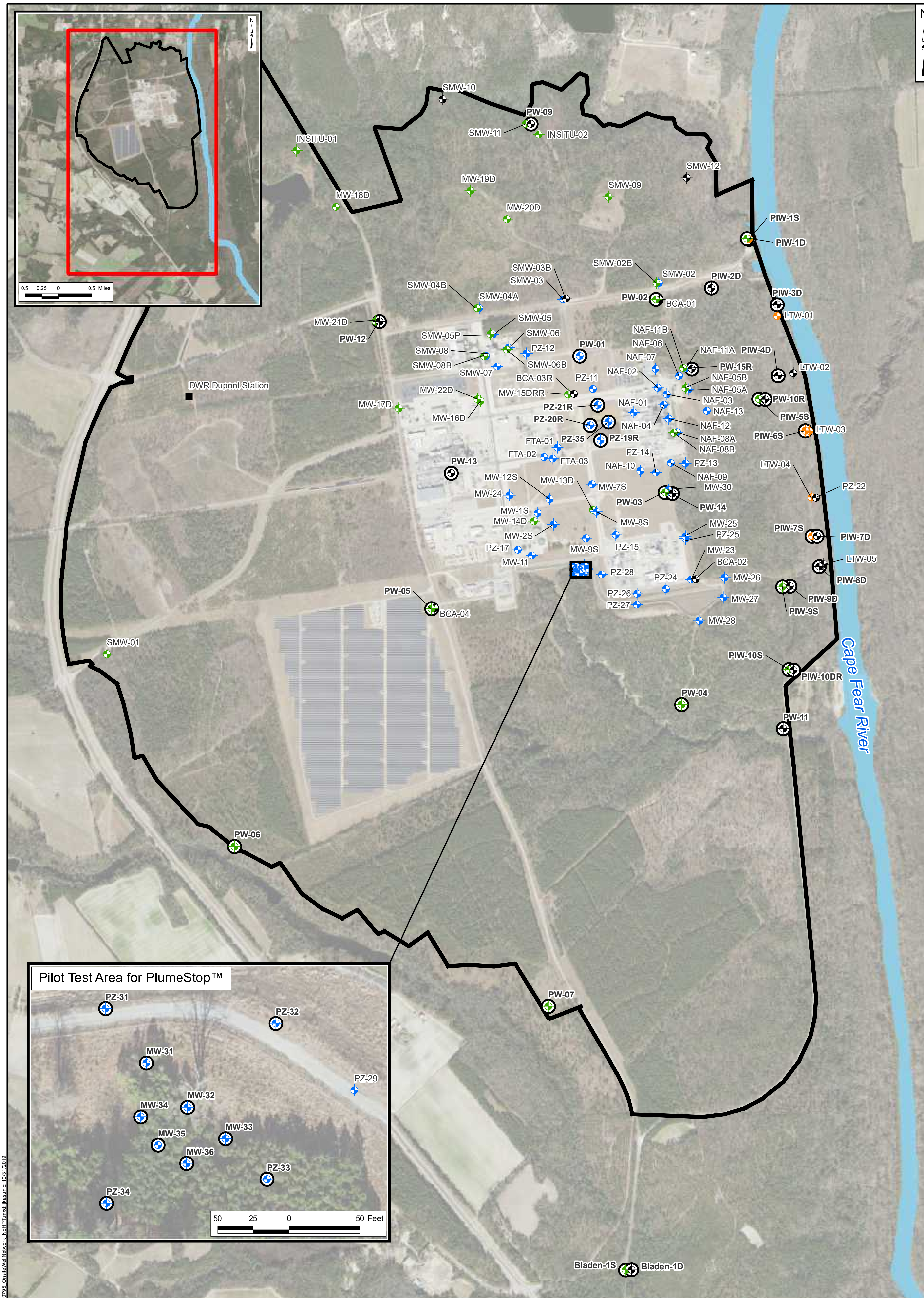
Figure

A6-2

Raleigh | October 2019

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_HPT and Co-Located Well Locations.mxd; jkasunic; 10/31/2019

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



Legend

- Perched Zone
- Surficial Aquifer
- Floodplain Deposits
- Black Creek Aquifer
- DWR Dupont Station (V42V) Well Cluster
- 2019 Installed Wells
- Site Boundary

1,000 500 0 1,000 Feet

Onsite Monitoring Well Network

Chemours Fayetteville Works, North Carolina

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

Geosyntec consultants

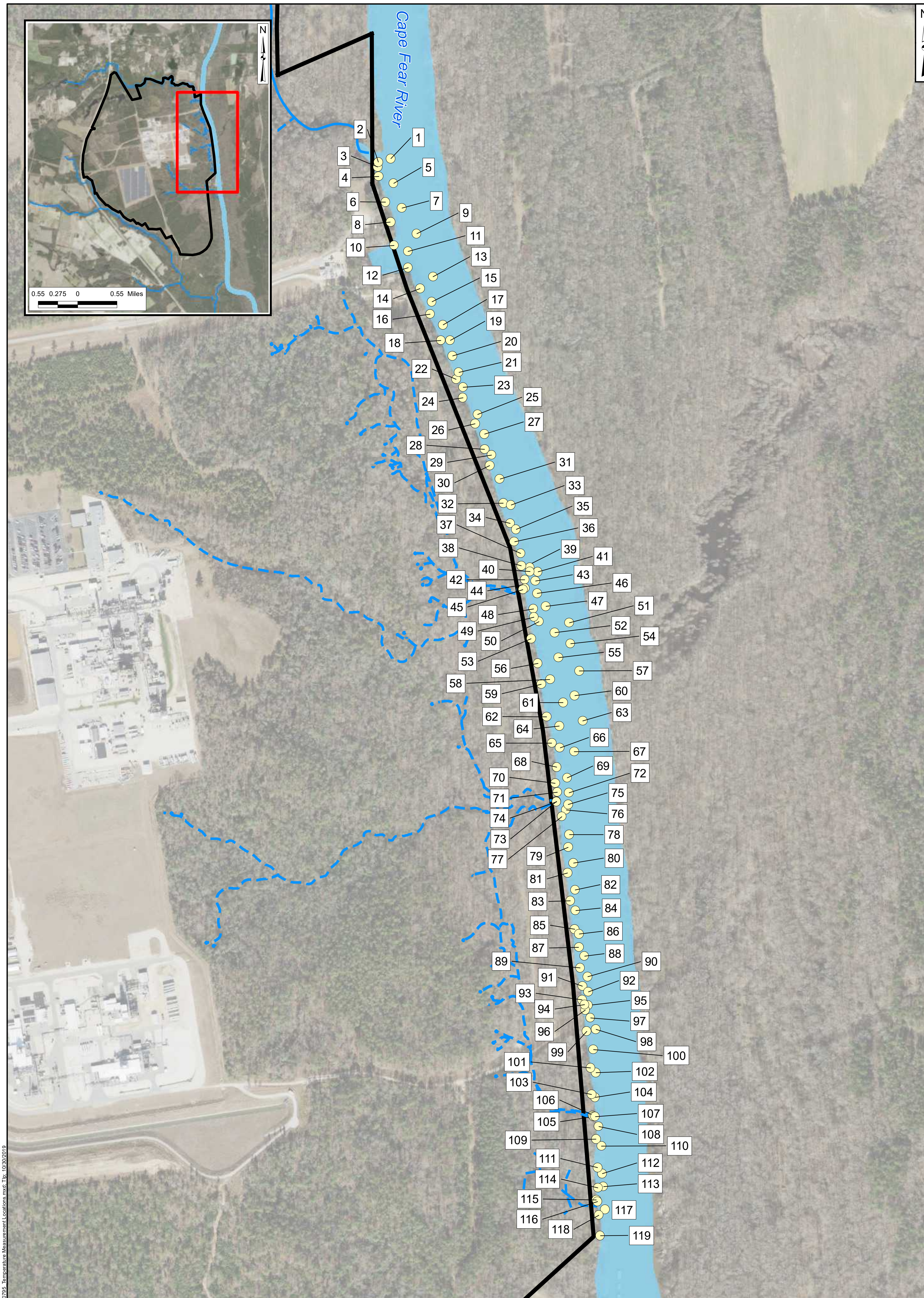
Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Figure **A6-3**

Raleigh | October 2019

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_OnsiteWellNetwork_NoHP.mxd; kasuric; 10/31/2019

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



Legend

109 Temperature Measurement Location

Observed Seep

Site Boundary

500 250 0 500 Feet

Cape Fear River Survey - Temperature Measurement Locations

Chemours Fayetteville Works, North Carolina

Notes:
1. Temperature measurements were collected at locations west of the thalweg from August 5 to 9, 2019.
2. Location of thalweg was estimated in the field based on field measurements of maximum depth using a depth finder.
3. All samples were located in the Cape Fear River. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).

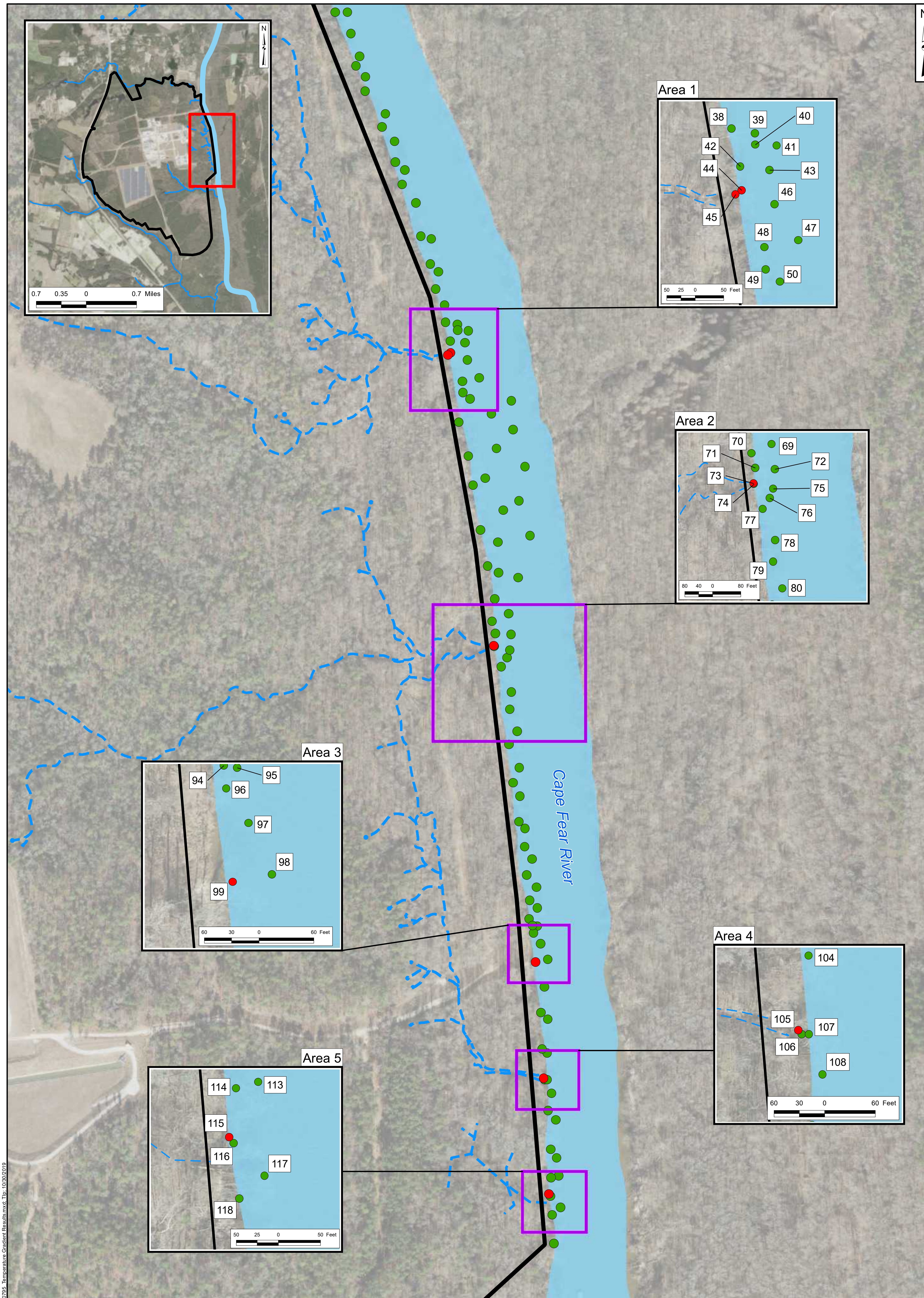
Geosyntec consultants

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

Figure **A6-4**

Raleigh | October 2019

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



Legend

Temperature difference between porewater and 6 inches above sediment

- 0 - 0.5 °C
- 0.5 - 6.0 °C
- Observed Seep
- Nearby Tributary
- Site Boundary
- Area of Observed Temperature Differential > 0.5 °C

Notes:
1. Temperature measurements were collected at locations west of the thalweg from August 5 to 9, 2019.
2. Location of thalweg was estimated in the field based on field measurements of maximum depth using a depth finder.
3. All samples were located in the Cape Fear River. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).

400 200 0 400 Feet

Temperature Gradient Results

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

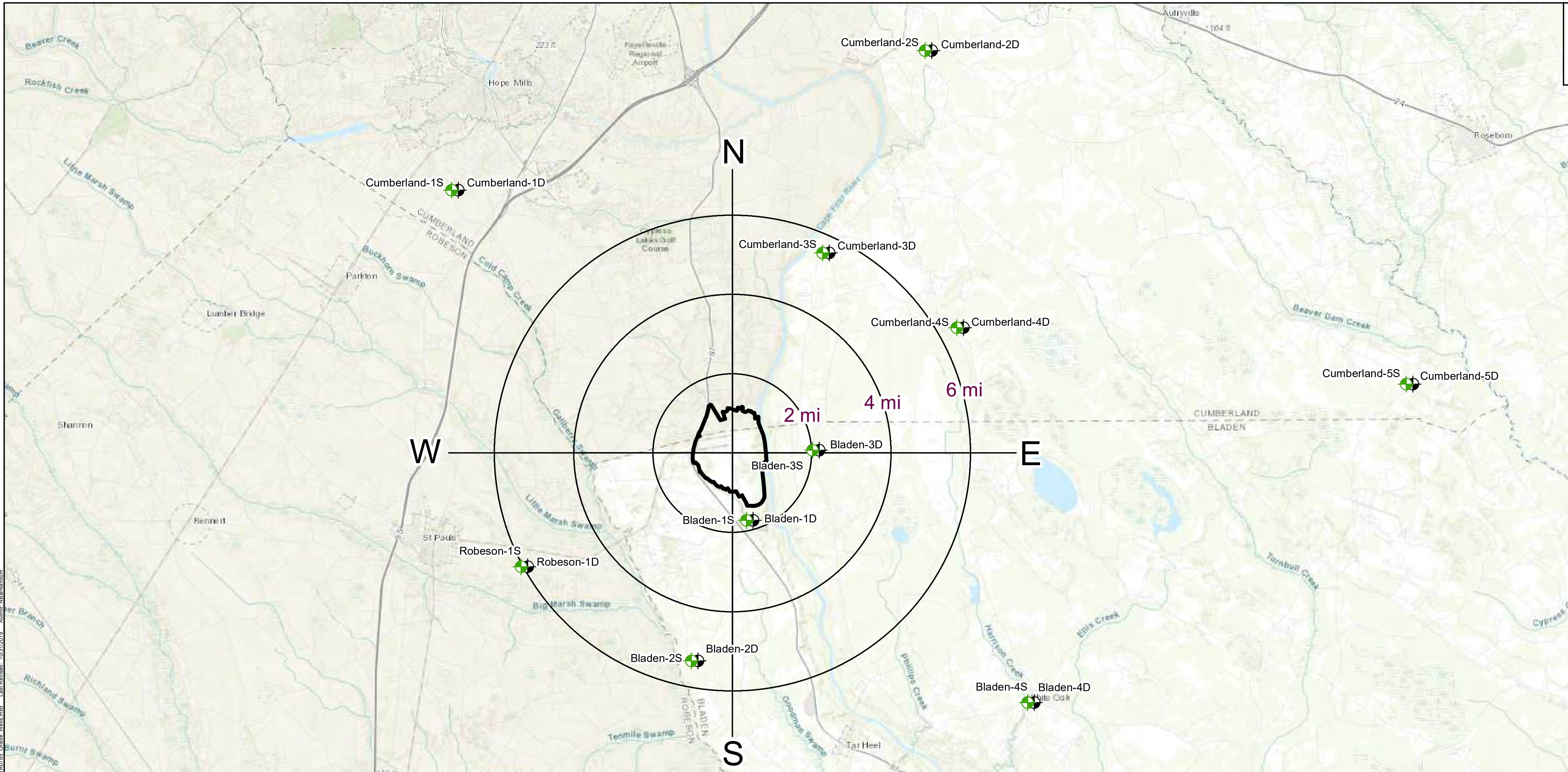
Figure

A6-5

Raleigh | October 2019

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_Temperature Gradient Results.mxd; Tlp; 10/30/2019

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



Legend

Well Type

Black Creek Aquifer

Surficial Aquifer

Site Boundary

Notes:

1. Black lines represent cardinal directions (N, E, S, W)
2. 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.
3. Basemap sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

2 1 0 2 Miles

Offsite Monitoring Wells

Chemours Fayetteville Works, North Carolina

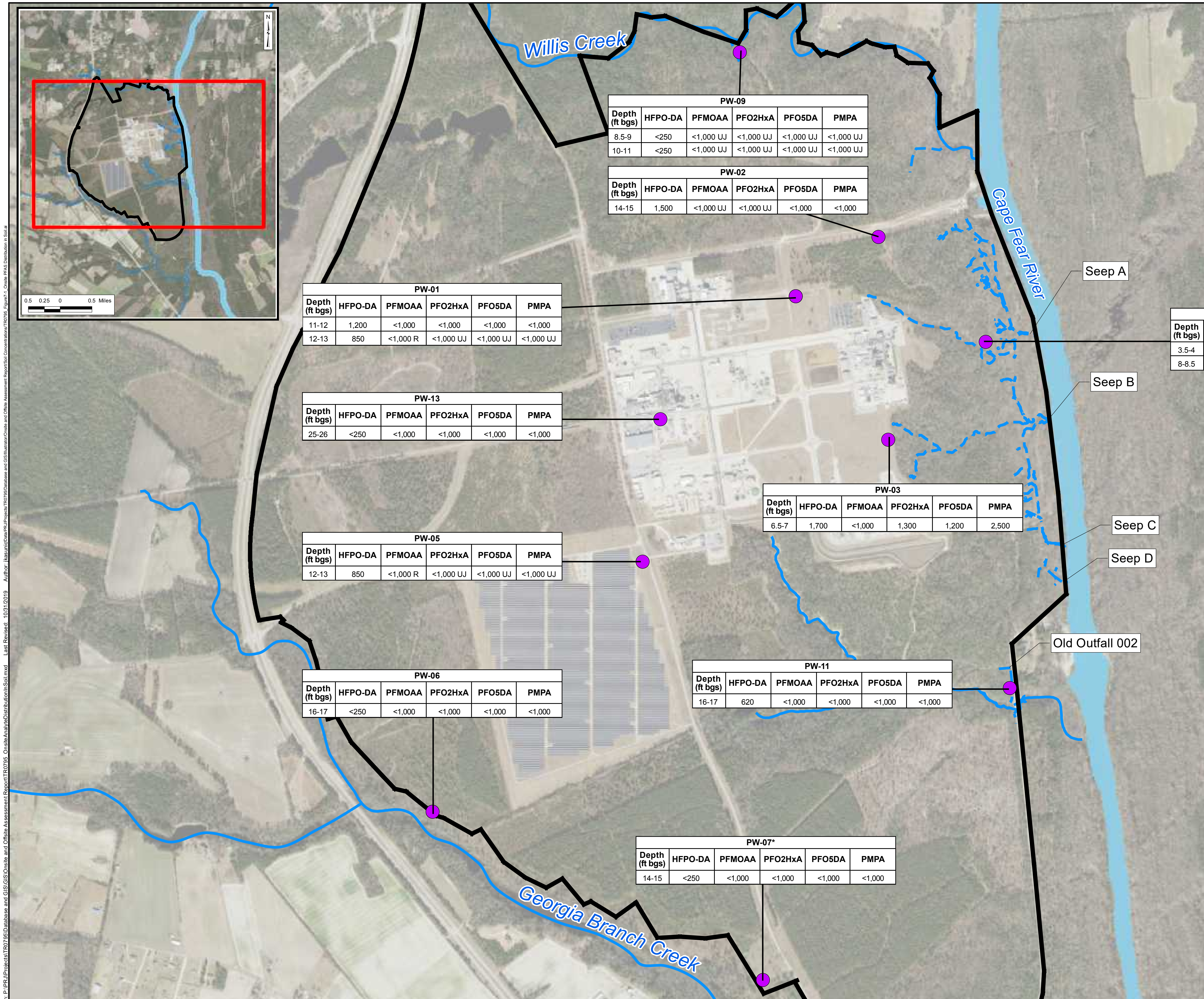
Geosyntec consultants

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

Raleigh | October 2019

Figure **A6-6**

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



PW-09					
Depth (ft bgs)	HFPO-DA	PFMOAA	PFO2HxA	PFO5DA	PMPA
8.5-9	<250	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
10-11	<250	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ

PW-02					
Depth (ft bgs)	HFPO-DA	PFMOAA	PFO2HxA	PFO5DA	PMPA
14-15	1,500	<1,000 UJ	<1,000 UJ	<1,000	<1,000

PW-01					
Depth (ft bgs)	HFPO-DA	PFMOAA	PFO2HxA	PFO5DA	PMPA
11-12	1,200	<1,000	<1,000	<1,000	<1,000
12-13	850	<1,000 R	<1,000 UJ	<1,000 UJ	<1,000 UJ

PW-10**					
Depth (ft bgs)	HFPO-DA	PFMOAA	PFO2HxA	PFO5DA	PMPA
3.5-4	570	<1,000	<1,000	1,260 U	<1,000
8-8.5	28,000	7,300	10,000 J	5,200	27,000 J

PW-13					
Depth (ft bgs)	HFPO-DA	PFMOAA	PFO2HxA	PFO5DA	PMPA
25-26	<250	<1,000	<1,000	<1,000	<1,000

PW-03					
Depth (ft bgs)	HFPO-DA	PFMOAA	PFO2HxA	PFO5DA	PMPA
6.5-7	1,700	<1,000	1,300	1,200	2,500

PW-05					
Depth (ft bgs)	HFPO-DA	PFMOAA	PFO2HxA	PFO5DA	PMPA
12-13	850	<1,000 R	<1,000 UJ	<1,000 UJ	<1,000 UJ

PW-11					
Depth (ft bgs)	HFPO-DA	PFMOAA	PFO2HxA	PFO5DA	PMPA
16-17	620	<1,000	<1,000	<1,000	<1,000

PW-06					
Depth (ft bgs)	HFPO-DA	PFMOAA	PFO2HxA	PFO5DA	PMPA
16-17	<250	<1,000	<1,000	<1,000	<1,000

PW-07*					
Depth (ft bgs)	HFPO-DA	PFMOAA	PFO2HxA	PFO5DA	PMPA
14-15	<250	<1,000	<1,000	<1,000	<1,000

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

Notes:
All measurements are in ng/kg (nanograms per kilogram).
< - Analyte not detected above associated reporting limit.
J - Analyte detected. Reported value may not be accurate or precise.
UJ - Analyte not detected. Reporting limit may not be accurate or precise.
* Results from the field duplicate sample are not shown but results are identical to the parent sample.
**Other analytes were detected, but not shown.
1. Only unsaturated soil samples shown.
2. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
3. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

1,500 750 0 1,500 Feet

Selected PFAS Concentrations in Onsite Soil

Chemours Fayetteville Works, North Carolina

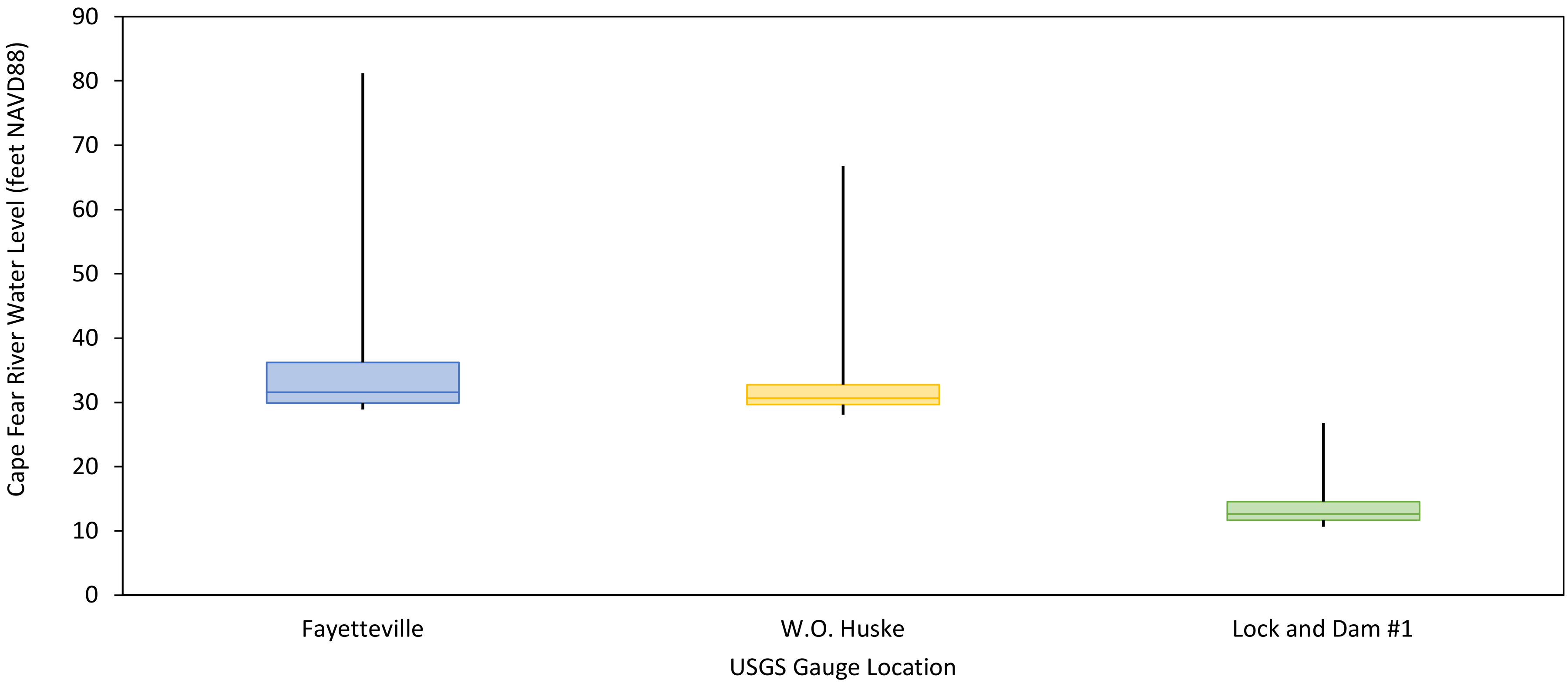
Geosyntec consultants

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

Figure **A7-1**

Raleigh | October 2019

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



Notes

NGVD29 - National Geodetic Vertical Datum of 1929
NAVD88 – North American Vertical Datum of 1988
USGS - United States Geological Survey

1. Figure includes water level data from January 1, 2014 to September 10, 2019.
2. Water level data obtained for USGS gauges at Fayetteville (USGS 02104000), W.O.Huske (USGS 2105500) and Lock and Dam #1 (USGS 02105769) from National Water Information System (URL: https://waterdata.usgs.gov/nwis/inventory/?site_no=02105769, date accessed: 2019-09-24)
3. Measured water level datum converted from feet NGVD29 to feet NAVD88 using National Oceanic and Atmospheric Administration's VDatum tool available at vdatum.noaa.gov.
4. Line inside boxes represents the median water level.
5. Bottom and top of boxes represent the 25th and 75th percentile water levels, respectively.
6. Extent of whiskers represent range of observed water levels.

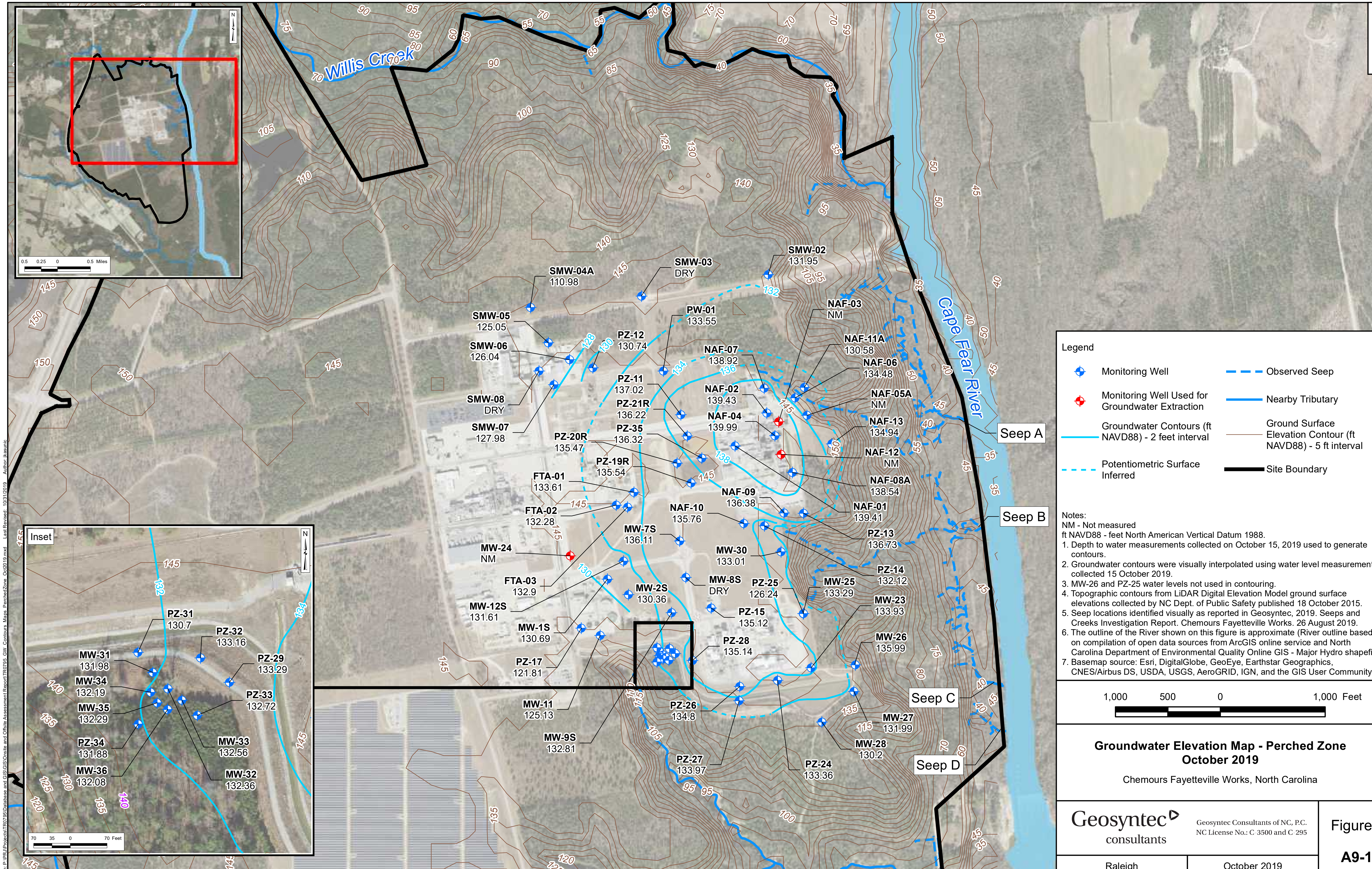
Cape Fear River Stage Variation
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure **A8-1**

Raleigh | October 2019



Legend

- Monitoring Well
- Monitoring Well Used for Groundwater Extraction
- Groundwater Contours (ft NAVD88) - 2 feet interval
- Potentiometric Surface Inferred
- Observed Seep
- Nearby Tributary
- Ground Surface Elevation Contour (ft NAVD88) - 5 ft interval
- Site Boundary

Notes:
NM - Not measured
ft NAVD88 - feet North American Vertical Datum 1988.

1. Depth to water measurements collected on October 15, 2019 used to generate contours.
2. Groundwater contours were visually interpolated using water level measurements collected 15 October 2019.
3. MW-26 and PZ-25 water levels not used in contouring.
4. Topographic contours from LiDAR Digital Elevation Model ground surface elevations collected by NC Dept. of Public Safety published 18 October 2015.
5. Seep locations identified visually as reported in Geosyntec, 2019. Seeps and Creeks Investigation Report. Chemours Fayetteville Works. 26 August 2019.
6. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
7. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

Groundwater Elevation Map - Perched Zone October 2019

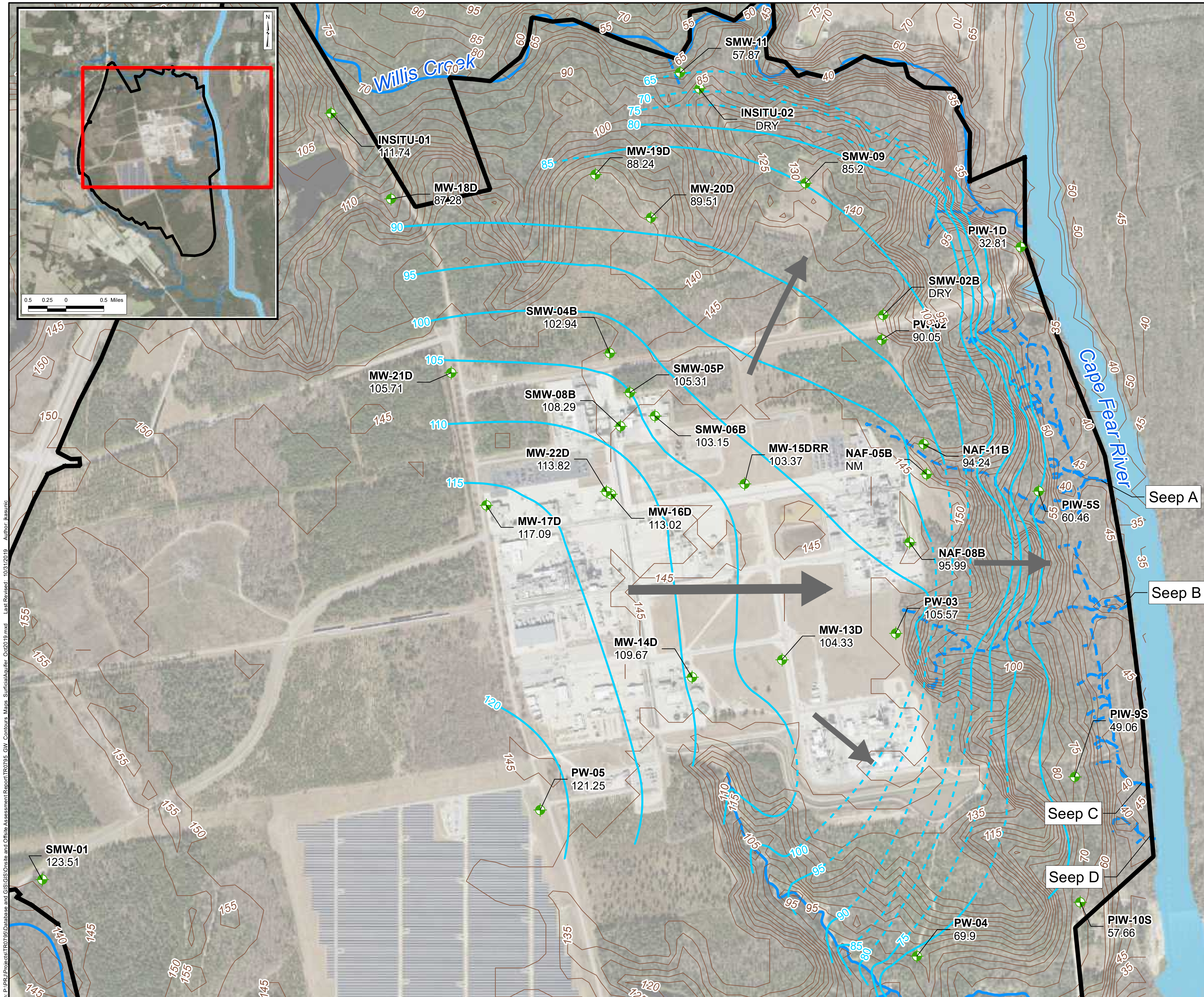
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | October 2019

Figure A9-1



Legend

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

Notes:
NM - Not measured
ft NAVD88 - feet North American Vertical Datum 1988.
1. Depth to water measurements collected on October 15, 2019 used to generate contours.
2. Groundwater contours were visually interpolated using water level measurements collected 15 October 2019.
3. Topographic contours from LiDAR Digital Elevation Model ground surface elevations collected by NC Dept. of Public Safety published 18 October 2015.
4. Seep locations identified visually as reported in Geosyntec, 2019. Seeps and Creeks Investigation Report. Chemours Fayetteville Works. 26 August 2019.
5. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
6. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

1,000 500 0 1,000 Feet

Groundwater Elevation Map - Surficial Aquifer October 2019

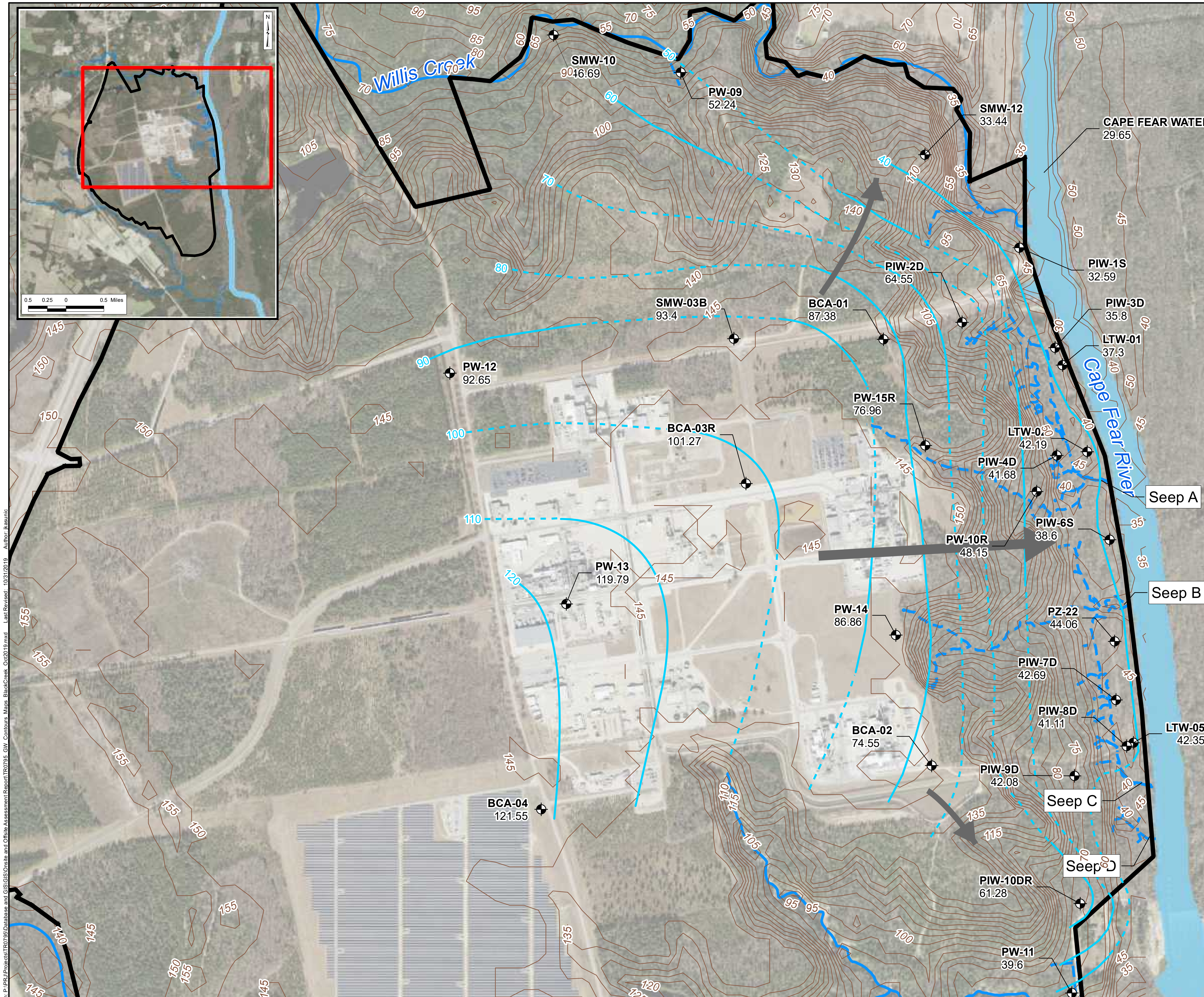
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure A9-2

Raleigh | October 2019



Legend

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

Notes:
ft NAVD88 - feet North American Vertical Datum 1988.
1. Depth to water measurements collected on October 15, 2019 used to generate contours.
2. Groundwater contours were visually interpolated using water level measurements collected 15 October 2019.
3. Cape Fear River water level indicated is median value for October 15, 2019 measured at the W.O. Huske Dam (USGS 2105500). Data obtained from National Water Information System (URL: https://waterdata.usgs.gov/nwis/inventory/?site_no=02105769, date accessed: 2019-10-23).
4. Topographic contours from LiDAR Digital Elevation Model ground surface elevations collected by NC Dept. of Public Safety published 18 October 2015.
5. Seep locations identified visually as reported in Geosyntec, 2019. Seeps and Creeks Investigation Report. Chemours Fayetteville Works. 26 August 2019.
6. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
6. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

1,000 500 0 1,000 Feet

Groundwater Elevation Map - Black Creek Aquifer October 2019

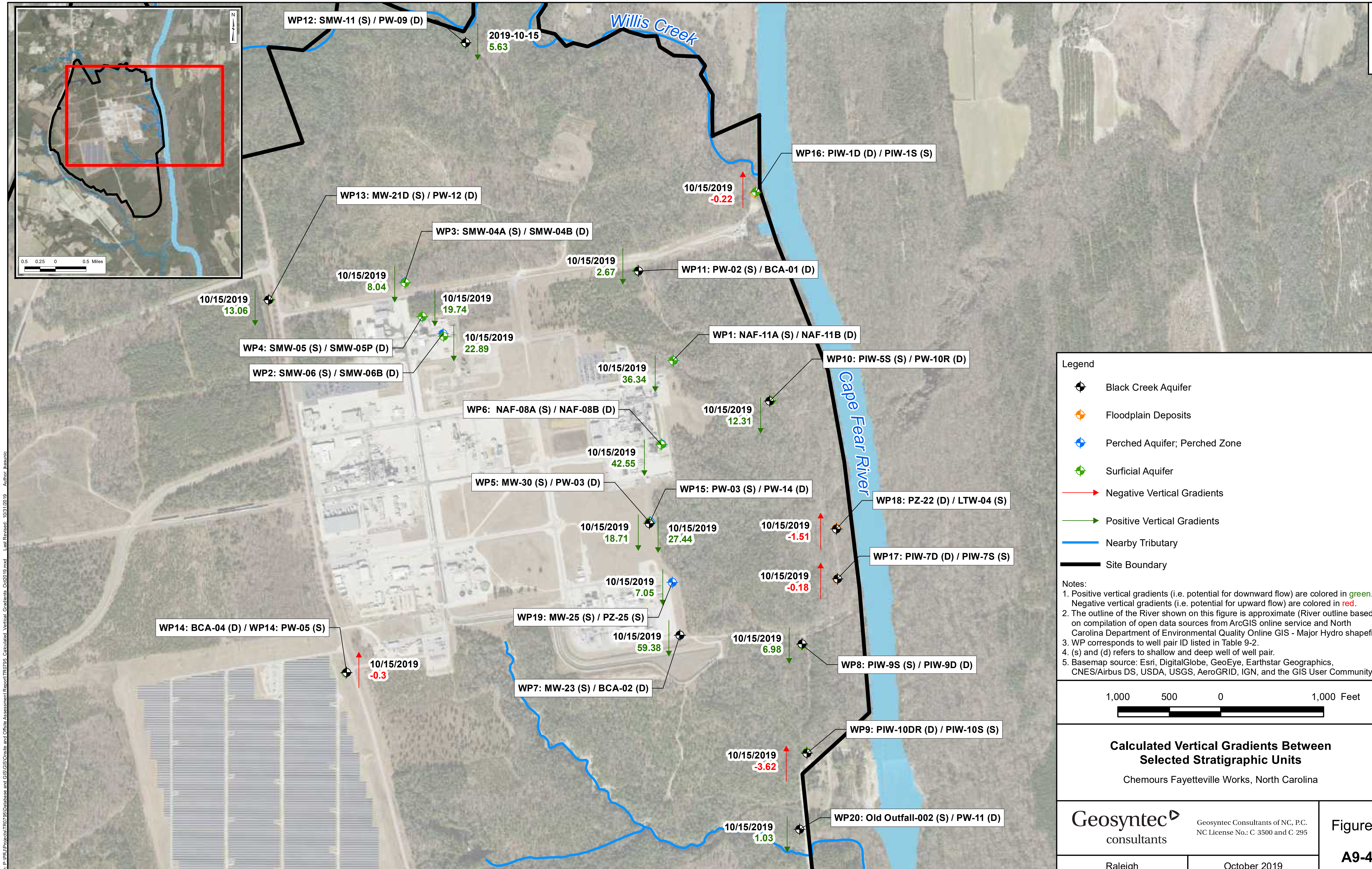
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh	October 2019	Figure A9-3

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



Notes:
1. Positive vertical gradients (i.e. potential for downward flow) are colored in green. Negative vertical gradients (i.e. potential for upward flow) are colored in red.
2. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
3. WP corresponds to well pair ID listed in Table 9-2.
4. (s) and (d) refers to shallow and deep well of well pair.
5. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

Calculated Vertical Gradients Between Selected Stratigraphic Units

Chemours Fayetteville Works, North Carolina

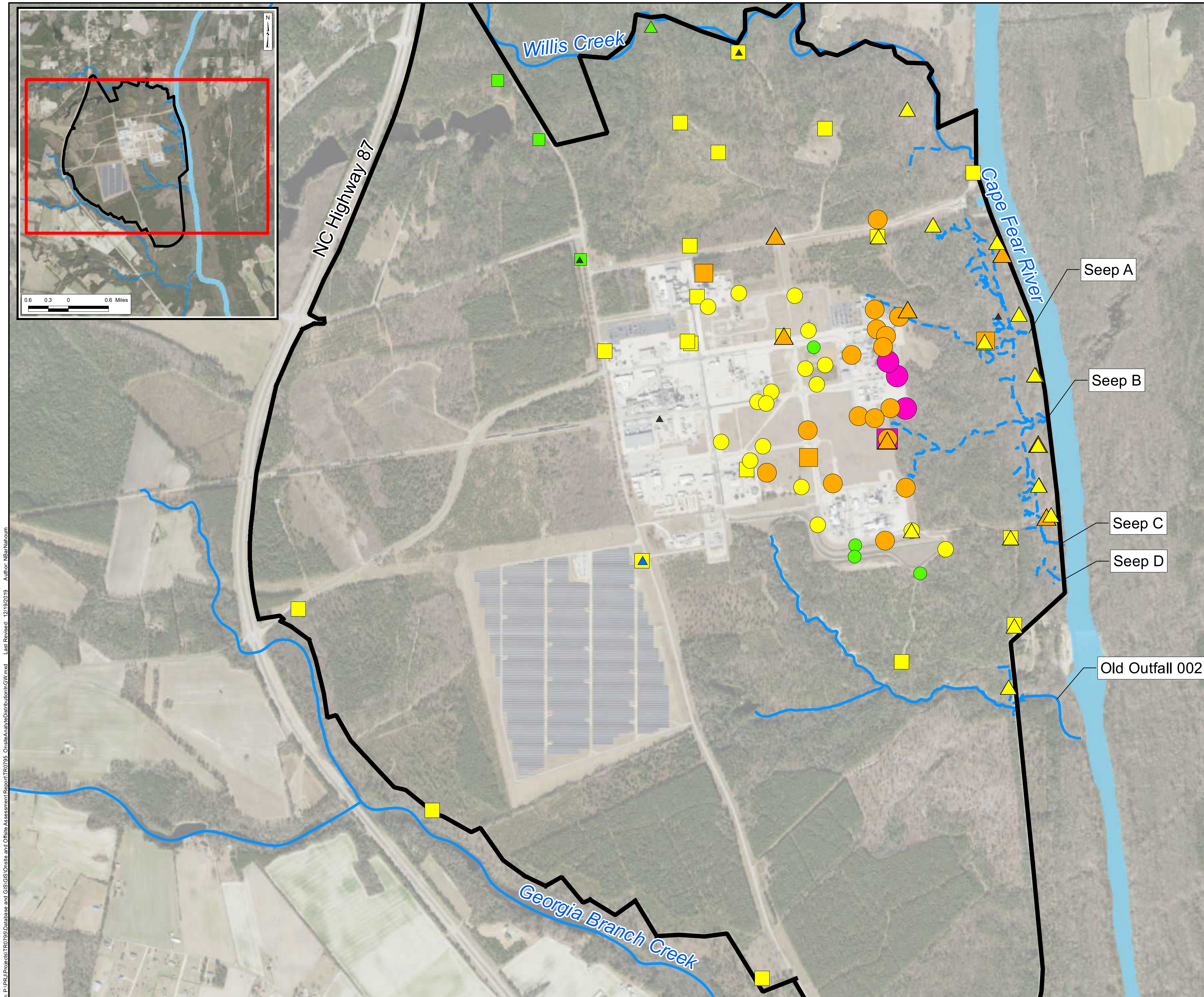
Geosyntec consultants

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

Figure **A9-4**

Raleigh | October 2019

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



Legend

Concentration (ng/L)
- < 10
- 10 - 100
- 100 - 1,000
- 1,000 - 10,000
- 10,000 - 100,000
- 100,000 - 1,000,000
- > 1,000,000

Well Type
- Perched Zone
- Surficial Aquifer
- Black Creek Aquifer / Floodplain Deposits
- Observed Seep
- Nearby Tributary
- Site Boundary

Notes:
ng/L - nanograms per liter

1. Samples were collected between June and November 2019.
2. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
3. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

1,000 500 0 1,000 Feet

Onsite PMPA Concentrations in Groundwater

Chemours Fayetteville Works, North Carolina

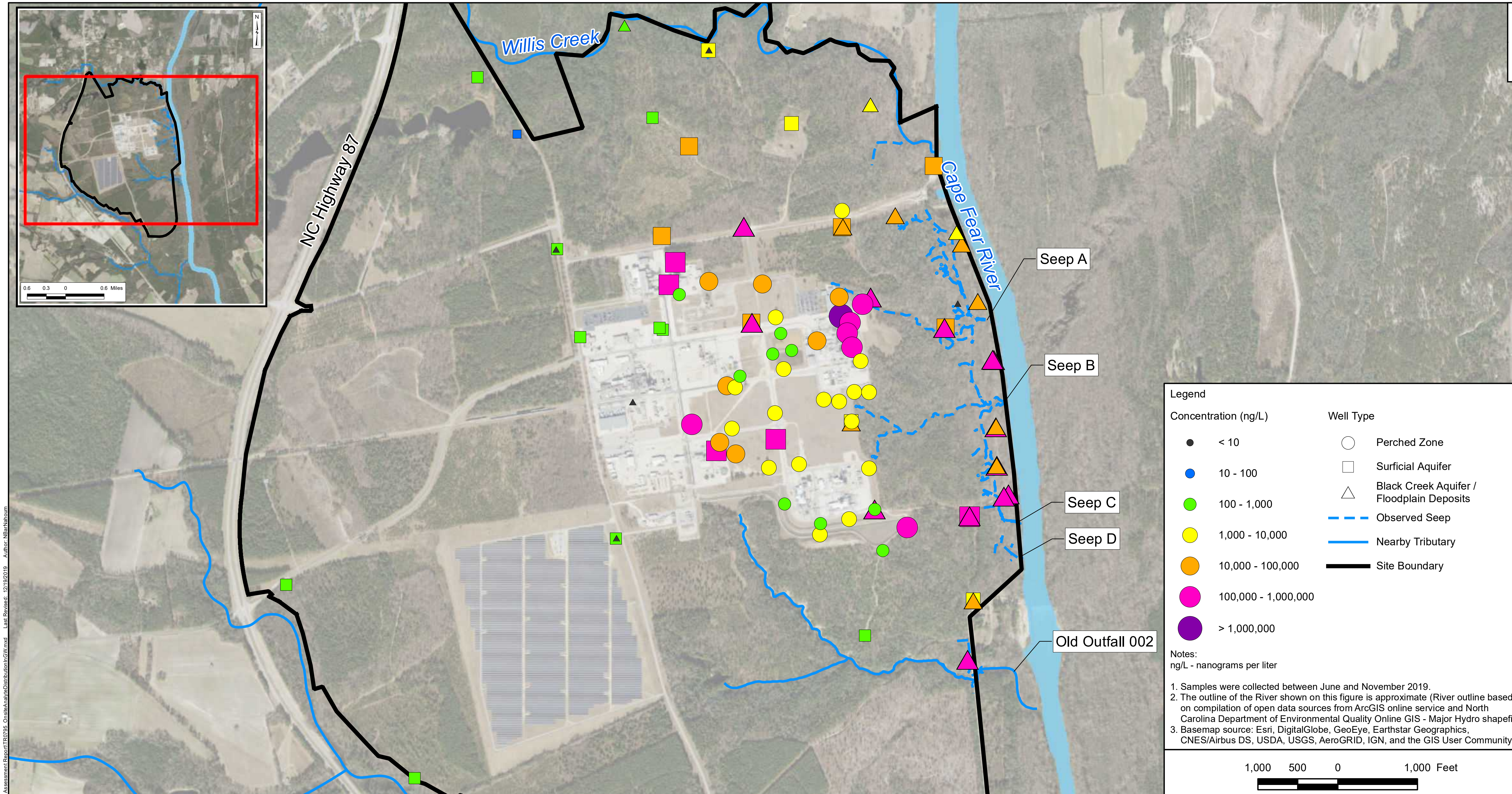
Geosyntec consultants

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

Figure A9-5

Raleigh | December 2019

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



Onsite PFMOAA Concentrations in Groundwater

Chemours Fayetteville Works, North Carolina

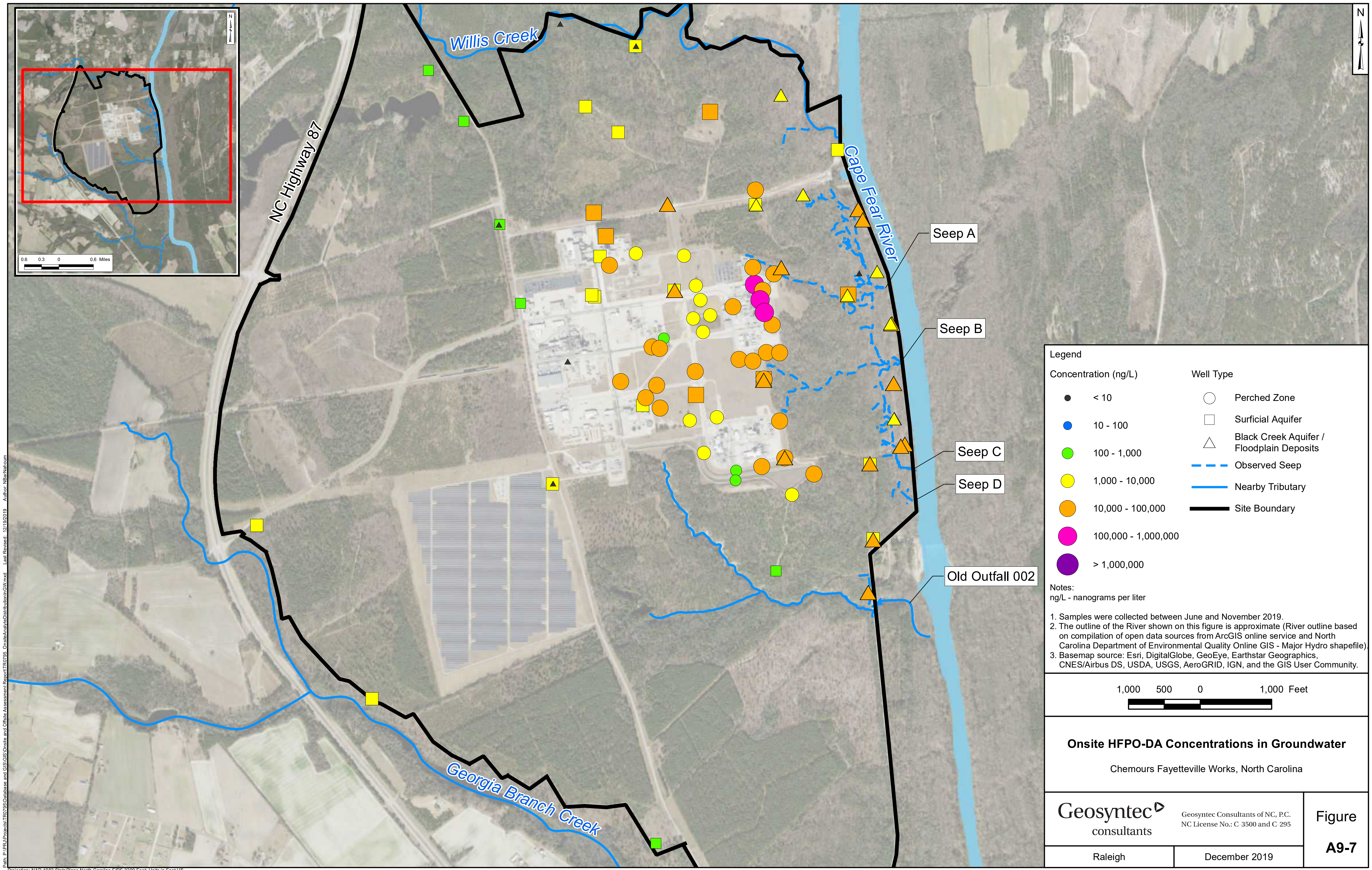
Geosyntec consultants

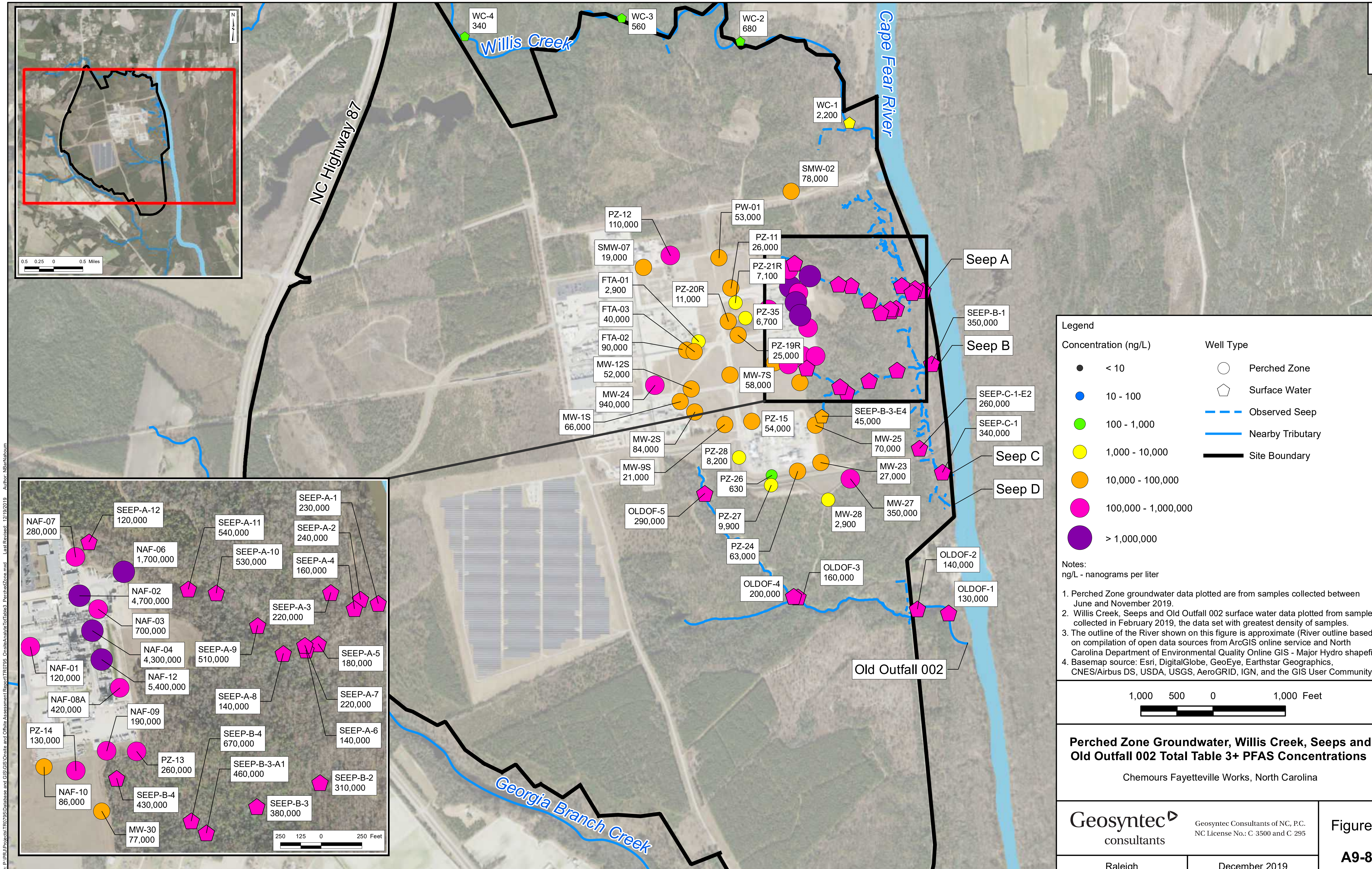
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure A9-6

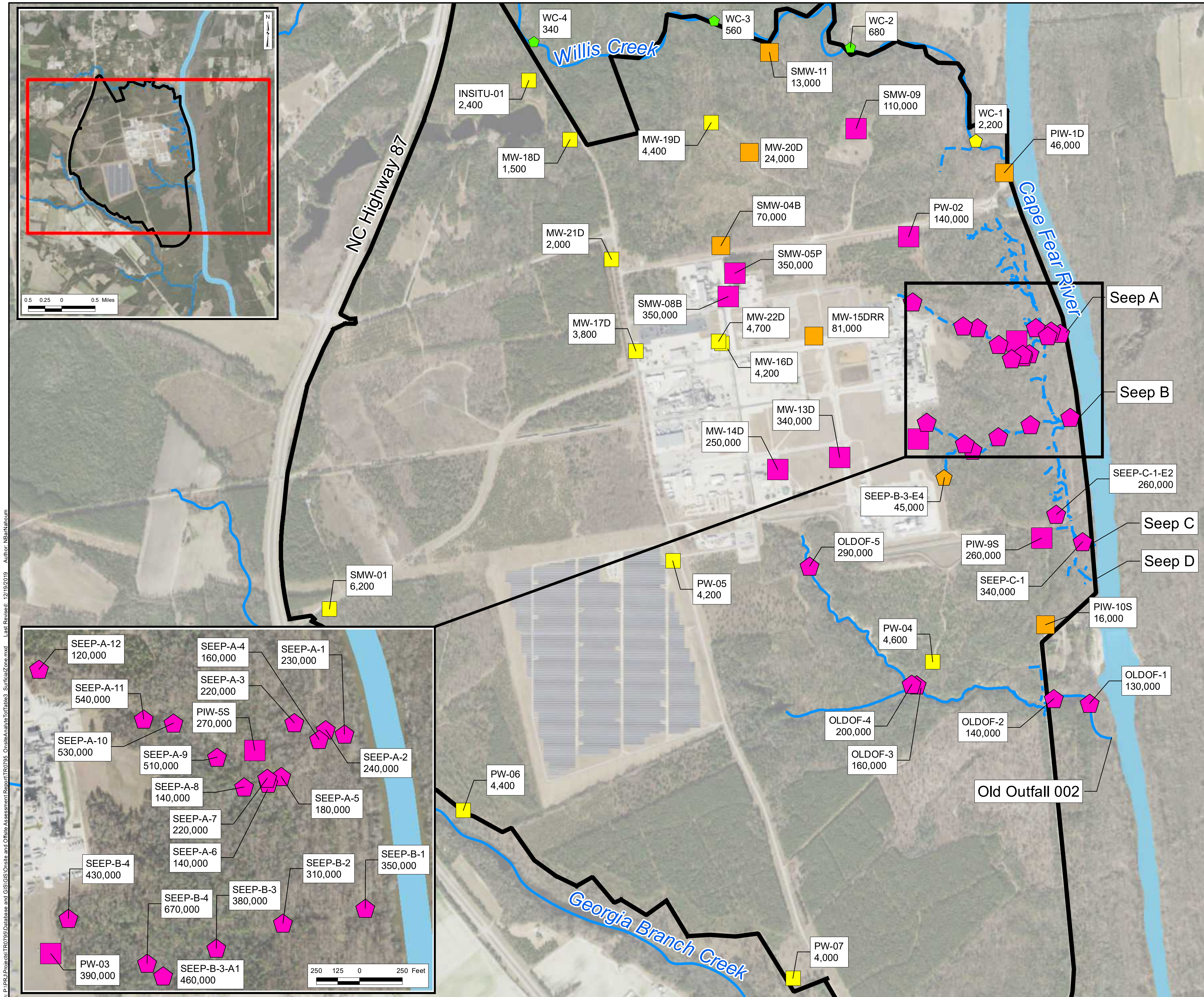
Raleigh | December 2019

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


Willis Creek
NC Highway 87
Cape Fear River
Georgia Branch Creek
Seep A
Seep B
Seep C
Seep D
Old Outfall 002
0.6 0.3 0 0.6 Miles
N
Legend
Concentration (ng/L)
< 10
10 - 100
100 - 1,000
1,000 - 10,000
10,000 - 100,000
100,000 - 1,000,000
> 1,000,000
Well Type
Perched Zone
Surficial Aquifer
Black Creek Aquifer / Floodplain Deposits
Observed Seep
Nearby Tributary
Site Boundary
Notes:
ng/L - nanograms per liter
1. Samples were collected between June and November 2019.
2. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
3. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.
1,000 500 0 1,000 Feet
Onsite HFPO-DA Concentrations in Groundwater
Chemours Fayetteville Works, North Carolina
Geosyntec consultants
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295
Figure
A9-7
Raleigh
December 2019
Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



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



Legend

Concentration (ng/L)	Well Type
< 10	Surficial
10 - 100	Surface Water
100 - 1,000	Observed Seep
1,000 - 10,000	Nearby Tributary
10,000 - 100,000	Site Boundary
100,000 - 1,000,000	
> 1,000,000	

Notes:
ng/L - nanograms per liter

1. Surficial groundwater data plotted are from samples collected between June and November 2019.
2. Willis Creek, Seeps and Old Outfall 002 surface water data plotted from samples collected in February 2019, the data set with greatest density of samples.
3. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
4. Basemap source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

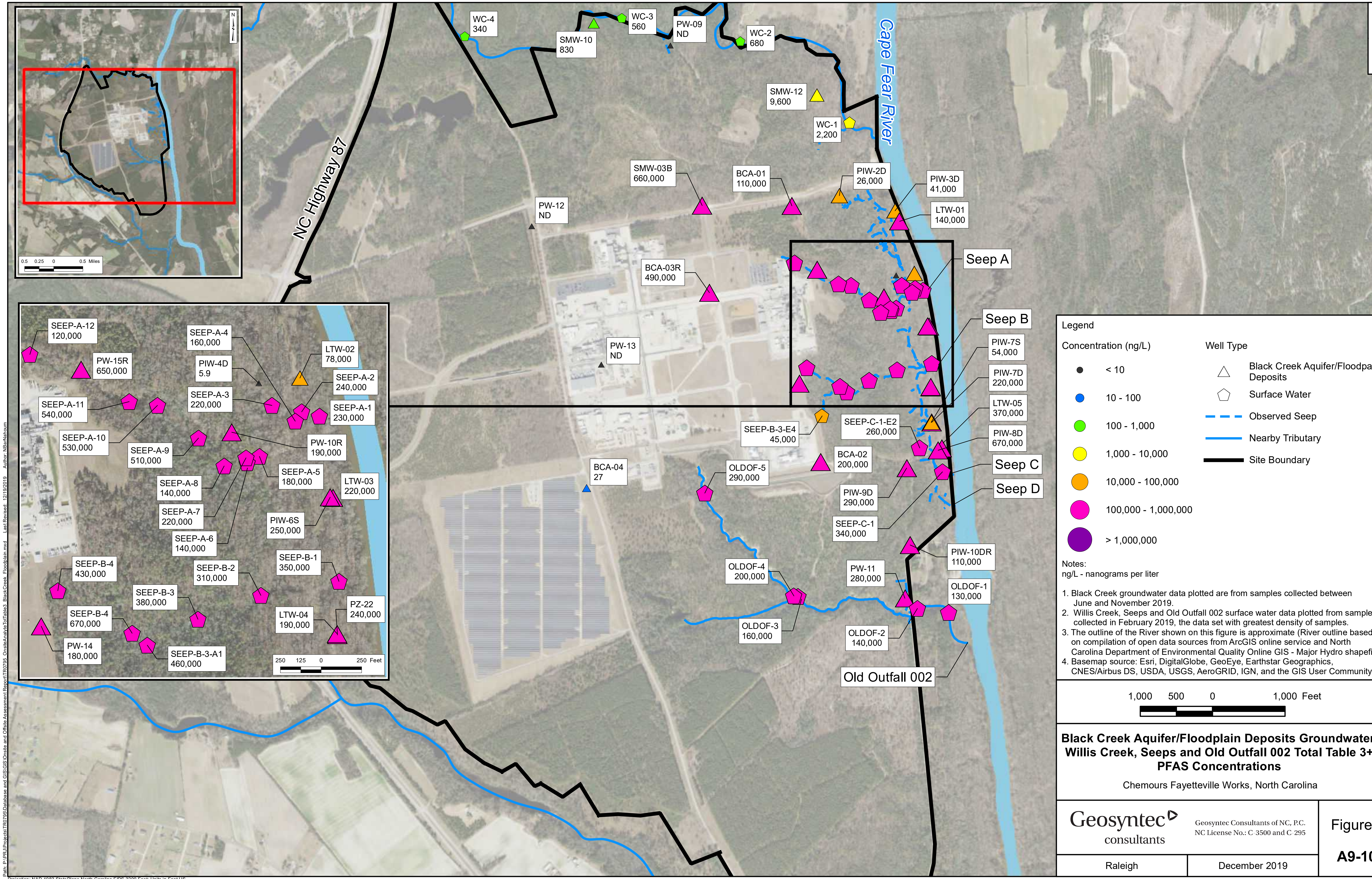
1,000 500 0 1,000 Feet

Surficial Aquifer Groundwater, Willis Creek, Seeps and Old Outfall 002 Total Table 3+ PFAS Concentrations

Chemours Fayetteville Works, North Carolina

Geosyntec consultants | Geosyntec Consultants of NC, P.C. NC License No.: C 3500 and C 295 | Figure A9-9

Raleigh | December 2019



Black Creek Aquifer/Floodplain Deposits Groundwater, Willis Creek, Seeps and Old Outfall 002 Total Table 3+ PFAS Concentrations

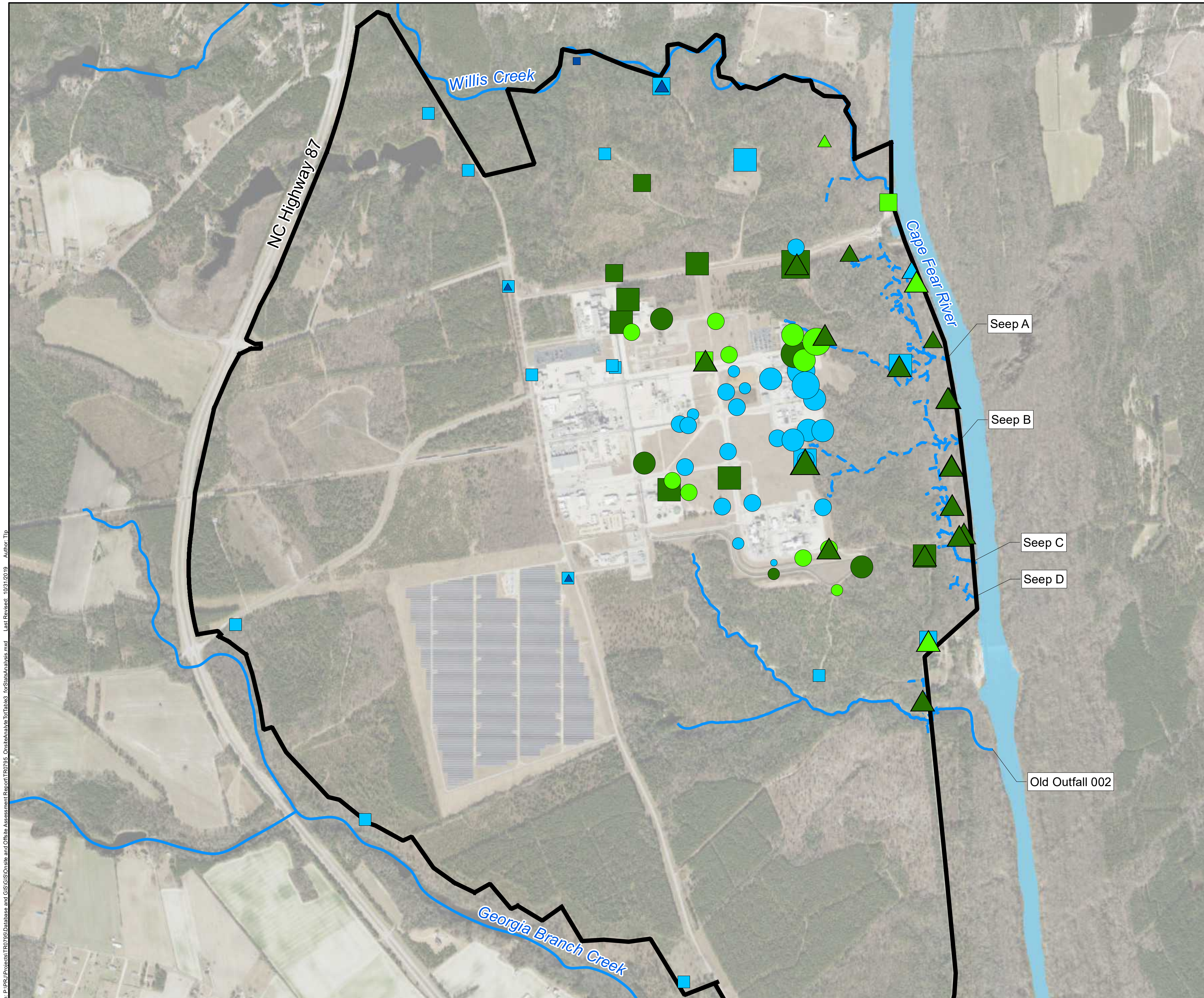
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | December 2019

Figure A9-10



Legend

Concentration (ng/L)
- < 1,000
- 1,000 - 10,000
- 10,000 - 100,000
- 100,000 - 1,000,000
- > 1,000,000

Well Type
- Black Creek/Floodplain Deposits
- Perched Zone
- Surficial

Proposed PFAS Signature
- Aerial - Predominant PMPA
- Aerial - Mixture of PFAS
- Combined Process Water - Predominant PFMOAA
- Combined Process Water - Mixture of PFAS
- Observed Seep
- Nearby Tributary
- Site Boundary

Notes:
ng/L - nanograms per liter

1. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
2. 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

Onsite Spatial Distribution of Proposed PFAS Signatures

Chemours Fayetteville Works, North Carolina

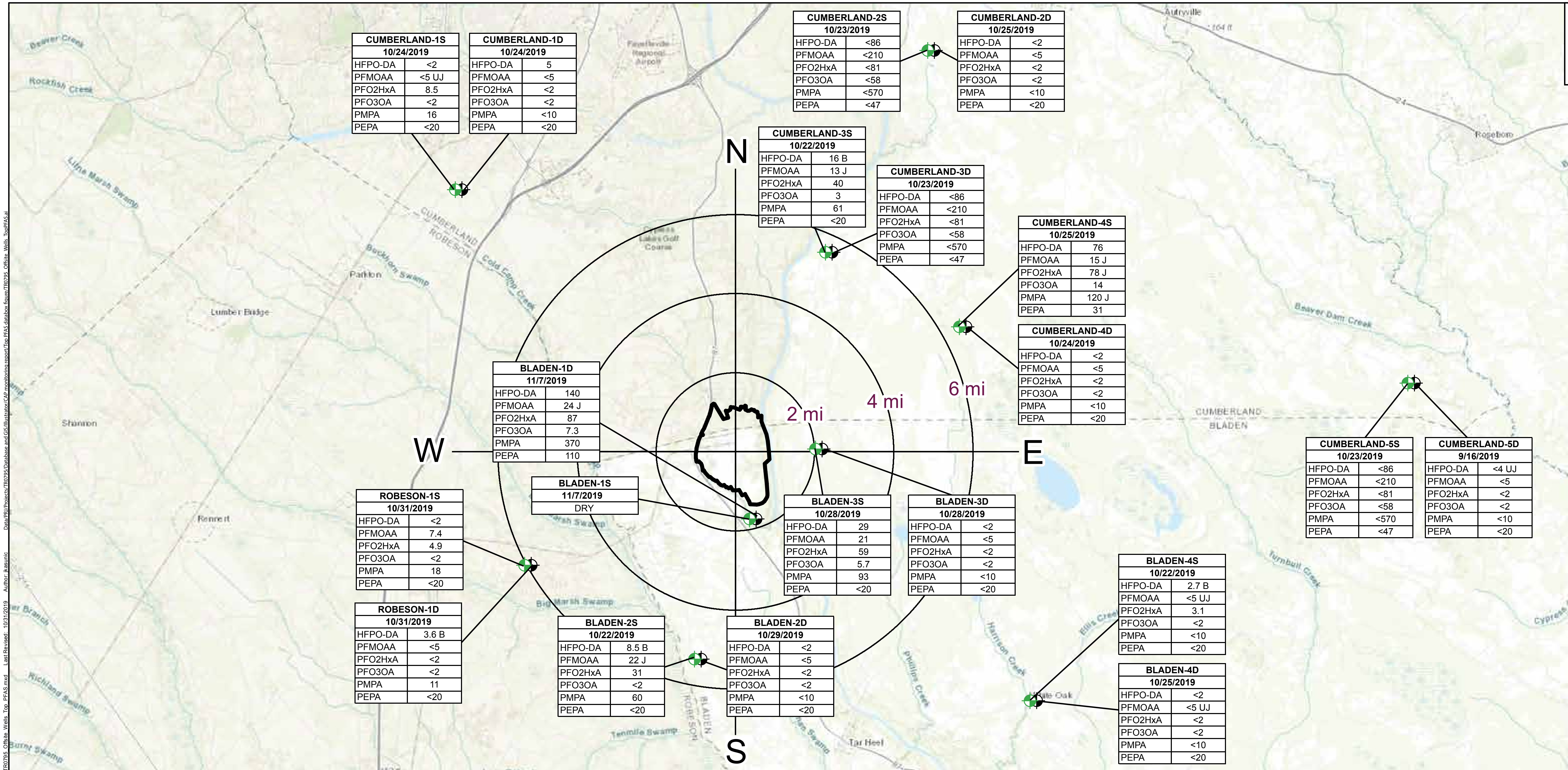
Geosyntec consultants

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

Figure A9-11

Raleigh | October 2019

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



CUMBERLAND-1S	10/24/2019
HFPO-DA	<2
PFMOAA	<5 UJ
PFO2HxA	8.5
PFO3OA	<2
PMPA	16
PEPA	<20

CUMBERLAND-1D	10/24/2019
HFPO-DA	5
PFMOAA	<5
PFO2HxA	<2
PFO3OA	<2
PMPA	<10
PEPA	<20

CUMBERLAND-2S	10/23/2019
HFPO-DA	<86
PFMOAA	<210
PFO2HxA	<81
PFO3OA	<58
PMPA	<570
PEPA	<47

CUMBERLAND-2D	10/25/2019
HFPO-DA	<2
PFMOAA	<5
PFO2HxA	<2
PFO3OA	<2
PMPA	<10
PEPA	<20

CUMBERLAND-3S	10/22/2019
HFPO-DA	16 B
PFMOAA	13 J
PFO2HxA	40
PFO3OA	3
PMPA	61
PEPA	<20

CUMBERLAND-3D	10/23/2019
HFPO-DA	<86
PFMOAA	<210
PFO2HxA	<81
PFO3OA	<58
PMPA	<570
PEPA	<47

CUMBERLAND-4S	10/25/2019
HFPO-DA	76
PFMOAA	15 J
PFO2HxA	78 J
PFO3OA	14
PMPA	120 J
PEPA	31

CUMBERLAND-4D	10/24/2019
HFPO-DA	<2
PFMOAA	<5
PFO2HxA	<2
PFO3OA	<2
PMPA	<10
PEPA	<20

CUMBERLAND-5S	10/23/2019
HFPO-DA	<86
PFMOAA	<210
PFO2HxA	<81
PFO3OA	<58
PMPA	<570
PEPA	<47

CUMBERLAND-5D	9/16/2019
HFPO-DA	<4 UJ
PFMOAA	<5
PFO2HxA	<2
PFO3OA	<2
PMPA	<10
PEPA	<20

BLADEN-1D	11/7/2019
HFPO-DA	140
PFMOAA	24 J
PFO2HxA	87
PFO3OA	7.3
PMPA	370
PEPA	110

BLADEN-1S	11/7/2019
DRY	

ROBESON-1S	10/31/2019
HFPO-DA	<2
PFMOAA	7.4
PFO2HxA	4.9
PFO3OA	<2
PMPA	18
PEPA	<20

ROBESON-1D	10/31/2019
HFPO-DA	3.6 B
PFMOAA	<5
PFO2HxA	<2
PFO3OA	<2
PMPA	11
PEPA	<20

BLADEN-2S	10/22/2019
HFPO-DA	8.5 B
PFMOAA	22 J
PFO2HxA	31
PFO3OA	<2
PMPA	60
PEPA	<20

BLADEN-2D	10/29/2019
HFPO-DA	<2
PFMOAA	<5
PFO2HxA	<2
PFO3OA	<2
PMPA	<10
PEPA	<20

BLADEN-3S	10/28/2019
HFPO-DA	29
PFMOAA	21
PFO2HxA	59
PFO3OA	5.7
PMPA	93
PEPA	<20

BLADEN-3D	10/28/2019
HFPO-DA	<2
PFMOAA	<5
PFO2HxA	<2
PFO3OA	<2
PMPA	<10
PEPA	<20

BLADEN-4S	10/22/2019
HFPO-DA	2.7 B
PFMOAA	<5 UJ
PFO2HxA	3.1
PFO3OA	<2
PMPA	<10
PEPA	<20

BLADEN-4D	10/25/2019
HFPO-DA	<2
PFMOAA	<5 UJ
PFO2HxA	<2
PFO3OA	<2
PMPA	<10
PEPA	<20

Legend

Well Type

- Black Creek Aquifer
- Surficial Aquifer
- Site Boundary

Notes:
All measurements are in ng/L (nanograms per litre).
< - Analyte not detected above associated reporting limit.
J - Analyte detected. Reported value may not be accurate or precise.
UJ - Analyte not detected. Reporting limit may not be accurate or precise.

1. Black lines represent cardinal directions (N, E, S, W)
2. Only the six most frequently detected Table 3+ compounds in offsite wells are shown.
3. 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.
4. Date indicated is date of sample collection.
5. Table 3+ compounds abbreviations referenced in Table A2-1 of the report.
6. "DRY" indicates well was dry at the time of sampling.
7. Basemap sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

2 1 0 2 Miles

Selected PFAS Concentrations in Offsite Groundwater

Chemours Fayetteville Works, North Carolina

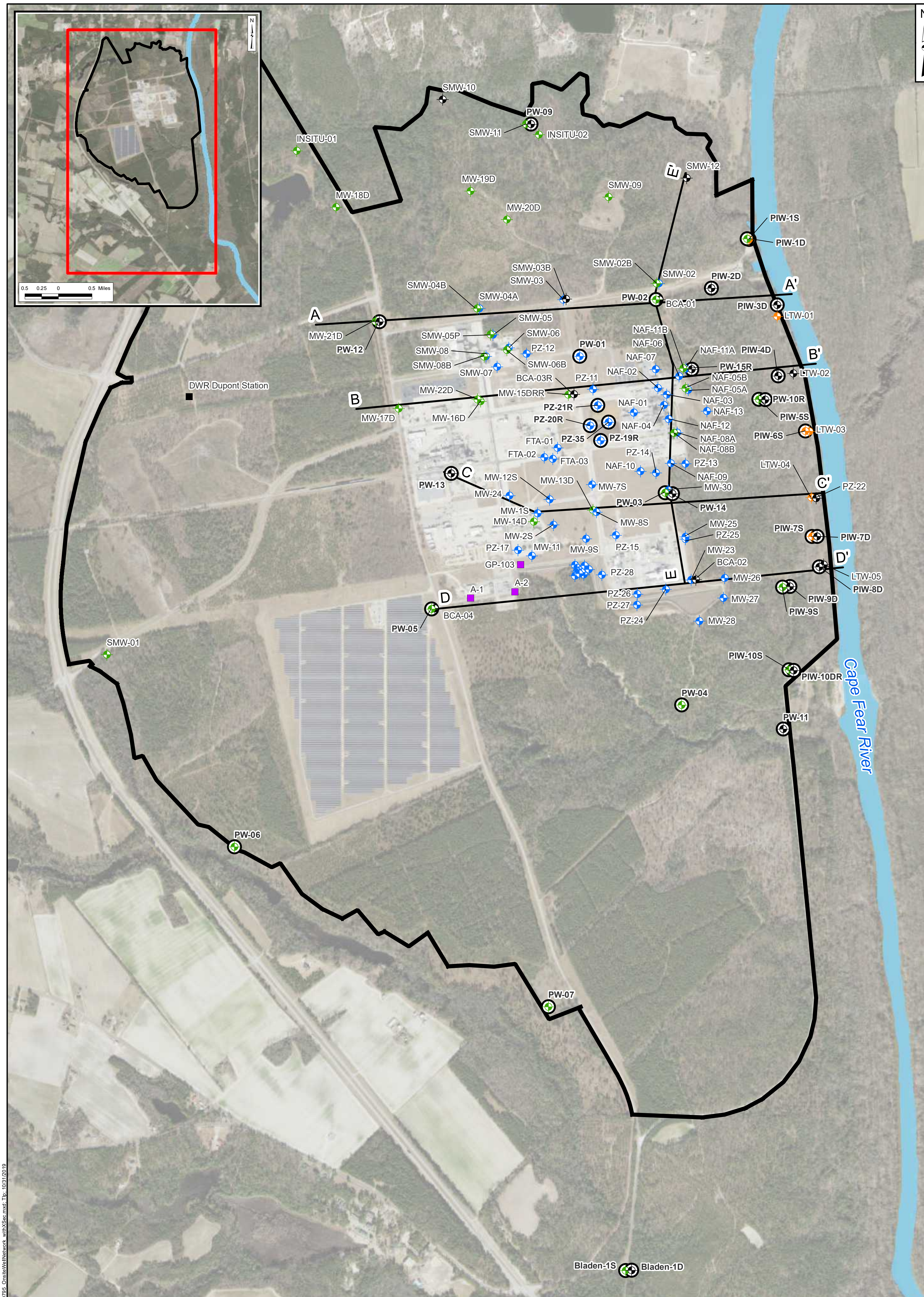
Geosyntec consultants

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

Raleigh | October 2019

Figure A9-12

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



Legend

- Perched Zone
- Surficial Aquifer
- Floodplain Deposits
- Black Creek Aquifer
- 2019 Installed Wells
- DWR Dupont Station (V42V) Well Cluster
- CPT/DPT Soil Boring
- Site Boundary
- Cross-Section

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

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

1,000 500 0 1,000 Feet

Onsite Cross-Section Lines

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

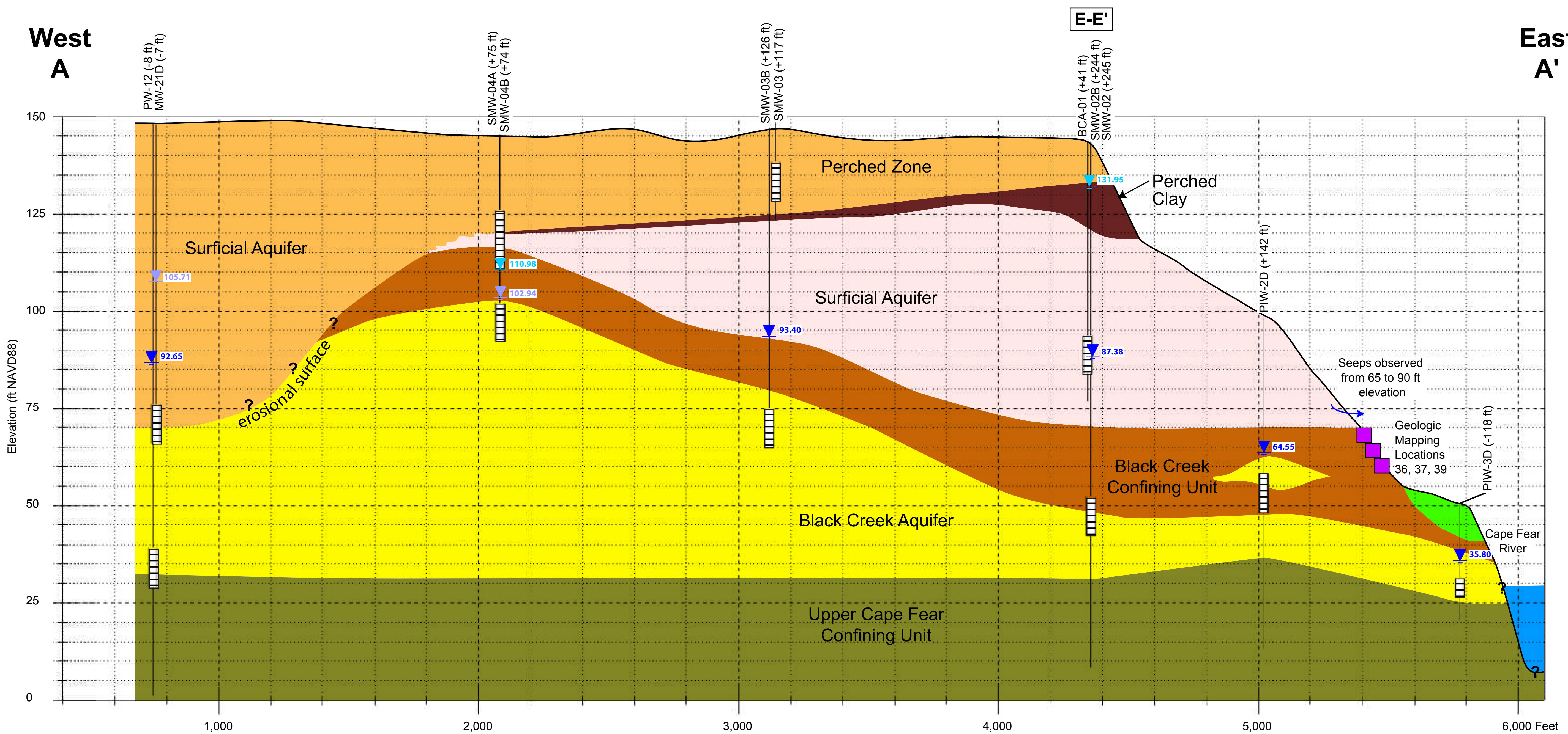
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

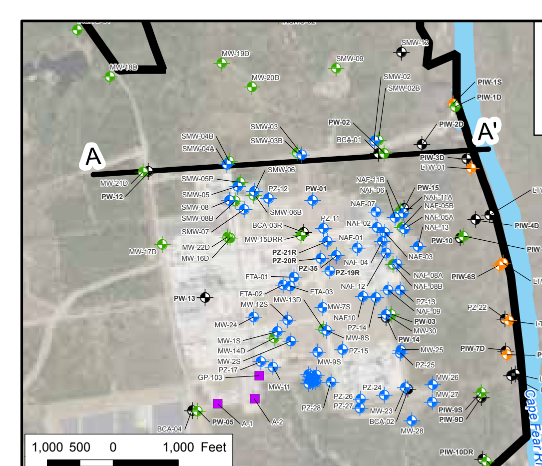
Figure

A10-1

Raleigh

October 2019





Legend

- Clay
- Silty or Sandy Clay with Organics
- Micaceous Clay
- Predominantly Fine to Medium-grained Sand
- Floodplain Deposits
- Fine to Medium-grained Sand with Variable Silt Content
- Fine to Medium Sand

- MW-17D (100 ft) — Offset Distance +/- north/south of line; Location Name
- Well Screen

- 110.98 — Perched Zone Groundwater Elevation
- 102.94 — Surficial Aquifer Groundwater Elevation
- 64.55 — Black Creek Aquifer Groundwater Elevation
- Geological Mapping Location
- E-E' — Corresponds to Section

Notes

ft NAVD88 - feet in 1988 North American Vertical Datum
Vertical Exaggeration = 15x
1. Lithology between borings is interpolated and estimated.
2. Groundwater elevations calculated from measured depth to water on 15 October 2019.
3. Cape Fear River water level indicated is median value for 15 October 2019 measured at the W.O. Huske Dam (USGS 2105500). Data obtained from National Water Information System (URL: https://waterdata.usgs.gov/nwis/inventory/?site_no=02105769, date accessed: 2019-09-24).
4. Geological Mapping Locations from Figure 6-1. Approximate mapping elevations listed in Table 6-1.
5. Seeps observed reported in Seeps and Creeks Investigation Report (Geosyntec, 2019)

Cross-Section A-A'

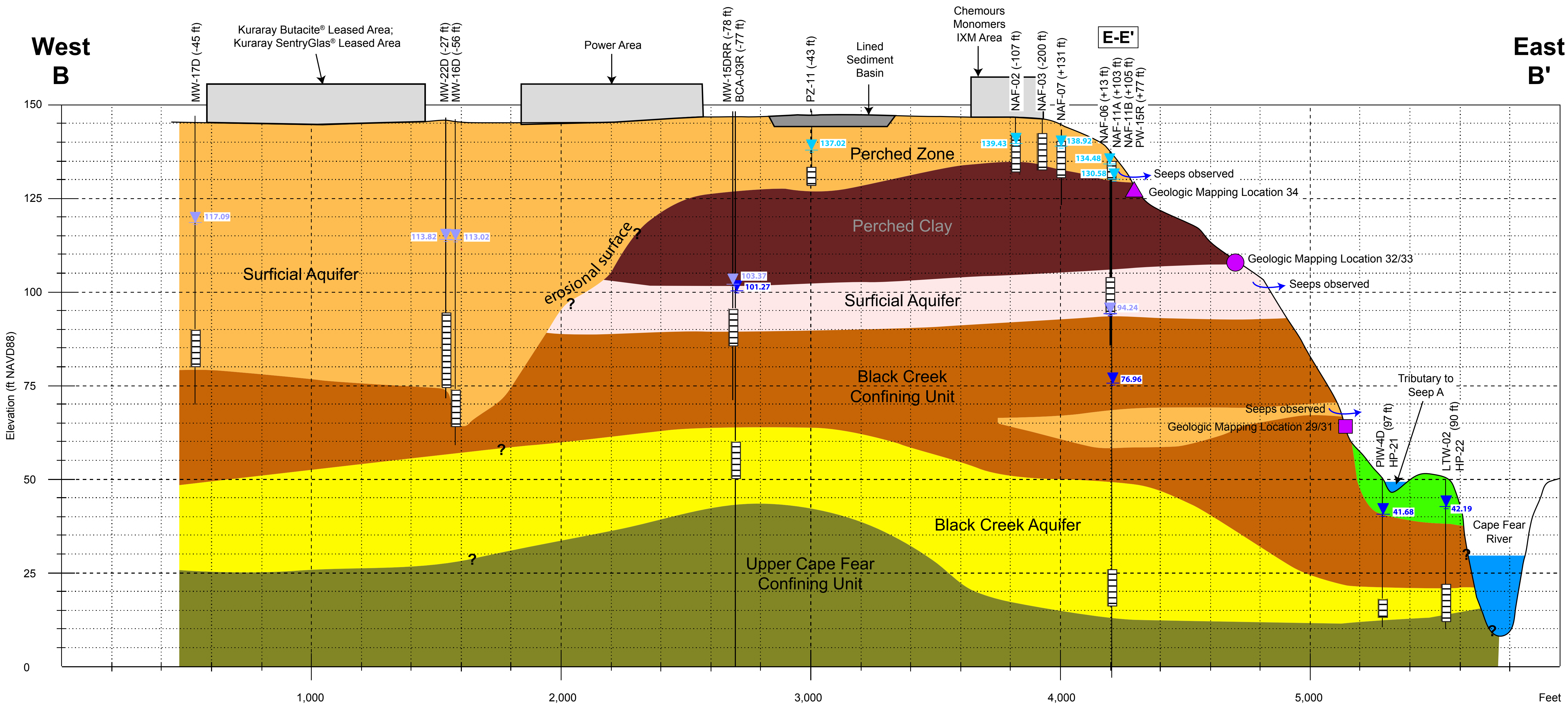
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | October 2019

Figure **A10-2**



Legend

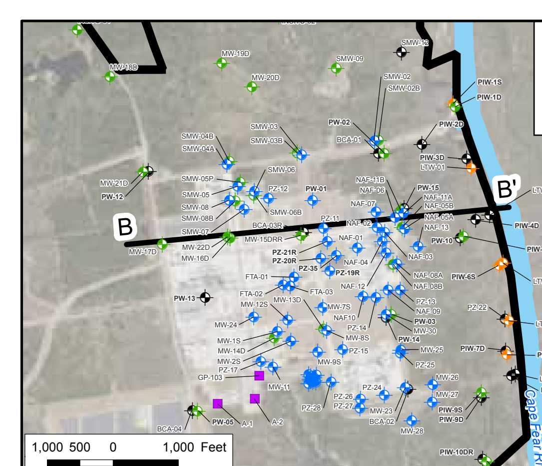
Clay	
Silty or Sandy Clay with Organics	
Micaceous Clay	
Predominantly Fine to Medium-grained Sand	
Floodplain Deposits	
Fine to Medium-grained Sand with Variable Silt Content	
Fine to Medium Sand	

- MW-17D (100 ft) — Offset Distance +/- north/south of line; Location Name
- Well Screen
- 110.98 — Perched Zone Groundwater Elevation
- 102.94 — Surficial Aquifer Groundwater Elevation
- 64.55 — Black Creek Aquifer Groundwater Elevation
- ▲●■ — Geological Mapping Location
- E-E' — Corresponds to Section

Notes

ft NAVD88 - feet in 1988 North American Vertical Datum
Vertical Exaggeration = 15x

1. Lithology between borings is interpolated and estimated.
2. Groundwater elevations calculated from measured depth to water on 15 October 2019.
3. Cape Fear River water level indicated is median value for 15 October 2019 measured at the W.O. Huske Dam (USGS 2105500). Data obtained from National Water Information System (URL: https://waterdata.usgs.gov/nwis/inventory/?site_no=02105769, date accessed: 2019-09-24).
4. Geological Mapping Locations from Figure 6-1. Approximate mapping elevations listed in Table 6-1.
5. Seeps observed reported in Seeps and Creeks Investigation Report (Geosyntec, 2019)



Cross-Section B-B'

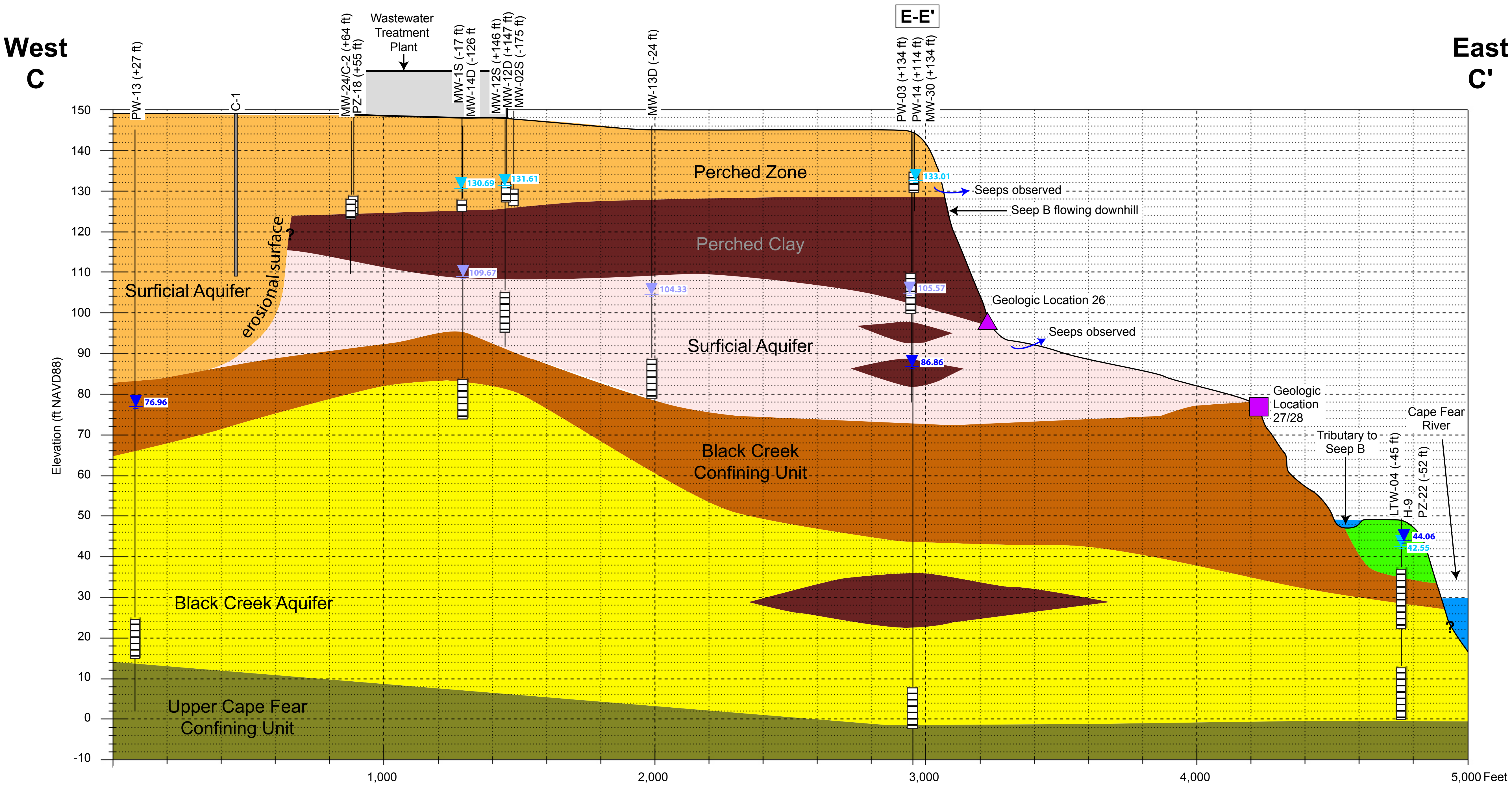
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure A10-3

Raleigh | October 2019



Legend

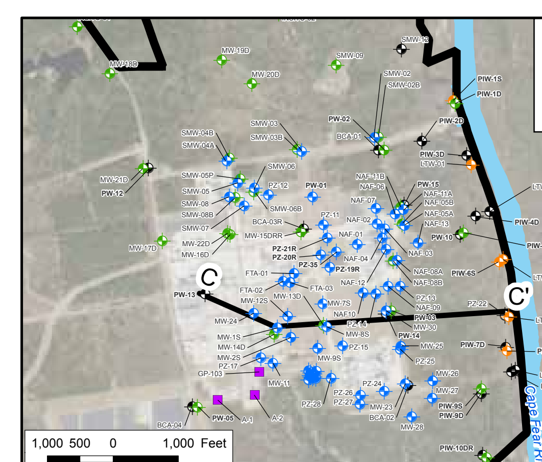
- Clay
- Silty or Sandy Clay with Organics
- Micaceous Clay
- Predominantly Fine to Medium-grained Sand with some Clay
- Floodplain Deposits
- Fine to Medium-grained Sand with Variable Silt Content
- Fine to Medium Sand

MW-17D (100 ft)
- Offset Distance +/- north/south of line
- Location Name
- Well Screen
- CPT Boring

- 110.98 Perched Zone Groundwater Elevation
- 102.94 Surficial Aquifer Groundwater Elevation
- 64.55 Black Creek Aquifer Groundwater Elevation
- Geological Mapping Location
- E-E' Corresponds to Section

Notes

ft NAVD88 - feet in 1988 North American Vertical Datum
Vertical Exaggeration = 15x
1. Lithology between borings is interpolated and estimated.
2. Groundwater elevations calculated from measured depth to water on 15 October 2019.
3. Cape Fear River water level indicated is median value for 15 October 2019 measured at the W.O. Huske Dam (USGS 2105500). Data obtained from National Water Information System (URL: https://waterdata.usgs.gov/nwis/inventory/?site_no=02105769, date accessed: 2019-09-24).
4. Geological Mapping Locations from Figure 6-1. Approximate mapping elevations listed in Table 6-1.
5. Seeps observed reported in Seeps and Creeks Investigation Report (Geosyntec, 2019)



Cross-Section C-C'

Chemours Fayetteville Works, North Carolina

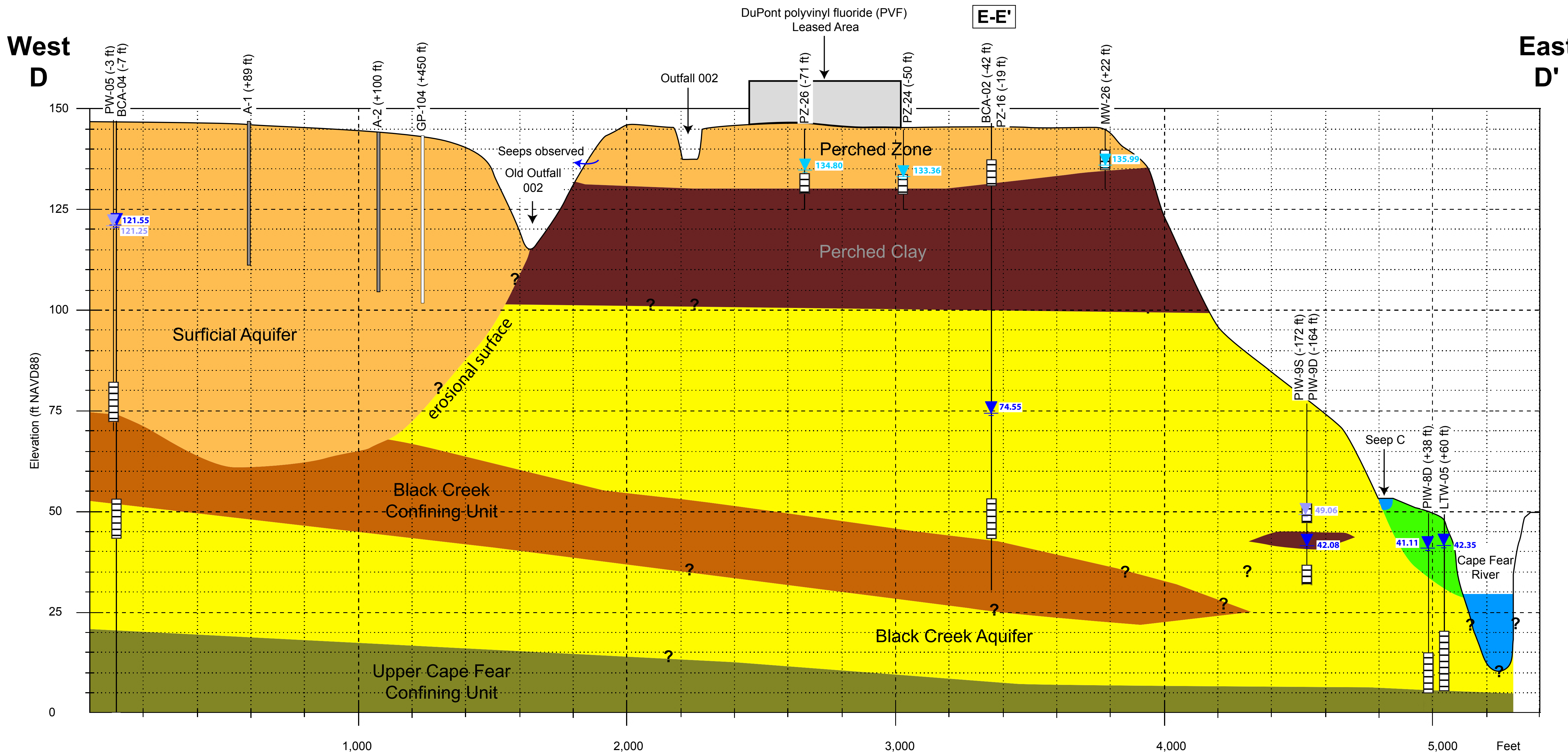
Geosyntec consultants

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

Raleigh | October 2019

Figure A10-4

00 01 02 03 04 Data\PRJ\Projects\TR0795\Database and GIS\Illustrator\Onsite and Offsite Assessment Report\Numeric Modeling cross-sections\TR0795_CrossSectionC_C'.ai

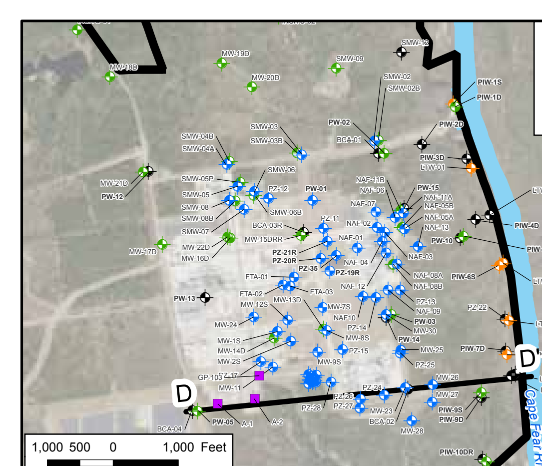


Legend

- Clay
- Silty or Sandy Clay with Organics
- Micaceous Clay
- Predominantly Fine to Medium-grained Sand with some Clay
- Floodplain Deposits
- Fine to Medium-grained Sand with Variable Silt Content
- Fine to Medium Sand
- MW-17D (100 ft) — Offset Distance +/- north/south of line; Location Name
- Well Screen
- E-E' Corresponds to Section
- 110.98 Perched Zone Groundwater Elevation
- 102.94 Surficial Aquifer Groundwater Elevation
- 64.55 Black Creek Aquifer Groundwater Elevation
- CPT Boring
- Soil Boring

Notes

ft NAVD88 - feet in 1988 North American Vertical Datum
Vertical Exaggeration = 15x
1. Lithology between borings is interpolated and estimated.
2. Groundwater elevations calculated from measured depth to water on 15 October 2019.
3. Cape Fear River water level indicated is median value for 15 October 2019 measured at the W.O. Huske Dam (USGS 2105500). Data obtained from National Water Information System (URL: https://waterdata.usgs.gov/nwis/inventory/?site_no=02105769, date accessed: 2019-09-24).
4. Geological Mapping Locations from Figure 6-1. Approximate mapping elevations listed in Table 6-1.
5. Seeps observed reported in Seeps and Creeks Investigation Report (Geosyntec, 2019)



Cross-Section D-D'

Chemours Fayetteville Works, North Carolina

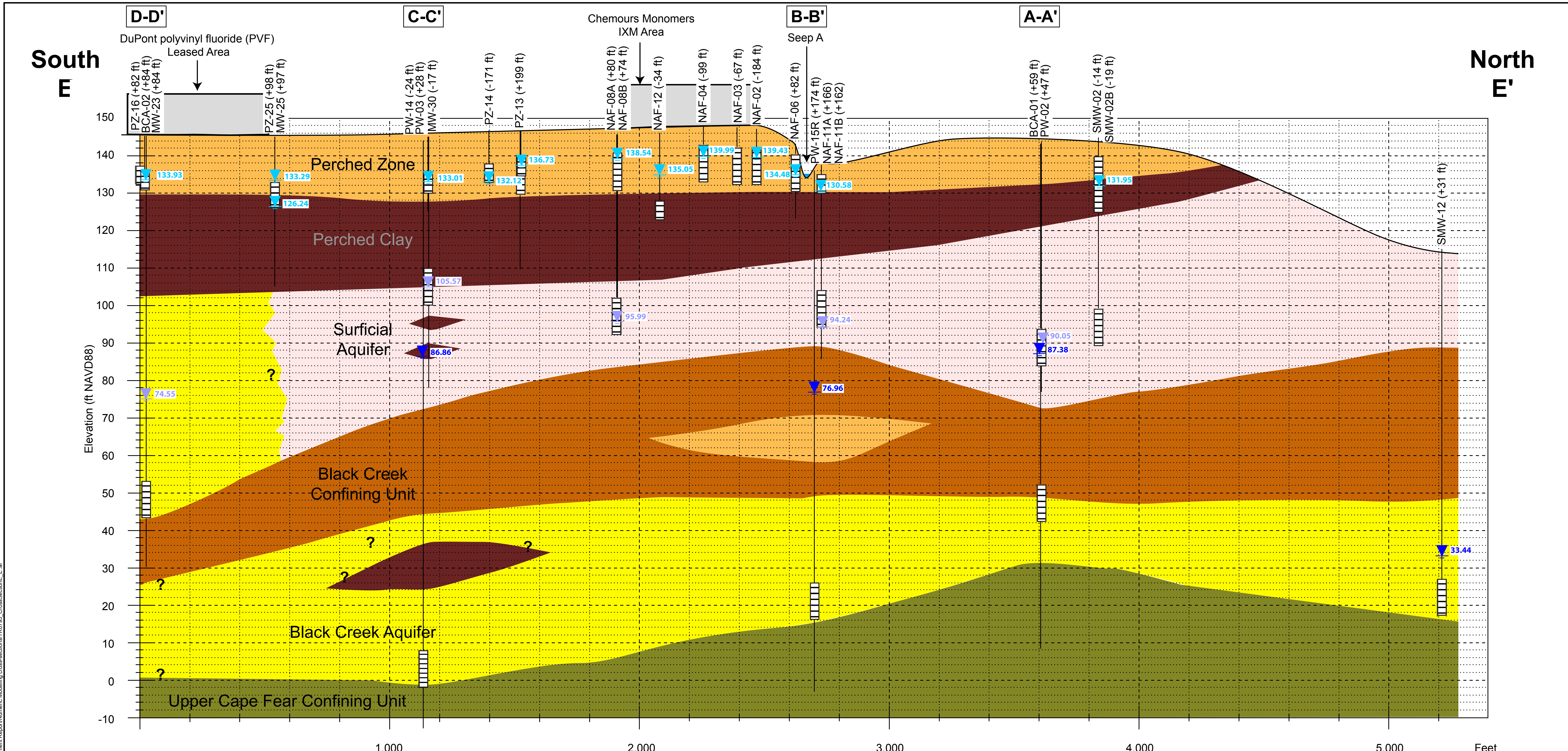
Geosyntec consultants

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

Raleigh | October 2019

Figure **A10-5**

00 01 02 03 04 Data\PRJ\Projects\TR0795\Database and GIS\Illustrator\Onsite and Offsite Assessment Report\Numeric Modeling cross-sections\TR0795_CrossSectionD_D'.ai



Legend

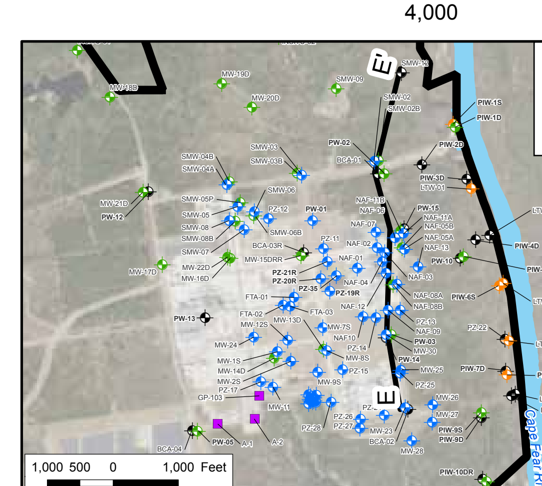
- Clay
- Silty or Sandy Clay with Organics
- Micaceous Clay
- Predominantly Fine to Medium-grained Sand with some Clay
- Floodplain Deposits
- Fine to Medium-grained Sand with Variable Silt Content
- Fine to Medium Sand

MW-17D (100 ft)
- Offset Distance +/- east/west of line
- Location Name
- Well Screen

- 110.98 Perched Zone Groundwater Elevation
- 102.94 Surficial Aquifer Groundwater Elevation
- 64.55 Black Creek Aquifer Groundwater Elevation
- A-A' Corresponds to Section

Notes

ft NAVD88 - feet in 1988 North American Vertical Datum
Vertical Exaggeration = 15x
Seep A bottom is approximate
1. Lithology between borings is interpolated and estimated.
2. Groundwater elevations calculated from measured depth to water on 15 October 2019.
3. Cape Fear River water level indicated is median value for 15 October 2019 measured at the W.O. Huske Dam (USGS 2105500). Data obtained from National Water Information System (URL: https://waterdata.usgs.gov/nwis/inventory/?site_no=02105769, date accessed: 2019-09-24).
4. Geological Mapping Locations from Figure 6-1. Approximate mapping elevations listed in Table 6-1.
5. Seeps observed reported in Seeps and Creeks Investigation Report (Geosyntec, 2019)



Cross-Section E-E'

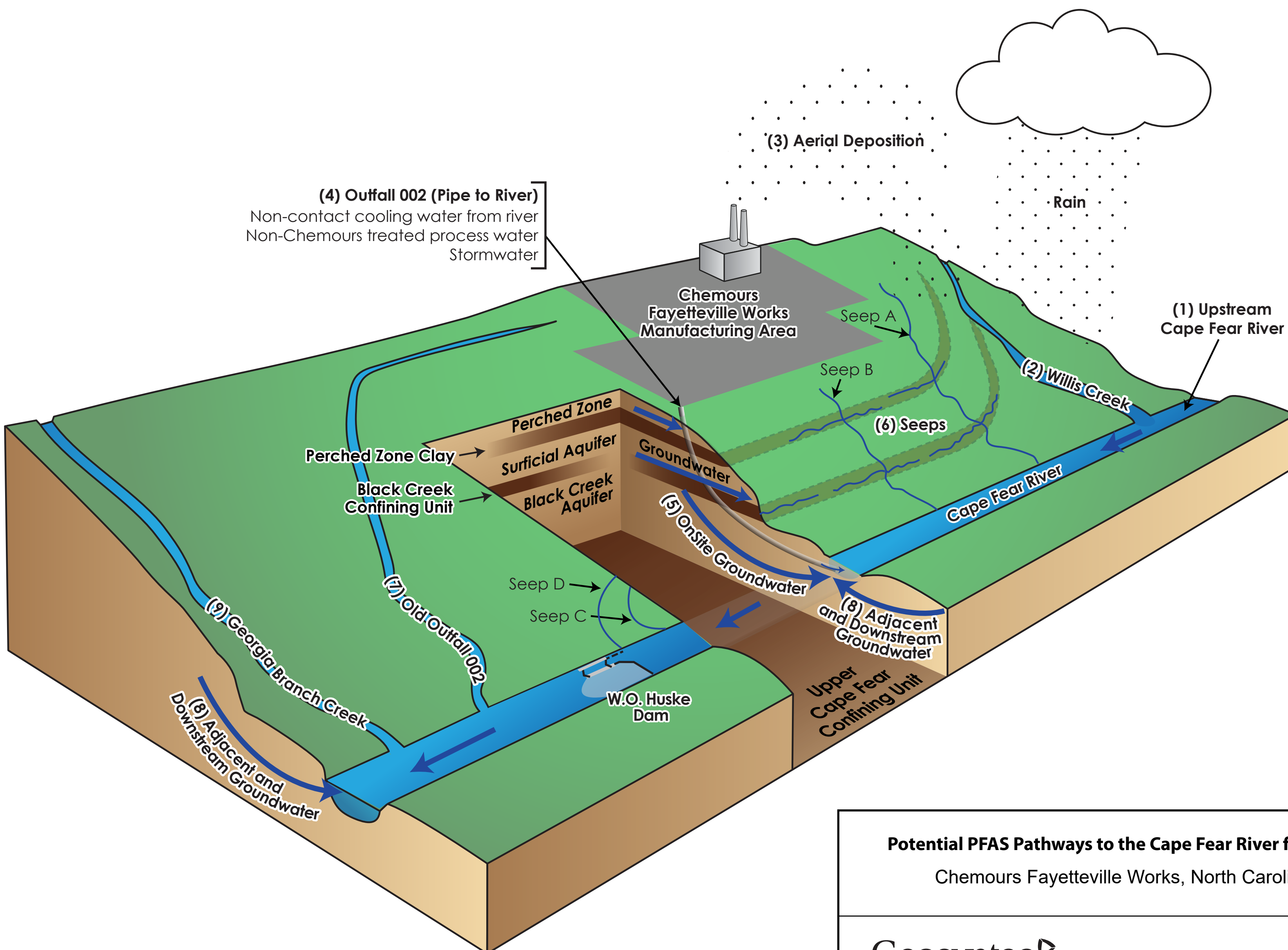
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | October 2019

Figure **A10-6**



Potential PFAS Pathways to the Cape Fear River from Site

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure **A10-7**

Raleigh, NC	September 2019

DATA REVIEW NARRATIVES AND LABORATORY REPORTS

DATA REVIEW NARRATIVES AND LABORATORY REPORTS

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

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

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

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

ADQM DATA REVIEW
NARRATIVE

Site	**Chemours FAY – Fayetteville**
Project	**GW Sampling 4Q19**
Project Reviewer	**Michael Aucoin, AECOM as a Chemours contractor**
Sampling Dates	**October 18, 22 – 25, and 28 – 31, 2019** **November 1, 4 – 8, 2019**

Analytical Protocol

Laboratory	Analytical Method	Parameter(s)
TestAmerica - Sacramento	Cl. Spec. Table 3 Compound SOP	Table 3+ compounds incl HFPO-DA

Sample Receipt

The following items are noted for this data set:

- All samples were received in satisfactory condition and within EPA temperature guidelines on:

  October 25, 29, and 31, 2019
  November 1, 8, and 12, 2019

Data Review

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

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

- HFPO-DA results in some groundwater samples were qualified B and the reported results may be biased high, or false positives, due to a comparable concentration found in the associated equipment blank.
- Several analytical results have been qualified J as estimated, and non-detect results qualified UJ indicating an estimated reporting limit, due to a poor lab control or matrix spike recovery; and poor lab replicate precision. See the Data Verification Module (DVM) Narrative Report for which samples were qualified, the specific reasons for qualification, and potential bias in reported results.

Attachments

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

Data Verification Module (DVM)

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

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

There are two qualifier fields in EIM:

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

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

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

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

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

DVM Narrative Report

Site: Fayetteville **Sampling Program:** GW Sampling 4Q19 **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
GW4Q19-BLADEN-2S-102219	10/22/2019	320-55686-4	Hfpo Dimer Acid	0.0085	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-BLADEN-2S-102219	10/22/2019	320-55686-4	Hfpo Dimer Acid (trial)	0.0076	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-BLADEN-4S-102219	10/22/2019	320-55686-6	Hfpo Dimer Acid (trial)	0.0027	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-BLADEN-4S-102219	10/22/2019	320-55686-6	Hfpo Dimer Acid	0.0027	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-3S-102219	10/22/2019	320-55686-5	Hfpo Dimer Acid (trial)	0.017	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-4D-103119-Dup	10/31/2019	320-55909-2	Hfpo Dimer Acid	0.0029	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-4D-103119-Dup	10/31/2019	320-55909-2	Hfpo Dimer Acid (trial)	0.0033	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-4D-103119	10/31/2019	320-55909-1	Hfpo Dimer Acid	0.0036	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-4D-103119	10/31/2019	320-55909-1	Hfpo Dimer Acid (trial)	0.0023	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-3S-102219	10/22/2019	320-55686-5	Hfpo Dimer Acid	0.016	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-ROBESON-1D-103119	10/31/2019	320-55909-3	Hfpo Dimer Acid	0.0036	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-ROBESON-1D-103119	10/31/2019	320-55909-3	Hfpo Dimer Acid (trial)	0.0038	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** GW Sampling 4Q19 **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
GW4Q19-PIW-4D-103119	10/31/2019	320-55909-1	R-EVE	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-4D-103119	10/31/2019	320-55909-1	R-EVE	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-05-103019	10/30/2019	320-55860-3	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-05-103019	10/30/2019	320-55860-3	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-06-102919	10/29/2019	320-55854-1	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-06-102919	10/29/2019	320-55854-1	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-4D-103119-Dup	10/31/2019	320-55909-2	R-EVE	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-4D-103119-Dup	10/31/2019	320-55909-2	R-EVE	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-EQBLK-01-110119	11/01/2019	320-56112-2	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-EQBLK-01-110119	11/01/2019	320-56112-2	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-FBLK-01-102919	10/29/2019	320-55854-6	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-FBLK-01-102919	10/29/2019	320-55854-6	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-FBLK-01-110119	11/01/2019	320-56112-1	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-FBLK-01-110119	11/01/2019	320-56112-1	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-FBLK-01-110419	11/04/2019	320-56112-6	Hfpo Dimer Acid	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-BLADEN-4S-102219	10/22/2019	320-55686-6	PFMOAA	0.0050	ug/L	PQL		0.0050	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** GW Sampling 4Q19 **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
GW4Q19-BLADEN-4S-102219	10/22/2019	320-55686-6	PFMOAA	0.0050	ug/L	PQL		0.0050	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-1S-102419	10/24/2019	320-55761-3	PFMOAA	0.0050	ug/L	PQL		0.0050	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-1S-102419	10/24/2019	320-55761-3	PFMOAA	0.0050	ug/L	PQL		0.0050	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-1D-102419	10/24/2019	320-55761-1	R-EVE	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-1D-102419	10/24/2019	320-55761-1	R-EVE	0.0020	UG/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-BLADEN-4D-102519	10/25/2019	320-55754-1	PFMOAA	0.0050	ug/L	PQL		0.0050	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-BLADEN-4D-102519	10/25/2019	320-55754-1	PFMOAA	0.0050	ug/L	PQL		0.0050	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-Bladen-2D-102919	10/29/2019	320-55854-5	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-Bladen-2D-102919	10/29/2019	320-55854-5	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** GW Sampling 4Q19 **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
GW4Q19-CUMBERLAND-1D-102419	10/24/2019	320-55761-1	Byproduct 5	0.0025	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-1D-102419	10/24/2019	320-55761-1	Byproduct 5	0.0025	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-1D-102419-D	10/24/2019	320-55761-2	Byproduct 5	0.0024	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-1D-102419-D	10/24/2019	320-55761-2	Byproduct 5	0.0024	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-01-101819	10/18/2019	320-55686-1	Byproduct 5	0.70	UG/L	PQL		0.012	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-01-101819	10/18/2019	320-55686-1	Byproduct 5	0.66	UG/L	PQL		0.012	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
GW4Q19-CUMBERLAND-4S-102519	10/25/2019	320-55761-5	R-EVE	0.0076	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-4S-102519	10/25/2019	320-55761-5	R-EVE	0.0073	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-4S-102519	10/25/2019	320-55761-5	Byproduct 4	0.030	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-4S-102519	10/25/2019	320-55761-5	Byproduct 4	0.034	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-04-103019	10/30/2019	320-55860-4	R-EVE	0.065	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-04-103019	10/30/2019	320-55860-4	Byproduct 4	0.20	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-04-103019	10/30/2019	320-55860-4	Byproduct 5	0.0036	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-04-103019	10/30/2019	320-55860-4	Byproduct 5	0.0039	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** GW Sampling 4Q19 **Validation Options:** LABSTATS

Validation Reason Quality review criteria exceeded between the REP (laboratory replicate) and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
GW4Q19-BLADEN-1D-110719	11/07/2019	320-56173-3	PFMOAA	0.024	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-BLADEN-1D-110719	11/07/2019	320-56173-3	PFMOAA	0.027	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-BLADEN-2S-102219	10/22/2019	320-55686-4	PFMOAA	0.022	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-BLADEN-2S-102219	10/22/2019	320-55686-4	PFMOAA	0.019	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-10DR-103019	10/30/2019	320-55860-2	R-EVE	0.98	UG/L	PQL		0.070	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-10DR-103019	10/30/2019	320-55860-2	R-EVE	0.84	UG/L	PQL		0.070	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-2D-110119	11/01/2019	320-56112-3	R-EVE	0.040	UG/L	PQL		0.014	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-2D-110119	11/01/2019	320-56112-3	R-EVE	0.040	UG/L	PQL		0.014	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-3D-102819	10/28/2019	320-55757-6	R-EVE	0.22	UG/L	PQL		0.014	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-3D-102819	10/28/2019	320-55757-6	R-EVE	0.25	UG/L	PQL		0.014	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-8D-103019	10/30/2019	320-55860-9	Byproduct 4	3.3	UG/L	PQL		0.63	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-8D-103019	10/30/2019	320-55860-9	Byproduct 4	3.8	UG/L	PQL		0.63	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-9D-102319	10/23/2019	320-55683-3	Byproduct 5	1.9	UG/L	PQL		0.29	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PIW-9D-102319	10/23/2019	320-55683-3	Byproduct 5	2.2	UG/L	PQL		0.29	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-04-103019	10/30/2019	320-55860-4	R-EVE	0.055	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-04-103019	10/30/2019	320-55860-4	Byproduct 4	0.17	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-07-110819	11/08/2019	320-56173-7	R-EVE	0.0095	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** GW Sampling 4Q19 **Validation Options:** LABSTATS

Validation Reason Quality review criteria exceeded between the REP (laboratory replicate) and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
GW4Q19-PW-07-110819	11/08/2019	320-56173-7	R-EVE	0.011	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-11-102319	10/23/2019	320-55683-2	Byproduct 5	2.0	UG/L	PQL		0.29	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-11-102319	10/23/2019	320-55683-2	Byproduct 5	2.3	UG/L	PQL		0.29	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-14-102319	10/23/2019	320-55683-8	Byproduct 5	2.4	UG/L	PQL		0.058	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-14-102319	10/23/2019	320-55683-8	Byproduct 5	2.0	UG/L	PQL		0.058	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** GW Sampling 4Q19 **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
GW4Q19-CUMBERLAND-4S-102519	10/25/2019	320-55761-5	PMPA	0.12	UG/L	PQL		0.010	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-4S-102519	10/25/2019	320-55761-5	PMPA	0.12	UG/L	PQL		0.010	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-4S-102519	10/25/2019	320-55761-5	PFO2HxA	0.078	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-4S-102519	10/25/2019	320-55761-5	PFO2HxA	0.082	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-4S-102519	10/25/2019	320-55761-5	PFMOAA	0.015	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-4S-102519	10/25/2019	320-55761-5	PFMOAA	0.014	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-04-103019	10/30/2019	320-55860-4	PFMOAA	0.36	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-04-103019	10/30/2019	320-55860-4	PFMOAA	0.37	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-07-110819	11/08/2019	320-56173-7	Hfpo Dimer Acid	0.79	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-07-110819	11/08/2019	320-56173-7	PEPA	0.38	UG/L	PQL		0.020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-07-110819	11/08/2019	320-56173-7	PEPA	0.39	UG/L	PQL		0.020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-07-110819	11/08/2019	320-56173-7	PFMOAA	0.31	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-PW-07-110819	11/08/2019	320-56173-7	PFMOAA	0.31	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-3S-102219	10/22/2019	320-55686-5	PFMOAA	0.013	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GW4Q19-CUMBERLAND-3S-102219	10/22/2019	320-55686-5	PFMOAA	0.013	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

APPENDIX B

Additional Corrective Action Plan Tables and Figures

APPENDIX B

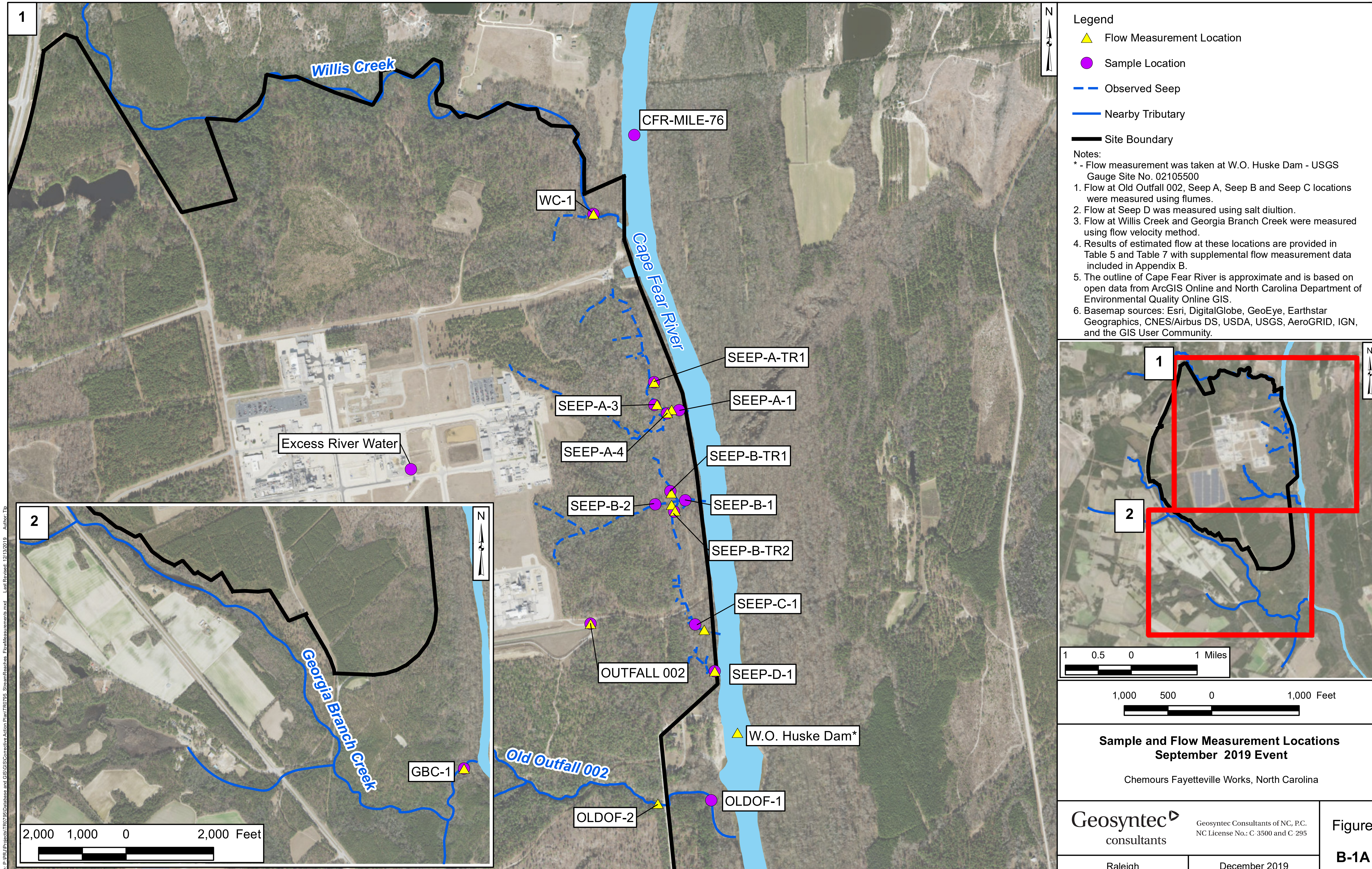
SUPPORTING TABLES, FIGURES, FIELD RECORDS AND LABORATORY REPORTS

This document presents supporting documents that include the following:

- Figure B-1A: Sample and Flow Measurement Locations September 2019 Event;
- Figure B-1B: Cape Fear River Sample Locations September 2019 Event;
- Figure B-2: Total Table 3+ Concentrations – September 2019 Event;
- Figure B-3: HFPO-DA Concentrations – September 2019 Event;
- Figure B-4: Cape Fear River Total Table 3+ Concentrations September 2019 Event;
- Figure B-5: Cape Fear River HFPO-DA Concentrations September 2019 Event;
- Table B-1: Well Development Stabilized Field Parameters;
- Table B-2: Groundwater Sampling Stabilized Field Parameters;
- Table B-3: On and Offsite Resampled Groundwater Well Analytical Results – July to November 2019;
- Table B-4: September 2019 Mass Loading Model Location Summary;
- Table B-5: Analytical Methods and Analyte List;
- Table B-6: Analytical Results;
- Records of Well Development;
- Records of Well Sampling; and
- Attachment B: Data Validation Module.

* * * * * * *

FIGURES



Legend

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

Notes:

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

1. Flow at Old Outfall 002, Seep A, Seep B and Seep C locations were measured using flumes.
2. Flow at Seep D was measured using salt diultion.
3. Flow at Willis Creek and Georgia Branch Creek were measured using flow velocity method.
4. Results of estimated flow at these locations are provided in Table 5 and Table 7 with supplemental flow measurement data included in Appendix B.
5. The outline of Cape Fear River is approximate and is based on open data from ArcGIS Online and North Carolina Department of Environmental Quality Online GIS.
6. Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

Sample and Flow Measurement Locations
September 2019 Event

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

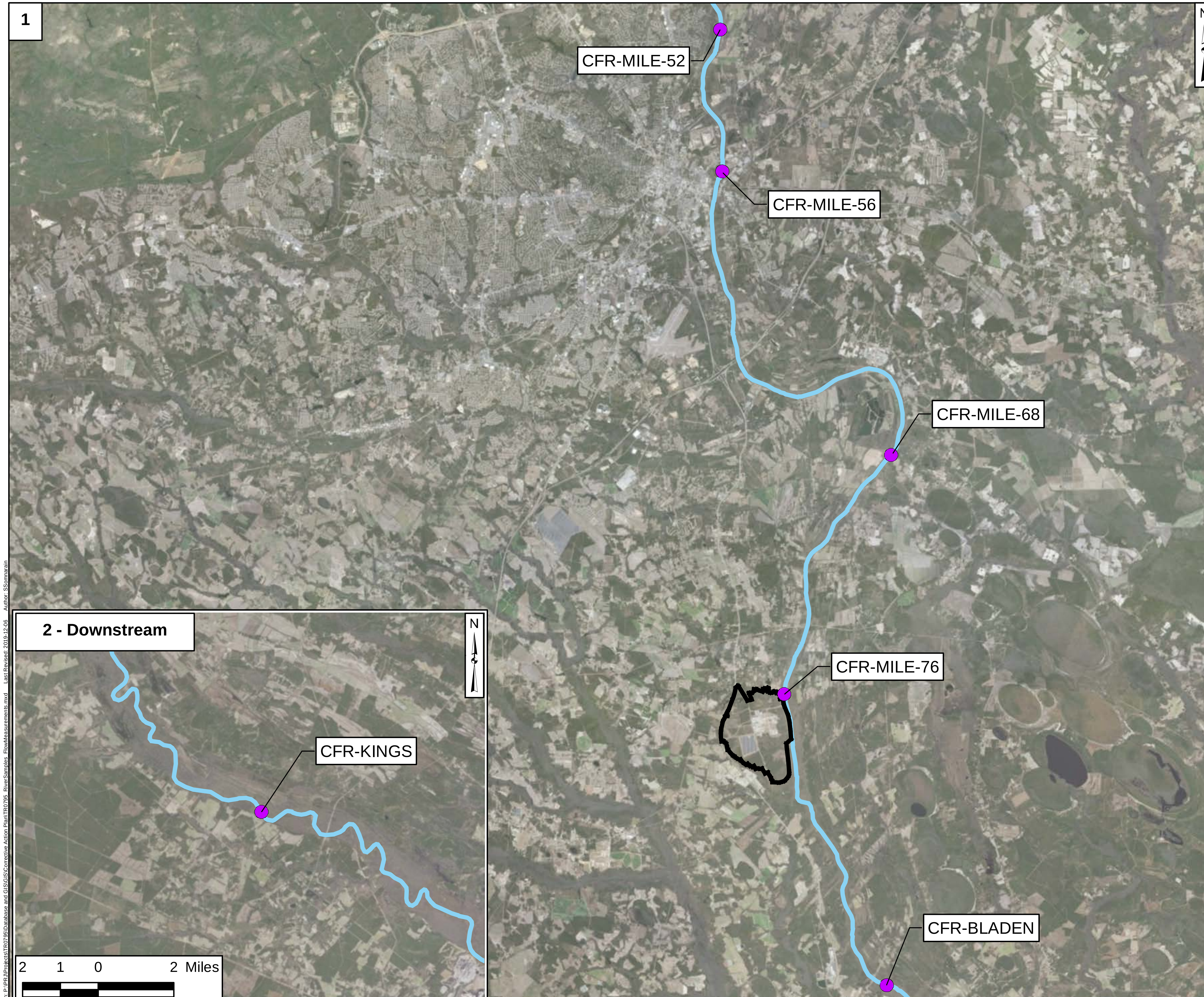
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Raleigh	December 2019

Figure **B-1A**

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Corrective Action Plan\TR0795 StreamReaches FlowMeasurements.mxd Last Revised: 12/13/2019 Author: Tlp

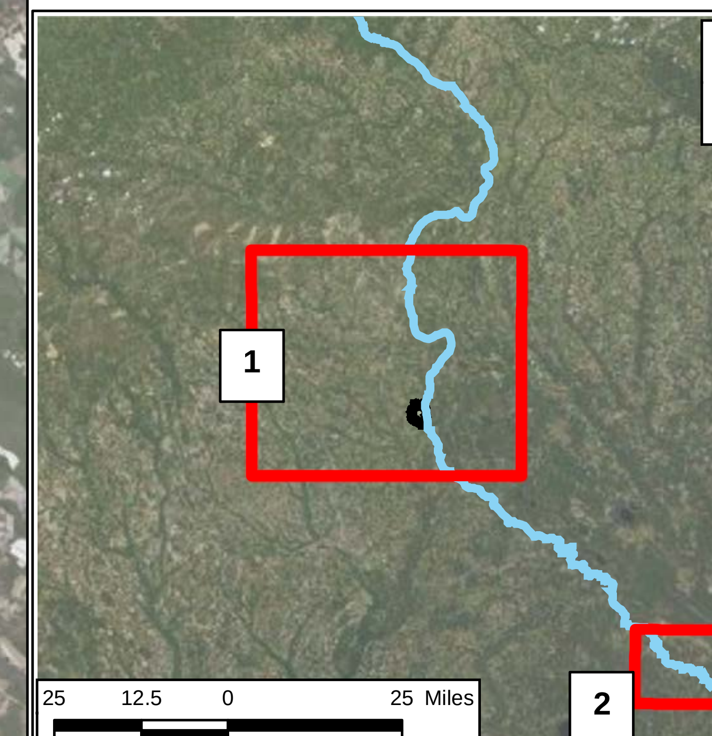
Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend

- Sample Location
- Site Boundary
- Cape Fear River

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



2 1 0 2 Miles

Cape Fear River Sample Locations
September 2019 Event

Chemours Fayetteville Works, North Carolina

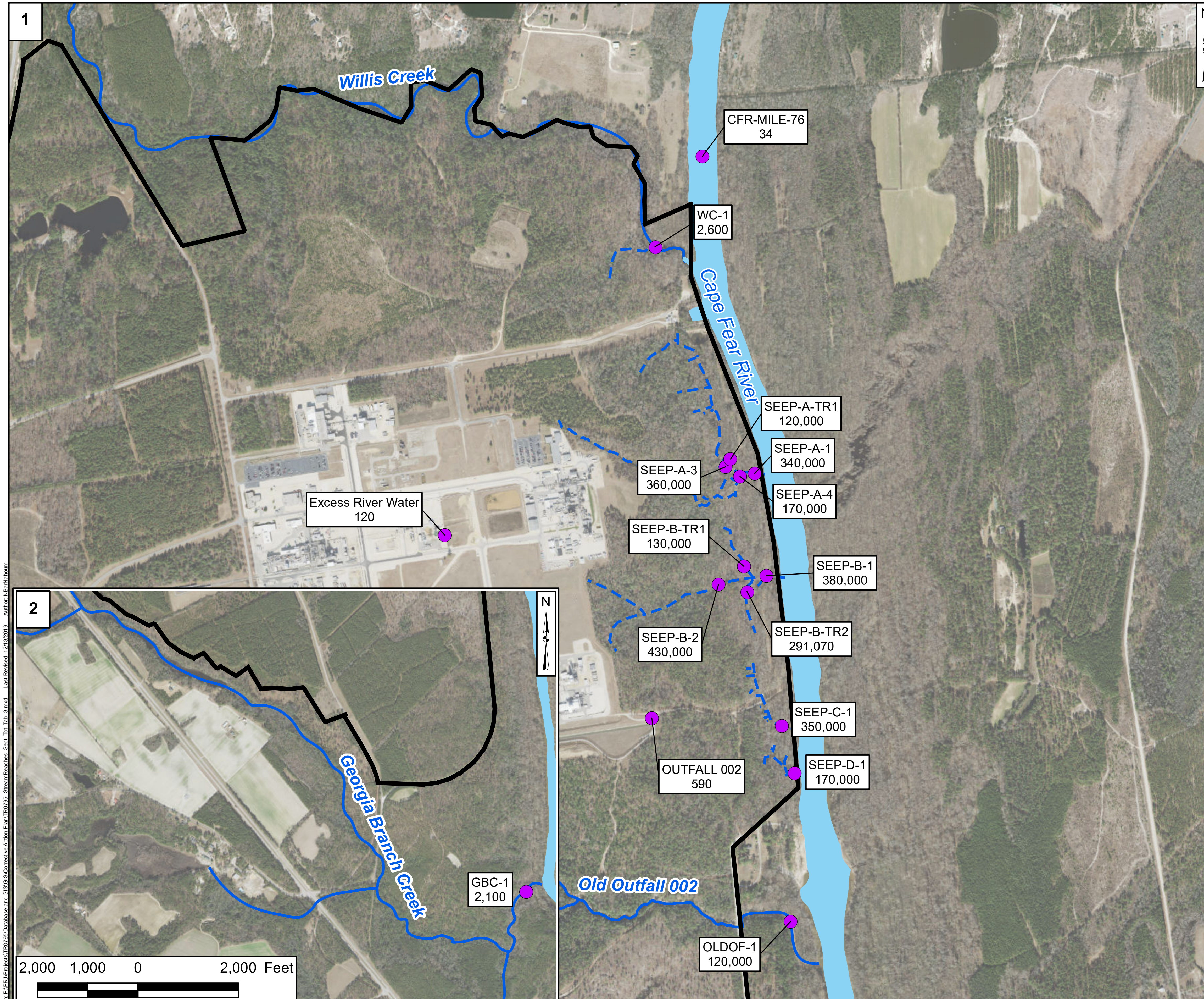
Geosyntec consultants

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

Figure **B-1B**

Raleigh | December 2019

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

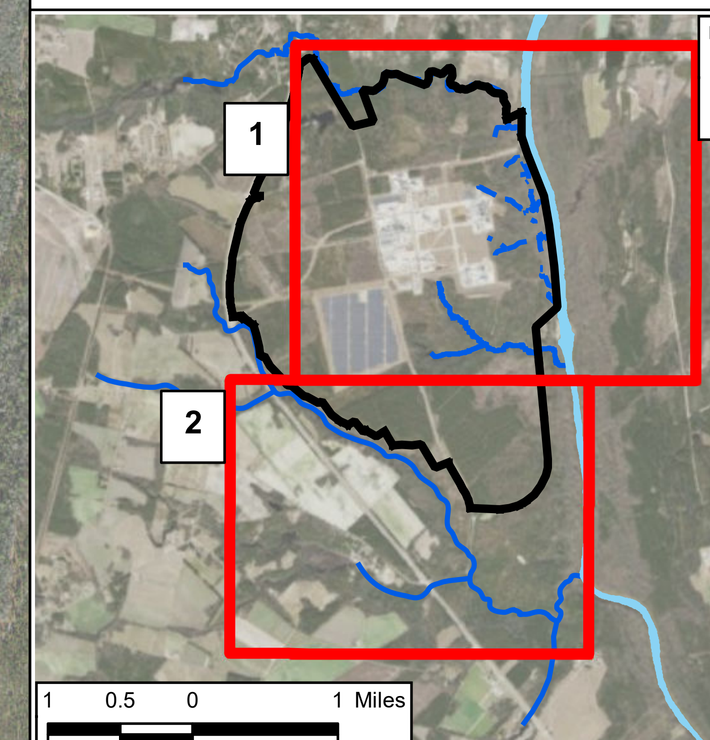


Legend

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

Notes:
HFPO-DA - hexafluoropropylene oxide dimer acid

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



1,000 500 0 1,000 Feet

Total Table 3+ Concentrations – September 2019 Event

Chemours Fayetteville Works, North Carolina

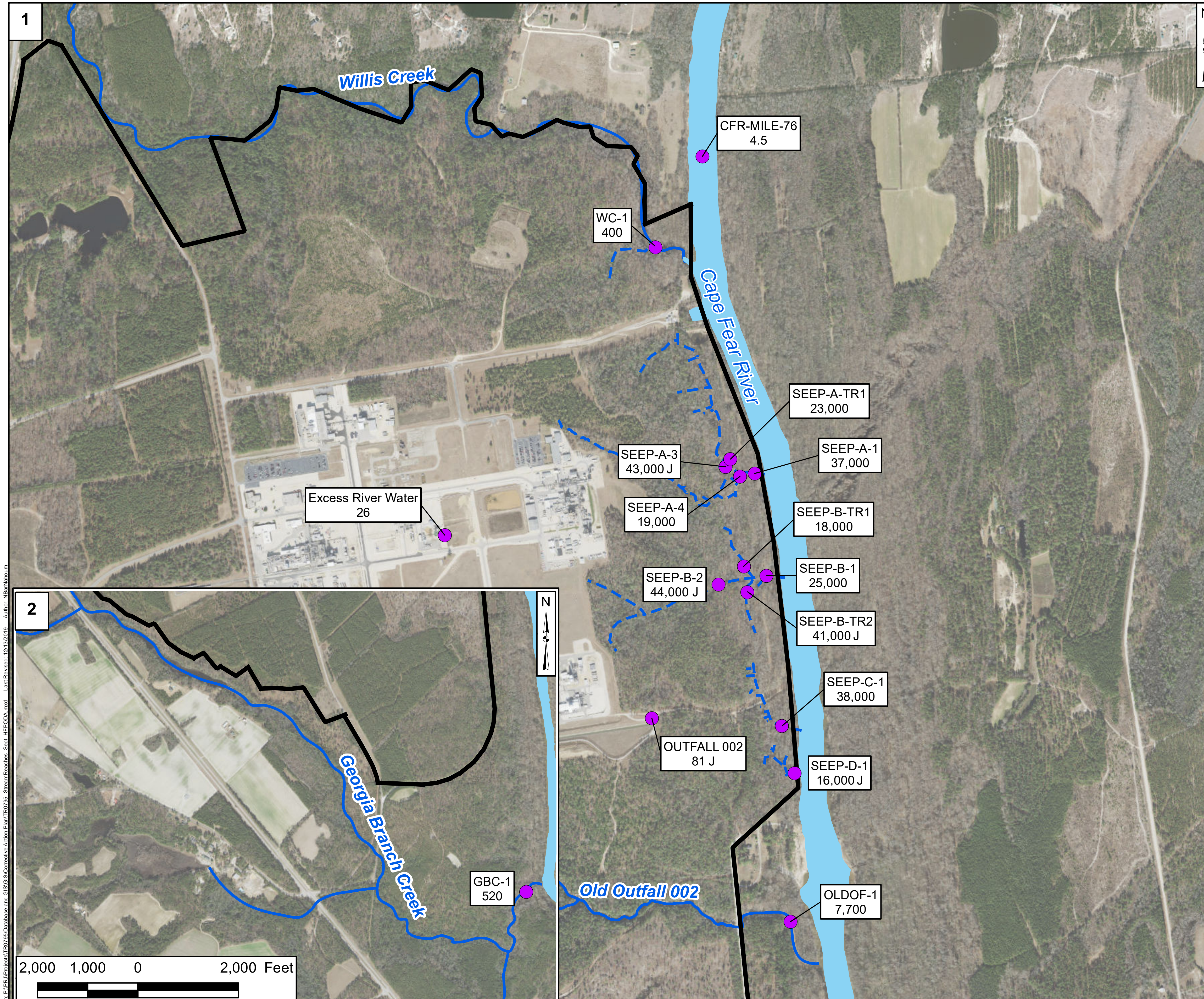
Geosyntec consultants

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

Figure **B-2**

Raleigh | December 2019

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

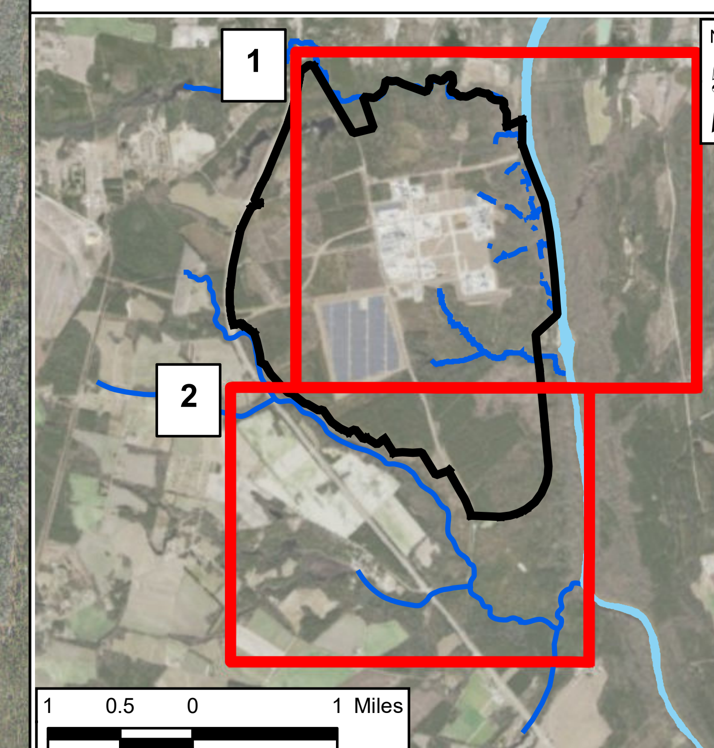


Legend

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

Notes:
J - estimate value
HFPO-DA - hexafluoropropylene oxide dimer acid

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



1,000 500 0 1,000 Feet

HFPO-DA Concentrations – September 2019 Event

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

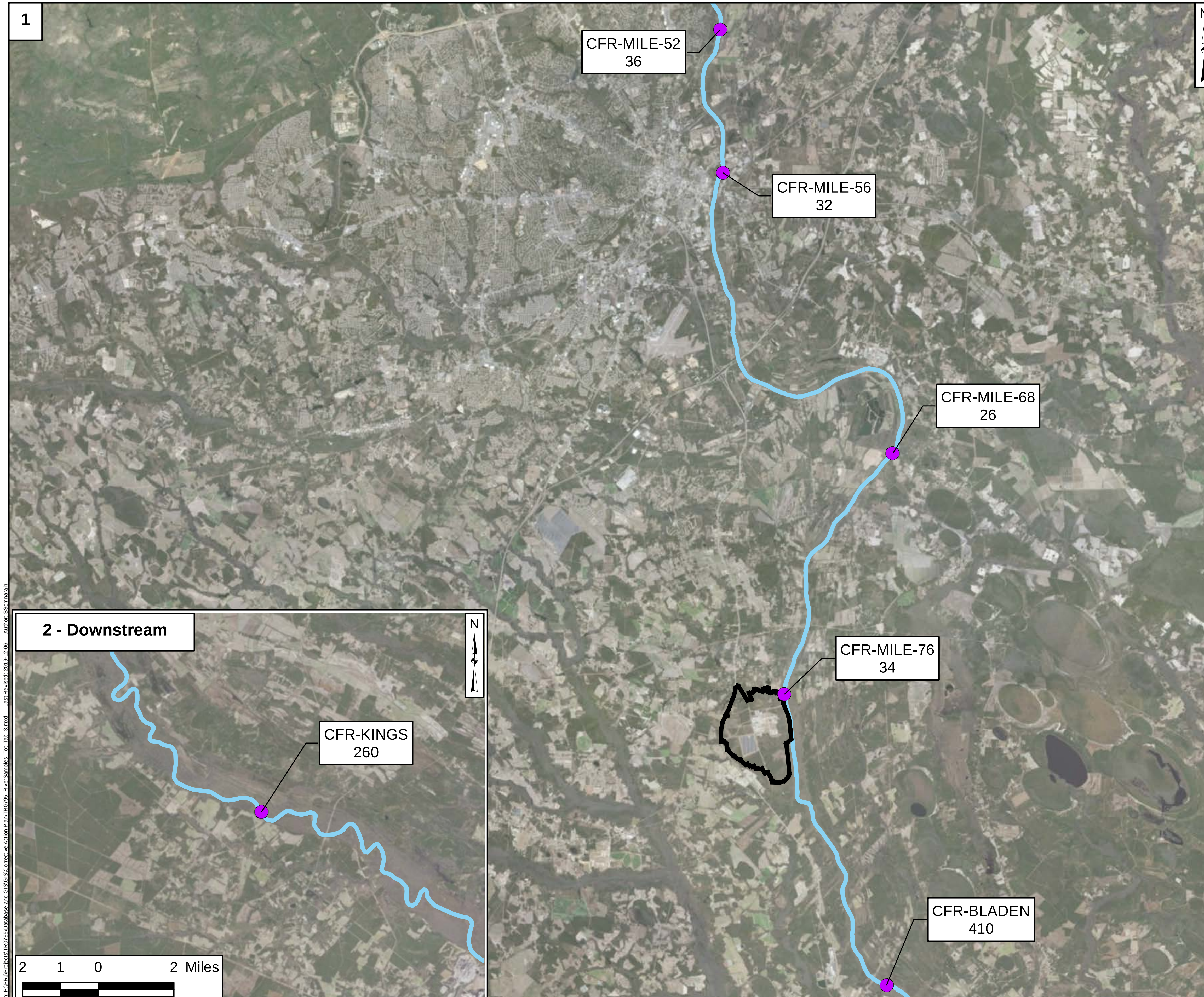
Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Raleigh | December 2019

Figure

B-3

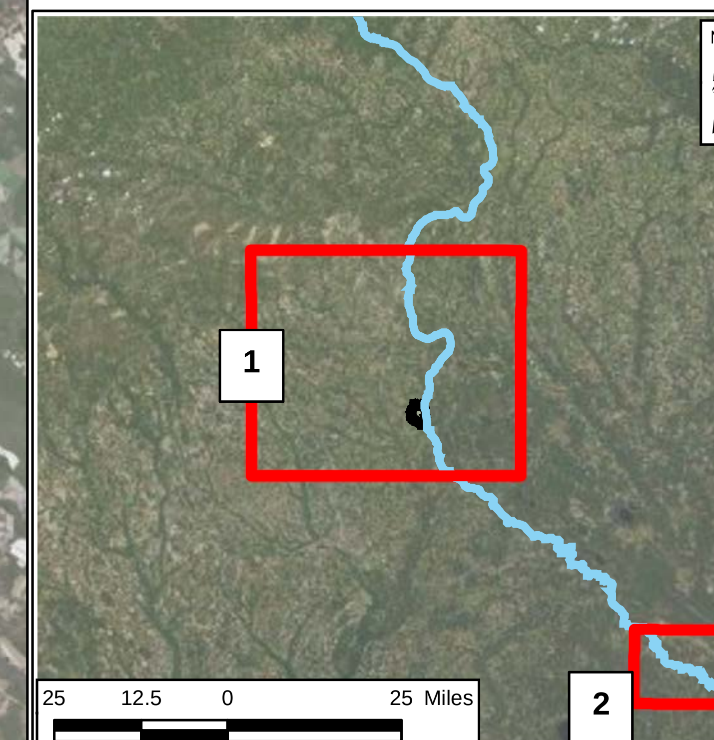
Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet; Units in Foot US



Legend
- Sample Location
- Site Boundary
- Cape Fear River

Notes:
HFPO-DA - hexafluoropropylene oxide dimer acid

1. All results are in nanograms per liter.
2. HFPO-DA is included in the total Table 3+ result, including HFPO-DA results evaluated by EPA Method 537 Mod.
3. Non-detect values were not included in sum of total Table 3+ results.
4. Total Table 3+ results include J-qualified data.
5. Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.



2 1 0 2 Miles

Cape Fear River Total Table 3+ Concentrations
September 2019 Event

Chemours Fayetteville Works, North Carolina

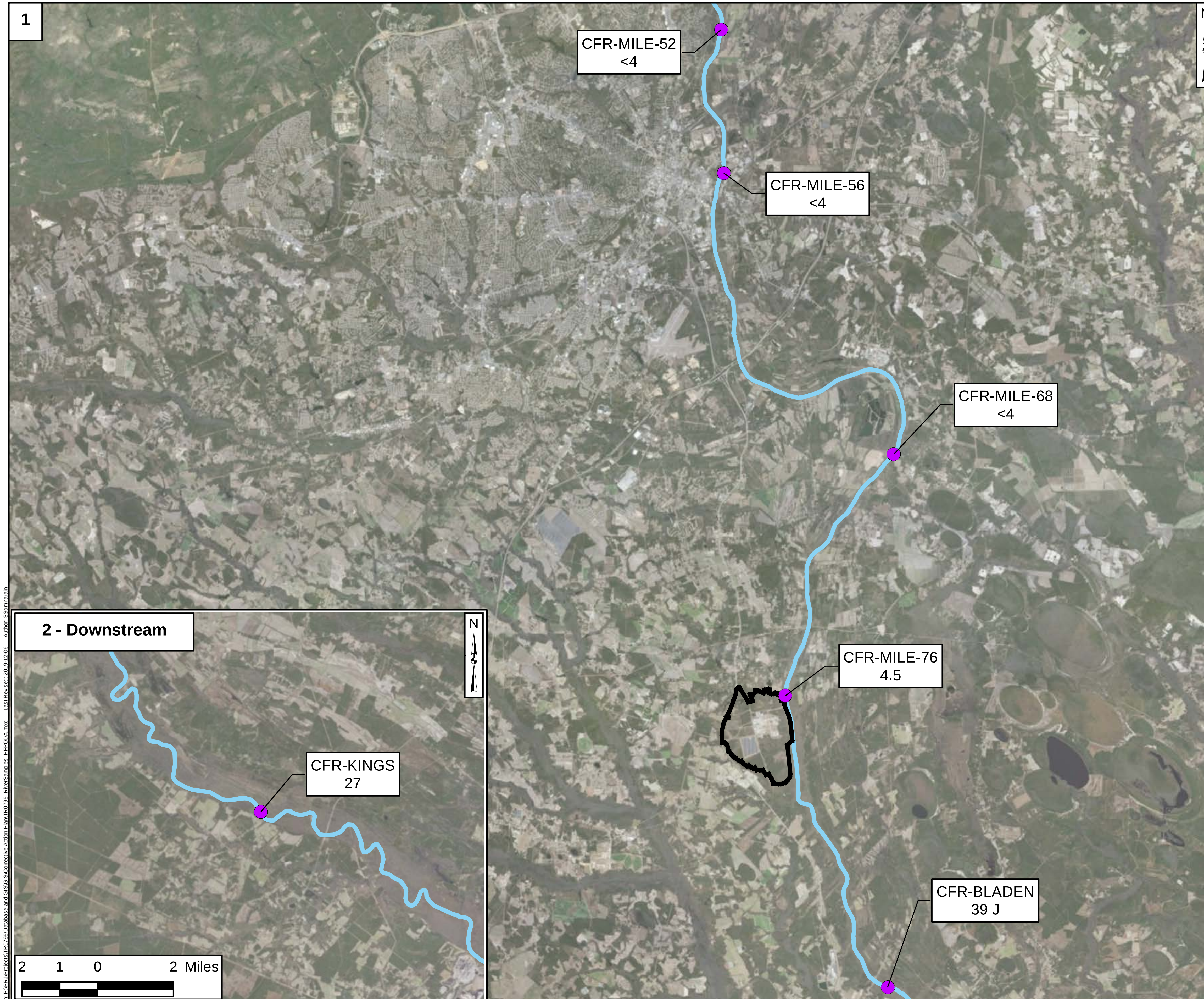
Geosyntec consultants

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

Raleigh | December 2019

Figure **B-4**

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



Legend

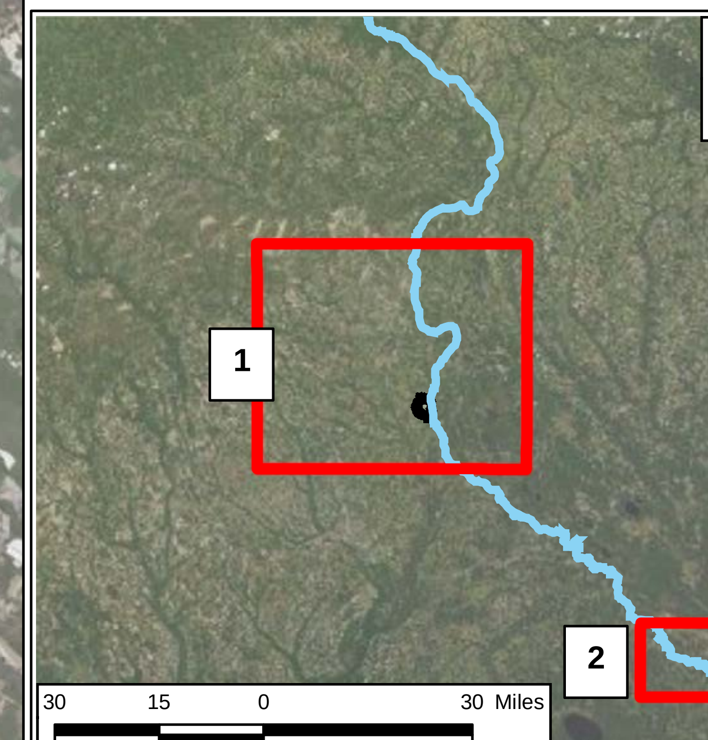
Sample Location

Site Boundary

Cape Fear River

Notes:
< - non-detect
J - estimated value

HFPO-DA - hexafluoropropylene oxide dimer acid
1. All results are in nanograms per liter.
2. Basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.



2 1 0 2 Miles

Cape Fear River HFPO-DA Concentrations
September 2019 Event

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure

B-5

Raleigh

December 2019

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Corrective Action Plan\TR0795_RiverSamples_HFPODA.mxd Last Revised: 2019-12-06 Author: SSomnarain

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

TABLES

TABLE B-1
WELL DEVELOPMENT STABILIZED FIELD PARAMETERS
Chemours Fayetteville Works, North Carolina

Well ID	Date	pH	DO (mg/L)	ORP (mV)	Turbididty (NTU)	Spec. Cond. (mS/cm)	Temp. (°C)
Onsite Wells							
PIW-2D	10/31/2019	5.76	5.91	124.4	29	0.071	19.2
PIW-4D	10/22/2019	6.29	1.77	68.1	28.2	0.05	18.42
PW-02	10/23/2019	4.32	4.48	312.7	119	0.12	18.95
PW-03	10/23/2019	5.37	1.07	37	999	0.38	21.99
PW-04	10/28/2019	4.01	0.84	297.1	17.4	0.433	19.7
PW-07	10/28/2019	7.51	5.98	271.9	61.5	0.09	18.3
PW-09	10/18/2019	7.27	1.75	-36.9	127	0.09	17.51
PW-10R	10/23/2019	5.73	0.1	20.2	35.4	0.07	18.01
PW-12	10/31/2019	5.92	7.02	85.1	21.7	0.051	18.3
PW-13	11/5/2019	6.11	0.19	5.3	45.4	0.05	19.32
PW-15R	10/30/2019	5.98	19.51	198	4.91	0.014	18.8
Offsite Wells							
CUMBERLAND-2D	10/22/2019	6.17	3.38	-11.8	31.1	0.06	20.03
CUMBERLAND-4S	10/18/2019	3.47	2.52	162.1	57.8	0.05	26.11
CUMBERLAND-4D	10/18/2019	4.97	48.8	80.1	15.5	0.04	19.91
CUMBERLAND-5S	10/21/2019	5.55	1.24	-50.7	9.43	0.11	22.61
ROBENSON-1S	10/17/2019	--	--	--	--	--	--
ROBENSON-1D	10/17/2019	4.98	44.3	102	19.3	0.06	19.99

Notes:

1. Stabilized field parameters following well development completion reported here.
2. Well development forms included in Appendix B of this report.

Abbreviations:

DO - Dissolved Oxyg mS/cm - milli Siemens per centimeter

ORP - Oxidation Redu °C - degree celsius

Spec. Cond. - Specific Conductivity

Temp. - Temperature

mg/L - milligrams per liter

mV - millivolts

NTU - Nephelometric Turbidity Units

TABLE B-2
GROUNDWATER SAMPLING STABILIZED FIELD PARAMETERS
Chemours Fayetteville Works, North Carolina

Well ID	Sampling Date	Sample Time	Field Sample ID	pH	DO (mg/L)	ORP (mV)	Turbididty (NTU)	Spec. Cond. (mS/cm)	Temp. (°C)
Onsite Wells									
PIW-1D	10/29/2019	12:10	GW4Q19-PIW-1D-102919	3.4	0.63	290	6	0.17	18
PIW-2D	11/1/2019	11:15	GW4Q19-PIW-2D-110119	5.8	0.43	45	16	0.07	17
PIW-3D	10/28/2019	16:35	GW4Q19-PIW-3D-102819	4	0.76	-91	8.7	0.1	18
PIW-4D	10/31/2019	13:25	GW4Q19-PIW-4D-103119	7.5	0.6	32	61	0.06	20
PIW-5S	10/29/2019	11:40	GW4Q19-PIW-5S-102919	3.7	2.9	440	11	0.13	19
PIW-6S	10/29/2019	13:30	GW4Q19-PIW-6S-102919	4.6	0.55	210	14	0.094	18
PIW-7S	10/30/2019	12:00	GW4Q19-PIW-7S-103019	6.1	0.31	5.3	3.9	0.15	19
PIW-7D	10/30/2019	11:15	GW4Q19-PIW-7D-103019	4.3	0.29	100	0.71	0.09	19
PIW-8D	10/30/2019	13:30	GW4Q19-PIW-8D-103019	4	0.65	190	1	0.2	18
PIW-9D	10/23/2019	11:20	GW4Q19-PIW-9D-102319	4.7	0	170	0	0.14	17
PIW-9S	10/23/2019	12:40	GW4Q19-PIW-9S-102319	4	0.33	11	1.3	0.11	18
PIW-10DR	10/30/2019	15:50	GW4Q19-PIW-10DR-103019	5.5	0.24	17	6.9	0.17	19
PIW-10S	10/29/2019	15:10	GW4Q19-PIW-10S-102919	4	3.8	200	1.1	0.05	19
PW-01	10/18/2019	13:40	GW4Q19-PW-01-101819	4.7	5	250	1.1	0.06	22
PW-02	11/4/2019	16:10	GW4Q19-PW-02-110419	4.7	6.7	240	130	0.11	19
PW-03	11/6/2019	12:50	GW4Q19-PW-03-110619	5.4	0.75	-140	1000	0.21	19.00
PW-04	10/30/2019	10:00	GW4Q19-PW-04-103019	4	0.84	300	12	0.43	20.00
PW-05	10/30/2019	10:00	GW4Q19-PW-05-103019	3.9	4.9	400	3.5	0.08	19
PW-06	10/29/2019	15:20	GW4Q19-PW-06-102919	5.1	3.3	220	1.4	0.067	19
PW-07	11/8/2019	9:30	GW4Q19-PW-07-110819	6	5.3	320	83	0.09	21
PW-09	10/30/2019	13:35	GW4Q19-PW-09-103019	9.5	0.05	-130	68	0.13	19
PW-10R	11/4/2019	13:40	GW4Q19-PW-10R-110419	5.4	0.12	43	5	0.06	18
PW-11	10/22/2019	16:25	GW4Q19-PW-11-102219	4.4	0.00	120	0.00	0.5	19
PW-12	11/5/2019	13:20	GW4Q19-PW-12-110519	5.6	0.00	-150	18	0.05	19
PW-13	11/8/2019	15:00	GW4Q19-PW-13-110819	6.4	1.2	-17	97	0.1	17
PW-14	10/23/2019	13:55	GW4Q19-PW-14-102319	4.7	0.00	170	0.00	0.18	23
PW-15R	11/6/2019	14:30	GW4Q19-PIW-15R-110619	5.1	3.2	150	13	0.15	19
Offsite Wells									
BLADEN-1D	11/7/2019	14:31	GW4Q19-BLADEN-1D-110719	7.1	0.54	-51	13	0.13	23
BLADEN-2S	10/22/2019	12:30	GW4Q19-BLADEN-2S-102219	6.1	0.44	-34	6.6	0.07	25
BLADEN-2D	10/29/2019	12:55	GW4Q19-BLADEN-2D-102919	6	0.09	32	28	0.05	21
BLADEN-3S	10/28/2019	12:05	GW4Q19-BLADEN-3S-102819	5.3	5	120	0.62	0.02	25
BLADEN-3D	10/28/2019	14:30	GW4Q19-BLADEN-3D-102819	5.9	0.2	31	15	0.08	22
BLADEN-4S	10/22/2019	16:50	GW4Q19-BLADEN-4S-102219	5.7	0.55	-43	22	0.07	27
BLADEN-4D	10/25/2019	12:45	GW4Q19-BLADEN-4D-102519	6.3	0.02	-76	5.5	0.42	22
CUMBERLAND-1S	10/24/2019	10:08	GW4Q19-CUMBERLAND-1S-102419	4.6	6.2	320	1	0.11	23
CUMBERLAND-1D	10/24/2019	10:55	GW4Q19-CUMBERLAND-1D-102419	5.2	0.34	-130	14	0.13	21
CUMBERLAND-2S	10/23/2019	12:00	GW4Q19-CUMBERLAND-2S-102319	5.1	3.6	220	1.2	0.07	23
CUMBERLAND-2D	10/25/2019	12:25	GW4Q19-CUMBERLAND-2D-102519	6.8	0.09	-490	20	0.08	22
CUMBERLAND-3S	10/22/2019	15:51	GW4Q19-CUMBERLAND-3D-102219	6.4	1.9	-62	8.8	0.18	24
CUMBERLAND-3D	10/23/2019	10:37	GW4Q19-CUMBERLAND-3D-102319	7.6	1.1	-230	3.8	0.23	21
CUMBERLAND-4S	10/25/2019	13:57	GW4Q19-CUMBERLAND-4S-102519	4.1	0.41	170	10	0.05	27
CUMBERLAND-4D	10/24/2019	14:25	GW4Q19-CUMBERLAND-4D-102419	5.4	0.34	71	18	0.04	23

TABLE B-2
GROUNDWATER SAMPLING STABILIZED FIELD PARAMETERS
Chemours Fayetteville Works, North Carolina

Well ID	Sampling Date	Sample Time	Field Sample ID	pH	DO (mg/L)	ORP (mV)	Turbididty (NTU)	Spec. Cond. (mS/cm)	Temp. (°C)
CUMBERLAND-5S	10/23/2019	14:32	GW4Q19-CUMBERLAND-5S-102319	5.5	1.3	20	4.8	0.12	24
ROBENSON-1S	10/31/2019	13:15	GW4Q19-ROBENSON-1S-103119	5.5	2.8	160	5.1	0.08	25
ROBENSON-1D	10/31/2019	11:35	GW4Q19-ROBENSON-1D-103119	6.4	0.13	-100	17	0.08	22

Notes:
1. PIW-1S and Bladen-1S were dry at the time of sampling
2. Duplicate samples collected at PIW-4D, Cumberland-1D and PW-15R
3. Stabilized field parameters following well purging reported here.
4. Well purging and groundwater sampling forms included in Appendix B of this report.

Abbreviations:
DO - Dissolved Oxygen
ORP - Oxidation Reduction Potential
Spec. Cond. - Specific Conductivity
Temp. - Temperature
mg/L - milligrams per liter
mV - millivolts
NTU - Nephelometric Turbidity Units

TABLE B-3
ON AND OFFSITE RESAMPLED GROUNDWATER WELL ANALYTICAL RESULTS - JULY TO NOVEMBER 2019
Chemours Fayetteville Works, North Carolina

Area	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite
Aquifer	Black Creek Aquifer	Black Creek Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	PIW-10DR	PIW-10DR	PIW-10S	PIW-10S	PIW-1D	PIW-1D	PIW-1D	PIW-2D	PIW-2D
Field Sample ID	PIW-10DR-091019	GW4Q19-PIW-10DR-103019	GW0619-PIW-10S	GW4Q19-PIW-10S-102919	GW0619-PIW-1D	GW0619-PIW-1D-D	GW4Q19-PIW-1D-102919	PIW-2D-091219	GW4Q19-PIW-2D-110119
Sample Date	9/10/2019	10/30/2019	7/22/2019	10/29/2019	7/19/2019	7/19/2019	10/29/2019	9/12/2019	11/1/2019
QA/QC	--	--	--	--	--	DUP	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-54176-1	320-55860-1	320-52621-1	320-55854-1	320-52621-1	320-52621-1	320-55854-1	320-54314-1	320-56112-1
Lab Sample ID	320-54176-1	320-55860-2	320-52621-3	320-55854-9	320-52621-1	320-52621-2	320-55854-4	320-54314-2	320-56112-3
Table 3+ SOP (ng/L)									
HFPO-DA	**19,000**	**15,000**	**4,400**	**3,600**	**11,000 J**	**8,700 J**	**9,500**	**1,800**	**1,600**
PFMOAA	**45,000**	**47,000**	**1,500**	**1,800**	**14,000**	**15,000**	**14,000**	**14,000**	**19,000**
PFO2HxA	**19,000**	**19,000**	**3,000**	**2,400**	**9,700**	**9,700**	**8,200**	**2,900**	**3,500**
PFO3OA	**6,000**	**6,500**	**520**	**450**	**1,800**	**1,800**	**1,300**	**100**	**140**
PFO4DA	**1,200 J**	**1,200**	**210**	**160**	**300**	**320**	**260**	<79	<16
PFO5DA	<34 UJ	<34	<34	**17**	<34	<34	<6.7	<34	<6.7
PMPA	**9,100**	**10,000**	**5,700**	**5,700**	**9,900**	**10,000**	**9,300**	**1,300**	**1,100**
PEPA	**3,400**	**3,600**	**2,100**	**1,900**	**3,600**	**3,600**	**2,900**	**92**	**76**
PFESA-BP1	<27	<27	<27	<2.7	<27	<27	<5.3	<27	<5.3
PFESA-BP2	**160 J**	**200**	**150**	**93**	**48**	**51**	**52**	<30	<6.1
Byproduct 4	**1,500**	**1,200**	**190**	**200**	**420**	**480**	**400**	<160	**44**
Byproduct 5	**6,400 J**	**5,600**	<58	<5.8	<58	<58	<12	<58	**16**
Byproduct 6	**15**	**18**	<15	<2	<15	<15	<3.1	<15	<3.1
NVHOS	**510**	**490**	<54	**22**	**150**	**160**	**130**	**110 J**	**140**
EVE Acid	<24	<24	<24	<2.4	<24	<24	<4.9	<24	<4.9
Hydro-EVE Acid	**790 J**	**870**	<28	**12**	**37**	**33**	**30**	<28	<5.6
R-EVE	**1,200**	**980 J**	**130**	**110**	**290 J**	**350 J**	**270**	<70	**40 J**
PES	<46	<46	<46	<4.6	<46	<46	<9.2	<46	<9.2
PFECA B	<60	<60	<60	<6	<60	<60	<12	<60	<12
PFECA-G	<41	<41	<41	<4.1	<41	<41	<8.2	<41	<8.2
Total Table 3+ Lab SOP*	**110,000**	**110,000**	**18,000**	**16,000**	**51,000**	**50,000**	**46,000**	**20,000**	**26,000**

Notes:

* - Total Table 3+ was calculated using HFPO-DA from EPA Method 537 Mod and J qualified data, but not non-detect data. The total is rounded to two significant figures.

Bold - Analyte detected above associated reporting limit

B - analyte detected in an associated blank

EPA - Environmental Protection Agency

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

ng/L - nanograms per liter

QA/QC - Quality assurance/ quality control

SDG - Sample Delivery Group

SOP - standard operating procedure

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

< - Analyte not detected above associated reporting limit.

TABLE B-3
ON AND OFFSITE RESAMPLED GROUNDWATER WELL ANALYTICAL RESULTS - JULY TO NOVEMBER 2019
Chemours Fayetteville Works, North Carolina

Area	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite
Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Surficial Aquifer	Surficial Aquifer	Floodplain Deposits
Location ID	PIW-3D	PIW-3D	PIW-4D	PIW-4D	PIW-4D	PIW-5S	PIW-5S	PIW-6S
Field Sample ID	GW0619-PIW-3D	GW4Q19-PIW-3D-102819	PIW-04D-091119	GW4Q19-PIW-4D-103119	GW4Q19-PIW-4D-103119-Dup	GW0619-PIW-5S	GW4Q19-PIW-5S-102919	GW0619-PIW-6S
Sample Date	7/18/2019	10/28/2019	9/11/2019	10/31/2019	10/31/2019	7/19/2019	10/29/2019	7/17/2019
QA/QC	--	--	--	--	DUP	--	--	--
Sample Matrix	LIQUID	LIQUID	Liquid	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-52464-1	320-55757-1	320-54317-1	320-55909-1	320-55909-1	320-52624-1	320-55854-1	320-52454-1
Lab Sample ID	320-52464-2	320-55757-6	320-54317-2	320-55909-1	320-55909-2	320-52624-5	320-55854-2	320-52454-5
Table 3+ SOP (ng/L)								
HFPO-DA	**9,600**	**11,000**	**6.7**	**3.6 B**	**2.9 B**	**79,000 J**	**41,000**	**13,000**
PFMOAA	**5,400**	**5,200**	<210	<5	<5	**35,000**	**61,000**	**160,000**
PFO2HxA	**9,100**	**7,900**	<81	**2.3**	**2.1**	**38,000**	**33,000**	**35,000**
PFO3OA	**1,700**	**1,400**	<58	<2	<2	**10,000**	**7,600**	**5,000**
PFO4DA	**780**	**700**	<79	<2	<2	**8,700**	**4,700**	**150**
PFO5DA	**95**	**97**	<34	<2	<2	**4,800**	**1,900**	<34
PMPA	**12,000**	**10,000**	<570	<10	<10	**100,000**	**76,000**	**8,700**
PEPA	**4,400**	**3,600**	<47	<20	<20	**44,000**	**31,000**	**2,300**
PFESA-BP1	<2.7	<5.3	<27	<2	<2	**4,300**	**1,300**	<27
PFESA-BP2	**150**	**140**	<30	<2	<2	**1,300**	**580**	**31**
Byproduct 4	**500**	**390**	<160	<2	<2	**4,700**	**2,900**	**470**
Byproduct 5	<5.8	<12	<58	<2	<2	**16,000**	**5,000**	**1,700**
Byproduct 6	**5.1**	**5.2**	<15	<2	<2	**65**	**41**	<15
NVHOS	**83**	**72**	<54	<2	<2	**770**	**680**	**1,100**
EVE Acid	<2.4	<4.9	<24	<2	<2	**1,800**	**570**	<24
Hydro-EVE Acid	**52**	**48**	<28	<2	<2	**1,600**	**820**	**43**
R-EVE	**290**	**220 J**	<70	<2 UJ	<2 UJ	**3,000**	**2,700**	**490**
PES	<4.6	<9.2	<46	<2	<2	<46	<46	<46
PFECA B	<6	<12	<60	<2	<2	<60	<60	<60
PFECA-G	<4.1	<8.2	<41	<2	<2	<41	<41	<41
Total Table 3+ Lab SOP*	**44,000**	**41,000**	**6.7**	**5.9**	**5.0**	**350,000**	**270,000**	**230,000**

Notes:

* - Total Table 3+ was calculated using HFPO-DA from EPA Method 537 Mod and J qualified data, but not non-detect data. The total is rounded to two significant figures.

Bold - Analyte detected above associated reporting limit

B - analyte detected in an associated blank

EPA - Environmental Protection Agency

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

ng/L - nanograms per liter

QA/QC - Quality assurance/ quality control

SDG - Sample Delivery Group

SOP - standard operating procedure

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

< - Analyte not detected above associated reporting limit.

TABLE B-3
ON AND OFFSITE RESAMPLED GROUNDWATER WELL ANALYTICAL RESULTS - JULY TO NOVEMBER 2019
Chemours Fayetteville Works, North Carolina

Area	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite
Aquifer	Floodplain Deposits	Black Creek Aquifer	Black Creek Aquifer	Floodplain Deposits	Floodplain Deposits	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	PIW-6S	PIW-7D	PIW-7D	PIW-7S	PIW-7S	PIW-8D	PIW-8D	PIW-9D
Field Sample ID	GW4Q19-PIW-6S-102919	GW0619-PIW-7D	GW4Q19-PIW-7D-103019	GW0619-PIW-7S	GW4Q19-PIW-7S-103019	GW0619-PIW-8D	GW4Q19-PIW-8D-103019	GW0619-PIW-9D
Sample Date	10/29/2019	7/19/2019	10/30/2019	7/19/2019	10/30/2019	7/19/2019	10/30/2019	7/23/2019
QA/QC	--	--	--	--	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-55854-1	320-52624-1	320-55860-1	320-52624-1	320-55860-1	320-52624-1	320-55860-1	320-52722-1
Lab Sample ID	320-55854-3	320-52624-3	320-55860-10	320-52624-4	320-55860-1	320-52624-2	320-55860-9	320-52722-1
Table 3+ SOP (ng/L)								
HFPO-DA	**10,000**	**11,000**	**9,400**	**1,400**	**6,600**	**54,000 J**	**65,000**	**33,000**
PFMOAA	**190,000**	**150,000**	**170,000**	**12,000**	**31,000**	**400,000**	**400,000**	**150,000**
PFO2HxA	**33,000**	**27,000**	**27,000**	**2,400**	**8,000**	**140,000**	**110,000**	**41,000**
PFO3OA	**4,400**	**2,400**	**2,900**	**180**	**1,500**	**51,000**	**45,000**	**12,000**
PFO4DA	<160	**570**	**590**	<79	**96**	**7,200**	**6,700**	**3,100**
PFO5DA	<67	<34	<34	<34	<34	<340	<130	**84**
PMPA	**9,000**	**3,500**	**3,300**	**1,100**	**3,800**	**15,000**	**15,000**	**9,900**
PEPA	**2,300**	**530**	**510**	<47	**1,200**	**4,500**	**4,200**	**3,400**
PFESA-BP1	<53	<27	<27	<27	<27	<270	<110	**29**
PFESA-BP2	<61	**53**	**67**	<30	**77**	**770**	**860**	**370**
Byproduct 4	**720**	**280**	**300**	<160	**740**	**4,400**	**3,300 J**	**1,900 J**
Byproduct 5	**1,900**	**690**	**560**	<58	<58	**10,000**	**7,200**	**2,700**
Byproduct 6	<31	<15	<15	<15	<15	<150	**120**	**18**
NVHOS	**1,100**	**810**	**830**	**88**	**350**	**3,600**	**3,200**	**1,700**
EVE Acid	<49	<24	<24	<24	<24	<240	<97	<24
Hydro-EVE Acid	<56	**170 J**	**200**	<28	**110**	**3,700**	**3,900**	**1,600**
R-EVE	**610**	**350 J**	**380**	**130**	**810**	**4,500**	**4,900**	**1,700**
PES	<92	<46	<46	<46	<46	<460	<180	<46
PFECA B	<120	<60	<60	<60	<60	<600	<240	<60
PFECA-G	<82	<41	<41	<41	<41	<410	<160	<41
Total Table 3+ Lab SOP*	**250,000**	**200,000**	**220,000**	**17,000**	**54,000**	**700,000**	**670,000**	**260,000**

Notes:

* - Total Table 3+ was calculated using HFPO-DA from EPA Method 537 Mod and J qualified data, but not non-detect data. The total is rounded to two significant figures.

Bold - Analyte detected above associated reporting limit

B - analyte detected in an associated blank

EPA - Environmental Protection Agency

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

ng/L - nanograms per liter

QA/QC - Quality assurance/ quality control

SDG - Sample Delivery Group

SOP - standard operating procedure

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

< - Analyte not detected above associated reporting limit.

TABLE B-3
ON AND OFFSITE RESAMPLED GROUNDWATER WELL ANALYTICAL RESULTS - JULY TO NOVEMBER 2019
Chemours Fayetteville Works, North Carolina

Area	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite
Aquifer	Black Creek Aquifer	Surficial Aquifer	Surficial Aquifer	Perched Zone	Perched Zone	Perched Zone	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer
Location ID	PIW-9D	PIW-9S	PIW-9S	PW-01	PW-01	PW-01	PW-02	PW-02	PW-03
Field Sample ID	GW4Q19-PIW-9D-102319	GW0619-PIW-9S	GW4Q19-PIW-9S-102319	PW-01-090919	PW-01-090919-D	GW4Q19-PW-01-101819	PW-02-091119	GW4Q19-PW-02-110419	PW-03-091119
Sample Date	10/23/2019	7/18/2019	10/23/2019	9/9/2019	9/9/2019	10/18/2019	9/11/2019	11/4/2019	9/11/2019
QA/QC	--	--	--	--	DUP	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-55683-1	320-52464-1	320-55683-1	320-54217-1	320-54217-1	320-55686-1	320-54274-1	320-56112-1	320-54317-1
Lab Sample ID	320-55683-3	320-52464-1	320-55683-6	320-54217-1	320-54217-2	320-55686-1	320-54274-1	320-56112-7	320-54317-1
Table 3+ SOP (ng/L)									
HFPO-DA	**20,000**	**7,300**	**9,700**	**8,300**	**7,500**	**7,500**	**7,400**	**7,800**	**78,000**
PFMOAA	**200,000**	**150,000**	**190,000**	**25,000**	**23,000**	**23,000**	**9,500,000**	**89,000**	**5,900**
PFO2HxA	**40,000**	**34,000**	**35,000**	**10,000**	**9,400**	**10,000**	**2,800,000**	**22,000**	**18,000**
PFO3OA	**11,000**	**8,400**	**8,300**	**2,000 J**	**1,900**	**2,300**	**750,000**	**6,200**	**5,800**
PFO4DA	**2,300**	**1,500**	**1,400**	**1,000 J**	**960**	**1,200**	**250,000**	**2,300**	**1,800**
PFO5DA	<170	<34	<34	**660 J**	**540**	**930**	**90,000**	**950**	**46**
PMPA	**8,500**	**7,500**	**7,500**	**4,100 J**	**3,600**	**3,800**	**470,000**	**4,200**	**130,000**
PEPA	**3,000**	**2,700**	**2,500**	**1,300**	**1,200**	**1,300**	**180,000**	**1,500**	**76,000**
PFESA-BP1	<130	<27	<27	**490**	**410**	**480**	**35,000**	**480**	**130**
PFESA-BP2	**330**	**170**	**200**	**490 J**	**400**	**530**	**43,000**	**550**	**750**
Byproduct 4	<790	**800**	**960**	**610**	**470**	**410**	**75,000**	**740**	**11,000**
Byproduct 5	**1,900 J**	**800**	**1,000**	**900 J**	**880 J**	**700 J**	**250,000**	**3,000**	**47,000**
Byproduct 6	<77	<15	<15	<15	<15	**13**	**1,900**	**20**	**93**
NVHOS	**1,700**	**1,500**	**1,700**	**280 J**	**270**	**270**	**110,000**	**970**	**8,000**
EVE Acid	<120	<24	<24	**110 J**	**100**	**95**	**2,200**	**25**	**520**
Hydro-EVE Acid	**1,600**	**690**	**740**	**130 J**	**110**	**120**	**18,000**	**220**	**4,900**
R-EVE	**630**	**650**	**900**	**310**	**260**	**260**	**36,000**	**580**	**12,000**
PES	<230	<46	<46	<46	<46	<9.2	<2,300	<46	<46
PFECA B	<300	<60	<60	<60	<60	<12	<3,000	<60	<60
PFECA-G	<200	<41	<41	<41	<41	<8.2	<2,000	<41	<41
Total Table 3+ Lab SOP*	**290,000**	**220,000**	**260,000**	**56,000**	**51,000**	**53,000**	**15,000,000**	**140,000**	**400,000**

Notes:

* - Total Table 3+ was calculated using HFPO-DA from EPA Method 537 Mod and J qualified data, but not non-detect data. The total is rounded to two significant figures.

Bold - Analyte detected above associated reporting limit

B - analyte detected in an associated blank

EPA - Environmental Protection Agency

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

ng/L - nanograms per liter

QA/QC - Quality assurance/ quality control

SDG - Sample Delivery Group

SOP - standard operating procedure

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

< - Analyte not detected above associated reporting limit.

TABLE B-3
ON AND OFFSITE RESAMPLED GROUNDWATER WELL ANALYTICAL RESULTS - JULY TO NOVEMBER 2019
Chemours Fayetteville Works, North Carolina

Area	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite
Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer
Location ID	PW-03	PW-04	PW-04	PW-05	PW-05	PW-06	PW-06	PW-07	PW-07
Field Sample ID	GW4Q19-PW-03-110619	PW-04-091119	GW4Q19-PW-04-103019	PW-05-090919	GW4Q19-PW-05-103019	PW-06-091019	GW4Q19-PW-06-102919	PW-07-091319	GW4Q19-PW-07-110819
Sample Date	11/6/2019	9/11/2019	10/30/2019	9/9/2019	10/30/2019	9/10/2019	10/29/2019	9/13/2019	11/8/2019
QA/QC	--	--	--	--	--	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	Liquid	Liquid	LIQUID
SDG	320-56117-1	320-54294-1	320-55860-1	320-54174-1	320-55860-1	320-54231-1	320-55854-1	320-54328-1	320-56173-1
Lab Sample ID	320-56117-6	320-54294-4	320-55860-4	320-54174-1	320-55860-3	320-54231-1	320-55854-1	320-54328-2	320-56173-7
Table 3+ SOP (ng/L)									
HFPO-DA	**61,000**	**940**	**1,000**	**1,600**	**1,200**	**950**	**1,300**	**1,100**	**790 J**
PFMOAA	**6,300**	**270**	**360 J**	<210	**230**	<210	**250**	**400**	**310 J**
PFO2HxA	**18,000**	**770**	**950**	**730**	**690**	**510**	**690**	**1,000**	**880**
PFO3OA	**5,700**	**280**	**330**	**73**	**73**	**74**	**110**	**140**	**110**
PFO4DA	**1,700**	**66**	**70**	**130**	**120**	<79	**71**	**87**	**54**
PFO5DA	<34	<2	<2	<34 UJ	<2 UJ	<34	<2 UJ	<2	**5.7**
PMPA	**150,000**	**710**	**1,100**	**1,600**	**1,300**	**1,100**	**1,400**	**1,400**	**1,400**
PEPA	**76,000**	**310**	**450**	**430**	**410**	**380**	**490**	**440**	**380 J**
PFESA-BP1	**94**	<2	<2	<27	<2	<27	<2	<2	<2
PFESA-BP2	**800**	**8.4**	**16**	**50**	**59**	<30	**40**	**5.1**	**7.4**
Byproduct 4	**10,000**	**120**	**200 J**	<160	**36**	<160	**50**	**41**	**23**
Byproduct 5	**37,000**	**4.4**	**3.6 J**	<58	<2	<58	<2	<2	**9.1**
Byproduct 6	**110**	<2	<2	<15	<2	<15	<2	<2	<2
NVHOS	**8,400**	**6.7**	**10**	<54	**6.4**	<54	**7.5**	**9.1**	**9.1**
EVE Acid	**500**	<2	<2	<24	<2	<24	<2	<2	<2
Hydro-EVE Acid	**5,300**	**5.9**	**10**	<28	**17**	<28	**9.3**	**6.4**	**6.5**
R-EVE	**12,000**	**47**	**65 J**	<70	**17**	<70	**22**	**13**	**9.5 J**
PES	<46	<2	<2	<46	<2	<46	<2	<2	<2
PFECA B	<60	<2	<2	<60	<2	<60	<2	<2	<2
PFECA-G	<41	<2	<2	<41	<2	<41	<2	<2	<2
Total Table 3+ Lab SOP*	**390,000**	**3,500**	**4,600**	**4,600**	**4,200**	**3,000**	**4,400**	**4,600**	**4,000**

Notes:

* - Total Table 3+ was calculated using HFPO-DA from EPA Method 537 Mod and J qualified data, but not non-detect data. The total is rounded to two significant figures.

Bold - Analyte detected above associated reporting limit

B - analyte detected in an associated blank

EPA - Environmental Protection Agency

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

ng/L - nanograms per liter

QA/QC - Quality assurance/ quality control

SDG - Sample Delivery Group

SOP - standard operating procedure

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

< - Analyte not detected above associated reporting limit.

TABLE B-3
ON AND OFFSITE RESAMPLED GROUNDWATER WELL ANALYTICAL RESULTS - JULY TO NOVEMBER 2019
Chemours Fayetteville Works, North Carolina

Area	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite
Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	PW-09	PW-09	PW-10R	PW-10R	PW-11	PW-11	PW-12	PW-12	PW-13
Field Sample ID	PW-09-091119	GW4Q19-PW-09-103019	GW0619-PW-10R	GW4Q19-PW-10R-110419	PW-11-091019	GW4Q19-PW-11-102319	PW-12-091119	GW4Q19-PW-12-110519	PW-13-091019
Sample Date	9/11/2019	10/30/2019	9/19/2019	11/4/2019	9/10/2019	10/23/2019	9/11/2019	11/5/2019	9/10/2019
QA/QC	--	--	--	--	--	--	--	--	--
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	Liquid	LIQUID	LIQUID
SDG	320-54274-1	320-55860-1	320-54522-1	320-56112-1	320-54231-1	320-55683-1	320-54299-1	320-56112-1	320-54231-1
Lab Sample ID	320-54274-2	320-55860-5	320-54522-1	320-56112-4	320-54231-2	320-55683-2	320-54299-4	320-56112-10	320-54231-3
Table 3+ SOP (ng/L)									
HFPO-DA	<4	<2	**9,900**	**5,200**	**16,000**	**12,000**	<4	<2	<15
PFMOAA	<210	<5	**130,000**	**150,000**	**280,000**	**190,000**	<5	<5	<210
PFO2HxA	**170 J**	<2	**23,000**	**24,000**	**56,000 J**	**36,000**	<2	<2	<81
PFO3OA	<58	<2	**1,100**	**1,000**	**32,000 J**	**18,000**	<2	<2	<58
PFO4DA	<79	<2	<79	<79	**16,000**	**11,000**	<2	<2	<79
PFO5DA	<34	<2	<34	**34**	**670 J**	**1,100**	<2	<2	<34
PMPA	**1,600**	<10	**3,200**	**3,500**	**8,200**	**6,000**	**15**	<10	<570
PEPA	**220**	<20	**440**	**490**	**3,100**	**2,400**	<20	<20	<47
PFESA-BP1	**160 J**	<2	<27	<27	**410**	**440**	<2	<2	<27
PFESA-BP2	**81**	<2	<30	<30	**910**	**980**	<2	<2	<30
Byproduct 4	<160	<2	<160	<160	**1,400**	**1,100**	<2	<2	<160
Byproduct 5	**94**	<2	**160**	**170**	**3,200**	**2,000 J**	<2	<2	<58
Byproduct 6	<15	<2	<15	<15	**93**	<77	<2	<2	<15
NVHOS	<54	<2	**680**	**820**	**3,000**	**1,800**	<2	<2	<54
EVE Acid	<24	<2	<24	<24	<120	<120	<2	<2	<24
Hydro-EVE Acid	<28	<2	<28	<28	**940**	**590**	<2	<2	<28
R-EVE	<70	<2	**230**	**150**	**540**	<350	<2	<2	<70
PES	<46	<2	<46	<46	<230	<230	<2	<2	<46
PFECA B	<60	<2	<60	<60	<300	<300	<2	<2	<60
PFECA-G	<41	<2	<41	<41	<200	<200	<2	<2	<41
Total Table 3+ Lab SOP*	**2,300**	**ND**	**170,000**	**190,000**	**420,000**	**280,000**	**15**	**ND**	**ND**

Notes:

* - Total Table 3+ was calculated using HFPO-DA from EPA Method 537 Mod and J qualified data, but not non-detect data. The total is rounded to two significant figures.

Bold - Analyte detected above associated reporting limit

B - analyte detected in an associated blank

EPA - Environmental Protection Agency

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

ng/L - nanograms per liter

QA/QC - Quality assurance/ quality control

SDG - Sample Delivery Group

SOP - standard operating procedure

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

< - Analyte not detected above associated reporting limit.

TABLE B-3
ON AND OFFSITE RESAMPLED GROUNDWATER WELL ANALYTICAL RESULTS - JULY TO NOVEMBER 2019
Chemours Fayetteville Works, North Carolina

Area	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	Offsite	Offsite
Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer	Black Creek Aquifer
Location ID	PW-13	PW-14	PW-14	PW-15R	PW-15R	PW-15R	PW-15R	BLADEN-1D	BLADEN-1D
Field Sample ID	GW4Q19-PW-13-110819	PW-14-091119	GW4Q19-PW-14-102319	GW0619-PW-15R	GW0619-PW-15R-D	GW4Q19-PW-15R-110619	GW4Q19-PW-15R-110619-D	BLADEN-1D-082719	DUP-1-082719
Sample Date	11/8/2019	9/11/2019	10/23/2019	9/19/2019	9/19/2019	11/6/2019	11/6/2019	8/27/2019	8/27/2019
QA/QC	--	--	--	--	DUP	--	DUP	--	DUP
Sample Matrix	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
SDG	320-56173-1	320-54274-1	320-55683-1	320-54519-1	320-54519-1	320-56117-1	320-56117-1	280-127778-1	280-127778-1
Lab Sample ID	320-56173-8	320-54274-3	320-55683-8	320-54519-1	320-54519-2	320-56117-4	320-56117-5	280-127778-1	280-127778-2
Table 3+ SOP (ng/L)									
HFPO-DA	<2	22,000	17,000	8,700 J	11,000 J	11,000	11,000	180	190
PFMOAA	<5	9,500,000	95,000	330,000	340,000	450,000	460,000	33	30
PFO2HxA	<2	3,400,000	27,000	63,000	64,000	76,000	77,000	81	80
PFO3OA	<2	1,100,000	8,100	14,000	14,000	16,000	17,000	6.2	6.2
PFO4DA	<2	610,000	4,800	2,200	2,200	2,000	2,300	<2	<2
PFO5DA	<2	390,000	2,900	<67	<67	<170	<170	<2	<2
PMPA	<10	1,400,000	13,000	36,000	36,000	50,000	50,000	330	330
PEPA	<20	390,000	3,400	8,900	9,300	11,000	11,000	110	110
PFESA-BP1	<2	6,000	52	3,300	4,100	2,300	2,400	<2	<2
PFESA-BP2	<2	250,000	2,500	640 J	670	470	480	0.48 J	0.48 J
Byproduct 4	<2	150,000	1,200	1,500 J	1,800 J	2,200	2,400	13 J	11 J
Byproduct 5	<2	190,000	2,400 J	19,000	21,000	27,000	27,000	<2	<2
Byproduct 6	<2	5,000	42	270	34	<77	<77	<2	<2
NVHOS	<2	96,000	840	3,500	3,500	4,600	4,800	2.2	1.9 J
EVE Acid	<2	<2,400	25	250 J	190	<120	<120	<2	<2
Hydro-EVE Acid	<2	210,000	2,000	550 J	510	400	430	<2	0.31 J
R-EVE	<2	130,000	1,200	700 J	560	930	890	6.2	5.7
PES	<2	<4,600	<46	210	<92	<230	<230	<2	<2
PFECA B	<2	<6,000	<60	220	<120	<300	<300	<2	<2
PFECA-G	<2	<4,100	<41	210	<82	<200	<200	<2	<2
Total Table 3+ Lab SOP*	ND	18,000,000	180,000	490,000	510,000	650,000	670,000	760	770

Notes:

* - Total Table 3+ was calculated using HFPO-DA from EPA Method 537 Mod and J qualified data, but not non-detect data. The total is rounded to two significant figures.

Bold - Analyte detected above associated reporting limit

B - analyte detected in an associated blank

EPA - Environmental Protection Agency

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

ng/L - nanograms per liter

QA/QC - Quality assurance/ quality control

SDG - Sample Delivery Group

SOP - standard operating procedure

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

< - Analyte not detected above associated reporting limit.

TABLE B-3
ON AND OFFSITE RESAMPLED GROUNDWATER WELL ANALYTICAL RESULTS - JULY TO NOVEMBER 2019
Chemours Fayetteville Works, North Carolina

Area	Offsite	Offsite	Offsite	Offsite	Offsite	Offsite	Offsite	Offsite
Aquifer	**Black Creek Aquifer**	**Black Creek Aquifer**	**Black Creek Aquifer**	**Surficial Aquifer**	**Surficial Aquifer**	**Black Creek Aquifer**	**Black Creek Aquifer**	**Surficial Aquifer**
Location ID	**BLADEN-1D**	**BLADEN-2D**	**BLADEN-2D**	**BLADEN-2S**	**BLADEN-2S**	**BLADEN-3D**	**BLADEN-3D**	**BLADEN-3S**
Field Sample ID	**GW4Q19-BLADEN-1D-110719**	**BLADEN-2D-082719**	**GW4Q19-Bladen-2D-102919**	**BLADEN-2S-082719**	**GW4Q19-BLADEN-2S-102219**	**BLADEN-3D-082819**	**GW4Q19-BLADEN-3D-102819**	**BLADEN-3S-082819**
Sample Date	**11/7/2019**	**8/27/2019**	**10/29/2019**	**8/27/2019**	**10/22/2019**	**8/28/2019**	**10/28/2019**	**8/28/2019**
QA/QC	--	--	--	--	--	--	--	--
Sample Matrix	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**	**LIQUID**
SDG	**320-56173-1**	**280-127778-1**	**320-55854-1**	**280-127778-1**	**320-55686-1**	**280-127778-1**	**320-55757-1**	**280-127778-1**
Lab Sample ID	**320-56173-3**	**280-127778-4**	**320-55854-5**	**280-127778-3**	**320-55686-4**	**280-127778-6**	**320-55757-4**	**280-127778-5**
Table 3+ SOP (ng/L)								
HFPO-DA	**140**	**11**	<2	**4.6**	**8.5 B**	**2.2 J**	<2	**12**
PFMOAA	**24 J**	<5	<5	**11**	**22 J**	<5	<5	**15**
PFO2HxA	**87**	**6.3**	<2	**19 J**	**31**	**1.3 J**	<2	**31**
PFO3OA	**7.3**	**0.96 J**	<2	**1.8 J**	<2	<2	<2	**3.8**
PFO4DA	<2	<2	<2	**1.5 J**	<2	<2	<2	**3.1**
PFO5DA	<2	<2	<2 UJ	**0.53**	<2	<2	<2	**0.98 J**
PMPA	**370**	**77 J**	<10	**68**	**60**	**14**	<10	**39**
PEPA	**110**	**12 J**	<20	**6.8 J**	<20	**2.1 J**	<20	**5.6 J**
PFESA-BP1	<2	<2	<2	<2	<2	<2	<2	<2
PFESA-BP2	<2	**3.9**	<2	**14**	**11**	**0.63 J**	<2	**3.6**
Byproduct 4	**7**	<2	<2	<2	**5.2**	<2	<2	**1.9 J**
Byproduct 5	<2	<2	<2	<2	<2	<2	<2	<2
Byproduct 6	<2	<2	<2	<2	<2	<2	<2	<2
NVHOS	**2**	<2	<2	**1.5 J**	<2	<2	<2	<2
EVE Acid	<2	<2	<2	<2	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	**0.36**	<2	<2	<2	**0.46 J**
R-EVE	**4.2**	<2	<2	<2	**3.5**	<2	<2	<2
PES	<2	<2	<2	<2	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2	<2	<2	<2
Total Table 3+ Lab SOP*	**750**	**110**	**ND**	**130**	**130**	**20**	**ND**	**120**

Notes:

* - Total Table 3+ was calculated using HFPO-DA from EPA Method 537 Mod and J qualified data, but not non-detect data. The total is rounded to two significant figures.

Bold - Analyte detected above associated reporting limit

B - analyte detected in an associated blank

EPA - Environmental Protection Agency

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

ng/L - nanograms per liter

QA/QC - Quality assurance/ quality control

SDG - Sample Delivery Group

SOP - standard operating procedure

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

< - Analyte not detected above associated reporting limit.

TABLE B-3
ON AND OFFSITE RESAMPLED GROUNDWATER WELL ANALYTICAL RESULTS - JULY TO NOVEMBER 2019
Chemours Fayetteville Works, North Carolina

Area	**Offsite**	**Offsite**	**Offsite**	**Offsite**	**Offsite**	**Offsite**	**Offsite**
Aquifer	**Surficial Aquifer**	**Black Creek Aquifer**	**Black Creek Aquifer**	**Surficial Aquifer**	**Surficial Aquifer**	**Black Creek Aquifer**	**Black Creek Aquifer**
Location ID	**BLADEN-3S**	**BLADEN-4D**	**BLADEN-4D**	**BLADEN-4S**	**BLADEN-4S**	**CUMBERLAND-1D**	**CUMBERLAND-1D**
Field Sample ID	**GW4Q19-BLADEN-3S-102819**	**BLADEN-4D-082819**	**GW4Q19-BLADEN-4D-102519**	**BLADEN-4S-082819**	**GW4Q19-BLADEN-4S-102219**	**CUMBER-1D-09162019**	**GW4Q19-CUMBERLAND-1D-102419**
Sample Date	**10/28/2019**	**8/28/2019**	**10/25/2019**	**8/28/2019**	**10/22/2019**	**9/16/2019**	**10/24/2019**
QA/QC	--	--	--	--	--	--	--
Sample Matrix	**LIQUID**	**Liquid**	**LIQUID**	**Liquid**	**LIQUID**	**Liquid**	**LIQUID**
SDG	**320-55757-1**	**280-127778-1**	**320-55754-1**	**280-127778-1**	**320-55686-1**	**320-54439-1**	**320-55761-1**
Lab Sample ID	**320-55757-3**	**280-127778-7**	**320-55754-1**	**280-127778-10**	**320-55686-6**	**320-54439-2**	**320-55761-1**
Table 3+ SOP (ng/L)							
HFPO-DA	**29**	<3.6	<2	<3.7	**2.7 B**	<3.8	**5**
PFMOAA	**21**	<5 UJ	<5 UJ	<5	<5 UJ	<5 UJ	<5
PFO2HxA	**59**	<2	<2	**3**	**3.1**	<2	<2
PFO3OA	**5.7**	<2	<2	<2	<2	<2	<2
PFO4DA	**3.9**	<2	<2	<2	<2	<2	<2
PFO5DA	<2	<2 UJ	<2	<2	<2	<2 UJ	<2
PMPA	**93**	**9.2 J**	<10	**12**	<10	<10	<10
PEPA	<20	<20	<20	<20	<20	<20	<20
PFESA-BP1	<2	<2	<2	<2	<2	<2	<2
PFESA-BP2	**8.3**	<2	<2	**1.5 J**	<2	<2	<2
Byproduct 4	<2	<2	<2	<2	<2	<2	<2
Byproduct 5	<2	<2	<2	<2	<2	<2	**2.5 J**
Byproduct 6	<2	<2	<2	<2	<2	<2	<2
NVHOS	<2	<2	<2	<2	<2	<2	<2
EVE Acid	<2	<2	<2	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2	<2	<2	<2
R-EVE	<2	<2	<2	<2	<2	<2	<2 UJ
PES	<2	<2	<2	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2	<2	<2
Total Table 3+ Lab SOP*	**220**	**9.2**	**ND**	**17**	**3**	**ND**	**7.5**

Notes:

* - Total Table 3+ was calculated using HFPO-DA from EPA Method 537 Mod and J qualified data, but not non-detect data. The total is rounded to two significant figures.

Bold - Analyte detected above associated reporting limit

B - analyte detected in an associated blank

EPA - Environmental Protection Agency

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

ng/L - nanograms per liter

QA/QC - Quality assurance/ quality control

SDG - Sample Delivery Group

SOP - standard operating procedure

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

< - Analyte not detected above associated reporting limit.

TABLE B-3
ON AND OFFSITE RESAMPLED GROUNDWATER WELL ANALYTICAL RESULTS - JULY TO NOVEMBER 2019
Chemours Fayetteville Works, North Carolina

Area	Offsite	Offsite	Offsite	Offsite	Offsite	Offsite
Aquifer	Black Creek Aquifer	Surficial Aquifer	Surficial Aquifer	Black Creek Aquifer	Black Creek Aquifer	Surficial Aquifer
Location ID	CUMBERLAND-1D	CUMBERLAND-1S	CUMBERLAND-1S	CUMBERLAND-2D	Cumberland-2D	CUMBERLAND-2S
Field Sample ID	GW4Q19-CUMBERLAND-1D-102419-D	CUMBER-1S-09162019	GW4Q19-CUMBERLAND-1S-102419	Cumber-2D-09162019	GW4Q19-CUMBERLAND-2D-102519	Cumber-2S-09162019
Sample Date	10/24/2019	9/16/2019	10/24/2019	9/16/2019	10/25/2019	9/16/2019
QA/QC	DUP	--	--	--	--	--
Sample Matrix	LIQUID	Liquid	LIQUID	Liquid	LIQUID	Liquid
SDG	320-55761-1	320-54439-1	320-55761-1	320-54378-1	320-55754-1	320-54378-1
Lab Sample ID	320-55761-2	320-54439-1	320-55761-3	320-54378-8	320-55754-2	320-54378-7
Table 3+ SOP (ng/L)						
HFPO-DA	**4.8**	<3.7	<2	<4 UJ	<2	<4 UJ
PFMOAA	<5	<5	<5 UJ	<5	<5	**22**
PFO2HxA	<2	**11**	**8.5**	<2	<2	**4.3**
PFO3OA	<2	**1.9 J**	<2	<2	<2	<2
PFO4DA	<2	**0.81 J**	<2	<2	<2	<2
PFO5DA	<2	<2 UJ	<2	<2	<2	<2
PMPA	<10	**13**	**16**	**10**	<10	**20**
PEPA	<20	<20	<20	<20	<20	<20
PFESA-BP1	<2	<2	<2	<2	<2	<2
PFESA-BP2	<2	**1.8 J**	**2.3**	<2	<2	<2
Byproduct 4	<2	<2	<2	<2	<2	<2
Byproduct 5	**2.4 J**	<2	<2	<2	<2	<2
Byproduct 6	<2	<2	<2	<2	<2	<2
NVHOS	<2	<2	<2	<2	<2	<2
EVE Acid	<2	<2	<2	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2	<2	<2	<2
R-EVE	<2	<2	<2	<2	<2	<2
PES	<2	<2	<2	<2	<2	<2
PFECA B	<2	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2	<2
Total Table 3+ Lab SOP*	**7.2**	**29**	**27**	**10**	**ND**	**46**

Notes:

* - Total Table 3+ was calculated using HFPO-DA from EPA Method 537 Mod and J qualified data, but not non-detect data. The total is rounded to two significant figures.

Bold - Analyte detected above associated reporting limit

B - analyte detected in an associated blank

EPA - Environmental Protection Agency

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

ng/L - nanograms per liter

QA/QC - Quality assurance/ quality control

SDG - Sample Delivery Group

SOP - standard operating procedure

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

< - Analyte not detected above associated reporting limit.

TABLE B-3
ON AND OFFSITE RESAMPLED GROUNDWATER WELL ANALYTICAL RESULTS - JULY TO NOVEMBER 2019
Chemours Fayetteville Works, North Carolina

Area	Offsite	Offsite	Offsite	Offsite	Offsite	Offsite
Aquifer	Surficial Aquifer	Black Creek Aquifer	Black Creek Aquifer	Surficial Aquifer	Surficial Aquifer	Black Creek Aquifer
Location ID	Cumberland-2S	CUMBERLAND-3D	Cumberland-3D	CUMBERLAND-3S	CUMBERLAND-3S	CUMBERLAND-4D
Field Sample ID	GW4Q19-CUMBERLAND-2S-102319	Cumber-3D-09162019	GW4Q19-CUMBERLAND-3D-102319	Cumber-3S-09162019	GW4Q19-CUMBERLAND-3S-102219	Cumber-4D-09162019
Sample Date	10/23/2019	9/16/2019	10/23/2019	9/16/2019	10/22/2019	9/16/2019
QA/QC	--	--	--	--	--	--
Sample Matrix	LIQUID	Liquid	LIQUID	Liquid	LIQUID	Liquid
SDG	320-55683-1	320-54378-1	320-55683-1	320-54378-1	320-55686-1	320-54378-1
Lab Sample ID	320-55683-1	320-54378-6	320-55683-5	320-54378-5	320-55686-5	320-54378-1
Table 3+ SOP (ng/L)						
HFPO-DA	<86	<4 UJ	<86	**10 J**	**16 B**	<4 UJ
PFMOAA	<210	**17 J**	<210	**30**	**13 J**	<5
PFO2HxA	<81	<2	<81	**63**	**40**	<2
PFO3OA	<58	<2	<58	**9.8 J**	**3**	<2
PFO4DA	<79	<2	<79	**8.7**	<2	<2
PFO5DA	**38**	<2	<34	**7.6**	<2	<2
PMPA	<570	**12**	<570	**44**	**61**	**12**
PEPA	<47	<20	<47	<20	<20	<20
PFESA-BP1	<27	<2	<27	<2	<2	<2
PFESA-BP2	<30	<2	<30	**4**	**5.1**	<2
Byproduct 4	<160	<2	<160	**20 J**	<2	**2.7 J**
Byproduct 5	<58	<2	<58	<2	<2	<2
Byproduct 6	<15	<2	<15	<2	<2	<2
NVHOS	<54	<2	<54	<2	<2	<2
EVE Acid	<24	<2	<24	<2	<2	<2
Hydro-EVE Acid	<28	<2	<28	<2	<2	<2
R-EVE	<70	<2	<70	**11 J**	**2.3**	<2
PES	<46	<2	<46	<2	<2	<2
PFECA B	<60	<2	<60	<2	<2	<2
PFECA-G	<41	<2	<41	<2	<2	<2
Total Table 3+ Lab SOP*	**38**	**29**	**ND**	**210**	**120**	**15**

Notes:

* - Total Table 3+ was calculated using HFPO-DA from EPA Method 537 Mod and J qualified data, but not non-detect data. The total is rounded to two significant figures.

Bold - Analyte detected above associated reporting limit

B - analyte detected in an associated blank

EPA - Environmental Protection Agency

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

ng/L - nanograms per liter

QA/QC - Quality assurance/ quality control

SDG - Sample Delivery Group

SOP - standard operating procedure

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

< - Analyte not detected above associated reporting limit.

TABLE B-3
ON AND OFFSITE RESAMPLED GROUNDWATER WELL ANALYTICAL RESULTS - JULY TO NOVEMBER 2019
Chemours Fayetteville Works, North Carolina

Area	Offsite	Offsite	Offsite	Offsite	Offsite	Offsite
Aquifer	Black Creek Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Surficial Aquifer	Black Creek Aquifer
Location ID	CUMBERLAND-4D	CUMBERLAND-4S	CUMBERLAND-4S	CUMBERLAND-5S	Cumberland-5S	ROBESON-1D
Field Sample ID	GW4Q19-CUMBERLAND-4D-102419	Cumber-4S-09162019	GW4Q19-CUMBERLAND-4S-102519	Cumber-5S-09162019	GW4Q19-CUMBERLAND-5S-102319	ROBESON-1D-091219
Sample Date	10/24/2019	9/16/2019	10/25/2019	9/16/2019	10/23/2019	9/12/2019
QA/QC	--	--	--	--	--	--
Sample Matrix	LIQUID	Liquid	LIQUID	Liquid	LIQUID	Liquid
SDG	320-55761-1	320-54378-1	320-55761-1	320-54378-1	320-55683-1	280-128413-1
Lab Sample ID	320-55761-4	320-54378-2	320-55761-5	320-54378-4	320-55683-7	280-128413-2
Table 3+ SOP (ng/L)						
HFPO-DA	<2	**110 J**	**76**	<4 UJ	<86	**6 J**
PFMOAA	<5	**39**	**15 J**	**22**	<210	<5
PFO2HxA	<2	**110**	**78 J**	<2	<81	**2.8**
PFO3OA	<2	**18**	**14**	<2	<58	<2
PFO4DA	<2	**5.1**	**7.3**	<2	<79	<2
PFO5DA	<2	<2	<2	<2	**50**	<2 UJ
PMPA	<10	**140**	**120 J**	**14**	<570	**35**
PEPA	<20	**42**	**31**	<20	<47	<20
PFESA-BP1	<2	<2	<2	<2	<27	<2
PFESA-BP2	<2	**4.8**	**5.6**	<2	<30	**3**
Byproduct 4	<2	**74 J**	**30 J**	<2	<160	<2
Byproduct 5	<2	<2	<2	<2	<58	<2
Byproduct 6	<2	<2	<2	<2	<15	<2
NVHOS	<2	**2.1**	<2	<2	<54	<2
EVE Acid	<2	<2	<2	<2	<24	<2
Hydro-EVE Acid	<2	<2	<2	<2	<28	<2
R-EVE	<2	**18 J**	**7.6 J**	<2	<70	<2
PES	<2	<2	<2	<2	<46	<2
PFECA B	<2	<2	<2	<2	<60	<2
PFECA-G	<2	<2	<2	<2	<41	<2
Total Table 3+ Lab SOP*	**ND**	**560**	**380**	**36**	**50**	**47**

Notes:

* - Total Table 3+ was calculated using HFPO-DA from EPA Method 537 Mod and J qualified data, but not non-detect data. The total is rounded to two significant figures.

Bold - Analyte detected above associated reporting limit

B - analyte detected in an associated blank

EPA - Environmental Protection Agency

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

ng/L - nanograms per liter

QA/QC - Quality assurance/ quality control

SDG - Sample Delivery Group

SOP - standard operating procedure

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

< - Analyte not detected above associated reporting limit.

TABLE B-3
ON AND OFFSITE RESAMPLED GROUNDWATER WELL ANALYTICAL RESULTS - JULY TO NOVEMBER 2019
Chemours Fayetteville Works, North Carolina

Area	Offsite	Offsite	Offsite
Aquifer	Black Creek Aquifer	Surficial Aquifer	Surficial Aquifer
Location ID	ROBESON-1D	ROBESON-1S	ROBESON-1S
Field Sample ID	GW4Q19-ROBESON-1D-103119	ROBESON-1S-091219	GW4Q19-ROBESON-1S-103119
Sample Date	10/31/2019	9/12/2019	10/31/2019
QA/QC	--	--	--
Sample Matrix	LIQUID	Liquid	LIQUID
SDG	320-55909-1	280-128413-1	320-55909-1
Lab Sample ID	320-55909-3	280-128413-1	320-55909-4
Table 3+ SOP (ng/L)			
HFPO-DA	**3.6 B**	<4 UJ	<2
PFMOAA	<5	**6.3**	**7.4**
PFO2HxA	<2	**6.2**	**4.9**
PFO3OA	<2	<2	<2
PFO4DA	<2	<2	<2
PFO5DA	<2	<2 UJ	<2
PMPA	**11**	**34**	**18**
PEPA	<20	<20	<20
PFESA-BP1	<2	<2	<2
PFESA-BP2	<2	**7.1**	**8.7**
Byproduct 4	<2	<2	<2
Byproduct 5	<2	<2	<2
Byproduct 6	<2	<2	<2
NVHOS	<2	<2	<2
EVE Acid	<2	<2	<2
Hydro-EVE Acid	<2	<2	<2
R-EVE	<2	<2	<2
PES	<2	<2	<2
PFECA B	<2	<2	<2
PFECA-G	<2	<2	<2
Total Table 3+ Lab SOP*	**11**	**54**	**39**

Notes:

* - Total Table 3+ was calculated using HFPO-DA from EPA Method 537 Mod and J qualified data, but not non-detect data. The total is rounded to two significant figures.

Bold - Analyte detected above associated reporting limit

B - analyte detected in an associated blank

EPA - Environmental Protection Agency

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

ng/L - nanograms per liter

QA/QC - Quality assurance/ quality control

SDG - Sample Delivery Group

SOP - standard operating procedure

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

< - Analyte not detected above associated reporting limit.

TABLE B-4
SEPTEMBER 2019 MASS LOADING MODEL LOCATION SUMMARY
Chemours Fayetteville Works, North Carolina

Location ID	Location Description	Sample Collection	Flow Measurement
		Sep-19	Sep-19
OLDOF-1	Old Outfall 002 Location 1	Y	--
OLDOF-2	Old Outfall 002 Location 2	--	Y
SEEP-A-1	Seep A Location 1	Y	Y
SEEP-A-3	Seep A Location 3	Y	Y
SEEP-A-4	Seep A Location 4	Y	Y
SEEP-A-TR1	Seep A Tributary 1	Y	Y
SEEP-B-1	Seep B Location 1	Y	Y
SEEP-B-2	Seep B Location 2	Y	Y
SEEP-B-TR1	Seep B Tributary 1	Y	Y
SEEP-B-TR2	Seep B Tributary 2	Y	Y
SEEP-C-1	Seep C Location 1	Y	Y
SEEP-D-1 (2)	Seep D Location 1	Y	Y
WC-1	Willis Creek Location 1	Y	Y
GBC-1	Georgia Branch Creek Location 1	Y	Y
CFR-MILE-52	Cape Fear River Mile 52	Y	--
CFR-MILE-56	Cape Fear River Mile 56	Y	--
CFR-MILE-68	Cape Fear River Mile 68	Y	--
CFR-MILE-76	Cape Fear River Mile 76	Y	--
CFR-BLADEN	Cape Fear River at Bladen Bluffs	Y	--
CFR-KINGS	Cape Fear River at Kings Bluff	Y	--
W.O. Huske Dam	USGS Gauge Site No. 02105500	--	Y
Excess River Water	Excess River Water	Y	Y
Outfall 002	Outfall 002 location	Y	Y

Notes:

1. Flow at Old Outfall 002, Seep A, Seep B and Seep C locations were measured using flumes.
2. Flow at Seep D was measured using salt diultion.
3. Flow at Willis Creek and Georgia Branch Creek were measured using flow velocity method.
4. Results of estimated flow at these locations are provided in Table 6 and supplemental flow measurement data is included in Attachment C.

Y - Sampling or flow measurement was conducted

TABLE B-5
ANALYTICAL METHODS AND ANALYTE LIST
Chemours Fayetteville Works, North Carolina

Analytical Method	Common Name	Chemical Name	CASN	Chemical Formula
Table 3+ Lab SOP	HFPO-DA	Hexafluoropropylene oxide dimer acid	13252-13-6	C6HF11O3
	PEPA	Perfluoroethoxypropylcarboxylic 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	2,3,3,3-Tetrafluoro-2-(trifluoromethoxy)propanoic	13140-29-9	C4HF7O3
	Hydro-EVE Acid	Hydro-EVE Acid	773804-62-9	C8H2F14O4
	EVE Acid	Perfluoroethoxypropionicacid	69087-46-3	C8HF13O4
	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	151772-58-6	C5HF9O4
	R-EVE	R-EVE	EVS1428	C8H2F12O5
	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	39492-91-6	C7HF13O7
	Byproduct 4	Byproduct 4	EVS1429	C7H2F12O6S
	Byproduct 5	Byproduct 6	EVS1430	C6H2F12O4S
	Byproduct 6	Byproduct 5	EVS1431	C7H3F11O7S
	NVHOS	NVHOS	1132933-86-8	C4H2F8O4S
	PES	PES	113507-82-7	C4HF9O4S
	PFESA-BP1	PFESA-BP1	29311-67-9	C7HF13O5S
	PFESA-BP2	PFESA-BP2	749836-20-2	C7H2F14O5S
EPA Method 537 Mod	PFBA	Perfluorobutanoic acid	375-22-4	C4HF7O2
	PFDA	Perfluorodecanoic acid	335-76-2	C10HF19O2
	PFDoA	Perfluorododecanoic acid	307-55-1	C12HF23O2
	PFHpA	Perfluoroheptanoic acid	375-85-9	C7HF13O2
	PFNA	Perfluorononanoic acid	375-95-1	C9HF17O2
	PFOA	Perfluorooctanoic acid	335-67-1	C8HF15O
	PFHxA	Perfluorohexanoic acid	307-24-4	C6HF11O2
	PFPeA	Perfluoropentanoic acid	2706-90-3	C5HF9O2
	PFTeA	Perfluorotetradecanoic acid	376-06-7	C14HF27O2
	PFTriA	Perfluorotridecanoic acid	72629-94-8	C13HF25O2
	PFUnA	Perfluoroundecanoic acid	2058-94-8	C11HF21O2
	PFBS	Perfluorobutanesulfonate	375-73-5	C4HF9SO
	PFDS	Perfluorodecanesulfonate	335-77-3	C10HF21O3S
	PFHpS	Perfluoroheptanesulfonic acid	375-92-8	C7HF15O3S
	PFHxS	Perfluorohexanesulfonic acid	355-46-4	C6HF13SO3
	PFNS	Perfluorononanesulfonate	68259-12-1	C9HF19O3S
	PFOS	Perfluorosulfonic acid	1763-23-1	C8HF17SO3
	PFPeS	Perfluoropentane sulfonic acid	2706-91-4	C5HF11O3S
	10:2 FTS	Fluorotelomer sulfonate 10:2	120226-60-0	C12H5F21O3
	4:2 FTS	Fluorotelomer sulfonate 4:2	757124-72-4	C6H5F9O3S
	6:2 FTS	Fluorotelomer sulfonate 6:2	27619-97-2	C8H5F13SO3
	8:2 FTS	Fluorotelomer sulfonate 8:2	39108-34-4	C10H5F17O3S
	NEtFOSAA	N-ethyl perfluorooctane sulfonamidoacetic acid	2991-50-6	C12H8F17NO4S
	NEtPFOSA	N-ethylperfluoro-1-octanesulfonamide	4151-50-2	C10H6F17NO2S
	NEtPFOSAE	N-ethyl perfluorooctane sulphonamidoethanol	1691-99-2	C12H10F17NO3S
	NMeFOSAA	N-methyl perfluorooctane sulfonamidoacetic acid	2355-31-9	C11H6F17NO4S
	NMePFOSA	N-methyl perfluoro-1-octanesulfonamide	31506-32-8	C9H4F17NO2S
	NMePFOSAE	N-methyl perfluorooctane sulfonamidoethanol	24448-09-7	C11H8F17NO3S
	PFDOS	Perfluorododecanesulfonic acid	79780-39-5	C12HF25O3S
	PFHxDA	Perfluorohexadecanoic acid	67905-19-5	C16HF31O2
	PFODA	Perfluorooctadecanoic acid	16517-11-6	C18HF35O2
	PFOSA	Perfluorooctane Sulfonamide	754-91-6	C8H2F17NO2S
	F-53B Major	F-53B Major	73606-19-6	C8HClF16O4S
	F-53B Minor	F-53B Minor	83329-89-9	C10HClF20O4S
	ADONA	4,8-dioxa-3H-perfluorononanoate	958445-44-8	C7H2F12O4
	NaDONA	NaDONA	EVS1361	--
	DONA	DONA	919005-14-4	--

Notes:
Abbreviations:
EPA - Environmental Protection Agency
ng/L - nanograms per liter
PFAS - Per- and Polyfluoroalkyl substances
SOP - Standard Operating Procedure

TABLE B-6
ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Analytical Method	Location ID	CFR-BLADEN	CFR-KINGS	CFR-KINGS	CFR-MILE-52	CFR-MILE-56	CFR-MILE-68	CFR-MILE-76	Excess River Water
	Field Sample ID	CFR-BLADEN-091819	CFR-KINGS-091819	CFR-KINGS-091819-D	CFR-RM-52-091719	CFR-RM-56-091719	CFR-RM-68-091719	CFR-RM-76-091719	EXCESS RIVER WATER-091719
	Sample Date	9/18/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019
	QA/QC	--	--	Dup	--	--	--	--	--
	Lab Sample ID	320-54536-4	320-54545-3	320-54545-4	320-54545-2	320-54545-1	320-54536-3	320-54544-2	320-54544-3
Table 3+ Lab SOP (ng/L)	HFPO-DA	**39 J**	**27**	**26**	<4	<4	<4	**4.5**	**26**
	PFMOAA	**150 J**	**82**	**85**	<5 UJ	<5	<5 UJ	<5	**8 J**
	PFO2HxA	**59**	**33**	**34**	<2	<2	<2	**4.5 B**	**15 B**
	PFO3OA	**13**	**7.1**	**7.6**	<2	<2	<2	<2	**2.2**
	PFO4DA	**4.4**	**2.3**	**2.4**	<2	<2	<2	<2	<2
	PFO5DA	**2.2**	<2	<2	<2	<2	<2	<2	<2
	PMPA	**53**	**36**	**35**	<10	<10	<10	**20**	**42**
	PEPA	<20	<20	<20	<20	<20	<20	<20	<20
	PFESA-BP1	**2.8**	<2	<2	<2	<2	<2	<2	<2
	PFESA-BP2	**3.2**	**2**	**2.1**	<2	<2	<2	<2	<2
	Byproduct 4	**18 J**	**23 J**	**9.6 J**	**16 J**	**15 J**	**12 J**	<2	**16 J**
	Byproduct 5	**46 J**	**33 J**	**32 J**	**4.5 J**	**4.6 J**	**3 J**	<2	**2.7 J**
	Byproduct 6	<2	<2	<2	<2	<2	<2	<2	<2
	NVHOS	**7.1**	**4.5**	**5.4**	**13**	**9.4**	**6.8**	**4.7**	**4.4**
	EVE Acid	<2	<2	<2	<2	<2	<2	<2	<2
	Hydro-EVE Acid	<2	<2	<2	<2	<2	<2	<2	<2
	R-EVE	**7.4 J**	**15 J**	**6.9 J**	**2.2 J**	**3.1 J**	**4.4 J**	<2	**7.1 J**
	PES	<2	<2	<2	<2	<2	<2	<2	<2
	PFECA B	<2	<2	<2	<2	<2	<2	<2	<2
	PFECA-G	<2	<2	<2	<2	<2	<2	<2	<2
	Total Table 3+ SOP	410	260	250	36	32	26	34	120
Method 537	10:2 Fluorotelomer sulfonate	<2	<2	<2	<2	<2	<2	<2	<2
	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20	<20	<20	<20
	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20	<20	<20	<20
	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<2	<2	<2	<2	<2	<2
	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<4	<4	<4	<4	<4	<4
	6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20	<20	<20	<20
	N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20	<20	<20
	N-ethylperfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2	<2	<2	<2
	N-methyl perfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2	<2	<2	<2
	N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20	<20	<20
	Perfluorobutane Sulfonic Acid	**4.6**	**2.9**	**2.8**	**4.8**	**5.3**	**4.6**	**4.7**	**4.2**
	Perfluorobutanoic Acid	**9.9**	**5.3**	**5.5**	**15**	**14**	**10**	**9.4**	**9.6**
	Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2	<2	<2	<2
	Perfluorodecanoic Acid	<2	<2	<2	<2	<2	<2	<2	<2
	Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2	<2	<2	<2
	Perfluorododecanoic Acid	<2	<2	<2	<2	<2	<2	<2	<2
	Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2	<2	<2	<2
	Perfluoroheptanoic Acid	**16**	**7.1**	**7.2**	**28**	**27**	**16**	**16**	**16**
	Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<2	<2	<2	<2	<2	<2
	Perfluorohexane Sulfonic Acid	**6.5**	**6**	**5.9**	**7.1**	**7**	**6.6**	**6**	**6.4**
	Perfluorohexanoic Acid	**23**	**10**	**9.9**	**39**	**38**	**24**	**22**	**23**
	Perfluorononanesulfonic acid	<2	<2	<2	<2	<2	<2	<2	<2
	Perfluorononanoic Acid	<2	<2	<2	<2	<2	<2	<2	<2
	Perfluorooctadecanoic acid	<2	<2	<2	<2	<2	<2	<2	<2
	Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2	<2	<2	<2
	Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2	<2	<2	<2
	Perfluoropentanoic Acid	**23**	**10**	**12**	**40**	**39**	**25**	**23**	**23**
	Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2	<2	<2	<2
	Perfluorotridecanoic Acid	<2	<2	<2	<2	<2	<2	<2	<2
	Perfluoroundecanoic Acid	<2	<2	<2	<2	<2	<2	<2	<2
	PFOA	**6.9**	**4.7**	**4.7**	**9**	**9.2**	**7.2**	**7.1**	**8.2**
	PFOS	**13**	**13**	**13**	**17**	**16**	**13**	**13**	**15**

TABLE B-6
ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Analytical Method	Location ID	GBC-1	OLDOF-1	OUTFALL 002	SEEP-A-1	SEEP-A-3	SEEP-A-3	SEEP-A-4	SEEP-A-TR1	SEEP-B-1
	Field Sample ID	GBC-1-091719	OLDOF-1-091719	OUTFALL 002-091719	SEEP-A-1-091719	SEEP-A-3-091719	SEEP-A-3-091719-D	SEEP-A-4-091719	SEEP-A-TR1-091719	SEEP-B-1-091719
	Sample Date	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019
	QA/QC	--	--	--	--	--	Dup	--	--	--
	Lab Sample ID	320-54543-3	320-54543-2	320-54536-2	320-54543-4	320-54491-3	320-54491-4	320-54491-2	320-54491-1	320-54489-4
Table 3+ Lab SOP (ng/L)	HFPO-DA	520	7,700	81 J	37,000	43,000 J	52,000 J	19,000	23,000	25,000
	PFMOAA	88	82,000	73 J	130,000	140,000	150,000	63,000	35,000	200,000
	PFO2HxA	320	17,000	65	55,000	56,000	61,000	27,000	24,000	46,000
	PFO3OA	44	4,300	20	18,000	18,000	20,000	6,500	5,300	9,100
	PFO4DA	13	1,300	9.8	9,600	11,000	10,000	2,600 J	1,500 J	1,200
	PFO5DA	2.3	800	9.2	6,700	8,700	8,700	2,100	210	310
	PMPA	800	5,100	40	24,000	24,000	25,000	29,000	20,000	36,000
	PEPA	240	1,800	<20	9,500	9,100	9,500	12,000	7,200	14,000
	PFESA-BP1	<2	53	41	7,900	8,900	10,000	100 J	<27	1,100
	PFESA-BP2	22	320	46	1,800	2,100	2,200	460	290	680
	Byproduct 4	37 J	390	26 J	3,100	3,200	3,400	1,300	990	3,900
	Byproduct 5	<2	970	150 J	28,000	30,000	33,000	3,600	250 J	30,000
	Byproduct 6	<2	<15	<2	85	89	95	22	15	63
	NVHOS	2.7	760	9.7 J	1,700	1,600	1,800	650	470	2,800
	EVE Acid	<2	<24	6.8	1,500	1,700	1,900	<24	<24	1,400
	Hydro-EVE Acid	<2	190	2.2	2,300	2,700	2,700	510	250	1,900
	R-EVE	18 J	220	6 J	1,600	1,600	1,800	870	680	2,600
	PES	<2	<46	<2	<46	<46	<46	<46	<46	<92
	PFECA B	<2	<60	<2	<60	<60	<60	<60	<60	<120
	PFECA-G	<2	<41	<2	<41	<41	<41	<41	<41	<82
	Total Table 3+ SOP	2,100	120,000	590	340,000	360,000	390,000	170,000	120,000	380,000
Method 537	10:2 Fluorotelomer sulfonate	<18	<18	<2	<19	<18	<18	<18	<19	<18
	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<190	<190	<20	<200	<190	<190	<190	<200	<190
	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<500	<490	<24	<520	<490	<490	<500	<520	<500
	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<82	<80	<4	<84	<79	<80	<82	<85	<82
	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<130	<130	<6.5	<140	<130	<130	<140	<140	<130
	6:2 Fluorotelomer sulfonate	<190	<190	<20	<200	<190	<190	<190	<200	<190
	N-ethyl perfluorooctane sulfonamidoacetic acid	<180	<180	<20	<190	<180	<180	<180	<190	<180
	N-ethylperfluoro-1-octanesulfonamide	<84	<82	<4.1	<86	<81	<82	<84	<87	<84
	N-methyl perfluoro-1-octanesulfonamide	<41	<41	<2	<43	<40	<41	<42	<43	<41
	N-methyl perfluorooctane sulfonamidoacetic acid	<300	<290	<20	<310	<290	<290	<300	<310	<300
	Perfluorobutane Sulfonic Acid	100	89	4.2	93	87	100	130	140	130
	Perfluorobutanoic Acid	<34	68	9.9	350	370	370	380	130	460
	Perfluorodecane Sulfonic Acid	<31	<30	<2	<32	<30	<30	<31	<32	<31
	Perfluorodecanoic Acid	<30	<29	<2	<31	<29	<29	<30	<31	<30
	Perfluorododecane sulfonic acid (PFDoS)	<43	<43	<2.1	<45	<42	<42	<44	<45	<43
	Perfluorododecanoic Acid	<53	<52	<2.6	<55	<51	<52	<53	<55	<53
	Perfluoroheptane sulfonic acid (PFHpS)	<18	<18	<2	<19	<18	<18	<18	<19	<18
	Perfluoroheptanoic Acid	<24	31	17	140	140	130	65	47	160
	Perfluorohexadecanoic acid (PFHxDA)	<86	<84	<4.1	<88	<83	<84	<86	<90	<86
	Perfluorohexane Sulfonic Acid	<16	<16	5.8	<17	<16	<16	<16	<17	<16
	Perfluorohexanoic Acid	<56	<55	24	<58	63	64	<56	<58	<56
	Perfluorononanesulfonic acid	<15	<15	<2	<16	<15	<15	<15	<16	<15
	Perfluorononanoic Acid	<26	<26	<2	<27	30	28	<26	<27	<26
	Perfluorooctadecanoic acid	<44	<44	<2.1	<46	<43	<43	<44	<46	<44
	Perfluorooctane Sulfonamide	<34	<33	<2	<35	<33	<33	<34	<35	<34
	Perfluoropentane sulfonic acid (PFPeS)	<29	<28	<2	<30	<28	<28	<29	<30	<29
	Perfluoropentanoic Acid	<47	160	23	800	790	870	480	320	1,200
	Perfluorotetradecanoic Acid	<28	<27	<2	<29	<27	<27	<28	<29	<28
	Perfluorotridecanoic Acid	<130	<120	<6.1	<130	<120	<120	<130	<130	<130
	Perfluoroundecanoic Acid	<110	<100	<5.1	<110	<100	<100	<110	<110	<110
	PFOA	<82	<80	7.2	<84	<79	<80	<82	<85	<82
	PFOS	<52	<51	14	<54	<50	<51	<52	<54	<52

TABLE B-6
ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Analytical Method	Location ID	SEEP-B-2	SEEP-B-TR1	SEEP-B-TR2	SEEP-C-1	SEEP-D-1	WC-1	EB	EB	EB	FBLK
	Field Sample ID	SEEP-B-2-091719	SEEP-B-TR1-091719	SEEP-B-TR2-091719	SEEP-C-1-091719	SEEP D-1-091719	WC-1-091719	EQBLK-091719-01	EQBLK-091719-02	EB-01-091819	FBLK-091719
	Sample Date	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/18/2019	9/17/2019
	QA/QC	--	--	--	--	--	--	Equipment Blank	Equipment Blank	Equipment Blank	Field Blank
	Lab Sample ID	320-54489-3	320-54489-2	320-54489-1	320-54544-1	320-54536-1	320-54543-1	320-54544-6	320-54544-5	320-54536-6	320-54544-4
Table 3+ Lab SOP (ng/L)	HFPO-DA	**44,000 J**	**18,000**	**41,000 J**	**38,000**	**16,000 J**	**400**	<4	<4	<4 UJ	<4
	PFMOAA	**190,000**	**61,000**	**92,000**	**210,000**	**100,000**	**690 J**	**36**	<5	<5	<5
	PFO2HxA	**45,000**	**17,000**	**27,000**	**56,000**	**28,000**	**380**	**6.7**	<2	<2	<2
	PFO3OA	**9,300**	**3,800**	**4,600**	**15,000**	**7,100**	**58**	<2	<2	<2	<2
	PFO4DA	**1,500**	**1,300**	**1,200**	**3,400**	**2,100**	**13**	<2	<2	<2	<2
	PFO5DA	**430**	**1,500**	**540**	<170	**240**	**3**	<2	<2	<2	<2
	PMPA	**49,000**	**17,000**	**41,000**	**12,000**	**8,100**	**540**	<10	<10	<10	<10
	PEPA	**22,000**	**6,000**	**19,000**	**4,100**	**2,700**	**130**	<20	<20	<20	<20
	PFESA-BP1	**2,200**	<27	**2,100**	<130	<27	<2	<2	<2	<2	<2
	PFESA-BP2	**1,300**	**580**	**1,600**	**530**	**350**	**13**	<2	<2	<2	<2
	Byproduct 4	**6,100**	**740**	**6,500**	**1,700**	**1,100**	**61 J**	<2	<2	<2	<2
	Byproduct 5	**45,000**	**4,300**	**38,000**	**2,800 B**	**2,000**	**300 J**	**2.1**	<2	<2	<2
	Byproduct 6	**110**	<15	**130**	<77	**16**	<2	<2	<2	<2	<2
	NVHOS	**4,100**	**580**	**4,500**	**1,900**	**900**	**13**	<2	<2	<2	<2
	EVE Acid	**2,800**	<24	**1,500**	<120	<24	<2	<2	<2	<2	<2
	Hydro-EVE Acid	**3,600**	**320**	**5,000**	**2,200**	**1,400**	**5.9**	<2	<2	<2	<2
	R-EVE	**4,600**	**390 J**	**5,400**	**2,000**	**1,100 J**	**34 J**	<2	<2	<2	<2
	PES	<92	<46	<46	<230	<46	<2	<2	<2	<2	<2
	PFECA B	<120	<60	<60	<300	<60	<2	<2	<2	<2	<2
	PFECA-G	<82	<41	<41	<200	<41	<2	<2	<2	<2	<2
	Total Table 3+ SOP	430,000	130,000	290,000	350,000	170,000	2,600	45			
Method 537	10:2 Fluorotelomer sulfonate	<19	<18	<18	<18	<17	<19	<2	<2	<2	<2
	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<200	<190	<190	<190	<180	<200	<20	<20	<20	<20
	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<510	<490	<490	<500	<470	<520	<20	<20	<20	<20
	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<84	<80	<80	<81	<77	<86	<2	<2	<2	<2
	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<140	<130	<130	<130	<130	<140	<4	<4	<4	<4
	6:2 Fluorotelomer sulfonate	<200	<190	<190	<190	<180	<200	<20	<20	<20	<20
	N-ethyl perfluorooctane sulfonamidoacetic acid	<190	<180	<180	<180	<170	<190	<20	<20	<20	<20
	N-ethylperfluoro-1-octanesulfonamide	<85	<82	<82	<83	<78	<88	<2	<2	<2	<2
	N-methyl perfluoro-1-octanesulfonamide	<42	<40	<40	<41	<39	<43	<2	<2	<2	<2
	N-methyl perfluorooctane sulfonamidoacetic acid	<300	<290	<290	<300	<280	<310	<20	<20	<20	<20
	Perfluorobutane Sulfonic Acid	**100**	**110**	**130**	<19	<18	**220**	<2	<2	<2	<2
	Perfluorobutanoic Acid	**780**	**450**	**800**	**380**	**210**	<35	<2	<2	<2	<2
	Perfluorodecane Sulfonic Acid	<31	<30	<30	<31	<29	<32	<2	<2	<2	<2
	Perfluorodecanoic Acid	<30	<29	<29	<30	<28	<31	<2	<2	<2	<2
	Perfluorododecane sulfonic acid (PFDoS)	<44	<42	<42	<43	<41	<45	<2	<2	<2	<2
	Perfluorododecanoic Acid	<54	<52	<52	<53	<50	<55	<2	<2	<2	<2
	Perfluoroheptane sulfonic acid (PFHpS)	<19	<18	<18	<18	<17	<19	<2	<2	<2	<2
	Perfluoroheptanoic Acid	**230**	**70**	**240**	**240**	**110**	<25	<2	<2	<2	<2
	Perfluorohexadecanoic acid (PFHxDA)	<87	<84	<84	<85	<80	<90	<2	<2	<2	<2
	Perfluorohexane Sulfonic Acid	<17	<16	<16	<16	<15	<17	<2	<2	<2	<2
	Perfluorohexanoic Acid	**62**	<54	**63**	**84**	<52	<58	<2	<2	<2	<2
	Perfluorononanesulfonic acid	<16	<15	<15	<15	<14	<16	<2	<2	<2	<2
	Perfluorononanoic Acid	<27	<25	<25	<26	<24	<27	<2	<2	<2	<2
	Perfluorooctadecanoic acid	<45	<43	<43	<44	<41	<46	<2	<2	<2	<2
	Perfluorooctane Sulfonamide	<34	<33	<33	<33	<32	<35	<2	<2	<2	<2
	Perfluoropentane sulfonic acid (PFPeS)	<29	<28	<28	<29	<27	<30	<2	<2	<2	<2
	Perfluoropentanoic Acid	**1,900**	**570**	**2,100**	**1,900**	**790**	<49	<2	<2	<2	<2
	Perfluorotetradecanoic Acid	<28	<27	<27	<28	<26	<29	<2	<2	<2	<2
	Perfluorotridecanoic Acid	<130	<120	<120	<120	<120	<130	<2	<2	<2	<2
	Perfluoroundecanoic Acid	<110	<100	<100	<110	<99	<110	<2	<2	<2	<2
	PFOA	<84	<80	<80	<81	<77	<86	<2	<2	<2	<2
	PFOS	<53	<51	<51	<52	<49	<54	<2	<2	<2	<2

TABLE B-6
ANALYTICAL RESULTS
Chemours Fayetteville Works, North Carolina

Analytical Method	Location ID	FBLK
	Field Sample ID	FB-01-091819
	Sample Date	9/18/2019
	QA/QC	Field Blank
	Lab Sample ID	320-54536-5
Table 3+ Lab SOP (ng/L)	HFPO-DA	<4
	PFMOAA	<5
	PFO2HxA	<2
	PFO3OA	<2
	PFO4DA	<2
	PFO5DA	<2
	PMPA	<10
	PEPA	<20
	PFESA-BP1	<2
	PFESA-BP2	<2
	Byproduct 4	<2
	Byproduct 5	<2
	Byproduct 6	<2
	NVHOS	<2
	EVE Acid	<2
	Hydro-EVE Acid	<2
	R-EVE	<2
	PES	<2
	PFECA B	<2
	PFECA-G	<2
	Total Table 3+ SOP	
Method 537	10:2 Fluorotelomer sulfonate	<2
	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20
	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20
	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2
	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4
	6:2 Fluorotelomer sulfonate	<20
	N-ethyl perfluorooctane sulfonamidoacetic acid	<20
	N-ethylperfluoro-1-octanesulfonamide	<2
	N-methyl perfluoro-1-octanesulfonamide	<2
	N-methyl perfluorooctane sulfonamidoacetic acid	<20
	Perfluorobutane Sulfonic Acid	<2
	Perfluorobutanoic Acid	<2
	Perfluorodecane Sulfonic Acid	<2
	Perfluorodecanoic Acid	<2
	Perfluorododecane sulfonic acid (PFDoS)	<2
	Perfluorododecanoic Acid	<2
	Perfluoroheptane sulfonic acid (PFHpS)	<2
	Perfluoroheptanoic Acid	<2
	Perfluorohexadecanoic acid (PFHxDA)	<2
	Perfluorohexane Sulfonic Acid	<2
	Perfluorohexanoic Acid	<2
	Perfluorononanesulfonic acid	<2
	Perfluorononanoic Acid	<2
	Perfluorooctadecanoic acid	<2
	Perfluorooctane Sulfonamide	<2
	Perfluoropentane sulfonic acid (PFPeS)	<2
	Perfluoropentanoic Acid	<2
	Perfluorotetradecanoic Acid	<2
	Perfluorotridecanoic Acid	<2
	Perfluoroundecanoic Acid	<2
	PFOA	<2
	PFOS	<2

Notes:
1. **Bold** - Analyte detected above associated reporting limit
2. F53B-Major, F53B-Minor, DONA, ADONA and NaDONA were not reported by the laboratory at the time of this analysis.

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

RECORD OF WELL DEVELOPMENT

RECORD OF WELL DEVELOPMENT

Site Name:	Chemours Fayetteville	Well ID:	Cumberland-2D	Well Diameter:	2 Inches
Samplers:	BEN KRAUSE	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Low Flow: SS Monsoon Pump Date: 10-21-2019 Time: 13:56

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 8.486

Initial Depth to Water (ft.): 5.41 Depth to Well Bottom (ft.): 58.45

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
14:26	6.00	7500.00	36.00	5.67	51.10	41.20	995.00	0.08	20.46	Cloudy	No	
14:40	6.10	7500.00	30.00	6.24	52.10	9.30	547.00	0.08	20.21	Cloudy	No	
14:50	6.15	7500.00	30.00	6.32	51.60	8.90	447.00	0.08	19.91	Cloudy	No	
15:10	6.20	7500.00	30.00	6.4	56.50	8.70	162.00	0.08	20.20	Cloudy	No	
15:25	6.21	7500.00	30.00	6.45	57.10	9.30	79.70	0.08	19.82	Semi cloudy	No	
15:35	6.25	7500.00	20.00	6.45	56.60	8.80	86.00	0.07	19.67	Semi cloudy	No	
15:45	6.30	7500.00	20.00	6.45	56.40	8.40	66.00	0.07	19.68	Slightly cloudy	No	
15:55	6.33	7500.00	20.00	6.43	55.40	8.30	64.00	0.07	19.70	Clear	No	

Sampling Data

Zero HS:

Method: Date: Time: Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	6.43
Spec. Cond.(mS/cm)	0.07
Turbidity (NTU)	64.00
Temp.(^oC)	19.70
DO (mg/L)	55.40
ORP (mV)	8.30

Screen Interval: 47 - 57

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

Parsons PLUS creating a safer world

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville

Well ID: Cumberland-2D

Well Diameter: 2 Inches

Samplers: BEN KRAUSE

Event: Quarterly

Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Low Flow: SS Monsoon Pump

Date: 10-22-2019

Time: 10:40

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	8.442		
Initial Depth to Water (ft.):	5.44	Depth to Well Bottom (ft.):	58.2

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
10:45	5.20	11250.00	45.00	7.08	2.14	-70.00	116.00	0.08	19.90	Semi cloudy	Sulfuric	
11:00	6.22	11250.00	45.00	6.74	2.57	-36.00	74.30	0.07	19.70	Semi cloudy	Sulfuric	
11:15	6.30	11250.00	45.00	6.3	3.04	-17.70	51.90	0.06	19.60	Semi cloudy	Sulfuric	
11:30	6.32	11250.00	45.00	6.19	3.38	-7.20	38.60	0.06	19.80	Clear	No	
11:45	6.35	11250.00	45.00	6.19	3.38	-11.10	33.10	0.06	20.00	Clear	No	
12:00	6.40	11250.00	45.00	6.17	3.38	-11.80	31.10	0.06	20.03	Clear	No	

Sampling Data

Zero HS:

Method:

Date:

Time:

Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	6.17
Spec. Cond.(mS/cm)	0.06
Turbidity (NTU)	31.10
Temp.(°C)	20.03
DO (mg/L)	3.38
ORP (mV)	

Screen Interval: 47 - 57

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Cloudy
Precipitation:	Rain
Wind (mph)	

Parsons PLUS creating a safer worlc

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville | Well ID: Cumberland-4D | Well Diameter: 2 Inches

Samplers: BEN KRAUSE Nick charles | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Low Flow: SS Monsoon Pump | Date: 10-18-2019 | Time: 11:02

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	8.768		
Initial Depth to Water (ft.):	13.9	Depth to Well Bottom (ft.):	68.7

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
11:17	16.65	7500.00	30.00	5.58	59.00	84.50		0.07	20.55	Cloudy	Sulfuric smell	Turbidity over range
11:30	17.80	7500.00	26.00	5.06	63.30	69.80	404.00	0.05	19.80	Cliudy	Sulfuric odor	
11:45	16.85	7500.00	30.00	5.14	83.30	82.10	583.00	0.04	20.05	Cloudy	Sulfuric odor	
12:00	16.90	7500.00	30.00	5.13	53.80	80.10	316.00	0.04	20.19	Cloudy	Sulfuric odor	
12:15	16.90	7500.00	30.00	5.17	51.20	88.20	77.00	0.04	19.79	Cloudy	Sulfuric odor	
14:10	16.35	7500.00	6.00	5.14	59.80	94.30	373.00	0.05	20.00	Cloudy	Sulfuric odor	
14:20	16.68	7500.00	20.00	4.92	48.00	75.50	92.60	0.04	19.97	Clear	Sulfuric odor	
14:35	16.80	7500.00		5	50.60	80.70	34.70	0.04	20.06	Clear	Sulfuric odor	
14:50	16.90	7500.00	30.00	5	48.60	78.80	18.80	0.04	19.98	Clear	Sulfuric odor	
15:05	16.90	7500.00	30.00	4.97	48.80	80.10	15.50	0.04	19.91	Clear	Sulfuric odor	

Sampling Data

Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.97
Spec. Cond.(mS/cm)	0.04
Turbidity (NTU)	15.50
Temp.(°C)	19.91
DO (mg/L)	48.80
ORP (mV)	80.10

Screen Interval: 57 - 67

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

Parsons PLUS creating a safer world

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville | Well ID: Cumberland-4S | Well Diameter: 2 Inches

Samplers: BEN KRAUSE | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Low Flow: SS Monsoon Pump | Date: 10-18-2019 | Time: 11:13

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 2.024

Initial Depth to Water (ft.): 7.65 | Depth to Well Bottom (ft.): 20.3

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
11:44	14.75	7900.00	72.00	3.44	0.00	233.00	69.10	0.04	27.69	Cloudy	Sulfuric	
12:06	14.72	7900.00	108.00	3.36	0.56	236.00	58.50	0.04	27.65	Cloudy	Sulfuric	
12:18	14.64	7900.00	104.00	3.43	0.36	232.00	58.00	0.04	27.64	Slightly cloudy	Sulfuric	
14:18	14.02	7900.00	128.00	3.51	0.70	234.00	60.20	0.04	27.65	Clear	Sulfuric	
14:47	12.45	7900.00	158.00	3.78	6.70	225.00	140.00	0.00	28.17	Slightly cloudy	Sulfuric	Fluctuating dtw from 8.8 to ~14
15:02	14.48	7900.00	178.00	3.64	3.67	131.80	78.10	0.05	26.77	Clear	None	
15:20	14.63	7900.00	208.00	3.52	3.06	149.00	51.40	0.05	27.18	Red/orange	No	
15:38	14.65	7900.00	226.00	3.47	2.52	162.10	57.80	0.05	26.11	Yellow,orange	None	

Sampling Data

Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	3.47
Spec. Cond.(mS/cm)	0.05
Turbidity (NTU)	57.80
Temp.(°C)	26.11
DO (mg/L)	2.52
ORP (mV)	162.10

Screen Interval: 10 - 20

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

RECORD OF WELL DEVELOPMENT

Site Name:	Chemours Fayetteville	Well ID:	Cumberland-4S	Well Diameter:	2 Inches
Samplers:	BEN KRAUSE	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Low Flow: SS Monsoon Pump Date: 10-21-2019 Time: 11:20

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	2.131		
Initial Depth to Water (ft.):	7.59	Depth to Well Bottom (ft.):	20.91

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
11:43	10.85		11.00	5.55	67.10	101.30	114.00	0.09	26.74	Orange	Sulfuric	
12:00	10.52		9.00	4.52	56.60	142.50	469.00	0.06	25.89	Orange	Sulfuric	
12:15	9.70		7.50	4.3	56.60	163.30	41.50	0.05	25.93	Orange	Sulfuric	
12:30	10.70		7.50	4.31	56.90	168.40	25.60	0.05	25.89	Orange	Sulfuric	
12:45	9.60		7.50	4.27	55.90	169.20	17.30	0.05	25.81	Orange	Sulfuric	

Sampling Data

Zero HS:

Method: Date: Time: Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.27
Spec. Cond.(mS/cm)	0.05
Turbidity (NTU)	17.30
Temp.(°C)	25.81
DO (mg/L)	55.90
ORP (mV)	169.20

Screen Interval: 10 - 20

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

Parsons PLUS creating a safer world

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville | Well ID: Cumberland-5S | Well Diameter: 2 Inches

Samplers: BRANDON WEIDNER Justin Hobart | Event: Other | Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Conventional: SS Monsoon Pump | Date: 10-21-2019 | Time: 11:04

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	3		
Initial Depth to Water (ft.):	4.48	Depth to Well Bottom (ft.):	23.23

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
11:30	4.59	9000.00		5.63	8.66	-28.60	984.00	0.12	22.95	Tan	Yes	
11:50	4.63	9000.00		5.8	2.10	-20.60	325.00	0.13	23.07	Light tan	Yes	
12:05	4.64	9000.00		5.69	1.46	-21.00	652.00	0.12	22.67	Tan	Yes	
12:20	4.64	9000.00		5.63	1.59	-69.40	402.00	0.12	22.68	Light tan	Yes	
12:35	4.64	9000.00		5.63	1.22	-59.60	218.00	0.12	22.75	Light tan	Yes	
12:50	4.64	9000.00		5.64	1.45	-66.40	235.00	0.12	22.87	Cloudy	Yes	
13:05	4.64	9000.00		5.64	1.46	-8.90	130.00	0.11	22.91	Cloudy	Yes	
13:20	4.64	9000.00		5.63	1.50	-68.40	66.60	0.11	22.78	Cloudy	Yes	
13:24	4.64	9000.00		5.62	1.60	-69.50	55.10	0.11	23.22	Cloudy	Yes	
16:10	4.60	9000.00		5.68	2.26	-67.50	145.00	0.12	23.26	Cloudy	Yes	
16:20	4.62	9000.00		5.61	1.71	-59.90	64.40	0.11	22.88	Cloudy	Yes	
16:30	4.62	9000.00		5.61	1.59	10.60	34.70	0.11	22.80	Cloudy	Yes	
16:40	4.64	9000.00		5.59	1.70	46.20	21.60	0.11	22.72	Clear	Yes	
16:50	4.64	9000.00		5.52	1.72	-34.70	19.30	0.11	22.83	Clear	Yes	
16:00	4.64	9000.00		5.63	1.43	-44.50	14.70	0.12	22.63	Clear	Yes	
17:10	4.64	9000.00		5.59	1.14	-54.70	11.40	0.11	22.50	Clear	Yes	
17:20	4.64	9000.00		5.6	1.26	-51.70	9.66	0.11	22.64	Clear	Yes	
17:30	4.64	9000.00		5.5	1.25	-50.20	9.33	0.11	22.63	Clear	Yes	
17:40	4.64	9000.00		5.55	1.24	-50.70	9.43	0.11	22.61	Clear	Yes	Odor, possible petroleum contamination from gas station

Sampling Data

Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	5.55
Spec. Cond.(mS/cm)	0.11
Turbidity (NTU)	9.43
Temp.(°C)	22.61
DO (mg/L)	1.24
ORP (mV)	

Screen Interval: 14 - 24

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	61.00
Sky:	Partly Cloudy
Precipitation:	None
Wind (mph)	5

Parsons PLUS creating a safer world

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville

Well ID: PIW-2D

Well Diameter: 2 Inches

Samplers: LAUREN LACY

Event: Quarterly

Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Electric Submersible Pump

Date: 10-28-2019

Time: 14:10

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	2.6		
Initial Depth to Water (ft.):	36.75	Depth to Well Bottom (ft.):	53

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^{o}C			
14:25												Well went dry before readings could be taken. Let recharge 30 minutes

Sampling Data

Zero HS:

Method:

Date:

Time:

Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	
Spec. Cond.(mS/cm)	
Turbidity (NTU)	
Temp.(^{o}C)	
DO (mg/L)	
ORP (mV)	

Screen Interval: 40 - 50

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

Sample ID:

DuplicateID:

Well ran dry

WEATHER CONDITIONS	
Temperature (F):	80.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	9

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville

Well ID: PIW-2D

Well Diameter: 2 Inches

Samplers: LUKE TART

Event: Quarterly

Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Electric Submersible Pump

Date: 10-29-2019

Time: 10:46

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	2.576		
Initial Depth to Water (ft.):	36.9	Depth to Well Bottom (ft.):	53

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
11:00	50.55			6.18	11.20	106.50	832.00	0.09	18.62	Cloudy	No	Well went dry at 1103
13:38												Developed until dry for the third time.

Sampling Data

Zero HS:

Method:

Date:

Time:

Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	
Spec. Cond.(mS/cm)	
Turbidity (NTU)	
Temp.(°C)	
DO (mg/L)	
ORP (mV)	

Screen Interval: 40 - 50

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

Sample ID:

DuplicateID:

Well ran dry

WEATHER CONDITIONS	
Temperature (F):	65.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	8

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville | Well ID: PIW-4D | Well Diameter: 2 Inches

Samplers: CHARLES PACE | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Electric Submersible Pump | Date: 10-22-2019 | Time: 14:51

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 0

Initial Depth to Water (ft.): | Depth to Well Bottom (ft.):

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
14:53		8500.00		6.51	2.53	55.30	1000.00	0.06	19.44	Grey	present	
15:10		8500.00		6.21	1.25	52.00	152.00	0.05	19.80	Cloudy	no	
15:29		8500.00		6.2	1.77	52.90	82.30	0.06	20.21	Slightly cloudy	Strong	
15:48		8500.00		5.9	1.61	81.50	67.20	0.05	19.56	Clear	Strong	
15:59		8500.00		6.01	1.31	64.90	36.60	0.05	19.02	Clear	Strong	
16:07		8500.00		6.24	1.62	62.90	32.50	0.05	18.98	Clear	Strong	
16:13		8500.00		6.29	1.78	65.70	29.50	0.05	18.76	Clear	Strong	
16:21		8500.00		6.29	1.77	68.10	28.20	0.05	18.42	Clear	Strong	About 250 gal purged.

Sampling Data

Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	6.29
Spec. Cond.(mS/cm)	0.05
Turbidity (NTU)	28.20
Temp.(°C)	18.42
DO (mg/L)	1.77
ORP (mV)	68.10

Screen Interval: 32.3 - 37.3

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	81.00
Sky:	Partly Cloudy
Precipitation:	None
Wind (mph)	9

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville
Well ID: PW-02
Well Diameter: 2 Inches

Samplers: Alli Vo, Brandon Peach
Event: Quarterly
Project Manager: Tracy Ovbey

Purging Data

Pump Depth:
Pump Loc: bottom of well
Method: Electric Submersible Pump
Date: 10-23-2019
Time: 10:20

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	1.096		
Initial Depth to Water (ft.):	56.64	Depth to Well Bottom (ft.):	63.49

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
10:38	58.45			4.99	3.92	174.50	484.00	0.13	19.28			
10:45	56.78			4.76	4.15	228.70	430.00	0.12	19.25			
11:10	58.45			4.61	4.03	249.40	350.00	0.12	19.57			
11:25				4.47	3.79	272.00	244.00	0.12				
11:40	58.42			4.43	4.22	283.00	216.00	0.12	19.12			
11:55	59.15			4.84	4.36	242.70	245.00	0.12	19.26			
12:10	59.23			4.49	4.67	267.30	200.00	0.12	19.01			
12:25	59.29			4.41	4.63	290.00	192.00	0.12	18.96			
12:40	59.31			4.37	4.42	299.40	184.00	0.12	18.91			
12:55	59.32			4.33	4.28	305.90	157.00	0.12	18.82			
13:10	59.34			4.32	4.28	309.70	131.00	0.12	18.86			
13:25	59.35			4.32	4.48	312.70	119.00	0.12	18.95			Tank full stop purging at 250 gal

Sampling Data

Zero HS:
Method:
Date:
Time:
Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.32
Spec. Cond.(mS/cm)	0.12
Turbidity (NTU)	119.00
Temp.(°C)	18.95
DO (mg/L)	4.48
ORP (mV)	312.70

Screen Interval: 50 - 60

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

Sample ID:
DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

Parsons PLUS creating a safer world

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville

Well ID: PW-03

Well Diameter: 2 Inches

Samplers: BRANDON WEIDNER

Event: Quarterly

Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Conventional: SS Monsoon Pump

Date: 10-23-2019 Time: 13:00

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	0.99		
Initial Depth to Water (ft.):	42.46	Depth to Well Bottom (ft.):	48.65

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
13:35	42.60	4800.00		6.7	1.30	-19.70	999.00	0.39	21.33	Dark gray	None	
13:50	43.50	4800.00		6.54	-0.20	25.10	999.00	0.35	22.97	Dark gray	None	Decided to read depth to water right before turning pump on
16:05	42.65	4800.00		5.37	1.07	37.00	999.00	0.38	21.99	Dark grey	No	3 well volumes purged, about 3 gallons in total

Sampling Data

Zero HS:

Method:

Date: Time:

Total Volume Purged (gallons): 2.97

Field Parameters

STABILIZED PARAMETERS	
pH	5.37
Spec. Cond.(mS/cm)	0.38
Turbidity (NTU)	999.00
Temp.(°C)	21.99
DO (mg/L)	1.07
ORP (mV)	37.00

Screen Interval: 35 - 45

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

Sample ID:

DuplicateID:

Well ran dry

WEATHER CONDITIONS	
Temperature (F):	70.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	4

RECORD OF WELL DEVELOPMENT

Site Name:	Chemours Fayetteville	Well ID:	PW-04	Well Diameter:	2 Inches
Samplers:	LUKE TART	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:
Pump Loc: bottom of well
Method: Peristaltic Pump Date: 10-28-2019 Time: 11:30

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	0.216		
Initial Depth to Water (ft.):	29.52	Depth to Well Bottom (ft.):	30.87

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
11:38				3.84	4.35	99.10		0.40	22.70	Cloudy	No	Turbidity OR
11:54	30.84			2.94	1.47	157.60	36.40	0.02	23.94	Clear	No	Went dry at 12:00

Sampling Data Zero HS:

Method: Date: Time: Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	2.94
Spec. Cond.(mS/cm)	0.02
Turbidity (NTU)	36.40
Temp.(^oC)	23.94
DO (mg/L)	1.47
ORP (mV)	157.60

Screen Interval: 17 - 27

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

Sample ID:
DuplicateID:

Well ran dry

WEATHER CONDITIONS	
Temperature (F):	73.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	9

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville | Well ID: PW-07 | Well Diameter: 2 Inches

Samplers: LUKE TART | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Electric Submersible Pump | Date: 10-28-2019 | Time: 13:06

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 0.31

Initial Depth to Water (ft.): 39.89 | Depth to Well Bottom (ft.): 41.83

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
13:25												Well went dry before any readings could be taken

Sampling Data

Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	
Spec. Cond.(mS/cm)	
Turbidity (NTU)	
Temp.(°C)	
DO (mg/L)	
ORP (mV)	

Screen Interval: 28 - 38

SAMPLE SET

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

Sample ID:

DuplicateID:

Well ran dry

WEATHER CONDITIONS	
Temperature (F):	77.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	5

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville | Well ID: PW-07 | Well Diameter: 2 Inches

Samplers: LUKE TART | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Electric Submersible Pump | Date: 10-29-2019 | Time: 10:09

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	0.224		
Initial Depth to Water (ft.):	39.6	Depth to Well Bottom (ft.):	41

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
10:32	40.60											Well too dry to pump water all the way out. Pumped what we could and

Sampling Data

Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	
Spec. Cond.(mS/cm)	
Turbidity (NTU)	
Temp.(^oC)	
DO (mg/L)	
ORP (mV)	

Screen Interval: 28 - 38

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

Sample ID:

DuplicateID:

Well ran dry

WEATHER CONDITIONS	
Temperature (F):	63.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	9

Parsons PLUS creating a safer world

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville | Well ID: PW-07 | Well Diameter: 2 Inches

Samplers: LUKE TART | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc:

Method: | Date: 11-01-2019 | Time: 09:19

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 0.28

Initial Depth to Water (ft.): 40.1 | Depth to Well Bottom (ft.): 41.85

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
09:31	40.10			6.75	75.60	66.60	265.00	0.07	16.40	Muddy		Bailer

Sampling Data

Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons): 0.5

Field Parameters

STABILIZED PARAMETERS	
pH	6.75
Spec. Cond.(mS/cm)	0.07
Turbidity (NTU)	265.00
Temp.(^oC)	16.40
DO (mg/L)	75.60
ORP (mV)	66.60

Screen Interval: 28 - 38

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

Sample ID:

DuplicateID:

Well ran dry

WEATHER CONDITIONS	
Temperature (F):	46.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	11

Parsons PLUS
creating a safer world

RECORD OF WELL DEVELOPMENT

Site Name:	Chemours Fayetteville	Well ID:	PW-07	Well Diameter:	2 Inches
Samplers:	BRANDON WEIDNER	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method:

Date: 11-05-2019 Time: 09:19

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	0.285		
Initial Depth to Water (ft.):	39.99	Depth to Well Bottom (ft.):	41.77

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
09:20	39.99		0.25	9.1	6.23	171.60	120.00	0.10	18.50	Cloudy	None	Using bailer to develop well dry, second time.

Sampling Data

Zero HS:

Method:

Date: Time:

Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	9.10
Spec. Cond.(mS/cm)	0.10
Turbidity (NTU)	120.00
Temp.(^oC)	18.50
DO (mg/L)	6.23
ORP (mV)	171.60

Screen Interval: 28 - 38

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	59.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	1

RECORD OF WELL DEVELOPMENT

Site Name:	Chemours Fayetteville	Well ID:	PW-09	Well Diameter:	2 Inches
Samplers:	CHARLES PACE	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Electric Submersible Pump Date: 10-18-2019 Time: 10:59

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 5.181

Initial Depth to Water (ft.): 25.33 Depth to Well Bottom (ft.): 57.71

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
11:20				9.21	3.92	33.90	613.00	0.14	17.63	Cloudy	No	
11:45				9.32	3.47	38.80	496.00	0.13	17.52	Cloudy	No	Well is running dry but recharging quickly, we are pumping dry and
12:30				9.03	2.29	14.80	289.00	0.11	17.43	Cloudy	No	Have not been steadily pumping, will let recharge then pump dry
13:00				8.11	1.85	-23.10	201.00	0.10	17.62	Cloudy	No	
13:15				7.78	1.76	-38.00	171.00	0.09	17.52	Cloudy	No	
13:30				7.61	1.86	-46.00	153.00	0.09	17.59	Cloudy	No	
13:45				7.54	1.88	-49.70	148.00	0.09	17.48	Cloudy	No	
14:00				7.51	1.87	-32.00	142.00	0.09	17.50	Cloudy	No	
14:20				7.31	1.68	-35.90	128.00	0.09	17.50	Cloudy	No	
14:25				7.27	1.75	-36.90	127.00	0.09	17.51	Cloudy	No	

Sampling Data

Zero HS:

Method: Date: Time: Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	7.27
Spec. Cond.(mS/cm)	0.09
Turbidity (NTU)	127.00
Temp.(°C)	17.51
DO (mg/L)	1.75
ORP (mV)	

Screen Interval: 44 - 54

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

Sample ID:

DuplicateID:

Well ran dry

WEATHER CONDITIONS	
Temperature (F):	59.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	8

Parsons PLUS creating a safer world

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville
Well ID: PW-10R
Well Diameter: 2 Inches

Samplers: KEN STUART Michael Wang
Event: Quarterly
Project Manager: Tracy Ovbey

Purging Data

Pump Depth:
Pump Loc: within screen
Method: Electric Submersible Pump
Date: 10-23-2019
Time: 11:46

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	6.832		
Initial Depth to Water (ft.):	27.83	Depth to Well Bottom (ft.):	70.53

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
12:39	52.16	4800.00	11.60	6.03	27.50	28.00	793.00	0.07	17.97	Grey	Sulfuric smell	DO unit is percent not mg/l throughout the readings below.
12:44	54.13	4800.00	15.00	5.99	8.40	10.90	755.00	0.07	18.01	15.00	Grey	Sulfuric smell
12:49	54.48	4800.00	5.00	6	6.10	6.70	728.00	0.07	18.03	Grey	Sulfuric smell	
12:54	54.94	4800.00	5.00	5.98	6.00	5.10	507.00	0.07	18.04	Grey	Sulfuric smell	
12:59	54.97	4800.00	5.00	5.96	5.30	5.80	238.00	0.07	18.07	Light grey	Sulfuric smell	
13:04	54.89	4800.00	5.00	5.95	4.80	5.40	157.00	0.08	18.10	Light grey	Sulfuric smell	DO input unit is percent but not mg/l
13:10	54.85	4800.00	5.00	5.93	4.30	6.70	224.00	0.08	18.08	Light grey	Sulfuric smell	
13:15	55.02	4800.00	5.00	5.93	0.31	6.30	124.00	0.08	18.11	Clear	Sulfuric smell	DO unit switched from percentage to mg/l
13:20	55.15	4800.00	5.00	5.91	0.26	7.30	106.00	0.08	18.07	Clear	No	
13:25	55.16	4800.00	5.00	5.89	0.27	8.10	90.30	0.08	18.07	Clear	No	Cut off the pump and dump IDW water.
14:18	52.28	4800.00	10.00	5.71	0.19	23.10	139.00	0.08	18.05	Clear	No odor	Started pumping at 1408. Initial water level was at 28.07 ft from top
14:23	53.68	4800.00	5.00	5.83	0.19	15.30	169.00	0.07	18.04	Clear	Sulfuric smell	169.00
14:29	54.22	4800.00	5.00	5.82	0.12	15.00	117.00	0.07	18.05	Clear	Sulfuric smell	
14:34	55.02	4800.00	5.00	5.82	0.15	15.00	133.00	0.07	18.04	Light grey	No odor	
14:39	55.44	4800.00	5.00	5.81	0.17	15.20	106.00	0.07	18.04	Clear	Sulfuric smell	
14:44	55.75	4800.00	5.00	5.83	0.14	15.20	91.00	0.07	18.03	Clear	Same odor	
14:49	55.58	4800.00	5.00	5.81	0.15	15.10	176.00	0.07	18.04	Clear	Same odor	
14:55	55.30	4800.00	5.00	5.79	0.12	15.80	70.50	0.07	18.04	Clear	No odor	
15:01	55.36	4800.00	5.00	5.78	0.16	16.10	60.10	0.07	18.04	Clear	Same odor	
15:05	55.38	4800.00	5.00	5.78	0.26	16.20	52.60	0.07	18.04	Clear	Same odor	
15:11	55.39	4800.00	5.00	5.77	0.01	16.60	47.10	0.07	18.05	Clear	Same odor	
15:14		4800.00	5.00	5.76	-0.31	17.50		0.07	18.06	Clear	Same odor	Pump cut off at 15:14. No depth to water and turbidity reading was
16:07	50.28	4800.00	5.00	5.8	1.34	24.10	123.00	0.07	17.99	Clear	Sulfuric smell	Pump reconnected at 1602. Initial water level = 28.09 ft from top of
16:15	52.78	4800.00	8.00	5.8	0.50	22.10	94.00	0.07	18.00	Clear	Same odor	
16:21	53.40	4800.00	5.00	5.78	0.28	21.50	81.30	0.07	18.01	Clear	No	
16:25	53.57	4800.00	5.00	5.77	0.18	21.30	66.50	0.07	18.01	Clear	Same odor	
16:31	53.70	4800.00	6.00	5.76	0.15	20.90	57.20	0.07	18.01	Clear	Same odor	
16:38	53.75	4800.00	8.00	5.75	0.14	20.50	46.50	0.07	18.01	Clear	Same odor	
16:43	53.82	4800.00	5.00	5.74	0.10	20.40	42.50	0.07	18.01	Clear	Same odor	
16:49	54.19	4800.00	6.00	5.74	0.11	20.60	42.80	0.07	18.01	Clear	Same odor	
16:54	54.16	4800.00	5.00	5.73	0.11	20.40	37.10	0.07	18.01	Clear	Same odor	
16:59	54.11	4800.00	5.00	5.73	0.10	20.20	35.40	0.07	18.01	Clear	Same odor	1700 stopped purging. Turbidity under 50 NTU for four readings and

Sampling Data

Zero HS:
Method:
Date:
Time:
Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	5.73
Spec. Cond.(mS/cm)	0.07

Screen Interval:

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

Parsons PLUS creating a safer world

Turbidity (NTU)	35.40
Temp.(^{o}C)	18.01
DO (mg/L)	0.10
ORP (mV)	20.20

57 - 67

PFAS	250 mL poly	NP	Table 3	
PFAS	250 mL poly	NP	Table 3+	

Sample ID:

DuplicateID:

WEATHER CONDITIONS

Temperature (F):	68.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	5

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville | Well ID: PW-13 | Well Diameter: 2 Inches

Samplers: BEN KRAUSE Ali Vo | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth: 131.2

Pump Loc: bottom of well

Method: Double valve pump | Date: 11-01-2019 | Time: 09:45

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 16.238

Initial Depth to Water (ft.): 29.76 | Depth to Well Bottom (ft.): 131.25

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
10:30	33.92	360.00	1.44	10.11	0.23	-218.10	1000.00	0.31	18.03	Cloudy	No odor	Turbidity meter maxed out
10:45	38.55	360.00	1.44	9.98	0.20	-206.90	1000.00	0.29	18.89	Cloudy	No odor	
11:00	41.41	360.00	1.44	9.22	0.18	-203.60	1000.00	0.20	19.24	Cloudy	No odor	Turbidity meter maxed out
11:15	42.88	360.00	1.44	8.26	0.16	-174.80	1000.00	0.15	19.10	Cloudy	No odor	
11:30	43.66	360.00	1.44	7.31	0.19	-134.70	1000.00	0.13	19.16	Cloudy	No odor	Turbidity meter maxed out
11:45	44.17	360.00	1.44	6.92	0.23	-114.30	1000.00	0.12	19.15	Cloudy	NA	Slightly less turbid but still exceeds limits of meter
12:00	44.45	360.00	1.44	6.87	0.26	-120.10	1000.00	0.11	19.52	Cloudy	No odor	
12:15	44.77	360.00	1.44	6.69	0.22	-115.80	880.00	0.11	19.52	Cloudy	No odor	
12:30	44.92	360.00	1.44	6.59	0.22	-115.50	783.00	0.10	19.62	Cloudy	No odor	
12:45	44.95	360.00	1.44	6.56	0.20	-116.50	626.00	0.10	19.59	Cloudy	No odor	
13:00	44.95	360.00	1.44	6.52	0.19	-119.80	591.00	0.10	19.62	Cloudy	No odor	
13:15	45.08	360.00	1.44	6.47	0.02	-120.40	506.00	0.10	19.58	Cloudy	No odor	
13:30	45.21	360.00	1.44	6.45	0.18	-122.10	532.00	0.10	19.47	Cloudy	No odor	
13:45	45.28	360.00	1.44	6.44	0.04	-126.90	469.00	0.10	19.58	Cloudy	No odor	
14:00	45.28	360.00	1.44	6.42	0.25	-128.20	479.00	0.10	19.79	Cloudy	No odor	
14:15	45.29	360.00	1.44	6.33	0.17	-127.90	452.10	0.09	19.62	Cloudy	No odor	

Sampling Data

Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	6.33
Spec. Cond.(mS/cm)	0.09
Turbidity (NTU)	452.10
Temp.(^oC)	19.62
DO (mg/L)	0.17
ORP (mV)	

Screen Interval: 120 - 130

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	44.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	10

Parsons PLUS creating a safer world

RECORD OF WELL DEVELOPMENT

Site Name:	Chemours Fayetteville	Well ID:	PW-13	Well Diameter:	2 Inches
Samplers:	BRANDON WEIDNER K. Stuart	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Electric Submersible Pump | Date: 11-04-2019 | Time: 15:10

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	15.598		
Initial Depth to Water (ft.):	33.32	Depth to Well Bottom (ft.):	130.81

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
15:40	62.88	3000.00	11.88	9.64	0.86	16.50	999.00	0.25	19.42	Gray	None	
15:55	66.40	3000.00	10.30	7.46	0.44	-84.30	999.00	0.12	19.34	Gray	None	Slowed pump rate from 3000 to 2400 ml/min
16:10	55.78	3000.00	9.51	6.79	0.29	-39.00	822.00	0.10	19.19	Brown	None	
16:25	53.31	3000.00	11.88	6.49	0.27	-18.70	492.00	0.10	19.14	Cloudy brown	None	Flow rate back at 3000ml/min
16:40	52.73	3000.00	11.88	6.38	0.23	-11.80	345.00	0.10	19.11	Cloudy brown	None	Last reading for today, will continue developing in the morning

Sampling Data

Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	6.38
Spec. Cond.(mS/cm)	0.10
Turbidity (NTU)	345.00
Temp.(^oC)	19.11
DO (mg/L)	0.23
ORP (mV)	

Screen Interval: 120 - 130

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	67.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	2

Parsons PLUS
creating a safer world

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville | Well ID: PW-13 | Well Diameter: 2 Inches

Samplers: BRANDON WEIDNER K. Stuart | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Electric Submersible Pump | Date: 11-05-2019 | Time: 09:56

WATER VOLUME CALCULATION	
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot	
Water Volume =	-4.998
Initial Depth to Water (ft.): 31.24	Depth to Well Bottom (ft.):

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
10:05	51.58	3840.00	5.94	7.17	1.63	40.60	999.00	0.10	19.30	Gray	None	Flow rate at 4500ml/min
10:20	56.37	3840.00	17.83	6.43	1.04	26.20	478.00	0.08	19.30	Grayish tan	None	
10:35	55.98	3840.00	17.83	6.2	2.17	20.10	211.00	0.08	19.20	Light tan	None	
10:50	54.71	3840.00	17.83	6.27	1.28	26.50	347.00	0.08	19.30	Light tan	None	
11:05	55.21	3840.00	15.22	6.1	1.28	23.80	172.00	0.08	19.30	Light tan	None	
11:20	55.11	3840.00	15.22	6.06	1.33	23.40	111.00	0.08	19.30	Light tan	None	
11:35	53.51	3840.00	15.22	6.05	1.33	22.20	98.80	0.07	19.30	Light tan	None	Break for lunch after this reading
13:45	34.16	3840.00	5.94	6.19	1.66	82.90	606.00	0.08	19.40	Light brown	None	Back from lunch, flow rate is now 4500ml/min
14:00	51.59	3840.00	17.83	5.69	1.21	63.60	421.00	0.08	19.40	Light tan	None	
14:15	51.96	3840.00	17.83	5.79	1.28	50.90	139.00	0.07	19.30	Light tan	None	
14:30	52.31	3840.00	17.83	5.81	1.32	46.40	111.00	0.07	19.30	Light tan	None	
14:45	51.24	3840.00	17.83	5.85	1.30	41.30	86.60	0.07	19.30	Light tan	None	
15:00	52.58	3840.00	17.83	5.87	1.28	37.60	77.60	0.07	19.30	Cloudy	None	
15:15	52.38	3840.00	17.83	5.89	1.25	34.70	60.30	0.07	19.30	Cloudy	None	
15:30	52.03	3840.00	17.83	5.92	1.17	31.80	66.00	0.07	19.30	Cloudy	None	Stopped developing to empty tote.
16:00	50.10	3840.00	11.09	5.64	0.48	76.00	273.00	0.08	19.30	Light tan	None	Pump rate 4200ml/min
16:10	51.89	3840.00	11.09	5.78	0.56	55.40	123.00	0.07	19.30	Light tan	None	
16:20	51.91	3840.00	11.09	5.86	0.70	47.30	83.80	0.07	19.30	Cloudy	None	
16:30	51.89	3840.00	11.09	5.88	0.86	42.80	69.40	0.07	19.30	Cloudy	None	
16:40	51.88	3840.00	11.09	5.89	0.95	39.80	63.70	0.07	19.30	Cloudy	None	

Sampling Data

Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	5.89
Spec. Cond.(mS/cm)	0.07
Turbidity (NTU)	63.70
Temp.(^oC)	19.30
DO (mg/L)	0.95
ORP (mV)	39.80

Screen Interval: 120 - 130

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	61.00
Sky:	Sunny
Precipitation:	None

Parsons PLUS creating a safer worlc

Wind (mph)	1

Parsons PLUS
creating a safer world

RECORD OF DEVELOPMENT

Site Name: Chemours Fayetteville

Well ID: Robeson-1S

Well Diameter: Inches

Samplers: Michael Wang

Event:

Project Manager:

Purging Data

Pump Depth:

Pump Loc:

Method:

Date: 10/17/2019

Time: 1233

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =			
Initial Depth to Water (ft.):	11.54	Depth to Well Bottom (ft.):	28.23

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
1233		6375.00										Started purging.
1253	16.97											cut the pump off, purge the well
1258	16.70											reconnected the pump
1318	15.13			5.00	8.46	167.00	42.10	0.050	22.64			reconected.
1333												cutt off the pump
1338				4.89	7.45	170.00	8.40	0.046	22.81			recoonected the pump
1353												disconnected the pump
1507	11.49											
1510												started pumping
1523	11.55			5.06	6.67	155.00	0.00	0.049	22.85			
1525												disconnected and purged
1530												reconnected
1545												disconnected and purged
1550												reconnected
1615				5.3	5.29	122.70	5.20	0.054	21.55			

Sampling Data

Zero HS:

Method:

Date:

Time:

Total Volume Purged (gallons): 220

Field Parameters

STABILIZED PARAMETERS	
pH	5.30
Spec. Cond.(mS/cm)	0.05
Turbidity (NTU)	5.20
Temp.(°C)	21.55
DO (mg/L)	5.29
ORP (mV)	122.70

Screen Interval: 17-27

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS

Temperature (F):

Sky:

Precipitation:

Wind (mph)

RECORD OF WELL DEVELOPMENT

Site Name: Chemours Fayetteville | Well ID: Robeson-1D | Well Diameter: 2 Inches

Samplers: BEN KRAUSE Nick Charles | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data Pump Depth: 50

Pump Loc: bottom of well

Method: Low Flow: SS Monsoon Pump | Date: 10-17-2019 | Time: 12:32

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 54.4

Initial Depth to Water (ft.): 13.5 | Depth to Well Bottom (ft.): 54.4

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
13:11	14.58	6000.00	67.20	7.6	0.00	55.10		0.16	20.27	Cloudy	No	Turbidity exceeded detection limit
13:29	14.63	6000.00	96.00	6.13	42.50	36.30		0.09	20.53	Cloudy	Sulfuric	Turbidity over range
13:51	14.70	6000.00	128.00	5.88	38.20	53.70	75.50	0.07	20.11	Clear	Sulfuric	
15:26	14.55	6000.00	158.00	5.68	60.60	87.80	178.00	0.07	20.80	Clear	Sulfuric	
15:41	14.55	6000.00	188.00	5.1	45.20	106.20	8.87	0.06	20.69	Clear	Sulfuric	
15:56	14.62	6000.00	218.00	5.3	46.80	93.20	737.00	0.06	20.13	Cloudy	Sulfuric	
16:11	14.65	6000.00	248.00	5.04	44.00	99.30	104.00	0.06	20.35	Clear	Sulfuric	
16:26	14.69	6000.00	278.00	4.98	44.30	102.00	19.30	0.06	19.99	Clear	Sulfuric	

Sampling Data Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.98
Spec. Cond.(mS/cm)	0.06
Turbidity (NTU)	19.30
Temp.(°C)	19.99
DO (mg/L)	44.30
ORP (mV)	102.00

Screen Interval: 42.75 - 52.75

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

RECORD OF DEVELOPMENT

Site Name: Chemours Fayetteville

Well ID: PIW-2D

Well Diameter: Inches

Samplers: Brandon Peach and Savannah Volkoff

Event:

Project Manager:

Purging Data

Pump Depth:

Pump Loc:

Method:

Date: 10/31/2019

Time: 1400

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume =

Initial Depth to Water (ft.): 36.85

Depth to Well Bottom (ft.):

Time 24 hr.	DTW ft.	Pump Rate ml/min.	Vol. gal.	pH	DO mg/L	Redox mV	Turbidity NTU	Spec. Cond. mS/cm	Temp. °C	Color	Odor	Comments
1415	35.61			6.24	11.47	138.30	278.00	0.09	20.50			
1420	38.95			5.81	9.80	165.00	263.00	0.085	19.20			
1425	40.43	150.00		5.63	9.73	159.10	201.00	0.082	19.00			
1435	40.39	150.00		5.8	9.63	137.00	142.00	0.078	19.40			
1440	-	150.00		5.8	8.86	131.70	58.70	0.075	19.30			
1445	40.97	150.00		5.8	8.07	130.00	58.60	0.075	19.20			
1450	41.01	150.00		5.79	7.63	129.20	54.60	0.074	19.30			
1455	41.07	150.00		5.79	7.70	128.30	33.80	0.072	19.20			
1500	-	150.00		5.79	7.19	128.00	31.80	0.072	19.20			
1505	41.13	150.00		5.76	7.01	128.10	31.90	0.071	19.20			
1510	41.17	150.00		5.75	6.73	128.70	28.50	0.071	19.20			
1515	-	150.00		5.75	6.10	126.70	25.00	0.071	19.20			
1520	-	150.00		5.77	6.03	124.80	25.10	0.071	19.20			
1525	-	150.00		5.76	5.91	124.40	29.00	0.071	19.20			

Sampling Data

Zero HS:

Method:

Date:

Time:

Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	5.76
Spec. Cond.(mS/cm)	0.07
Turbidity (NTU)	29.00
Temp.(°C)	19.20
DO (mg/L)	5.91
ORP (mV)	124.40

Screen Interval:

SAMPLE SET

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS

Temperature (F):

Sky:

Precipitation:

Wind (mph)

Parsons PLUS
creating a safer world

RECORD OF DEVELOPMENT

Site Name: Chemours Fayetteville

Well ID: PW-12

Well Diameter: Inches

Samplers: Brandon Peach and Savannah Volkoff

Event:

Project Manager:

Purging Data

Pump Depth:

Pump Loc:

Method:

Date: 10/31/2019

Time: 9:55

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume =

Initial Depth to Water (ft.): 58.4

Depth to Well Bottom (ft.):

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
0955												
1005	58.20	575.00		5.57	5.77	141.40	441.00	0.052	18.40			
1020	58.14	500.00		5.73	5.89	118.10	242.00	0.052	18.50			
1035	58.10	500.00		5.76	6.43	110.00	148.00	0.052	18.60			
1050	58.12	500.00		5.81	6.47	100.40	88.60	0.051	18.60			
1105	58.10	500.00		5.83	6.76	96.80	78.50	0.051	18.30			
1120	58.10	500.00		5.84	6.51	93.80	50.80	0.051	18.30			
1135	58.10	500.00		5.86	6.73	91.30	37.90	0.051	18.30			
1150	58.10	500.00		5.88	6.87	89.10	29.80	0.051	18.50			
1155	58.10	500.00		5.88	7.02	88.30	27.40	0.051	18.30			
1200	58.20	500.00		5.89	7.20	88.10	26.20	0.051	18.30			
1205	58.10	500.00		5.89	7.03	87.50	23.20	0.051	18.50			
1210	58.10	500.00		5.91	7.40	86.20	24.60	0.051	18.30			
1215	58.10	500.00		5.92	7.29	85.80	22.00	0.051	18.40			
1220	58.10	500.00		5.91	7.77	85.00	22.40	0.051	18.30			
1225	58.10	500.00		5.92	7.49	82.40	21.80	0.051	18.30			
1230	58.10	500.00		5.92	7.02	85.10	21.70	0.051	18.30			

Sampling Data

Zero HS:

Method:

Date:

Time:

Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	5.92
Spec. Cond.(mS/cm)	0.05
Turbidity (NTU)	21.70
Temp.(°C)	18.30
DO (mg/L)	7.02
ORP (mV)	85.10

Screen Interval:

SAMPLE SET

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS

Temperature (F):

Sky:

Precipitation:

Wind (mph)

Parsons PLUS
creating a safer world

RECORD OF DEVELOPMENT

Site Name: Chemours Fayetteville
Well ID: P1W-15R
Well Diameter: Inches

Samplers: Brandon Peach and Savannah Volkoff
Event:
Project Manager:

Purging Data

Pump Depth:
Pump Loc:

Method:
Date: 10/30/2019
Time: 1510

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume =

Initial Depth to Water (ft.): 54.32
Depth to Well Bottom (ft.):

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
1520	60.47	800.00		7.48	2.01	46.40	184.00		19.00			
1535	59.63	750.00		6.37	4.72	74.30	65.50		19.00			
1550	61.27	750.00		5.7	16.50	134.40	96.00		18.70			
1609	61.05	750.00		5.25	23.60	140.10	15.00		18.80			
1615	61.27	750.00		5.99	18.58	143.10	9.75		18.80			
1620	61.25	750.00		5.55	18.11	141.60	8.55		18.90			
1625	61.31	750.00		5.43	19.09	148.30	13.90		18.80			
1630	60.91	750.00		5.42	18.54	147.60	13.60		18.20			
1635	61.30	750.00		5.48	19.51	148.00	4.91		18.80			

Sampling Data

Zero HS:

Method:
Date:
Time:
Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	5.48
Spec. Cond.(mS/cm)	
Turbidity (NTU)	4.91
Temp.(°C)	18.80
DO (mg/L)	19.51
ORP (mV)	148.00

Screen Interval:

SAMPLE SET

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

Sample ID:
DuplicateID:

WEATHER CONDITIONS

Temperature (F):
Sky:
Precipitation:
Wind (mph)

Parsons PLUS
creating a safer world

RECORD OF WELL SAMPLING

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville
Well ID: Bladen-1S
Well Diameter: 2 Inches

Samplers: BRANDON WEIDNER Justin Hobart
Event: Quarterly
Project Manager: Tracy Ovbey

Purging Data

Pump Depth:
Pump Loc: within screen
Method: Low Flow: Geo Pump
Date: 10-22-2019
Time: 10:50

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	0		
Initial Depth to Water (ft.):		Depth to Well Bottom (ft.):	

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
18:12												Well is dry

Sampling Data

Zero HS:
Method:
Date: 10-22-2019
Time: 18:12
Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	
Spec. Cond.(mS/cm)	
Turbidity (NTU)	
Temp.(°C)	
DO (mg/L)	
ORP (mV)	

Screen Interval: 5 - 10

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

Sample ID: GW4Q19-Bladen-1S
DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	68.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	2

Parsons PLUS
creating a safer worlc

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	Bladen-1D	Well Diameter:	2 Inches
Samplers:	BRANDON WEIDNER K. Stuart	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Low Flow: Geo Pump Date: 11-07-2019 Time: 13:30

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	3.032		
Initial Depth to Water (ft.):	19.75	Depth to Well Bottom (ft.):	38.7

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
13:45	19.79	100.00		8.78	0.78	149.70	50.10	0.14	21.60	Clear		
13:51	19.79	100.00		8.84	0.54	87.20	34.70	0.14	22.90	Clear		
13:54	19.79	100.00		8.7	0.51	57.30	25.70	0.13	23.10	Clear	Sulfur like odor	
14:00	19.79	100.00		8.33	0.50	-34.90	20.70	0.13	22.40	Clear	Sulfur	
14:05	19.79	100.00		7.95	0.53	-56.70	18.10	0.13	22.20	Clear		
14:10	19.79	100.00		7.57	0.54	-56.00	17.30	0.13	22.40	Clear	Sulfur like odor	
14:15	19.79	100.00		7.45	0.53	-66.50	18.00	0.13	22.50	Clear	Sulfur like smell	
14:20	19.79	100.00		7.33	0.57	-56.30	14.00	0.13	22.70	Clear	Sulfur like odor	
14:25	19.79	100.00		7.18	0.58	-54.70	15.20	0.12	22.40	Clear	Sulfur like odor	
14:30	19.79	100.00		7.08	0.54	-51.40	13.00	0.13	22.60	Clear	Sulfur like odor	

Sampling Data

Zero HS:

Method: Date: 11-07-2019 Time: 14:31 Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	7.08
Spec. Cond.(mS/cm)	0.13
Turbidity (NTU)	13.00
Temp.(°C)	22.60
DO (mg/L)	0.54
ORP (mV)	

Screen Interval: 37 - 47

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

Sample ID: GW4Q19-Bladen-1D

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	74.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	3

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	Bladen-2S	Well Diameter:	2 Inches
Samplers:	BRANDON WEIDNER Justin Hobart	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Low Flow: Geo Pump | Date: 10-22-2019 | Time: 11:27

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	1.974		
Initial Depth to Water (ft.):	7.39	Depth to Well Bottom (ft.):	19.73

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
11:55	8.40	120.00		5.83	1.13	38.50	8.93	0.06	24.51	Clear	None	
11:58	8.61	120.00		5.82	0.72	10.10	7.54	0.05	24.71	Clear	None	
12:03	8.69	120.00		5.84	0.64	-4.20	8.69	0.06	24.84	Clear	None	
12:08	8.72	120.00		5.9	0.57	-14.50	8.08	0.06	24.90	Clear	None	
12:13	8.73	120.00		5.96	0.59	-11.40	6.90	0.06	24.75	Clear	None	
12:18	8.75	120.00		6.03	0.47	-29.20	7.07	0.06	24.75	Clear	None	
12:22	8.76	120.00		6.06	0.48	-29.40	6.35	0.07	24.62	Clear	None	
12:28	8.78	120.00		6.1	0.44	-33.50	6.64	0.07	24.70			

Sampling Data

Zero HS:

Method:

Date: 10-22-2019 Time: 12:30 Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	6.10
Spec. Cond.(mS/cm)	0.07
Turbidity (NTU)	6.64
Temp.(°C)	24.70
DO (mg/L)	0.44
ORP (mV)	

Screen Interval: 10 - 20

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

Sample ID: GW4Q19-Bladen-2S

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	70.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	5

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: Bladen-3D | Well Diameter: 2 Inches

Samplers: BRANDON WEIDNER B.Peach | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data Pump Depth: 37.7

Pump Loc: within screen

Method: Double valve pump | Date: 10-28-2019 | Time: 11:24

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 5.467

Initial Depth to Water (ft.): 10.51 | Depth to Well Bottom (ft.): 44.68

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
12:00	13.25	400.00		6.22	1.20	54.20	127.00	0.11	21.00	Cloudy	None	
12:05	13.91	400.00		5.9	0.70	56.10	153.00	0.10	20.90	Cloudy	None	
12:10	14.22	400.00		5.86	0.51	52.60	159.00	0.10	21.20	Cloudy	None	
12:15	14.51	400.00		5.89	0.48	44.60	83.30	0.10	20.80	Cloudy	None	
12:20	14.63	400.00		5.88	0.54	42.00	62.60	0.10	20.70	Cloudy	None	
12:25	14.75	400.00		5.87	0.56	42.60	46.80	0.10	20.70	Cloudy	None	
12:30	14.84	400.00		5.86	0.56	41.80	41.00	0.09	20.70	Cloudy	None	
12:35	14.90	400.00		5.84	0.53	42.70	46.70	0.09	20.70	Cloudy	None	
12:40	14.93	400.00		5.84	0.54	42.60	38.00	0.09	20.70	Cloudy	None	
12:45	14.97	400.00		5.83	0.31	41.70	35.60	0.08	20.60	Cloudy	None	
12:52	14.99	400.00		5.78	0.30	42.50	30.40	0.09	20.70	Cloudy	None	
13:00	15.05	400.00		5.8	0.32	41.50	27.10	0.09	20.60	Cloudy	None	
13:05	15.02	400.00		5.82	0.30	39.40	23.50	0.09	20.60	Cloudy	None	
13:12	15.26	400.00		5.8	0.29	41.40	23.00	0.08	20.50	Clear	None	
13:15	15.23	400.00		5.79	0.30	41.60	24.30	0.09	20.50	Clear	None	
13:20	15.28	400.00		5.8	3.05	46.90	24.60	0.09	20.40	Clear	None	
13:30	15.11	400.00		5.79	0.86	49.30	18.40	0.08	21.00	Clear	None	
13:50	14.85	400.00		6.08	0.39	23.80	21.20	0.10	20.90	Clear	None	Compressor turns off and couldn't sample last 15 mins.
13:55	12.67	400.00		5.97	0.26	30.30	21.50	0.09	21.10	Clear	None	
13:55	12.98	400.00		5.88	0.30	35.80	35.20	0.08	21.10	Clear	None	
14:00	13.68	400.00		5.83	0.46	39.60	36.50	0.08	20.90	Clear	None	
14:05	13.30	400.00		5.83	0.27	37.00	26.80	0.08	21.90	Clear	None	
14:10	12.71	400.00		5.89	0.20	33.00	26.50	0.08	21.90	Clear	None	Changed flow to 5 secs every 25 secs to reduce draw down
14:15	12.51	400.00		5.88	0.19	32.50	21.40	0.08	22.00	Clear	None	
14:20	12.44	400.00		5.88	0.19	32.00	20.00	0.08	22.00	Clear	None	
14:25	12.40	400.00		5.88	0.19	31.00	15.80	0.08	21.80	Clear	None	
14:29	12.34	400.00		5.87	0.20	31.00	15.40	0.08	21.70	Clear	None	

Sampling Data Zero HS:

Method: Dedicated tubing | Date: 10-28-2019 | Time: 14:30 | Total Volume Purged (gallons): 9.06

Field Parameters

STABILIZED PARAMETERS	
pH	5.87
Spec. Cond.(mS/cm)	0.08
Turbidity (NTU)	15.40
Temp.(°C)	21.70
DO (mg/L)	0.20

Screen Interval: 33.75 - 43.75

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

Parsons PLUS creating a safer world

ORP (mV)	31.00

Sample ID:	GW4Q19-Bladen-3D
DuplicateID:	

WEATHER CONDITIONS

Temperature (F):	74.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	2

Parsons PLUS
creating a safer worlc

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	Bladen-3S	Well Diameter:	2 Inches
Samplers:	BRANDON WEIDNER A. Vo	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth: 12

Pump Loc: within screen

Method: Low Flow: Geo Pump | Date: 10-28-2019 | Time: 11:25

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 0.789

Initial Depth to Water (ft.): 9.58 | Depth to Well Bottom (ft.): 14.51

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
11:45	9.58	180.00		7.94	5.63	61.40	1.14	0.05	26.53			
11:53	9.59	180.00		5.82	5.26	114.70	1.10	0.03	25.70			
11:57	9.58	180.00		5.25	4.69	122.80	1.23	0.02	25.70			
12:00	9.60	180.00		5.31	4.82	121.30	1.03	0.03	25.55			
12:05	9.61	180.00		5.31	4.98	124.40	0.62	0.02	25.07			

Sampling Data

Zero HS:

Method: Peristaltic Pump | Date: 10-28-2019 | Time: 12:05 | Total Volume Purged (gallons): 1.03

Field Parameters

STABILIZED PARAMETERS	
pH	5.31
Spec. Cond.(mS/cm)	0.02
Turbidity (NTU)	0.62
Temp.(°C)	25.07
DO (mg/L)	4.98
ORP (mV)	124.40

Screen Interval: 5 - 15

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

Sample ID: GW4Q19-Bladen-3S

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	74.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	2

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	Bladen-4D	Well Diameter:	2 Inches
Samplers:	BRANDON WEIDNER S. Volkoff	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:
Pump Loc: within screen
Method: Double valve pump Date: 10-25-2019 Time: 11:13

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	8.05		
Initial Depth to Water (ft.):	1.41	Depth to Well Bottom (ft.):	51.72

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
12:15	1.62	640.00		6.29	0.03	-69.90	32.00	0.43	22.15	Clear	None	
12:20	1.81	640.00		6.27	0.02	-69.10	25.60	0.42	22.13	Clear	None	
12:25	1.80	640.00		6.31	0.02	-74.00	19.20	0.42	22.02	Clear	None	
12:30	1.82	640.00		6.31	0.02	-75.30	13.90	0.42	21.98	Clear	Nonw	
12:35	1.83	640.00		6.31	0.02	-76.30	9.29	0.42	21.80	Clear	None	
12:40	1.83	640.00		6.26	0.02	-76.30	5.49	0.42	21.91	Clear	None	

Sampling Data

Zero HS:
Method: Dedicated tubing Date: 10-25-2019 Time: 12:45 Total Volume Purged (gallons): 5.11

Field Parameters

STABILIZED PARAMETERS	
pH	6.26
Spec. Cond.(mS/cm)	0.42
Turbidity (NTU)	5.49
Temp.(°C)	21.91
DO (mg/L)	0.02
ORP (mV)	

Screen Interval: 46.75 - 51.75

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

Sample ID: GW4Q19-Bladen-4D
DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	77.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	3

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	Bladen-4S	Well Diameter:	2 Inches
Samplers:	BRANDON WEIDNER Justin Hobart	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:
Pump Loc: within screen

Method: Low Flow: Geo Pump Date: 10-22-2019 Time: 13:12

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 1.48

Initial Depth to Water (ft.): 5.74 Depth to Well Bottom (ft.): 14.99

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
13:42	5.74	170.00		5.78	2.85	20.30	32.90	0.08	27.29	Clear	None	
13:47	5.75	170.00		5.76	1.60	4.90	28.90	0.08	27.35	Clear	None	
13:52	5.75	170.00		5.75	1.04	-7.00	24.60	0.08	27.38	Clear	None	
13:57	5.75	170.00		5.74	0.98	-8.30	24.50	0.07	27.33	Clear	None	
14:02	5.75	170.00		5.73	0.81	-18.60	23.40	0.07	27.37	Clear	None	
14:07	5.75	170.00		5.73	0.82	-24.80	22.20	0.07	27.37	Clear	None	
14:12	5.75	170.00		5.74	0.83	-26.30	21.80	0.07	27.42	Clear	None	
14:17	5.75	170.00		5.74	0.71	-25.90	21.80	0.07	27.52	Clear	None	
14:22	5.75	170.00		5.73	0.64	-30.80	22.20	0.07	27.60	Clear	None	
14:27	5.75	170.00		5.72	0.66	-31.50	22.00	0.07	27.59	Clear	None	
14:32	5.75	170.00		5.72	0.60	-33.30	22.40	0.07	27.49	Clear	None	
14:37	5.75	170.00		5.71	0.65	-34.80	22.40	0.07	27.60	Clear	None	Start pumping 5x well volume, due to high turb but stable parameters
14:42	5.75	170.00		5.72	0.65	-36.70	22.30	0.07	27.67	Clear	None	
14:47	5.75	170.00		5.71	0.55	-37.30	22.20	0.07	27.65	Clear	None	
14:52	5.75	170.00		5.71	0.55	-38.90	22.50	0.07	27.54	Clear	None	
14:57	5.75	170.00		5.71	0.57	-38.80	22.30	0.07	27.61	Clear	None	
15:02	5.75	170.00		5.7	0.59	-39.30	21.80	0.07	27.52	Clear	None	
15:07	5.75	170.00		5.7	0.57	-39.20	22.20	0.07	27.49	Clear	None	
15:12	5.75	170.00		5.71	0.58	-40.10	23.20	0.07	27.57	Clear	None	
15:17	5.75	170.00		5.7	0.55	-40.60	22.20	0.07	27.52	Clear	None	
15:22	5.75	170.00		5.71	0.55	-40.40	22.30	0.07	27.42	Clear	None	
15:27	5.75	170.00		5.71	0.51	-40.20	22.50	0.07	27.39	Clear	None	
15:32	5.75	170.00		5.71	0.54	-40.10	22.50	0.07	27.29	Clear	None	
15:37	5.75	170.00		5.7	0.58	-41.30	22.80	0.07	27.29	Clear	None	
15:42	5.75	170.00		5.69	0.57	-40.10	22.30	0.07	27.29	Clear	None	
15:47	5.75	170.00		5.69	0.58	-38.80	22.90	0.07	27.29	Clear	None	
15:52	5.75	170.00		5.69	0.56	-38.00	22.60	0.07	27.27	Clear	None	
15:57	5.75	170.00		5.69	0.55	-39.80	22.00	0.07	27.22	Clear	None	
16:02	5.75	170.00		5.68	0.50	-38.90	22.50	0.06	27.21	Clear	None	
16:07	5.75	170.00		5.69	0.61	-38.00	29.30	0.07	27.24	Clear	None	Accidentally hit flow cell, iron precipitate floating around cell
16:12	5.75	170.00		5.69	0.59	-40.30	22.90	0.07	27.20	Clear	None	
16:17	5.75	170.00		5.69	0.56	-38.60	22.90	0.07	27.19	Clear	None	
16:22	5.75	170.00		5.69	0.57	-39.10	22.90	0.07	27.24	Clear	None	
16:27	5.75	170.00		5.68	0.55	-39.80	22.40	0.07	27.19	Clear	None	
16:32	5.75	170.00		5.68	0.57	-40.40	22.50	0.07	27.20	Clear	None	
16:37	5.75	170.00		5.68	0.56	-41.30	22.30	0.07	27.28	Clear	None	
16:42	5.75	170.00		5.68	0.55	-42.40	22.50	0.07	27.36	Clear	None	
16:46	5.75	170.00		5.68	0.55	-42.70	22.20	0.07	27.26	Clear	None	Purged 5x well volume, sampled

Sampling Data

Zero HS:

Method:

Date: 10-22-2019 Time: 16:50 Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	5.68
Spec. Cond.(mS/cm)	0.07
Turbidity (NTU)	22.20
Temp.(^{o}C)	27.26
DO (mg/L)	0.55
ORP (mV)	

Screen Interval: 4.75 - 14.75

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

Sample ID: GW4Q19-Bladen-4S

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	76.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	6

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	Cumberland-1D	Well Diameter:	2 Inches
Samplers:	BRANDON WEIDNER Mike Wang	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth: 45

Pump Loc: within screen

Method: Double valve pump Date: 10-24-2019 Time: 09:20

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	6.893		
Initial Depth to Water (ft.):	7.28	Depth to Well Bottom (ft.):	50.36

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
10:10	7.68	480.00		5.29	1.18	-39.90	297.00	0.13	20.40	Cloudy	Yes	
10:15	7.45	480.00		5.28	0.88	-95.50	117.00	0.12	20.63	Cloudy	Yes	
10:20	7.51	480.00		5.3	0.68	-119.40	73.50	0.13	20.59	Cloudy	Yes	
10:25	7.45	480.00		5.31	0.59	-132.90	44.50	0.13	20.66	Cloudy	Yes	Sulfur smell
10:30	7.45	480.00		5.3	0.47	-137.90	39.80	0.13	20.71	Cloudy	Yes	
10:35	7.50	480.00		5.27	0.38	-142.60	30.20	0.13	20.73	Cloudy	Yes	
10:40	7.47	480.00		5.26	0.37	-144.10	20.50	0.13	20.76	Cloudy	Yes	
10:45	7.48	480.00		5.22	0.35	-136.90	16.30	0.13	20.78	Clear	Yes	
10:50	7.48	480.00		5.15	0.34	-128.60	14.10	0.13	20.90	Clear	Yes	Sulfur smell

Sampling Data

Zero HS:

Method:

Date: 10-24-2019 Time: 10:55 Total Volume Purged (gallons): 5.9

Field Parameters

STABILIZED PARAMETERS	
pH	5.15
Spec. Cond.(mS/cm)	0.13
Turbidity (NTU)	14.10
Temp.(°C)	20.90
DO (mg/L)	0.34
ORP (mV)	-128.60

Screen Interval: 40 - 50

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

Sample ID: GW4Q19-Cumberland-1D

DuplicateID: GW4Q19-Cumberland-1D-D

WEATHER CONDITIONS	
Temperature (F):	51.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	5

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville

Well ID: Cumberland-1S

Well Diameter: 2 Inches

Samplers: BEN KRAUSE

Event: Quarterly

Project Manager: Tracy Ovbey

Purging Data

Pump Depth: 20

Pump Loc: within screen

Method: Peristaltic Pump

Date: 10-24-2019

Time: 09:23

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 2.893

Initial Depth to Water (ft.): 7.12

Depth to Well Bottom (ft.): 25.2

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
09:45	7.20	175.00	0.23	4.91	5.67	281.30	1.50	0.11	22.90	Clear	No	
09:50	7.20	175.00	0.23	4.73	6.86	293.60	1.10	0.11	23.10	Clear	No	
09:55	7.21	175.00	0.23	4.63	6.34	304.60	0.92	0.11	23.10	Clear	No	
10:00	7.21	175.00	0.23	4.61	6.15	313.40	0.86	0.11	23.10	Clear	No	
10:05	7.22	175.00	0.23	4.59	6.20	323.20	1.00	0.11	23.20	Clear	No	

Sampling Data

Zero HS:

Method:

Date: 10-24-2019

Time: 10:08

Total Volume Purged (gallons): 1.31

Field Parameters

STABILIZED PARAMETERS	
pH	4.59
Spec. Cond.(mS/cm)	0.11
Turbidity (NTU)	1.00
Temp.(°C)	23.20
DO (mg/L)	6.20
ORP (mV)	323.20

Screen Interval: 15 - 25

SAMPLE SET

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

Sample ID: GW4Q19-Cumberland-1S

DuplicateID:

WEATHER CONDITIONS

Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville
Well ID: Cumberland-2D
Well Diameter: 2 Inches
Samplers: BEN KRAUSE
Event: Quarterly
Project Manager: Tracy Ovbey

Purging Data
Pump Depth: 52
Pump Loc: within screen
Method: Double valve pump
Date: 10-25-2019
Time: 09:21

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	8.357		
Initial Depth to Water (ft.):	5.32	Depth to Well Bottom (ft.):	57.55

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
10:00	5.35	150.00	0.20	6.64	0.44	-108.00	136.00	0.10	20.80	Cloudy	Sulfuric	
10:05	5.31	150.00	0.20	6.7	0.27	-132.60	117.00	0.10	21.00	Semi cloudy	Sulfuric	
10:10	5.35	150.00	0.20	6.73	0.29	-149.30	107.00	0.10	21.00	Slightly cloudy	Sulfuric	
10:15	5.35	150.00	0.20	6.76	0.22	-162.40	98.10	0.10	21.10	Slightly cloudy	Sulfuric	
10:20	5.31	150.00	0.20	6.78	0.32	-177.90	94.60	0.10	21.30	Slightly cloudy	Sulfuric	
10:25	5.32	150.00	0.20	6.77	0.34	-183.60	83.60	0.09	21.90	Slightly cloudy	Sulfuric	
10:30	5.32	150.00	0.20	6.78	0.27	-192.40	79.10	0.09	20.80	Clear	Sulfuric	
10:35	5.32	150.00	0.20	6.77	0.19	-199.30	70.80	0.09	20.70	Clear	Sulfuric	
10:40	5.32	150.00	0.20	6.72	0.21	-209.60	68.60	0.09	20.70	Clear	Sulfuric	
10:45	5.32	150.00	0.20	6.74	0.19	-231.50	65.00	0.09	21.00	Clear	Sulfuric	
10:50	5.32	150.00	0.20	6.78	0.16	-251.70	64.70	0.09	21.20	Clear	Sulfuric	
10:55	5.33	150.00	0.20	6.8	0.21	-274.80	62.60	0.09	21.20	Semi cloudy	No odor	
11:00	5.32	150.00	0.20	6.8	0.18	-305.90	66.30	0.09	21.30	Clear	Sulfuric	
11:05	5.33	150.00	0.20	6.82	0.16	-335.80	57.40	0.08	21.20	Clear	Sulfuric	
11:10	5.35	150.00	0.20	6.8	0.19	-370.40	52.10	0.08	20.90	Clear	No	
11:15	5.33	150.00	0.20	6.79	0.16	-380.80	48.20	0.08	20.80	Clear	No	
11:20	5.33	150.00	0.20	6.79	0.15	-410.20	42.60	0.08	21.30	Clear	No	
11:25	5.35	150.00	0.20	6.81	0.12	-420.30	41.30	0.08	21.10	Clear	No	
11:30	5.33	150.00	0.20	6.79	0.13	-423.10	37.00	0.08	21.50	Clear	No	
11:35	5.33	150.00	0.20	6.78	0.13	-421.60	41.20	0.08	22.10	Clear	No	
11:40	5.34	150.00	0.20	6.75	0.13	-440.90	35.60	0.08	21.20	Clear	No	
11:45	5.35	150.00	0.20	6.79	0.10	-479.90	32.90	0.08	22.00	Clear	No	
11:50	5.33	150.00	0.20	6.81	0.07	-477.30	29.70	0.08	21.90	Clear	No	
11:55	5.35	150.00	0.20	6.76	0.09	-490.20	24.40	0.08	21.90	Clear	No	
12:00	5.33	150.00	0.20	6.87	0.09	-490.30	19.80	0.08	21.20	Clear	No	
12:05	5.32	150.00	0.20	6.85	0.09	-484.90	18.20	0.08	21.50	Clear	No	
12:10	5.33	150.00	0.20	6.8	0.09	-485.30	19.90	0.08	21.60	Clear	No	

Sampling Data
Zero HS:
Method:
Date: 10-25-2019 Time: 12:25
Total Volume Purged (gallons): 5.15

Field Parameters

STABILIZED PARAMETERS	
pH	6.80
Spec. Cond.(mS/cm)	0.08
Turbidity (NTU)	19.90
Temp.(°C)	21.60
DO (mg/L)	0.09
ORP (mV)	

Screen Interval: 47 - 57

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

Parsons PLUS
creating a safer world

Sample ID:	GW4Q19-Cumberland-2D
DuplicateID:	

WEATHER CONDITIONS

Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: Cumberland-2S | Well Diameter: 2 Inches

Samplers: BEN KRAUSE | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth: 12

Pump Loc: within screen

Method: Peristaltic Pump | Date: 10-23-2019 | Time: 11:15

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 1.848

Initial Depth to Water (ft.): 5.2 | Depth to Well Bottom (ft.): 16.75

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
11:35	5.20	165.00	0.22	5.52	4.26	193.80	1.57	0.06	23.00	Clear	No	
11:40	5.20	165.00	0.22	5.28	4.60	196.30	1.16	0.07	23.10	Clear	No	
11:45	5.20	165.00	0.22	5.16	3.79	205.10	2.34	0.07	23.00	Clear	No	
11:50	5.19	165.00	0.22	5.08	3.83	212.10	1.46	0.07	23.10	Clear	No	
11:55	5.19	165.00	0.22	5.08	3.64	218.10	1.18	0.07	23.10	Clear	No	

Sampling Data

Zero HS:

Method:

Date: 10-23-2019 | Time: 12:00 | Total Volume Purged (gallons): 1.1

Field Parameters

STABILIZED PARAMETERS	
pH	5.08
Spec. Cond.(mS/cm)	0.07
Turbidity (NTU)	1.18
Temp.(^oC)	23.10
DO (mg/L)	3.64
ORP (mV)	218.10

Screen Interval: 7 - 17

SAMPLE SET

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

Sample ID: GW4Q19-Cumberland-2S

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: Cumberland-3D | Well Diameter: 2 Inches

Samplers: BEN KRAUSE | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth: 24.5

Pump Loc: within screen

Method: Peristaltic Pump | Date: 10-23-2019 | Time: 09:54

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 3.035

Initial Depth to Water (ft.): 8.09 | Depth to Well Bottom (ft.): 27.06

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
10:05	8.10	175.00	0.23	8.04	4.39	-197.80	10.60	0.23	21.10	Clear	No	
10:10	8.10	175.00	0.23	7.85	1.75	-207.80	9.74	0.23	21.00	Clear	No	
10:15	8.10	175.00	0.23	7.76	1.30	-215.10	8.85	0.23	21.00	Clear	No	
10:20	8.10	175.00	0.23	7.7	1.26	-219.70	7.16	0.23	21.00	Clear	No	
10:25	8.10	175.00	0.23	7.66	1.14	-223.50	5.34	0.23	21.00	Clear	No	
10:30	8.10	175.00	0.23	7.62	1.12	-224.60	4.95	0.23	21.00	Clear	No	
10:35	8.10	175.00	0.23	7.6	1.08	-226.00	3.77	0.23	21.00	Clear	No	

Sampling Data

Zero HS:

Method: | Date: 10-23-2019 | Time: 10:37 | Total Volume Purged (gallons): 1.61

Field Parameters

STABILIZED PARAMETERS	
pH	7.60
Spec. Cond.(mS/cm)	0.23
Turbidity (NTU)	3.77
Temp.(°C)	21.00
DO (mg/L)	1.08
ORP (mV)	

Screen Interval: 22 - 27

SAMPLE SET

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

Sample ID: GW4Q19-Cumberland-3D

DuplicateID:

WEATHER CONDITIONS

Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	Cumberland-3S	Well Diameter:	2 Inches
Samplers:	BEN KRAUSE	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth: 11.5
Pump Loc: within screen
Method: Peristaltic Pump Date: 10-22-2019 Time: 14:52

WATER VOLUME CALCULATION
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot
Water Volume = 0.902
Initial Depth to Water (ft.): 8.54 Depth to Well Bottom (ft.): 14.18

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
15:05	8.55	175.00	0.23	6.32	1.83	-51.70	10.30	0.08	24.20	Clear	No	
15:10	8.55	175.00	0.23	6.32	1.65	-51.80	10.50	0.08	24.30	Clear	No	
15:15	8.56	175.00	0.23	6.32	1.41	-53.70	12.30	0.08	24.30	Clear	No	
15:20	8.55	175.00	0.23	6.23	2.12	-41.70	10.20	0.13	24.20	Clear	No	
15:25	8.55	175.00	0.23	6.28	2.60	-40.70	9.48	0.18	24.20	Clear	No	
15:30	8.55	175.00	0.23	6.34	2.41	-48.60	9.08	0.18	24.40	Clear	No	
15:35	8.55	175.00	0.23	6.39	2.18	-54.80	8.68	0.18	24.40	Clear	No	
15:40	8.55	175.00	0.23	6.43	2.12	-58.30	9.05	0.17	24.30	Clear	No	
15:45	8.55	175.00	0.23	6.43	1.96	-60.60	9.06	0.18	24.30	Clear	No	
15:50	8.60	175.00	0.23	6.44	1.93	-61.50	8.75	0.18	24.10	Clear	No	

Sampling Data

Zero HS:
Method: Peristaltic Pump Date: 10-22-2019 Time: 15:51 Total Volume Purged (gallons): 2.66

Field Parameters

STABILIZED PARAMETERS	
pH	6.44
Spec. Cond.(mS/cm)	0.18
Turbidity (NTU)	8.75
Temp.(°C)	24.10
DO (mg/L)	1.93
ORP (mV)	

Screen Interval: 9 - 14

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

Sample ID: GW4Q19-Cumberland-3S
DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Partly Sunny
Precipitation:	None
Wind (mph)	

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: Cumberland-4D | Well Diameter: 2 Inches

Samplers: BEN KRAUSE | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Double valve pump | Date: 10-24-2019 | Time: 13:09

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 8.72

Initial Depth to Water (ft.): 13.95 | Depth to Well Bottom (ft.): 68.45

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
13:50	14.00	225.00	0.30	5.4	1.54	107.30	114.00	0.04	23.10	Slightly cloudy	No	
13:55	13.99	225.00	0.30	5.43	1.22	98.50	138.00	0.04	23.10	Slightly cloudy	No	
14:00	14.00	225.00	0.30	5.41	1.17	94.70	121.00	0.04	23.00	Slightly cloudy	No	
14:05	14.00	225.00	0.30	5.41	1.16	91.70	89.50	0.04	23.00	Slightly cloudy	No	
14:10	14.00	225.00	0.30	5.41	1.18	89.90	87.30	0.04	23.00	Clear	No	
14:15	14.00	225.00	0.30	5.39	1.00	87.70	89.80	0.04	22.60	Clear	No	
14:20	14.00	225.00	0.30	5.35	0.92	87.00	78.90	0.04	22.60	Clear	No	
14:25	14.00	225.00	0.30	5.35	0.78	85.20	70.20	0.04	22.50	Clear	No	
14:30	14.00	225.00	0.30	5.34	0.67	83.80	64.30	0.04	22.50	Clear	No	
14:35	14.00	225.00	0.30	5.34	0.56	81.70	53.80	0.04	22.80	Clear	No	
14:40	14.00	225.00	0.30	5.36	0.50	79.50	55.90	0.04	22.70	Clear	No	
14:45	14.00	225.00	0.30	5.37	0.48	77.23	45.60	0.04	22.80	Clear	No	
14:50	14.00	225.00	0.30	5.37	0.42	76.80	38.60	0.04	22.60	Clear	No	
14:55	14.00	225.00	0.30	5.36	0.41	77.00	34.80	0.04	22.50	Clear	No	
15:00	14.00	225.00	0.30	5.34	0.39	77.30	29.80	0.04	22.30	Clear	No	
15:05	14.00	225.00	0.30	5.32	0.37	77.80	31.60	0.04	22.30	Clear	No	
15:10	14.00	225.00	0.30	5.32	0.36	77.10	24.60	0.04	22.40	Clear	No	
15:15	14.00	225.00	0.30	5.32	0.34	76.70	19.80	0.04	22.80	Clear	No	
15:20	14.00	225.00	0.30	5.38	0.35	71.90	19.60	0.04	22.90	Clear	No	
15:25	14.00	225.00	0.30	5.38	0.34	71.10	17.90	0.04	22.80	Clear	No	

Sampling Data

Zero HS:

Method: | Date: 10-24-2019 | Time: 14:25 | Total Volume Purged (gallons): 6

Field Parameters

STABILIZED PARAMETERS	
pH	5.38
Spec. Cond.(mS/cm)	0.04
Turbidity (NTU)	17.90
Temp.(°C)	22.80
DO (mg/L)	0.34
ORP (mV)	71.10

Screen Interval: 57 - 67

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

Sample ID: GW4Q19-Cumberland-4D

DuplicateID:

WEATHER CONDITIONS

Temperature (F):

Sky: Sunny

Precipitation: None

Wind (mph)

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: Cumberland-4S | Well Diameter: 2 Inches

Samplers: BEN KRAUSE | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Peristaltic Pump | Date: 10-25-2019 | Time: 13:14

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 2.112

Initial Depth to Water (ft.): 7.7 | Depth to Well Bottom (ft.): 20.9

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
13:35	7.85	200.00	0.27	4.04	0.54	187.90	11.50	0.05	26.50	Orange	No	
13:40	7.85	200.00	0.27	4.02	0.45	183.20	9.84	0.05	26.50	Oramge	No	
13:45	7.86	200.00	0.27	4.05	0.42	178.50	10.00	0.05	26.50	Orange	No	
13:50	7.86	200.00	0.27	4.05	0.41	175.80	9.59	0.05	26.50	Orange	No	
13:55	7.87	200.00	0.27	4.08	0.41	173.80	10.20	0.05	26.50	Orange	No	

Sampling Data

Zero HS:

Method:

Date: 10-25-2019 | Time: 13:57 | Total Volume Purged (gallons): 1.62

Field Parameters

STABILIZED PARAMETERS	
pH	4.08
Spec. Cond.(mS/cm)	0.05
Turbidity (NTU)	10.20
Temp.(°C)	26.50
DO (mg/L)	0.41
ORP (mV)	173.80

Screen Interval: 10 - 20

SAMPLE SET

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

Sample ID: GW4Q19-Cumberland-4S

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	Cumberland-5S	Well Diameter:	2 Inches
Samplers:	BEN KRAUSE	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth: 19

Pump Loc: within screen

Method: Peristaltic Pump Date: 10-23-2019 Time: 13:15

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	3.038		
Initial Depth to Water (ft.):	4.46	Depth to Well Bottom (ft.):	23.45

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
13:30	4.45	175.00	0.23	5.4	1.95	73.10	5.78	0.14	24.00	Clear	Sulfuric	
13:35	4.49	175.00	0.23	5.4	1.61	62.90	6.30	0.13	23.90	Clear	Sulfuric	
13:41	4.48	175.00	0.23	5.44	1.46	52.60	5.54	0.13	23.80	Clear	Sulfuric	
13:45	4.48	175.00	0.23	5.46	1.41	45.00	5.95	0.13	23.80	Clear	Sulfuric	
13:50	4.47	175.00	0.23	5.48	1.36	38.30	5.83	0.13	23.80	Clear	No	
13:55	4.48	175.00	0.23	5.48	1.36	34.30	5.49	0.13	23.70	Clear	No	
14:00	4.48	175.00	2.30	5.5	1.36	30.80	4.96	0.13	23.70	Clear	No	
14:05	4.48	175.00	2.30	5.4	1.37	27.80	5.02	0.13	23.70	Clear	Sulfuric	
14:10	4.48	175.00	0.23	5.51	1.53	24.90	6.77	0.13	23.70	Clear	Sulfuric	
14:15	4.49	175.00	0.23	5.46	1.48	24.40	6.80	0.13	23.50	Clear	No	
14:20	4.48	175.00	0.23	5.48	1.42	21.50	4.96	0.13	23.70	Clear	No	
14:25	4.48	175.00	0.23	5.47	1.36	21.50	5.16	0.13	23.60	Clear	No	
14:30	4.48	175.00	0.23	5.47	1.33	20.20	4.82	0.12	23.50	Clear	No	

Sampling Data

Zero HS:

Method:

Date: 10-23-2019 Time: 14:32 Total Volume Purged (gallons): 3.45

Field Parameters

STABILIZED PARAMETERS	
pH	5.47
Spec. Cond.(mS/cm)	0.12
Turbidity (NTU)	4.82
Temp.(°C)	23.50
DO (mg/L)	1.33
ORP (mV)	20.20

Screen Interval: 14 - 24

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

Sample ID: GW4Q19-Cumberland-5S

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-1D	Well Diameter:	2 Inches
Samplers:	LUKE TART	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Peristaltic Pump Date: 10-29-2019 Time: 11:16

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 1.944

Initial Depth to Water (ft.): 19.63 Depth to Well Bottom (ft.): 31.78

Time 24 hr.	DTW ft.	Pump Rate ml/min.	Vol. gal.	pH	DO mg/L	Redox mV	Turbidity NTU	Spec. Cond. mS/cm	Temp. °C	Color	Odor	Comments
11:37	19.70	300.00		3.36	32.98	198.80	85.10	0.16	18.63	Cloudy	None	
11:42	19.71	300.00		3.38	2.22	223.50	88.50	0.17	18.25	Clear	No	
11:47	19.72	300.00		3.41	1.25	244.40	16.60	0.17	18.20	Clear	No	
11:51	19.73	300.00		3.41	0.83	256.70	9.04	0.17	18.22	Clear	No	
11:54	19.73	300.00		3.42	0.64	272.60	7.27	0.17	18.19	Clear	No	
12:00	19.73	300.00		3.42	0.65	279.00	18.20	0.17	18.20	Clear	No	
12:06	19.73	300.00		3.42	0.63	287.30	5.98	0.17	18.27	Clear	No	

Sampling Data

Zero HS:

Method: Date: 10-29-2019 Time: 12:10 Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	3.42
Spec. Cond.(mS/cm)	0.17
Turbidity (NTU)	5.98
Temp.(°C)	18.27
DO (mg/L)	0.63
ORP (mV)	287.30

Screen Interval: 24.5 to 29.5

SAMPLE SET

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

Sample ID: GW4Q19-PIW-1D

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	66.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	8

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-1S	Well Diameter:	2 Inches
Samplers:	LUKE TART	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc:

Method: | Date: 10-29-2019 | Time: 13:28

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	0		
Initial Depth to Water (ft.):	22	Depth to Well Bottom (ft.):	22

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
13:30												Completely dry.

Sampling Data

Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	
Spec. Cond.(mS/cm)	
Turbidity (NTU)	
Temp.(^{o}C)	
DO (mg/L)	
ORP (mV)	

Screen Interval: 7.8 - 17.8

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

Sample ID: GW4Q19-PIW-1S

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	68.00
Sky:	Cloudy
Precipitation:	Rain
Wind (mph)	4

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-2D	Well Diameter:	2 Inches
Samplers:	LUKE TART	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Double valve pump Date: 11-01-2019 Time: 09:43

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 2.592

Initial Depth to Water (ft.): 36.8 Depth to Well Bottom (ft.): 53

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
10:15	37.80	150.00		6.27	2.84	67.50	104.00	0.08	15.94	Cloudy	None	
10:20	37.81	150.00		6.17	1.52	66.30	101.00	0.08	15.76	Cloudy		
10:25	37.87	150.00		6.04	1.48	66.80	99.00	0.08	15.65	Cloudy		
10:30	38.02	150.00		6	0.58	59.40	68.10	0.08	16.06	Cloudy		
10:35	37.90	150.00		5.99	0.56	56.20	53.60	0.07	15.46	Cloudy		
10:40	37.87	150.00		5.89	0.50	55.60	37.80	0.07	15.76	Cloudy		
10:45	38.05	150.00		5.88	0.51	49.70	24.20	0.07	16.09	Clear		
10:50	37.85	150.00		5.89	0.49	49.10	22.50	0.07	15.74	Clear		
10:55	37.95	150.00	1.50	5.87	0.48	47.80	20.50	0.07	16.10	Clear		
11:00	38.15	150.00		5.84	0.40	45.70	17.50	0.07	16.40	Clear		
11:05	38.00	150.00		5.82	0.40	46.60	17.20	0.07	16.14	Clear		
11:11	38.10	150.00	1.75	5.82	0.43	45.10	16.20	0.07	16.50	Clear	None	

Sampling Data

Zero HS:

Method:

Date: 11-01-2019 Time: 11:15 Total Volume Purged (gallons): 1.75

Field Parameters

STABILIZED PARAMETERS	
pH	5.82
Spec. Cond.(mS/cm)	0.07
Turbidity (NTU)	16.20
Temp.(°C)	16.50
DO (mg/L)	0.43
ORP (mV)	45.10

Screen Interval: 40 - 50

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

Sample ID: GW4Q19-PIW-2D

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	47.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	11

Parsons PLUS
creating a safer world

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-3D	Well Diameter:	2 Inches
Samplers:	LUKE TART	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Peristaltic Pump Date: 10-28-2019 Time: 16:09

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	1.482		
Initial Depth to Water (ft.):	17.6	Depth to Well Bottom (ft.):	26.86

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
16:07	18.00	250.00		4.2	2.77	53.90	105.00	0.10	18.93	Cloudy	None	
16:12	18.10	250.00		3.83	1.20	47.50	17.40	0.10	18.80	Clear	None	
16:17	18.12	250.00		3.8	1.00	-68.40	13.40	0.10	18.61	Clear	No	
16:22	18.15	250.00		3.82	0.83	-75.50	10.70	0.10	18.60	Clear	None	
16:27	18.16	250.00		3.9	0.82	-85.70	7.97	0.10	18.43	Clear	None	
16:32	18.15	250.00		3.99	0.76	-90.80	8.72	0.10	18.37	Clearr	None	

Sampling Data

Zero HS:

Method: Peristaltic Pump Date: 10-28-2019 Time: 16:35 Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	3.99
Spec. Cond.(mS/cm)	0.10
Turbidity (NTU)	8.72
Temp.(°C)	18.37
DO (mg/L)	0.76
ORP (mV)	

Screen Interval: 19 - 24

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

Sample ID: GW4Q19-PIW-3D

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	81.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	9

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-4D	Well Diameter:	2 Inches
Samplers:	LUKE TART	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Double valve pump Date: 10-30-2019 Time: 15:13

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	4.883		
Initial Depth to Water (ft.):	11.25	Depth to Well Bottom (ft.):	41.77

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
18:00	11.29	250.00		5.74	0.75	28.60	74.40	0.06	18.31	Clear	None	
16:05	11.30	250.00		5.84	0.51	20.50	66.50	0.06	28.41	Clear	None	
16:10	11.29	250.00		5.85	0.43	17.10	66.10	0.06	28.25	Clear	None	Last reading for the day. Left tubing in well and will restart tomorrow.

Sampling Data

Zero HS:

Method: Date: Time: Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	5.85
Spec. Cond.(mS/cm)	0.06
Turbidity (NTU)	66.10
Temp.(°C)	28.25
DO (mg/L)	0.43
ORP (mV)	17.10

Screen Interval: 32.3 - 37.3

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

Sample ID: GW4Q19-PIW-4D

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	77.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	3

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-4D	Well Diameter:	2 Inches
Samplers:	LUKE TART	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Double valve pump Date: 10-31-2019 Time: 10:51

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	4.877		
Initial Depth to Water (ft.):	11.29	Depth to Well Bottom (ft.):	41.77

Time 24 hr.	DTW ft.	Pump Rate ml/min.	Vol. gal.	pH	DO mg/L	Redox mV	Turbidity NTU	Spec. Cond. mS/cm	Temp. °C	Color	Odor	Comments
10:50	11.29	280.00		7.65	2.35	87.50	52.50	0.06	18.87	Clear	None	
10:55	11.29	280.00		7.14	1.35	84.00	34.50	0.06	18.86	Clear	None	
11:00	11.25	280.00		6.99	0.84	64.70	46.80	0.06	18.70	Clear	None	
11:05	11.25	280.00		7.18	0.72	44.60	57.50	0.06	18.59	Clear none		
11:10	11.25	280.00		7.35	0.60	28.30	59.60	0.06	18.82	Cloudy	None	
11:15	11.25	280.00		7.39	0.58	26.30	62.00	0.06	18.75	Clear	None	
11:20	11.25	280.00		7.39	0.59	26.00	62.80	0.06	18.69	Clear	None	
11:25	11.25	280.00		7.38	0.61	26.30	63.70	0.05	18.62	Clear	None	
11:35	11.25	280.00		7.09	1.69	46.20	65.40	0.06	17.72	Clear	None	
11:40	11.25	280.00		7.46	0.22	22.00	83.90	55.60	19.53	Clear	None	
11:45	11.25	280.00		7.51	0.27	20.60	80.30	0.06	19.77	Cloudy	None	
11:50	11.25	280.00		7.51	0.29	19.80	78.20	0.06	20.15	Cloudy	None	
11:55	11.25	280.00		7.52	0.25	18.30	81.80	0.06	20.67	Cloudy	None	
11:59	11.25	280.00		7.5	0.20	19.00	82.60	0.06	0.72	Cloudy	None	
12:05	11.25	280.00		6.97	0.89	52.90	86.80	0.05	17.62	Cloudy	None	
12:10	11.25	280.00		7.12	1.11	45.60	90.70	0.05	17.64	Cloudy	None	
12:15	11.25	280.00		7.26	2.05	40.90	93.40	0.05	17.59	Cloudy	None	
12:20	11.26	280.00		7.29	2.14	37.10	93.60	0.05	17.70	Cloudy	None	
12:25	11.26	280.00		7.37	0.47	34.40	96.20	0.05	17.59	Cloudy	None	
12:30	11.27	280.00		7.45	3.38	33.30	96.70	0.05	17.64	Cloudy	None	
12:35	11.29	280.00		7.38	2.47	36.60	96.10	0.05	17.58	Cloudy	None	
12:40	11.29	280.00		7.36	3.09	37.70	97.20	0.05	17.58	Cloudy	None	
12:45	11.29	280.00		7.4	1.32	36.60	87.60	0.05	17.57	Cloudy	None	
12:50	11.29	280.00		7.45	2.80	36.70	87.20	0.05	17.75	Cloudy	None	
12:55	11.29	280.00		7.43	1.37	36.60	78.10	0.05	17.70	Cloudy	None	
13:00	11.29	280.00		7.38	3.29	41.20	71.20	0.05	17.59	Cloudy	Yes, methane	
13:05	11.30	280.00		7.39	1.50	37.70	69.80	0.05	17.69	Cloudy	Yes, methane	
13:10	11.29	280.00		7.47	2.26	36.00	71.90	0.05	19.09	Cloudy	Yes, methane	
13:15	11.29	280.00		7.5	1.57	34.30	59.20	0.05	19.63	Cloudy	Yes, methane	
13:20	11.29	280.00		7.5	0.60	32.10	60.50	0.06	19.68	Cloudy	Yes, methane	

Sampling Data

Zero HS:

Method: Date: 10-31-2019 Time: 13:25 Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	7.50
Spec. Cond.(mS/cm)	0.06
Turbidity (NTU)	60.50
Temp.(°C)	19.68

Screen Interval: 32.3 - 37.3

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

DO (mg/L)	0.60
ORP (mV)	32.10

Sample ID:	GW4Q19-PIW-4D
DuplicateID:	GW4Q19-PIW-4D-D

WEATHER CONDITIONS

Temperature (F):	79.00
Sky:	Partly Sunny
Precipitation:	None
Wind (mph)	12

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-7D	Well Diameter:	2 Inches
Samplers:	LUKE TART	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc:

Method: Date: 10-30-2019 Time: 10:23

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 5.157

Initial Depth to Water (ft.): 5.87 Depth to Well Bottom (ft.): 38.1

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^{o}C			
10:50	5.90			4.29	1.26	87.70	5.29	0.09	18.88	Clear	None	
10:55	5.90			4.17	0.83	99.40	2.68	0.09	19.08	Clear	None	
11:00	5.90			4.12	0.55	105.30	2.03	0.09	18.54	Clear	None	
10:05	5.90			4.11	0.45	105.90	1.71	0.09	18.64	Clear	None	
11:10	5.90			4.12	0.45	106.70	1.25	0.09	18.49	Clear	None	
11:15	5.90			4.11	0.39	106.80	0.96	0.09	18.38	Clear	None	
11:20	5.90			4.12	0.38	106.60	0.92	0.09	18.45	Clear	None	
11:25	5.90			4.1	0.34	106.40	0.72	0.09	18.50	Clear	None	
11:30	5.90			4.13	0.29	104.60	0.86	0.09	18.60	Clear	None	
11:35	5.90			4.11	0.30	105.10	0.89	0.09	18.34	Clear	None	
11:40	5.90			4.3	0.29	102.10	0.71	0.09	18.50	Clear	None	

Sampling Data

Zero HS:

Method: Date: 10-30-2019 Time: 11:15 Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.30
Spec. Cond.(mS/cm)	0.09
Turbidity (NTU)	0.71
Temp.(^{o}C)	18.50
DO (mg/L)	0.29
ORP (mV)	102.10

Screen Interval: 29 - 34

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

Sample ID: GW4Q19-PIW-7D

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	70.00
Sky:	Cloudy
Precipitation:	None
Wind (mph)	10

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-8D	Well Diameter:	2 Inches
Samplers:	LUKE TART	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:
Pump Loc: within screen
Method: Double valve pump Date: 10-30-2019 Time: 12:30

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	5.552		
Initial Depth to Water (ft.):	7.3	Depth to Well Bottom (ft.):	42

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
12:45	7.39	250.00		3.85	1.74	155.50	25.50	0.20	18.44	Clear	None	
12:50	7.39	250.00		3.93	1.42	154.50	12.80	0.20	18.40	Clear	None	
12:55	7.37	250.00		3.97	0.76	157.40	7.71	0.20	18.31	Clear	None	
12:59	7.37	250.00		3.98	0.71	162.60	4.45	0.20	18.24	Clear	None	
13:06	7.39	250.00		3.97	1.19	170.20	2.23	0.20	18.38	Clear	None	
13:10	7.39	250.00		3.98	0.70	173.80	1.94	0.20	18.37	Clear	None	
13:15	7.39	250.00		3.98	0.61	179.10	1.46	0.20	18.33	Clear	None	
13:20	7.39	250.00		3.98	0.60	182.40	1.81	0.20	18.29	Clear	None	
13:25	7.39	250.00		3.98	0.65	185.40	1.02	0.20	18.39	Clear	None	

Sampling Data

Zero HS:
Method:
Date: 10-30-2019 Time: 13:30 Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	3.98
Spec. Cond.(mS/cm)	0.20
Turbidity (NTU)	1.02
Temp.(^oC)	18.39
DO (mg/L)	0.65
ORP (mV)	185.40

Screen Interval: 35.5 - 45.5

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

Sample ID: GW4Q19-PIW-8D
DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	72.00
Sky:	Cloudy
Precipitation:	Rain
Wind (mph)	5

Parsons PLUS
creating a safer world

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-9D	Well Diameter:	2 Inches
Samplers:	CHARLES PACE	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Double valve pump Date: 10-23-2019 Time: 09:55

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = -5.974

Initial Depth to Water (ft.): 37.34 Depth to Well Bottom (ft.):

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
10:30	37.51	310.00		10.02	3.54	-2.00	0.00	0.33	17.32	Clear	No	
10:35	37.51	310.00		7.65	0.00	7.00	0.00	0.21	17.33	Clear	No	
10:40	37.42	310.00		5.85	0.00	83.00	0.00	0.18	17.27	Clear	No	
10:45	37.50	310.00		5.33	0.00	112.00	0.00	0.16	17.28	Clear	No	
10:50	37.50	310.00		5.11	0.00	128.00	0.00	0.16	17.30	Clear	No	
10:55	37.50	310.00		5.03	0.00	136.00	0.00	0.15	17.33	Clear	No	
11:00	37.50	310.00		4.96	0.00	147.00	0.00	0.15	17.32	Clear	No	
11:05	37.50	310.00		4.8	0.00	160.00	0.00	0.15	17.35	Clear	No	
11:10	37.50	310.00		4.75	0.00	167.00	0.00	0.15	17.39	Clear	No	
11:15	37.50	310.00		4.71	0.00	171.00	0.00	0.14	17.40	Clear	No	

Sampling Data

Zero HS:

Method: Date: 10-23-2019 Time: 11:20 Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.71
Spec. Cond.(mS/cm)	0.14
Turbidity (NTU)	
Temp.(°C)	17.40
DO (mg/L)	
ORP (mV)	171.00

Screen Interval: 40 - 45

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

Sample ID: GW4Q19-PIW-9D

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	60.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	8

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-9S	Well Diameter:	2 Inches
Samplers:	BRANDON WEIDNER Charles Pace	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Low Flow: Geo Pump Date: 10-23-2019 Time: 09:56

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	0.429		
Initial Depth to Water (ft.):	30.43	Depth to Well Bottom (ft.):	33.11

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
11:10	30.62	200.00		4.52	1.70	173.50	33.10	0.11	18.04	Clear	None	
11:15	30.65	200.00		4.2	1.10	114.00	25.70	0.11	17.87	Clear	None	
11:20	30.66	200.00		3.98	0.87	86.80	13.10	0.11	17.78	Clear	None	
11:25	30.66	200.00		3.96	0.79	65.60	6.70	0.11	17.68	Clear	None	
11:30	30.66	200.00		3.97	0.79	49.80		0.11	17.67			No turbidity taken
11:35	30.72	200.00		3.99	0.54	41.60		0.11	17.77			No turbidity taken
11:40	30.71	200.00		3.99	0.48	32.60	3.73	0.11	17.78	Clear	None	
11:45	30.71	200.00		3.98	0.47	29.00	2.42	0.11	17.79	Clear	None	
11:50	30.71	200.00		3.98	0.46	26.30	2.08	0.11	17.77	Clear	None	
11:55	30.71	200.00		3.98	0.43	22.60	1.61	0.11	17.82	Clear	None	
12:00	30.70	200.00		4	0.41	17.10	2.00	0.11	17.87	Clear	None	
12:05	30.70	200.00		3.98	0.35	16.90	1.42	0.11	17.90	Clear	None	
12:10	30.70	200.00		3.99	0.39	15.40	1.44	0.11	17.94	Clear	None	
12:15	30.69	200.00		3.99	0.35	14.30	1.23	0.11	17.97	Clear	None	
12:20	30.69	200.00		4.02	0.42	13.10	1.27	0.11	18.01	Clear	None	
12:25	30.60	200.00		4.04	0.33	11.01	1.20	0.11	17.96	Clear	None	
12:30	30.69	200.00		4.04	0.32	11.50	1.39	0.11	17.98	Clear	None	
12:35	30.69	200.00		4.04	0.33	10.90	1.25	0.11	17.90	Clear	None	

Sampling Data

Zero HS:

Method: Peristaltic Pump Date: 10-23-2019 Time: 12:40 Total Volume Purged (gallons): 4.49

Field Parameters

STABILIZED PARAMETERS	
pH	4.04
Spec. Cond.(mS/cm)	0.11
Turbidity (NTU)	1.25
Temp.(°C)	17.90
DO (mg/L)	0.33
ORP (mV)	10.90

Screen Interval: 24.8 - 29.8

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

Sample ID: GW4Q19-PIW-9S

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	61.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	5

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-10DR	Well Diameter:	2 Inches
Samplers:	BEN KRAUSE	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth: 55.5

Pump Loc: within screen

Method: Double valve pump Date: 10-30-2019 Time: 15:10

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 7.563

Initial Depth to Water (ft.): 14.68 Depth to Well Bottom (ft.): 61.95

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
15:15	14.68	200.00	0.27	5.67	0.51	-2.20	56.80	0.18	19.45	Clear	No odor	
15:20	14.70	200.00	0.27	5.54	0.36	7.90	36.80	0.17	19.48	Clear	No odor	
15:25	14.70	200.00	0.27	5.49	0.41	15.30	18.90	0.17	19.22	Clear	No odor	
15:30	14.70	200.00	0.27	5.49	0.39	16.30	14.90	0.17	19.30	Clear	No odor	
15:35	14.69	200.00	0.27	5.48	0.28	15.60	11.70	0.17	19.23	Clear	No odor	
15:40	14.68	200.00	0.27	5.48	0.26	16.40	8.77	0.17	19.45	Clear	No odor	
15:45	14.68	200.00	0.27	5.47	0.25	15.80	8.01	0.17	19.42	Clear	No odor	
15:50	14.68	200.00	0.27	5.46	0.24	16.60	6.91	0.17	19.29	Clear	No odor	

Sampling Data

Zero HS:

Method: Date: 10-30-2019 Time: 15:50 Total Volume Purged (gallons): 2.13

Field Parameters

STABILIZED PARAMETERS	
pH	5.46
Spec. Cond.(mS/cm)	0.17
Turbidity (NTU)	6.91
Temp.(°C)	19.29
DO (mg/L)	0.24
ORP (mV)	16.60

Screen Interval: 53 - 58

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

Sample ID: GW4Q19-PIW-10DR

DuplicateID:

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

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PIW-10S	Well Diameter:	2 Inches
Samplers:	LUKE TART	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: bottom of well

Method: Peristaltic Pump Date: 10-29-2019 Time: 14:13

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	0.206		
Initial Depth to Water (ft.):	18.9	Depth to Well Bottom (ft.):	20.19

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
14:40	19.30	250.00		3.96	14.06	186.90	61.40	0.05	19.20	Cloudy	None	
14:45	19.25	250.00		3.97	7.06	189.70	15.30	0.05	19.21	Clear	None	
14:52	19.25	250.00		3.98	4.61	195.20	5.42	0.05	19.22	Clear	None	
14:57	19.25	250.00		3.99	3.76	198.70	2.60	0.05	19.19	Clear	None	
15:02	19.25	250.00		3.98	3.75	202.10	1.58	0.05	19.23	Clear	None	
15:07	19.25	250.00		3.99	3.80	204.80	1.12	0.05	19.20	Clear	None	

Sampling Data

Zero HS:

Method: Date: 10-29-2019 Time: 15:10 Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	3.99
Spec. Cond.(mS/cm)	0.05
Turbidity (NTU)	1.12
Temp.(°C)	19.20
DO (mg/L)	3.80
ORP (mV)	204.80

Screen Interval: 7 - 17

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

Sample ID: GW4Q19-PIW-10S

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	68.00
Sky:	Cloudy
Precipitation:	Rain
Wind (mph)	5

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: PW-01 | Well Diameter: 2 Inches

Samplers: BRANDON WEIDNER Ally Vo | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Low Flow: Geo Pump | Date: 10-18-2019 | Time: 12:49

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 1.166

Initial Depth to Water (ft.): 16.1 | Depth to Well Bottom (ft.): 23.39

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
13:05	16.08	200.00		5.27	2.39	213.00	8.71	0.08	21.97	Clear	None	
13:10	16.08	200.00		5.04	2.87	227.60	5.22	0.07	22.17	Clear	None	
13:15	16.08	200.00		4.88	3.78	236.90	3.26	0.06	22.20	Clear	None	
13:20	16.08	200.00		4.75	4.34	242.80	1.91	0.06	21.68	Clear	None	
13:25	16.08	200.00		4.77	4.97	244.00	1.03	0.06	21.99	Clear	None	
13:30	16.08	200.00		4.77	4.71	244.10	0.83	0.06	21.88	Clear	None	
13:35	16.08	200.00		4.73	4.98	248.70	1.13	0.06	21.79	Clear	None	

Sampling Data

Zero HS:

Method: Peristaltic Pump | Date: 10-18-2019 | Time: 13:40 | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.73
Spec. Cond.(mS/cm)	0.06
Turbidity (NTU)	1.13
Temp.(°C)	21.79
DO (mg/L)	4.98
ORP (mV)	248.70

Screen Interval: 11 - 21

SAMPLE SET

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

Sample ID: GW4Q19-PW-01

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	65.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	4

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville
Well ID: PW-02
Well Diameter: 2 Inches

Samplers: BEN KRAUSE Luke Tart
Event: Quarterly
Project Manager: Tracy Ovbey

Purging Data

Pump Depth:
Pump Loc: within screen
Method: Double valve pump
Date: 11-04-2019
Time: 14:40

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	1.302		
Initial Depth to Water (ft.):	56.6	Depth to Well Bottom (ft.):	64.74

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
14:45	56.60	200.00		5.48	1.19	186.40	204.00	0.13	19.06	Cloudy	None	
15:50	56.60	200.00		5.35	0.77	188.50	231.00	0.13	18.94	Cloudy	None	
14:55	56.55	200.00	1.00	5.26	0.62	189.20	221.00	0.13	18.91	Cloudy	None	
15:00	56.58	200.00		5.21	0.83	190.70	226.00	0.13	18.94	Cloudy	Nome	
15:05	56.65	200.00		5.17	0.83	193.90	230.10	0.12	18.91	Cloudy	No odor	
15:15	56.60	200.00		5.14	4.77	197.90	250.00	0.12	18.71	Cloudy	None	
15:20	56.70	200.00		5.04	2.41	206.50	213.00	0.12	18.71	Cloudy	None	
15:25	56.63	200.00		4.81	6.03	217.80	168.00	0.12	18.67	Cloudy	No odor	
15:30	56.61	200.00		4.91	3.22	217.90	159.00	0.12	18.63	Cloudy	No odor	
15:35	56.62	200.00		4.92	3.11	219.10	155.00	0.12	18.56	Cloudy	No odor	
15:40	56.65	200.00		4.92	2.83	221.20	155.00	0.12	18.66	Cloudy	No odor	
15:45	56.59	200.00		4.88	2.89	224.50	141.00	0.12	18.62	Cloudy	None	
15:50	56.61	200.00		4.83	6.68	232.10	146.00	0.12	18.57	Cloudy	None	
15:55	56.57	200.00		4.8	7.80	233.50	137.00	0.11	18.57	Cloudy	None	
16:00	56.66	200.00		4.72	5.03	239.10	133.00	0.11	18.57	Cloudy	Nome	
16:05	56.60	200.00		4.73	4.04	242.50	135.00	0.11	18.56	Cloudy	No odor	
16:10	56.67	200.00		4.71	6.65	244.80	125.00	0.11	18.54	Cloudy	No odor	

Sampling Data

Zero HS:
Method:
Date: 11-04-2019
Time: 16:10
Total Volume Purged (gallons): 7.4

Field Parameters

STABILIZED PARAMETERS	
pH	4.71
Spec. Cond.(mS/cm)	0.11
Turbidity (NTU)	125.00
Temp.(°C)	18.54
DO (mg/L)	6.65
ORP (mV)	244.80

Screen Interval: 50 - 60

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

Sample ID: GW4Q19-PW-02
DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	66.00
Sky:	Partly Cloudy
Precipitation:	None
Wind (mph)	5

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville
Well ID: PW-03
Well Diameter: 2 Inches
Samplers: BEN KRAUSE
Event: Quarterly
Project Manager: Tracy Ovbey

Purging Data

Pump Depth: 46
Pump Loc: within screen
Method: Double valve pump
Date: 11-05-2019
Time: 15:10

WATER VOLUME CALCULATION
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot
Water Volume = 1.187
Initial Depth to Water (ft.): 42.26
Depth to Well Bottom (ft.): 49.68

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
15:20	43.05	100.00	0.03	6.27	5.45	-135.40	1000.00	0.35	21.28	murky	None	
15:25	43.24	100.00	0.03	6.18	1.94	-143.90	1000.00	0.33	21.03	Cloudy	No odor	
15:30	43.59	100.00	0.03	6.12	1.69	-142.00	1000.00	0.33	20.72	Cloudy	No odor	
15:35	43.85	100.00	0.03	5.98	1.26	-142.40	1000.00	0.33	20.43	Cloudy	No odor	
15:40	44.00	100.00	0.03	5.8	2.62	-59.80	1000.00	0.31	19.90	Cloudy	No odor	
15:45	44.25	100.00	0.03	5.69	1.11	-89.90	1000.00	0.30	19.78	Cloudy	No odor	
15:50	44.35	100.00	0.03	5.6	0.90	-143.50	1000.00	0.26	19.69	Cloudy	No odor	
15:55	44.60	100.00	0.03	5.64	0.73	-137.90	1000.00	0.26	19.74	Cloudy	None	
16:00	44.55	100.00	0.03	5.79	0.67	-153.20	1000.00	0.27	19.77	Cloudy	No odor	
16:05	44.55	100.00	0.03	5.92	0.67	-156.40	1000.00	0.28	19.76	Cloudy	No odor	
16:10	44.60	100.00	0.27	5.91	0.64	-161.60	1000.00	0.25	20.00	Cloudy	No odor	
16:15	45.48	100.00	0.03	5.88	0.61	-160.00	1000.00	0.23	20.11	Cloudy	No odor	
16:20	46.08	100.00	0.27	5.44	0.75	-142.90	1000.00	0.21	18.68	Murky	None	

Sampling Data

Zero HS:
Method:
Date: 11-05-2019
Time: 15:39
Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	5.44
Spec. Cond.(mS/cm)	0.21
Turbidity (NTU)	1000.00
Temp.(°C)	18.68
DO (mg/L)	0.75
ORP (mV)	

Screen Interval: 35 - 45

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

Sample ID: GW4Q19-PW-03
DuplicateID:

Well ran dry

WEATHER CONDITIONS

Temperature (F):
Sky: Sunny
Precipitation: None
Wind (mph)

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PW-05	Well Diameter:	2 Inches
Samplers:	BEN KRAUSE	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth: 74

Pump Loc: within screen

Method: Double valve pump Date: 10-30-2019 Time: 09:30

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 8.043

Initial Depth to Water (ft.): 29.33 Depth to Well Bottom (ft.): 79.6

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
09:35	29.43	225.00	0.30	4.07	5.58	364.50	36.60	0.07	19.50	Clear	No odor	
09:45	29.45	225.00	0.30	3.98	4.90	414.70	8.61	0.08	19.35	Clear	No odor	
09:55	29.45	225.00	0.30	3.83	4.92	404.10	4.23	0.08	19.45	Clear	No odor	
10:00	29.45	225.00	0.30	3.93	4.89	402.80	3.47	0.08	19.36	Clear	No odor	

Sampling Data

Zero HS:

Method:

Date: 10-30-2019 Time: 10:00 Total Volume Purged (gallons): 1.8

Field Parameters

STABILIZED PARAMETERS	
pH	3.93
Spec. Cond.(mS/cm)	0.08
Turbidity (NTU)	3.47
Temp.(°C)	19.36
DO (mg/L)	4.89
ORP (mV)	402.80

Screen Interval: 65 - 75

SAMPLE SET

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

Sample ID: GW4Q19-PW-05

DuplicateID:

WEATHER CONDITIONS

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

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: PW-09 | Well Diameter: 2 Inches

Samplers: BEN KRAUSE | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth: 51

Pump Loc: within screen

Method: Double valve pump | Date: 10-30-2019 | Time: 11:17

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 5.277

Initial Depth to Water (ft.): 25.33 | Depth to Well Bottom (ft.): 58.31

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
11:23	26.50	180.00	0.24	11.38	0.41	-113.10	45.40	0.51	18.28	Clear	No odor	
11:28	26.51	180.00	0.24	11.33	0.52	-119.90	28.50	0.61	18.40	Clear	No odor	
11:32	26.50	180.00	0.24	11.57	0.23	-144.70	17.80	0.80	18.56	Clear	No odor	
11:37	26.50	180.00	0.24	11.62	0.21	-187.90	21.50	0.68	18.51	Clear	No odor	
11:42	26.50	180.00	0.24	11.36	0.18	-168.90	62.10	0.61	18.43	Clear	No odor	
11:47	26.51	180.00	0.24	10.74	0.16	-123.70	75.20	0.28	18.49	Clear	No odor	
11:52	26.49	180.00	0.24	10.61	0.16	-65.60	79.30	0.25	18.51	Clear	No odor	
11:57	26.49	180.00	0.24	10.35	0.18	-72.90	75.50	0.22	18.47	Clear	No odor	
12:02	26.49	180.00	0.24	10.22	0.12	-69.30	77.20	0.20	18.45	Clear	No odor	
12:07	26.48	180.00	0.24	10.14	0.13	-83.70	80.60	0.19	18.41	Clear	No odor	
12:12	26.48	180.00	0.24	10.08	0.12	-98.10	80.70	0.19	18.54	Clear	No odor	
12:17	26.49	180.00	0.24	9.96	0.12	-100.10	83.10	0.18	18.48	Clear	No odor	
12:22	26.50	180.00	0.24	9.98	0.12	-101.10	84.90	0.17	18.39	Clear	No odor	
12:27	26.49	180.00	0.24	9.88	0.12	-97.90	85.00	0.17	18.40	Clear	No odor	
12:32	26.50	180.00	0.24	9.89	0.12	-108.60	84.40	0.17	18.34	Clear	No odor	
12:37	26.50	180.00	0.24	9.86	0.12	-108.50	85.50	0.17	18.38	Clear	No odor	
12:42	26.49	180.00	0.24	9.81	0.10	-116.90	79.80	0.17	18.34	Clear	No odor	
12:47	26.50	180.00	0.24	9.78	0.09	-120.10	77.40	0.16	18.30	Clear	No odor	
12:52	26.50	180.00	0.24	9.73	0.09	-120.50	76.30	0.15	18.30	Clear	No odor	
12:57	26.49	180.00	0.24	9.67	0.09	-124.60	72.80	0.15	18.26	Clear	No odor	
13:02	26.49	180.00	0.24	9.62	0.07	-129.10	75.90	0.14	18.35	Clear	No odor	
13:07	26.49	180.00	0.24	9.6	0.05	-130.30	72.40	0.14	18.41	Clear	No odor	
13:12	26.49	180.00	0.24	9.57	0.05	-132.90	71.10	0.14	18.44	Clear	No odor	
13:17	26.49	180.00	0.24	9.54	0.05	-124.10	69.80	0.13	18.39	Clear	No odor	
13:23	26.49	180.00	0.24	9.51	0.05	-127.50	68.80	0.14	18.39	Clear	No odor	
13:28	26.48	180.00	0.24	9.49	0.05	-124.50	66.80	0.13	18.42	Clear	No odor	
13:33	26.49	180.00	0.24	9.48	0.05	-126.50	67.50	0.13	18.62	Clear	No odor	Turbidity stabilized around 68 NTU for half hour period.

Sampling Data

Zero HS:

Method:

Date: 10-30-2019 | Time: 01:35 | Total Volume Purged (gallons): 6.53

Field Parameters

STABILIZED PARAMETERS	
pH	9.48
Spec. Cond.(mS/cm)	0.13
Turbidity (NTU)	67.50
Temp.(°C)	18.62
DO (mg/L)	0.05
ORP (mV)	

Screen Interval: 44 - 54

SAMPLE SET

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

Sample ID:	GW4Q19-PW-09
DuplicateID:	

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

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PW-10R	Well Diameter:	2 Inches
Samplers:	BEN KRAUSE Luke Tart	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth: 62

Pump Loc: within screen

Method: Double valve pump | Date: 11-04-2019 | Time: 12:30

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 6.634

Initial Depth to Water (ft.): 27.64 | Depth to Well Bottom (ft.): 69.1

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
12:40	27.80	200.00	0.27	5.43	0.51	84.90	28.50	0.07	18.13	Clear	None	
12:45	27.82	200.00	0.27	5.4	0.19	75.80	7.30	0.07	17.88	Clear	None	
12:50	27.90	200.00	0.27	5.41	0.17	65.70	6.98	0.06	17.88	Clear	None	
12:55	27.80	200.00		5.42	0.22	61.40	7.61	0.06	17.91	Clear	None	
13:00	27.80	200.00	0.27	5.4	0.39	58.20	4.68	0.06	17.88	Clear	None	
13:05	27.82	200.00		5.39	0.35	56.60	3.47	0.06	17.87	Clear	None	
13:10	27.90	200.00	2.50	5.4	0.29	52.50	3.91	0.06	17.89	Clear	None	
13:15	27.80	200.00		5.4	0.18	50.70	3.46	0.06	18.00	Clear	None	
13:20	27.90	200.00	3.00	5.4	0.18	47.60	4.39	0.06	17.92	Clear	Nome	
13:26	27.85	200.00		5.39	0.13	45.90	5.15	0.06	17.99	Clear	None	
13:30	27.86	200.00	0.27	5.39	0.12	43.60	3.66	0.06	17.99	Clear	None	
13:35	27.86	200.00	4.00	5.39	0.12	42.80	4.99	0.06	18.05	Clear	None	

Sampling Data

Zero HS:

Method: | Date: 11-04-2019 | Time: 13:40 | Total Volume Purged (gallons): 4.3

Field Parameters

STABILIZED PARAMETERS	
pH	5.39
Spec. Cond.(mS/cm)	0.06
Turbidity (NTU)	4.99
Temp.(^oC)	18.05
DO (mg/L)	0.12
ORP (mV)	42.80

Screen Interval: 57 - 67

SAMPLE SET

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

Sample ID: GW4Q19-PW-10R

DuplicateID:

WEATHER CONDITIONS

Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: PW-11 | Well Diameter: 2 Inches

Samplers: STEVEN BOOR Brandon - Geosyntec | Event: Other | Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Double valve pump | Date: 10-22-2019 | Time: 15:07

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 5.422

Initial Depth to Water (ft.): 33.68 | Depth to Well Bottom (ft.): 67.57

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
15:50	33.97	450.00		3.85	24.27	181.00	0.00	0.50	19.23	Clear		
15:55	33.98	450.00		3.83	3.02	168.00	0.00	0.51	18.93	Clear		
16:00	33.98	450.00		3.96	2.40	154.00	0.00	0.50	19.06			
16:05	33.98	450.00		4.09	0.00	144.00	0.00	0.50	19.03			
16:10	33.98	450.00		4.22	0.00	127.00	0.00	0.50	18.91			
16:15	33.98	450.00		4.35	0.00	118.00	0.30	0.49	18.75			
16:18	33.97	450.00		4.43	0.00	115.00	0.00	0.50	18.78			

Sampling Data

Zero HS:

Method: Other | Date: 10-22-2019 | Time: 16:25 | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.43
Spec. Cond.(mS/cm)	0.50
Turbidity (NTU)	
Temp.(°C)	18.78
DO (mg/L)	
ORP (mV)	115.00

Screen Interval: 53 - 63

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

Sample ID: GW4Q19-PW-11

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	80.00
Sky:	Partly Sunny
Precipitation:	Rain
Wind (mph)	

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: PW-12 | Well Diameter: 2 Inches

Samplers: BEN KRAUSE | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data Pump Depth: 116

Pump Loc: within screen

Method: Double valve pump | Date: 11-05-2019 | Time: 11:00

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 10.592

Initial Depth to Water (ft.): 58.14 | Depth to Well Bottom (ft.): 124.34

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
11:10	58.21	200.00	0.27	5.93	-0.73	-116.70	495.00	0.05	19.18	Cloudy	No odor	
11:15	58.20	200.00	0.27	5.77	-0.60	-116.50	279.00	0.05	19.26	Cloudy	No odor	
11:20	58.21	200.00	0.27	5.68	-0.48	-119.00	207.00	0.05	19.32	Cloudy	No odor	
11:25	58.20	200.00	0.27	5.66	-0.44	-118.70	193.00	0.05	19.40	Cloudy	No odor	
11:30	58.20	200.00	0.27	5.67	-0.34	-125.50	153.00	0.05	19.50	Cloudy	No odor	
11:35	58.20	200.00	0.27	5.66	-0.28	-128.00	120.00	0.05	19.48	Cloudy	No odor	
11:40	58.20	200.00	0.27	5.66	-0.26	-132.10	108.00	0.05	19.65	Cloudy	No odor	
11:45	58.20	200.00	0.27	5.66	-0.22	-133.80	97.40	0.05	19.63	Cloudy	No odor	
11:50	58.20	200.00	0.27	5.67	-0.20	-136.50	83.90	0.05	19.72	Cloudy	No odor	
11:55	58.20	200.00	0.27	5.61	-0.24	-143.50	75.00	0.05	19.64	Cloudy	None	
12:00	58.20	200.00	0.27	5.57	2.11	-148.20	68.00	0.05	19.52	Cloudy	None	
12:05	58.20	200.00	0.27	5.54	1.34	-147.90	61.60	0.05	19.33	Cloudy	None	
12:10	58.20	200.00	0.27	5.51	0.96	-150.10	59.20	0.05	19.16	Cloudy	No odor	
12:15	58.20	200.00	0.27	5.48	0.78	-148.50	55.30	0.05	19.05	Clear	No odor	
12:20	58.20	200.00	0.27	5.42	0.73	-150.50	47.30	0.05	19.09	Clear	No odor	
12:25	19.15	200.00	0.27	5.41	0.67	-146.80	38.40	0.05	19.17	Cloudy	None	
12:30	58.20	200.00	0.27	5.48	-0.52	-153.00	28.10	0.05	19.19	Clear	None	
12:35	58.20	200.00	0.27	5.54	-0.40	-142.80	25.30	0.05	19.41	Clear	No odor	
12:40	58.20	200.00	0.27	5.6	-0.32	-149.00	21.80	0.05	19.31	Clear	None	
12:45	58.20	200.00	0.27	5.73	-0.14	-93.60	23.50	0.05	19.96	Cloudy	None	
12:50	58.20	200.00	0.27	5.69	-0.14	-115.80	26.40	0.05	19.53	Clear	None	
12:55	58.20	200.00	0.27	5.66	-0.14	-128.60	26.90	0.05	19.32	Clear	None	
13:00	58.20	200.00	0.27	5.65	-0.14	-141.10	24.40	0.05	19.30	Cloudy	None	
13:05	58.20	200.00	0.27	5.65	-0.14	-146.20	25.70	0.05	19.36	Clear	None	
13:10	58.20	200.00	0.27	5.63	-0.14	-150.60	20.80	0.05	19.47	Clear	None	
13:15	58.20	200.00	0.27	5.62	-0.14	-152.20	18.60	0.05	19.43	Clear	No odor	
13:20	58.20	200.00	0.27	5.61	-0.14	-152.50	17.80	0.05	19.25	Clear	None	

Sampling Data Zero HS:

Method: | Date: 11-05-2019 | Time: 13:20 | Total Volume Purged (gallons): 6.93

Field Parameters

STABILIZED PARAMETERS	
pH	5.61
Spec. Cond.(mS/cm)	0.05
Turbidity (NTU)	17.80
Temp.(°C)	19.25
DO (mg/L)	
ORP (mV)	

Screen Interval: 109 - 119

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

Parsons PLUS creating a safer world

Sample ID:	GW4Q19-PW-12
DuplicateID:	

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

Parsons PLUS
creating a safer worlc

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: PW-14 | Well Diameter: 2 Inches

Samplers: CHARLES PACE | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc: within screen

Method: Double valve pump | Date: 10-23-2019 | Time: 12:58

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = -9.784

Initial Depth to Water (ft.): 61.15 | Depth to Well Bottom (ft.):

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
13:30	61.15	195.00		5.51	0.00	117.00	295.00	0.20	22.78	Grey	No	
13:35	61.18	195.00		5.26	0.00	125.00	84.50	0.19	23.39	Murky	No	
13:40	61.15	195.00		4.72	0.00	164.00	1.00	0.18	22.77	Clear	No	
13:45	61.15	195.00		4.71	0.00	166.00	0.00	0.18	22.20	Clear	No	
13:50	61.15	195.00		4.67	0.00	167.00	0.00	0.18	23.01	Clear	No	

Sampling Data

Zero HS:

Method: | Date: 10-23-2019 | Time: 13:55 | Total Volume Purged (gallons): 1.03

Field Parameters

STABILIZED PARAMETERS	
pH	4.67
Spec. Cond.(mS/cm)	0.18
Turbidity (NTU)	
Temp.(°C)	23.01
DO (mg/L)	
ORP (mV)	167.00

Screen Interval: 136 - 146

SAMPLE SET

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

Sample ID: GW4Q19-PW-14

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	71.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	8

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: Robeson-1D | Well Diameter: 2 Inches

Samplers: BEN KRAUSE Ali Vo | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data

Pump Depth: 47.7

Pump Loc: within screen

Method: Double valve pump | Date: 10-31-2019 | Time: 10:25

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume = 6.496

Initial Depth to Water (ft.): 14.28 | Depth to Well Bottom (ft.): 54.88

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
10:30	14.30	200.00	0.27	6.13	0.62	-29.90	25.00	0.08	22.97	Clear	No odor	
10:35	14.30	200.00	0.27	6.1	0.36	-48.30	68.10	0.08	22.80	Clear	No odor	
10:40	14.30	200.00	0.27	6.25	0.26	-64.20	65.10	0.08	22.68	Clear	No odor	
10:45	14.31	200.00	0.27	6.38	0.24	-78.00	48.00	0.08	22.74	Clear	No odor	
10:50	14.30	200.00	0.27	6.42	0.28	-85.60	43.60	0.08	22.62	Clear	No odor	
10:55	14.31	200.00	0.27	6.42	0.25	-89.50	36.10	0.08	22.50	Clear	No odor	
11:00	14.31	200.00	0.27	6.42	0.19	-87.60	31.10	0.08	22.45	Clear	No odor	
11:05	14.31	200.00	0.27	6.42	0.19	-93.90	29.10	0.08	22.45	Clear	No odor	
11:10	14.32	200.00	0.27	6.43	0.19	-97.50	25.40	0.08	22.42	Clear	No odor	
11:15	14.32	200.00	0.27	6.41	0.19	-96.70	25.60	0.08	22.39	Clear	No odor	
11:20	14.31	200.00	0.27	6.4	0.13	-101.10	22.80	0.08	22.39	Clear	No odor	
11:25	14.31	200.00	0.27	6.42	0.13	-100.50	19.50	0.08	22.43	Clear	No odor	
11:30	14.31	200.00	0.27	6.41	0.13	-101.50	19.60	0.08	22.42	Clear	No odor	
11:35	14.31	200.00	0.27	6.39	0.13	-102.10	17.20	0.08	22.43	Clear	No odor	

Sampling Data

Zero HS:

Method:

Date: 10-31-2019 | Time: 11:35 | Total Volume Purged (gallons): 3.73

Field Parameters

STABILIZED PARAMETERS	
pH	6.39
Spec. Cond.(mS/cm)	0.08
Turbidity (NTU)	17.20
Temp.(°C)	22.43
DO (mg/L)	0.13
ORP (mV)	

Screen Interval: 42.75 - 52.75

SAMPLE SET

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

Sample ID: GW4Q19-Robeson-1D

DuplicateID:

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

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	Robeson-1S	Well Diameter:	2 Inches
Samplers:	BEN KRAUSE Ali Vo	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth: 22

Pump Loc: within screen

Method: Peristaltic Pump Date: 10-31-2019 Time: 13:00

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	2.654		
Initial Depth to Water (ft.):	12.06	Depth to Well Bottom (ft.):	28.65

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
13:05	12.19	120.00	0.16	5.5	3.13	165.40	7.72	0.08	25.80	Clear	No odor	
13:10	12.20	120.00	0.16	5.46	2.98	168.20	6.03	0.08	25.62	Clear	No odor	
13:15	12.20	120.00	0.16	5.51	2.82	161.30	5.05	0.08	25.48	Clear	No odor	

Sampling Data

Zero HS:

Method:

Date: 10-31-2019 Time: 13:15 Total Volume Purged (gallons): 0.48

Field Parameters

STABILIZED PARAMETERS	
pH	5.51
Spec. Cond.(mS/cm)	0.08
Turbidity (NTU)	5.05
Temp.(^oC)	25.48
DO (mg/L)	2.82
ORP (mV)	161.30

Screen Interval: 17 - 27

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

Sample ID: GW4Q19-Robeson-1S

DuplicateID:

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

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PW-15R	Well Diameter:	2 Inches
Samplers:	BEN KRAUSE Danielle Delgado	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth: 120

Pump Loc: within screen

Method: PFC Free Bladder Pump Date: 11-06-2019 Time: 14:00

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	10.325		
Initial Depth to Water (ft.):	59.47	Depth to Well Bottom (ft.):	124

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			
14:05	59.58	125.00		6.04	7.75	89.10	97.50	0.18	19.50	Clear	None	
14:10	59.64	125.00	0.17	5.55	3.54	92.50	38.60	0.17	19.50	Clear	None	
14:15	59.68	125.00	0.17	5.48	3.25	127.60	28.80	0.16	19.40	Clear	None	
14:20	59.66	125.00	0.17	5.3	3.25	143.10	26.00	0.16	19.60	Clear	None	
14:25	59.65	125.00	0.17	5.14	3.24	149.10	19.50	0.15	19.40	Clear	None	
14:30	59.69	125.00	0.17	5.12	3.22	149.00	12.80	0.15	19.40	Clear	None	

Sampling Data

Zero HS:

Method:

Date: 11-06-2019 Time: 14:30 Total Volume Purged (gallons): 1

Field Parameters

STABILIZED PARAMETERS	
pH	5.12
Spec. Cond.(mS/cm)	0.15
Turbidity (NTU)	12.80
Temp.(^oC)	19.40
DO (mg/L)	3.22
ORP (mV)	149.00

Screen Interval: 110 - 120

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

Sample ID: GW4Q19-PW-15R

DuplicateID: GW4Q19-PW-15R-D

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: PW-13 | Well Diameter: 2 Inches

Samplers: BEN KRAUSE Danielle delgado | Event: Quarterly | Project Manager: Tracy Ovbey

Purging Data Pump Depth: 129

Pump Loc: within screen

Method: Double valve pump | Date: 11-08-2019 | Time: 13:10

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	15.816		
Initial Depth to Water (ft.):	34.2	Depth to Well Bottom (ft.):	133.05

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
13:20	34.44	125.00	0.17	9.91	4.14	212.10	293.00	0.35	18.70	Cloudy	None	
13:25	34.38	125.00	0.17	8.63	1.07	127.70	246.00	0.15	17.40	Cloudy	None	
13:30	34.45	125.00	0.17	7.97	0.89	53.80	209.00	0.13	18.00	Cloudy	None	
13:35	34.44	125.00	0.17	7.56	0.86	18.40	170.00	0.12	17.90	Cloudy	None	
13:40	34.42	125.00	0.17	7.23	0.82	0.70	157.00	0.12	18.20	Cloudy	None	
13:45	34.44	125.00	0.17	7.08	0.82	-12.60	141.00	0.11	17.30	Cloudy	None	
13:50	34.44	125.00	0.17	6.99	0.83	-21.70	132.00	0.11	18.00	Cloudy	None	
13:55	34.40	125.00	0.17	6.9	0.83	-26.30	113.00	0.11	17.70	Cloudy	None	
14:00	34.42	125.00	0.17	6.89	0.80	-32.00	107.00	0.11	18.20	Cloudy	None	
14:05	34.44	125.00	0.17	6.85	0.81	-32.90	97.00	0.11	17.90	Cloudy	None	
14:11	34.44	125.00	0.17	8.7	0.81	-30.10	95.00	0.11	17.60	Cloudy	None	
14:15	34.44	125.00	0.17	6.7	0.88	-26.20	89.00	0.11	17.70	Cloudy	None	
14:20	34.44	125.00	0.17	6.63	0.97	-23.10	87.00	0.10	16.70	Cloudy	None	
14:25	34.44	125.00	0.17	6.55	0.98	-23.40	86.80	0.10	17.90	Cloudy	None	
14:30	34.44	125.00	0.17	6.54	1.00	-23.00	83.30	0.10	17.80	Cloudy	None	
14:35	34.44	125.00	0.17	6.48	1.10	-20.00	94.00	0.10	17.90	Cloudy	None	
14:40	34.44	125.00	0.17	6.46	1.10	-19.70	99.10	0.10	18.10	Cloudy	None	
14:45	34.44	125.00	0.17	6.42	1.09	-19.50	98.10	0.10	18.00	Cloudy	None	
14:50	34.44	125.00	0.17	6.39	1.19	-18.40	103.00	0.10	17.60	Cloudy	None	
14:55	34.44	125.00	0.17	6.38	1.19	-17.00	97.20	0.10	17.10	Cloudy	None	

Sampling Data Zero HS:

Method: | Date: 11-08-2019 | Time: 15:00 | Total Volume Purged (gallons): 3.33

Field Parameters

STABILIZED PARAMETERS	
pH	6.38
Spec. Cond.(mS/cm)	0.10
Turbidity (NTU)	97.20
Temp.(°C)	17.10
DO (mg/L)	1.19
ORP (mV)	

Screen Interval: 120 - 130

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

Sample ID: GW4Q19-PW-13

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville
Well ID: PW-07
Well Diameter: 2 Inches
Samplers: BRANDON WEIDNER K. Stuart
Event: Quarterly
Project Manager: Tracy Ovbey

Purging Data

Pump Depth:
Pump Loc: bottom of well
Method:
Date: 11-07-2019 Time: 11:14

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	0.277		
Initial Depth to Water (ft.):	40.04	Depth to Well Bottom (ft.):	41.77

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
11:20	40.04		0.25	5.97	5.29	316.90	83.10	0.09	21.30	Cloudy	None	Went dry before we could sample water

Sampling Data

Zero HS:
Method:
Date: 11-07-2019 Time: 11:28
Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	5.97
Spec. Cond.(mS/cm)	0.09
Turbidity (NTU)	83.10
Temp.(°C)	21.30
DO (mg/L)	5.29
ORP (mV)	316.90

Screen Interval: 28 - 38

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

Sample ID: GW4Q19-PW-07
DuplicateID:

Well ran dry

WEATHER CONDITIONS	
Temperature (F):	71.00
Sky:	Sunny
Precipitation:	None
Wind (mph)	2

RECORD OF WELL SAMPLING

Site Name:	Chemours Fayetteville	Well ID:	PW-07	Well Diameter:	2 Inches
Samplers:	BEN KRAUSE Danielle Delgado	Event:	Quarterly	Project Manager:	Tracy Ovbey

Purging Data

Pump Depth:

Pump Loc:

Method: Date: 11-08-2019 Time: 09:17

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =	0.256		
Initial Depth to Water (ft.):	40.15	Depth to Well Bottom (ft.):	41.75

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	^oC			

Sampling Data

Zero HS:

Method: Grab Date: 11-08-2019 Time: 09:30 Total Volume Purged (gallons): 0

Field Parameters

STABILIZED PARAMETERS	
pH	
Spec. Cond.(mS/cm)	
Turbidity (NTU)	
Temp.(^oC)	
DO (mg/L)	
ORP (mV)	

Screen Interval: 28 - 38

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

Sample ID: GW4Q19-PW-07

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	
Sky:	Sunny
Precipitation:	None
Wind (mph)	

Parsons PLUS
creating a safer world

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: PIW-6S | Well Diameter: 2 Inches

Samplers: Brandon Peach and Savannah Volkoff | Event: | Project Manager:

Purging Data Pump Depth: `23

Pump Loc:

Method: | Date: 10/29/2019 | Time: 1235

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume =

Initial Depth to Water (ft.): 14.52 | Depth to Well Bottom (ft.): 31.54

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
1235												BEGIN PURGING
1240	15.07	175.00		4.52	0.83	251.40	30.30	0.094	18.5			
1246	15.14	185.00		4.50	0.63	247.70	33.50	0.094	18.4			
1251	15.23	185.00		4.46	0.61	240.90	30.50	0.094	18.3			
1256	15.20	175.00		4.52	0.48	237.10	35.90	0.094	18.3			
1304	15.20	175.00		4.65	0.46	215.00	33.50	0.093	18.1			
1309	15.26	-		4.64	0.46	210.80	24.10	0.093	18.1			
1314	15.25	-		4.63	0.52	210.90	20.50	0.093	18.1			
1319	15.29	-		4.61	0.56	213.20	31.70	0.093	18.0			
1324	15.31	-		4.6	0.55	210.20	14.20	0.093	18.0			

Sampling Data Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.60
Spec. Cond.(mS/cm)	0.09
Turbidity (NTU)	14.20
Temp.(°C)	18.00
DO (mg/L)	0.55
ORP (mV)	210.20

Screen Interval: 18-28

SAMPLE SET

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS

Temperature (F):

Sky:

Precipitation:

Wind (mph)

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: PIW-7S | Well Diameter: 2 Inches

Samplers: Brandon Peach and Savannah Volkoff | Event: | Project Manager:

Purging Data Pump Depth: `12

Pump Loc:

Method: | Date: 10/31/2019 | Time: 1100

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume =

Initial Depth to Water (ft.): 5.73 | Depth to Well Bottom (ft.):

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
1100	5.40	150.00		5.88	0.81	68.10	19.10	0.145	19.7			
1106	5.70	200.00		5.87	0.49	50.10	26.10	0.015	19.3			
1111	5.60	200.00		5.86	0.48	40.20	20.30	0.146	19.1			
1116	5.90	200.00		5.89	0.37	30.40	19.70	0.015	18.9			
1121	6.00	200.00		5.93	0.39	23.00	19.29	0.152	18.9			
1126	6.00	200.00		5.97	0.38	17.90	6.85	0.153	18.9			
1130	6.01	200.00		6.01	0.35	13.70	4.46	0.154	18.9			
1135	5.90	200.00		6.03	0.40	11.00	6.97	0.154	18.9			
1140	6.00	200.00		6.05	0.35	8.80	4.83	0.155	18.8			
1145	6.00	200.00		6.06	0.35	7.50	2.86	0.155	18.8			
1150	6.00	200.00		6.07	0.31	6.10	2.49	0.154	18.9			
1155	6.01	200.00		6.08	0.34	5.90	2.70	0.153	18.9			
1200	6.00	200.00		6.08	0.31	5.30	3.92	0.152	18.9			

Sampling Data Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	6.08
Spec. Cond.(mS/cm)	0.15
Turbidity (NTU)	3.92
Temp.(°C)	18.90
DO (mg/L)	0.31
ORP (mV)	5.30

Screen Interval: 7-17=10FT

SAMPLE SET

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS

Temperature (F):

Sky:

Precipitation:

Wind (mph)

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: PW-04 | Well Diameter: 2 Inches

Samplers: Brandon Peach and Savannah Volkoff | Event: | Project Manager:

Purging Data

Pump Depth: 22

Pump Loc:

Method: | Date: 10/29/2019 | Time: 1635

WATER VOLUME CALCULATION

= (Total Depth of Well - Depth To Water) x Casing Volume per Foot

Water Volume =

Initial Depth to Water (ft.): 28.25 | Depth to Well Bottom (ft.): 30.8

Time	DTW	Pump Rate	Vol.	pH	DO	Redox	Turbidity	Spec. Cond.	Temp.	Color	Odor	Comments
24 hr.	ft.	ml/min.	gal.		mg/L	mV	NTU	mS/cm	°C			
1635	28.78	50.00		4.02	1.32	316.40	8.3	0.442	19.7			1620 begin purge
1640	29.31	50.00		3.96	0.87	320.90	16.7	0.417	19.7			1625 stop and cut new tubing 30ft
1645	29.68	25.00		3.96	0.78	315.40	46.9	0.401	19.7			1629 begin purge
1650	29.90	25.00		3.90	0.76	306.80	24.6	0.416	19.7			
1655	30.20	25.00		4.00	0.81	300.50	18.0	0.426	19.8			
1700	30.64	25.00		4.01	0.84	297.10	12.4	0.433	19.7			

Sampling Data

Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	4.01
Spec. Cond.(mS/cm)	0.43
Turbidity (NTU)	12.40
Temp.(°C)	19.70
DO (mg/L)	0.84
ORP (mV)	297.10

Screen Interval: 10

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	
Sky:	
Precipitation:	
Wind (mph)	

Parsons PLUS creating a safer world

RECORD OF WELL SAMPLING

Site Name: Chemours Fayetteville | Well ID: PW-06 | Well Diameter: 2 Inches

Samplers: Brandon Peach and Savannah Volkoff | Event: | Project Manager:

Purging Data

Pump Depth: 14

Pump Loc:

Method: | Date: 10/29/2019 | Time: 1420

WATER VOLUME CALCULATION			
= (Total Depth of Well - Depth To Water) x Casing Volume per Foot			
Water Volume =			
Initial Depth to Water (ft.):	19.54	Depth to Well Bottom (ft.):	32.84

Time 24 hr.	DTW ft.	Pump Rate ml/min.	Vol. gal.	pH	DO mg/L	Redox mV	Turbidity NTU	Spec. Cond. mS/cm	Temp. °C	Color	Odor	Comments
1420												BEGIN PURGING
1425	20.20	175.00		3.94	3.00	392.40	2.23	0.087	19.1			
1430	20.23	75.00		4.03	2.58	380.00	1.41	0.084	19.1			
1435	20.20	-		4.27	2.24	330.50	1.19	0.074	19.1			
1440	20.26	125.00		4.37	3.30	319.80	1.15	0.071	19.0			
1445	20.30	125.00		4.50	3.28	301.20	1.01	0.068	19.0			
1450	20.31	125.00		4.67	3.11	179.10	1.71	0.066	19.0			
1455	20.34	125.00		4.76	3.46	265.30	1.22	0.065	19.0			
1500	20.27	125.00		4.92	2.56	242.50	1.52	0.066	19.0			
1505	20.27	125.00		4.98	3.29	235.40	1.27	0.066	19.0			
1510	20.29	125.00		4.99	3.06	228.20	1.25	0.066	18.9			
1515		125.00		5.12	3.29	216.70	1.38	0.067	19.0			

Sampling Data

Zero HS:

Method: | Date: | Time: | Total Volume Purged (gallons):

Field Parameters

STABILIZED PARAMETERS	
pH	5.12
Spec. Cond.(mS/cm)	0.07
Turbidity (NTU)	1.38
Temp.(°C)	19.00
DO (mg/L)	3.29
ORP (mV)	216.70

Screen Interval: 10

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

Sample ID:

DuplicateID:

WEATHER CONDITIONS	
Temperature (F):	
Sky:	
Precipitation:	
Wind (mph)	

DATA REVIEW NARRATIVES AND LABORATORY REPORTS

DATA REVIEW NARRATIVES AND LABORATORY REPORTS

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

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

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

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

ADQM DATA REVIEW
NARRATIVE

Site Chemours FAY – Fayetteville

Project Creeks Seeps Old Outfall 002 9/19

Project Reviewer Michael Aucoin, AECOM as a Chemours contractor

Sampling Dates September 17 - 18, 2019

Analytical Protocol

Laboratory	Analytical Method	Parameter(s)
TestAmerica - Sacramento	537 Modified	PFAS[1]
TestAmerica - Sacramento	Cl. Spec. Table 3 Compound SOP	Table 3+ compounds

[1] Perfluoroalkylsubstances, a list of 33 compounds including HFPO-DA.

Sample Receipt

The following items are noted for this data set:

All samples were received in satisfactory condition and within EPA temperature guidelines on September 19, 2019

Data Review

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

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

- Some table 3+ results in three water samples were qualified B and the reported results may be biased high, or false positives, due to a comparable concentration found in the associated equipment blank. Byproduct 5 and PFMOAA results in sample ID EXCESS RIVER WATER-091719 were also impacted by an MS RPR outside criteria indicating estimated results but the B qualifier supercedes the J qualifier.
- Several analytical results have been qualified J as estimated, and non-detect results qualified UJ indicating an estimated reporting limit, due to a poor laboratory matrix spike; sample analysis which exceeded the laboratory preparation hold time; and poor field duplicate or lab replicate precision. See the Data Verification Module (DVM) Narrative Report for which samples were qualified, the specific reasons for qualification, and potential bias in reported results.

Attachments

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

Data Verification Module (DVM)

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

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

There are two qualifier fields in EIM:

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

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

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

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

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

DVM Narrative Report

Site: Fayetteville **Sampling Program:** Creeks Seeps Old Outfall 002 9/19 **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EXCESS RIVER WATER-091719	09/17/2019	320-54544-3	Byproduct 5	0.0027	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
EXCESS RIVER WATER-091719	09/17/2019	320-54544-3	Byproduct 5	0.0027	UG/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
EXCESS RIVER WATER-091719	09/17/2019	320-54544-3	PFO2HxA	0.015	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
EXCESS RIVER WATER-091719	09/17/2019	320-54544-3	PFO2HxA	0.015	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
EXCESS RIVER WATER-091719	09/17/2019	320-54544-3	PFMOAA	0.0080	ug/L	PQL		0.0050	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
EXCESS RIVER WATER-091719	09/17/2019	320-54544-3	PFMOAA	0.0079	ug/L	PQL		0.0050	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-C-1-091719	09/17/2019	320-54544-1	Byproduct 5	2.8	UG/L	PQL		0.29	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-C-1-091719	09/17/2019	320-54544-1	Byproduct 5	3.1	UG/L	PQL		0.29	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-76-091719	09/17/2019	320-54544-2	PFO2HxA	0.0045	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-76-091719	09/17/2019	320-54544-2	PFO2HxA	0.0050	ug/L	PQL		0.0020	B	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** Creeks Seeps Old Outfall 002 9/19 **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-RM-52-091719	09/17/2019	320-54545-2	PFMOAA	0.0050	ug/L	PQL		0.0050	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-52-091719	09/17/2019	320-54545-2	PFMOAA	0.0050	ug/L	PQL		0.0050	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-68-091719	09/17/2019	320-54536-3	PFMOAA	0.0050	ug/L	PQL		0.0050	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-68-091719	09/17/2019	320-54536-3	PFMOAA	0.0050	ug/L	PQL		0.0050	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** Creeks Seeps Old Outfall 002 9/19 **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EB-01-091819	09/18/2019	320-54536-6	Hfpo Dimer Acid	0.0040	UG/L	PQL		0.0040	UJ	537 Modified		3535_PFC

Site: Fayetteville **Sampling Program:** Creeks Seeps Old Outfall 002 9/19 **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-RM-68-091719	09/17/2019	320-54536-3	R-EVE	0.0044	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-68-091719	09/17/2019	320-54536-3	R-EVE	0.0043	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-68-091719	09/17/2019	320-54536-3	Byproduct 4	0.012	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-68-091719	09/17/2019	320-54536-3	Byproduct 4	0.011	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-68-091719	09/17/2019	320-54536-3	Byproduct 5	0.0030	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-68-091719	09/17/2019	320-54536-3	Byproduct 5	0.0031	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-52-091719	09/17/2019	320-54545-2	R-EVE	0.0022	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-52-091719	09/17/2019	320-54545-2	R-EVE	0.0022	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-52-091719	09/17/2019	320-54545-2	Byproduct 4	0.016	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-52-091719	09/17/2019	320-54545-2	Byproduct 4	0.015	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-52-091719	09/17/2019	320-54545-2	Byproduct 5	0.0045	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-56-091719	09/17/2019	320-54545-1	R-EVE	0.0031	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-56-091719	09/17/2019	320-54545-1	R-EVE	0.0030	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-56-091719	09/17/2019	320-54545-1	Byproduct 4	0.015	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-56-091719	09/17/2019	320-54545-1	Byproduct 5	0.0046	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-56-091719	09/17/2019	320-54545-1	Byproduct 5	0.0049	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** Creeks Seeps Old Outfall 002 9/19 **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-BLADEN-091819	09/18/2019	320-54536-4	R-EVE	0.0074	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-BLADEN-091819	09/18/2019	320-54536-4	R-EVE	0.0082	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-BLADEN-091819	09/18/2019	320-54536-4	Byproduct 4	0.018	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-BLADEN-091819	09/18/2019	320-54536-4	Byproduct 4	0.020	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-BLADEN-091819	09/18/2019	320-54536-4	Byproduct 5	0.046	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-BLADEN-091819	09/18/2019	320-54536-4	Byproduct 5	0.049	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-KINGS-091819	09/17/2019	320-54545-3	R-EVE	0.015	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-KINGS-091819	09/17/2019	320-54545-3	Byproduct 4	0.023	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-KINGS-091819	09/17/2019	320-54545-3	Byproduct 5	0.033	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-KINGS-091819	09/17/2019	320-54545-3	Byproduct 5	0.033	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-KINGS-091819-D	09/17/2019	320-54545-4	Byproduct 5	0.032	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-KINGS-091819-D	09/17/2019	320-54545-4	Byproduct 5	0.034	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
WC-1-091719	09/17/2019	320-54543-1	PFMOAA	0.69	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
WC-1-091719	09/17/2019	320-54543-1	PFMOAA	0.67	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
WC-1-091719	09/17/2019	320-54543-1	R-EVE	0.034	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
WC-1-091719	09/17/2019	320-54543-1	R-EVE	0.034	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
WC-1-091719	09/17/2019	320-54543-1	Byproduct 4	0.061	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** Creeks Seeps Old Outfall 002 9/19 **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
										SOP		
WC-1-091719	09/17/2019	320-54543-1	Byproduct 4	0.059	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
WC-1-091719	09/17/2019	320-54543-1	Byproduct 5	0.30	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
WC-1-091719	09/17/2019	320-54543-1	Byproduct 5	0.28	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
EXCESS RIVER WATER-091719	09/17/2019	320-54544-3	R-EVE	0.0071	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
EXCESS RIVER WATER-091719	09/17/2019	320-54544-3	R-EVE	0.0072	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
EXCESS RIVER WATER-091719	09/17/2019	320-54544-3	Byproduct 4	0.016	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GBC-1-091719	09/17/2019	320-54543-3	R-EVE	0.018	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GBC-1-091719	09/17/2019	320-54543-3	R-EVE	0.018	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GBC-1-091719	09/17/2019	320-54543-3	Byproduct 4	0.037	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
GBC-1-091719	09/17/2019	320-54543-3	Byproduct 4	0.037	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
OUTFALL 002-091719	09/17/2019	320-54536-2	Byproduct 4	0.026	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
OUTFALL 002-091719	09/17/2019	320-54536-2	Byproduct 4	0.027	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
OUTFALL 002-091719	09/17/2019	320-54536-2	Byproduct 5	0.15	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** Creeks Seeps Old Outfall 002 9/19 **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-KINGS-091819	09/17/2019	320-54545-3	R-EVE	0.014	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-KINGS-091819	09/17/2019	320-54545-3	Byproduct 4	0.023	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-KINGS-091819-D	09/17/2019	320-54545-4	R-EVE	0.0069	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-KINGS-091819-D	09/17/2019	320-54545-4	R-EVE	0.0069	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-KINGS-091819-D	09/17/2019	320-54545-4	Byproduct 4	0.0096	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-KINGS-091819-D	09/17/2019	320-54545-4	Byproduct 4	0.011	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** Creeks Seeps Old Outfall 002 9/19 **Validation Options:** LABSTATS

Validation Reason Quality review criteria exceeded between the REP (laboratory replicate) and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-RM-52-091719	09/17/2019	320-54545-2	Byproduct 5	0.0056	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-RM-56-091719	09/17/2019	320-54545-1	Byproduct 4	0.017	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
EXCESS RIVER WATER-091719	09/17/2019	320-54544-3	Byproduct 4	0.018	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
OUTFALL 002-091719	09/17/2019	320-54536-2	NVHOS	0.0097	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
OUTFALL 002-091719	09/17/2019	320-54536-2	NVHOS	0.011	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
OUTFALL 002-091719	09/17/2019	320-54536-2	R-EVE	0.0060	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
OUTFALL 002-091719	09/17/2019	320-54536-2	R-EVE	0.0071	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
OUTFALL 002-091719	09/17/2019	320-54536-2	Byproduct 5	0.17	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP D-1-091719	09/17/2019	320-54536-1	R-EVE	1.1	UG/L	PQL		0.070	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP D-1-091719	09/17/2019	320-54536-1	R-EVE	1.2	UG/L	PQL		0.070	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-A-3-091719	09/17/2019	320-54491-3	Perfluorobutane Sulfonic Acid (trial)	0.087	UG/L	PQL		0.019	J	537 Modified		3535_PFC
SEEP-A-4-091719	09/17/2019	320-54491-2	PFESA-BP1	0.10	UG/L	PQL		0.027	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-A-4-091719	09/17/2019	320-54491-2	PFESA-BP1	0.12	UG/L	PQL		0.027	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-A-4-091719	09/17/2019	320-54491-2	PFO4DA	2.6	ug/L	PQL		0.079	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-A-4-091719	09/17/2019	320-54491-2	PFO4DA	3.0	ug/L	PQL		0.079	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-A-TR1-091719	09/17/2019	320-54491-1	PFO4DA	1.5	ug/L	PQL		0.079	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-A-TR1-091719	09/17/2019	320-54491-1	PFO4DA	1.7	ug/L	PQL		0.079	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** Creeks Seeps Old Outfall 002 9/19 **Validation Options:** LABSTATS

Validation Reason Quality review criteria exceeded between the REP (laboratory replicate) and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SEEP-A-TR1-091719	09/17/2019	320-54491-1	Byproduct 5	0.25	UG/L	PQL		0.058	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-A-TR1-091719	09/17/2019	320-54491-1	Byproduct 5	0.29	UG/L	PQL		0.058	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-B-TR1-091719	09/17/2019	320-54489-2	R-EVE	0.39	UG/L	PQL		0.070	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-B-TR1-091719	09/17/2019	320-54489-2	R-EVE	0.43	UG/L	PQL		0.070	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** Creeks Seeps Old Outfall 002 9/19 **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-BLADEN-091819	09/18/2019	320-54536-4	PFMOAA	0.15	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-BLADEN-091819	09/18/2019	320-54536-4	PFMOAA	0.15	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
OUTFALL 002-091719	09/17/2019	320-54536-2	PFMOAA	0.073	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
OUTFALL 002-091719	09/17/2019	320-54536-2	PFMOAA	0.080	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** Creeks Seeps Old Outfall 002 9/19 **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-BLADEN-091819	09/18/2019	320-54536-4	Hfpo Dimer Acid	0.039	UG/L	PQL		0.0040	J	537 Modified		3535_PFC
OUTFALL 002-091719	09/17/2019	320-54536-2	Hfpo Dimer Acid	0.081	UG/L	PQL		0.0040	J	537 Modified		3535_PFC
SEEP D-1-091719	09/17/2019	320-54536-1	Hfpo Dimer Acid	16	UG/L	PQL		0.14	J	537 Modified		3535_PFC

APPENDIX C

K_{OW}, K_{OC} and Mass Distribution Calculations

APPENDIX C

MEASURED K_{OW} AND CALCULATED K_{OC} FOR TABLE 3+ COMPOUNDS

Laboratory studies were performed at Chemours Experimental Station in Wilmington, Delaware to determine Table 3+ PFAS octanol-water partition coefficients (K_{ow}) using liquid chromatography elution times (OECD, 2014). In this method, Table 3+ PFAS partition between the mobile solvent phase and the hydrocarbon stationary phase as they are transported along the column by the mobile phase. Compounds elute in proportion to their hydrocarbon-water partition coefficient, with hydrophilic chemicals eluted earlier and lipophilic chemicals later. K_{ow} is then estimated by determining the retention time for each compound in relation to reference compounds with known K_{ow} values.

K_{ow} tests were conducted on an Agilent 1290 Infinity II HPLC with an Agilent 6470 triple quad with an AJS-ESI source as the detector in multiple reaction monitoring mode (MS/MS filtering). The analytical column was a Phenomenex Gemini reversed phase C18 column 100 x 3 mm, 3 um particle size with 110 A pore size and TMS endcapping. The column was maintained at 50° C +/- 0.1° C by the LC column compartment oven. Mobile phase flow was isocratic at 0.5 mL/min. Table 3+ were separated into 4 groups to facilitate separation under isocratic conditions:

- Group 1 - MMF, DFSA, MTP, Byproduct 4, Byproduct 5, and R-EVE;
- Group 2 - PPF Acid and PMPA;
- Group 3 - PFMOAA, NVHOS, PFO2HxA, PEPA, PES, PFECA B, and PFO3A; and
- Group 4 - By product 6, Hydro Eve, By product 2, PFECA G, PFO4DA, Byproduct 1, Eve Acid, and PFO5DoA.

Mobile phases were prepared daily. Tests were conducted with different isocratic mobile phases methanol/water compositions for each group, and at two pH values (pH 5 [4.89 - 5.10] and pH 8 [8.10 – 8.29]) to span Site pH conditions. Mobile phases were buffered with 20 mM ammonium salt buffer (acetate for pH 5 and bicarbonate for pH 8). Analytes were prepared in a minimum of 90% mobile phase.

The retention time is described by the capacity factor k:

$$k = \frac{t_R - t_0}{t_R}$$

where t_R is the retention time of the Table 3+ compound, and t_0 is the average time a solvent molecule needs to pass through the column (the dead-time). K_{ow} values for Table 3+

compounds were estimated by experimentally determining k and then calculating K_{ow} using the following equation:

$$log\ K_{ow} = a + b\ x \log k$$

where a, b = linear regression coefficients were calculated with a linear regression curve of log K_{ow} and k of 11 reference PFAS compounds of varying structures (Table C-1 and Figure C-1). For DFSA, MTP, PPF, and PFMOAA, t_R was found to be less than t_0, thus log K_{ow} was estimated by extrapolation and extrapolated values are provided in parenthesis.

A linear regression curve between log K_{ow} and log K_{oc} was then developed using 20 reference compounds with known log K_{ow} and log K_{oc} (Table C-2 and Figure C-2). Results of the log K_{ow} and log K_{oc} values for Table 3+ PFAS are provided in Table 3 of the main CAP text.

Table C-1:Reference Compounds for Log Kow versus Retention Time Linear Regression Curve

Acronym	Name	Formula	CAS #	Log K_{ow}[1]
Perfluoroalkyl Ether Carboxylic Acids				
HFPO-DA	2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propionic acid	C6HF11O3	13252-13-6	3.6
Perfluoroalkyl Carboxylic Acids				
PFBA	Perfluoro-n-butanoic acid	C4HF7O2	375-22-4	2.82
PFPeA	Perfluoro-n-pentanoic acid	C5HF9O2	2706-90-3	3.43
PFHxA	Perfluoro-n-hexanoic acid	C6HF11O2	307-24-4	4.06
PFHpA	Perfluoro-n-heptanoic acid	C7HF13O2	375-85-9	4.67
PFOA	Perfluoro-n-octanoic acid	C8HF15O2	335-67-1	5.3
PFNA	Perfluoro-n-nonanoic acid	C9HF17O2	375-95-1	5.92
Perfluoroalkyl Sulfonic Acids				
PFBS	Perfluorobutanesulfonic acid	C4HF9O3S	375-73-5	3.9
PFHxS	Perfluorohexanesulphonic acid	C6HF13O3S	355-46-4	5.17
PFOS	Perfluorooctanesulfonic acid	C8HF17O3S	1763-23-1	6.3
Fluorotelomer sulfonic acids (Polyfluorinated)				
6:2 FTS	Fluorotelomer sulfonate	C8H5F13O3S	27619-97-2	4.44

[1] HFPO-DA value from Hopkins et al, 2018.
PFOS value from Zhao et al., 2016.
All other values from Concawe, 2016.

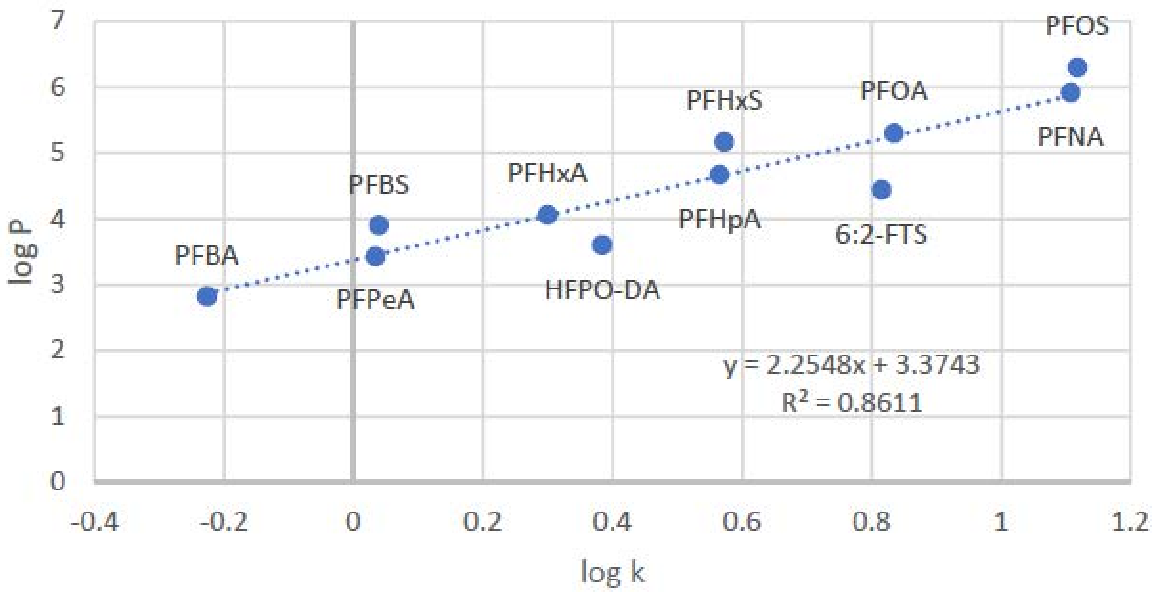


Figure C-1: Linear Regression Curve for Log P (log K_{ow}) vs Log k (represents the retention time) at pH 5.10 for Select Reference Compounds

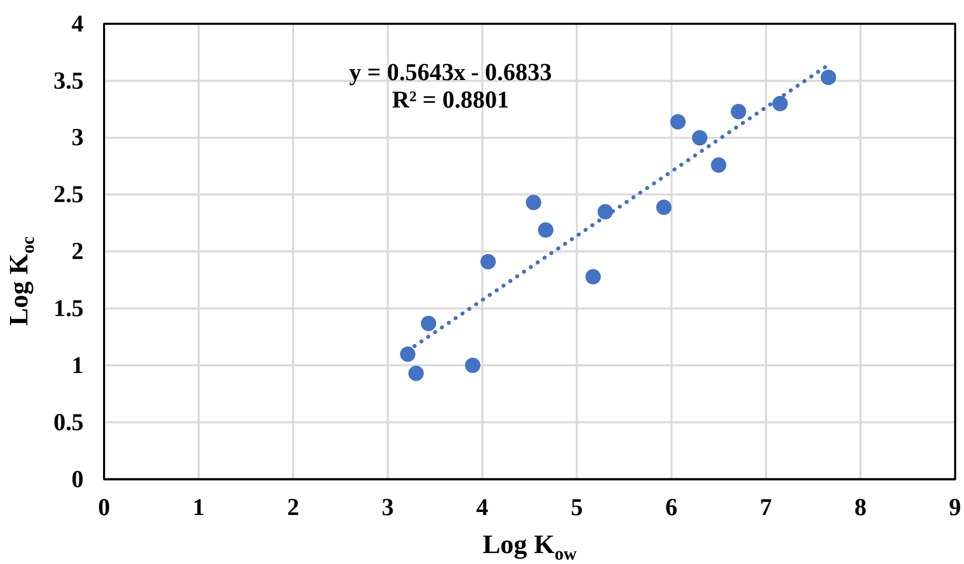


Figure C-2: Linear Regression Curve of Log K_{ow} vs Log K_{oc} for Reference PFAS Compounds

Table C-2: Reference Compounds for Log K_{ow} and Log K_{oc} Linear Regression Curve

Acronym	Name	Formula	CAS #	Log K_{ow}[1]	Log K_{OC} [L/kg][1]
Perfluoroalkyl Carboxylates / Perfluoroalkyl Carboxylic Acids					
PFBA	Perfluorobutanoic Acid	C4HF7O2	375-22-4	2.82	1.88
PFPeA	Perfluoropentanoic Acid	C5HF9O2	2706-90-3	3.43	1.37
PFHxA	Perfluorohexanoic Acid	C6HF11O2	307-24-4	4.06	1.91
PFHpA	Perfluoroheptanoic Acid	C7HF13O2	375-85-9	4.67	2.19
PFOA	Perfluorooctanoic Acid	C8HF15O2	335-67-1	5.3	2.35
PFNA	Perfluorononanoic Acid	C9HF17O2	375-95-1	5.92	2.39
PFDA	Perfluorodecanoic Acid	C10HF19O2	335-76-2	6.5	2.76
PFUnA	Perfluoroundecanoic Acid	C11HF21O2	2058-94-8	7.15	3.3
Perfluoroalkyl Sulfonates / Perfluoroalkyl Sulfonic Acids					
PFBS	Perfluorobutane Sulfonate	C4HF9O3S	375-73-5	3.9	1
PFHxS	Perfluorohexane Sulfonate	C6HF13O3S	432-50-8	5.17	1.78
PFOS	Perfluorooctane Sulfonate	C8HF17O3S	1763-23-1	6.3	3
PFDS	Perfluorodecane Sulfonate	C10HF21O3S	333-77-3	7.66	3.53
Perfluoroctane Sulfonamide and Derivatives					
N-MeFOSA	N-Methyl-Perfluorooctane Sulfonamide	$C_9H_4F_{17}NO_2S$	31506-32-8	6.07	3.14
N-EtFOSA	N-Ethyl-Perfluorooctane Sulfonamide	$C_{10}H_6F_{17}NO_2S$	4151-50-2	6.71	3.23
Perfluoroalkyl Ether Carboxylic Acids					
HFPO-DA	Hexafluoropropylene oxide dimer acid	C6HF11O3	13252-13-6	3.21	1.1
Fluorotelomer Alcohols					
4:2 FTOH	Perfluorethylethanol 4:2	$C_6H_5F_9O$	2043-47-2	3.3	0.93
6:2 FTOH	Perfluorhexylethanol 6:2	C8H5F13O	647-42-7	4.54	2.43
(8:2 FTOH)	Perfluorocylethanol 8:2	C10H5F17O	865-86-1	5.58	3.84
(10:2 FTOH)	Perfluordecylethanol 10:2	C12H5F21O	678-39-8	6.63	6.2
Fluorotelomer sulfonic acids					
(8:2 FTS)	1H, 1H, 2H, 2H-Per-fluorodecanesulfonic Acid	C10H5O3F17S	39108-34-4	5.66	0.01

[1] PFOS values from NGWA, 2019.
HFPO-DA value from Hopkins et al., Recently Detected Drinking Water Contaminants: GenX and Other Per- and Polyfluoroalkyl Ether Acids, 2018.
All other values from: Concawe. Environmental fate and effects of poly and perfluoroalkyl substances (PFAS), 2011.

Compounds in parentheses were excluded from linear regression curve due to values not being compatible with PFAS structure correlations

MASS DISTRIBUTION CALCULATIONS FOR TABLE 3+ COMPOUNDS

The total mass of PFAS in saturated aquifers was calculated by summing PFAS in groundwater and PFAS sorbed on soils. The PFAS sorbed on saturated soil was calculated by taking the groundwater concentrations from a groundwater sample for each PFAS to PFAS sorbed on 0.1 kg soil using median fraction organic carbon f_{oc} similar lithologic units and K_{oc} values. For locations where f_{oc} wasn't measured, a median f_{oc} value from all lithologic units was used.

An analysis was performed to determine whether PFAS mass on and offsite was primarily associated with the unsaturated zone or the saturated zone. This analysis was conducted to help evaluate the potential relative benefit between corrective action for soils versus groundwater. The analysis was conducted by comparing the unsaturated zone total mass (mass in pore water and soil) to the saturated zone total mass (mass in groundwater and soil) for samples taken from the same location. Total mass was calculated for one cubic meter of material (unsaturated or saturated).

The total Table 3+ PFAS mass in the unsaturated zone was estimated by summing the total Table 3+ PFAS mass measured in soil samples from the unsaturated zone (this is assumed to include both PFAS n the pore water and PFAS sorbed on the soil).

The total Table 3+ PFAS mass in the saturated zone was calculated using groundwater data from samples representative of the saturated zone to estimate the total mass of PFAS in the soil from which the groundwater sample originated. Parameters used for the calculations were:

- Measured fraction organic carbon (f_{oc}) - values used for f_{oc} were the median value for the lithological unit from which the groundwater sample was collected. F_{oc} data are presented in the On and Offsite Assessment report (Geosyntec, 2019);
- Calculated K_{oc} values - provided earlier in this Appendix;
- Dry bulk density of the subsurface material -1.602 kg/L was used for all lithological units;
- Porosity – 40% was used for all lithological units.

The total mass of PFAS in groundwater and the total mass of PFAS in the soil were then added together to calculate a total mass of PFAS in the saturated zone. For this exercise, non-detects were not included in any calculations.

Results are provided in Table C-3. Results are shown in Figure 4 in the main CAP text.

Table C-3: PFAS Mass Distribution Between Saturated and Unsaturated Zone

Location ID	Sample Date	Onsite/Offsite	Sample Type	Aquifer Saturation	Total Mass per Cubic Meter (kg/m^3)
Bladen-2S	8/27/2019	Offsite	GW	saturated	5.79E-08
Bladen-2S	8/16/2019	Offsite	S	unsaturated	nd
Bladen-3S	8/28/2019	Offsite	GW	saturated	5.24E-08
Bladen-3S	8/20/2019	Offsite	S	unsaturated	nd
Bladen-4S	8/28/2019	Offsite	GW	saturated	7.19E-09
Bladen-4S	8/21/2019	Offsite	S	unsaturated	nd
Cumberland-1S	9/16/2019	Offsite	groundwater	saturated	1.27E-08
Cumberland-1S	9/13/2019	Offsite	soil	unsaturated	nd
Cumberland-2S	9/16/2019	Offsite	groundwater	saturated	1.94E-08
Cumberland-2S	9/12/2019	Offsite	soil	unsaturated	nd
Cumberland-3S	9/16/2019	Offsite	groundwater	saturated	9.69E-08
Cumberland-3S	9/12/2019	Offsite	soil	unsaturated	nd
Cumberland-4S	9/16/2019	Offsite	groundwater	saturated	2.50E-07
Cumberland-4S	9/11/2019	Offsite	soil	unsaturated	5.13E-07
Cumberland-4S	9/11/2019	Offsite	soil	unsaturated	6.25E-07
Cumberland-5S	9/16/2019	Offsite	groundwater	saturated	1.50E-08
Cumberland-5S	9/11/2019	Offsite	soil	unsaturated	nd
PW-01	9/9/2019	Onsite	groundwater	saturated	2.53E-05
PW-01	9/9/2019	Onsite	groundwater	saturated	2.31E-05
PW-01	7/31/2019	Onsite	soil	unsaturated	1.92E-06
PW-01	7/30/2019	Onsite	soil	unsaturated	7.05E-06
PW-02	9/11/2019	Onsite	groundwater	saturated	6.31E-03
PW-02	9/11/2019	Onsite	groundwater	saturated	6.62E-03
PW-02	7/29/2019	Onsite	soil	unsaturated	2.40E-06
PW-03	9/11/2019	Onsite	groundwater	saturated	1.78E-04
PW-03	9/11/2019	Onsite	groundwater	saturated	1.52E-04
PW-03	7/23/2019	Onsite	soil	unsaturated	1.07E-05
PW-05	9/9/2019	On Site	groundwater	saturated	2.11E-06
PW-05	7/26/2019	On Site	soil	unsaturated	1.36E-06
PW-06	9/10/2019	On Site	groundwater	saturated	1.35E-06
PW-06	7/29/2019	On Site	soil	unsaturated	nd

Location ID	Sample Date	Onsite/Offsite	Sample Type	Aquifer Saturation	Total Mass per Cubic Meter (kg/m^3)
PW-07	9/13/2019	Onsite	groundwater	saturated	2.08E-06
PW-07	9/13/2019	Onsite	groundwater	saturated	1.95E-06
PW-07	7/24/2019	Onsite	soil	unsaturated	nd
PW-07	7/24/2019	Onsite	soil	unsaturated	nd
PW-09	9/11/2019	Onsite	groundwater	saturated	1.31E-06
PW-09	9/11/2019	Onsite	groundwater	saturated	1.24E-06
PW-09	8/12/2019	Onsite	soil	unsaturated	nd
PW-09	8/12/2019	Onsite	soil	unsaturated	nd
PW-11	9/10/2019	Onsite	groundwater	saturated	2.23E-04
PW-11	9/10/2019	Onsite	groundwater	saturated	2.42E-04
PW-11	7/25/2019	Onsite	soil	unsaturated	9.94E-07
PW-12	9/11/2019	Onsite	groundwater	saturated	7.07E-09
PW-12	9/11/2019	Onsite	groundwater	saturated	nd
PW-12	7/31/2019	Onsite	soil	unsaturated	1.33E-06
PW-12	7/31/2019	Onsite	soil	unsaturated	nd
PW-13	9/10/2019	Onsite	groundwater	saturated	nd
PW-13	9/10/2019	Onsite	groundwater	saturated	nd
PW-13	8/21/2019	Onsite	soil	unsaturated	nd
Robeson-1S	9/12/2019	Offsite	groundwater	saturated	2.36E-08
Robeson-1S	9/9/2019	Offsite	soil	unsaturated	nd
Robeson-1S	9/9/2019	Offsite	soil	unsaturated	nd

Notes:
nd – no Table 3+ compounds were detected

REFERENCES

Concawe. Environmental fate and effects of poly and perfluoroalkyl substances (PFAS), June 2016.

Geosyntec, 2019. On and Offsite Assessment. September 30, 2019.

Hopkins, Z. R., Sun, M., DeWitt, J. C., & Knappe, D. R., 2018. Recently detected drinking water contaminants: GenX and other per-and polyfluoroalkyl ether acids. Journal-American Water Works Association, 110(7), 13-28.

NGWA, 2018. "NGWA Releases Groundwater and PFAS: State of Knowledge and Practice" 23 July 2018 https://www.ngwa.org/publications-and-news/Newsroom/2018-press-releases/ngwa-releases-groundwater-and-pfas

OECD, 2014, OECD Guidelines for Testing of Chemicals: Partition Coefficient (n-Octanol/Water), High Performance Liquid Chromatography (HPLC) Method

Zhao, P., X. Xia, J. Dong, N. Xia, X. Jiang, Y. Li and Y., Zhu, 2016. "Short-and long-chain perfluoroalkyl substances in the water, suspended particulate matter, and surface sediment of a turbid river." Science of the Total Environment 568: 57-65.

APPENDIX D

Southwestern Offsite Seeps Assessment

Geosyntec consultants

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

2501 Blue Ridge Road, Suite 430
Raleigh, NC 27607
PH: 919.870.0576
FAX: 919-870-0578
www.geosyntec.com

Memorandum

Date: December 31, 2019

To: The Chemours Company FC, LLC

From: Geosyntec Consultants of NC, PC

Subject: Southwestern Offsite Seeps Assessment

INTRODUCTION AND OBJECTIVES

Geosyntec Consultants of NC, PC (Geosyntec) has prepared this memorandum for The Chemours Company FC, LLC (Chemours) for the Fayetteville Works facility in Bladen County, North Carolina (the Site). The purpose of this memorandum is to describe the findings of the Southwestern Offsite Seeps Assessment. Groundwater seeps are a common hydrogeological feature in areas of sloping terrain. Onsite four groundwater seeps (Seeps A, B, C and D; Figure 1) were identified in early 2019 (Geosyntec, 2019a). These onsite seeps informed the overall conceptualization of per- and polyfluoroalkyl substances (PFAS) mass transport from the Site to the Cape Fear River. The assessment described in this memorandum was undertaken to identify and sample the groundwater seeps located between the Old Outfall 002 and Georgia Branch Creek to assess Table 3+ PFAS concentrations and Table 3+ PFAS signatures (i.e. aerial vs. process water signatures).

METHODS

The southwestern offsite seeps were identified by observation from a boat along the west shore of the Cape Fear River from the Old Outfall 002 to Georgia Branch Creek (Appendix A). The shoreline was observed for any surface water runoff, ground water seeps or erosional features indicative of flowing water. A total of ten seeps were identified on the western shore of the Cape Fear River (Figure 1) along with one erosional feature which contained no flow of water. Nine of the ten seep (E to M) were sampled. Chemours obtained verbal agreement for sampling the seeps to the exception of the Lock and Dam Seep; Chemours is presently working towards obtaining a written access agreement to sample the Lock and Dam Seep which is immediately adjacent a boat launch ramp.

Once a seep was identified, it was sampled by submerging a 250 mL HDPE sampling bottle to capture the water flowing from the seep, facing into the direction of flow. Two bottles were collected for each location and were composited together at the laboratory. Seeps E, F, J and L did not have enough flow to enable sampling by placing bottle in the flow of water; the seeps only had drops of water seeping from bank. Instead, these seeps (Seeps E, F, J and L) were sampled by collecting the trickle of water from a freshly cut section of the embankment. For Seep J, one bottle was collected from the seep and another from the wetland area upstream that is believed to feed the ground water of Seep J. While no above ground flow was observed between Seep J and the wetland area there was a continuous area of wetland vegetation connecting the seep and the wetland suggesting a hydrological connection. For Seep E and Seep F water was collected from an upstream pool of water along the seep channel rather than directly at the mouth. The highest flow was observed at Seep K which had clearly visible surface water flowing while low trickling flow was observed at Seeps G, H, I and M (Appendix B).

Seep samples were analyzed by the following methods:

- EPA Method 537 Mod (includes Hexafluoropropylene oxide dimer acid [HFPO-DA]) at TestAmerica Sacramento; and
- Table 3+ Standard Operating Protocol (SOP) at TestAmerica Sacramento

Seep PFAS signatures were assessed using hierarchical cluster analysis as described in the Corrective Action Plan (Geosyntec, 2019a).

DATA QUALITY

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

- Hold time criteria;
- Field and laboratory blank contamination;
- Completeness of QA/QC samples;
- MS/MSD recoveries and the relative percent differences (RPDs) between these spikes;

- Laboratory control sample/control sample duplicate recoveries and the RPD between these spikes;
- Surrogate spike recoveries for organic analyses; and
- RPD between field duplicate sample pairs.

The analytical results for the offsite seeps are presented in Table 1. Results are presented with all validation flags. The "J" and "UJ" flagged results indicate usable data, which should be considered as quantitatively estimated. The results are not necessarily within the laboratory's criteria for accuracy and precision of the test method employed, but in the reviewer's professional judgment are usable. Laboratory reports and data review narratives are provided in Appendix C. One field blank sample was analyzed for Table 3+ and Mod 537 PFAS compounds. All analytes were non-detect indicating there was no cross-contamination in the field blank.

RESULTS AND DISCUSSION

Total Table 3+ PFAS concentrations at the offsite seeps ranged from 2,600 ng/L at Seep J to 6,800 ng/L at Seep F (Table 1). The highest single compound measured was PMPA at Seep J with a concentration of 2,800 ng/L. The seeps with the highest concentration of total Table 3+ (Seep E and Seep G; 6,200 and 6,800 ng/L respectively) are located on the northern part of the study area, about 500 feet south of Old Outfall 002 (Figure 2). The other seeps have lower total Table 3+ concentration with the lowest (Seep J; 2,600 ng/L) is located in the middle of the study area, half a mile south of Old Outfall 002. The data gathered here shows an overall decreasing trend in total Table 3+ PFAS concentration while moving southward towards Georgia Branch Creek. The sample collected from Georgia Branch Creek in September 2019 (Geosyntec, 2019b) had a total Table 3+ concentration of 2,100 ng/L, similar to the concentrations found at Seep H through M. Compared to the onsite seeps and Old Outfall 002 the offsite seeps have lower concentrations of Total Table 3+ PFAS by one to two orders of magnitude (Figure 2).

Similar to Georgia Branch Creek, all of the offsite seeps exhibited an aerial PFAS signature (Figure 3). These results indicate that the PFAS in these offsite seeps likely originated from aerial PFAS deposition. The PFAS then subsequently infiltrated to groundwater and eventually discharged from these seeps to the Cape Fear River.

REFERENCES:

Geosyntec, 2019a. On and Offsite Assessment. September 30, 2019.

Geosyntec, 2019b. Corrective Action Plan. 2019.

* * * * *

Geosyntec consultants

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

Enclosures:

- Tables
- Figures
- Appendix A: Field Logs
- Appendix B: Field Photo Logs
- Appendix C: Data Review Narratives and Laboratory Reports

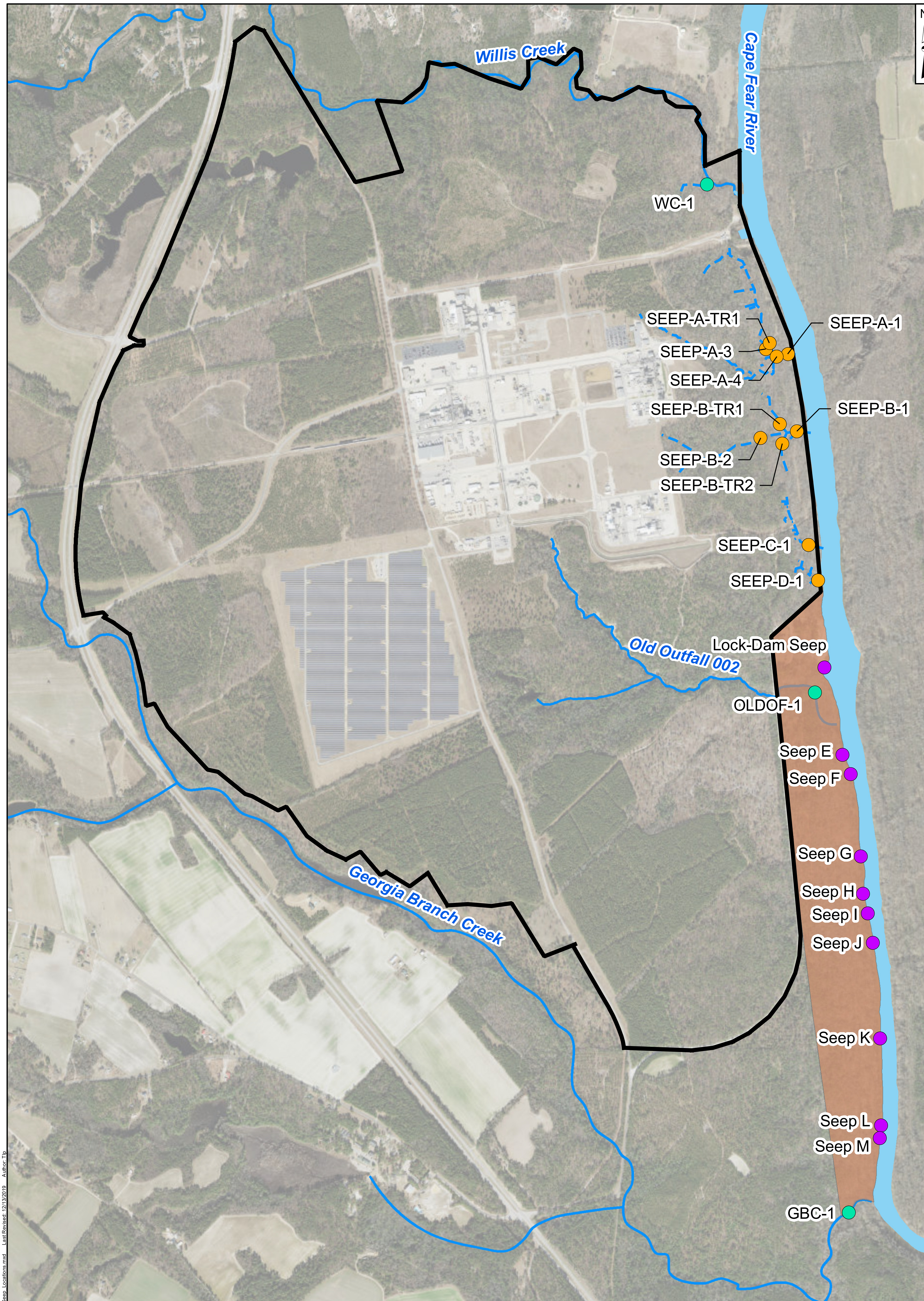
TABLES

TABLE 1
Southwestern Offsite Seeps Analytical Results
Chemours Fayetteville Works, North Carolina

Location ID	SEEP-E	SEEP-F	SEEP-G	SEEP-H	SEEP-I	SEEP-J	SEEP-K	SEEP-L	SEEP-M	FBLK
Field Sample ID	SEEP-E-0930	SEEP-F-0923	SEEP-G-0911	SEEP-H-0905	SEEP-I-0856	SEEP-J-0843	SEEP-K-0835	SEEP-L-0825	SEEP-M-0818	FIELD-BLANK-1-20191021-1050
Sample Date	22-10-19	22-10-19	22-10-19	22-10-19	22-10-19	22-10-19	22-10-19	22-10-19	22-10-19	21-10-19
QA/QC	--	--	--	--	--	--	--	--	--	Field Blank
SDG	320-55576-1	320-55576-1	320-55576-1	320-55576-1	320-55576-1	320-55576-1	320-55576-1	320-55576-1	320-55576-1	320-55576-1
Lab Sample ID	320-55576-1	320-55576-2	320-55576-3	320-55576-4	320-55576-5	320-55576-6	320-55576-7	320-55576-8	320-55576-9	320-55576-10
Table 3+ Lab SOP (ng/L)										
HFPO-DA	**1,200**	**1,100**	**700**	**550**	**570**	**580**	**640**	**520**	**570**	<4
PFMOAA	**480 J**	**900**	**190**	**140**	**130**	**180 J**	**160**	**130**	**100**	<5
PFO2HxA	**800**	**810**	**470**	**350**	**300**	**350 J**	**320**	**220**	**190**	<2
PFO3OA	**170**	**130**	**57**	**28**	**17**	**120 J**	**41**	**18**	**15**	<2
PFO4DA	**83**	**7.3**	**9**	<2	<2	**58**	**11**	**2.7**	<2	<2
PFO5DA	**46**	<2	<2	<2	<2	**20 J**	**4.8**	<2	<2	<2
PMPA	**2,300**	**2,800**	**1,500**	**1,200**	**1,200**	**810 J**	**1,300**	**1,200**	**1,300**	<10
PEPA	**710**	**870**	**490**	**360**	**390**	**260**	**400**	**350**	**410**	<20
PFESA-BP1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
PFESA-BP2	**90**	**9.6**	**22**	**16**	**12**	**37**	**70**	**44**	**28**	<2
Byproduct 4	**220 J**	**92**	**79 J**	**39 J**	**53 J**	**110 J**	**130 J**	**120 J**	**78 J**	<2
Byproduct 5	**2.1 J**	<2.9	<2	<2	<2	<2	<2	<2	<2	<2
Byproduct 6	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
NVHOS	**15**	**12**	**5.4**	**4.3**	**4.4**	**8.1 J**	**5.2**	**5.9**	**5.6**	<2
EVE Acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Hydro-EVE Acid	**7.7**	**2**	<2	<2	<2	**2.7**	**3.5**	<2	<2	<2
R-EVE	**76**	**60**	**39**	**21 J**	**23 J**	**16**	**46 J**	**44 J**	**26 J**	<2
PES	<2	<2.3	<2	<2	<2	<2	<2	<2	<2	<2
PFECA B	<2	<3	<2	<2	<2	<2	<2	<2	<2	<2
PFECA-G	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Other PFAS (ng/L)										
10:2 Fluorotelomer sulfonate	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
11Cl-PF3OUdS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20	<35	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
6:2 Fluorotelomer sulfonate	<20	**86**	<20	<20	<20	<20	<20	<20	<20	<20
9Cl-PF3ONS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
ADONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
NaDONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<2	<2 UJ	<2 UJ	<2	<2	<2	<2	<2
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<2	<2	<2	<2	<2	**2.2**	<2	<2	<2	<2
Perfluorobutanoic Acid	**18**	**15**	**13**	**11**	**11**	**8.8**	**9.9**	**9.7**	**7.5**	<2
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	**8.3**	<2	<2	<2	<2	**4.1**	<2	<2	<2	<2
Perfluorododecane Sulfonic Acid (PFDoS)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Perfluoroheptane Sulfonic Acid (PFHpS)	<2	<2	<2	<2	<2	**2.7**	<2	<2	<2	<2
Perfluoroheptanoic Acid	**5.5**	<2	<2	<2	<2	**13**	<2	<2	<2	<2
Perfluorohexadecanoic Acid (PFHxDA)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Perfluorohexane Sulfonic Acid	**4.3**	<2	<2	<2	<2	**8.2**	<2	<2	<2	<2
Perfluorohexanoic Acid	**5.4**	**4.5**	**3.4**	**2.7**	**2.8**	**8.4**	**3.8**	**2.4**	**2.3**	<2
Perfluorononane Sulfonic Acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Perfluorononanoic Acid	**6**	<2	<2	<2	<2	**20**	<2	<2	<2	<2
Perfluorooctadecanoic Acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Perfluoropentane Sulfonic Acid (PFPeS)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	**20**	**18**	**15**	**13**	**11**	**12**	**12**	**9.4**	**8.1**	<2
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<2.3	<2.6	<2	<2	<2	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	**4.9**	<2.2	<2	<2	<2	<2	<2	<2	<2	<2
Perfluorooctanoic Acid (PFOA)	**15**	<2	<2	<2	<2	**55**	**3.7**	<2	<2	<2
Perfluorooctanoic Sulfonic Acid (PFOS)	**160**	<2	<2	<2	**4.4**	**270**	**7.6**	**4.1**	**2.7**	<2

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
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.

FIGURES



Legend

- Location of Offsite Seep Mouth at Cape Fear River
- Onsite Seep Location
- Tributary and Old Outfall Location
- Observed Seep
- Nearby Tributary
- Site Boundary
- Shoreline Surveyed for Offsite Seeps

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

1,000 500 0 1,000 Feet

Onsite Seep, Offsite Seep, and Tributary Sample Locations

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

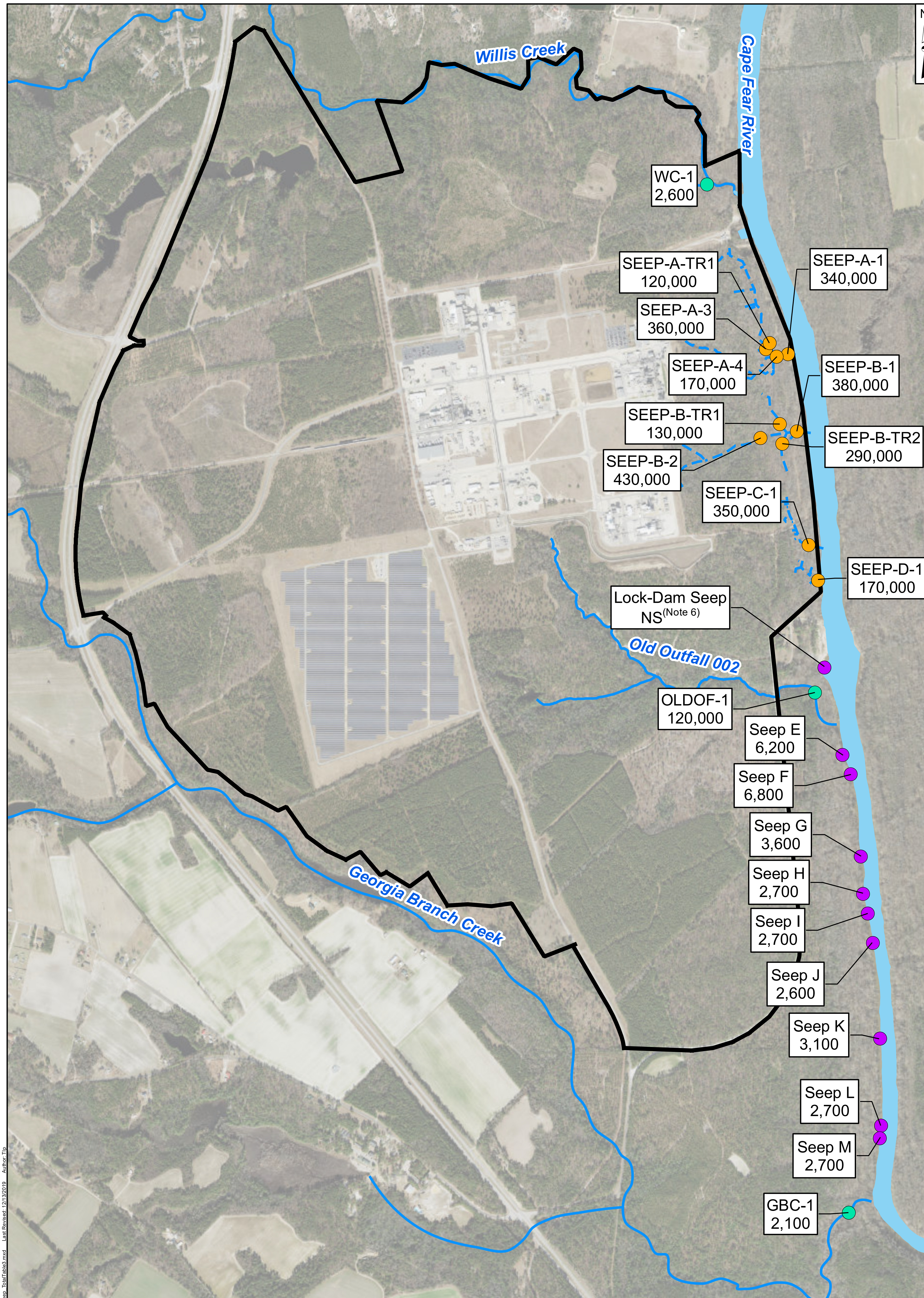
Geosyntec Consultants of NC, P.C.
NC License No.: C-3500 and C-295

Figure 1

Raleigh | December 2019

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Corrective Action Plan\TR0795_Offsite_Seep_Locations.mxd Last Revised: 12/13/2019 Author: Tlp

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



Legend

- Location of Offsite Seep Mouth at Cape Fear River
- Onsite Seep Location
- Tributary and Old Outfall Location
- Observed Seep
- Nearby Tributary
- Site Boundary

Notes:
NS = not sampled
1. All results are in ng/L (nanograms per liter).
2. Offsite seep samples were collected on Oct 22, 2019. All other samples were collected on Sept. 17, 2019.
3. HFPO-DA (hexafluoropropylene oxide dimer acid) is included in the total Table 3+ result, including HFPO-DA results evaluated by EPA Method 537 Mod.
4. Non-detect values were not included in the sum of total Table 3+ results.
5. Total Table 3+ results include J-qualified data.
6. Chemours is arranging for offsite access to sample this location due to the need to be near the active boat ramp to collect the sample.
7. Seep E to M samples were collected where the seeps entered the Cape Fear River. Their locations on this figure have been slightly adjusted to facilitate interpretation so that they do not appear to be in the Cape Fear River.
8. 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).
9. 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

Onsite Seep, Offsite Seep, and Tributary Total Table 3+ Results

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

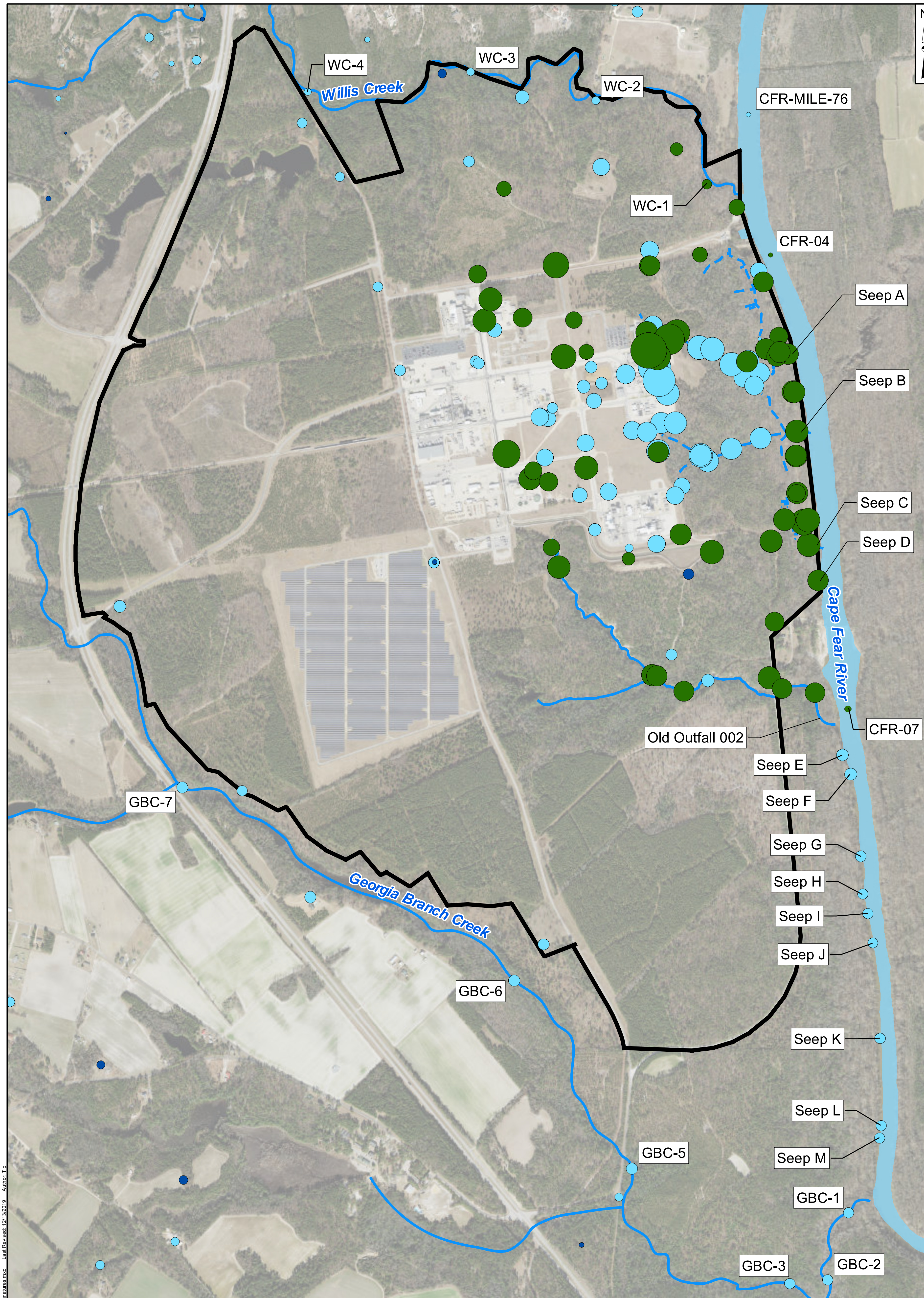
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure 2

Raleigh | December 2019

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Corrective Action Plan\TR0795_Offsite_Seep_TotalTable3.mxd Last Revised: 12/13/2019 Author: TIp

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



Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Corrective Action Plan\TR0795_PFAS_Signatures.mxd Last Revised: 12/13/2019 Author: Tlp

Legend

Signature

- Aerial - Mixture of PFAS
- Aerial - Predominant PMPA or HFPO-DA
- Combined Process Water - Predominant PFMOAA
- Observed Seep
- Nearby Tributary
- Site Boundary

Reference Scale (Note 1)
(Total Table 3+, ng/L)

10
100
1,000
10,000
100,000
1,000,000

Notes:
ng/L - nanograms per liter

1. The size of the symbol denotes the relative magnitude of Total Table 3+ concentrations and the color of the symbol denotes the proposed PFAS signature.
2. Total Table 3+ concentrations were calculated using the 11 PFAS compounds listed in Attachment C of the Consent Order.
3. Non-detect values were not included in the sum of total Table 3+ results.
4. Total Table 3+ results include J-qualified data.
5. Seep E to M samples were collected where the seeps entered the Cape Fear River. Their locations on this figure have been slightly adjusted to facilitate interpretation so that they do not appear to be in the river.
6. 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

PFAS signatures in the vicinity of the Site

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure 3

Raleigh | December 2019

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

APPENDIX A
Field Logs

DAILY FIELD REPORT

Geosyntec consultants
www.geosyntec.com

Project Name: Chemours
Project Number: TR0795
Field Personnel: L. Eggering, B. Peach, A. Vo,
Recorded By: S. Wolkoff
Weather: overcast, chilly, rain predicted

Date: 10/22/19
Page 1 of ___
Primary Activities: seep identification and sampling of surface water

Time	Description of activities - location of work, work performed, equipment & personnel used, incidental information
0745	Team @ William O'Huske dam for boat deployment below the dam.
0812	Georgia Branch
	34.814662 ; -78.821366
	"Frog Tog" brand suggestion for rain coat - L.E.
0818	1 seep collection (2 bottles) ID: (Seep M)
	34.816773 , -78.820992
0825	2 seep collection (2 bottles) (Seep L)
	34.817228 , -78.820863
0830	Seep dry ; erosion? , maybe water w/ upland hike ; 34.819482 , -78.820947
0835	3 seep collection (2 bottles) (Seep K)
	34.820384 ; -78.820955
0843	4 Seep ID holes in side ; oxidization ; ~~sheen~~ sheen (seep J)
	34.823835 ; -78.821307
	- samples are composite of multiple slow flowing holes / areas
	- up hill there is a pool of water
	- collected

DAILY FIELD REPORT

Geosyntec consultants
www.geosyntec.com

Project Name: Chemours
Project Number: TR0795
Field Personnel: B. Peach, A. VO, L. Eggering
Recorded By: C. Vakoff
Weather: overcast

Date: 10.22.19
Page 2 of 2
Primary Activities: seep identification & surface water sampling

Time	Description of activities - location of work, work performed, equipment & personnel used, incidental information
	Below William O'Huske dam @ Chemours site
0856	5 Seep collected (2 bottles) (Seep I)
	34.824900 ; -78.821701
0905	6 Seep collected 2 bottles (Seep H)
	34.825611 ; -78.821655
0911	7 Seep collected 2 jars (Seep G)
	34.826967 ; -78.821884
0922	8 Seep 1D collected 2 jars (Seep F)
	- iron along bank
	- difficult to collect sample from river; low flow
	- running water uphill
	34.829940 ; -78.822158
	- collected ~ 20ft uphill
	- side channel parallel to Cape Fear River
0930	9 SEEP collected 2 jars (Seep E)
	uphill ~ 10ft collection
	- iron pool @ river
	34.830635 ; -78.822418
0945	off-water
1000	LOCKDAM-SEEP (Lock Dam-Seep)
	collected off-water, on land
	coordinates: 34.833801 ; -78.823536

APPENDIX B
Field Photo Log

GEOSYNTEC CONSULTANTS

Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, NC**

Photograph 1 **Date: 10/22/2019** **Comments:** Facing West; Collector coordinates: 34.814662, -78.821366; Sample not collected; Site identified as Georgia Creek	
Photograph 2 **Date: 10/22/2019** **Comments:** View West; Collector coordinates: 34.816773, -78.820992; Sample ID: "Seep M"	

GEOSYNTEC CONSULTANTS

Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, NC**

Photograph 3

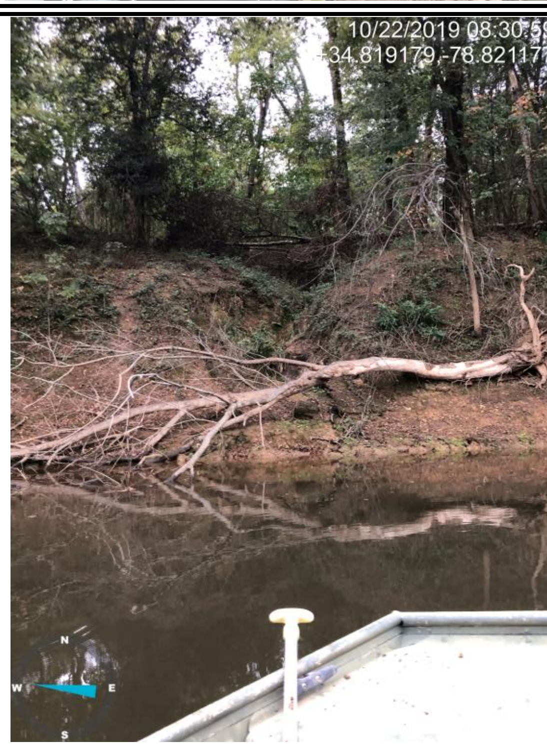
Date: 10/22/2019

Comments: View Southwest; Collector coordinates:34.817228, -78.820863; Sample ID: “Seep L”

Photograph 4

Date: 10/22/2019

Comments: View West; Collector coordinates: 34.819482, -78.820947; No sample collected because seep was dry. Possibly caused by erosion but maybe water upland.



GEOSYNTEC CONSULTANTS

Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, NC**

Photograph 5

Date: 10/22/2019

Comments: View West; Collector coordinates: 34.820384, -78.820955; Sample ID: “Seep K”

Photograph 6

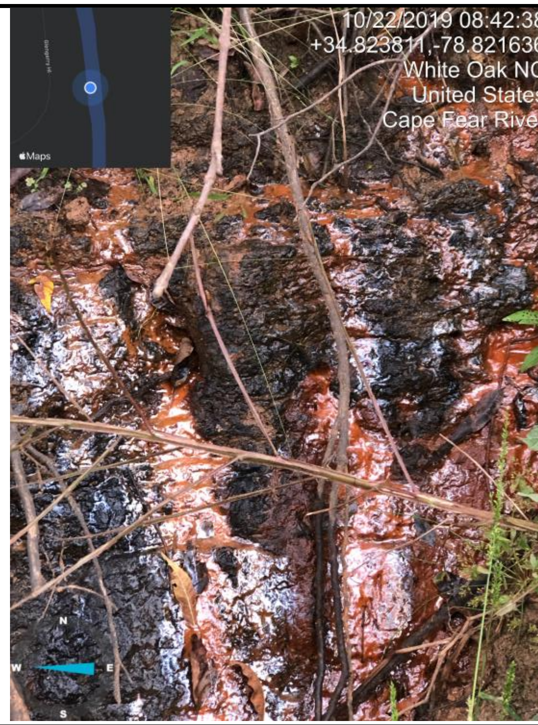
Date: 10/22/2019

Comments: View West; Collector coordinates: 34.823835, -78.821307; Sample ID: “Seep J”; Samples are composite of multiple slow flowing holes and uphill there is a pool of water. Coordinates on picture are incorrect.

GEOSYNTEC CONSULTANTS

Photographic Record

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	**Site Location: Fayetteville, NC**

Photograph 7	
Date: 10/22/2019	
Comments: View West; Collector coordinates: 34.823835, -78.821307; Sample ID: "Seep J"; Samples are composite of multiple slow flowing holes and uphill there is a pool of water.	

Photograph 8	
Date: 10/22/2019	
Comments: View Southwest; Collector coordinates: 34.823835, -78.821307; Sample ID: "Seep J"; Samples are composite of multiple slow flowing holes and uphill there is a pool of water.	

GEOSYNTEC CONSULTANTS

Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, NC**

Photograph 9

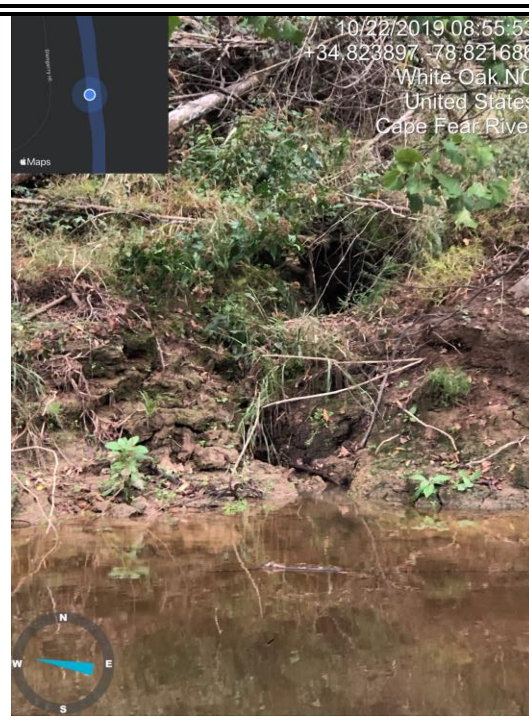
Date: 10/22/2019

Comments: View West; Collector coordinates: 34.823835, -78.821307; Sample ID: “Seep J”; Samples are composite of multiple slow flowing holes and uphill there is a pool of water.

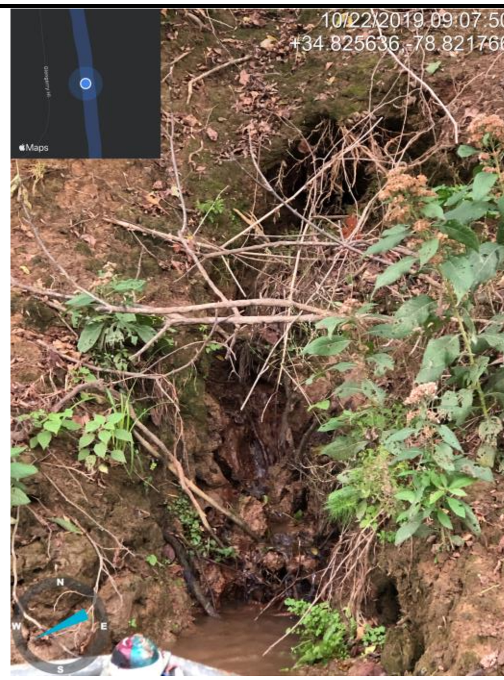
Photograph 10

Date: 10/22/2019

Comments: View West; Collector coordinates: 34.824900, -78.821701; Sample ID: “Seep I”. Coordinates on pictures are incorrect.



GEOSYNTEC CONSULTANTS **Photographic Record**	
Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, NC**

Photograph 11 **Date: 10/22/2019** **Comments:** View West; Collector coordinates: 34.825611, -78.821655; Sample ID: "Seep H"	
Photograph 12 **Date: 10/22/2019** **Comments:** View West; Collector coordinates: 34.825611, -78.821655; Sample ID: "Seep H"	

GEOSYNTEC CONSULTANTS

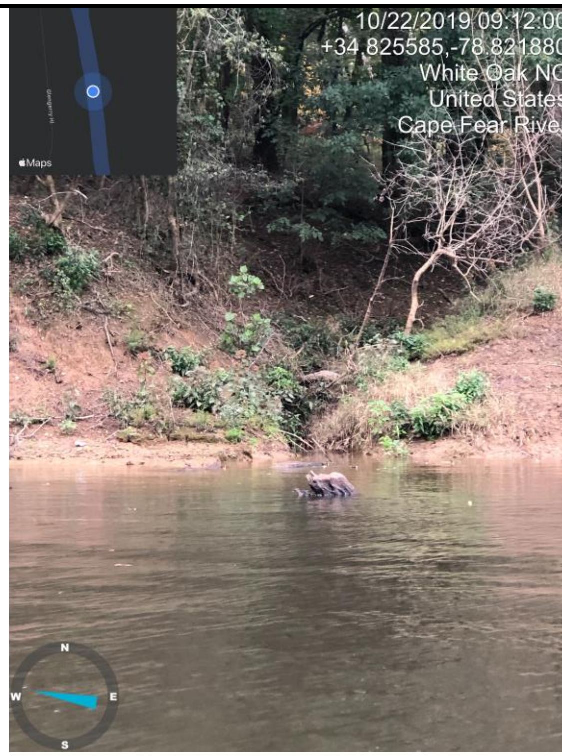
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, NC**

Photograph 13

Date: 10/22/2019

Comments: View West; Collector coordinates: 34.826967, -78.821884; Sample ID: "Seep G" **.** Coordinates on picture are incorrect.



Photograph 14

Date: 10/22/2019

Comments: View West; Collector coordinates: 34.829940, -78.822158; Sample ID: "Seep F"; Sample collected ~20ft uphill in channel positioned parallel to the Cape Fear River.

GEOSYNTEC CONSULTANTS

Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, NC**

Photograph 15

Date: 10/22/2019

Comments: View Northwest; Collector coordinates: 34.830635, -78.822418; Sample ID: "Seep E". Sample collected ~10ft uphill in iron pool. Coordinates on picture are incorrect.

APPENDIX C
DATA REVIEW NARRATIVES AND LABORATORY REPORTS

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

ADQM DATA REVIEW
NARRATIVE

Site **Chemours FAY – Fayetteville**

Project **2019 OFFSITE SEEP SAMPLING**

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

Sampling Dates **October 21 - 22, 2019**

Analytical Protocol

Laboratory	Analytical Method	Parameter(s)
TestAmerica - Sacramento	537 Modified	PFAS[1]
TestAmerica - Sacramento	Cl. Spec. Table 3 Compound SOP	Table 3+ compounds

[1] Perfluoroalkylsubstances, a list of 37 compounds including HFPO-DA.

Sample Receipt

The following items are noted for this data set:

All samples were received in satisfactory condition and within EPA temperature guidelines on October 23, 2019

Data Review

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

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

- Some analytical results have been qualified J as estimated, and non-detect results qualified UJ indicating an estimated reporting limit, due to a poor surrogate or laboratory matrix spike recovery and poor lab replicate precision. See the Data Verification Module (DVM) Narrative Report for which samples were qualified, the specific reasons for qualification, and potential bias in reported results.

Attachments

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

Data Verification Module (DVM)

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

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

There are two qualifier fields in EIM:

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

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

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

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

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

DVM Narrative Report

Site: Fayetteville **Sampling Program:** 2019 OFFSITE SEEP SAMPLING **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SEEP-I-0856	10/22/2019	320-55576-5	N-ethylperfluoro-1-octanesulfonamide	0.0020	UG/L	PQL		0.0020	UJ	537 Modified		3535_PFC
SEEP-H-0905	10/22/2019	320-55576-4	N-ethylperfluoro-1-octanesulfonamide	0.0020	UG/L	PQL		0.0020	UJ	537 Modified		3535_PFC

Site: Fayetteville **Sampling Program:** 2019 OFFSITE SEEP SAMPLING **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SEEP-H-0905	10/22/2019	320-55576-4	R-EVE	0.021	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-H-0905	10/22/2019	320-55576-4	R-EVE	0.021	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-H-0905	10/22/2019	320-55576-4	Byproduct 4	0.039	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-H-0905	10/22/2019	320-55576-4	Byproduct 4	0.040	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-E-0930	10/22/2019	320-55576-1	Byproduct 4	0.22	UG/L	PQL		0.0032	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-E-0930	10/22/2019	320-55576-1	Byproduct 5	0.0021	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-G-0911	10/22/2019	320-55576-3	Byproduct 4	0.079	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-G-0911	10/22/2019	320-55576-3	Byproduct 4	0.074	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-I-0856	10/22/2019	320-55576-5	R-EVE	0.023	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-I-0856	10/22/2019	320-55576-5	R-EVE	0.022	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-I-0856	10/22/2019	320-55576-5	Byproduct 4	0.053	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-I-0856	10/22/2019	320-55576-5	Byproduct 4	0.051	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-J-0843	10/22/2019	320-55576-6	Byproduct 4	0.11	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-J-0843	10/22/2019	320-55576-6	Byproduct 4	0.10	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-K-0835	10/22/2019	320-55576-7	R-EVE	0.046	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-K-0835	10/22/2019	320-55576-7	Byproduct 4	0.13	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** 2019 OFFSITE SEEP SAMPLING **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SEEP-L-0825	10/22/2019	320-55576-8	R-EVE	0.044	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-L-0825	10/22/2019	320-55576-8	R-EVE	0.042	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-L-0825	10/22/2019	320-55576-8	Byproduct 4	0.12	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-L-0825	10/22/2019	320-55576-8	Byproduct 4	0.12	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-M-0818	10/22/2019	320-55576-9	R-EVE	0.026	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-M-0818	10/22/2019	320-55576-9	R-EVE	0.027	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-M-0818	10/22/2019	320-55576-9	Byproduct 4	0.078	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-M-0818	10/22/2019	320-55576-9	Byproduct 4	0.079	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** 2019 OFFSITE SEEP SAMPLING **Validation Options:** LABSTATS

Validation Reason Quality review criteria exceeded between the REP (laboratory replicate) and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SEEP-E-0930	10/22/2019	320-55576-1	Byproduct 4	0.19	UG/L	PQL		0.0032	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-J-0843	10/22/2019	320-55576-6	NVHOS	0.0081	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-J-0843	10/22/2019	320-55576-6	NVHOS	0.0069	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-K-0835	10/22/2019	320-55576-7	R-EVE	0.053	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-K-0835	10/22/2019	320-55576-7	Byproduct 4	0.16	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

Site: Fayetteville **Sampling Program:** 2019 OFFSITE SEEP SAMPLING **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SEEP-E-0930	10/22/2019	320-55576-1	PFMOAA	0.48	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-E-0930	10/22/2019	320-55576-1	PFMOAA	0.43	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-J-0843	10/22/2019	320-55576-6	PMPA	0.81	UG/L	PQL		0.010	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-J-0843	10/22/2019	320-55576-6	PMPA	0.80	UG/L	PQL		0.010	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-J-0843	10/22/2019	320-55576-6	PFO2HxA	0.35	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-J-0843	10/22/2019	320-55576-6	PFO2HxA	0.35	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-J-0843	10/22/2019	320-55576-6	PFO3OA	0.12	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-J-0843	10/22/2019	320-55576-6	PFO3OA	0.12	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-J-0843	10/22/2019	320-55576-6	PFO5DA	0.020	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-J-0843	10/22/2019	320-55576-6	PFO5DA	0.022	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-J-0843	10/22/2019	320-55576-6	PFMOAA	0.18	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SEEP-J-0843	10/22/2019	320-55576-6	PFMOAA	0.17	ug/L	PQL		0.0050	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

APPENDIX E
PFAS Signatures Assessment

APPENDIX E: PFAS SIGNATURE METHODS AND RESULTS

1. INTRODUCTION AND OBJECTIVES

This appendix provides details on the statistical method used to facilitate identification of PFAS signatures in the onsite and offsite areas and a summary of the results of the analysis (Table E-1).

Hierarchical cluster analysis (HCA), was used to evaluate the relative proportions of Table 3+ PFAS concentrations in onsite and offsite groundwater and surface water to identify: (i) groups of samples that share similar concentration compositions and (ii) the Total Table 3+ PFAS compounds driving these groupings. The results of the HCA were used to infer PFAS signatures across the onsite and offsite areas and to provide a line of evidence regarding different PFAS pathways. The analysis was performed using R software (R Core Team, 2018).

2. HIERARCHICAL CLUSTER ANALYSIS

The hierarchical cluster analysis was performed similarly to the one performed for the On and Offsite Assessment (Geosytnec, 2019); however, the data set was expanded to include onsite and offsite groundwater samples collected from the following locations:

- Onsite and offsite groundwater wells;
- Offsite private drinking water wells;
- Cape Fear River, Willis Creek, Georgia Branch Creek, and Old Outfall 002; and
- Onsite and offsite groundwater seeps.

Also, this analysis used data for the 11 Table 3+ PFAS data on Attachment C of the Consent Order. Private well data were analyzed for only the Attachment C PFAS and, therefore, this was the set of Table 3+ PFAS that could facilitate the identification and subsequent comparison of signatures between the samples of private well data and other data sets.

Hierarchical cluster analysis (HCA) is a multivariate statistical method that can identify common groups, i.e., clusters, of wells within a large data set based on their PFAS concentration compositions. HCA builds a hierarchy from the bottom-up and does not require the number of clusters to be specified beforehand (Hastie et al. 2009).

The idea behind the HCA clustering algorithm is as follows:

1. Begin by assuming each groundwater well is in its own cluster.
2. Identify the closest two clusters and combine them into one cluster.
3. Repeat the above step until all the data points are in a single cluster.

To perform step 2 above, a distance metric (to quantify the dissimilarity between clusters) and an agglomeration criterion need to be selected. Many distances are available (Manhattan, Euclidean, etc.) as well as several agglomeration methods (Ward, single, centroid, etc.). For this analysis, the

Manhattan distance and Ward's method were used to perform the HCA. The Ward's method minimizes the sum of squares of any two (hypothetical) clusters that can be formed at each step. This method produces compact clusters of similar size and is one of the most common methods used for environmental concentration data.

The results of HCA are displayed using a tree-based graphical representation known as a dendrogram. Each leaf of the dendrogram (vertical line) corresponds to a well and wells that are similar to each other are merged into branches (horizontal lines). The height of each merge indicates the similarity between two clusters. Therefore, merges with higher heights represent less similar clusters.

To determine the optimal number of clusters, a "majority rule" approach can be used. This approach involves simultaneously calculating several indices (e.g., Elbow, Silhouette Gap statistics, etc.) to determine the relevant number of clusters and the number proposed by the majority of indices is the optimal number of clusters (Charrad et al., 2014).

3. RESULTS

The HCA identified four clusters of wells with differing Table 3+ PFAS compositions. The PFAS compositions across wells within a cluster were used to infer the following four PFAS signatures:

- Aerial deposition PFAS signature characterized by a mixture of PFAS compounds;
- Aerial deposition PFAS signature characterized by a predominant proportion of PMPA or HFPO-DA; and
- Combined process water PFAS signature characterized with a predominant proportion of PFMOAA.

For each proposed PFAS signature, the concentration compositions for all locations are shown in Table E-1. The spatial distribution of these proposed PFAS signatures are provided in Figures 2 in the main report.

4. REFERENCES

Charrad, Malika, Nadia Ghazzali, Véronique Boiteau, and Azam Niknafs. 2014. "NbClust: An R Package for Determining the Relevant Number of Clusters in a Data Set." Journal of Statistical Software 61: 1–36. http://www.jstatsoft.org/v61/i06/paper.

Geosyntec, 2019. On and Offsite Assessment (Version 2). October 31, 2019.

Hastie, T., Tibshirani, R. and Friedman, J., 2009. The Elements of Statistical Learning: Data Mining, Inference, and Prediction. Biometrics.

R Core Team. 2018. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. Available at: https://www.R-project.org/.

TABLES

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Mixture of PFAS	Offsite	Groundwater	BLADEN-3D	08/28/19	11%	0%	6%	0%	0%	0%	69%	10%	0%	3%	0%	20
Aerial - Mixture of PFAS	Onsite	Groundwater	PIW-3D	07/18/19	22%	12%	21%	4%	2%	0%	28%	10%	0%	0%	0%	43,000
Aerial - Mixture of PFAS	Onsite	Groundwater	FTA-01	06/27/19	18%	0%	14%	2%	0%	3%	52%	10%	0%	1%	0%	2,900
Aerial - Mixture of PFAS	Onsite	Groundwater	FTA-02	06/27/19	36%	18%	14%	3%	3%	4%	10%	4%	2%	6%	0%	62,000
Aerial - Mixture of PFAS	Onsite	Groundwater	FTA-03	06/27/19	37%	9%	18%	2%	2%	3%	18%	6%	2%	2%	0%	35,000
Aerial - Mixture of PFAS	Onsite	Groundwater	MW-12S	07/08/19	33%	13%	19%	3%	2%	2%	20%	8%	0%	1%	0%	51,000
Aerial - Mixture of PFAS	Onsite	Groundwater	MW-23	06/25/19	64%	3%	8%	1%	1%	0%	16%	6%	0%	1%	0%	27,000
Aerial - Mixture of PFAS	Onsite	Groundwater	MW-25	06/25/19	26%	4%	12%	2%	2%	1%	38%	15%	0%	1%	0%	67,000
Aerial - Mixture of PFAS	Onsite	Groundwater	MW-30	07/02/19	24%	4%	12%	1%	2%	3%	38%	14%	0%	1%	0%	76,000
Aerial - Mixture of PFAS	Onsite	Groundwater	MW-7S	07/10/19	32%	9%	16%	3%	2%	3%	24%	10%	0%	2%	0%	54,000
Aerial - Mixture of PFAS	Onsite	Groundwater	MW-9S	06/25/19	27%	8%	13%	2%	2%	1%	34%	13%	0%	1%	0%	21,000
Aerial - Mixture of PFAS	Onsite	Groundwater	NAF-01	07/10/19	20%	19%	19%	5%	6%	6%	16%	7%	1%	3%	0%	110,000
Aerial - Mixture of PFAS	Onsite	Groundwater	NAF-04	07/15/19	11%	10%	17%	5%	2%	1%	3%	1%	45%	5%	0%	2,400,000
Aerial - Mixture of PFAS	Onsite	Groundwater	NAF-08A	07/15/19	9%	2%	4%	1%	1%	1%	51%	28%	1%	1%	0%	390,000
Aerial - Mixture of PFAS	Onsite	Groundwater	NAF-09	07/02/19	23%	3%	12%	5%	6%	1%	29%	19%	0%	1%	0%	180,000
Aerial - Mixture of PFAS	Onsite	Groundwater	NAF-10	07/03/19	29%	6%	12%	2%	1%	1%	35%	12%	0%	1%	0%	80,000
Aerial - Mixture of PFAS	Onsite	Groundwater	NAF-12	07/17/19	5%	10%	17%	7%	4%	3%	14%	1%	29%	10%	0%	2,300,000
Aerial - Mixture of PFAS	Onsite	Groundwater	PZ-13	06/25/19	17%	3%	8%	1%	1%	2%	43%	24%	0%	1%	0%	260,000
Aerial - Mixture of PFAS	Onsite	Groundwater	PZ-14	07/03/19	26%	4%	11%	2%	2%	2%	38%	14%	0%	0%	0%	120,000
Aerial - Mixture of PFAS	Onsite	Groundwater	PZ-15	06/25/19	19%	5%	17%	2%	2%	2%	36%	15%	0%	1%	0%	52,000
Aerial - Mixture of PFAS	Onsite	Groundwater	PZ-19R	07/01/19	27%	12%	25%	3%	3%	2%	18%	8%	0%	1%	0%	24,000
Aerial - Mixture of PFAS	Onsite	Groundwater	PZ-20R	07/01/19	33%	8%	25%	2%	2%	2%	19%	8%	0%	1%	0%	10,000
Aerial - Mixture of PFAS	Onsite	Groundwater	PZ-21R	07/02/19	30%	13%	26%	3%	3%	2%	15%	6%	0%	1%	0%	6,900
Aerial - Mixture of PFAS	Onsite	Groundwater	PZ-24	06/25/19	58%	2%	7%	1%	1%	0%	22%	8%	0%	0%	0%	62,000
Aerial - Mixture of PFAS	Onsite	Groundwater	PZ-26	06/25/19	38%	0%	30%	0%	0%	9%	0%	22%	0%	0%	0%	630
Aerial - Mixture of PFAS	Onsite	Groundwater	PZ-28	06/25/19	18%	6%	16%	2%	2%	1%	40%	14%	0%	1%	0%	7,900
Aerial - Mixture of PFAS	Onsite	Groundwater	PZ-35	07/02/19	25%	9%	23%	4%	6%	6%	17%	8%	0%	2%	0%	6,500
Aerial - Mixture of PFAS	Onsite	Groundwater	SMW-02	07/17/19	24%	4%	26%	4%	1%	0%	28%	13%	0%	0%	0%	76,000
Aerial - Mixture of PFAS	Onsite	Groundwater	SMW-07	07/08/19	63%	4%	11%	1%	1%	0%	14%	4%	0%	1%	0%	19,000
Aerial - Mixture of PFAS	Offsite	Surface Water	CFR-04	07/25/19	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	2.2
Aerial - Mixture of PFAS	Offsite	Surface Water	CFR-04	07/25/19	48%	0%	52%	0%	0%	0%	0%	0%	0%	0%	0%	4.4
Aerial - Mixture of PFAS	Offsite	Surface Water	CFR-04	07/25/19	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	2.2
Aerial - Mixture of PFAS	Offsite	Surface Water	CFR-KINGS	05/23/19	18%	8%	31%	8%	3%	0%	31%	0%	0%	0%	0%	93
Aerial - Mixture of PFAS	Offsite	Surface Water	CFR-MILE-76	05/22/19	24%	0%	15%	0%	0%	0%	61%	0%	0%	0%	0%	29
Aerial - Mixture of PFAS	Offsite	Surface Water	GBC-1	05/29/19	19%	0%	16%	3%	0%	0%	50%	11%	0%	1%	0%	2,600
Aerial - Mixture of PFAS	Offsite	Surface Water	GBC-2	05/29/19	25%	0%	14%	3%	0%	0%	46%	11%	0%	1%	0%	2,600
Aerial - Mixture of PFAS	Offsite	Surface Water	GBC-3	05/29/19	23%	0%	16%	2%	0%	0%	47%	11%	0%	1%	0%	3,000
Aerial - Mixture of PFAS	Offsite	Surface Water	GBC-5	05/29/19	28%	5%	17%	3%	0%	0%	35%	11%	0%	1%	0%	4,600
Aerial - Mixture of PFAS	Offsite	Surface Water	GBC-6	05/29/19	29%	0%	17%	3%	0%	0%	39%	11%	0%	1%	0%	4,900
Aerial - Mixture of PFAS	Offsite	Surface Water	GBC-7	05/29/19	28%	0%	19%	3%	0%	1%	38%	10%	0%	1%	0%	4,200
Aerial - Mixture of PFAS	Onsite	Surface Water	OLDOF-2J	02/02/19	13%	7%	19%	4%	0%	0%	41%	16%	0%	0%	0%	9,000
Aerial - Mixture of PFAS	Onsite	Surface Water	SEEP-A-10	02/07/19	16%	20%	16%	7%	5%	4%	13%	5%	13%	2%	0%	380,000
Aerial - Mixture of PFAS	Onsite	Surface Water	SEEP-A-11	02/07/19	15%	20%	16%	7%	5%	4%	12%	5%	14%	2%	0%	380,000
Aerial - Mixture of PFAS	Onsite	Surface Water	SEEP-A-12	02/07/19	19%	14%	28%	5%	4%	2%	19%	7%	0%	1%	0%	110,000
Aerial - Mixture of PFAS	Onsite	Surface Water	SEEP-A-5	02/07/19	14%	19%	17%	6%	4%	3%	24%	11%	1%	1%	0%	130,000
Aerial - Mixture of PFAS	Onsite	Surface Water	SEEP-A-6	02/07/19	16%	13%	16%	5%	4%	3%	26%	13%	1%	1%	0%	110,000
Aerial - Mixture of PFAS	Onsite	Surface Water	SEEP-A-7	02/07/19	16%	23%	17%	5%	3%	2%	22%	10%	1%	1%	0%	180,000
Aerial - Mixture of PFAS	Onsite	Surface Water	SEEP-A-8	02/07/19	11%	15%	15%	5%	5%	4%	29%	13%	2%	1%	0%	120,000
Aerial - Mixture of PFAS	Onsite	Surface Water	SEEP-A-9	02/07/19	16%	20%	16%	7%	5%	4%	13%	5%	13%	2%	0%	360,000
Aerial - Mixture of PFAS	Onsite	Surface Water	SEEP-B-3	02/06/19	20%	3%	9%	2%	1%	1%	33%	18%	12%	2%	0%	200,000

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Mixture of PFAS	Onsite	Surface Water	SEEP-B-3-A1	02/06/19	25%	2%	8%	2%	1%	1%	30%	16%	13%	2%	0%	230,000
Aerial - Mixture of PFAS	Onsite	Surface Water	SEEP-B-3-E4	02/06/19	27%	4%	14%	3%	3%	1%	35%	13%	0%	1%	0%	37,000
Aerial - Mixture of PFAS	Onsite	Surface Water	SEEP-B-4	02/06/19	22%	2%	6%	1%	1%	1%	32%	16%	18%	2%	0%	380,000
Aerial - Mixture of PFAS	Onsite	Surface Water	SEEP-B-4	02/06/19	15%	2%	9%	2%	2%	1%	31%	16%	20%	2%	0%	210,000
Aerial - Mixture of PFAS	Offsite	Surface Water	SEEP-E	10/22/19	20%	8%	14%	3%	1%	1%	39%	12%	0%	2%	0%	5,900
Aerial - Mixture of PFAS	Offsite	Surface Water	SEEP-F	10/22/19	17%	14%	12%	2%	0%	0%	42%	13%	0%	0%	0%	6,600
Aerial - Mixture of PFAS	Offsite	Surface Water	SEEP-G	10/22/19	20%	6%	14%	2%	0%	0%	44%	14%	0%	1%	0%	3,400
Aerial - Mixture of PFAS	Offsite	Surface Water	SEEP-H	10/22/19	21%	5%	13%	1%	0%	0%	45%	14%	0%	1%	0%	2,600
Aerial - Mixture of PFAS	Offsite	Surface Water	SEEP-I	10/22/19	22%	5%	11%	1%	0%	0%	46%	15%	0%	0%	0%	2,600
Aerial - Mixture of PFAS	Offsite	Surface Water	SEEP-J	10/22/19	24%	7%	14%	5%	2%	1%	34%	11%	0%	2%	0%	2,400
Aerial - Mixture of PFAS	Offsite	Surface Water	SEEP-K	10/22/19	22%	5%	11%	1%	0%	0%	44%	14%	0%	2%	0%	2,900
Aerial - Mixture of PFAS	Offsite	Surface Water	SEEP-L	10/22/19	21%	5%	9%	1%	0%	0%	48%	14%	0%	2%	0%	2,500
Aerial - Mixture of PFAS	Offsite	Surface Water	SEEP-M	10/22/19	22%	4%	7%	1%	0%	0%	50%	16%	0%	1%	0%	2,600
Aerial - Mixture of PFAS	Offsite	Surface Water	WC-2	02/07/19	19%	8%	21%	0%	0%	0%	43%	9%	0%	0%	0%	680
Aerial - Mixture of PFAS	Offsite	Surface Water	WC-3	02/07/19	21%	11%	20%	0%	0%	0%	48%	0%	0%	0%	0%	560
Aerial - Mixture of PFAS	Offsite	Surface Water	WC-4	02/07/19	15%	0%	24%	0%	0%	0%	61%	0%	0%	0%	0%	340
Aerial - Mixture of PFAS	Offsite	Surface Water	WC-5	02/07/19	9%	0%	20%	0%	0%	0%	51%	20%	0%	0%	0%	370
Aerial - Mixture of PFAS	Offsite	Groundwater	BLADEN-3S	08/28/19	11%	13%	27%	3%	3%	1%	34%	5%	0%	3%	0%	110
Aerial - Mixture of PFAS	Onsite	Groundwater	INSITU-01	06/20/19	25%	9%	20%	2%	0%	0%	34%	10%	0%	1%	0%	2,300
Aerial - Mixture of PFAS	Onsite	Groundwater	MW-16D	07/15/19	32%	12%	11%	2%	1%	0%	32%	8%	1%	1%	0%	4,000
Aerial - Mixture of PFAS	Onsite	Groundwater	MW-17D	07/15/19	18%	7%	13%	2%	0%	0%	45%	14%	0%	1%	0%	3,800
Aerial - Mixture of PFAS	Onsite	Groundwater	MW-18D	07/15/19	54%	4%	7%	0%	0%	0%	28%	7%	0%	0%	0%	1,500
Aerial - Mixture of PFAS	Onsite	Groundwater	MW-19D	07/09/19	25%	16%	19%	4%	2%	0%	25%	8%	0%	0%	0%	4,400
Aerial - Mixture of PFAS	Onsite	Groundwater	MW-21D	07/11/19	19%	6%	15%	1%	0%	0%	44%	15%	0%	0%	0%	2,000
Aerial - Mixture of PFAS	Onsite	Groundwater	MW-22D	07/15/19	38%	6%	12%	2%	1%	0%	30%	10%	0%	0%	0%	4,700
Aerial - Mixture of PFAS	Onsite	Groundwater	SMW-01	06/25/19	35%	6%	16%	3%	1%	0%	28%	9%	0%	1%	0%	6,000
Aerial - Mixture of PFAS	Onsite	Groundwater	SMW-09	07/11/19	28%	4%	6%	2%	2%	0%	10%	3%	44%	1%	0%	50,000
Aerial - Mixture of PFAS	Onsite	Groundwater	SMW-11	06/26/19	32%	13%	19%	3%	2%	1%	23%	6%	0%	1%	0%	12,000
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/17/17	28%	6%	10%	0%	0%	0%	56%	0%	0%	0%	0%	910
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/26/18	5%	9%	8%	0%	0%	0%	59%	8%	0%	11%	0%	270
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/19/17 & 09/30/19	21%	4%	8%	0%	0%	0%	52%	13%	0%	1%	0%	2,300
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	03/01/18	4%	5%	1%	0%	0%	0%	68%	12%	0%	10%	0%	320
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/07/18	3%	8%	1%	0%	0%	0%	68%	9%	0%	11%	0%	320
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/30/18 & 01/28/19	18%	4%	4%	0%	0%	0%	59%	12%	0%	3%	0%	970
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/31/19	9%	12%	28%	2%	1%	0%	39%	6%	0%	4%	0%	220
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/02/19	4%	9%	5%	0%	0%	0%	67%	8%	0%	8%	0%	240
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/29/19	15%	8%	10%	0%	0%	0%	46%	17%	0%	4%	0%	210
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/19/17	14%	8%	20%	2%	0%	0%	51%	0%	0%	4%	0%	85
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/31/19	16%	9%	12%	0%	0%	0%	51%	8%	0%	3%	0%	210
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/24/17 & 09/26/19	23%	4%	6%	1%	0%	0%	53%	13%	0%	1%	0%	1,400
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/06/17	14%	4%	7%	0%	0%	0%	61%	13%	0%	0%	0%	1,600
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	11/20/17	16%	7%	15%	0%	0%	0%	47%	11%	0%	4%	0%	1,300
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/25/17	35%	5%	9%	0%	0%	0%	39%	12%	0%	0%	0%	3,100
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/16/19	6%	14%	12%	0%	0%	0%	66%	0%	0%	3%	0%	79
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/29/19	10%	9%	11%	1%	0%	0%	56%	9%	0%	5%	0%	410
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/23/17 & 04/11/19	43%	5%	13%	1%	1%	0%	27%	8%	0%	1%	0%	9,200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/19/17 & 08/27/19	12%	4%	5%	0%	0%	0%	67%	12%	0%	0%	0%	1,300
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/30/19	9%	4%	4%	0%	0%	0%	68%	12%	0%	3%	0%	130
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/17/19	9%	6%	4%	0%	0%	0%	71%	10%	0%	1%	0%	310
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/26/19	8%	3%	1%	0%	0%	0%	77%	11%	0%	0%	0%	250

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/12/17	15%	5%	10%	0%	0%	0%	56%	11%	0%	3%	0%	1,700
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/17	8%	0%	9%	0%	0%	0%	71%	12%	0%	0%	0%	1,000
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/12/17 & 09/27/19	22%	7%	14%	1%	1%	0%	42%	8%	0%	5%	0%	640
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/07/17 & 08/06/19	21%	8%	17%	0%	0%	0%	43%	10%	0%	1%	0%	890
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/16/19	3%	14%	10%	0%	0%	0%	68%	0%	0%	5%	0%	100
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/23/19	3%	8%	11%	0%	0%	0%	68%	0%	0%	10%	0%	89
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/30/18	13%	0%	12%	0%	0%	0%	69%	0%	0%	6%	0%	45
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/04/19	0%	22%	12%	0%	0%	0%	59%	0%	0%	7%	0%	68
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/01/19	10%	11%	11%	0%	0%	0%	65%	0%	0%	3%	0%	88
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/30/19	4%	28%	19%	0%	0%	0%	42%	0%	0%	8%	0%	69
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/19	8%	13%	11%	0%	0%	0%	59%	0%	0%	9%	0%	90
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/19	35%	0%	6%	0%	0%	0%	54%	0%	0%	6%	0%	78
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/31/19	5%	14%	10%	0%	0%	0%	58%	6%	0%	6%	0%	170
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/17/17 & 07/09/19	20%	3%	10%	1%	0%	0%	49%	16%	0%	2%	0%	3,500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/19/17 & 09/10/19	25%	5%	17%	3%	1%	0%	37%	12%	0%	1%	0%	4,900
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/01/19	25%	5%	14%	2%	0%	0%	38%	14%	0%	2%	0%	1,500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	03/18/19 & 08/28/19	14%	9%	27%	2%	1%	0%	35%	10%	0%	2%	0%	1,900
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/16/19	19%	11%	14%	0%	0%	0%	57%	0%	0%	0%	0%	64
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/17 & 09/24/19	18%	6%	17%	2%	1%	0%	41%	12%	0%	3%	0%	2,000
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/23/19	20%	5%	10%	0%	0%	0%	63%	0%	0%	3%	0%	130
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/23/19	9%	5%	10%	1%	0%	0%	64%	8%	0%	2%	0%	260
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/28/17 & 01/10/18	6%	6%	5%	0%	0%	0%	72%	6%	0%	5%	0%	390
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/17/17	4%	4%	3%	0%	0%	0%	79%	7%	0%	3%	0%	280
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/25/19	0%	18%	10%	0%	0%	0%	64%	0%	0%	8%	0%	28
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/29/19	14%	10%	22%	2%	1%	0%	40%	9%	0%	2%	0%	450
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/26/17 & 07/16/19	14%	5%	9%	0%	0%	0%	53%	15%	0%	3%	0%	2,800
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/25/19	10%	12%	15%	1%	0%	0%	49%	9%	0%	3%	0%	300
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/01/19	12%	8%	19%	3%	1%	0%	55%	0%	0%	3%	0%	260
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/25/19	6%	13%	10%	0%	0%	0%	68%	0%	0%	3%	0%	140
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/24/19	6%	15%	12%	0%	0%	0%	61%	0%	0%	6%	0%	89
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/21/19	70%	0%	0%	0%	0%	0%	30%	0%	0%	0%	0%	54
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/23/18	36%	0%	0%	0%	0%	0%	64%	0%	0%	0%	0%	20
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/24/18	37%	0%	8%	0%	0%	0%	55%	0%	0%	0%	0%	25
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/19/19	7%	11%	14%	0%	0%	0%	65%	0%	0%	3%	0%	200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/03/19	17%	1%	17%	2%	0%	0%	50%	10%	0%	2%	0%	1,200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/23/18 & 09/11/19	14%	9%	14%	1%	0%	0%	50%	8%	0%	3%	0%	900
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	03/27/18	16%	6%	15%	0%	0%	0%	53%	11%	0%	0%	0%	1,200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/23/18 & 10/08/19	15%	8%	19%	3%	0%	0%	43%	10%	0%	1%	0%	2,100
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/25/18	29%	0%	6%	0%	0%	0%	64%	0%	0%	0%	0%	51
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/02/19	8%	6%	7%	0%	0%	0%	65%	9%	0%	4%	0%	170
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/23/18 & 08/27/19	14%	4%	8%	1%	0%	0%	60%	12%	0%	1%	0%	3,800
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/30/19	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	2.1
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/31/19	7%	8%	11%	0%	0%	0%	62%	9%	0%	3%	0%	180
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/19	4%	15%	19%	1%	0%	0%	60%	0%	0%	1%	0%	270
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/17/19	10%	8%	10%	1%	0%	0%	61%	8%	0%	2%	0%	400
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/25/19	5%	13%	16%	2%	0%	0%	60%	0%	0%	5%	0%	230
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/01/19	3%	14%	14%	0%	0%	0%	62%	0%	0%	7%	0%	84
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	03/07/18	7%	14%	16%	1%	0%	0%	56%	0%	0%	5%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/19/19	7%	12%	13%	1%	0%	0%	62%	0%	0%	5%	0%	180
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/23/19	14%	8%	13%	1%	0%	0%	49%	9%	0%	6%	0%	280

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/26/19	11%	10%	15%	1%	0%	0%	58%	0%	0%	5%	0%	190
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/23/19	4%	9%	10%	0%	0%	0%	68%	8%	0%	1%	0%	370
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/26/19	5%	13%	13%	2%	0%	0%	64%	0%	0%	4%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/23/19	4%	9%	17%	2%	0%	0%	60%	6%	0%	2%	0%	360
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/30/19	8%	13%	31%	4%	1%	0%	32%	6%	0%	5%	0%	180
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/17	4%	4%	4%	0%	0%	0%	78%	7%	0%	3%	0%	410
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/25/19	11%	7%	26%	3%	1%	0%	51%	0%	0%	1%	0%	200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/23/19	4%	8%	10%	0%	0%	0%	67%	10%	0%	0%	0%	390
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/14/19	9%	7%	23%	1%	1%	0%	52%	7%	0%	0%	0%	350
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/09/19	12%	12%	23%	3%	0%	0%	46%	0%	0%	4%	0%	210
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/21/19	7%	13%	22%	2%	0%	0%	52%	0%	0%	3%	0%	140
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/21/19	7%	13%	22%	2%	0%	0%	53%	0%	0%	3%	0%	130
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/26/19	5%	13%	24%	2%	0%	0%	54%	0%	0%	1%	0%	190
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/30/19	10%	10%	17%	2%	0%	0%	56%	0%	0%	5%	0%	150
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/08/19	4%	12%	29%	3%	0%	0%	44%	7%	0%	1%	0%	450
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/30/19	6%	12%	30%	4%	1%	0%	34%	6%	0%	6%	0%	180
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/21/19	2%	14%	27%	3%	0%	0%	44%	0%	0%	10%	0%	130
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/09/19	9%	6%	11%	0%	0%	0%	68%	0%	0%	5%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/25/19	9%	12%	25%	3%	1%	0%	38%	5%	0%	7%	0%	440
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/26/17	3%	0%	4%	0%	0%	0%	84%	6%	0%	4%	0%	390
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/17/19	11%	6%	3%	0%	0%	0%	65%	13%	0%	2%	0%	280
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/11/19	2%	9%	34%	5%	1%	0%	42%	0%	0%	6%	0%	350
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/21/19	11%	0%	25%	0%	0%	0%	64%	0%	0%	0%	0%	53
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/17/19	9%	12%	16%	2%	0%	0%	56%	0%	0%	5%	0%	150
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/23/19	15%	9%	19%	2%	0%	0%	53%	0%	0%	2%	0%	180
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/20/19	5%	12%	21%	0%	0%	0%	43%	0%	0%	19%	0%	120
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/08/19	6%	9%	7%	0%	0%	0%	68%	9%	1%	0%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/02/19	10%	10%	19%	0%	0%	0%	59%	0%	0%	1%	0%	150
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/03/19	8%	19%	21%	0%	0%	0%	46%	0%	0%	6%	0%	170
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/08/19	9%	16%	24%	1%	1%	0%	36%	6%	0%	7%	0%	210
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/13/18 & 08/01/19	12%	6%	21%	2%	0%	0%	47%	9%	0%	2%	0%	1,500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/29/19	8%	15%	20%	1%	0%	0%	44%	6%	0%	6%	0%	460
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/02/19	13%	10%	15%	1%	0%	0%	48%	8%	0%	6%	0%	270
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	05/08/19 & 06/19/19	8%	4%	1%	0%	0%	0%	76%	12%	0%	0%	0%	250
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/22/19	9%	16%	22%	0%	0%	0%	48%	0%	0%	5%	0%	76
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	05/29/19	9%	0%	26%	1%	0%	0%	50%	0%	0%	13%	0%	150
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/22/19	13%	3%	1%	0%	0%	0%	73%	10%	0%	0%	0%	220
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/26/18	17%	9%	11%	0%	0%	0%	49%	11%	0%	3%	0%	310
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/20/19	13%	4%	3%	0%	0%	0%	67%	13%	0%	1%	0%	440
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/30/19	0%	10%	28%	2%	1%	0%	45%	13%	0%	1%	0%	1,900
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/11/19	0%	0%	0%	0%	0%	82%	0%	0%	0%	0%	18%	12
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/26/17 & 08/01/19	26%	8%	24%	2%	1%	0%	30%	7%	0%	2%	0%	970
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/26/18	12%	10%	19%	1%	0%	0%	47%	6%	0%	5%	0%	190
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/11/19	13%	10%	16%	1%	0%	0%	49%	8%	0%	4%	0%	310
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/09/19	5%	7%	13%	1%	0%	0%	66%	7%	0%	1%	0%	500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/25/19	15%	11%	19%	1%	0%	0%	42%	9%	0%	3%	0%	280
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/25/18	7%	15%	21%	2%	1%	0%	48%	0%	0%	6%	0%	180
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/11/19	9%	14%	16%	0%	0%	2%	54%	0%	0%	4%	0%	200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/01/19	9%	11%	17%	0%	0%	0%	59%	0%	0%	4%	0%	150
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/14/19	9%	7%	12%	1%	0%	0%	64%	7%	0%	1%	0%	410

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/13/17	14%	0%	30%	0%	0%	0%	56%	0%	0%	0%	0%	270
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/23/19	5%	12%	11%	1%	0%	0%	66%	0%	0%	5%	0%	200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/19/18	9%	15%	20%	2%	0%	0%	48%	0%	0%	6%	0%	170
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	11/10/17	36%	0%	9%	0%	0%	0%	55%	0%	0%	0%	0%	42
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/19/19	9%	11%	12%	0%	0%	0%	64%	0%	0%	4%	0%	190
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/31/18 & 08/07/19	32%	10%	11%	2%	1%	0%	37%	7%	0%	2%	0%	410
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/31/18	20%	5%	13%	0%	0%	0%	50%	12%	0%	0%	0%	1,500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/23/18	6%	13%	16%	0%	0%	0%	59%	0%	0%	5%	0%	200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/13/17	7%	11%	19%	1%	0%	0%	54%	0%	0%	8%	0%	240
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/20/17 & 09/18/19	23%	7%	18%	1%	1%	0%	35%	12%	0%	2%	0%	880
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/10/19	9%	5%	13%	1%	0%	0%	69%	0%	0%	3%	0%	190
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/13/19	14%	8%	16%	1%	0%	0%	48%	12%	0%	1%	0%	930
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/20/17	24%	0%	11%	0%	0%	0%	65%	0%	0%	0%	0%	55
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/31/19	9%	9%	10%	0%	0%	0%	58%	12%	0%	2%	0%	360
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/30/19	12%	10%	17%	0%	0%	0%	49%	9%	0%	2%	0%	370
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/10/19	6%	13%	12%	0%	0%	0%	60%	8%	0%	2%	0%	270
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/25/17	27%	7%	17%	1%	0%	0%	35%	11%	0%	2%	0%	1,300
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/20/17	14%	8%	15%	0%	0%	0%	64%	0%	0%	0%	0%	120
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/01/19	13%	7%	15%	2%	1%	0%	51%	8%	0%	3%	0%	550
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/26/19	7%	6%	5%	0%	0%	0%	72%	8%	0%	1%	0%	280
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/21/17 & 07/16/19	22%	7%	22%	2%	1%	0%	36%	10%	0%	2%	0%	2,100
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/28/17 & 01/28/19	25%	3%	11%	0%	0%	0%	53%	8%	0%	0%	0%	530
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/30/18 & 09/17/19	20%	4%	4%	0%	0%	0%	61%	11%	0%	0%	0%	740
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/25/19	16%	4%	4%	0%	0%	0%	65%	11%	0%	0%	0%	710
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/24/17 & 10/03/19	26%	6%	17%	1%	0%	0%	38%	10%	0%	1%	0%	4,200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/17/17 & 01/28/19	13%	5%	12%	1%	0%	0%	55%	12%	0%	2%	0%	940
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/19/17	27%	5%	17%	0%	0%	0%	41%	10%	0%	0%	0%	1,700
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/19/19	16%	6%	9%	0%	0%	0%	61%	8%	0%	0%	0%	260
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/17	21%	8%	17%	0%	0%	0%	54%	0%	0%	0%	0%	72
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/23/17	79%	0%	21%	0%	0%	0%	0%	0%	0%	0%	0%	12
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	04/30/19	13%	7%	10%	1%	0%	0%	59%	10%	0%	1%	0%	510
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/07/17	24%	6%	20%	3%	0%	0%	36%	11%	0%	0%	0%	2,800
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/07/19	13%	6%	4%	0%	0%	0%	67%	9%	0%	1%	0%	390
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/03/19	10%	7%	19%	2%	0%	0%	63%	0%	0%	0%	0%	120
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/15/17 & 09/10/19	17%	6%	13%	1%	0%	0%	48%	14%	0%	1%	0%	920
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/26/19	16%	9%	18%	3%	0%	0%	45%	10%	0%	0%	0%	620
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/07/17 & 09/19/17	35%	0%	4%	0%	0%	0%	62%	0%	0%	0%	0%	60
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/04/17 & 08/13/19	21%	7%	13%	1%	0%	0%	46%	11%	0%	1%	0%	900
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	05/02/18 & 11/27/18	15%	5%	8%	0%	0%	0%	58%	14%	0%	0%	0%	1,000
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/24/19	18%	6%	12%	0%	0%	0%	54%	10%	0%	0%	0%	680
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/02/19	17%	8%	10%	0%	0%	0%	53%	9%	0%	3%	0%	410
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/02/19	10%	10%	9%	0%	0%	0%	66%	0%	0%	5%	0%	120
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/19/19	18%	6%	14%	1%	0%	0%	50%	10%	0%	0%	0%	670
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/31/19	13%	5%	11%	1%	0%	0%	58%	11%	0%	2%	0%	620
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/12/19	20%	6%	16%	1%	0%	0%	45%	11%	0%	1%	0%	760
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/07/19	6%	12%	12%	0%	0%	0%	61%	0%	0%	8%	0%	180
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/17/17 & 08/06/19	24%	5%	7%	0%	0%	0%	50%	13%	0%	0%	0%	1,200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/17/17 & 08/06/19	19%	5%	9%	0%	0%	0%	51%	16%	0%	0%	0%	1,700
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/29/19	10%	6%	9%	1%	0%	0%	62%	11%	0%	2%	0%	510
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/29/19	12%	8%	12%	1%	0%	0%	52%	12%	0%	3%	0%	430

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/11/19	4%	10%	21%	2%	0%	0%	53%	10%	0%	1%	0%	320
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/30/19	13%	14%	9%	1%	0%	0%	49%	11%	0%	4%	0%	430
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/13/17 & 10/26/18	34%	0%	32%	0%	0%	0%	34%	0%	0%	0%	0%	7,400
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/05/19	13%	7%	14%	2%	1%	0%	51%	10%	0%	3%	0%	530
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/07/19	11%	8%	15%	1%	0%	0%	48%	12%	0%	3%	0%	450
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/14/17 & 10/08/19	32%	6%	33%	4%	1%	0%	17%	6%	0%	1%	0%	13,000
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/28/17 & 09/03/19	24%	7%	21%	2%	1%	0%	34%	10%	0%	1%	0%	4,100
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/06/17 & 09/11/19	27%	7%	19%	2%	0%	0%	36%	8%	0%	1%	0%	4,400
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/28/17 & 09/03/19	27%	6%	15%	1%	0%	0%	39%	11%	0%	0%	0%	3,300
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/03/19	8%	16%	14%	0%	0%	0%	56%	0%	0%	6%	0%	51
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	11/22/17 & 08/13/19	20%	3%	6%	0%	0%	0%	57%	13%	0%	0%	0%	4,900
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/27/17 & 07/30/19	25%	7%	13%	1%	0%	0%	43%	9%	0%	2%	0%	2,500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	11/22/17 & 09/24/19	17%	7%	13%	1%	0%	0%	49%	12%	0%	1%	0%	3,300
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/05/19	12%	10%	13%	0%	0%	0%	52%	8%	0%	4%	0%	290
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/11/19	0%	14%	16%	0%	0%	11%	51%	0%	0%	5%	3%	70
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/23/19	6%	8%	8%	0%	0%	0%	68%	9%	0%	1%	0%	280
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/03/19	15%	15%	18%	0%	0%	0%	48%	0%	0%	3%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/03/19	11%	12%	33%	4%	2%	0%	33%	0%	0%	5%	0%	210
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/05/19	18%	10%	15%	1%	0%	0%	42%	10%	0%	4%	0%	450
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/28/19	9%	12%	10%	0%	0%	0%	66%	0%	0%	3%	0%	180
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/29/19	2%	15%	14%	0%	0%	0%	65%	0%	0%	4%	0%	180
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/17/19	13%	6%	13%	1%	0%	0%	56%	10%	0%	1%	0%	480
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/28/19	27%	15%	21%	0%	0%	0%	35%	0%	0%	2%	0%	240
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/26/19	3%	21%	32%	0%	0%	0%	37%	0%	0%	7%	0%	110
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/02/19	25%	0%	17%	3%	0%	0%	56%	0%	0%	0%	0%	77
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/09/19	22%	6%	14%	1%	0%	0%	42%	10%	0%	4%	0%	630
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/19/17 & 08/21/19	23%	5%	12%	1%	0%	0%	45%	13%	0%	1%	0%	7,800
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/29/19	11%	11%	15%	0%	0%	0%	42%	8%	0%	12%	0%	680
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/13/19	15%	9%	15%	1%	0%	0%	56%	0%	0%	4%	0%	140
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/26/18 & 10/02/19	21%	8%	32%	3%	0%	0%	26%	8%	0%	3%	0%	850
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/05/17	19%	7%	18%	0%	0%	0%	43%	13%	0%	0%	0%	1,500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/31/19	12%	9%	14%	0%	0%	0%	53%	10%	0%	2%	0%	280
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/19/19	13%	7%	26%	5%	2%	0%	31%	7%	0%	9%	0%	350
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/26/19	14%	7%	11%	1%	0%	0%	53%	13%	0%	2%	0%	440
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/19/19	14%	5%	13%	1%	0%	0%	52%	13%	0%	2%	0%	440
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	11/29/17 & 09/16/19	19%	3%	14%	1%	0%	0%	51%	13%	0%	0%	0%	18,000
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/19/19	4%	12%	41%	6%	2%	0%	31%	0%	0%	5%	0%	220
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	11/21/17 & 08/07/19	18%	6%	19%	5%	1%	0%	40%	9%	0%	1%	0%	2,800
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/24/19	17%	7%	40%	10%	1%	0%	19%	6%	0%	1%	0%	730
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/24/17 & 08/27/19	20%	6%	21%	4%	1%	0%	37%	8%	0%	2%	0%	3,500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/02/19	9%	8%	6%	0%	0%	0%	64%	11%	0%	1%	0%	200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/31/18 & 01/07/19	23%	10%	7%	1%	0%	0%	47%	10%	0%	1%	0%	740
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/29/19	7%	6%	5%	0%	0%	0%	68%	9%	0%	4%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/13/19	16%	5%	3%	0%	0%	0%	65%	11%	0%	1%	0%	490
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/07/19	0%	24%	19%	0%	0%	0%	57%	0%	0%	0%	0%	28
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/07/19	13%	12%	27%	3%	1%	0%	36%	0%	0%	7%	0%	130
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/07/19	17%	10%	22%	2%	0%	0%	36%	8%	0%	5%	0%	280
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/24/19	9%	5%	6%	0%	0%	0%	64%	13%	0%	4%	0%	190
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/03/19	4%	13%	12%	0%	0%	0%	66%	0%	0%	5%	0%	72
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/18/19	14%	5%	8%	1%	0%	0%	59%	12%	0%	1%	0%	470

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/18/19	16%	6%	9%	1%	0%	0%	55%	12%	0%	1%	0%	600
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/19/19	14%	10%	24%	4%	1%	0%	43%	0%	0%	5%	0%	180
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/01/19	4%	13%	23%	5%	3%	0%	43%	0%	0%	10%	0%	84
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/01/18 & 01/28/19	26%	7%	18%	1%	0%	0%	37%	9%	0%	3%	0%	550
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/03/19	8%	14%	26%	3%	0%	0%	41%	5%	0%	3%	0%	610
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/02/19	9%	16%	16%	0%	0%	0%	55%	0%	0%	5%	0%	81
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/26/18 & 08/15/19	12%	5%	9%	1%	0%	0%	57%	15%	0%	2%	0%	1,200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/19/19	18%	5%	13%	2%	0%	0%	48%	11%	0%	2%	0%	990
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/04/19	13%	9%	17%	1%	0%	0%	49%	10%	0%	2%	0%	510
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/19/19 & 07/30/19	8%	17%	18%	0%	0%	0%	50%	0%	0%	7%	0%	100
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/15/19	11%	10%	13%	0%	0%	0%	56%	9%	0%	1%	0%	410
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/31/19	6%	6%	7%	1%	0%	0%	69%	10%	0%	1%	0%	190
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/14/19	2%	15%	19%	1%	0%	0%	62%	0%	0%	1%	0%	210
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/24/18	7%	9%	9%	0%	0%	0%	58%	16%	0%	2%	0%	140
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/07/19	8%	16%	22%	0%	0%	0%	48%	0%	0%	6%	0%	140
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/04/19	15%	8%	13%	2%	0%	0%	59%	0%	0%	2%	0%	98
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/13/19	36%	0%	6%	0%	0%	0%	59%	0%	0%	0%	0%	48
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	04/23/19	21%	6%	10%	1%	0%	0%	45%	14%	0%	3%	0%	470
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/03/19	14%	7%	34%	8%	1%	0%	22%	10%	0%	3%	0%	350
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/15/18 & 07/16/18	16%	0%	14%	0%	0%	0%	52%	18%	0%	0%	0%	970
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/11/19	20%	11%	10%	1%	0%	0%	46%	11%	0%	2%	0%	500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/01/19	9%	10%	34%	4%	0%	0%	38%	0%	0%	5%	0%	200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/13/19	7%	15%	29%	4%	0%	0%	38%	0%	0%	7%	0%	130
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/07/19	23%	2%	3%	0%	0%	0%	58%	10%	0%	3%	0%	510
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/14/18	14%	9%	15%	0%	0%	0%	62%	0%	0%	0%	0%	570
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/23/18	10%	5%	2%	0%	0%	0%	64%	18%	0%	0%	0%	110
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/05/18 & 08/08/19	16%	3%	9%	1%	0%	0%	59%	12%	0%	1%	0%	950
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/16/19	15%	10%	20%	3%	0%	0%	47%	0%	0%	4%	0%	140
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/24/18	13%	14%	16%	2%	0%	0%	49%	0%	0%	6%	0%	120
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/08/19	19%	3%	4%	0%	0%	0%	59%	12%	0%	2%	0%	350
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/14/19	26%	7%	14%	0%	0%	0%	53%	0%	0%	0%	0%	47
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/22/19	13%	8%	4%	0%	0%	0%	63%	10%	0%	2%	0%	220
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	04/02/19	18%	4%	16%	1%	0%	0%	47%	12%	0%	2%	0%	400
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/30/19	5%	4%	8%	0%	0%	0%	75%	7%	0%	1%	0%	760
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/17/19	22%	5%	16%	2%	0%	0%	53%	0%	0%	2%	0%	130
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/07/18	6%	14%	18%	0%	0%	0%	60%	0%	0%	2%	0%	230
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/12/18	65%	0%	35%	0%	0%	0%	0%	0%	0%	0%	0%	8
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/26/19	14%	9%	11%	1%	0%	0%	54%	9%	0%	2%	0%	330
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/17 & 01/28/19	14%	5%	10%	1%	0%	0%	56%	11%	0%	2%	0%	870
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/28/19	8%	11%	16%	1%	0%	0%	53%	8%	0%	3%	0%	450
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/03/19	3%	11%	12%	0%	0%	0%	67%	6%	0%	2%	0%	360
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/14/19	20%	10%	26%	3%	2%	0%	36%	0%	0%	3%	0%	170
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/14/19	18%	10%	14%	1%	0%	0%	46%	8%	0%	4%	0%	180
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/28/19	19%	6%	20%	3%	1%	0%	50%	0%	0%	1%	0%	180
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/06/19	8%	5%	4%	0%	0%	0%	68%	13%	0%	2%	0%	290
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/14/17	8%	11%	14%	0%	0%	0%	62%	0%	0%	4%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/08/19	6%	19%	27%	2%	0%	0%	41%	0%	0%	4%	0%	150
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/30/19	9%	12%	9%	0%	0%	0%	61%	0%	0%	8%	0%	91
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/07/19	28%	7%	12%	0%	0%	0%	38%	13%	0%	2%	0%	1,100
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/05/19	0%	23%	24%	0%	0%	0%	45%	0%	0%	9%	0%	140

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/17	15%	8%	22%	0%	0%	0%	42%	14%	0%	0%	0%	1,400
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/23/19	6%	10%	11%	0%	0%	0%	69%	0%	0%	3%	0%	120
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/24/19	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	4
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/01/19	8%	11%	8%	0%	0%	0%	69%	0%	0%	3%	0%	75
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/29/19	18%	9%	12%	0%	0%	0%	44%	13%	0%	3%	0%	540
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/31/17 & 07/05/19	9%	14%	24%	1%	0%	0%	40%	7%	0%	5%	0%	580
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/22/19	10%	7%	19%	0%	0%	0%	65%	0%	0%	0%	0%	150
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/11/19 & 07/24/19	0%	0%	0%	0%	0%	79%	0%	0%	0%	0%	21%	11
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/23/19	18%	8%	10%	0%	0%	0%	51%	10%	0%	3%	0%	450
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/29/19	20%	8%	20%	2%	0%	0%	36%	11%	0%	2%	0%	890
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	05/29/19 & 08/06/19	25%	7%	15%	1%	0%	0%	39%	14%	0%	1%	0%	2,000
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/08/19	16%	9%	9%	0%	0%	0%	51%	12%	0%	3%	0%	280
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/22/19	21%	8%	12%	0%	0%	0%	47%	10%	0%	2%	0%	320
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/15/17 & 08/06/19	26%	7%	14%	1%	0%	0%	39%	13%	0%	1%	0%	2,300
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/08/19	21%	9%	8%	0%	0%	0%	51%	9%	0%	2%	0%	270
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/08/19 & 07/22/19	19%	9%	13%	0%	0%	0%	47%	9%	0%	3%	0%	320
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/19	8%	14%	25%	0%	0%	0%	49%	0%	0%	5%	0%	69
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/11/19	9%	11%	12%	0%	0%	5%	57%	0%	0%	5%	1%	170
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/17 & 09/10/19	40%	8%	18%	1%	0%	0%	23%	8%	0%	2%	0%	3,000
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/07/19	20%	11%	27%	3%	0%	0%	30%	8%	0%	2%	0%	240
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/07/19	0%	19%	15%	0%	0%	0%	47%	0%	0%	19%	0%	79
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/17/19	11%	7%	19%	3%	1%	0%	59%	0%	0%	1%	0%	240
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/17/19	12%	8%	16%	0%	0%	0%	62%	0%	0%	2%	0%	190
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/27/17 & 10/01/19	17%	8%	22%	2%	0%	0%	39%	11%	0%	2%	0%	1,500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	04/10/19 & 09/25/19	25%	15%	22%	3%	0%	0%	26%	7%	0%	2%	0%	1,100
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/17/17 & 01/09/19	19%	11%	13%	1%	0%	0%	52%	0%	0%	4%	0%	620
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	03/18/19 & 04/09/19	22%	6%	12%	0%	0%	0%	61%	0%	0%	0%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/17/19	10%	8%	13%	1%	0%	0%	57%	10%	0%	1%	0%	460
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/12/19	10%	7%	14%	1%	0%	0%	57%	11%	0%	1%	0%	670
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/10/19	16%	6%	16%	1%	0%	0%	50%	10%	0%	0%	0%	380
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/06/19	12%	8%	12%	1%	0%	0%	53%	11%	0%	1%	0%	500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/12/18	8%	15%	24%	2%	0%	0%	44%	0%	0%	6%	0%	120
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/19/19	19%	6%	16%	1%	0%	0%	44%	11%	0%	3%	0%	630
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	11/29/17 & 11/20/18	38%	0%	0%	0%	0%	0%	62%	0%	0%	0%	0%	1,000
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/19	8%	11%	11%	0%	0%	0%	68%	0%	0%	3%	0%	100
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/19	11%	13%	17%	0%	0%	0%	57%	0%	0%	2%	0%	88
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/19	7%	13%	13%	0%	0%	0%	64%	0%	0%	3%	0%	91
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/15/19	18%	7%	9%	1%	0%	0%	54%	10%	0%	1%	0%	520
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/17 & 08/12/19	41%	4%	9%	1%	0%	0%	37%	9%	0%	0%	0%	2,300
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/29/19	8%	9%	4%	0%	0%	0%	69%	10%	0%	1%	0%	250
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/01/19	11%	10%	16%	0%	0%	0%	63%	0%	0%	0%	0%	59
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/24/19	32%	5%	17%	3%	1%	0%	31%	10%	0%	0%	0%	650
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/24/17	18%	6%	16%	2%	0%	0%	45%	11%	0%	2%	0%	3,500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/01/19	17%	8%	26%	5%	2%	0%	41%	0%	0%	1%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/08/19	10%	13%	11%	0%	0%	0%	63%	0%	0%	3%	0%	110
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/19/19	38%	5%	17%	3%	1%	0%	26%	10%	0%	0%	0%	650
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/18/19	13%	4%	4%	0%	0%	0%	65%	12%	0%	2%	0%	480
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/19/19	28%	9%	15%	1%	0%	0%	45%	0%	0%	1%	0%	220
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/24/19	34%	5%	18%	3%	1%	0%	29%	10%	0%	0%	0%	650
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	11/29/17 & 09/18/19	28%	6%	31%	5%	1%	0%	20%	8%	0%	1%	0%	2,700

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	11/29/17 & 09/24/19	32%	6%	16%	2%	1%	0%	31%	11%	0%	2%	0%	2,000
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/19/19	21%	7%	17%	1%	0%	0%	42%	9%	0%	1%	0%	400
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/04/19	12%	10%	14%	1%	0%	0%	52%	10%	0%	1%	0%	520
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/01/19	18%	5%	8%	0%	0%	0%	55%	11%	0%	3%	0%	120
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/18/17 & 10/23/17	12%	5%	7%	0%	0%	0%	63%	13%	0%	0%	0%	1,500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	11/30/17 & 09/26/19	49%	5%	21%	2%	0%	0%	17%	5%	0%	1%	0%	3,200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/19/19	26%	6%	18%	2%	0%	0%	39%	8%	0%	0%	0%	620
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/15/19	18%	5%	3%	0%	0%	0%	64%	10%	0%	1%	0%	460
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/22/19	33%	7%	24%	3%	1%	0%	22%	8%	0%	2%	0%	3,600
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/14/17 & 09/24/19	34%	5%	14%	2%	0%	0%	33%	9%	0%	1%	0%	2,000
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/14/17 & 10/01/19	16%	8%	22%	3%	0%	0%	39%	11%	0%	2%	0%	2,100
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/31/19	5%	8%	4%	0%	0%	0%	74%	9%	0%	0%	0%	470
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/19/19	14%	9%	16%	2%	1%	0%	49%	7%	0%	2%	0%	310
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/19/19	16%	10%	16%	2%	0%	0%	53%	0%	0%	2%	0%	230
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/13/17 & 09/18/17	19%	15%	17%	0%	0%	0%	49%	0%	0%	0%	0%	45
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/17/19	8%	8%	10%	0%	0%	0%	70%	0%	0%	4%	0%	130
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/01/18	8%	6%	5%	0%	0%	0%	69%	12%	0%	0%	0%	170
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/25/19	16%	5%	9%	1%	0%	0%	57%	10%	0%	1%	0%	470
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/14/19	8%	6%	3%	0%	0%	0%	71%	10%	0%	0%	0%	240
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/01/18	7%	7%	6%	0%	0%	0%	67%	13%	0%	0%	0%	180
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/19/19	21%	9%	20%	2%	1%	0%	37%	9%	0%	1%	0%	1,000
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/16/19	21%	8%	15%	0%	0%	0%	45%	10%	0%	1%	0%	1,300
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/20/19	14%	8%	18%	3%	1%	0%	46%	9%	0%	2%	0%	430
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/19	14%	9%	12%	0%	0%	0%	43%	17%	0%	6%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/29/17 & 01/28/19	19%	10%	19%	1%	1%	0%	38%	7%	0%	4%	0%	580
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/06/19	19%	10%	20%	2%	1%	0%	36%	8%	0%	4%	0%	640
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/21/19	9%	8%	33%	6%	4%	0%	38%	0%	0%	2%	0%	150
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/08/17 & 10/25/18	21%	0%	23%	0%	0%	0%	56%	0%	0%	0%	0%	1,100
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/19/17 & 09/27/19	17%	5%	8%	1%	0%	0%	52%	17%	0%	1%	0%	1,500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/29/19	11%	10%	16%	1%	0%	0%	51%	8%	0%	3%	0%	370
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/26/19	24%	8%	16%	0%	0%	0%	52%	0%	0%	0%	0%	87
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/08/17 & 07/05/19	30%	0%	11%	0%	0%	0%	59%	0%	0%	0%	0%	40
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/08/17 & 10/01/19	24%	9%	15%	2%	0%	0%	39%	9%	0%	1%	0%	1,200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/03/19	0%	27%	27%	0%	0%	0%	41%	0%	0%	5%	0%	100
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/19/19	6%	15%	13%	0%	0%	0%	64%	0%	0%	3%	0%	140
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/14/19	10%	8%	8%	0%	0%	0%	61%	11%	0%	2%	0%	460
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/23/19	21%	4%	7%	0%	0%	0%	67%	0%	0%	2%	0%	190
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/01/18 & 01/28/19	19%	9%	13%	1%	0%	0%	46%	11%	0%	1%	0%	970
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/17 & 01/28/19	11%	5%	9%	1%	0%	0%	62%	10%	0%	3%	0%	930
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	03/11/19	27%	9%	18%	2%	0%	0%	32%	9%	0%	2%	0%	1,100
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/17 & 09/03/19	27%	7%	16%	0%	0%	0%	35%	11%	0%	2%	0%	1,800
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/24/18	13%	5%	13%	0%	0%	0%	56%	14%	0%	0%	0%	1,700
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/14/19	12%	12%	19%	1%	0%	0%	46%	6%	0%	5%	0%	260
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/29/19	5%	15%	42%	2%	0%	0%	33%	0%	0%	4%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/17/17 & 09/24/19	21%	9%	15%	1%	0%	0%	42%	9%	0%	3%	0%	1,000
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/22/17 & 08/28/19	17%	6%	18%	2%	1%	0%	43%	11%	0%	2%	0%	7,200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/04/19	5%	14%	15%	0%	0%	0%	61%	0%	0%	5%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/23/19	12%	13%	14%	0%	0%	0%	53%	0%	0%	8%	0%	130
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/01/19	13%	10%	24%	2%	0%	0%	39%	9%	0%	2%	0%	250
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/09/19	8%	8%	15%	1%	0%	0%	63%	0%	0%	5%	0%	240

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/29/19	9%	7%	13%	1%	0%	0%	56%	10%	0%	3%	0%	770
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/03/19	10%	19%	6%	0%	0%	0%	62%	0%	0%	4%	0%	100
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/26/19	10%	11%	29%	4%	1%	0%	36%	7%	0%	3%	0%	450
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/24/17	18%	5%	14%	2%	1%	0%	46%	13%	0%	1%	0%	8,300
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/17/19	8%	9%	4%	0%	0%	0%	67%	9%	0%	2%	0%	250
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/15/19	12%	10%	12%	1%	0%	0%	53%	9%	0%	4%	0%	210
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/04/19	6%	14%	14%	0%	0%	0%	60%	0%	0%	6%	0%	220
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/10/19	12%	7%	17%	2%	0%	0%	50%	6%	0%	6%	0%	360
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/07/19	9%	9%	33%	2%	0%	0%	36%	7%	0%	3%	0%	690
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/23/18	6%	9%	11%	0%	0%	0%	47%	20%	0%	7%	0%	120
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/22/18 & 09/25/19	15%	10%	14%	2%	0%	0%	47%	11%	0%	1%	0%	1,700
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	05/01/18 & 07/23/18	16%	5%	7%	0%	0%	0%	57%	16%	0%	0%	0%	1,200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/22/19	4%	15%	17%	0%	1%	0%	57%	0%	0%	6%	0%	190
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/31/19	11%	10%	11%	0%	0%	0%	43%	17%	0%	7%	0%	140
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/20/17 & 11/07/17	25%	0%	9%	0%	0%	0%	67%	0%	0%	0%	0%	63
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/20/17 & 11/07/17	35%	0%	12%	0%	0%	0%	53%	0%	0%	0%	0%	60
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/07/19	6%	11%	8%	0%	0%	0%	67%	0%	0%	7%	0%	210
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/08/19	12%	13%	23%	2%	1%	0%	37%	7%	0%	6%	0%	210
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/25/19	5%	14%	11%	0%	0%	0%	62%	6%	0%	2%	0%	450
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/01/19	10%	13%	21%	0%	0%	0%	51%	0%	0%	5%	0%	57
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/22/19	14%	14%	22%	0%	0%	0%	44%	0%	0%	7%	0%	140
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/25/19	9%	17%	25%	0%	1%	0%	42%	0%	0%	6%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/04/19	18%	12%	22%	1%	0%	0%	42%	0%	0%	5%	0%	170
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/19/19	16%	9%	18%	1%	0%	0%	41%	12%	0%	3%	0%	210
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/04/17 & 10/08/19	23%	8%	18%	1%	0%	0%	37%	11%	0%	1%	0%	2,400
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/19/19	17%	15%	26%	2%	0%	0%	33%	0%	0%	7%	0%	170
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	02/22/18 & 09/25/19	13%	5%	12%	1%	0%	0%	54%	15%	0%	1%	0%	1,500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/26/19	9%	10%	13%	1%	0%	0%	50%	9%	0%	9%	0%	480
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/07/19	16%	8%	14%	2%	0%	0%	46%	10%	0%	3%	0%	260
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/10/19	14%	6%	18%	0%	0%	0%	56%	0%	0%	5%	0%	140
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/07/19	9%	9%	14%	2%	0%	0%	61%	0%	0%	6%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	05/29/19	20%	3%	33%	3%	0%	0%	34%	0%	0%	7%	0%	220
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/10/19	21%	6%	19%	0%	0%	0%	48%	0%	0%	6%	0%	190
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/19	9%	14%	22%	0%	0%	0%	48%	0%	0%	7%	0%	120
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/09/19	15%	6%	19%	2%	0%	0%	52%	0%	0%	6%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/19/17 & 07/23/19	17%	9%	13%	1%	0%	0%	47%	10%	0%	2%	0%	2,700
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/03/19	8%	13%	5%	0%	0%	0%	61%	0%	0%	13%	0%	120
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/17 & 10/10/19	23%	8%	21%	1%	0%	0%	36%	10%	0%	1%	0%	1,300
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/19/17	17%	10%	14%	0%	0%	0%	59%	0%	0%	0%	0%	78
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/03/19	15%	7%	8%	0%	0%	0%	52%	9%	0%	9%	0%	290
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/26/18	15%	5%	5%	0%	0%	0%	69%	6%	0%	0%	0%	110
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/08/19	9%	5%	7%	1%	0%	0%	66%	11%	0%	2%	0%	510
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/08/19	16%	9%	13%	1%	1%	0%	48%	9%	0%	4%	0%	600
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/12/18 & 10/01/19	15%	9%	27%	4%	1%	0%	35%	8%	0%	1%	0%	1,600
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/25/19	16%	11%	25%	1%	0%	0%	35%	7%	0%	4%	0%	520
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/30/19	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	5.1
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/08/17 & 01/28/19	20%	7%	17%	1%	0%	0%	43%	9%	0%	2%	0%	690
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/13/17 & 10/10/19	24%	9%	22%	2%	1%	0%	32%	10%	0%	2%	0%	1,500
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/14/17	13%	0%	24%	0%	0%	0%	63%	0%	0%	0%	0%	620
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/07/17	19%	6%	15%	3%	0%	0%	46%	10%	0%	0%	0%	2,400

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/11/17	8%	10%	21%	5%	0%	0%	51%	0%	0%	6%	0%	82
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/15/18	22%	0%	14%	0%	0%	0%	64%	0%	0%	0%	0%	22
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/07/17 & 08/28/19	15%	8%	39%	5%	2%	0%	21%	7%	0%	2%	0%	1,400
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/07/17 & 08/28/19	18%	8%	25%	2%	1%	0%	36%	8%	0%	2%	0%	2,200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/19/19	11%	13%	18%	0%	0%	0%	54%	0%	0%	5%	0%	48
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/08/19	11%	10%	26%	4%	1%	0%	36%	7%	0%	4%	0%	340
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/19/19	13%	12%	22%	2%	0%	0%	47%	0%	0%	5%	0%	130
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/29/19	7%	13%	11%	0%	0%	0%	68%	0%	0%	2%	0%	140
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/28/19	8%	14%	24%	2%	0%	0%	48%	0%	0%	4%	0%	170
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/19/19	12%	12%	21%	2%	0%	0%	50%	0%	0%	4%	0%	150
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/19/19	12%	13%	18%	0%	0%	0%	57%	0%	0%	0%	0%	72
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/17/19	8%	11%	10%	0%	0%	0%	67%	0%	0%	4%	0%	63
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/19/19	6%	13%	9%	0%	0%	0%	68%	0%	0%	4%	0%	160
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/02/19	10%	11%	18%	3%	0%	0%	58%	0%	0%	0%	0%	97
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/24/19	10%	12%	26%	3%	0%	0%	46%	0%	0%	2%	0%	240
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/23/19	8%	12%	15%	1%	0%	0%	59%	0%	0%	4%	0%	200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/28/19	14%	11%	18%	0%	0%	0%	57%	0%	0%	0%	0%	56
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/23/19	14%	12%	27%	2%	1%	0%	41%	0%	0%	3%	0%	190
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/09/19	8%	9%	9%	0%	0%	0%	63%	8%	0%	2%	0%	150
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/23/19	8%	11%	11%	0%	0%	0%	65%	0%	0%	4%	0%	170
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/28/19	12%	8%	12%	0%	0%	0%	64%	0%	0%	3%	0%	170
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/03/19	2%	12%	12%	0%	0%	0%	69%	0%	0%	4%	0%	120
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/17/19	17%	12%	23%	2%	0%	0%	38%	6%	0%	2%	0%	340
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/25/18	7%	12%	20%	3%	0%	0%	54%	0%	0%	5%	0%	130
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/22/19	5%	17%	11%	0%	0%	0%	62%	0%	0%	5%	0%	120
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/24/19	13%	12%	20%	1%	0%	0%	42%	10%	0%	1%	0%	430
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/29/19	9%	8%	23%	2%	0%	0%	45%	9%	0%	3%	0%	370
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	01/10/18 & 08/28/19	11%	11%	8%	0%	0%	0%	63%	0%	0%	7%	0%	46
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/22/19	14%	9%	17%	1%	0%	0%	50%	7%	0%	1%	0%	420
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/24/19	13%	11%	19%	1%	0%	0%	44%	10%	0%	1%	0%	410
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/23/19	8%	11%	14%	0%	0%	0%	62%	0%	0%	4%	0%	83
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/08/19	4%	14%	12%	0%	0%	0%	60%	0%	0%	10%	0%	140
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/26/19	5%	18%	24%	2%	0%	0%	43%	0%	0%	8%	0%	120
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/22/19	19%	13%	11%	0%	0%	0%	49%	0%	0%	7%	0%	77
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/26/17 & 08/06/19	18%	4%	9%	0%	0%	0%	59%	9%	0%	0%	0%	1,200
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/15/17	35%	0%	65%	0%	0%	0%	0%	0%	0%	0%	0%	15
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/04/19	7%	17%	12%	0%	0%	0%	54%	0%	0%	10%	0%	59
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	11/30/17	3%	8%	11%	0%	0%	0%	61%	9%	0%	7%	0%	250
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/18/19	18%	6%	10%	0%	0%	0%	46%	16%	0%	3%	0%	240
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/29/19	8%	8%	12%	1%	0%	0%	58%	10%	0%	4%	0%	570
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	04/23/19	31%	9%	20%	2%	0%	0%	29%	8%	0%	1%	0%	1,100
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	03/29/19	13%	7%	17%	3%	1%	0%	46%	8%	0%	5%	0%	280
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/05/17	25%	0%	12%	0%	0%	0%	63%	0%	0%	0%	0%	600
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	10/19/17 & 08/27/19	16%	6%	22%	4%	1%	0%	37%	12%	0%	2%	0%	2,400
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	12/07/17	7%	9%	9%	1%	0%	0%	64%	0%	0%	10%	0%	170
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/29/19	10%	8%	12%	1%	0%	0%	56%	9%	0%	4%	0%	550
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	08/01/19	7%	9%	28%	3%	1%	0%	40%	8%	0%	5%	0%	470
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/03/19 & 07/10/19	26%	0%	15%	0%	0%	0%	59%	0%	0%	0%	0%	93
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/11/19	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	2.9
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/22/19	13%	0%	31%	0%	0%	0%	55%	0%	0%	0%	0%	31

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	09/11/19	4%	8%	16%	3%	0%	0%	66%	0%	0%	2%	0%	140
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/15/19	17%	4%	28%	1%	0%	0%	49%	0%	0%	0%	0%	190
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	06/26/19 & 08/07/19	25%	20%	20%	1%	0%	0%	29%	5%	0%	0%	0%	750
Aerial - Mixture of PFAS	Offsite	Drinking Water	Private Residence	07/18/19	28%	0%	26%	0%	0%	0%	46%	0%	0%	0%	0%	61
Aerial - Mixture of PFAS	Offsite	Groundwater	BLADEN-1D	11/07/19	19%	3%	12%	1%	0%	0%	50%	15%	0%	0%	0%	740
Aerial - Mixture of PFAS	Offsite	Groundwater	BLADEN-2D	10/29/19	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	ND
Aerial - Mixture of PFAS	Offsite	Groundwater	BLADEN-2S	10/22/19	6%	17%	23%	0%	0%	0%	45%	0%	0%	8%	0%	130
Aerial - Mixture of PFAS	Offsite	Groundwater	BLADEN-4S	10/22/19	47%	0%	53%	0%	0%	0%	0%	0%	0%	0%	0%	5.8
Aerial - Mixture of PFAS	Offsite	Groundwater	Cumberland-2S	10/23/19	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	38
Aerial - Mixture of PFAS	Offsite	Groundwater	Cumberland-3D	10/23/19	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	ND
Aerial - Mixture of PFAS	Offsite	Groundwater	CUMBERLAND-3S	10/22/19	12%	9%	29%	2%	0%	0%	44%	0%	0%	4%	0%	140
Aerial - Mixture of PFAS	Offsite	Groundwater	CUMBERLAND-4D	10/24/19	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	ND
Aerial - Mixture of PFAS	Offsite	Groundwater	CUMBERLAND-4S	10/25/19	22%	4%	22%	4%	2%	0%	35%	9%	0%	2%	0%	350
Aerial - Mixture of PFAS	Offsite	Groundwater	Cumberland-5S	10/23/19	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	50
Aerial - Mixture of PFAS	Onsite	Groundwater	PIW-10S	10/29/19	22%	11%	15%	3%	1%	0%	35%	12%	0%	1%	0%	16,000
Aerial - Mixture of PFAS	Onsite	Groundwater	PIW-4D	10/31/19	61%	0%	39%	0%	0%	0%	0%	0%	0%	0%	0%	5.9
Aerial - Mixture of PFAS	Onsite	Groundwater	PIW-5S	10/29/19	16%	24%	13%	3%	2%	1%	29%	12%	1%	0%	0%	260,000
Aerial - Mixture of PFAS	Onsite	Groundwater	PW-03	11/06/19	19%	2%	6%	2%	1%	0%	47%	24%	0%	0%	0%	320,000
Aerial - Mixture of PFAS	Onsite	Groundwater	PW-04	10/30/19	23%	8%	22%	8%	2%	0%	26%	11%	0%	0%	0%	4,300
Aerial - Mixture of PFAS	Onsite	Groundwater	PW-05	10/30/19	29%	6%	17%	2%	3%	0%	32%	10%	0%	1%	0%	4,100
Aerial - Mixture of PFAS	Onsite	Groundwater	PW-06	10/29/19	30%	6%	16%	3%	2%	0%	32%	11%	0%	1%	0%	4,400
Aerial - Mixture of PFAS	Onsite	Groundwater	PW-07	11/08/19	20%	8%	22%	3%	1%	0%	36%	10%	0%	0%	0%	3,900
Aerial - Mixture of PFAS	Onsite	Groundwater	PW-09	10/30/19	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	ND
Aerial - Mixture of PFAS	Onsite	Groundwater	PW-12	11/05/19	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	ND
Aerial - Mixture of PFAS	Onsite	Groundwater	PW-13	11/08/19	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	ND
Aerial - Mixture of PFAS	Offsite	Groundwater	ROBESON-1S	10/31/19	0%	19%	13%	0%	0%	0%	46%	0%	0%	22%	0%	39
Aerial - Mixture of PFAS	Onsite	Surface Water	SEEP-B-2	02/05/19	21%	4%	9%	2%	1%	1%	34%	18%	8%	2%	0%	180,000
Aerial - Predominant PMPA or HFPO-DA	Onsite	Groundwater	BCA-04	07/09/19	26%	0%	0%	0%	0%	0%	74%	0%	0%	0%	0%	27
Aerial - Predominant PMPA or HFPO-DA	Offsite	Groundwater	BLADEN-4D	08/28/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	9.2
Aerial - Predominant PMPA or HFPO-DA	Offsite	Groundwater	CUMBERLAND-2D	09/16/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	10
Aerial - Predominant PMPA or HFPO-DA	Onsite	Groundwater	SMW-10	06/27/19	0%	0%	0%	0%	0%	6%	94%	0%	0%	0%	0%	830
Aerial - Predominant PMPA or HFPO-DA	Onsite	Groundwater	MW-28	06/26/19	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2,900
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/30/18	17%	0%	0%	0%	0%	0%	83%	0%	0%	0%	0%	170
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	12/14/17	8%	0%	0%	0%	0%	0%	92%	0%	0%	0%	0%	250
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	12/15/17	0%	0%	17%	0%	0%	0%	83%	0%	0%	0%	0%	13
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/26/19	11%	0%	0%	0%	0%	0%	89%	0%	0%	0%	0%	31
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/27/19	5%	5%	9%	0%	0%	0%	75%	0%	0%	5%	0%	150
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/19/19	8%	4%	6%	0%	0%	0%	79%	0%	0%	2%	0%	140
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/31/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	5.5
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/07/19	7%	5%	7%	0%	0%	0%	78%	0%	0%	3%	0%	190
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/19/17	11%	4%	2%	0%	0%	0%	78%	0%	0%	4%	0%	190
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/19/17	14%	0%	0%	0%	0%	0%	86%	0%	0%	0%	0%	62
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/25/17	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	14
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/10/19	13%	0%	13%	0%	0%	0%	74%	0%	0%	0%	0%	92
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/26/19	5%	4%	2%	0%	0%	0%	90%	0%	0%	0%	0%	130
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/19	2%	7%	2%	0%	0%	0%	88%	0%	0%	1%	0%	200
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/21/19	7%	6%	0%	0%	0%	0%	87%	0%	0%	0%	0%	100
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/30/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	24
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	05/02/18	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5.7
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/19	7%	0%	4%	0%	0%	0%	89%	0%	0%	0%	0%	59

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/21/19	9%	3%	1%	0%	0%	0%	87%	0%	0%	0%	0%	240
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/12/19	11%	4%	1%	0%	0%	0%	85%	0%	0%	0%	0%	190
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/26/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	49
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/24/18 & 06/12/19	10%	0%	0%	0%	0%	0%	90%	0%	0%	0%	0%	630
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/21/19	10%	8%	8%	0%	0%	0%	72%	0%	0%	2%	0%	150
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/07/18	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	15
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/20/19	0%	12%	0%	0%	0%	0%	81%	0%	0%	7%	0%	91
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	12/15/17	11%	0%	0%	0%	0%	0%	89%	0%	0%	0%	0%	200
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/23/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	22
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/25/19	4%	0%	0%	0%	0%	0%	96%	0%	0%	0%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	12/07/17	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	20
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/19	12%	0%	3%	0%	0%	0%	79%	0%	0%	6%	0%	68
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/19	0%	0%	13%	0%	0%	0%	76%	0%	0%	11%	0%	21
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/16/17	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	26
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/18/19	11%	0%	9%	0%	0%	0%	80%	0%	0%	0%	0%	78
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/16/19	10%	8%	11%	0%	0%	0%	71%	0%	0%	0%	0%	170
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/14/19	10%	7%	7%	0%	0%	0%	76%	0%	0%	0%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/23/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	38
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/22/19	0%	0%	5%	0%	0%	0%	95%	0%	0%	0%	0%	43
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/20/19	0%	0%	10%	0%	0%	0%	90%	0%	0%	0%	0%	51
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/13/19	16%	0%	6%	0%	0%	0%	78%	0%	0%	0%	0%	91
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/22/19	8%	0%	3%	0%	0%	0%	89%	0%	0%	0%	0%	170
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/18/19	7%	0%	4%	0%	0%	0%	89%	0%	0%	0%	0%	160
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/02/19	9%	0%	0%	0%	0%	0%	91%	0%	0%	0%	0%	48
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/08/19	7%	7%	11%	0%	0%	0%	75%	0%	0%	0%	0%	48
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/21/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	14
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/14/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	18
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/20/19	4%	9%	11%	0%	0%	0%	72%	0%	0%	5%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	12/14/17	30%	0%	0%	0%	0%	0%	70%	0%	0%	0%	0%	17
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/30/19	8%	0%	8%	0%	0%	0%	78%	0%	0%	7%	0%	44
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	12/07/17	18%	0%	0%	0%	0%	0%	82%	0%	0%	0%	0%	39
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/18/19	9%	0%	7%	0%	0%	0%	85%	0%	0%	0%	0%	270
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	12/07/17	4%	0%	0%	0%	0%	0%	96%	0%	0%	0%	0%	220
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/12/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	31
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/19/19	0%	0%	10%	0%	0%	0%	90%	0%	0%	0%	0%	22
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/18/19	6%	11%	9%	0%	0%	0%	72%	0%	0%	3%	0%	250
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/11/19	3%	8%	9%	0%	0%	0%	76%	0%	0%	4%	0%	98
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/21/19	0%	0%	3%	0%	0%	0%	97%	0%	0%	0%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/18/19	10%	0%	7%	0%	0%	0%	83%	0%	0%	0%	0%	240
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/27/19	4%	3%	1%	0%	0%	0%	90%	0%	0%	1%	0%	230
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/29/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	27
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/21/19	0%	0%	5%	0%	0%	0%	95%	0%	0%	0%	0%	69
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/18/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	22
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/29/18 & 06/12/19	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1.8
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/13/18 & 07/25/19	10%	0%	0%	0%	0%	0%	90%	0%	0%	0%	0%	12
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/21/19	4%	8%	7%	0%	0%	0%	82%	0%	0%	0%	0%	150
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	74
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/26/19	0%	4%	0%	0%	0%	0%	96%	0%	0%	0%	0%	220
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/26/19	0%	4%	2%	0%	0%	0%	94%	0%	0%	0%	0%	140
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/24/17	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	42

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/14/19	0%	5%	2%	0%	0%	0%	93%	0%	0%	0%	0%	120
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/08/19	2%	13%	8%	0%	0%	0%	73%	0%	0%	4%	0%	190
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/19	10%	0%	0%	0%	0%	0%	90%	0%	0%	0%	0%	33
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/17	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	40
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/19	7%	7%	4%	0%	0%	0%	80%	0%	0%	2%	0%	95
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/23/18 & 06/05/19	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	18
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/15/19	0%	0%	8%	0%	0%	0%	92%	0%	0%	0%	0%	20
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/21/19	7%	9%	7%	0%	0%	0%	77%	0%	0%	0%	0%	210
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/19	12%	9%	6%	0%	0%	0%	72%	0%	0%	0%	0%	150
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/31/18	4%	6%	3%	0%	0%	0%	87%	0%	0%	0%	0%	170
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/23/19	0%	7%	2%	0%	0%	0%	91%	0%	0%	0%	0%	140
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/15/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	7.9
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/26/19	8%	5%	4%	0%	0%	0%	83%	0%	0%	0%	0%	130
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/08/19	0%	11%	7%	0%	0%	0%	78%	0%	0%	4%	0%	73
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/02/19	0%	7%	0%	0%	0%	0%	93%	0%	0%	0%	0%	82
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/25/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	51
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/19	0%	11%	5%	0%	0%	0%	84%	0%	0%	0%	0%	61
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	15
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/19	5%	11%	12%	0%	0%	0%	70%	0%	0%	2%	0%	160
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/30/19	10%	0%	0%	0%	0%	0%	84%	0%	0%	7%	0%	88
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/09/19	9%	0%	2%	0%	0%	0%	85%	0%	0%	4%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/19	7%	9%	9%	0%	0%	0%	73%	0%	0%	2%	0%	170
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	42
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/14/19	4%	0%	0%	0%	0%	0%	96%	0%	0%	0%	0%	78
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/26/19	3%	9%	8%	0%	0%	0%	79%	0%	0%	0%	0%	98
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/19	5%	6%	3%	0%	0%	0%	86%	0%	0%	0%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/15/19	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/26/18	8%	0%	0%	0%	0%	0%	92%	0%	0%	0%	0%	400
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/23/19	6%	9%	5%	0%	0%	0%	76%	0%	0%	3%	0%	64
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/28/19	4%	9%	0%	0%	0%	0%	87%	0%	0%	0%	0%	77
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/25/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	11
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/19/19	5%	7%	6%	0%	0%	0%	80%	0%	0%	2%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/13/19	4%	10%	15%	0%	0%	0%	70%	0%	0%	2%	0%	200
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/24/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	14
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/19/17	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	21
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/20/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	69
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/20/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	10
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/20/19	9%	0%	2%	0%	0%	0%	89%	0%	0%	0%	0%	100
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/20/19	5%	0%	0%	0%	0%	0%	95%	0%	0%	0%	0%	82
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/18/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	19
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/09/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	43
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/12/19	13%	0%	12%	0%	0%	0%	75%	0%	0%	0%	0%	43
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/16/17	26%	0%	0%	0%	0%	0%	74%	0%	0%	0%	0%	190
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/07/19	6%	0%	0%	0%	0%	0%	94%	0%	0%	0%	0%	70
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/21/19	0%	19%	7%	0%	0%	0%	73%	0%	0%	0%	0%	31
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/24/19	8%	0%	10%	0%	0%	0%	82%	0%	0%	0%	0%	200
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/17/19	7%	4%	2%	0%	0%	0%	86%	0%	0%	0%	0%	130
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/07/18	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	22
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/19/19	3%	5%	5%	0%	0%	0%	87%	0%	0%	0%	0%	150
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/26/17 & 06/06/19	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	12

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/25/18	12%	8%	0%	0%	0%	0%	78%	0%	0%	2%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	03/02/18	14%	0%	0%	0%	0%	0%	86%	0%	0%	0%	0%	43
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	03/16/18 & 07/10/19	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1.7
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/17 & 10/31/18	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	920
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/30/18	6%	0%	0%	0%	0%	0%	94%	0%	0%	0%	0%	86
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/30/18 & 03/25/19	8%	3%	0%	0%	0%	0%	89%	0%	0%	0%	0%	170
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/26/17	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	15
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/11/18 & 09/26/19	13%	5%	0%	0%	0%	0%	82%	0%	0%	0%	0%	180
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/24/18	7%	0%	0%	0%	0%	0%	93%	0%	0%	0%	0%	84
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/17	5%	6%	0%	0%	0%	0%	88%	0%	0%	0%	0%	84
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/31/18 & 03/28/18	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1.9
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/10/17	14%	6%	5%	0%	0%	0%	75%	0%	0%	0%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/30/18	20%	0%	2%	0%	0%	0%	77%	0%	0%	0%	0%	89
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/17 & 10/27/17	13%	11%	0%	0%	0%	0%	76%	0%	0%	0%	0%	62
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/23/17	22%	0%	0%	0%	0%	0%	78%	0%	0%	0%	0%	45
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/30/18	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	30
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/06/18	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	41
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/26/19	0%	9%	0%	0%	0%	0%	91%	0%	0%	0%	0%	61
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/06/18	14%	0%	0%	0%	0%	0%	86%	0%	0%	0%	0%	37
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/26/18	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	44
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/30/18	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	31
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/30/18	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	24
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/19	3%	6%	0%	0%	0%	0%	92%	0%	0%	0%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/19	0%	12%	4%	0%	0%	0%	82%	0%	0%	2%	0%	120
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/02/19	3%	14%	4%	0%	0%	0%	77%	0%	0%	2%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	11/10/17	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	13
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/02/19	2%	5%	0%	0%	0%	0%	92%	0%	0%	0%	0%	120
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/23/17	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	32
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/02/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	39
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/02/19	4%	15%	7%	0%	0%	0%	73%	0%	0%	1%	0%	290
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/30/18	12%	0%	12%	0%	0%	0%	75%	0%	0%	0%	0%	520
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/15/18 & 11/27/18	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	640
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/13/18 & 06/04/19	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	44
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/30/18	8%	0%	0%	0%	0%	0%	92%	0%	0%	0%	0%	130
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/07/18	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	33
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	03/09/18	8%	5%	2%	0%	0%	0%	86%	0%	0%	0%	0%	130
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/13/18	19%	0%	0%	0%	0%	0%	81%	0%	0%	0%	0%	59
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/13/18	12%	0%	0%	0%	0%	0%	88%	0%	0%	0%	0%	35
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/08/18 & 07/24/19	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5.2
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/24/18	21%	0%	0%	0%	0%	0%	79%	0%	0%	0%	0%	57
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/31/18	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	19
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/17 & 12/13/17	13%	0%	0%	0%	0%	0%	87%	0%	0%	0%	0%	44
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/19	6%	9%	12%	0%	0%	0%	70%	0%	0%	2%	0%	90
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/08/18 & 03/28/18	8%	0%	0%	0%	0%	0%	92%	0%	0%	0%	0%	23
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/31/18	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	47
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/20/18 & 06/03/19	21%	0%	0%	0%	0%	0%	79%	0%	0%	0%	0%	130
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/31/18	15%	0%	0%	0%	0%	0%	85%	0%	0%	0%	0%	78
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/21/19	3%	10%	7%	0%	0%	0%	80%	0%	0%	0%	0%	230
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/15/18 & 06/03/19	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	27
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/06/18	14%	0%	14%	0%	0%	0%	71%	0%	0%	0%	0%	590

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/19/19	8%	0%	6%	0%	0%	0%	86%	0%	0%	0%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/19	10%	0%	16%	0%	0%	0%	74%	0%	0%	0%	0%	46
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/22/17 & 12/13/17	90%	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%	580
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/19	7%	10%	8%	0%	0%	0%	73%	0%	0%	2%	0%	140
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/23/19	6%	7%	5%	0%	0%	0%	80%	0%	0%	3%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/22/19	7%	0%	3%	0%	0%	0%	90%	0%	0%	0%	0%	83
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/23/19	6%	5%	0%	0%	0%	0%	89%	0%	0%	0%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/22/19	5%	10%	3%	0%	0%	0%	80%	0%	0%	2%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/30/18	13%	0%	3%	0%	0%	0%	78%	0%	0%	6%	0%	92
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/22/19	4%	10%	5%	0%	0%	0%	77%	0%	0%	4%	0%	76
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/22/19	0%	0%	8%	0%	0%	0%	92%	0%	0%	0%	0%	26
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/08/18	0%	10%	0%	0%	0%	0%	78%	0%	0%	12%	0%	53
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/22/19	0%	0%	7%	0%	0%	0%	93%	0%	0%	0%	0%	30
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/23/19	0%	0%	8%	0%	0%	0%	92%	0%	0%	0%	0%	52
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/22/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	12
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/22/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	25
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/03/19	18%	0%	0%	0%	0%	0%	82%	0%	0%	0%	0%	37
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/29/19	2%	0%	0%	0%	0%	0%	98%	0%	0%	0%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	12/20/17 & 07/09/19	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	31
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/19/19	6%	0%	0%	0%	0%	0%	94%	0%	0%	0%	0%	160
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/21/19	5%	7%	0%	0%	0%	0%	86%	0%	0%	2%	0%	140
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/26/19	5%	4%	0%	0%	0%	0%	91%	0%	0%	0%	0%	210
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/21/19	8%	4%	2%	0%	0%	0%	87%	0%	0%	0%	0%	220
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/19/19	8%	0%	0%	0%	0%	0%	92%	0%	0%	0%	0%	140
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/10/19	14%	11%	5%	0%	0%	0%	68%	0%	0%	2%	0%	140
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/31/18 & 11/20/18	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	220
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/22/19	6%	8%	4%	0%	0%	0%	82%	0%	0%	0%	0%	170
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/21/19	4%	9%	5%	0%	0%	0%	82%	0%	0%	0%	0%	170
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/23/19	3%	6%	0%	0%	0%	0%	91%	0%	0%	0%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/19	0%	18%	6%	0%	0%	0%	71%	0%	0%	6%	0%	51
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/07/19	6%	10%	6%	0%	0%	0%	77%	0%	0%	1%	0%	200
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/10/19	4%	6%	4%	0%	0%	0%	84%	0%	0%	1%	0%	210
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/19/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	32
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/02/18	25%	0%	0%	0%	0%	0%	75%	0%	0%	0%	0%	25
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/25/19	5%	12%	5%	0%	0%	0%	76%	0%	0%	3%	0%	69
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/25/19	5%	11%	8%	0%	0%	0%	74%	0%	0%	3%	0%	160
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/27/19	0%	6%	0%	0%	0%	0%	94%	0%	0%	0%	0%	130
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/19	12%	0%	0%	0%	0%	0%	88%	0%	0%	0%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/25/19	0%	11%	0%	0%	0%	0%	89%	0%	0%	0%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/26/19	0%	6%	2%	0%	0%	0%	92%	0%	0%	0%	0%	93
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/26/19	0%	0%	4%	0%	0%	0%	96%	0%	0%	0%	0%	77
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/19	8%	0%	0%	0%	0%	0%	92%	0%	0%	0%	0%	100
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/14/19	2%	9%	2%	0%	0%	0%	86%	0%	0%	1%	0%	160
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/25/19	1%	12%	7%	0%	0%	0%	79%	0%	0%	1%	0%	220
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/19	5%	7%	5%	0%	0%	0%	83%	0%	0%	0%	0%	160
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/24/18	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	05/07/18	5%	7%	1%	0%	0%	0%	85%	0%	0%	1%	0%	210
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/05/19	6%	13%	7%	0%	0%	0%	74%	0%	0%	0%	0%	72
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	12
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/21/19	0%	20%	0%	0%	0%	0%	76%	0%	0%	4%	0%	89

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/08/18	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	11
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/25/19	9%	5%	17%	0%	0%	0%	70%	0%	0%	0%	0%	170
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/02/19	4%	4%	14%	0%	0%	0%	78%	0%	0%	0%	0%	170
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/10/19	0%	0%	9%	0%	0%	0%	91%	0%	0%	0%	0%	35
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/21/19	5%	12%	0%	0%	0%	0%	81%	0%	0%	2%	0%	150
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/25/19	4%	5%	3%	0%	0%	0%	87%	0%	0%	0%	0%	160
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/21/19	0%	19%	0%	0%	0%	0%	76%	0%	0%	5%	0%	93
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/21/19 & 06/24/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	22
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/19	7%	7%	13%	0%	0%	0%	73%	0%	0%	0%	0%	69
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/21/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	12
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/21/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	16
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	11/29/17	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	14
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/19	8%	4%	2%	0%	0%	0%	86%	0%	0%	0%	0%	130
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	11/28/17	16%	0%	0%	0%	0%	0%	84%	0%	0%	0%	0%	250
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/15/19	0%	0%	33%	0%	0%	0%	67%	0%	0%	0%	0%	27
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/23/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	17
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	11/29/17	14%	6%	10%	0%	0%	0%	69%	0%	0%	0%	0%	79
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	12/20/17	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	19
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	12/04/17	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	17
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	11/29/17	12%	0%	0%	0%	0%	0%	88%	0%	0%	0%	0%	41
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/27/19	0%	0%	29%	0%	0%	0%	71%	0%	0%	0%	0%	18
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/22/19	10%	0%	17%	0%	0%	0%	73%	0%	0%	0%	0%	30
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/04/19	10%	5%	4%	0%	0%	0%	82%	0%	0%	0%	0%	130
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	11/29/17	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	16
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/24/17 & 06/26/19	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3.6
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/24/17 & 02/13/18	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1.9
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/25/17 & 02/13/18	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1.9
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/01/19	7%	0%	6%	0%	0%	0%	87%	0%	0%	0%	0%	42
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/01/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	23
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/22/19	4%	0%	0%	0%	0%	0%	96%	0%	0%	0%	0%	83
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/19	6%	0%	7%	0%	0%	0%	78%	0%	0%	9%	0%	42
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/19/17	0%	0%	17%	0%	0%	0%	83%	0%	0%	0%	0%	16
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	12/13/17 & 11/21/18	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1,300
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/19	10%	9%	5%	0%	0%	0%	71%	0%	0%	5%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/19	15%	7%	6%	0%	0%	0%	71%	0%	0%	1%	0%	240
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/19	13%	10%	7%	0%	0%	0%	68%	0%	0%	2%	0%	130
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	24
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/19	4%	14%	4%	0%	0%	0%	78%	0%	0%	0%	0%	96
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/19	9%	10%	0%	0%	0%	0%	81%	0%	0%	0%	0%	58
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/19	0%	14%	10%	0%	0%	0%	77%	0%	0%	0%	0%	63
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/19	7%	12%	11%	0%	0%	0%	70%	0%	0%	0%	0%	54
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/19	7%	14%	8%	0%	0%	0%	71%	0%	0%	0%	0%	48
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/14/18	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	12
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/24/18	6%	8%	12%	0%	0%	0%	73%	0%	0%	0%	0%	790
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	06/21/19	8%	0%	2%	0%	0%	0%	90%	0%	0%	0%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/01/18	6%	10%	7%	0%	0%	0%	75%	0%	0%	2%	0%	190
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/19/19	10%	9%	7%	0%	0%	0%	74%	0%	0%	0%	0%	180
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/02/19	5%	9%	14%	0%	0%	0%	72%	0%	0%	0%	0%	74
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/01/18	27%	0%	0%	0%	0%	0%	73%	0%	0%	0%	0%	23
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/18/19	6%	14%	7%	0%	0%	0%	73%	0%	0%	0%	0%	300

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/19/19	11%	9%	9%	0%	0%	0%	71%	0%	0%	0%	0%	91
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/19	0%	0%	20%	0%	0%	0%	80%	0%	0%	0%	0%	19
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/30/18	7%	0%	0%	0%	0%	0%	93%	0%	0%	0%	0%	160
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/15/17	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.68
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/31/18	23%	0%	0%	0%	0%	0%	77%	0%	0%	0%	0%	43
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/19/19	5%	4%	0%	0%	0%	0%	86%	0%	0%	5%	0%	130
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/12/18 & 07/25/19	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	21
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/13/17	15%	6%	7%	0%	0%	0%	72%	0%	0%	0%	0%	95
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	02/07/18 & 06/05/19	26%	0%	4%	0%	0%	0%	69%	0%	0%	0%	0%	49
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/20/17 & 11/07/17	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	69
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/17	18%	0%	12%	0%	0%	0%	70%	0%	0%	0%	0%	36
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/20/17	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	15
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/24/18	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4.5
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/02/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	28
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/17 & 06/13/18	11%	8%	4%	0%	0%	0%	73%	0%	0%	5%	0%	150
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/26/17	9%	9%	3%	0%	0%	0%	79%	0%	0%	0%	0%	80
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/24/18	6%	7%	3%	0%	0%	0%	82%	0%	0%	2%	0%	160
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/17	7%	7%	3%	0%	0%	0%	83%	0%	0%	0%	0%	82
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/23/18	7%	7%	6%	0%	0%	0%	76%	0%	0%	4%	0%	250
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/25/19	3%	9%	4%	0%	0%	0%	80%	0%	0%	4%	0%	220
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/22/19	0%	14%	3%	0%	0%	0%	83%	0%	0%	0%	0%	150
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/19/19	0%	13%	6%	0%	0%	0%	79%	0%	0%	2%	0%	180
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/23/19	5%	9%	5%	0%	0%	0%	79%	0%	0%	2%	0%	140
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/06/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	5.8
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/22/18	9%	0%	0%	0%	0%	0%	91%	0%	0%	0%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/22/19	0%	14%	8%	0%	0%	0%	75%	0%	0%	4%	0%	150
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/19	7%	7%	5%	0%	0%	0%	78%	0%	0%	4%	0%	93
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	12/04/17	12%	0%	0%	0%	0%	0%	88%	0%	0%	0%	0%	33
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/09/19	15%	0%	4%	0%	0%	0%	74%	0%	0%	6%	0%	100
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/30/19	0%	22%	0%	0%	0%	0%	78%	0%	0%	0%	0%	68
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/19/17	14%	0%	0%	0%	0%	0%	86%	0%	0%	0%	0%	310
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/26/17	17%	10%	3%	0%	0%	0%	70%	0%	0%	0%	0%	65
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/17/17	20%	8%	0%	0%	0%	0%	73%	0%	0%	0%	0%	72
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/11/19	4%	8%	5%	0%	0%	0%	81%	0%	0%	3%	0%	110
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/22/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	27
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/18/17 & 10/31/18	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	630
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/25/19	3%	9%	2%	0%	0%	0%	85%	0%	0%	1%	0%	120
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/25/19	3%	5%	0%	0%	0%	0%	92%	0%	0%	0%	0%	100
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/09/19	5%	5%	0%	0%	0%	0%	89%	0%	0%	1%	0%	100
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/23/19	5%	10%	10%	0%	0%	0%	71%	0%	0%	3%	0%	69
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/03/19	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2.8
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/23/19	8%	0%	8%	0%	0%	0%	84%	0%	0%	0%	0%	49
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/23/19	0%	0%	7%	0%	0%	0%	82%	0%	0%	11%	0%	39
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/23/19	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	22
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/22/19	8%	0%	7%	0%	0%	0%	84%	0%	0%	0%	0%	54
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/28/19	4%	11%	4%	0%	0%	0%	77%	0%	0%	3%	0%	61
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/24/19	10%	11%	7%	0%	0%	0%	70%	0%	0%	2%	0%	140
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/10/18 & 08/28/19	10%	0%	0%	0%	0%	0%	82%	0%	0%	8%	0%	50
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/10/18 & 09/04/19	0%	0%	19%	0%	0%	0%	70%	0%	0%	11%	0%	24
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	12/13/17 & 11/20/18	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	370

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/03/19	14%	0%	13%	0%	0%	0%	73%	0%	0%	0%	0%	36
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/04/19	12%	4%	7%	0%	0%	0%	74%	0%	0%	2%	0%	160
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/11/19	0%	0%	21%	0%	0%	0%	79%	0%	0%	0%	0%	14
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/23/19	13%	0%	10%	0%	0%	0%	76%	0%	0%	0%	0%	60
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/03/19	0%	0%	5%	0%	0%	0%	95%	0%	0%	0%	0%	100
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	08/12/19	3%	4%	2%	0%	0%	0%	88%	0%	0%	3%	0%	140
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	07/11/19	3%	5%	8%	0%	0%	5%	76%	0%	0%	2%	1%	170
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	01/30/18	14%	0%	17%	0%	0%	0%	70%	0%	0%	0%	0%	450
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	09/13/17 & 09/29/17	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.92
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/21/19	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9.9
Aerial - Predominant PMPA or HFPO-DA	Offsite	Drinking Water	Private Residence	10/02/19	0%	0%	35%	0%	0%	0%	65%	0%	0%	0%	0%	25
Aerial - Predominant PMPA or HFPO-DA	Offsite	Groundwater	CUMBERLAND-1D	10/24/19	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5
Aerial - Predominant PMPA or HFPO-DA	Offsite	Groundwater	CUMBERLAND-1S	10/24/19	0%	0%	32%	0%	0%	0%	60%	0%	0%	9%	0%	27
Aerial - Predominant PMPA or HFPO-DA	Offsite	Groundwater	ROBESON-1D	10/31/19	25%	0%	0%	0%	0%	0%	75%	0%	0%	0%	0%	15
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	BCA-01	07/08/19	9%	62%	20%	3%	0%	0%	5%	1%	0%	0%	0%	110,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	BCA-02	07/09/19	9%	63%	15%	5%	2%	0%	4%	1%	0%	0%	0%	190,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	BCA-03R	09/12/19	3%	71%	15%	3%	0%	0%	6%	2%	0%	0%	0%	460,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	LTW-02	07/17/19	13%	50%	21%	4%	0%	0%	9%	3%	0%	0%	0%	75,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	LTW-05	07/16/19	7%	67%	19%	6%	1%	0%	0%	0%	0%	0%	0%	360,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PZ-22	07/23/19	4%	76%	16%	2%	0%	0%	2%	0%	0%	0%	0%	240,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	SMW-03B	07/12/19	2%	74%	12%	2%	0%	0%	9%	2%	0%	0%	0%	620,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	SMW-12	07/11/19	18%	42%	14%	1%	0%	0%	20%	5%	0%	0%	0%	9,300
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	LTW-01	07/17/19	14%	34%	23%	5%	1%	0%	17%	6%	0%	0%	0%	130,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	LTW-03	07/17/19	6%	70%	16%	2%	0%	0%	4%	1%	0%	0%	0%	210,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	LTW-04	07/17/19	9%	55%	18%	3%	0%	0%	11%	4%	0%	0%	0%	180,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	MW-1S	06/28/19	22%	33%	17%	2%	2%	2%	15%	5%	0%	2%	0%	64,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	MW-24	07/17/19	2%	78%	14%	3%	1%	0%	1%	0%	0%	0%	0%	920,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	MW-27	06/25/19	3%	69%	18%	5%	1%	0%	2%	1%	0%	0%	0%	350,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	MW-2S	07/10/19	21%	34%	15%	3%	2%	3%	15%	5%	0%	3%	0%	82,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	NAF-02	06/27/19	4%	66%	18%	6%	2%	1%	2%	1%	1%	0%	0%	4,400,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	NAF-03	06/27/19	8%	41%	17%	6%	3%	3%	7%	4%	9%	1%	0%	640,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	NAF-06	07/11/19	6%	50%	19%	7%	4%	3%	3%	1%	5%	2%	0%	1,600,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	NAF-07	06/27/19	15%	39%	19%	6%	3%	2%	11%	4%	0%	1%	0%	240,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PZ-11	07/16/19	20%	29%	20%	3%	3%	3%	14%	5%	2%	1%	0%	24,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PZ-12	07/11/19	7%	62%	13%	3%	1%	0%	5%	1%	7%	1%	0%	100,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PZ-27	06/25/19	5%	62%	14%	3%	2%	1%	7%	3%	0%	2%	0%	9,300
Combined Process Water - Predominant PFMOAA	Offsite	Surface Water	CFR-04	07/25/19	21%	54%	25%	0%	0%	0%	0%	0%	0%	0%	0%	16
Combined Process Water - Predominant PFMOAA	Offsite	Surface Water	CFR-07	07/25/19	13%	48%	17%	4%	0%	0%	17%	0%	0%	0%	0%	75
Combined Process Water - Predominant PFMOAA	Offsite	Surface Water	CFR-07	07/25/19	11%	43%	17%	4%	0%	0%	25%	0%	0%	0%	0%	49
Combined Process Water - Predominant PFMOAA	Offsite	Surface Water	CFR-07	07/25/19	20%	55%	25%	0%	0%	0%	0%	0%	0%	0%	0%	18
Combined Process Water - Predominant PFMOAA	Offsite	Surface Water	CFR-07	07/25/19	11%	51%	18%	5%	2%	0%	14%	0%	0%	0%	0%	140
Combined Process Water - Predominant PFMOAA	Offsite	Surface Water	CFR-BLADEN	05/22/19	12%	54%	17%	4%	1%	0%	13%	0%	0%	0%	0%	240
Combined Process Water - Predominant PFMOAA	Onsite	Surface Water	OLDOF-1	02/01/19	4%	66%	17%	5%	1%	1%	4%	2%	0%	0%	0%	130,000
Combined Process Water - Predominant PFMOAA	Onsite	Surface Water	OLDOF-2	02/01/19	5%	65%	17%	5%	1%	1%	5%	1%	0%	0%	0%	130,000
Combined Process Water - Predominant PFMOAA	Onsite	Surface Water	OLDOF-2L	02/02/19	4%	67%	16%	5%	1%	1%	4%	1%	0%	0%	0%	150,000
Combined Process Water - Predominant PFMOAA	Onsite	Surface Water	OLDOF-3	02/02/19	3%	69%	16%	5%	1%	1%	4%	1%	0%	0%	0%	160,000
Combined Process Water - Predominant PFMOAA	Onsite	Surface Water	OLDOF-4	02/02/19	3%	70%	15%	4%	1%	1%	4%	1%	0%	0%	0%	200,000
Combined Process Water - Predominant PFMOAA	Onsite	Surface Water	OLDOF-5	02/02/19	3%	68%	15%	5%	2%	1%	3%	1%	2%	0%	0%	280,000
Combined Process Water - Predominant PFMOAA	Onsite	Surface Water	OLDOF-5K	02/02/19	15%	42%	15%	4%	4%	1%	13%	4%	0%	1%	0%	43,000
Combined Process Water - Predominant PFMOAA	Onsite	Surface Water	SEEP-A-1	02/07/19	6%	38%	21%	7%	4%	4%	12%	4%	3%	1%	0%	160,000

TABLE E-1
PFAS SIGNATURES FOR ON AND OFFSITE GROUNDWATER AND SURFACE WATER LOCATIONS
Chemours Fayetteville Works, North Carolina

PFAS Signature	Area	Media	Location ID	Sample Date	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	PFECA-G	Total Table 3+ (ng/L)
Combined Process Water - Predominant PFMOAA	Onsite	Surface Water	SEEP-A-2	02/07/19	14%	36%	19%	7%	4%	2%	10%	4%	2%	1%	0%	190,000
Combined Process Water - Predominant PFMOAA	Onsite	Surface Water	SEEP-A-3	02/07/19	7%	40%	21%	8%	4%	3%	10%	4%	3%	1%	0%	170,000
Combined Process Water - Predominant PFMOAA	Onsite	Surface Water	SEEP-A-4	02/07/19	13%	31%	20%	6%	3%	3%	17%	7%	1%	1%	0%	140,000
Combined Process Water - Predominant PFMOAA	Onsite	Surface Water	SEEP-D-1	05/30/19	12%	56%	18%	5%	1%	0%	6%	2%	0%	0%	0%	160,000
Combined Process Water - Predominant PFMOAA	Offsite	Surface Water	WC-1	02/07/19	17%	29%	18%	3%	0%	0%	26%	8%	0%	0%	0%	1,700
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	MW-13D	07/11/19	11%	54%	20%	5%	2%	0%	6%	2%	0%	1%	0%	330,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	MW-14D	07/11/19	4%	72%	14%	3%	1%	0%	3%	1%	0%	0%	0%	250,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	MW-15DRR	09/12/19	6%	55%	11%	2%	1%	0%	6%	2%	15%	2%	0%	57,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	MW-20D	07/09/19	8%	60%	14%	3%	1%	0%	12%	3%	0%	0%	0%	23,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	SMW-04B	07/12/19	19%	59%	10%	2%	1%	0%	7%	1%	0%	0%	0%	69,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	SMW-05P	07/25/19	6%	66%	13%	4%	1%	0%	8%	2%	0%	0%	0%	340,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	SMW-08B	07/16/19	3%	76%	14%	4%	1%	0%	2%	1%	0%	0%	0%	340,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PIW-10DR	10/30/19	15%	46%	19%	6%	1%	0%	10%	4%	0%	0%	0%	100,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PIW-1D	10/29/19	21%	31%	18%	3%	1%	0%	20%	6%	0%	0%	0%	46,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PIW-2D	11/01/19	6%	75%	14%	1%	0%	0%	4%	0%	0%	0%	0%	25,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PIW-6S	10/29/19	4%	76%	13%	2%	0%	0%	4%	1%	0%	0%	0%	250,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PIW-7D	10/30/19	4%	80%	13%	1%	0%	0%	2%	0%	0%	0%	0%	210,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PIW-7S	10/30/19	13%	59%	15%	3%	0%	0%	7%	2%	0%	0%	0%	52,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PIW-8D	10/30/19	10%	62%	17%	7%	1%	0%	2%	1%	0%	0%	0%	650,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PIW-9D	10/23/19	7%	70%	14%	4%	1%	0%	3%	1%	0%	0%	0%	290,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PIW-9S	10/23/19	4%	75%	14%	3%	1%	0%	3%	1%	0%	0%	0%	250,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PW-01	10/18/19	15%	45%	20%	5%	2%	2%	7%	3%	1%	1%	0%	51,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PW-02	11/04/19	6%	66%	16%	5%	2%	1%	3%	1%	0%	0%	0%	130,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PW-10R	11/04/19	3%	81%	13%	1%	0%	0%	2%	0%	0%	0%	0%	180,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PW-11	10/23/19	4%	68%	13%	6%	4%	0%	2%	1%	0%	0%	0%	280,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PW-14	10/23/19	10%	55%	16%	5%	3%	2%	7%	2%	0%	1%	0%	170,000
Combined Process Water - Predominant PFMOAA	Onsite	Groundwater	PW-15R	11/06/19	2%	73%	12%	3%	0%	0%	8%	2%	0%	0%	0%	620,000
Combined Process Water - Predominant PFMOAA	Onsite	Surface Water	SEEP-B-1	02/05/19	8%	51%	15%	3%	1%	0%	14%	6%	1%	0%	0%	290,000
Combined Process Water - Predominant PFMOAA	Onsite	Surface Water	SEEP-C-1	02/05/19	8%	59%	19%	6%	1%	0%	5%	2%	0%	0%	0%	330,000
Combined Process Water - Predominant PFMOAA	Onsite	Surface Water	SEEP-C-1-E2	02/05/19	7%	66%	16%	4%	1%	0%	5%	2%	0%	0%	0%	250,000

Notes:
ng/L - nanograms per liter
Table 3+ compounds reported as percentage of Total Table 3+ concentrations.

APPENDIX F

Offsite Human Health Screening Level Exposure Assessment (SLEA) of Table 3+ PFAS

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

OFFSITE HUMAN HEALTH SCREENING LEVEL EXPOSURE ASSESSMENT (SLEA) OF TABLE 3+ PFAS

Chemours Fayetteville Works

Prepared for

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

Prepared by

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

Geosyntec Project Number TR0795

December 2019

TABLE OF CONTENTS

1 INTRODUCTION 1
1.1 SLEA Objectives 3
1.2 Overview of HFPO-DA 4
1.3 Document Organization 5

2 BACKGROUND 6
2.1 Facility Description 6
2.2 Facility History 6
2.3 Climate 6
2.4 Topography 7
2.5 Cape Fear River and Tributaries 7
2.6 Table 3+ PFAS and Fate and Transport Considerations 8

3 CONCEPTUAL EXPOSURE MODEL 10
3.1 Offsite Receptor Populations 10
3.2 Environmental Exposure Media and Routes 11
3.3 Complete Exposure Pathways 13

4 IDENTIFICATION OF OFFSITE EXPOSURE UNITS 15

5 ENVIRONMENTAL DATASETS AND EPCS 17
5.1 Soil 17
5.1.1 Soil Data 17
5.1.2 Soil EPCs 21
5.2 Well Water 22
5.2.1 Well Water Data 22
5.2.2 Well Water EPCs 23
5.3 Surface Water 23
5.3.1 Surface Water Data 24
5.3.2 Surface Water EPCs 26
5.4 Fish 27
5.4.1 Fish Tissue Data 27
5.4.2 Fish Tissue EPCs 29
5.5 Homegrown Produce 29
5.5.1 Homegrown Produce Data 29

TABLE OF CONTENTS (CONTINUED)

5.5.2 Homegrown Produce EPCs 29
5.6 Data Quality 30

6 INTAKE CHARACTERIZATION 32
6.1 Intake Equations and Inputs 32
6.2 Intake Characterization Results 32
6.2.1 Upland EUs 33
6.2.2 Cape Fear River and Pond EUs 34
6.2.3 Surface Water Intake Points 34

7 PROVISIONAL HAZARD CHARACTERIZATION 35
7.1 HFPO-DA Toxicity Criteria 35
7.2 Hazard Characterization Methods 36
7.3 Hazard Characterization Results 37

8 UNCERTAINTY ASSESSMENT 39
8.1 Uncertainty in Laboratory Analytical Data 39
8.1.1 Detection Limits 39
8.2 Uncertainty in Exposure Point Concentrations 40
8.2.1 Soil Exposure Point Concentrations 40
8.2.2 Produce Exposure Point Concentrations 41
8.2.3 Drinking Water Exposure Point Concentrations 42
8.2.4 Surface Water Exposure Point Concentrations 42
8.2.5 Fish Tissue Exposure Point Concentrations 43
8.3 Uncertainty in the Exposure Assessment 44
8.3.1 Uncertainty in Exposure Media and Routes 44
8.3.2 Uncertainty in Exposure Assumptions 46
8.4 Uncertainty in the Hazard Characterization 46

9 CONCLUSIONS 49

10 REFERENCES 51

LIST OF TABLES

Table 1: Table 3+ Constituents

Table 2: Classification of Table 3+ PFAS

Table 3: Intake Characterization and Provisional Hazard Characterization Summary

Table 4: Supplemental Hazard Characterization

LIST OF FIGURES

Figure 1: Facility Location

Figure 2: Conceptual Exposure Model

Figure 3: Exposure Units

Figure 4: Sampling Locations Evaluated in the SLEA – Soil

Figure 5: Sampling Locations Evaluated in the SLEA – Untreated Well Water

Figure 6: River Sampling Diagram

Figure 7: Sampling Locations Evaluated in the SLEA – Surface Water and Fish Fillets

Figure 8: Offsite HFPO-DA Untreated Well Water Concentrations (2017-2019)

LIST OF APPENDICES

Appendix A: Consent Order

Appendix B: Analytical Data Used in the SLEA

Appendix C: ProUCL Output

Appendix D: ERM Air Modeling Output

Appendix E: Modeled HFPO-DA Concentrations in Homegrown Produce

Appendix F: Intake and Hazard Calculations

LIST OF ABBREVIATIONS

%	Percent
ADI	Average Daily Intake
BAF	Bioaccumulation Factor
BCF	Bioconcentration Factor
bgs	Below Ground Surface
CFPUA	Cape Fear Public Utility Authority
CFRW	Cape Fear River Watch
Chemours	The Chemours Company FC, LLC
CSM	Conceptual Site Model
DHHS	Department of Health and Human Services
DQO	Data Quality Objective
DuPont	E.I. du Pont de Nemours and Company
DVM	Data Verification Module
EIM	Environmental Information Management system
EPC	Exposure Point Concentration
EU	Exposure Unit
°F	Degrees Fahrenheit
Facility	Fayetteville Works facility in Bladen County, North Carolina
GI	Gastrointestinal
HDPE	High-Density Polyethylene
HFPO-DA	Hexafluoropropylene Oxide Dimer Acid
km	Kilometer
K_{ow}	Octanol-Water Partition Coefficient
Kuraray	Kuraray America Inc.
ISM	Incremental Sampling Methodology
mg/kg-day	Milligram(s) per Kilogram of Body Weight per Day
NC	North Carolina
NC DEQ	North Carolina Department of Environmental Quality

LIST OF ABBREVIATIONS (CONTINUED)

ng/L	Nanograms per Liter
NPDES	National Pollutant Discharge Elimination System
Parsons	Parsons of NC (Parsons)
PFAS	Perfluoroalkyl and Polyfluoroalkyl Substances
PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid
PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid
PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid
PFOA	Perfluoro-n-octanoic acid
PFOS	Sodium perfluoro-1-octanesulfonate
pKa	Acid Dissociation Constant
PFMOAA	Perfluoro-1-methoxyacetic acid
PEPA	Perfluoroethoxypropyl carboxylic acid
PFESA-BP2	Byproduct 2
PMPA	Perfluoromethoxypropyl carboxylic acid
PPA	Polymer Processing Aid
PPARα	Peroxisome proliferator-activated receptor alpha
PVF	Polyvinyl Fluoride
QA	Quality Assurance
QC	Quality Control
RfDo	Oral Reference Dose
RM	River Mile
RPD	Relative Percent Difference
SLEA	Screening Level Exposure Assessment
SOP	Standard Operating Procedure
UCL	Upper Confidence Limit on the Mean
UF	Uncertainty Factor
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

EXECUTIVE SUMMARY

Geosyntec has prepared this *Offsite Human Health Screening Level Exposure Assessment* (SLEA) on behalf of The Chemours Company FC, LLC (Chemours) in support of developing a *Corrective Action Plan* (CAP) for the Chemours Fayetteville Works Facility in Bladen County, North Carolina (the Facility).

The overall goal of the SLEA is to refine understanding of the Facility Conceptual Site Model (CSM) in support of developing the CAP, which is accomplished by quantifying potential human intake and noncarcinogenic human health hazard from assumed exposure to Table 3+ per- and polyfluoroalkyl substances (PFAS) in the vicinity of the Facility. Table 3+ PFAS are the PFAS originating from air emissions and past process water releases at the Facility. The SLEA quantifies potential human exposure to the following media:

- offsite soil, drinking well water, and homegrown produce within a 10-kilometer radius of the Facility (subdivided into 12 exposure units);
- offsite surface water and fish tissue in the Cape Fear River, extending 10 miles upstream and 55 miles downstream of the Facility (subdivided into five [5] exposure units);
- surface water and fish tissue from an onsite Facility pond; and
- surface water from a private offsite pond.

Central tendency and upper-bound exposure point concentrations (EPCs) for soil, well water, surface water and fish fillets were calculated using empirical data whereas EPCs for produce were calculated using approved United States Environmental Protection Agency (USEPA) models. Exposure to soil, well water, and produce was evaluated for adult and child resident, farmer, and gardener populations. Exposure to surface water and fish tissue was evaluated for adult and child recreationalist populations. Potential PFAS intake from each medium was estimated using standard regulatory risk assessment equations that combine media-specific EPCs with conservative, receptor-specific exposure assumptions recommended by USEPA. Total hexafluoropropylene oxide dimer acid (HFPO-DA) intake calculated for each receptor-exposure scenario was compared to the North Carolina Department of Health and Human Services (NC DHHS) 2017 draft oral reference dose (RfDo) to yield a provisional noncarcinogenic human health hazard estimate.

Calculated hazards for HFPO-DA for all receptor-exposure scenarios evaluated in the SLEA are less than 1 which, as defined by USEPA, indicates adverse effects to human receptors are unlikely, including sensitive subpopulations. Untreated well water was identified as the primary source of potential PFAS intake and hazard. Additionally, when the SLEA accounts for the effectiveness of the Chemours-provided drinking water treatment systems that are currently in-place, PFAS intake via well water consumption and associated hazards are substantially reduced and may be as low as zero. While other media were not identified as significantly contributing to overall intake and hazard, human exposure to PFAS in environment media will continue to decrease over time as a result of Facility air emissions reductions.

1 INTRODUCTION

Geosyntec Consultants of NC, PC (Geosyntec) has prepared this Offsite Human Health Screening Level Exposure Assessment (SLEA) of Table 3+ (per- and polyfluoroalkyl substances) PFAS on behalf of The Chemours Company FC, LLC (Chemours) for the Fayetteville Works facility in Bladen County, North Carolina (Facility)[1]. Table 3+ PFAS, listed in Table 1, have been historically released from process water and air emissions at the Facility; however, Chemours' process water is currently sent for offsite disposal and air abatement controls being installed are reducing air emissions by 99 percent (%).

The purpose of the SLEA is to estimate potential offsite[2] human exposures to current conditions, influenced by historically-released or deposited Table 3+ PFAS and in consideration of control technologies being implemented. SLEA exposure estimates are calculated using regional[3] concentrations in environmental media in the vicinity of the Facility. The SLEA focuses on hexafluoropropylene oxide dimer acid (HFPO-DA[4]) while also estimating human exposures to 19 other PFAS presently capable of being analyzed using the Table 3+ standard operating protocol (SOP) method. The SLEA also presents the results of a provisional human health hazard characterization for HFPO-DA based on intakes quantified herein and the North Carolina Department of Health and Human Services (NC DHHS) 2017 draft oral reference dose (RfDo).

The content and findings of the SLEA should be reviewed in consideration of the following:

- The SLEA drinking water intake and provisional hazard estimates for residences in the vicinity of the Facility are initially calculated based on untreated well water which, in many cases, is not representative of drinking water conditions. Concentrations detected in groundwater are almost entirely the legacy of prior operations, mostly by Chemours' predecessor, and abatement and remediation measures already taken by Chemours have addressed and essentially abated releases of PFAS from Chemours' continuing operations at the Facility. As part of the Consent Order implementation, Chemours is required to offer replacement drinking water (in the form of public water or whole building filtration systems)

---

[1] An Ecological SLEA prepared by Geosyntec is being concurrently submitted with this document.
[2] Herein, "onsite" and "offsite" are used to distinguish areas within and outside of the Facility boundaries, respectively, as shown in Figure 1.
[3] PFAS concentrations and exposures are characterized herein as "regional" on the basis that they do not represent conditions at a specific point of exposure (e.g., pertinent to an individual or discrete residence or from a specific drinking water well). Rather, the SLEA assesses potential intake on the basis of Exposure Units (EUs) arrayed around and radiating from the approximately center-point of the Facility, as well as conditions in the Cape Fear River, proximal to the Facility.
[4] HFPO-DA is also referred to as GenX.

when private wells have HFPO-DA detected above 140 nanograms per liter (ng/L). For private drinking water wells, when any individual PFAS listed in Consent Order Attachment C, exceeds 10 ng/L or when total PFAS listed in Consent Order Attachment C exceed 70 ng/L, Chemours is required to offer residents or other persons up to three under-the-sink reverse osmosis drinking water systems. Chemours is required to offer temporary replacement water supplies (i.e., bottled water) to those properties qualifying for a filtration or reverse osmosis system until these systems have been provided. As noted above, the SLEA presents the results of a provisional hazard characterization, limited to HFPO-DA. Under Reasonable Maximum Exposure (RME) conditions, even in the absence of treatment, no receptor-specific, cumulative hazards exceed unity (1). The majority of hazard is associated with consumption of untreated drinking water; however, this exercise may be considered hypothetical, as qualifying residents or other persons (as described above) within the Facility zone of influence are provided with alternate or treated water supplies. All post-treatment drinking well water results are non-detect for all Table 3+ PFAS compounds, resulting in (essentially) zero drinking water-associated hazards. Intake and hazard estimates based on assumed HFPO-DA concentrations of 10 ng/L (the maximum concentration not qualifying for treatment) are up to two orders of magnitude lower than those calculated based on untreated well water reducing hazard estimates from being consistently less than 1 to consistently less than 0.1.

- Chemours is acting to reduce air emissions of PFAS from the Facility, including installation of a thermal oxidizer that will dramatically reduce aerial PFAS emissions from the Site, with reduction of aerial HFPO-DA emissions by 99% starting in January 2020 compared to 2017 baseline, and expected comparable reductions for other PFAS. This is relevant since Table 3+ PFAS in offsite media originate from aerial deposition stemming from Facility emissions to air, which are described in the *On and Offsite Assessment Report* (Geosyntec, 2019c). Based on this, the present concentrations of offsite PFAS are expected to diminish over time through natural attenuation. Current conditions therefore, represent the highest expected concentrations in receiving media with future exposure diminishing over time. With a reduction in air emissions, associated soil and groundwater concentrations will attenuate over time, as will contributions to other receiving media, such as surface water and recreational fish species. Additionally, Chemours' process water is being sent for offsite disposal, eliminating a pathway that historically contributed PFAS to the river.

- The SLEA sampling, analyses, and evaluation methods were developed to provide screening-level estimates of intake and potential human health hazard to offsite populations. Like any regulatory risk assessment, the hazard estimates are not predictive of any health outcome. Rather, the findings are intended to further support refining the existing conceptual site model (CSM) by using measured concentrations of Table 3+ PFAS in the environment to identify sources and transport mechanisms that are the most likely to result in potentially complete exposure pathways for human receptors and rank these pathways based on potential intake. This information can then be used to focus future evaluations on pathways that are relevant to informing risk management decisions and excluding pathways that, albeit complete, are likely insignificant relative to overall exposure.

This SLEA considers relevant exposure scenarios under future potential conditions where Consent Order required air emission reduction targets have been achieved.

1.1 SLEA Objectives

The objectives of the SLEA are as follows:

1. Develop representative exposure point concentrations (EPCs) for HFPO-DA and other Table 3+ PFAS in offsite environmental media.
2. Develop estimates of average intake of HFPO-DA and other Table 3+ PFAS from relevant exposure pathways for potential human receptor populations in the vicinity of the Facility.
3. Develop estimated ranges of potential associated human health hazard, predicated on intake estimates by pathway and receptor population[5].
4. Identify and evaluate uncertainties associated with limitations in environmental data, and exposure assumptions in the context of the results of the SLEA intake and hazard characterizations to support site management decisions.

The methodology used in this assessment is consistent with North Carolina risk assessment practices and the United States Environmental Protection Agency's (USEPA) G*uidelines for Exposure Assessment* (USEPA, 1992) and *Draft Guidelines for Human Exposure Assessment* (USEPA, 2016).

The SLEA also supports the Groundwater Corrective Action Plan (CAP) required by Paragraph 16 of the executed Consent Order entered into court on February 25, 2019 and

---

[5] The SLEA hazard characterization uses the draft RfDo developed by the NC DHHS (2017), which underpins the State's provisional health goal for HFPO-DA in drinking water. The SLEA uncertainty assessment evaluates the implications for use of alternative toxicity criteria, such as the probabilistic RfDo developed by Thompson, et al. (2019) and the USEPA's draft RfDo (USEPA, 2018a). See Section 8.4.

signed by Chemours, the North Carolina Department of Environmental Quality (NCDEQ), and the Cape Fear River Watch (CFRW).

1.2 Overview of HFPO-DA

HFPO-DA is a human-made chemical produced at the Chemours Fayetteville Works facility in Bladen County, North Carolina. HFPO-DA is a six carbon, branched PFAS containing an ether bond (i.e., an oxygen atom linking two carbon atoms). HFPO-DA[6] is a clear, colorless liquid completely miscible with water (i.e., infinite solubility in surface water, groundwater, rainwater, leachate) and low octanol-water partitioning capacity (empirically estimated $\log K_{ow}$ of 4.24)[7]. Under normal environmental conditions, HFPO-DA exists as an anionic acid (2.8 acid dissociation constant [pKa])[8] (Hoke et al., 2016). Biodegradability test data (DuPont-A080558; Kaplan, 2010) indicate HFPO-DA is not readily biodegradable, with a half-life in soil, water, air, and sediment greater than 6 months (USEPA, 2018a). As such, HFPO-DA is expected to be relatively stable and persistent in the environment, and resistant to photolysis and hydrolysis (undergoing very slow hydroxyl radical catalyzed indirect photolysis).

Measured bioconcentration factors (BCFs) and bioaccumulation factors (BAFs) suggest that HFPO-DA has a low potential to bioaccumulate in biota. Multiple fish studies have confirmed BCFs of less than 3 and 30, based on exposure to 200,000 and 20,000 ng/L, and BCFs of 1 for higher concentrations (DuPont-A080560 2009; Hoke et al., 2016; Goodband, 2019). A recent study suggests that HFPO-DA does not have the capacity to bioaccumulate in some benthic fish species, based on treated food consumption over a 21-day exposure period (Hassell et al., 2019). Log BAFs calculated for carp were 0.86 for blood, 0.5 for liver and 0.61 for muscle. Tissue values indicate a BAF of less than 10 (Pan et al., 2017).

---

[6] HFPO-DA is used here to refer to: 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (CASN 13252-13-6), which has the chemical formula $C_6HF_{11}O_3$.
[7] K_{ow} is the octanol-water partitioning coefficient, the ratio of the equilibrium concentration of a dissolved chemical in a two-phase system of n-octanol and water. n-Octanol serves as a surrogate to biota lipids and K_{ow} is used as an indicator of a chemical's tendency to bioaccumulate in organisms.
[8] The pKa predicts that HFPO-DA will be in acid form (as a negative ion, or an anion) at a pH $\geq$ 2.8.

1.3 Document Organization

This document is organized as follows:

- Section 1, Introduction, presents the objectives of the SLEA and provides an overview of the Table 3+ PFAS.
- Section 2, Background, summarizes conditions in offsite areas in the vicinity of the Facility, focusing on those that are relevant to developing a CSM and conceptual exposure model (CEM).
- Section 3, Conceptual Exposure Model, identifies potentially complete exposure pathways by which human receptors may come into contact with Table 3+ PFAS in the environment.
- Section 4, Identification of Offsite Exposure Units, describes the organization of exposure units evaluated in the SLEA and the rationale for their identification.
- Section 5, Environmental Datasets and Exposure Point Concentrations, summarizes the data evaluated in the SLEA, including the sampling and analysis methods for data collection, and describes how data are used in the SLEA to quantify potential human exposure.
- Section 6, Intake Characterization, summarizes the methods for quantifying human exposure and compares the calculated intakes by exposure media for relevant populations and associated complete exposure pathways.
- Section 7, Provisional Hazard Characterization, presents a description of the methods and toxicological criteria used to derive estimated human health hazard quantitative point estimates for relevant populations and associated complete exposure pathways, related to HFPO-DA.
- Section 8, Uncertainty Assessment, identifies key uncertainties in the SLEA.
- Section 9, Conclusions, summarizes the findings of the SLEA.
- Section 10, References, presents the references used in the development of the SLEA Report.

2 BACKGROUND

The following section describes the physical setting and operational history of the Facility, as well as fate and transport considerations for HFPO-DA.

2.1 Facility Description

The Facility is located within a 2,177-acre property at 22828 NC Highway 87, approximately 15 miles southeast of the city of Fayetteville, NC along the Bladen-Cumberland county line. Figure 1 presents an overview of the Facility location and features. The Facility is bounded by NC Highway 87 to the west, the Cape Fear River to the east, and by undeveloped areas and farmland to the north and south. Willis and Georgia Branch Creeks, which are tributaries of the Cape Fear River, are located near the northern and southern property boundaries respectively, with the Georgia Branch Creek being offsite for its entire course (Geosyntec, 2019a).

2.2 Facility History

The Facility property was originally purchased by E.I. du Pont de Nemours and Company (DuPont) in 1970 and the first manufacturing area was constructed shortly thereafter. A former manufacturing area, used to produce nylon strapping and elastomeric tape, was sold in 1992. DuPont sold its Butacite® and SentryGlas® manufacturing units to Kuraray America Inc. (Kuraray) in June 2014 and subsequently spun off its specialty chemicals business into Chemours in July 2015. Presently, the Facility consists of five manufacturing areas used to produce specialty fluorinated monomers, the intermediates and starting materials thereof, fluorinated polymer initiators and processing aids, fluorinated polymer resin, polymer sheeting, and manufactured products. The five manufacturing areas shown in Figure 1 include: Chemours Monomers IXM; Chemours Polymer Processing Aid (PPA); Kuraray Trosifol®; Kuraray SentryGlas®; and DuPont Company polyvinyl fluoride (PVF) resin manufacturing unit. In addition to the manufacturing operations, Chemours operates two natural gas-fired boilers and a wastewater treatment plant, which treatment includes sanitary wastewaters from Chemours, Kuraray, and DuPont and process wastewaters from Kuraray and DuPont (Geosyntec, 2019a). Hazardous waste generated during manufacturing activities are managed at the Hazardous Container and Storage Area prior to shipment offsite for treatment, disposal, or recycling (Parsons, 2014).

2.3 Climate

The climate in Bladen County is characterized by relatively mild winters, hot summers, and abundant rainfall. According to the National Weather Service, average monthly temperatures range from a high of 91 degrees Fahrenheit (°F) in July to a low of 33°F in

January. Average monthly rainfall ranges from a high of 5.92 inches in July to a low of 2.65 inches in December (Parsons, 2014).

2.4 Topography

The developed portion (manufacturing area) of the Facility is located on a relatively flat topographic plateau at an approximate elevation of 145 feet above mean sea level and approximately 70 feet above the Cape Fear River floodplain. Surface topography generally remains flat to the west with a gentle increase of about 5 feet to a topographic divide near NC Highway 87. However, ground surface elevations decrease from the topographic plateau at the manufacturing area towards the Cape Fear River to the east as well as its tributaries, Willis Creek to the north and Georgia Branch Creek to the south. Topographic relief from the main manufacturing area decreases by approximately 100 feet in elevation towards the Cape Fear River bank to the east. Inclined topographic relief combined with overland flow and groundwater seeps have created natural drainage networks into the Cape Fear River (Geosyntec, 2019a).

2.5 Cape Fear River and Tributaries

The Cape Fear River and its entire watershed are located in the state of North Carolina. The Cape Fear River drains 9,164 square miles and empties into the Atlantic Ocean near the city of Wilmington, NC. The Facility is situated on the western bank of the Cape Fear River; it draws water from the Cape Fear River and historically returned over 95% of this water via Old Outfall 002 (now discontinued) after being used primarily as non-contact cooling water. Two lock and dam systems with United States Geological Survey (USGS) stream gauges are located downstream of the Facility: (1) W.O. Huske Lock and Dam, located 0.5 river miles downstream from the Facility (USGS 02105500); and (2) Cape Fear Lock and Dam #1, located 55 river miles downstream (USGS 02105769).

There are three perennial surface water features that are tributaries to the Cape Fear River at or adjacent to the Facility. To the north of the Facility is Willis Creek. To the south of the Facility is Georgia Branch Creek which confluences with the Cape Fear River approximately 7,500 feet south of the W.O. Huske Dam. Old Outfall 002, which currently conveys only surface water and groundwater to the Cape Fear River, is approximately 1,350 feet south of the W.O. Huske Dam (Geosyntec, 2019a). Additionally, in January 2019 three groundwater seep features were identified on the bluff slope leading from the Facility to the Cape Fear River. These seeps represent groundwater exiting the aquifer and forming channelized flows of water to the Cape Fear River.

2.6 Table 3+ PFAS and Fate and Transport Considerations

Onsite PFAS were released historically from the Facility from aerial emissions with resulting deposition and from direct process water releases to groundwater. Offsite soil and groundwater PFAS are solely from aerial emission releases based on an analysis of both groundwater flow directions (offsite residential areas are hydraulically isolated or upgradient of process water release areas) and PFAS signatures (Geosyntec, 2019c). In turn, constituents in soil may have contributed to constituents in groundwater through leaching and infiltration of the vadose zone and to vegetation through root uptake. Table 3+ PFAS constituents in surface water may have arisen through aerial deposition, discharge of Facility wastewaters, stormwater/surficial runoff during precipitation events, or discharge from groundwater to receiving surface water bodies at the groundwater-surface water interface. Surface water concentrations may have contributed to fish tissue concentrations through bioconcentration.

Table 3+ PFAS, including HFPO-DA, have been detected in soils on- and offsite, in groundwater on- and offsite, in surface water on- and offsite, and in offsite biota. Sources of PFAS for the various environmental media examined in this SLEA are summarized in the table below.

Environmental Media	Aerial Emissions and Deposition	Process Water Releases
Cape Fear River	✓	✓
Offsite Soil	✓	--
Offsite Groundwater	✓	--
Offsite Terrestrial Vegetation	✓	--
Offsite Biota (e.g., fish)	Uptake and Bioconcentration from Surrounding Media	

Pursuant to Consent Order Paragraph 27, Chemours funded a study analyzing the fate and transport of identified PFAS originating from the Facility in air, surface water, and groundwater (Geosyntec, 2019d). The findings of the study are summarized below.

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

Most Table 3+ PFAS, are fluoroethers: their structure includes two carbons connected by an oxygen atom – an ether bond. PFAS with ether bonds are expected to be less volatile and more soluble than non-ether PFAS of equivalent chain length due to the polar oxygen atoms included in their structures. Table 3+ PFAS contain at least one polar head group and many also contain additional polar head groups. The structural information for the Table 3+ PFAS is provided in Table 2.

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

The tails of PFAS are made primarily of carbon atoms. They tend to be nonpolar, and so they tend to sorb to organic carbon species in soil and sediment (Higgins and Luthy 2006, Guelfo and Higgins, 2013). Because PFAS tails are also lipophobic, sorption to organic carbon tends to be weaker than that of alkanes. The sorption and retardation of PFAS will increase with increasing fluorinated tail length. For a given soil, sediment, or organic carbon type, the structure of the PFAS tail affects its interactions with organic carbon molecules. Branched isomers tend to have lower sorption affinity than linear isomers of equal chain length (Kärrman et al., 2011). Sorption of PFAS to charged particle surfaces in common soils and sediments is expected to be negligible relative to sorption to particulate organic carbon (Higgins and Luthy, 2006).

Current literature indicates that transformation of most PFAS in the environment is negligible. An important observed environmental transformation of PFAS has been the hydrolysis of some polyfluorinated precursors to form perfluorinated compounds (Mueller and Yingling, 2018) and the biotic degradation of trifluoroacetate (e.g., Visscher et al., 1994). Recently, researchers identified an Acidimicrobium microbial species that appears capable of defluorinating select PFAS (Huang and Jaffe, 2019). The ether and carbon-hydrogen bond components of the Table 3+ PFAS may be amenable to transformation reactions that degrade the tails of these compounds (e.g., Weber et al., 2017).

3 CONCEPTUAL EXPOSURE MODEL

Development of a CEM [conceptual exposure model] is recommended by USEPA (USEPA, 1989) to support interpretation of environmental data and inform site management decisions. The SLEA CEM identifies potentially complete exposure pathways by which human receptors could come in contact with Table 3+ PFAS in environmental media within the offsite Study Area. For an exposure pathway to be complete, the following five elements are necessary:

- a source or release from a source;
- a mechanism of release and transport;
- an exposure medium (i.e., point of contact) for potential receptors;
- an exposure route (e.g., ingestion); and,
- the presence of a receptor population (e.g., residential adult and child).

If an element of the CEM is missing, the exposure pathway is considered incomplete. For the purposes of the SLEA, source and release/transport mechanism(s) for PFAS are presumed to exist. As such, the SLEA focuses on characterizing exposure media, exposure routes, and human receptors for Table 3+ PFAS. Generally, intake of Table 3+ PFAS is only quantified for complete pathways but, in some instances for the purpose of informing site management decisions, intake is also quantified for pathways that are not reasonably anticipated to be complete (e.g., due to current or planned implementation of institutional controls).

The human health CEM is diagrammatically presented in Figure 2 and its elements are described below. The CEM reflects the current understanding of fate and transport mechanisms and exposure conditions in the vicinity of the Facility but may be updated as new information becomes available.

3.1 Offsite Receptor Populations

The Facility property encompasses 2,177 acres of relatively flat, undeveloped open land and woodland bounded by the Cape Fear River on the east, NC Highway 87 on the west, Willis Creek on the north, and farmland on the south (Figure 1). Based on the current Facility setting, including surrounding land uses, potential receptors for evaluation in the SLEA and the rationale for their inclusion are summarized below:

- Residents (Adult and Child). The nearest residence is approximately 1 km north of Facility manufacturing areas. North and northwest of the Facility, several residential neighborhoods occur within 5 km of the Facility.

- Farmers (Adult and Child). Farmers were identified as potential receptors based on the predominance of agricultural land use to the east, south, and west of the Facility.
- Gardeners (Adult and Child). Residents and farmers may garden on their properties to grow homegrown produce for personal consumption.
- Offsite workers (Adults only). Although residential and agricultural land uses predominate the areas surrounding the Facility, some commercial businesses are also present.
- Recreationalists (Adult and Child). The Cape Fear River may be used for recreational purposes, including canoeing and swimming.
- Recreational anglers (Adult and Child). The Cape Fear River and regional private ponds and lakes may be used for recreational purposes, including fishing.

3.2 Environmental Exposure Media and Routes

The SLEA focuses on evaluating the relative potential for intake based on direct and indirect contact with Table 3+ PFAS detected in environmental media from air deposition and from historical process water releases (i.e., via outfall releases and/or via migration of groundwater to Cape Fear River surface water adjacent to and downstream of the Site). This SLEA also considers ongoing and future stack emissions in light of stack control technologies, for instance the Thermal Oxidizer control technology is scheduled to be operational by December 31, 2019. Environmental investigations have detected Table 3+ PFAS in soil, groundwater, surface water, plants (non-edible), and fish in the vicinity of the Facility. Potential exposure media and routes evaluated in the SLEA are summarized below. Unless otherwise noted below, these media-specific complete exposure pathways are quantitatively evaluated herein. It is important to note that these are hypothetical exposure scenarios developed to evaluate the potential for exposure; in reality, some (or all) of these assumed exposure pathways may be incomplete for specific receptor populations.

- Offsite Surface Soil. Stack and fugitive process emissions to ambient air have resulted in historically-deposited PFAS in offsite soils, based on dispersion and deposition processes. The projected 99% reduction in Facility-wide air emissions of "GenX compounds" (as defined in the Consent Order) will significantly reduce continuing contribution to offsite surface soil and associated concentrations are expected to attenuate over time. Offsite residents, farmers, gardeners, and workers are assumed to be directly exposed to surface soil via incidental ingestion and dermal contact. As described in Section 8.3.1, dermal absorption studies with HFPO-DA indicate exposure via the dermal pathway is unlikely to be significant

(DuPont-25292, 2008); as such, dermal exposure to surface soil is discussed as part of the uncertainty assessment. Soil intake by offsite commercial workers is likely to be lower than that of other offsite populations (e.g., residents, farmers, and gardeners); therefore, offsite worker exposure to soil is qualitatively evaluated in the uncertainty assessment based on the results of receptors with greater exposure potential.

- Offsite Subsurface Soil. Table 3+PFAS present in offsite subsurface soils originate from aerial deposition followed by downward infiltration through the vadose zone (unsaturated zone). For most receptors, the potential for direct exposure to subsurface soil is incomplete and, relative to surface soil, would likely be insignificant. Therefore, surface soil conditions are relevant to informing risk management decisions. As such, direct contact with subsurface soil is semi-quantitatively evaluated as component of the SLEA uncertainty assessment.
- Offsite Groundwater. Table 3+ PFAS present in offsite groundwater originate from historically-deposited PFAS which have infiltrated from soils to groundwater. Table 3+ PFAS have been detected in groundwater used for drinking water in private wells within the vicinity of the Facility. Offsite residents, farmers, gardeners, and workers using well water for potable purposes are assumed to be exposed to historically-deposited PFAS via ingestion and dermal contact. Due to their limited dermal absorption efficiency (see Section 8.3.1), exposure to PFAS in water via dermal contact is considered an insignificant exposure pathway and, therefore, associated intake is qualitatively evaluated as a component of the uncertainty assessment. Irrigation-related contact represents a significantly lessened degree of exposure when compared to more frequent drinking water use. Thus, irrigation-related exposures are qualitatively evaluated as a component of the uncertainty assessment.
- Surface Water. Table 3+ PFAS present in offsite surface water, excluding Willis Creek and the Cape Fear River, stem from offsite aerial deposition, precipitation runoff, and groundwater discharge at the groundwater-surface water interface transporting historically-deposited PFAS to surface water bodies. Willis Creek and the Cape Fear River also include contributions from onsite, direct release sources (e.g., outfalls). Recreationalists have the potential to be exposed to Table 3+ PFAS in surface water (e.g., ponds and creeks near the Facility, Cape Fear River) via incidental ingestion and dermal contact (e.g., swimming, canoeing). Approximately 8 and 55 miles downstream of the Facility, respectively, surface water from the Cape Fear River is withdrawn and treated for use as drinking water at the Bladen Bluffs and Kings Bluff water treatment facilities. Offsite residents, farmers, gardeners, and workers are assumed to use

untreated Cape Fear River water collected from the intake points for potable purposes and, therefore, are assumed to be exposed to Table 3+ PFAS via ingestion and dermal contact. As with well water exposure scenarios, dermal contact intakes for surface water as a function of domestic water supply are insignificant and are qualitatively evaluated in the uncertainty assessment. Offsite worker exposure to surface water as drinking water is also qualitatively evaluated.

- Terrestrial Biota. Invertebrates and other terrestrial biota may potentially assimilate PFAS from soil or, in the case of plants, from soil, pore water, and wet and dry deposited particulates, by extension. As such, farmers and gardeners are assumed to be indirectly exposed to Table 3+ PFAS via consumption of plants and livestock. The SLEA quantitatively evaluates plant intake using biouptake models from the USEPA (2005); other consumable terrestrial biota (i.e., agricultural livestock and game species) are qualitatively evaluated as part of the uncertainty assessment.
- Fish Tissue. Aquatic species in the Cape Fear River and surrounding surface water bodies (e.g., local ponds) may assimilate PFAS from sediment, surface water, or food/prey items. As such, recreational anglers are assumed to be indirectly exposed to Table 3+ PFAS via consumption of fish fillets.

3.3 Complete Exposure Pathways

Receptor-exposure scenarios developed for the SLEA to quantitatively evaluate intake of historically-released Table 3+ PFAS from soil, homegrown produce, untreated well water, untreated surface water, and fish tissue are summarized below. For the well water-as-drinking water scenarios, a “current conditions” exposure was also quantified, which considered the requirements of the Consent Order for providing replacement drinking water and treatment systems. As noted above, these exposure pathways are assumed to be complete for the purposes of the SLEA but some or all related exposure pathways may be incomplete for an actual offsite receptor. For example, the SLEA assumes gardeners and farmers only consume fruits and vegetables that are homegrown whereas, in reality, most people also (or exclusively) consume store-brought fruits and vegetables grown in a variety of locations.

- Residents (Adult and Child): Surface soil via incidental ingestion; untreated well water as drinking water via ingestion; current conditions well water as drinking water via ingestion; and untreated Cape Fear River surface water from Bladen and Kings Bluff as drinking water via ingestion. Soil and drinking water exposure assumptions for residents are presented in Attachment F, Table F-2-1.

- Farmers (Adult and Child): Surface soil via incidental ingestion; untreated well water as drinking water via ingestion; current conditions well water as drinking water via ingestion; and, aboveground leafy vegetables (e.g., lettuce), aboveground fruits (e.g., tomatoes), and belowground vegetables (e.g., carrots) via ingestion. Soil, produce, and drinking water exposure assumptions for farmers are presented in Attachment F, Table F-2-2.

- Gardeners (Adult and Child): Surface soil via incidental ingestion; untreated well water as drinking water via ingestion; current conditions well water as drinking water via ingestion; and, aboveground leafy vegetables (e.g., lettuce), aboveground fruits (e.g., tomatoes), and belowground vegetables (e.g., carrots) via ingestion. Soil, produce, and drinking water exposure assumptions for gardeners are presented in Attachment F, Table F-2-3.

- Recreationalists (Adult and Child): Untreated surface water via incidental ingestion. Surface water exposure assumptions for recreationalists are presented in Attachment F, Table F-2-4.

- Recreational Anglers (Adult and Child): Fish tissue fillets via ingestion. Fish consumption exposure assumptions for Recreational Anglers are presented in Attachment F, Table F-2-5.

Additionally, the uncertainty assessment (Section 8.3.1) includes a qualitative or semi-quantitative evaluation of Table 3+ PFAS intake for: (i) direct exposure to subsurface soil by residents, farmers, and gardeners; (ii) use of groundwater as irrigation water by farmers and gardeners; (iii) consumption of livestock by farmers; (iv) direct exposure to surface soil and use of untreated well water and surface water as drinking water by offsite workers; and (v) dermal contact with soil, groundwater, and surface water by relevant receptors.

4 IDENTIFICATION OF OFFSITE EXPOSURE UNITS

The selection of SLEA exposure units (EUs) was premised on the concept that, based on aerial dispersion and deposition as well as direct discharge of waste and process waters, concentrations of Table 3+ PFAS in environmental media are likely to attenuate with distance from the Facility, particularly for well water and soil which are the primary offsite exposure media of interest. As such, the offsite study area was conceptualized as three concentric circles originating from the approximate center-point of the Facility that correspond to radial distances of 2.5, 5, and 10 km. These concentric circles were then bisected north-to-south and east-to-west to subdivide the offsite study area into northeast, southeast, southwest, and northwest quadrants. Additionally, the northeast direction quadrant corresponds to the dominant wind direction (ERM, 2018) and the EUs that comprise this quadrant (EUs 1, 5, and 9) capture the areas of likely highest historical aerial deposition to soil. Therefore, as shown in Figure 3, the upland EUs evaluated in the SLEA are:

- EU1: 2.5-km radius, northeast;
- EU2: 2.5-km radius, southeast;
- EU3: 2.5-km radius, southwest;
- EU4: 2.5-km radius, northwest;
- EU5: 5-km radius, northeast;
- EU6: 5-km radius, southeast;
- EU7: 5-km radius, southwest;
- EU8: 5-km radius, northwest;
- EU9: 10-km radius, northeast;
- EU10: 10-km radius, southeast;
- EU11: 10-km radius, southwest; and
- EU12: 10-km radius, northwest.

The Cape Fear River was also subdivided into multiple EUs, where:

- EU13: upstream locations;
- EU14: Facility-adjacent locations;
- EU15: locations approximately 4 miles downstream of the Facility;

- EU16: locations approximately 8 miles downstream of the Facility at Bladen Bluffs; and
- EU17: locations approximately 55 miles downstream of the Facility at Kings Bluffs.

Additionally, two ponds were designated as EUs:

- EU18: Pond 1 located in the northwest corner of the Facility; and
- EU19: Pond B located approximately 1 mile east-southeast of the Facility, on the east side of the Cape Fear River.

For each upland EU (EU1 through EU12), exposure to surface soil, untreated well water, current conditions well water (i.e., in consideration of the Consent Order requirements for replacement drinking water and treatment systems), and produce is quantitatively evaluated. For each Cape Fear River EU and the two Pond EUs, exposure to surface water is quantitatively evaluated. Fish tissue consumption is quantitatively at the Cape Fear River EUs 13 through 16 and onsite Pond 1 (EU18); fish tissue was not collected at Kings Bluffs (EU17) or offsite Pond B (EU19). Additionally, residential consumption of untreated surface water collected at the public water supply intakes located at Bladen Bluffs and Kings Bluffs, is quantitatively evaluated within the context of the SLEA.

5 ENVIRONMENTAL DATASETS AND EPCS

This section describes the SLEA datasets and EPC calculation methods. Media-specific EPCs are used to quantify intake as described in Section 7.

Analytical datasets evaluated in the SLEA are presented in Appendix B. Datasets for soil and fish tissue consist of samples collected between July and September 2019 per the SLEA Work Plan (Geosyntec 2019e). The dataset for surface water consists of samples collected between September 2017 and October 2019, including data collected per the SLEA Work Plan and downstream data reported by the NCDEQ and CFPUA. The SLEA relies upon well water data collected as part of ongoing offsite monitoring, using recent data collected between 2017 and 2019 to quantify potential intake.

EPCs were calculated on an EU-specific basis. When possible, EPCs based on the mean and 95% UCL concentrations are evaluated to provide a range of potential intake estimates where these EPCs are referred to herein as the central tendency exposure (CTE) and reasonable maximum exposure (RME), respectively. The mean and UCL concentrations were calculated using ProUCL Version 5.1; ProUCL outputs are provided as Appendix C. Media-specific considerations for EPC calculation are discussed in the subsections below.

5.1 Soil

The SLEA characterizes potential Table 3+ PFAS intake from exposure to offsite soil using data collected between July and September 2019. The goal of the soil sampling investigation was to characterize regional soil conditions in surficial and subsurface depth intervals for each of the 12 EUs, defined in Section 4 (Figure 3). The EUs were arrayed by quadrant and proximity, extending to a distance of 10 km from the approximate center-point of the Facility such that they range in size and include units that are very large (e.g., EUs 9, 10, 11, and 12). Soil datasets are described in Section 5.1.1. Soil EPCs are described in Section 5.1.2.

5.1.1 Soil Data

Surface soil is defined as 0 to 6 inches below ground surface (bgs). Surface soil sampling was conducted in consideration of ITRC's incremental sampling methodology (ISM), NCDEQ's recommendations for collecting composite soil samples from large areas without visible contamination (NCDEQ, 2015), and accessibility. In each EU, 30 discrete soil aliquots were collected and aggregated into a single composite sample submitted for laboratory analysis that is considered representative of the EU. A composite sampling approach was selected because it enables a more complete assessment of a large study area where discrete sampling was impractical (e.g., representativeness, coverage, schedule). The resulting EPC is considered characteristic of regional conditions and exposures within a given EU; however, as discussed further in the uncertainty assessment, it is acknowledged that composite sample EPCs may not be representative of a specific receptor's exposure.

Prior to field mobilization and in consideration of ISM guidance, each EU was gridded via ordinary or area-of-influence kriging to define 30 random sampling locations, or nodes. Areas that the project team knew to be inaccessible were excluded from the grid. Additional modifications to the sampling locations were necessary in the field due to access limitations, including lack of property owner consent, health and safety concerns, and physical barriers to access (e.g., dense vegetation). As a result, most sampling locations were selected in the field. Due to access limitations in the field, the majority of private property-based locations were excluded through potential lack of consent. Chemours was able to secure access to public rights-of-way through the NC Department of Transportation. As a result, some EUs reflect right-of-way-only data sampling locations. Sampling locations were recorded via global positioning system and are shown in Figure 4.

Surface soil aliquots were collected from 0 to 6-inches bgs using stainless steel bowls and spoons. Consistent with the SLEA Work Plan, individual surface soil sample aliquots were collected from 30 locations in each EU and were homogenized in the field and composited into a single sample for laboratory analysis, for a total of 12 surface soil samples. Subsurface soil samples were collected from a depth of 4 to 4.5 feet bgs using stainless steel hand augers. One discrete subsurface soil sample was collected from each EU for a total of 12 subsurface soil samples. In EUs 5, 7 and 8, the subsurface sampling location was selected at random from the 30 surface sampling locations. For the remaining EUs, collection of the subsurface soil sample was coordinated with installation of a groundwater monitoring well. For these EUs, the subsurface soil grab sample was preferentially collected from the borehole (and so is not paired with a discrete surface soil aliquot represented in the composite sample). In any case, for each EU, 30 surface soil aliquots were composited into one sample for laboratory analysis and one discrete subsurface soil sample was submitted for laboratory analysis.

Although the subsurface soil sample is a discrete grab sample, there are no significant concerns in comparison to the composite-based surface soil sample, on an individual EU basis. Subsurface soil direct contact is not a basis for quantitative evaluation in the exposure assessment, as the potential for direct contact exposure is significantly reduced when compared to surface soil complete exposure pathways. The subsurface soil sample provides an indication of the significance of vadose zone leaching potential but is not a significant line of evidence for use in predicting groundwater concentrations, as direct measurements in groundwater are available. As such, the subsurface soil data are not used to quantitatively assess leaching to groundwater.

Field personnel collected quality assurance/quality control (QA/QC) samples (i.e., duplicates, matrix spikes/matrix spike duplicates, and equipment blanks); however, in the interests of performing this SLEA in a timeframe capable of supporting the development of a CAP by December 31, 2019, replicate samples were not collected.

Composited surface soil samples and discrete subsurface soil samples were shipped under chain of custody to a TestAmerica analytical laboratory for analysis of Table 3+ PFAS per the SOP.

In Figure 4, surface soil sampling locations are shown, grouped by EU and presented in uniform color. Subsurface soil sampling locations are shown in white, irrespective of EU. As discussed above, 30 individual surface soil aliquots were composited into one composite sample for laboratory analysis. In three EUs (EUs 5, 7 and 8), Chemours collected a subsurface soil sample (4-4.5 ft bgs), co-located with a surface soil aliquot; these locations are designated by a crosshatched white circle in Figure 4. For the remaining EUs, Chemours collected a discrete subsurface soil sample (4-4.5 ft bgs), based on access, clearance, and the installation of a groundwater monitoring well. Specific sampling location outcomes are discussed, below:

- EU1: 2.5-km radius, Northeast Quadrant. Thirty surface soil aliquots were collected. Based on access restrictions in offsite areas, sampling coverage in EU1 was evenly split between three residential properties adjacent to Marsh Wood Lake and a public access roadway in the eastern portion of the EU. Fifteen surface soil samples were collected in the southeast corner of this EU, along a public roadway. Fifteen additional samples were collected from three private residential yards (five samples per residence) located adjacent to Marsh Wood Lake. A discrete subsurface soil sample (4-4.5 ft bgs) was collected from one of these residences, coincident with the installation of a monitoring well. The predominant air depositional pattern extends from the Facility to the northeast. The three residences adjacent to Marsh Wood Lake occur along this vector. A lower potential for deposition is associated with the sampling points in the southeast corner of EU1, providing a mix of representative soil conditions. The central area of EU1 is not well represented by the existing dataset, owing to access restrictions. A total of 31 soil samples were collected from 31 locations within this EU.
- EU2: 2.5-km radius, Southeast Quadrant. Thirty surface soil aliquots were collected. Based on access restrictions in offsite areas, sampling coverage is constrained in EU2 but can be considered complete, extending across the EU. One discrete subsurface soil sample (4-4.5 ft bgs) was collected coincident with a

monitoring well installation, located at the approximate midpoint of the EU. A total of 31 samples were collected from 31 locations within this EU.

- EU3: 2.5-km radius, Southwest Quadrant. Thirty surface soil aliquots were collected. Targeting public access roadways, sampling coverage in offsite areas is constrained in EU3 but can be considered complete, extending across the EU. One discrete subsurface soil sample (4-4.5 ft bgs) was collected coincident with a monitoring well installation, located in the northwest quadrant of the EU. A total of 31 samples were collected from 31 locations within this EU.
- EU4: 2.5-km radius, Northwest Quadrant. Thirty surface soil aliquots were collected. Targeting public access roadways, sampling coverage is in offsite areas is constrained in EU4 but can be considered complete, extending across the EU. One discrete subsurface soil sample (4-4.5 ft bgs) was collected coincident with a monitoring well installation, located in the northeast quadrant of the EU. A total of 31 samples were collected from 31 locations within this EU.
- EU5: 5-km radius, Northeast Quadrant. Thirty surface soil aliquots were collected. Targeting public access roadways, sampling coverage is in offsite areas is fairly well distributed across the EU and can be considered complete. One discrete subsurface soil sample (4-4.5 ft bgs) was collected coincident with a surface soil sample aliquot, located on the southern border of the EU. A total of 31 samples were collected from 30 locations within this EU.
- EU6: 5-km radius, Southeast Quadrant. Thirty surface soil aliquots were collected. Targeting public access roadways, sampling coverage is in offsite areas is constrained to the eastern and western areas of the EU, with the central area largely unaddressed. Nonetheless, the existing characterization is considered complete, and representative of conditions radiating from the source. One discrete subsurface soil sample (4-4.5 ft bgs) was collected coincident with a monitoring well installation, located in the northwest quadrant of the EU. A total of 31 samples were collected from 31 locations within this EU.
- EU7: 5-km radius, Southwest Quadrant. Thirty surface soil aliquots were collected. Targeting public access roadways, sampling coverage is in offsite areas is well distributed and can be considered complete in EU8, extending throughout the EU. One co-located subsurface soil sample (4-4.5 ft bgs) was collected coincident with a surface soil aliquot location, located in the southeast quadrant of the EU. A total of 31 samples were collected from 30 locations within this EU.
- EU8: 5-km radius, Northwest Quadrant. Thirty surface soil aliquots were collected. Targeting public access roadways, sampling coverage is in offsite areas is well distributed and can be considered complete in EU7, extending throughout

the EU. One co-located subsurface soil sample (4-4.5 ft bgs) was collected coincident with a surface soil aliquot location, located on the southeast border of the EU. A total of 31 samples were collected from 30 locations within this EU.

- EU9: 10-km radius, Northeast Quadrant. Thirty surface soil aliquots were collected. Targeting public access roadways, sampling coverage is in offsite areas is fairly well distributed across the EU and can be considered complete. One discrete subsurface soil sample (4-4.5 ft bgs) was collected coincident with a monitoring well installation, located in the northwest quadrant of the EU. A total of 31 samples were collected from 31 locations within this EU.
- EU10: 10-km radius, Southeast Quadrant. Thirty surface soil aliquots were collected. Targeting public access roadways, sampling coverage is in offsite areas is fairly well distributed across the EU and can be considered complete. One discrete subsurface soil sample (4-4.5 ft bgs) was collected coincident with a monitoring well installation, located in the central area of the EU. A total of 31 samples were collected from 31 locations within this EU.
- EU11: 10-km radius, Southwest Quadrant. Thirty surface soil aliquots were collected. Targeting public access roadways, sampling coverage is in offsite areas is fairly well distributed across the EU and can be considered complete. One discrete subsurface soil sample (4-4.5 ft bgs) was collected coincident with a monitoring well installation, located in the southeast quadrant of the EU. A total of 31 samples were collected from 31 locations within this EU.
- EU12: 10-km radius, Northwest Quadrant. Thirty surface soil aliquots were collected. Targeting public access roadways, sampling coverage is in offsite areas is fairly well distributed across the EU and can be considered complete. One discrete subsurface soil sample (4-4.5 ft bgs) was collected coincident with a monitoring well installation, located in the central area of the EU. A total of 31 samples were collected from 31 locations within this EU.

5.1.2 Soil EPCs

One composite surface soil sample and one discrete subsurface soil sample were collected from each upland EU. Hence, soil CTE and RME EPCs are equivalent to single sample, maximum detected concentrations. Soil EPCs are summarized in Table F-3-1.

Of the 20 Table 3+ constituents, only two were detected in soil – HFPO-DA, which was detected in two surface and three subsurface samples, and perfluoro(3,5-dioxahexanoic) acid (PFO2HxA), which was detected in two surface samples and one subsurface sample.

As discussed above, subsurface soil data are not used in the intake characterization or provisional hazard characterization. However, potential intake of Table 3+ PFAS in subsurface soil is discussed as part of the uncertainty assessment.

5.2 Well Water

The SLEA assesses untreated well water as drinking water, via domestic water usage, based on available data in the upland EUs (i.e., EU1 through EU12). As part of the Consent Order implementation, Chemours is required to offer replacement drinking water (in the form of public water or whole building filtration systems) when private wells have HFPO-DA detected above 140 ng/L. When any individual PFAS listed in Consent Order Attachment C exceeds 10 ng/L or when total PFAS listed in Consent Order Attachment C exceed 70 ng/L, Chemours is required to offer residents or other persons up to three under-the-sink reverse osmosis drinking water systems. Chemours is required to offer temporary replacement water supplies (i.e., bottled water) to residents or other persons qualifying for a filtration or reverse osmosis system until these systems have been provided. Hence, untreated well water data are not representative of current conditions and results in SLEA intake and hazard estimates that are conservative (i.e., health protective). Therefore, the SLEA also includes a "current conditions" evaluation based on drinking water concentrations of 10 ng/L of HFPO-DA and 70 ng/L of total PFAS. These assumed current conditions concentrations represent the maximum concentrations where the Consent Order does not require treatment. However, even this evaluation likely overestimates EU-wide intake and hazard as PFAS are uniformly reported as non-detect in household drinking water where filtration or under-the-sink reverse osmosis drinking water systems have been provided by Chemours.

The untreated well water datasets are described in Section 5.2.1. Untreated well water EPCs are described in Section 5.2.2.

5.2.1 Well Water Data

The SLEA characterizes potential intake of Consent Order Attachment C PFAS[9] from drinking water using untreated data collected from offsite private drinking water wells samples (i.e., mid- and post- filtration results were excluded). PFAS analytical groundwater data for evaluation in the SLEA were compiled from the Chemours Locus Environmental Information Management system (EIM), which includes a large dataset

[9] Well water samples collected as part of ongoing monitoring are analyzed for the 10 Table 3+ PFAS compounds specified in Attachment C of the Consent Order. Table F-1 identifies the target analytes associated with each SOP.

of well data from the offsite study area (over 1,000 wells), particularly for downgradient wells located north of the Facility.

Offsite private drinking water wells are screened in both the Surficial and Black Creek Aquifers, based on a review of resident-reported well depths and offsite geological well records retrieved from www.ncwater.org. There were 55 wells with lithology and geophysical data available in the vicinity of the Facility. These wells were sampled for up to 48 PFAS compounds using various analytical laboratories and methods and not all Table 3+ PFAS were analyzed in each sample.

Locations of the wells sampled in 2017 and 2019, which were included in the SLEA, are presented in Figure 5.

5.2.2 Well Water EPCs

For each well, only the most recent sampling data for Table 3+ analytes were evaluated in the SLEA. Where duplicate data exists for a well/analyte pair, the highest concentration result was retained for analysis. Data were segregated by EU prior to EPC calculation. A mean and 95% UCL concentration were calculated to represent the CTE and RME EPCs, respectively, for each EU using ProUCL Version 5.1 (USEPA, 2015a); if ProUCL could not reliably calculate a UCL or the recommended UCL exceeded the maximum detected concentration, the maximum detected concentration was selected as the RME EPC. ProUCL output is provided in Appendix C.

Untreated well water EPCs are presented in Appendix F, Table F-3-2. Of the 11 Table 3+ constituents listed on Attachment C and analyzed for in untreated well water, nine (9) were detected in at least one EU. Generally, concentrations in EUs 1 through 4 are higher than those in other EUs, indicating an attenuation of concentrations with distance from the Facility, which is consistent with the CSM. Additional spatial analysis of well data is presented in the Paragraph 19 *On and Offsite Assessment Report* (Geosyntec, 2019c).

5.3 <u>Surface Water</u>

The SLEA characterizes potential PFAS intake from surface water using data collected between 2017 and 2019, as described below. Surface water data were used to calculate EPCs for recreational swimming exposure conditions for four locations in the Cape Fear River, one onsite pond, and one offsite pond. Cape Fear River EPCs were developed for untreated surface water samples collected upstream, adjacent to, and downstream of the Facility, and used to evaluate recreational exposure. Cape Fear River EPCs were also developed for untreated downstream surface water collected from public supply intakes at Bladen Bluffs and Kings Bluffs to conservatively evaluate potable use exposure. EPCs representative of local ponds were developed on a pond-specific basis; only recreational exposures (e.g., fishing, swimming) were evaluated for the ponds. Surface water datasets are described in Section 5.3.1. Surface water EPCs are described in Section 5.3.2.

5.3.1 Surface Water Data

The SLEA considered surface water data collected from the locations shown in Figure 7 during the following sampling events:

- September 2017 Local Program surface water sampling conducted per the *Cape Fear River Surface Water Sampling Plan* (Parsons, 2017a);
- May 2018 Local Program surface water sampling conducted per the *Additional Cape Fear River Surface Water Sampling Plan* (Geosyntec, 2018a);
- June 2018 Regional Program surface water sampling conducted per the *Addendum to Additional Cape Fear River Surface Water Sampling Plan* (Geosyntec, 2018b);
- October and December 2018 Post-Florence surface water sampling conducted per the *Post Hurricane Florence Sampling Plan* (Geosyntec, 2018c);
- Spring (February, May, and June) 2019 surface water sampling conducted per the *Seeps and Creeks Investigation Report* (Geosyntec, 2019b); and
- Summer 2019 SLEA surface water sampling conducted per the *SLEA Work Plan* (Geosyntec, 2019e).

Results of pre-SLEA sampling events were reported in: C*ape Fear River Surface Water Sampling Memorandum* (Parsons, 2017b); *Assessment of the Chemical and Spatial Distribution of PFAS in the Cape Fear River* (Geosyntec, 2018d); and *Post Hurricane Florence PFAS Characterization Report* (Geosyntec, 2018e). A summary of these sampling events is provided below.

Local sampling programs conducted by Parsons in September 2017 and May 2018 focused on portions of the Cape Fear River directly upstream, adjacent to, and downstream of the Facility (Geosyntec, 2018d). The associated surface water sampling locations along the Cape Fear River included Cape Fear River-01 (CFR-01) through CFR-09. At each surface water sampling location, four samples were collected along an east-west transect to assess the lateral and vertical concentration distributions in the Cape Rear River (Figure 6)[10]. Samples collected in the September 2017 and May 2018 events

[10] Transect samples are: (i) West, located 25% of the distance across the channel from the west shore, 1-foot below water surface; (ii) Center Top, located in the middle of the channel, 1-foot below water surface; (iii) Center Middle, located in the middle of the channel, halfway between surface and river bottom; and (iv) East, located 25% of the distance across the channel from the east shore, 1-foot below water surface.

were analyzed for perfluorinated carboxylic acids, perfluorosulfonic acids, and HFPO-DA (Geosyntec, 2018d).

A regional sampling program was performed in June 2018 by Parsons to characterize PFAS distribution from the confluence of the Deep and Haw Rivers [River Mile (RM)-0] to the Kings Bluff Intake Canal, where the City of Wilmington and the Counties of Pender and Brunswick draw water (RM-132). A total of 16 surface water samples were collected from discrete locations along the Cape Fear River. To the greatest extent practicable, samples were collected from the middle depth of the water column at the thalweg, i.e., the deepest portion of the river channel. The associated sample names indicate the miles from the start of the Cape Fear River and are denoted by RM-X. Samples were analyzed according to Method 8321, Method 537, and Method Table 3 SOP (the Table 3+ method was not yet developed at the time of analysis). Some Regional Program sampling locations are co-located with those from the Local Program sampling locations, for example RM-66/CFR-01 and RM-76/CFR-05 (Geosyntec, 2018d).

An assessment was conducted in October and December of 2018 to assess the effect of Hurricane Florence on the distribution of PFAS in the river (Geosyntec, 2018c). As part of the assessment, the following five (5) surface water samples were collected from the middle of the Cape Fear River: three upstream locations (RM-60, CFR-03, RM-76) and two downstream locations (RM-83 and RM-132). Samples were analyzed according to Method 537, Method Table 3 SOP, as well as Method Table 3+ SOP by the Chemours Fluoroproducts Analytical Group.

In the spring of 2019, 14 additional samples were collected from the middle of the Cape Fear River at RM-56, RM-68, RM-76, RM-84, and RM-132 (the last two locations correspond to the intakes for Bladen and Kings Bluffs, respectively). Samples were analyzed according to Method 537 Modified and Method Table 3+ SOP.

In support of the SLEA, additional surface water samples were collected in July and September 2019 from the Cape Fear River (EU14), an onsite pond (EU18 "Pond 1"), and an offsite pond (EU19 "Pond B"). At CFR-04 and CFR-07, four (4) samples were collected along an east-west transect as described in the SLEA Work Plan (Geosyntec, 2019e). Four (4) surface water samples were collected from onsite "Pond 1" located in the northwest portion of the Facility. Three (3) surface water samples were collected from offsite "Pond B" located 1 mile east of the Facility (east of the Cape Fear River). Surface water samples using a peristaltic pump, new dedicated high-density polyethylene (HDPE) tubing, and dedicated silicone tubing for the pump head at each location. In the Cape Fear River, the tubing was lowered to the Work Plan-specified sampling depth below the water surface using an anchor weight and the tubing positioned to point upwards; in the ponds, the tubing was lowered to the approximate middle depth of the surface water column. Surface water was pumped directly from submerged tubing through a peristaltic pump into new 250-milliliter HDPE bottles. Samples were shipped on ice via chain of custody for analysis via Method Table 3+ SOP (Table 1).

Finally, additional untreated (raw) surface water data from public intakes located at Bladen Bluffs and Kings Bluffs were obtained from a NCDEQ website[11] and from the Cape Fear Public Utility Authority (CFPUA) website[12], respectively.

5.3.2 Surface Water EPCs

Surface water data were segregated as follows to develop EPCs representative of recreational exposure at the following EUs:

- EU13, Cape Fear River Upstream: CFR-01/RM-66, CFR-02, CFR-03, RM-56, RM-60, and RM-68;
- EU14, Cape Fear River Facility-adjacent: CFR-04, CFR-05/RM-76, CFR-06, and CFR-07;
- EU15, Cape Fear River Downstream (4 Miles): CFR-09;
- EU16, Cape Fear River Downstream (8 Miles): RM-84, CFR-BLADEN, and NCDEQ Bladen Bluffs raw (untreated) water data;
- EU17, Cape Fear River Downstream (55 Miles): RM-132, CFR-KINGS, and CFPUA Sweeney raw (untreated) water data;
- EU18, Pond 1 (onsite): Pond-1-SE, Pond-1-NE, and Pond-1-NW; and
- EU19, Pond B (offsite): Pond-B-West, Pond-B-East, and Pond-B-South.

Surface water data were segregated as follows to develop EPCs representative of potential potable use:

- EU16, Cape Fear River Downstream (8 Miles): NCDEQ Bladen Bluffs raw (untreated) water data; and
- EU17, Cape Fear River Downstream (55 Miles): CFPUA Sweeney raw (untreated) water data.

The surface water dataset includes samples collected between July 2017 and October 2019. Data were reviewed to identify potential seasonal or annual concentration trends. Concentrations were variable but no trends were apparent. As such, 2017 to 2019 river water data were compiled for each EU to develop recreational use EPCs. Additionally, at Bladen and Kings Bluffs, which correspond to public water supply intake points, water

---

[11] https://deq.nc.gov/news/key-issues/genx-investigation
[12] https://www.cfpua.org/692/Drinking-Water-Quality

data reported by the NCDEQ for 2017 and CFPUA for 2018 and 2019 were used to develop potable use EPCs.

EPCs for the CTE and RME scenarios correspond to mean and 95% UCLs, respectively. Within the available historical datasets, detection limits were often not reported. As such, non-detect results were excluded rather than replaced with a surrogate value (e.g., zero or a more recent RL) to retain the conservative nature of the SLEA. To maintain consistency between EPC calculation methods for surface water, only detected values were used at each EU.

Surface water EPCs for the Cape Fear River, onsite pond, and offsite pond sampling locations are presented in Appendix F, Table F-3-4.

5.4 Fish

The SLEA characterizes potential intake of Table 3+ PFAS from recreational fish consumption using tissue samples collected between July and September 2019. Fish collection locations are shown in Figure 7 and color-coded by genus. Fish tissue data are described in Section 5.4.1. Fish tissue EPCs are described in Section 5.4.2.

5.4.1 Fish Tissue Data

In support of the SLEA, fish fillets were collected from five sampling points within the Cape Fear River: (i) 10 miles upstream of the Facility (RM-68) at EU13, which, relative to the distance from the Facility, far exceeds the expected home range for recreational sport fish targeted by local anglers (Lewis and Flickinger, 1967); (ii) adjacent to the Facility (CFR-05 and CFR-06) at EU14, (iii) 4 miles downstream of the Facility (CFR-09) at EU15, and (iv) 8 miles downstream of the Facility (Bladen Bluffs) at EU16. Fish fillets were also collected from onsite Pond 1 (EU18). Fish were not collected from Kings Bluffs (EU17), which is 55 miles downstream, or offsite Pond B (EU19), which is stocked with fish by the private owner.

Fish were collected by traditional rod-and-reel methods. Fish selected for chemical analysis were filleted in the field and fish fillets (i.e., muscle tissue) were preserved on ice and submitted to TestAmerica under chain of custody for analysis of PFAS per the Table 3+ SOP. Species selected for chemical analysis are summarized below by sampling location.

- EU13, Cape Fear River Upstream (RM-68). Five (5) fillet samples were collected from the upstream EU. One sample was collected from each of the following specimens: one flathead catfish (*Pylodictis olivaris*), one channel catfish (*Ictalurus punctatus*), one blue catfish (*Ictalurus furcatus*), and two largemouth bass (*Micropterus salmoides*). HFPO-DA and Table 3+ PFAS were not detected in EU13 fish fillet samples.

- EU14, Cape Fear River Facility-adjacent (CFR-06 and CFR-07). Seven (7) fillet samples were collected adjacent to the Facility. One sample was collected from each of the following specimens: one flathead catfish, one channel catfish, four blue catfish, and one largemouth bass. HFPO-DA was not detected at CFR-06 or CFR-07. Table 3+ PFAS were not detected in with the exception of perfluoromethoxypropyl carboxylic acid (PMPA) in three samples and perfluoro(3,5,7,9-tetraoxadecanoic) acid (PFO4DA) in one sample. Relative to the Huske Dam, four (4) specimens were collected upstream and three (3) were collected downstream. Based on these samples, the presence of the dam does not appear to be influencing fillet concentrations; therefore, for the purposes of SLEA EPC calculation, these samples were grouped together.
- EU15, Cape Fear River Downstream (CFR-09). Three (3) fillet samples were collected from CFR-09, which is located approximately 4 miles downstream of the Facility. One sample was collected from a largemouth bass and two samples were collected from blue catfish (separate specimens). HFPO-DA was not detected in the CFR-09 samples. PMPA was detected in one sample and PFO4DA was detected in two samples.
- EU16, Cape Fear River Downstream, Bladen Bluffs. Eight (8) fillet samples were collected from the Bladen Bluffs EU, which is located approximately 8 miles downstream of the Facility. One sample was collected from each of the following specimens: one bluegill sunfish (*Lepomis macrochirus*), one channel catfish, one largemouth bass, and five redbreasted sunfish (*Lepomis auratus*). Target PFAS were detected in six of the eight samples. perfluoro-1-methoxyacetic acid (PFMOAA) was the most frequently detected PFAS, with reported detections in five samples. HFPO-DA was detected in three samples and PFO4DA, perfluoro-3,5,7,9,11-pentaoxadodecanoic acid (PFO5DA), and R-EVE were detected in one sample each.
- EU18, Onsite Pond 1. Three (3) fish fillet samples were collected from onsite Pond 1. These samples were collected from three largemouth bass. HFPO-DA and Table 3+ PFAS were not detected in two of the three samples. In the third sample, PFO4DA and PMPA were detected.

In total, six (6) Table 3+ PFAS were detected in fish fillets. Concentrations were reviewed to identify potential concentration trends. Four of the six detected PFAS were only detected in samples collected from Bladen Bluffs, including HFPO-DA. PFO4DA was detected in onsite Pond 1, Facility-adjacent, and downstream samples; the highest concentration was reported at Bladen Bluffs and it exceeded onsite and Facility-adjacent concentrations by two or more orders of magnitude. PMPA was detected in onsite Pond 1, Facility-adjacent, and CFR-09 samples but not Bladen Bluffs samples; no concentration gradient was apparent for the detections. Detections occurred in multiple species and inspection of the data did not indicate a relationship to trophic level.

5.4.2 Fish Tissue EPCs

EPCs for the CTE and RME scenarios generally correspond to mean and 95% UCL concentrations calculated in ProUCL, respectively. However, based on the limited number of detections, EU-specific UCLs could not be calculated for some PFAS. In these instances, EPCs for the RME scenario correspond to maximum detected concentrations.

Fish fillet EPCs for the Cape Fear River and Pond 1 sampling locations are presented in Appendix F, Table F-3-5.

5.5 Homegrown Produce

5.5.1 Homegrown Produce Data

Due to seasonal limitations, harvest-ready produce could not be collected in the vicinity of the Facility. As such, the SLEA characterizes intake of Table 3+ PFAS from homegrown produce consumption using modeled concentrations in aboveground leafy vegetables (e.g., lettuce), aboveground fruits (e.g., tomatoes), and belowground vegetables (e.g., carrots).

5.5.2 Homegrown Produce EPCs

Produce EPCs were estimated using equations presented in the USEPA's 2005 *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (HHRAP). These equations consider bioconcentration of HFPO-DA from surface soil (via root uptake) and air (via particulate deposition and absorption). The produce exposure assessment is limited to HFPO-DA based upon its reliance on physicochemical parameters for modeling plant biouptake and Facility-specific deposition data. The HHRAP equations, inputs, and outputs are presented in Appendix E and discussed below.

Study area-specific inputs to the HHRAP equations are limited to surface soil EPCs and particulate emission and deposition rates; otherwise, inputs are based on USEPA recommendations or the primary literature. Surface soil EPCs, which are presented in Table F-4-1, were derived from data collected in September and October 2019 (i.e., per the SLEA Work Plan); soil EPCs were combined with the bioconcentration factors derived in Table E-1 to estimate produce EPCs as a result of root uptake. As with soil, a single EPC is used for the CTE and RME produce exposure estimates (Table F-4-5).

Particulate emission and deposition rates were developed from a regional deposition model developed by Chemours for emissions of HFPO-DA from both point and fugitive sources identified at the Facility. The eight (8) sources include the Vinyl Ethers North

Division, Vinyl Ethers South, and PPA Process Stacks and associated fugitive emissions, as well as the Polymers Process and Semi-Works Process Stacks. The deposition model used the latest versions of the regulatory dispersion model and supporting programs of AERMOD (version 1621r), AERMAP (version 11103), and BPIP (version 04274), and local meteorological data collected from 2012 through 2016 that was pre-processed for AERMOD by the NCDEQ. Chemours previously presented the deposition modeling results in the 2018 document, *Modeling Report: HFPO-DA Atmospheric Deposition and Screening Groundwater Effects, Fayetteville Works Facility, Fayetteville, NC* (ERM, 2018).

For the purposes of the SLEA and to focus the CAP on future conditions, the model was refined to account for planned stack emissions control measures, including a thermal oxidizer, that will reduce aerial HFPO-DA emissions by 99% starting in January 2020 compared to 2017 baseline, and expected comparable reductions for other PFAS. Wet and dry deposition flux estimates for HFPO-DA were extracted from the refined model for multiple points within each EU. Using these data, an average and maximum flux were calculated (Table E-1 of Appendix E). The average and maximum flux estimates were combined with the projected 2020 Facility-wide emissions rate for HFPO-DA (Table D-1 of Appendix D).

5.6 Data Quality

Analytical data were reviewed using the Data Verification Module (DVM) within the EIM system, which is a commercial software program used to manage data. Following the DVM process, a manual review of the data was conducted. The DVM and manual review results were combined in a data review narrative report for each set of sample results, which is consistent with Stage 2b of the USEPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (USEPA, 2009). The narrative report summarizes which samples were qualified (if any), the specific reasons for the qualification, and any potential bias in reported results. The data usability, in view of the project's data quality objectives (DQOs), was assessed and the data were entered into the EIM system. The data were evaluated by the DVM against the following data usability checks:

- Hold time criteria;
- Field and laboratory blank contamination;
- Completeness of QA/QC samples;
- Matrix spike/matrix spike duplicate recoveries and the relative percent differences (RPDs) between these spikes;
- Laboratory control sample/control sample duplicate recoveries and the RPD between these spikes;

- Surrogate spike recoveries for organic analyses; and
- RPD between field duplicate sample pairs.

Results are presented in Appendix B with validator flags. The "J" and "UJ" flagged results indicate usable data, which should be considered as quantitatively estimated. In other words, the results are not necessarily within the laboratory's criteria for accuracy and precision of the test method employed, but in the reviewer's professional judgment are usable. Laboratory reports and data review narratives for drinking water samples collected prior to the Consent Order were included in reports prepared by Parsons (Parsons, 2017c, 2018 a, b); for samples collected after the Consent Order, the information is submitted electronically to NCDEQ on a routine basis. Laboratory reports and data review narratives for other media are provided as Appendix E to the Ecological SLEA (Geosyntec, 2019f).

6 INTAKE CHARACTERIZATION

Intake of PFAS was quantified as an average daily intake (ADI), expressed in units of milligrams of constituent per kilogram of body weight per day (mg/kg-day). Intake was calculated for each route and then summed by exposure medium (e.g., soil, drinking water). Total intakes for each receptor from relevant exposure media in a given EU were also calculated. For residents, farmers, gardeners, and recreationalists, two age groups were considered: a child age 0 to 6 years and an aggregated, age-adjusted child/adult receptor, reflective of 0 to 26 years of age.

6.1 Intake Equations and Inputs

The equations used to calculate intake are based on USEPA guidance, including the *Risk Assessment Guidance for Superfund* (USEPA, 1989); and the *Regional Screening Levels User's Guide* (USEPA, 2019a). Intake assumptions were developed based on USEPA guidance, including the *Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors* and associated updates (USEPA, 2014; 2015b) and the *Exposure Factors Handbook* and associated updates (USEPA, 2011; 2017; 2018b, c; 2019b). Receptor-specific inputs and equations are presented in Appendix F, Tables F-2-1 through F-2-5. EPCs are presented in Appendix F, Tables F-3-1 through F-3-5.

6.2 Intake Characterization Results

Tables F-4-1 through F-4-10 of Appendix F present the PFAS-specific intake calculations for each receptor-EU combination. Intake of total Table 3+ PFAS (i.e., the sum of detected Table 3+ PFAS) is presented in Table F-5-1 (upland EUs), Table F-5-2 (Cape Fear River and pond EUs), and Table F-5-3 (Cape Fear River surface water intake points). The intakes are summarized below, focusing on the RME exposure scenario.

As described in the Section 1 of this SLEA, the results of the intake characterization should be reviewed in consideration of the following:

- The SLEA drinking water intake estimates in EU1 through EU12 are initially calculated based on untreated well water which, in many cases, is not representative of current drinking water conditions. While ingestion of untreated well water as drinking water is the most significant complete intake pathway and contributor to hazard, Consent Order Attachment C PFAS are uniformly reported as non-detect in household drinking water where filtration or under-the-sink reverse osmosis drinking water systems have been provided by Chemours. Hence, the SLEA intake estimates based on untreated well water are conservative relative to current conditions.

- Chemours is taking action to reduce air emissions of PFAS from the Facility, including installation of a Thermal Oxidizer that will dramatically reduce aerial PFAS emissions from the Site, with reduction of aerial HFPO-DA emissions by 99% starting in January 2020 compared to 2017 baseline, and expected comparable reductions for other PFAS. With a reduction in air emissions, associated soil and groundwater concentrations (and, by extension, well water) will attenuate over time, as will contributions to other receiving media, such as surface water and recreational fish species.

6.2.1 Upland EUs

The results of the intake characterization for residents, farmers, and gardeners potentially exposed to Table 3+ PFAS in soil, homegrown produce, and untreated drinking water are summarized in Table F-5-1. Across all upland EUs (i.e., EU1 through EU12) for CTE and RME exposure scenarios, drinking water consumption, assuming untreated drinking water, accounted for 97% or more of total intake.

The RME range of intake estimates for each exposure medium was as follows:

- Untreated Well Water: 6.1E-06 to 4.7E-04 mg/kg-day
- Homegrown Produce: 7.7E-16 to 6.2E-06 mg/kg-day
- Surface Soil: 1.4E-09 to 6.3E-08 mg/kg-day

As discussed throughout this document, the use of untreated well water to calculate domestic use substantially overstates the current potential for exposure on a population and individual basis. The sum of RME EPCs for Table 3+ PFAS listed on Attachment C in untreated well water ranged from approximately 180 ng/L to 9,500 ng/L whereas under current conditions and per the requirements of the Consent Order, concentrations in the monitoring well network are presumed to range from non-detect (i.e., where treatment systems were installed) to 70 ng/L (i.e., the maximum concentration for which a treatment system would not be required by the Consent Order).

Table F-5-1 includes an RME intake estimate based on a PFAS concentration of 70 ng/L, which is the maximum EPC for drinking water wells in EU1 through EU12 that is reasonably anticipated under current conditions. The range of intakes under this assumed current conditions scenario was as follows (but may be as low as zero):

- Current Conditions Well Water: 2.4E-06 to 3.5E-06 mg/kg-day

6.2.2 Cape Fear River and Pond EUs

The results of the intake characterization for recreationalists potentially exposed to Table 3+ PFAS in surface water and fish tissue fillets from the Cape Fear River, onsite Pond 1, and offsite Pond B are summarized in Table F-5-2. The lowest intakes were associated with the upstream EU where Table 3+ PFAS were not detected in fish tissue. The highest intakes were associated with consumption of fish caught at Bladen Bluffs.

The range of RME intake for Facility-adjacent and near-downstream EUs (i.e., excluding Bladen and Kings Bluff) for each exposure medium was as follows:

- Surface Water: 7.3E-08 to 3.1E-06 mg/kg-day
- Fish Fillets: 1.1E-07 to 2.1E-06 mg/kg-day

The range of RME intake for Bladen and Kings Bluffs for each exposure medium was as follows:

- Surface Water: 1.1E-07 to 7.4E-07 mg/kg-day
- Fish Fillets (Bladen Bluff): 2.7E-05 to 4.7E-05 mg/kg-day

The contribution from fish and surface water to total intake varied by EU, and apparent differences may be attributable to the low number of detections, differences in detection capabilities for surface water and animal tissue, and the exclusion of non-detect results from the surface water EPC calculations (see Section 8.2.4).

6.2.3 Surface Water Intake Points

The results of the intake characterization for residents potentially exposed to HFPO-DA in untreated surface water at the public supply intake points at Bladen Bluffs (EU16) and Kings Bluffs (EU17) are summarized in Table F-5-3. These data were reported by NCDEQ and CFPUA. Total intake of HFPO-DA from residential consumption of untreated river water from Bladen Bluffs was approximately an order of magnitude higher than intake from Kings Bluffs. Of the Table 3+ compounds, only HFPO-DA was analyzed for at Bladen Bluffs and nine Table 3+ compounds were analyzed for at Kings Bluffs; as such, a total PFAS intake comparison could not be made between the two EUs. The range of RME intakes was as follows:

- Bladen Bluffs (HFPO-DA): 1.2E-05 to 1.8E-05 mg/kg-day
- Kings Bluffs (HFPO-DA): 6.4E-07 to 9.2E-07 mg/kg-day
- Kings Bluffs (Table 3+ PFAS): 3.5E-06 to 5.0E-06 mg/kg-day

7 PROVISIONAL HAZARD CHARACTERIZATION

The purpose of the SLEA is to assess which complete exposure pathways of Table 3+ PFAS are likely the most significant contributors of overall human exposure on a regional basis. The relative ranking of exposures resulting from the SLEA can be used to inform risk management decisions and exclude pathways that, albeit potentially complete, are insignificant relative to overall exposure potential.

In addition to providing a relative ranking of exposure pathways, the estimated intakes of HFPO-DA were also used to calculate provisional quantitative estimates of potential hazard. The hazard characterization is limited to an assessment of HFPO-DA based on the current availability of toxicity criteria, which are described in Section 7.1. The methods used to quantify potential hazard are described Section 7.2. The results of the provisional hazard characterization are presented in Section 7.3.

7.1 HFPO-DA Toxicity Criteria

The SLEA provisional hazard characterization is based on the RfDo of 1E-04 mg/kg-day adopted by the NC DHHS. There are other published values available that may better reflect the toxicological profile of HFPO-DA but a detailed evaluation of the uncertainties associated with these values is outside the scope and objectives of the SLEA. Therefore, the SLEA relies upon the determination from the NC DHHS that, in a regulatory context, the RfDo is protective of human health. Because regulatory risk assessment generally "errs on the side of caution," it must be reiterated that this (or any) RfDo is not predictive of an actual health outcome. The RfDo is described further below.

The USEPA defines an RfDo as "An estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. It can be derived from a [no-observed-adverse-effect level] NOAEL, [low-observed-adverse-effect level] LOAEL, or benchmark dose, with uncertainty factors generally applied to reflect limitations of the data used. Generally used in USEPA's non-cancer health assessments."

To calculate the RfDo, NC DHHS considered seven repeat oral dose studies in rodents of 28 days or longer that were provided by Chemours/DuPont during the USEPA Toxic Substances Control Act (TSCA) review process (NC DHHS, 2018) in derivation of the RfDo. These repeat oral dose studies are preferred to single-dose studies as they are more likely to be applicable to long-term human exposure; however, they are subchronic whereas chronic studies, generally defined as 6 months to a lifetime, are preferred. The NC DHHS consulted with toxicologists and risk assessors at USEPA, the National Institute of Environmental Health Sciences, and the Agency for Toxic Substances and

Disease Registry to identify applicable toxicology information and risk assessment procedures.

The NC DHHS utilized a NOAEL of 0.1 mg/kg-day for liver toxicity endpoints from two subchronic studies in mice (a 28-day study and a reproductive screen) as a point of departure (POD) for calculation of the RfDo. These sub-chronic studies were chosen as the critical studies because they demonstrate adverse effects at the lowest doses tested and associations were evident across multiple studies at the same or similar doses.

The NC DHHS used default uncertainty factors (UFs) recommended by the USEPA to derive their RfDo from the POD. The NC DHHS did not apply a modifying factor (MF) because NOAELs from multiple studies were identical, or within the same order of magnitude, with similar health endpoints (liver toxicity). Additionally, NC DHHS staff concluded that the UFs discussed below adequately addressed the uncertainties of the database. The following default UFs were applied to the POD to derive the RfDo:

- Sub-chronic to chronic uncertainty factor (UF_S): A factor of 10 to account for the uncertainty involved in extrapolating from less than chronic NOAELs to chronic NOAELs;
- Interspecies uncertainty factor (UF_A): A factor of 10 to account for the uncertainty involved in extrapolating from animal data to humans; and,
- Intraspecies uncertainty factor (UF_H): A factor of 10 to account for the variation in sensitivity among the members of the human population

Alternate HFPO-DA RfDo values are available and include a USEPA provisional value and values available from the primary, peer-reviewed literature. Consideration of readily available alternatives and their associated uncertainty are discussed further in Section 8.4.

Additionally, per Paragraph 14 of the Consent Order, Chemours is performing studies to provide both human health and ecological toxicity information for select PFAS, including PFMOAA, PMPA, PFO2HxA, perfluoroethoxypropyl carboxylic acid (PEPA) and Byproduct 2 (PFESA-BP2). These studies are described in the Toxicity Study Workplan (Chemours, 2019) and are anticipated to be completed in 2022.

7.2 Hazard Characterization Methods

There are presently neither federal nor state regulatory standards for HFPO-DA in water, soil, air, or food. As discussed in above, the provisional hazard characterization is predicated on the current RfDo developed by the NC DHHS of 1E-04 mg/kg-day. Using this RfDo, a hazard quotient (HQ) for HFPO-DA was calculated as follows for each receptor-media-EU combination:

$$HQ = ADI \div RfD_o$$

where:

- HQ = Hazard quotient (unitless)
- ADI = Receptor-specific average daily intake of HFPO-DA (mg/kg-day)
- RfDo = Oral reference dose (hazard per mg/kg body weight-day)

Total intake of HFPO-DA was summed across relevant media prior to calculating HQs. An HQ greater than 1 was used as the benchmark for identifying potential human health hazard. Consistent with USEPA Region 4 guidance for conducting human health risk assessments, HQs were rounded to one significant figure (USEPA, 2018d).

7.3 Hazard Characterization Results

Table F-6-1 presents the preliminary hazard characterization for intake of soil, produce, and untreated drinking water at upland EUs 1 through 12. Calculated HQs were less than 1 for the upland receptor exposure scenarios evaluated in the SLEA, indicating potential HFPO-DA exposure is unlikely to pose a hazard to residents, farmers, or gardeners, even in the absence of drinking water treatment. Outside of EU1, the potential hazard from untreated well water consumption accounted for 96% or more of total hazard for each receptor. At EU1, untreated well water consumption accounted for over 99% of the residential intake but only 84% (CTE) to 92% (RME) of the gardener and farmer intake; consumption of homegrown produce accounted for most of the remainder, with soil intake being insignificant.

As stated previously, the use of untreated well water to calculate domestic use substantially overstates the population's potential exposure, as treatment systems provided by Chemours have substantially reduced PFAS in drinking water. Table F-6-1 also presents HQ estimates based on an assumption of 10 ng/L of HFPO-DA in drinking water, which is the maximum concentration in well water that would not require a treatment system. Total HQs for assumed current conditions range from 0.003 to 0.07 and, hence are more than an order of magnitude below unity (1). This indicates that HFPO-DA in soil, produce, and well water in the vicinity of the Facility do not pose a hazard to resident, farmer, or gardener populations under current conditions.

Table F-6-2 presents the preliminary hazard characterization for intake of surface water and fish tissue from the Cape Fear River (10 miles upstream, Facility-adjacent, 4 miles downstream, 8 miles downstream, 55 miles downstream), onsite Pond 1, and offsite Pond B. Calculated HQs were less than 1 for the receptor exposure scenarios evaluated in the SLEA, indicating potential HFPO-DA exposure in the Cape Fear River does not pose a hazard to recreationalist populations. The highest HQs (0.08 to 0.1) are driven by consumption of fish from the downstream EU16 at Bladen Bluffs; otherwise, HQs were less than 0.01, indicating surface water and fish tissue do not pose a hazard to recreationalist populations under current conditions.

Table F-6-3 presents the preliminary hazard characterization for domestic use intakes of Cape Fear River untreated surface water collected from the public supply intake points at Bladen Bluffs (EU16) and Kings Bluffs (EU17). Calculated HQs (0.006 to 0.1) were less than 1 for the receptor exposure scenarios evaluated in the SLEA, indicating potential HFPO-DA exposure in untreated surface water at the Bladen Bluffs and Kings Bluff intake points within the Cape Fear River does not pose a hazard to residential consumers under current conditions.

Table F-7, which is also duplicated as Table 3 for presentation purposes, presents a summary of Total 3+ PFAS and HFPO-DA intake estimates as well as projected HFPO-DA provisional hazard estimates, by EU under CTE and RME conditions. For the RME scenario, calculated intakes and HQs for upland receptors are presented for untreated well water concentrations as well as assumed current conditions; current conditions incorporate an assumption of 10 ng/L HFPO-DA and 70 ng/L total PFAS in untreated groundwater to address the scenario where no drinking water treatment may have been required. Intake and HQ estimates are only presented for the maximum-exposed receptor which is an offsite child gardener, offsite child recreationalist, or offsite child resident. Utilizing the NC DHHS RfDo, individual HQs are less than 1, even in the absence of drinking water treatment, indicating HFPO-DA does not pose a hazard to offsite populations. The conclusion of no hazard for receptors in the upland EUs is further supported by the current conditions HQs which are more than an order of magnitude less than 1 and may be as low as zero.

8 UNCERTAINTY ASSESSMENT

This section discusses uncertainties in the SLEA that may materially impact the understanding of exposure, estimates of intake, and quantitative point estimates of hazard for HFPO-DA. Uncertainties are inherent in the process of quantifying exposure (and hazard) due to the use of environmental sampling results, assumptions regarding receptor behavior, and the quantitative representation of chemical toxicity. Therefore, assumptions used in the HH-SLEA aimed to provide additional conservatism where there was significant uncertainty. Analysis of the critical areas of uncertainty in an assessment provides context for interpreting the quantitative results and better informs risk management decisions.

8.1 Uncertainty in Laboratory Analytical Data

8.1.1 Detection Limits

For groundwater and surface water, the reporting limits (RLs) for Table 3+ PFAS ranged from 2 to 10 ng/L. These concentrations are below the State's provisional health goal for HFPO-DA in drinking water of 140 ng/L[13]. Therefore, the method is sufficiently sensitive for this characterization of HFPO-DA drinking water and recreational direct exposure scenarios.

Methods for analyzing HFPO-DA are sufficiently sensitive to estimate exposures compared to the NC DHHS HFPO-DA RfDo. While the methods are sensitive enough to evaluate exposures compared to the NC DHHS HFPO-DA RfDo, there are presently neither federal nor state regulatory standards for HFPO-DA in water, soil, air, or food. Hence, there is uncertainty with the ability of laboratory analytical limits to detect PFAS at concentrations that may pose a potential human health hazard. The RLs for Table 3+ PFAS ranged from 500 to 550 ng/kg for Method 537 (HFPO-DA only) and 1,000 to 1,200 ng/kg for the Table 3+ Method (20 PFAS). For fish tissue, RLs for Table 3+ PFAS ranged from 1,000 to 1,200 ng/kg. Based on the maximum RL and default child resident and recreational angler exposure assumptions, the estimated PFAS intake from soil and fish fillets would be 1E-08 and 4E-07 mg/kg-day, respectively. These intake estimates are several orders of magnitude below the NC DHHS RfDo of 1E-04 mg/kg-day. Therefore, the HFPO-DA method is sufficiently sensitive based on the NC DHHS HFPO-DA RfDo.

[13] The NC DHHS provisional health goal assumes an individual receives 80% of the acceptable dose (i.e., the RfDo) via other sources, such as food. Hence, the provisional health goal was determined such that intake via drinking water does not exceed 20% of the RfDo. These source contribution estimates are default assumptions and not supported by empirical data. The contribution of HFPO-DA from other sources is likely less than 80% such that concentrations greater than 140 ng/L would also be protective of human health.

Although there is not a current expectation that other Table 3+ PFAS could be orders of magnitude more potent than HFPO-DA, uncertainty associated with RLs remains unresolved pending additional toxicological information.

8.2 Uncertainty in Exposure Point Concentrations

The SLEA was prepared to provide a screening-level evaluation of intake on a regional basis. As such, the EPCs evaluated herein are not representative of a specific exposure point. Rather, they were calculated on an EU-basis and reflect the variability within a given EU. EPC uncertainty is discussed below by environmental contact medium. For all media evaluated herein, the calculated EPCs are considered conservative, i.e., health-protective, relative to future conditions as attenuation of concentrations in all contact media is expected over time based on the implementation of recent and imminent Facility emissions control technologies.

8.2.1 Soil Exposure Point Concentrations

Uncertainty associated with soil EPCs is primarily associated with the use of composite samples to characterize Table 3+ PFAS within each EU. Composite samples inherently represent an average concentration across an EU. Although various composite sampling methods were considered in the development of the SLEA Work Plan, a simplified compositing approach was implemented in the interest of time and access limitations. The sampling deviated from typical ISM sampling most significantly in that replicate samples were not collected. Replicate samples provide information about concentration variability and can be combined to develop upper-bound estimates on the mean to support alternate EPCs. Although the current composite samples reflect an average of conditions throughout a given EU, these results may also be considered *de facto* maximum detected concentrations (in that they are not averaged with replicates). The lack of variability in these data introduces uncertainty to individual intake estimates and it precludes estimation of confidence bounds around an individual's intake.

Although the lack of variability data introduces uncertainty to the SLEA intake estimates, it is unlikely to affect the overall conclusions for the following reasons:

(i) the SLEA demonstrates that incidental soil ingestion accounts for less than 1% of total intake of Table 3+ PFAS, and consumptive use of untreated well water accounts for over 90% of total intake; and,

(ii) PFAS in groundwater and, subsequently, well water are attributed to leaching from soil and there is likely a correlation in concentration between these media such that, for a given receptor, the ratio of intake from these two sources does not significantly vary. Therefore, uncertainty in soil data does not change the

SLEA conclusion that addressing exposure to PFAS via well water consumption meaningfully reduces overall receptor exposure.

Because the EU-specific EPCs in soil constitute a regional approach to characterization, and do not reflect conditions at one location or residence, there was consideration of aggregating data among EU groupings to characterize broader regional influence, based on predominant dispersion and deposition patterns. The individual EU approach to EPC development yields the most conservative estimates of projected intake and hazard. Combination of EUs 1, 5 and 9 to characterize a broader northeast quadrant yielded lower EPCs. Since none of the individual EU-based EPCs resulted in significant projected hazards, no additional effort was expended to evaluate EU grouping.

8.2.2 Produce Exposure Point Concentrations

Empirical produce data were not available. As such, concentrations in homegrown produce were modeled based on uptake from soil, modeled air emissions, and particulate stack emissions deposition rate data.

The soil-derived concentrations are subject to the data and EPC uncertainties described above. Additionally, the assumed root uptake factors may under- or over-estimate produce concentrations. Key input parameters for these uptake factors are the octanol-water partition coefficient (K_{ow}) and the organic carbon-water partition coefficient (K_{oc}). The K_{ow} value used was developed by Chemours using empirical, site-specific data. The K_{oc} values used in the SLEA were derived from the primary literature and may or may not be applicable to study area conditions. In future use of site specific K_{oc} values which Chemours is developing would reduce uncertainty in estimates. The deposition-derived concentrations are uncertain due to the combination of multiple models (e.g., AERMOD, AERMAP, and BPIP), which are each inherently uncertain.

To evaluate the potential magnitude of uncertainty associated with the homegrown produce EPCs, modeled concentrations were compared to concentrations measured in non-edible grasses collected from the upland EUs to support the Ecological Screening Level Exposure Assessment (Geosyntec, 2019f). Use of the plant uptake models indicated that concentrations in produce due to deposition are insignificant relative to root uptake, with modeled concentrations less than 0.001 ng/kg dry weight (based on 2020 emission and flux estimates). Modeled HFPO-DA concentrations due to root uptake ranged from 49.4 to 357 ng/kg dw in aboveground produce and 2,710 to 19,571 ng/kg dw in belowground produce. Concentrations of HFPO-DA measured in non-edible grass ranged from 1,600 to 171,000 ng/kg dw (Geosyntec, 2019f). It is possible that these grasses represent long-lived species (not annuals) and the measured data in biota represent an artifact of pre-air emission control technology conditions, whereas the modeled air data represent the 2020 reduction goals (a two order-of magnitude improvement). A relationship between soil and vegetation could not be reliably established based on the available data.

Given the range of modeled and measured plant concentrations and uncertainty in the relevance of grass concentrations to edible plants, future measured homegrown produce (i.e., fruit and vegetable) concentrations would provide greater certainty in SLEA results.

8.2.3 Drinking Water Exposure Point Concentrations

Over 1,000 wells have been sampled in the vicinity of the Facility and many wells are sampled regularly as part of ongoing monitoring activities. Thus, the drinking water dataset is robust and calculated statistics (i.e., mean, 95 UCL) are likely reliable. Importantly, the EPCs used herein for the drinking water intake assessment and provisional hazard characterization represent untreated well water. As part of the Consent Order implementation, Chemours is required to offer permanent replacement drinking water (in the form of public water or whole building filtration systems) when private wells have HFPO-DA detected above 140 ng/L. When any individual PFAS listed in Consent Order Attachment C, exceeds 10 ng/L or when total PFAS listed in Consent Order Attachment C exceed 70 ng/L, Chemours is required to offer residents up to three under-the-sink reverse osmosis drinking water systems. Chemours offers temporary replacement water supplies (i.e., bottled water) to residents qualifying for a filtration or reverse osmosis system until these systems have been provided. With the implementation of these systems, post-treatment drinking water (where required for qualifying households) shows no detections of any Table 3+ PFS compounds. With the elimination of pre-treatment well water as the source of domestic drinking water supply, associated hazards are expected to substantially decrease. As summarized in Table 4, the provisional HFPO-DA HQs are substantially lower than those calculated based on untreated well water (i.e., based on current conditions, HFPO-DA HQs are expected to decrease from <1 to <0.1).

8.2.4 Surface Water Exposure Point Concentrations

The primary source of uncertainty associated with surface water EPCs is the transient nature of surface water such that the samples evaluated in the SLEA represent a "snap shot" of conditions that may change seasonally or annually. However, inclusion of data collected in different years at different times of the year reduces the likelihood that EPCs were underestimated.

Unlike other media evaluated in this SLEA, the EPCs for surface water were calculated using only detected concentrations. This approach was selected due to the lack of reporting limits for several historical sample results reported by NCDEQ and CFPUA. In general, exclusion of non-detect results is likely to over-estimate rather than under-estimate EPCs such that the SLEA intake and hazard estimates remain conservative.

There is also uncertainty in the total Table 3+ PFAS intake estimates due to inconsistency in target analytes between locations and dates. For example, NCDEQ's analysis of Bladen Bluffs intake samples was limited to HFPO-DA and the CFPUA's analysis of Kings Bluffs intake samples was limited to nine Table 3+ PFAS (including HFPO-DA). As a result, total Table 3+ PFAS intake may be underestimated for the hypothetical residential surface water-as-drinking water scenarios. For other EUs and non-potable use scenarios, the potential for underestimating total Table 3+ PFAS intake is mitigated by the fact that at least one sample at each EU was analyzed for the 20 Table 3+ PFAS. One exception is EU15 where no surface water samples were collected; however, the results of the intake characterization for the upstream and downstream EUs support that concentrations at EU15 are unlikely to pose a hazard.

Overall, given the low magnitude of the intake estimates (relative to untreated well water) and the NC DHHS RfDo, uncertainties identified above are unlikely to affect the SLEA conclusion that surface water is not a significant source of human exposure for Table 3+ PFAS under current conditions.

8.2.5 Fish Tissue Exposure Point Concentrations

The primary source of uncertainty associated with the fish tissue EPCs is the small size of the dataset and the fact that these data represent a "snap shot" of conditions, which may change seasonally or annually.

From a CSM perspective, the fish tissue data were not particularly informative. No concentration gradient was apparent, and the highest tissue concentrations were measured in samples collected farthest from the Facility, approximately 8 miles downstream at Bladen Bluffs. Given this spatial distribution, it is not possible to draw conclusions about concentrations farther downstream. Future additional fish tissue data from further downstream including near Kings Bluff Intake would refine the assessment of the spatial distribution of these compounds in fish.

Due to the limited number of detections in fish fillets a bioconcentration factor for the surface water-to-fish fillet pathway could not be developed. In fish fillets, the most frequently detected Table 3+ PFAS was PFO4DA, which was detected in samples from onsite Pond 1, the Facility-adjacent samples, CFR-09, and Bladen Bluffs, with the highest concentration reported for Bladen Bluffs. Conversely, PFO4DA was reported as non-detect in Bladen Bluffs surface water samples and no relationship between surface water and fish tissue samples was apparent for the other locations where samples were co-located. Based on these data, surface water could not be used as an indicator of fish tissue concentrations and, hence, there is uncertainty associated with the identity of contributing source(s) of PFAS in fish tissue.

8.3 Uncertainty in the Exposure Assessment

The SLEA was prepared to provide a screening-level evaluation of intake and to rank exposure media based on potential for intake of Table 3+ PFAS. Like any regulatory exposure or risk assessment, the exposures evaluated herein are hypothetical in that they do not represent any actual receptor nor are they predictive of health outcomes.

8.3.1 Uncertainty in Exposure Media and Routes

This section discusses the potential effect of including or excluding certain exposure pathways on the results and conclusions of the SLEA.

Subsurface soil intake was not quantitively evaluated in the SLEA. Rather, the SLEA focused on exposure to surface soil (0-0.5 ft bgs) because there is a greater potential for exposure to surface soil and, based on the presumed source of PFAS in soil (i.e., deposition from air), contamination is likely to attenuate with depth. Given the limited number of detections of PFAS in soil, it is not possible to draw reliable conclusions about attenuation with depth. The available data do not exhibit a consistent pattern with respect to leaching potential or attenuation with depth. At EU1 (the EU associated with the highest probability of influence, based on dispersion and deposition patterns), HFPO-DA exhibits an almost order-of-magnitude reduction with depth. PFO2HxA also attenuates significantly, from 2,300 ng/kg in surface soil to non-detect in subsurface soil. At EU3, HFPO-DA attenuates from 360 ng/kg in surface soil to non-detect at depth. At EU4, PFO2HxA attenuates from 1,400 ng/kg in surface soil to ND in subsurface soil. At EUs 4 and 8, HFPO-DA is reported as non-detect in surface soil, with low detections registering with depth. At EU4, PFO2HxA is reported as non-detect in surface soil and 2,300 ng/kg in subsurface soil. Given that exposure to subsurface soil is likely to occur infrequently, if at all, it is reasonable to conclude that the intake of subsurface soil is more than an order of magnitude lower than intake associated with surface soil and further characterization of subsurface soil is not useful for informing risk management decisions. It is also worth noting that collection of soil samples was constrained to available public access roads and rights-of-way. Considering the need for routine roadwork, including regrading, excavation and fill, although attenuation with depth is a reasonable expectation, non-detect results in surface soil extending to detected concentration at depth should not be surprising.

Worker exposure to environmental media was not quantitatively evaluated given that residential exposures are expected to be greater and, as a result, risk management actions to define remedial goals predicated on residential exposure and potential hazard will also be protective of workers. Based on the provisional hazard characterization, HFPO-DA in surface soil, untreated well water, and untreated surface water is unlikely to pose a hazard to offsite workers.

Dermal contact with soil, drinking water, and surface water by relevant receptors was not quantitatively evaluated because no dermal toxicity criteria have been developed at the federal or state level. Exposure studies indicate dermal uptake in animals is undetectable at low doses typical of environmental exposure and human uptake is more than an order of magnitude lower than animal uptake. For human exposures, dermal exposure is expected to be insignificant relative to ingestion exposure. From a relative ranking perspective and based on the chemico-physical properties of PFAS, dermal absorption from water is likely to be greater than that from soil. Hence, inclusion of the dermal pathway would increase the estimated fraction of total intake that is attributable to drinking water. The increase in intake for HFPO-DA could result in provisional HQs for some RME scenarios that exceed 1; however, the marginal increase would not affect the conclusions of this SLEA.

Use of groundwater as irrigation water by farmers and gardeners was not quantitatively evaluated in the SLEA. For this type of use scenario, receptors are primarily exposed to the irrigation water via dermal contact. As discussed above, dermal absorption of PFAS is likely to be insignificant. Irrigation-specific intake is likely to be significantly less than consumption-based intake such that risk management actions to address potable use exposure and potential hazard will also be protective of other groundwater uses. Irrigation water could also represent a source of PFAS to produce. In future empirical produce data would further refine the certainty of exposure estimates.

Consumption of livestock (pork, beef or chicken muscle tissue or poultry eggs) by farmers was not quantitatively evaluated in the SLEA. Likewise, exposures related to recreational hunting activities (e.g., venison, waterfowl) also were not assessed. Existing studies target either secondary ingestion targets (e.g., liver, rather than muscle tissue) or focus on a different class of compounds (e.g., the ‘C8’ compounds, such as perfluorooctanoic acid [PFOA] and perfluorooctane sulfonate [PFOS]). Since these complete exposure pathways are presumed to occur, future assessments that include these lines of evidence are expected to reduce the uncertainty associated with exposure assessment.

Sediment data were not quantitatively evaluated in the SLEA. For human receptors, sediment exposures, if they occur, are primarily associated with recreationalist populations. Generally, sediment exposures can be considered relative to surface soil exposures. While incidental contact (whether ingestion or dermal contact-based) is generally lower than that associated with surface soil, frequency of exposure is more significantly reduced. Residential contact frequency with surface soil is assessed on the basis of 350 days per year spent at the resident's primary address, while sediment contact for a recreational user is assessed on the basis of 12 events per year. With all other parameter values assumed to be equivalent, sediment contact and intake is related to approximately 3% of that associated with soil. As soil represents only 1% of the total intake for of Table 3+ PFAS for a typical resident (and HIs under the RME condition do not exceed one for any receptor in any EU), sediment exposures are presumed to be below a level of significance capable of eliciting an effect on site or risk management decisions.

Based on bioaccumulative potential, sediments are presumed to have a greater impact on fish tissue concentrations and subsequent recreational fish ingestion by humans. Fish tissue concentrations from local ponds and the Cape Fear River represent direct measurements, influenced by dissolved concentrations as well as incidental sediment ingestion by fish. Therefore, the exposure assessment of human consumption of fish inherently accounts for indirect, food chain-related exposures to constituents in sediment. Given the limited potential for direct contact with sediment and the availability of empirical fish tissue data, the lack of sediment data does not present a significant uncertainty in terms of evaluating direct contact human exposures. However, there is uncertainty in how PFAS move through the environment and concentrate in fish tissue, and sediment data may be informative to characterizing this component of the CSM.

8.3.2 Uncertainty in Exposure Assumptions

Media-specific EPCs were varied for the CTE and RME scenarios evaluated herein but the receptor-specific exposure assumptions were held constant. Exposure assumptions generally corresponded to USEPA default recommended RME values used in the development of USEPA's Regional Screening Levels. The conservatism of the RME scenario was compounded by combining RME exposure assumptions with the 95% UCL EPC and is more likely to over-estimate, rather than under-estimate, exposure and hazard. The use of RME exposure assumptions in the CTE scenario also likely over-estimates exposure and hazard, such that none of the combinations used herein represent a "true" CTE scenario (i.e., one that combines average EPCs with average intake estimates). However, from a ranking perspective, the lack of a true CTE scenario is unlikely to have affected the conclusions of the SLEA because for the driving receptor-exposure scenario (i.e., untreated well water consumption), the range of intakes is relatively narrow.

8.4 Uncertainty in the Hazard Characterization

The hazard characterization was specific to HFPO-DA based on the availability of toxicity criteria (i.e., NC DHHS RfDo). Therefore, cumulative hazards may be underestimated but data are not available to evaluate the overall effect, if any, on the conclusions of the hazard characterization. The lack of toxicity data, however, does not affect the conclusion that untreated drinking water represents the most significant source of potential PFAS exposure and exposures related to drinking water are significantly reduced as a function of Chemours-implemented groundwater treatment measures.

The SLEA provisional hazard characterization for HFPO-DA is based on the RfDo of 1E-04 mg/kg-day adopted by the NC DHHS, which is based on liver toxicity endpoints from two subchronic studies in mice. As described below, the use of this value may under or over-estimate potential HFPO-DA.

There is inherent uncertainty in the use of animal toxicity data to characterize potential human health hazards, and this uncertainty is accounted for by the use of UFs used to derive the RfDo. Because many research groups are working in this area, the RfDo could potentially change as new information becomes available that would suggest a different animal model for perfluoroalkyls toxicity or impact the selection of UFs underpinning derivation of the RfDo.

The toxicological database for PFAS continues to expand and others have used the available data to develop alternative toxicity values. A recent study of HFPO-DA (Thompson, et al., 2019) has proposed an additional, provisional RfDo predicated on chronic studies in rats and benchmark dose modeling using deterministic and probabilistic techniques. Thompson et al. derived a deterministic RfDo of 0.02 mg/kg-day and a more conservative probabilistic RfDo of 0.01 mg/kg-day; by both calculation methods, these RfDo values indicate a lower potency than indicated by the 2017 NC DHHS RfDo. Notably, NC DHHS previously developed an RfDo of 0.01 mg/kg-day, also based on a 2-year chronic rat study. The decrease in the NC DHHS RfDo and divergence from the RfDo values developed by Thompson et al. stems from two key differences:

- Study Duration. Thompson et al., 2019 and the 201y6# NC DHHS RfDo were developed from chronic 2-year chronic animal studies whereas the 2017 NC DHHS RfDo was developed from a subchronic, 28-day animal study. Longer-duration animal studies are more relevant to most human exposure and generally given preference when used to develop toxic potency estimates for humans. The need to incorporate an uncertainty factor to address the subchronic basis of the study results in a ten-fold factor lowering of the resultant RfDo.
- Study Species. Thompson et al., 2019 and the 201# NC DHHS RfDo were developed based on liver effects observed in rats whereas the 2017 NC DHHS RfDo was developed from liver effects observed in mice. Hepatocellular hypertrophy and an increased liver-to-body weight ratio are common findings in rodents but are considered non-adverse and less relevant to humans when there is evidence for peroxisome proliferator-activated receptor alpha (PPARα) activation (USEPA, 2018a). It is generally agreed that humans and nonhuman primates are refractory, or at least significantly less responsive than rodents, to PPARα-

mediated effects (Corton et al., 2014; Klaunig et al., 2003; Maloney and Waxman, 1999). Although mice appear to be the more sensitive species to HFPO-DA based on the observed effect levels, the liver lesions in mice are consistent with PPARα activation and, hence, the observed effects are not relevant to humans.

Table 4 presents a comparison of projected RME hazard indices for the maximally-exposed populations for each EU, predicated on use of the NC DHHS and Thompson RfDo values. Table 4 also includes hazards calculated based on the USEPA draft RfDo (developed using methods similar to NC DHHS) that tend to indicate HFPO-DA has a 25% higher potency than the NC DHHS RfDo. It is notable that under each condition, projected hazard indices are equal to or less than 1, indicating no exceedance of available health benchmarks or of USEPA's threshold for identifying a potential human health hazard, even in the absence of drinking water treatment. There is very little difference between the projected hazard estimates predicated on the NC DHHS and USEPA values, with the USEPA RfDo representing a slightly more conservative value resulting in marginal increases of associated hazard. The Thompson study-based RfDo represents a significant change in associated hazard, with a two order-of-magnitude reduction. If viewed as a bounding estimate along with the NC DHHS-based criterion, it provides for a range of potential hazard to support risk management in consideration of the inherent conservatism incorporated into risk characterization methodologies. Of further note, is the fact that these projected hazard indices represent pre-treatment conditions for drinking water or an assumed concentration of 10 ng/L which is the maximum concentration of HFPO-DA that would not require a treatment system. With the imposition of residential treatment systems in the vicinity of the Facility, PFAS concentrations in well water are substantially reduced such that exposure via the drinking water pathway may be as low as zero.

9 CONCLUSIONS

This section summarizes the SLEA and its results, which are tabulated in Table 3.

The objectives of the SLEA were to develop EPCs for Table 3+ PFAS in offsite environmental media, quantify and rank potential intake from these media for assumed receptor populations, and provide a provisional estimate of potential human health hazard.

Based on the existing CSM and to characterize the regional distribution of PFAS in the vicinity of the Facility, the study area was evaluated on an EU-basis, consisting of 12 upland EUs, five Cape Fear River EUs, one onsite pond EU, and one offsite pond EU. The nature and extent of Table 3+ PFAS in the vicinity of the Facility were characterized using air emission rates, soil, untreated well water, untreated surface water, and fish tissue data collected between 2017 and 2019. Additionally, a current conditions drinking water scenario was evaluated based on the treatment requirements of the Consent Order. Based on current use conditions, the SLEA identifies residents, farmers, and gardeners as exposure populations for the upland EUs; recreationalists as exposure populations for the Cape Fear River and ponds; and residential potable water users as exposure populations for untreated surface water from the Cape Fear River collected at public supply intake points (i.e., Bladen and Kings Bluffs). Potential intake was calculated using RME exposure assumptions and a range of EPCs for each environmental/contact medium. Based on available toxicity data, the intake characterization focuses on ingestion pathways. Although the SLEA focuses on potentially complete exposure pathways, it is important to note that the exposure assumptions do not represent an actual receptor; in reality, some (or all) of these assumed exposure pathways may be incomplete for an actual receptor.

The SLEA identifies untreated well water as the primary source of potential PFAS intake, and hence, exposure. However, even in the absence of treatment, no hazard was identified for offsite resident, gardener, and farmer populations exposed to soil, well water, and produce in the vicinity of the Facility. For residents, intake of PFAS from direct exposure to soil was insignificant relative to the RfDo and in comparison to domestic use of well water. Residential intake of PFAS from untreated well water accounted for greater than 96% of the total intake and was two or more orders of magnitude greater than intake from soil. For gardeners and farmers, the contribution from soil was also insignificant relative to consumption of untreated well water; however, due to a lack of empirical produce data, there is uncertainty in the total intake estimates for farmers and gardeners and in the relative contributions from homegrown produce and untreated drinking water. The modeled produce concentrations and measured non-edible grass concentrations provide a preliminary indication that produce consumption is unlikely to pose a hazard under current conditions and, due to Facility air emissions reductions, the potential for exposure will further decrease in the future. Finally, regardless of the contribution of homegrown produce to potential intake, replacement drinking water and drinking water filtration systems reduces overall exposures and potential hazard to upland receptors.

The SLEA indicated that recreational exposure to surface water and recreational fish consumption is unlikely to be a significant source of PFAS intake and, based on the provisional hazard characterization, HFPO-DA does not pose a human health hazard. The relative contribution of surface water and fish consumption to recreationalists' total intake estimates varied between EUs; no concentration gradient was apparent based on the fish fillet data, no species-specific relationships were apparent, and no correlation to surface water concentration was apparent. Hence, there is uncertainty associated with the bioconcentration mechanisms for fish. It is also notable that the maximum detected PFAS fish tissue concentrations were measured in fish fillet samples collected from the sample point farthest downstream from the Facility (i.e., Bladen Bluffs), indicating there is uncertainty with respect to the spatial distribution of PFAS in the Cape Fear River and impact on fish fillet data.

Under current conditions, no human health hazards from HFPO-DA were identified for consumptive use of untreated surface water from the Bladen and Kings Bluffs public supply intake points.

In summary, the SLEA demonstrates that current concentrations of HFPO-DA in the environment in the vicinity of the Facility are unlikely to pose a hazard to human health, even in the absence of groundwater treatment. The Chemours-provided drinking water treatment systems have effectively reduced Table 3+ PFAS concentrations in residential wells (i.e., the primary source of potential PFAS intake) such that in the vicinity of the Facility, the population's potential for Table 3+ PFAS exposure via domestic water has substantially decreased. Due to Facility air emissions reductions, the potential for exposure to PFAS in environment media will continue to decrease over time.

10 REFERENCES

Chemours, 2019. Chemours' Proposed Toxicity Study Work Plan Pursuant to Paragraph 14 of the Consent Order. Chemours Fayetteville Works. March 27, 2019.

Corton, JC, ML Cunningham, BT Hummer, C Lau, B Meek, JM Peters, J Popp, L Rhomberg, J See, and JE Klaunig, 2014. Mode of Action Framework Analysis for Receptor-Mediated Toxicity: The Peroxisome Proliferator-Activated Receptor alpha (PPARalpha) as a Case Study. *Crit Rev Toxicol*, 44(1): 1–49.

DuPont-25292: E.I. du Pont de Nemours and Company, 2008. *Determination of a Permeability Coefficient (Kp) for H-28308 Using Human and Rat Skin Mounted in an In Vitro Static Diffusion Cell*. Study Completion Date: February 27, 2008.

DuPont-A080558: Du Pont-Mitsui Fluorochemicals Company, Ltd, 2009. *Ready Biodegradability Test of FRD903*. Test guideline not identified. Study conducted by Mitsubishi Chemical Medience Corporation, Yokohama Laboratory, Yokohama, Japan. Study Completion Date: May 25, 2009.

DuPont-A080560: Du Pont-Mitsui Fluorochemicals Company, Ltd, 2009. *Bioconcentration Study of FRD903 with Carp.* Study conducted by Mitsubishi Chemical Medience Corporation, Yokohama Laboratory, Yokohama, Japan. Study Completion Date: June 26, 2009.

ERM, 2018. Modeling Report: HFPO-DA Atmospheric Deposition and Screening Groundwater Effects. April 27, 2018.

Geosyntec, 2018a. Additional Cape Fear River Surface Water Sampling Plan, Chemours Fayetteville Works, North Carolina.

Geosyntec, 2018b. Addendum to Additional Cape Fear River Surface Water Sampling Plan, Chemours Fayetteville Works, North Carolina.

Geosyntec, 2018c. Revised- Post Hurricane Florence Sampling Plan, Chemours Facility Fayetteville Works, North Carolina. October 11, 2018.

Geosyntec, 2018d. Assessment of the Chemical and Spatial Distribution of PFAS in the Cape Fear River. September 17, 2018.

Geosyntec, 2018e. Post Hurricane Florence PFAS Characterization. Onsite/Offsite Surface Water, Groundwater and Soil. April 2019.

Geosyntec, 2019a. Chemours Fayetteville Works Cape Fear River PFAS Mass Loading Model Scope of Work. April 2019.

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

Geosyntec, 2019c. On and Offsite Assessment. Chemours Fayetteville Works. Version 2: October 31, 2019.

Geosyntec, 2019d. Site Associated PFAS Fate and Transport Study. Chemours Fayetteville Works. June 24, 2019.

Geosyntec, 2019e. Offsite Screening Level Exposure Assessment (SLEA) of Site Associated PFAS – Workplan. Chemours Fayetteville Works. July 2019.

Geosyntec, 2019f. Ecological Screening Level Exposure Assessment, Chemours Fayetteville Works. Draft. December 31, 2019.

Goodband, T, 2019. Final Report: 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid: Bioaccumulation in Common Carp (*Cyprinus carpio*): Aqueous Exposure. Chemours Belgium BVBA. March 2019.

Guelfo, JL and CP Higgins, 2013. Subsurface Transport Potential of Perfluoroalkyl Acids at Aqueous Film-forming Foam (AFFF)-impacted Sites. *Environ Sci Technol,* 47(8): 4164-71.

Hassell KL, TL Coggan, T Cresswell, A Kolobaric, K Berry, ND Crosbie, J Blackbeard, VJ Pettigrove, and BO Clarke, 2019. Dietary Uptake and Depuration Kinetics of PFOS, PFOA and GenX in a Benthic Fish. *Environ Toxicol Chem*, https://doi.org/10.1002/etc.4640, 21 November 2019.

Higgins CP and RG Luthy, 2006. Sorption of Perfluorinated Surfactants on Sediments. *Environ Sci Technol,* 40(23): 7251-56.

Hoke, RA, BD Ferrell, TL Sloman, RC Buck, LW Buxton, 2016. Aquatic hazard, bioaccumulation and screening risk assessment for ammonium 2,3,3,3- tetrafluoro-2-(heptafluoropropoxy)-propanoate. *Chemosphere, 149*, 336-42.

Huang S and PR Jaffe, 2019. Defluorination of Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) by Acidimicrobium sp. Strain A6. *Environ Sci Technol,* 53(19): 11410-19.

Kaplan, M.A., 2010. Letter to the USEPA Office of Pollution Prevention and Toxics re: TSCA Review. 8EHQ-06-16436/8EHQ-06-16478. 2010.

Kärrman, A, K Elgh-Dalgren, C Lafossas and T Møskeland, 2011. Environmental Levels and Distribution of Structural Isomers of Perfluoroalkyl Acids After Aqueous Fire-Fighting Foam (AFFF) Contamination. *Environmental Chemistry,* 8(4): 372-380.

Klaunig JE, MA Babich, KP Baetcke, JC Cook, JC Corton, RM David, JG DeLuca, DY Lai, RH McKee, JM Peters, RA Roberts, and PA Fenner-Crisp, 2003. PPARα Agonist-Induced Rodent Tumors: Modes of Action and Human Relevance. *Crit Rev Toxicol*, 33(6): 655-780.

Lewis, WM and S Flickinger, 1967. Home Range Tendency of the Largemouth Bass (*Micropterus salmoides*). *Ecology, 48(6).* 1020-23.

Maloney EK and DJ Waxman, 1999. trans-Activation of PPARalpha and PPARgamma by Structurally Diverse Environmental Chemicals. *Toxicol Appl Pharmacol*, 161(2): 209-18.

Mueller R and V Yingling, 2018. Environmental Fate and Transport for Per- and Polyfluoroalkyl Substances. Interstate Technology Regulatory Council.

NCDEQ (North Carolina Department of Environmental Quality), 2015. *Registered Environmental Consultant Program, Implementation Guidance*. October 2015.

NCDEQ and NC DHHS, 2018. Secretaries' Science Advisory Board *Review of the North Carolina Drinking Water Provisional Health Goal for GenX*, DRAFT. August 29, 2018.

NC DHHS (North Carolina Department of Health and Human Services) (2017). *DHHS Drinking Water Advisory Decision Matrix*. Presented to the NC SAB December 4, 2017. Available at: https://deq.nc.gov/news/hot-topics/genx-investigation/secretaries-science-advisory-board

Pan, Y., Zhang, H., Cui, Q., Sheng, N., Yeung, L., Guo, Y., Sun, Y., and Dai, J. (2017). First Report on the Occurrence and Bioaccumulation of Hexafluoropropylene Oxide Trimer Acid: An Emerging Concern. *Environ Sci Technol,* 51(17): 9553-60.

Parsons, 2014. Final RCRA Facility Investigation Report (Rev. 1). February 2014; Revised August 2014.

Parsons, 2017a. Technical Memorandum. Cape Fear River Surface Water Sampling Plan. 22 September 2017.

Parsons, 2017b. Technical Memorandum. Cape Fear River Surface Water Sampling Memorandum. 3 November 2017.

Parsons, 2017c. Residential Drinking Water Well Surveying Memorandum. Fayetteville Works Facility Fayetteville, North Carolina. 7 November 2017.

Parsons, 2018a. Comprehensive Residential Sampling Through the End of Phase 2. Fayetteville Works Facility Fayetteville, North Carolina. 29 March 2018.

Parsons, May 2018b. Comprehensive Residential Sampling Through March 4, 2018 of Phase 4. Fayetteville Works Facility Fayetteville, North Carolina. May 2018.

Thompson, C, S Fitch, C Ring, W Rish, J Cullen, and L Haws, 2019. Development of an Oral Reference Dose for the Perfluorinated Compound GenX. *J Appl Toxicol*, 39(9): 1267-82.

USEPA (United States Environmental Protection Agency), 1989. *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A), Interim Final*. Office of Emergency and Remedial Response, Washington, DC. EPA/540/1-89/002, December.

USEPA, 1992. *Guidelines for Exposure Assessment.* Risk Assessment Forum, Washington, DC. EPA/600/Z-92/001, May.

USEPA, 2004. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final. Office of Superfund Remediation and Technology Innovation, Washington, DC. EPA/540/R/99/005, OSWER 9285.7-02EP, PB99-963312. July.

USEPA, 2005. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities. September.

USEPA, 2009. Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use. Office of Solid Waste and Emergency Response, Washington, DC. OSWER No. 9200.1-85, EPA 540-R-08-005. January.

USEPA, 2011. *Exposure Factors Handbook: 2011 Edition.* National Center for Environmental Assessment, Office of Research and Development, Washington, DC. EPA/600/R09/052F, September.

USEPA, 2014. *Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors*. Office of Solid Waste and Emergency Response. OSWER Directive 9200.1-120, February.

USEPA, 2015a. ProUCL Version 5.1 Technical Guide. Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations. Prepared by Singh, A. and A.K. Singh. EPA/600/R-07/041, October.

USEPA, 2015b. Frequently Asked Questions (FAQs) About Update of Standard Default Exposure Factors. OSWER Directive 9285.6-03, February 24, 2015.

USEPA, 2016. *Guidelines for Human Exposure Assessment, Peer Review Draft*. Risk Assessment Forum. Washington, DC, January 7.

USEPA, 2017. *Update for Chapter 5 of the Exposure Factors Handbook, Soil and Dust Ingestion*. National Center for Environmental Assessment, Office of Research and Development, Washington, DC. EPA/600/R-17/384F, September.

USEPA, 2018a. Public Comment Draft, Human Health Toxicity Values for Hexafluoropropylene Oxide (HFPO) Dimer Acid and Its Ammonium Salt (CASRN 13252-13-6 and CASRN 62037-80-3). Office of Water, Washington, DC. EPA-823-P-18-001, November.

USEPA, 2018b. *Update for Chapter 9 of the Exposure Factors Handbook, Intake of Fruits and Vegetables*. National Center for Environmental Assessment, Office of Research and Development, Washington, DC. EPA/600/R-18/098F, August.

USEPA, 2018c. *Update for Chapter 11 of the Exposure Factors Handbook, Intake of Meats, Dairy Products, and Fats*. National Center for Environmental Assessment, Office of Research and Development, Washington, DC. EPA/600/R-17/485F, April.

USEPA, 2018d. Region 4 Human Health Risk Assessment Supplemental Guidance. Scientific Support Section, Superfund Division, EPA Region 4. March 2018.

USEPA, 2019a. *Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites*, November. Available at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

USEPA, 2019b. *Update for Chapter 3 of the Exposure Factors Handbook, Ingestion of Water and Other Select Liquids*. National Center for Environmental Assessment, Office of Research and Development, Washington, DC. EPA/600/R-18/259F, February.

Visscher PT, CW Culbertson, and RS Oremland, 1994. Degradation of Trifluoroacetate in Oxic and Anoxic Sediments. *Nature*, 369(6483): 729-31.

Weber AK, LB Barber, DR LeBlanc, EM Sunderland, and CD Vecitis, 2017. Geochemical and Hydrologic Factors Controlling Subsurface Transport of Poly- and Perfluoroalkyl Substances, Cape Cod, Massachusetts. *Environ Sci Technol,* 51(8): 4269-79.

TABLES

TABLE 1
TABLE 3+PFAS EVALUATED IN THE SLEA
Chemours Fayetteville Works, North Carolina

Chemical Abbreviation	Chemical Name	Chemical Formula	Consent Order Constituent	Table 3+ Constituent
HFPO-DA	Hexafluoropropylene oxide dimer acid	C6HF11O3	X	X
PEPA	Perfluoroethoxypropyl carboxylic acid	C5HF9O3	X	X
PFECA-G	Perfluoro-4-isopropoxybutanoic acid	C12H9F9O3S	X	X
PFMOAA	Perfluoro-2-methoxyaceticacid	C3HF5O3	X	X
PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	C4HF7O4	X	X
PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	C5HF9O5	X	X
PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	C6HF11O6	X	X
PMPA	Perfluoromethoxypropyl carboxylic acid	C4HF7O3	X	X
Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	C8H2F14O4		X
EVE Acid	Perflouroethoxypropionic acid	C8HF13O4		X
PFECA B	Perfluoro-3,6-dioxaheptanoic acid	C5HF9O4		X
R-EVE	R-EVE	C8H2F12O5		X
PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	C7HF13O7	X	X
Byproduct 4	Byproduct 4	C7H2F12O6S		X
Byproduct 6	Byproduct 6	C6H2F12O4S		X
Byproduct 5	Byproduct 5	C7H3F11O7S		X
NVHOS	Perflouroethoxysulfonic acid	C4H2F8O4S		X
PES	Perfluoroethoxyethanesulfonic acid	C4HF9O4S		X
PFESA-BP1	Byproduct 1	C7HF13O5S	X	X
PFESA-BP2	Byproduct 2	C7H2F14O5S	X	X

Notes:
CASN - Chemical Abstract Service Number
SLEA - Screening Level Exposure Assessment

TABLE 2
CLASSIFICATION OF TABLE 3+ PFAS
Chemours Fayetteville Works, North Carolina

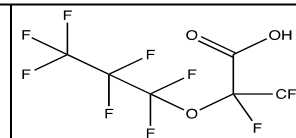
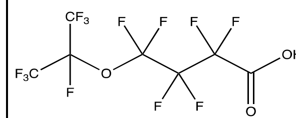
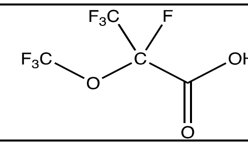
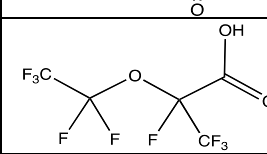
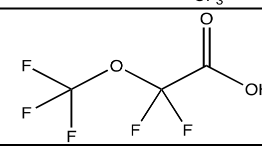
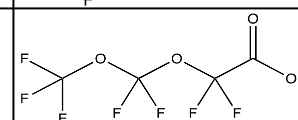
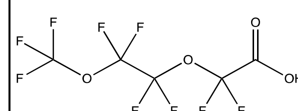
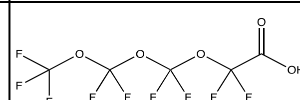
Common Name	Chemical Name	CAS #	Formula	Degree of Fluorination	Ether Bonds	Isomer type	Functional Groups			Diprotic[d]	Structure
							R-C=C[a]	R-CO_2H[b]	R-SO_3H[c]		
Per- and polyfluoroalkyl ether carboxylic acids (PFECAs)											
HFPO-DA	Hexafluoropropylene oxide dimer acid	13252-13-6	$C_6HF_{11}O_3$	Per	1	Branched	--	✓	--	--	
PFECA-G	Perfluoro-4-isopropoxybutanoic acid	801212-59-9	$C_7H_1F_{13}O_1$	Per	1	Branched	--	✓	--	--	
PMPA	Perfluoromethoxypropyl carboxylic acid	13140-29-9	$C_4HF_7O_3$	Per	1	Branched	--	✓	--	--	
PEPA	Perfluoroethoxypropyl carboxylic acid	267239-61-2	$C_5HF_9O_3$	Per	1	Branched	--	✓	--	--	
PFMOAA	Perfluoro-2-methoxyacetic acid	674-13-5	$C_3HF_5O_3$	Per	1	Linear	--	✓	--	--	
PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	39492-88-1	$C_4HF_7O_4$	Per	2	Linear	--	✓	--	--	
PFECA B	Perfluoro-3,6-dioxaheptanoic acid	151772-58-6	$C_5HF_9O_4$	Per	2	Linear	--	✓	--	--	
PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	39492-89-2	$C_5HF_9O_5$	Per	3	Linear	--	✓	--	--	

TABLE 2
CLASSIFICATION OF TABLE 3+ PFAS
Chemours Fayetteville Works, North Carolina

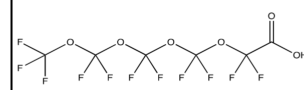
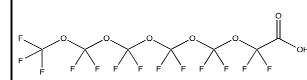
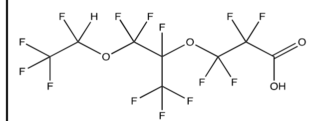
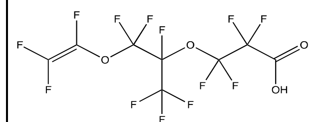
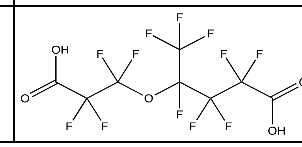
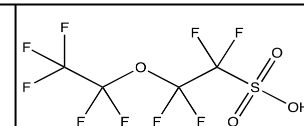
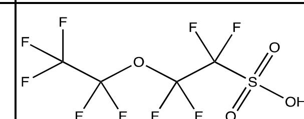
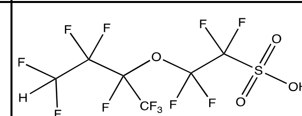
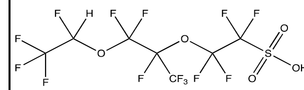
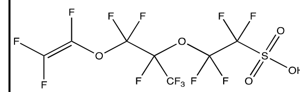
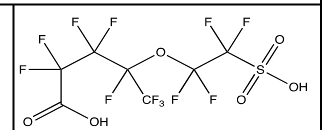
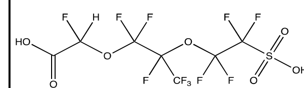
Common Name	Chemical Name	CAS #	Formula	Degree of Fluorination	Ether Bonds	Isomer type	Functional Groups			Diprotic[d]	Structure
							R-C=C[a]	R-CO_2H[b]	R-SO_3H[c]		
PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	39492-90-5	$C_6HF_{11}O_6$	Per	4	Linear	--	✓	--	--	
PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	39492-91-6	$C_7HF_{13}O_7$	Per	5	Linear	--	✓	--	--	
Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	773804-62-9	$C_8H_2F_{14}O_4$	Poly	2	Branched	--	✓	--	--	
EVE Acid	Perfluoroethoxypropionic acid	69087-46-3	$C_8HF_{13}O_4$	Per	2	Branched	✓	✓	--	--	
R-EVE	R-EVE	N/A	$C_8H_2F_{12}O_5$	Per	1	Branched	--	✓	--	✓	
Per- and polyfluoroalkyl ether sulfonic acids (PFESAs)											
PES	Perfluoroethoxyethanesulfonic acid	113507-82-7	$C_4HF_9O_4S$	Per	1	Linear	--	--	✓	--	
NVHOS	Perfluoroethoxysulfonic acid	1132933-86-8	$C_4H_2F_8O_4S$	Poly	1	Linear	--	--	✓	--	
Byproduct 6	Byproduct 6	N/A	$C_6H_2F_{12}O_4S$	Poly	1	Branched	--	--	✓	--	

TABLE 2
CLASSIFICATION OF TABLE 3+ PFAS
Chemours Fayetteville Works, North Carolina

Common Name	Chemical Name	CAS #	Formula	Degree of Fluorination	Ether Bonds	Isomer type	Functional Groups			Diprotic[d]	Structure
							R-C=C[a]	$R-CO_2H$[b]	$R-SO_3H$[c]		
Byproduct 2	Byproduct 2	749836-20-2	$C_7H_2F_{14}O_5S$	Poly	2	Branched	--	--	✓	--	
PFESA-BP1	Byproduct 1	29311-67-9	$C_7HF_{13}O_5S$	Per	2	Branched	✓	--	✓	--	
Per- and polyfluoroalkyl ether sulfonic and carboxylic acids (PFES-CAs)											
Byproduct 4	Byproduct 4	N/A	$C_7H_2F_{12}O_6S$	Per	1	Branched	--	✓	✓	✓	
Byproduct 5	Byproduct 5	N/A	$C_7H_3F_{11}O_7S$	Poly	2	Branched	--	✓	✓	✓	

Notes:
[a] Carbon double bond functional group
[b] Carboxylic acid functional group
[c] Sulfonic acid functional group
[d] Compound with two acid functional groups

TABLE 3
INTAKE CHARACTERIZATION AND PROVISIONAL HAZARD CHARACTERIZATION SUMMARY
Chemours Fayetteville Works, North Carolina

				Relevant Exposure Media with Untreated Drinking Water Data [2]						Relevant Exposure Media with Current Conditions Drinking Water [2]		
				Table 3+ PFAS Intake		HFPO-DA Intake		HFPO-DA Hazard		Table 3+ PFAS Intake	HFPO-DA Intake	HFPO-DA Hazard
Exposure Unit (EU)	EU Description	Receptor [1]	Exposure Media [2]	CTE	RME	CTE	RME	CTE HQ	RME HQ	RME	RME	RME HQ
				mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	unitless	unitless	mg/kg-day	mg/kg-day	unitless
EU1	2.5 km, Northeast	Offsite Child Gardener (Age 0-6)	• Surface Soil • Homegrown Produce • Well Water as Drinking Water	2E-04	5E-04	4E-05	8E-05	0.4	0.8	1E-05	7E-06	0.07
EU2	2.5 km, Southeast			3E-04	4E-04	3E-05	6E-05	0.3	0.6	3E-06	5E-07	0.005
EU3	2.5 km, Southwest			1E-04	2E-04	2E-05	3E-05	0.2	0.3	4E-06	1E-06	0.01
EU4	2.5 km, Northwest			4E-05	5E-05	7E-06	1E-05	0.07	0.1	3E-06	5E-07	0.005
EU5	5 km, Northeast			7E-05	1E-04	2E-05	2E-05	0.2	0.2	4E-06	5E-07	0.005
EU6	5 km, Southeast			3E-05	5E-05	5E-06	9E-06	0.05	0.09	3E-06	5E-07	0.005
EU7	5 km, Southwest			5E-05	7E-05	1E-05	2E-05	0.1	0.2	3E-06	5E-07	0.005
EU8	5 km, Northwest			1E-05	2E-05	3E-06	5E-06	0.03	0.05	3E-06	5E-07	0.005
EU9	10 km, Northeast			2E-05	3E-05	3E-06	5E-06	0.03	0.05	3E-06	5E-07	0.005
EU10	10 km, Southeast			1E-05	2E-05	7E-07	1E-06	0.007	0.01	3E-06	5E-07	0.005
EU11	10 km, Southwest			1E-05	2E-05	2E-06	2E-06	0.02	0.02	3E-06	5E-07	0.005
EU12	10 km, Northwest			8E-06	9E-06	8E-07	1E-06	0.008	0.01	3E-06	5E-07	0.005
EU13	CFR, 10 mi. Upstream	Offsite Child Recreationalist (Age 0-6)	• Surface Water • Fish Tissue Fillets	1E-07	4E-07	5E-09	5E-09	0.00005	0.00005	n/a	n/a	n/a
EU14	CFR, Site-Adjacent			7E-07	1E-06	2E-08	3E-08	0.0002	0.0003	n/a	n/a	n/a
EU15	CFR, 4 mi. Downstream			1E-06	2E-06	ND	ND	ND	ND	n/a	n/a	n/a
EU16	CFR, Bladen Bluffs			1E-05	5E-05	6E-06	1E-05	0.06	0.1	n/a	n/a	n/a
EU17	CFR, Kings Bluffs			1E-07	2E-07	2E-08	2E-08	0.0002	0.0002	n/a	n/a	n/a
EU18	Onsite Pond 1			3E-06	3E-06	7E-07	8E-07	0.007	0.008	n/a	n/a	n/a
EU19	Offsite Pond B			1E-06	1E-06	3E-07	3E-07	0.003	0.003	n/a	n/a	n/a
EU16 (Intake Point)	CFR, Bladen Bluffs	Offsite Child Resident (Age 0-6)	• Untreated CFR Surface Water as Drinking Water	Not Available [3]		9E-06	2E-05	0.09	0.2	n/a	n/a	n/a
EU17 (Intake Point)	CFR, Kings Bluffs			4E-06	5E-06	8E-07	9E-07	0.008	0.009	n/a	n/a	n/a

Notes:

[1] This summary table presents the calculated intakes and HQs for the most sensitive receptor for a given EU scenario.

[2] Intake estimates for EU1 through EU12 were calculated using (1) untreated well water data collected between 2017 and 2019 and (2) based on presumed maximum concentrations under current conditions, which correspond to 70 ng/L for total PFAS and 10 ng/L for HFPO-DA. Hazard estimates for EU1 through EU12 were calculated using (1) untreated well water data collected between 2017 and 2019 and (2) based on a presumed maximum concentration of 10 ng/L for HFPO-DA.

[3] Only HFPO-DA data were available for surface water intake exposure points.

Abbreviations:

"--" - not available/not calculated
n/a - not applicable
CFR - Cape Fear River
CTE - central tendency exposure
EU - Exposure Unit
HFPO-DA - Hexafluoropropylene oxide dimer acid
HQ - hazard quotient
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ND - constituent not detected
RfDo - non-cancer oral reference dose
RME - reasonable maximum exposure
SW - surface water
NC DHHS - North Carolina Department of Health and Human Services

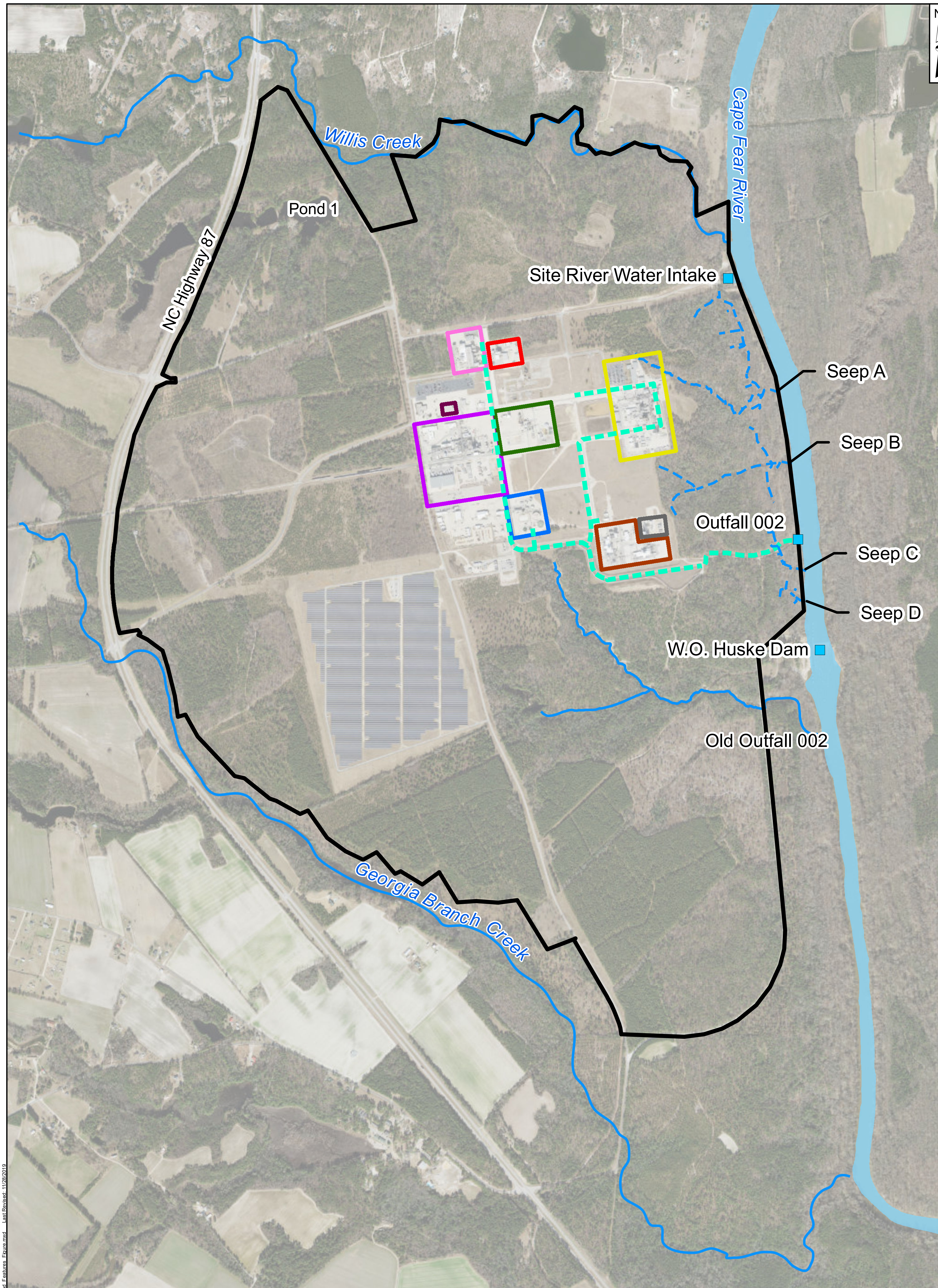
TABLE 4
SUPPLEMENTAL HAZARD CHARACTERIZATION BASED ON ALTERNATIVE RfD VALUES
Chemours Fayetteville Works, North Carolina

			HFPO-DA Intake (mg/kg-day) [2]		HFPO-DA Hazard					
					Untreated Well Water (RME EPC) [3,5]			Current Conditions (10 ng/L) [4,5]		
Exposure Unit (EU)	EU Description	Receptor [1]	Untreated Well Water (RME EPC)	Current Conditions (10 ng/L)	USEPA Draft RfDo = 8.00E-05	NC DHHS RfDo = 1.00E-04	Thompson et al. RfDo = 1.00E-02	USEPA Draft RfDo = 8.00E-05	NC DHHS RfDo = 1.00E-04	Thompson et al. RfDo = 1.00E-02
EU1	2.5 km, Northeast	Offsite Child Gardener (Age 0-6)	8E-05	7E-06	1	0.8	0.008	0.08	0.07	0.0007
EU2	2.5 km, Southeast		6E-05	5E-07	0.7	0.6	0.006	0.006	0.005	0.00005
EU3	2.5 km, Southwest		3E-05	1E-06	0.4	0.3	0.003	0.02	0.01	0.0001
EU4	2.5 km, Northwest		1E-05	5E-07	0.1	0.1	0.001	0.006	0.005	0.00005
EU5	5 km, Northeast		2E-05	5E-07	0.3	0.2	0.002	0.006	0.005	0.00005
EU6	5 km, Southeast		9E-06	5E-07	0.1	0.09	0.0009	0.006	0.005	0.00005
EU7	5 km, Southwest		2E-05	5E-07	0.2	0.2	0.002	0.006	0.005	0.00005
EU8	5 km, Northwest		5E-06	5E-07	0.06	0.05	0.0005	0.006	0.005	0.00005
EU9	10 km, Northeast		5E-06	5E-07	0.07	0.05	0.0005	0.006	0.005	0.00005
EU10	10 km, Southeast		1E-06	5E-07	0.01	0.01	0.0001	0.006	0.005	0.00005
EU11	10 km, Southwest		2E-06	5E-07	0.03	0.02	0.0002	0.006	0.005	0.00005
EU12	10 km, Northwest		1E-06	5E-07	0.01	0.01	0.0001	0.006	0.005	0.00005
EU13	CFR, 10 mi. Upstream	Offsite Child Recreationalist (Age 0-6)	5E-09	n/a	0.00006	0.00005	0.0000005	n/a	n/a	n/a
EU14	CFR, Site-Adjacent		3E-08	n/a	0.0004	0.0003	0.000003	n/a	n/a	n/a
EU15	CFR, 4 mi. Downstream		ND	n/a	ND	ND	ND	n/a	n/a	n/a
EU16	CFR, Bladen Bluffs		1E-05	n/a	0.2	0.1	0.001	n/a	n/a	n/a
EU17	CFR, Kings Bluffs		2E-08	n/a	0.0002	0.0002	0.000002	n/a	n/a	n/a
EU18	Onsite Pond 1		8E-07	n/a	0.01	0.008	0.00008	n/a	n/a	n/a
EU19	Offsite Pond B		3E-07	n/a	0.004	0.003	0.00003	n/a	n/a	n/a
EU16 (Intake Point)	CFR, Bladen Bluffs	Offsite Child Resident (Age 0-6)	2E-05	n/a	0.2	0.2	0.002	n/a	n/a	n/a
EU17 (Intake Point)	CFR, Kings Bluffs		9E-07	n/a	0.01	0.009	0.00009	n/a	n/a	n/a

Notes:
[1] This summary table presents the calculated intakes and HQs for the most sensitive receptor for a given EU scenario.
[2] Intake estimates include HFPO-DA from the following sources: EU1 through EU12 - soil, homegrown produce, and drinking water; EU13 through EU19 - surface water and fish tissue; and EU16 and 17 (Intake Point) - surface water as drinking water.
[3] Intake and hazard estimates based on untreated well water data collected between 2017 and 2019.
[4] Current conditions intake and hazard estimates are based on assumed drinking water concentrations of 10 ng/L for HFPO-DA (see Section 7 of the Human Health SLEA Report).
[5] HQs are calculated for a range of RfDo values, which are discussed as part of the SLEA uncertainty assessment.

Abbreviations:
"--" - not available/not calculated
n/a - not applicable
CFR - Cape Fear River
EU - Exposure Unit
HFPO-DA - Hexafluoropropylene oxide dimer acid
HQ - hazard quotient
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ND - constituent not detected
RfDo - non-cancer oral reference dose
RME - reasonable maximum exposure
NC DHHS - North Carolina Department of Health and Human Services
USEPA - United States Environmental Protection Agency

FIGURES



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

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

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

2,000 1,000 0 2,000 Feet

Facility Location and Features

Chemours Fayetteville Works, North Carolina

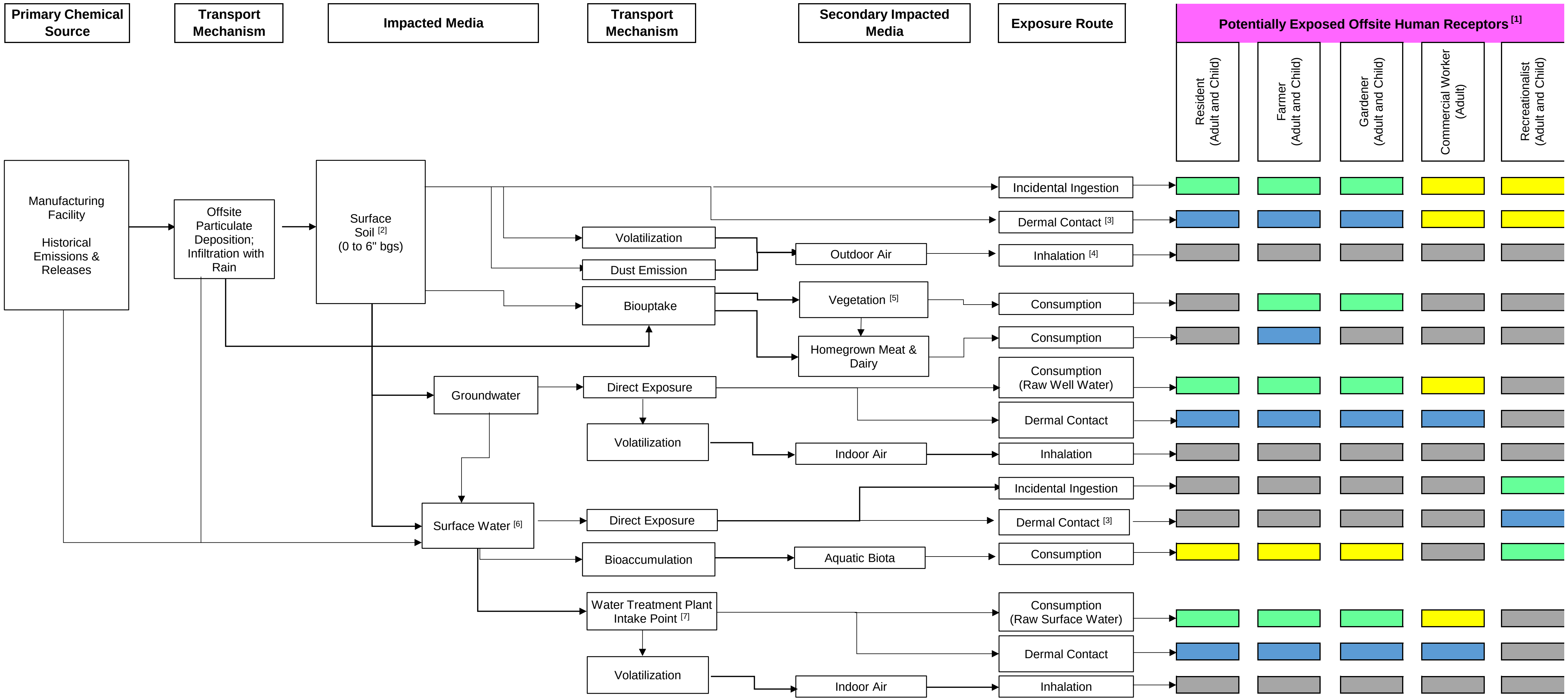
Geosyntec consultants

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

Raleigh	December 2019	Figure 1

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\SLEAT\TR0795_HH_Facility_Location_and_Features_Figure.mxd Last Revised: 11/26/2019

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



Notes:

[1] The SLEA is specific to offsite receptors.
[2] Subsurface soil was qualitatively evaluated in the SLEA.
[3] Dermal exposure pathways were qualitatively evaluated in the SLEA.
[4] Soil particulates and vapors in ambient air are not evaluated in the SLEA as this pathway is unlikely to be significant.
[5] Produce concentrations were estimated from soil data and modeled deposition rate data.
[6] Sediment data were qualitatively evaluated in the SLEA.
[7] Intake points for domestic water are located at Bladen and Kings Bluffs. Untreated data were used in the SLEA as a conservative estimate of potential intake.

Complete exposure pathway quantitatively evaluated in the SLEA.
Potentially complete pathway with limited potential for intake that is qualitatively evaluated in the SLEA.
Potentially complete pathway evaluated using a higher-exposure receptor, where:

- Worker exposure to soil and drinking water was excluded from quantitative evaluation on the basis that risk management based on residents will be protective of the receptor group.
- Recreationalist exposure to soil was excluded from quantitative evaluation on the basis that risk management based on residents will be protective of the receptor group.
- Resident, farmer, and gardener fish consumption was excluded from quantitative evaluation on the basis that risk management based on recreationalists will be protective of these receptor groups.

Incomplete or insignificant exposure pathway; no evaluation or management action is necessary.

Conceptual Exposure Model for Human Exposure to PFAS Historically Deposited Offsite

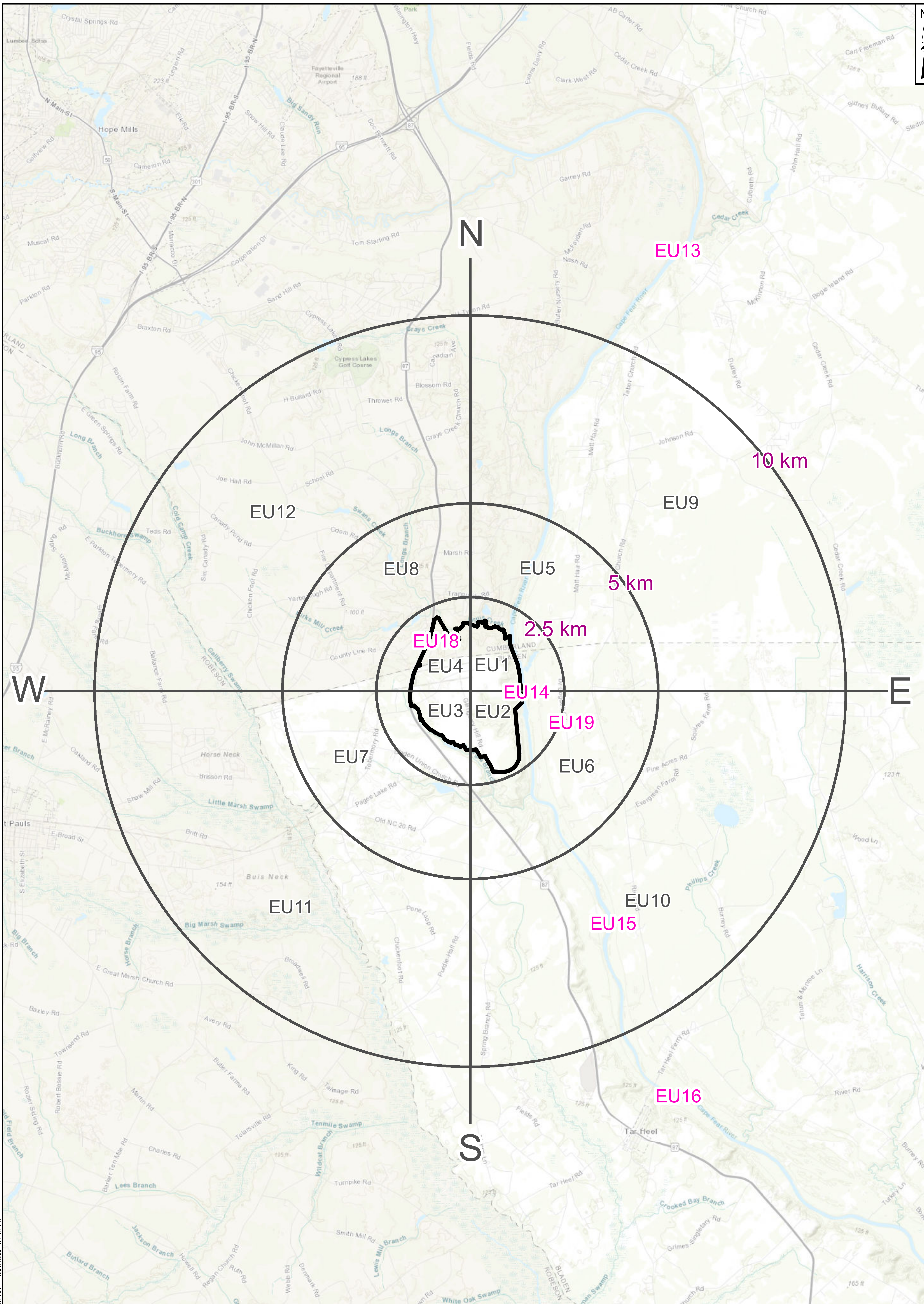
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure 2

Raleigh | December 2019



Legend
EU## Upland EU
EU## Surface water EU
Site Boundary

2 1 0 2 Miles
3 1.5 0 3 Kilometers

Human Health SLEA Exposure Units
Chemours Fayetteville Works, North Carolina

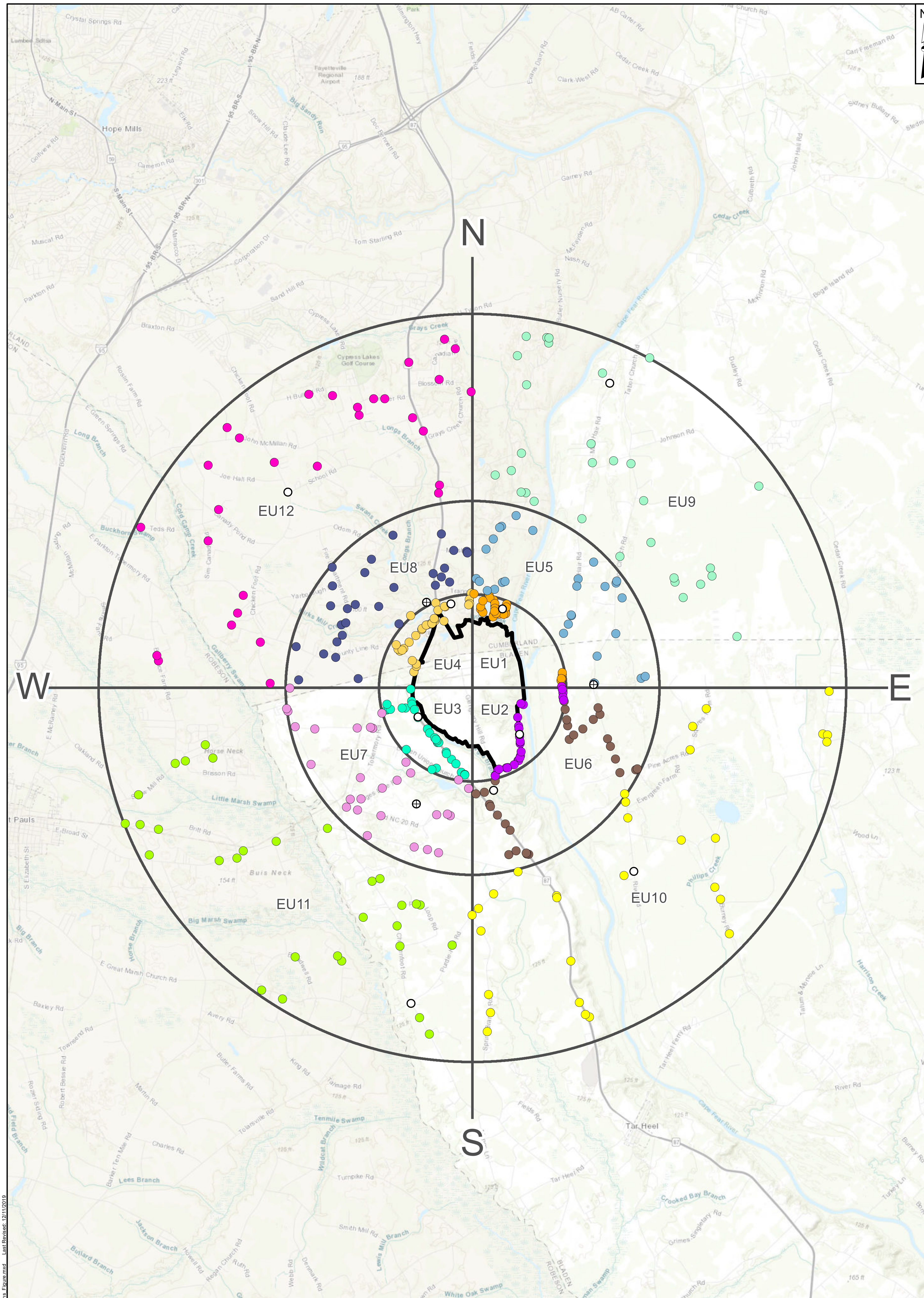
Geosyntec consultants
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure 3

Raleigh | December 2019

Notes:
EU = Exposure Unit
km = Kilometer
SLEA = Screening Level Exposure Assessment
1. Black lines represent cardinal directions (N, E, S, W).
2. Basemap Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community.

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



Legend

- ⊕ Co-Located Surface/Subsurface Soil Location
- ○ Subsurface Discrete Soil Location
- Site Boundary

EU Surface ISM Soil Location and Increment Counts

EU1 (31)	EU5 (30)	EU9 (31)
EU2 (31)	EU6 (31)	EU10 (31)
EU3 (31)	EU7 (30)	EU11 (31)
EU4 (31)	EU8 (30)	EU12 (31)

2 1 0 2 Miles
3 1.5 0 3 Kilometers

Human Health SLEA Soil Sampling Locations

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

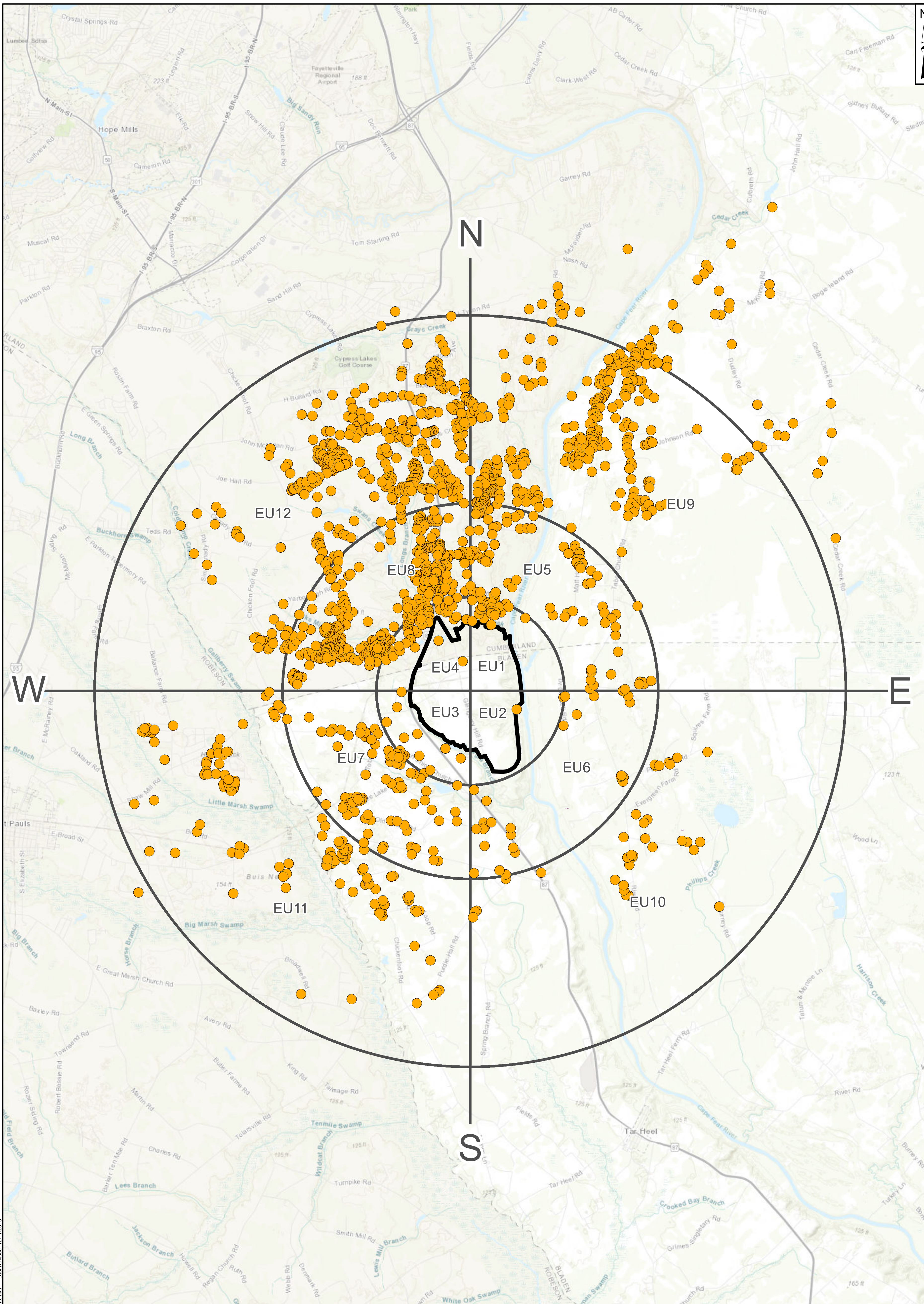
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure 4

Raleigh | December 2019

Notes:
EU = Exposure Unit
ISM = Incremental Sampling Methodology
SLEA = Screening Level Exposure Assessment
1. Each point represents a single ISM subsample which was composited into a single sample for each EU.
2. Black lines represent cardinal directions (N, E, S, W).
3. Basemap Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community.

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



2 1 0 2 Miles

3 1.5 0 3 Kilometers

Legend

Offsite Drinking Water Well Locations

Site Boundary

Notes:
EU = Exposure Unit
SLEA = Screening Level Exposure Assessment
1. Black lines represent cardinal directions (N, E, S, W).
2. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

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

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\SLEA\TR0795_EU_GW_Sample_Locations.mxd Last Revised: 12/11/2019

Human Health SLEA Untreated Well Water Sampling Locations

Chemours Fayetteville Works, North Carolina

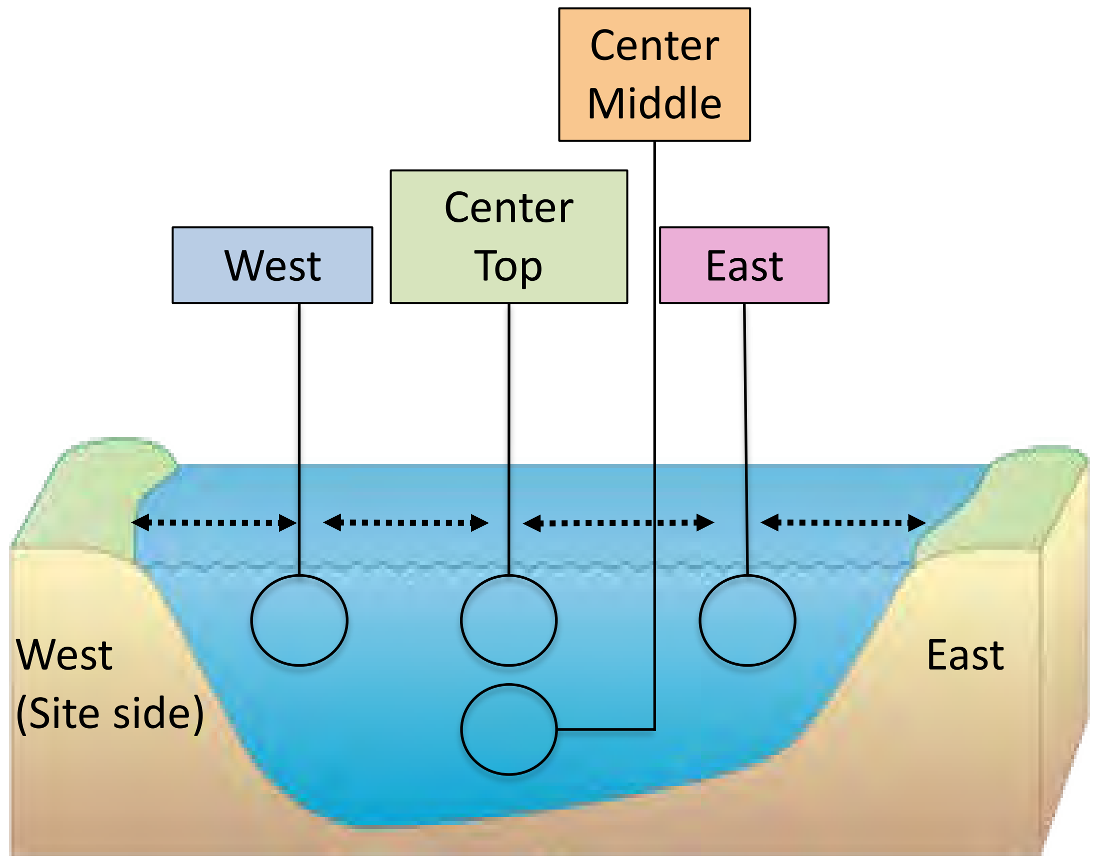
Geosyntec consultants

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

Raleigh | December 2019

Figure 5

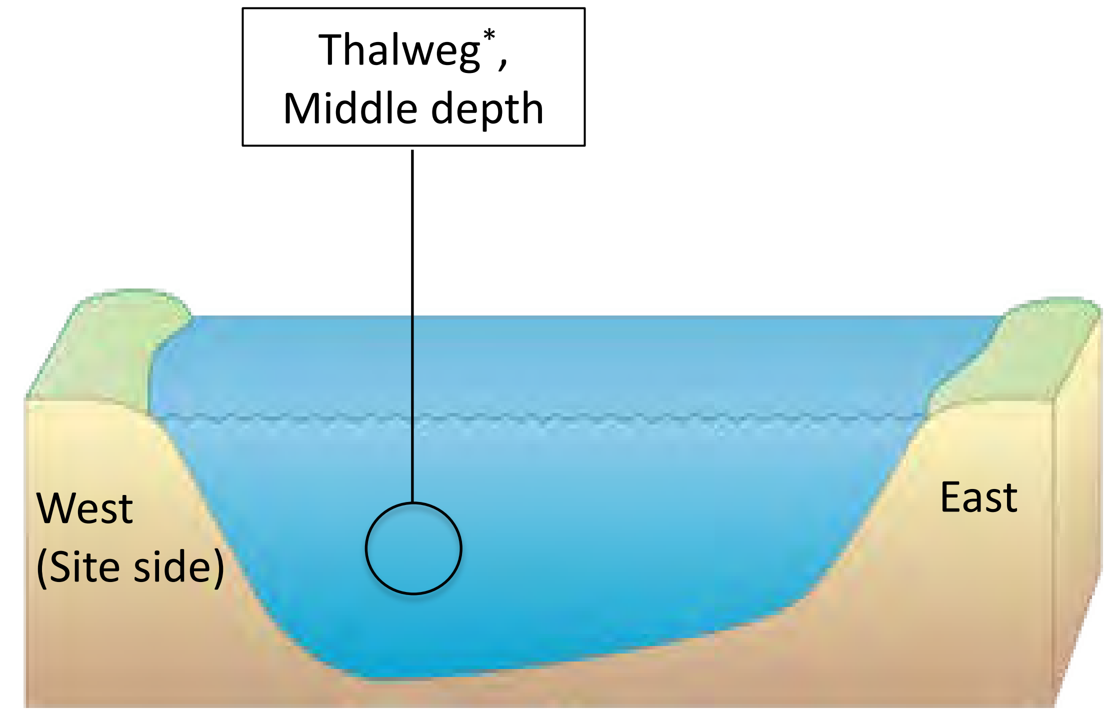
2017-2018 Local Program and 2019 SLEA Surface Water Sampling



◄········► 25 % of river width

Sampling Location Selection Rationale:
Assess how concentrations differ across cross-section, particularly close to Site

2018 Regional Program, 2018 Post-Florence, and Spring 2019 Surface Water Sampling



*Thalweg: Deepest part of the channel cross section

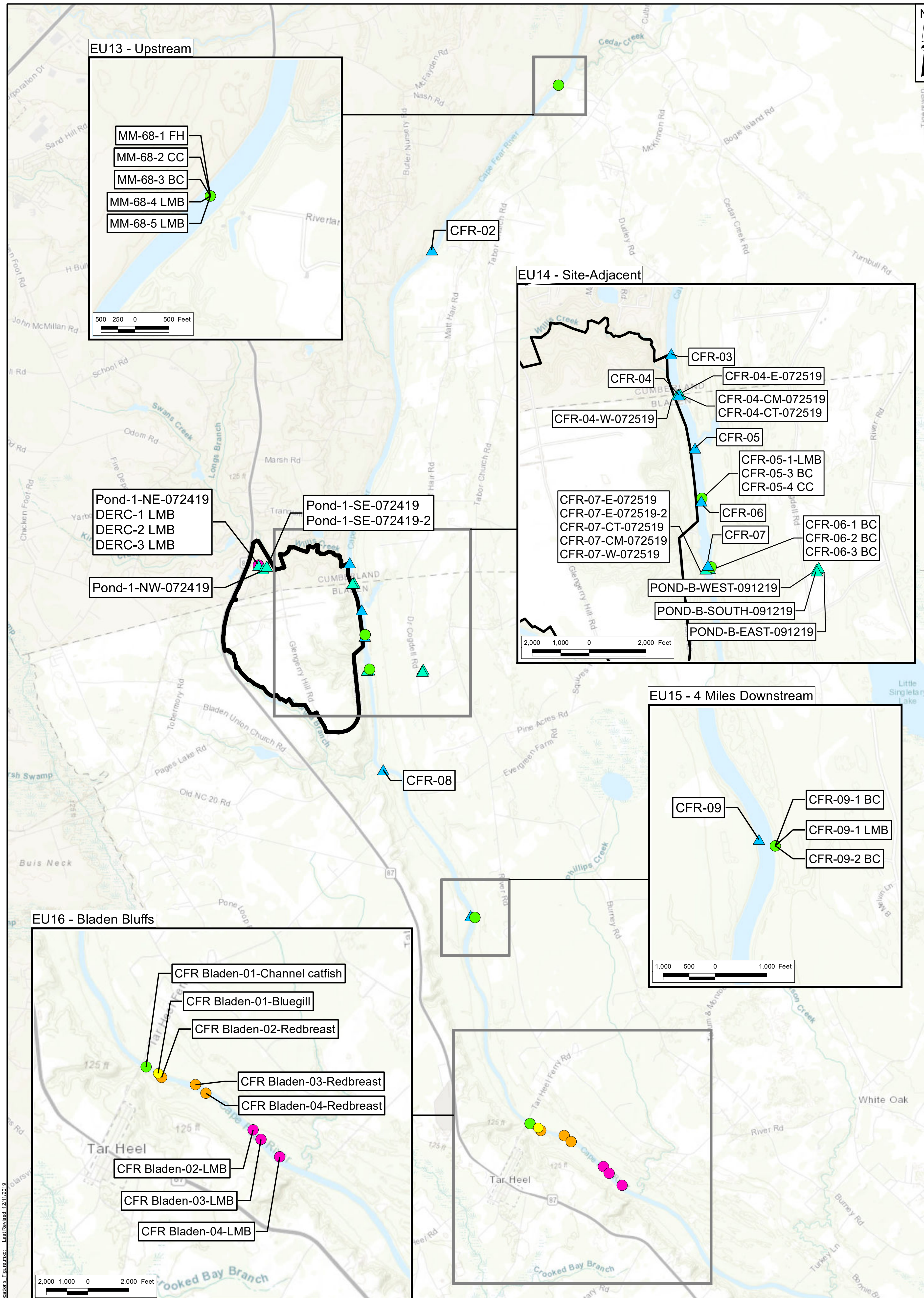
Sampling Location Selection Rationale:
Assess how concentrations vary along the length of the river. The majority of flow occurs at the thalweg, which is typically the most mixed part of river and expected to be representative of average concentrations.

Cape Fear River Surface Water Sampling Diagram
Chemours Fayetteville Works, North Carolina

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

Raleigh | December 2019

Figure 6



Legend

- Bluegill
- Catfish
- Largemouth Bass
- Redbreasted Sunfish
- Surface Water
- CFR - Cape Fear River Sampling Transects
- Site Boundary

2 1 0 2 Miles

Notes:
CFR = Cape Fear River
SLEA = Screening Level Exposure Assessment
1. Topographic Basemap Source: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community.

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

Human Health SLEA Fish Fillet and Surface Water Sampling Locations

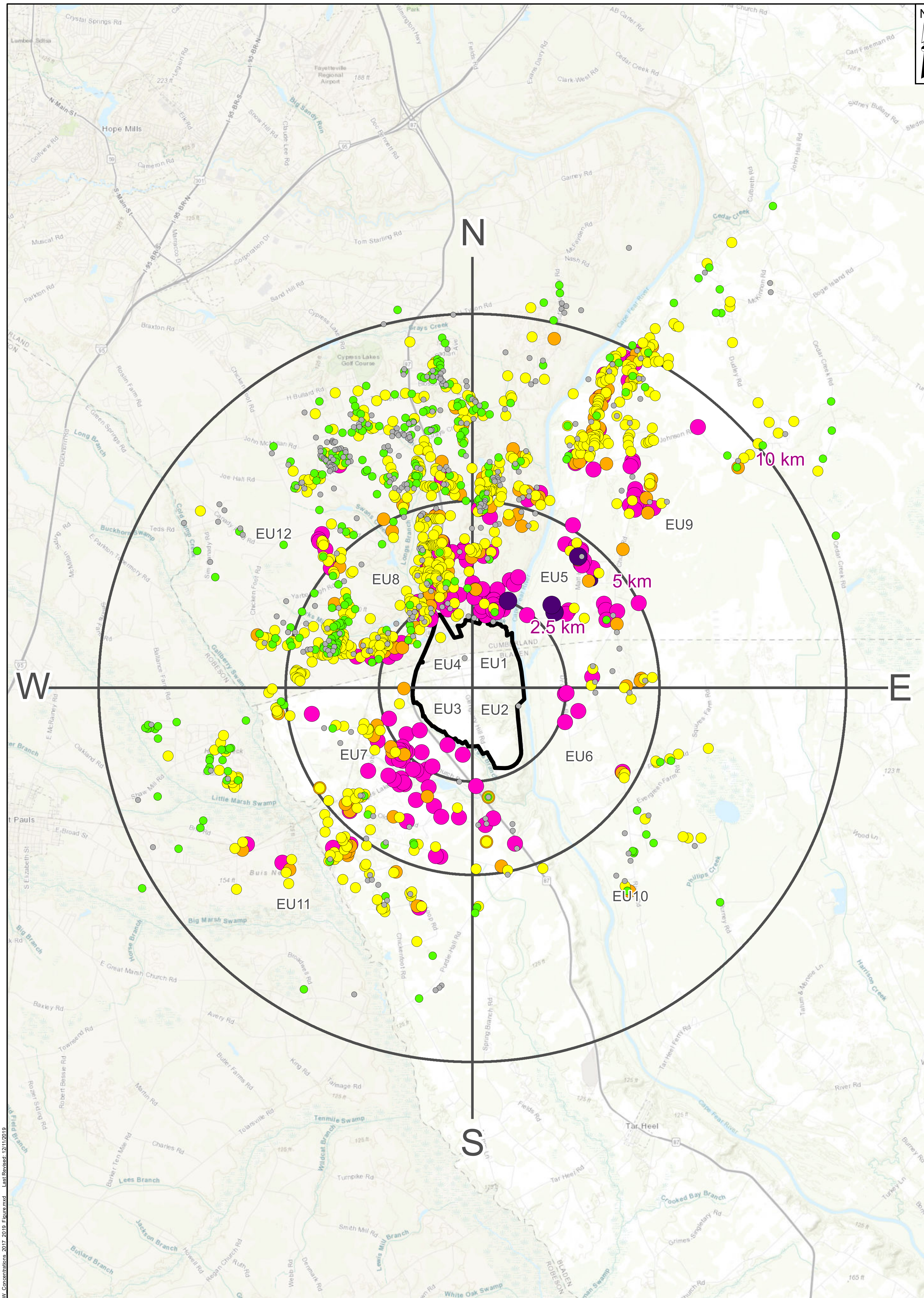
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | December 2019

Figure 7



Legend
HFPO-DA Concentration (ng/L)

- Non-detect
- <10
- 10 - 70
- 70 - 140
- 140 - 1,400
- > 1,400
- Site Boundary

Notes:
ng/L = nanograms per liter
EU = Exposure Unit
km = kilometer
1. Black lines represent cardinal directions (N, E, S, W).
2. Basemap Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community.

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

2 1 0 2 Miles
3 1.5 0 3 Kilometers

Offsite HFPO-DA
Groundwater Concentrations

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure **8**

Raleigh | December 2019

APPENDIX A
Consent Order

STATE OF NORTH CAROLINA

COUNTY OF BLADEN

IN THE GENERAL COURT OF JUSTICE
SUPERIOR COURT DIVISION
17 CVS 580

STATE OF NORTH CAROLINA, *ex rel.*, MICHAEL S. REGAN, SECRETARY, NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY,

Plaintiff,

CAPE FEAR RIVER WATCH,

Plaintiff-Intervenor,

v.

THE CHEMOURS COMPANY FC, LLC,

Defendant.

CONSENT ORDER

WHEREAS, since July 1, 2015, Defendant The Chemours Company FC, LLC ("Chemours") has owned and operated a chemical manufacturing facility called the Fayetteville Works ("Facility") in Bladen County, North Carolina, which, prior to July 1, 2015, was owned and operated by E. I. DuPont de Nemours & Company, Inc. ("DuPont").

WHEREAS, on September 7, 2017, Plaintiff, the State of North Carolina, by and through Michael S. Regan, Secretary of the North Carolina Department of Environmental Quality ("DEQ"), filed a Complaint and motion for a temporary restraining order in this Court against Chemours, seeking various forms of relief relating to alleged violations by Chemours and DuPont of North Carolina water quality laws and regulations arising out of the discharge of certain per- and polyfluoroalkyl substances ("PFAS"), including a compound often referred to by the trade name "GenX," into surface water and groundwater;

WHEREAS, on September 8, 2017, the Court entered a partial consent order resolving DEQ's motion for a temporary restraining order;

WHEREAS, on April 10, 2018, Plaintiff filed an Amended Complaint against Chemours that, among other things, sought further relief, including relating to alleged violations by Chemours and DuPont of North Carolina water quality laws and regulations arising out of the discharge or release of per- and polyfluoroalkyl substances into surface water, groundwater and the air;

WHEREAS, on July 11, 2018, Chemours filed an Answer to the Amended Complaint denying the allegations that Chemours had violated State laws or regulations and setting forth multiple affirmative defenses to Plaintiff's claims;

WHEREAS, DEQ has issued Notices of Violation to Chemours dated September 6, 2017, November 13, 2017, February 12, 2018, and June 1, 2018 (collectively, "the NOVs"), relating to the alleged violations set forth in the Complaint and/or Amended Complaint, and Chemours responded to the NOVs;

WHEREAS, since the filing of the Complaint, the Parties have conducted good-faith discussions to develop comprehensive and effective solutions to the environmental concerns that have been raised concerning the Facility's operations, including those underlying the allegations of the Amended Complaint and the NOVs;

WHEREAS, the Parties have negotiated this Consent Order that the Parties believe will provide such solutions;

WHEREAS, pursuant to this Consent Order, and in consideration of the release of claims and the other relief set forth herein, Chemours will, among other things:

(i) install abatement technology at the Facility (including a thermal oxidizer) that, once fully operational, will permanently reduce annual air emissions of GenX Compounds and other PFAS (as those terms are defined below) by at least 99% from baseline levels and control all PFAS emissions from process streams routed to the thermal oxidizer at an efficiency of 99.99%;

(ii) on an interim basis, reduce annual air emissions of GenX Compounds (as defined below) by at least 82% beginning as of October 6, 2018 and by at least 92% beginning as of December 31, 2018;

(iii) continue to capture for off-site disposal all process wastewater from its operations at the Facility unless or until an NPDES Permit is issued authorizing the discharge of process wastewater;

(iv) undertake the measures specified below with respect to abatement and remediation of groundwater contamination and provision of alternative drinking water supplies; and

(v) agree to the measures specified below to verify and ensure compliance with the foregoing commitments and the requirements of this Consent Order;

WHEREAS, Chemours denies any violation of any law, regulation or permit, including the claims of any such violation made in the Amended Complaint or the NOVs, and has agreed to this Consent Order solely to avoid the expense, burden and uncertainty of litigation and to address community concerns about the Facility;

WHEREAS, Chemours and DEQ have consented to the intervention of Cape Fear River Watch in this matter for the purpose of entering into this Consent Order and resolving Cape Fear River Watch's pending actions in Cape Fear River Watch v. North Carolina Department of Environmental Quality, 18 CVS 2462 (New Hanover Cty. Sup. Ct.) and Cape Fear River Watch v. Chemours Company FC, LLC, No. 7:18-cv-00159 (E.D.N.C.);

NOW THEREFORE, the parties agree, and the Court orders, as follows:

A. DEFINITIONS

"**Amended Complaint**" means the amended complaint filed by the Plaintiff in this matter on April 10, 2018.

"**Complaint**" means the complaint filed by the Plaintiff in this matter on September 7, 2018.

"Defendant" or **"Chemours"** means The Chemours Company FC, LLC, a Delaware limited liability company registered and doing business in North Carolina.

"**DEQ**" means the North Carolina Department of Environmental Quality, including all its divisions.

"DAQ" means the North Carolina Division of Air Quality, a division of DEQ.

"DWM" means the North Carolina Division of Waste Management, a division of DEQ.

"DWR" means the North Carolina Division of Water Resources, a division of DEQ.

"Facility" means Chemours' Fayetteville Works Facility located at 22828 NC Highway 87 W, Fayetteville, Bladen County, North Carolina, which Facility is owned by, and operated in part by, Chemours.

"GenX" means the chemical C3 Dimer Acid (also known as HFPO Dimer Acid), which has a CAS number of 13252-13-6.

"GenX Compounds" means C3 Dimer Acid (also known as HFPO Dimer Acid), CAS No. 13252-13-6, C3 Dimer Acid Fluoride (also known as HFPO Dimer Acid Fluoride), CAS No. 2062-98-8, and C3 Dimer Acid Ammonium Salt (also known as HFPO Dimer Acid Ammonium Salt), CAS No. 62037-80-3.

"NOVs" means the Notices of Violation issued by DEQ to Chemours dated September 6, 2017, November 13, 2017, February 12, 2018, and June 1, 2018. "NOVs" also includes the anticipated notice of violation for the truck spill that occurred during Hurricane Florence on September 18, 2018.

"PFAS" means perfluoroalkyl and polyfluoroalkyl substances.

"Plaintiff" means the sovereign State of North Carolina on behalf of DEQ.

"2017 Total Reported Emissions" means total facility-wide estimated emissions of GenX Compounds in the amount of 2302.7 lbs as reported by Chemours to DAQ in Chemours' Letter of April 27, 2018 and the document, "HFPO-DA Baseline Emission Estimates," attached thereto as Exhibit 2.

B. JURISDICTION AND VENUE

1. Plaintiff is the sovereign State of North Carolina. This action was brought on the relation of Michael S. Regan, Secretary of DEQ, the State agency established pursuant to N.C. Gen. Stat. § 143B-279.1 *et seq.*, and vested with the statutory authority to enforce the State's

environmental protection laws, including laws enacted to protect the water and air quality of the State.

2. Plaintiff-Intervenor Cape Fear River Watch is a § 501(c)(3) nonprofit public interest organization headquartered in Wilmington, North Carolina that engages residents of the Cape Fear watershed through programs to preserve and safeguard the river. The organization has 1,100 members, including members who live near, drink water from, and fish, swim, and boat on the Cape Fear River downstream of Chemours' Fayetteville Works Facility. Cape Fear River Watch's mission is "to protect and improve the water quality of the Lower Cape Fear River Basin through education, advocacy and action."

3. Defendant Chemours is a Delaware limited liability company registered and doing business in North Carolina. Chemours owns the Fayetteville Works facility located at 22828 NC Highway 87 W, Fayetteville, Bladen County, North Carolina and operates a portion of that facility.

4. This Court has jurisdiction pursuant to N.C. Gen. Stat. § 143-215.6C, N.C. Gen. Stat. § 143-114C, N.C. Gen. Stat. § 7A-245(a)(2) and N.C. Gen. Stat. § 1-493.

5. Bladen County, North Carolina is a proper venue because portions of the Fayetteville Works facility are located in Bladen County and the Amended Complaint alleges violations occurring in Bladen County. N.C. Gen. Stat. § 143-215.6C; N.C. Gen. Stat. § 143-114C.

6. The Honorable Douglas B. Sasser, Senior Resident Superior Court Judge, presides over this matter by designation pursuant to Rule 2.1 of the General Rules of Practice.

C. COMPLIANCE MEASURES – AIR EMISSIONS

7. Control Technology Improvements:

a. *Second Phase Scrubber.* Chemours completed installation of a packed bed scrubber ("Second Phase Scrubber") to control emissions from the Division Waste Gas Scrubber on November 7, 2018.

b. *Vinyl Ethers North Carbon Adsorber Project*: Chemours has made improvements to allow for the control of emissions from the Second Phase Scrubber by the Vinyl Ethers North Carbon Adsorber Unit ("Vinyl Ethers North Carbon Adsorber Project") in accordance with the following schedule and conditions:

i. On October 19, 2018, Chemours submitted to DAQ a process hazard assessment pertaining to the Vinyl Ethers North Carbon Adsorber Project.

ii. On December 26, 2018, Chemours completed construction of the Vinyl Ethers North Carbon Adsorber Project. All emissions from the Second Phase Scrubber are controlled by the Vinyl Ethers North Carbon Adsorber Unit subject to such unit downtime as may be required by the process hazard assessment or as necessary for maintenance of the unit. Chemours will use its best efforts consistent with safe operations to minimize unit downtime.

iii. Within ninety (90) days of installation, Chemours shall submit a report to DAQ demonstrating that the Vinyl Ethers North Carbon Adsorber

Unit operates with a minimum control efficiency of 93% for GenX Compounds.

c. *Thermal Oxidizer*. By December 31, 2019, Chemours shall install a thermal oxidizer to control all PFAS in process streams from the HFPO Process, the Vinyl Ethers North Process, the Vinyl Ethers South Process, the RSU Process, the TFE Process, the MMF Process, and the Polymers Process. Within ninety (90) days of installation, Chemours shall demonstrate that the thermal oxidizer controls all PFAS at an efficiency of 99.99%.

8. GenX Emissions Reduction Milestones: Chemours shall achieve the overall emissions reductions of GenX Compounds in accordance with the following schedule.

a. By October 6, 2018 and for the twelve-month period beginning on that date, Chemours shall reduce Facility-wide air emissions of GenX Compounds on an annualized basis by at least 82% from 2017 Total Reported Emissions. To demonstrate compliance with this paragraph, Chemours shall follow the procedure in paragraph (b) below, except the demonstration year shall run from October 6, 2018 through October 5, 2019 (rather than Calendar Year 2019) and the final report demonstrating compliance shall be due on or before December 5, 2019 (rather than February 28, 2020).

b. By December 31, 2018 and for the twelve-month period beginning on that date, Chemours shall reduce Facility-wide air emissions of GenX Compounds on an annualized basis by at least 92% from 2017 Total Reported Emissions. To demonstrate compliance with this paragraph, Chemours shall:

i. Conduct emissions testing for GenX Compounds emissions sources to determine GenX Compounds emission rates for each product campaign. Emissions testing shall be conducted during the first campaign of that product of the Calendar Year 2019. Control device operating parameters must be recorded during the testing. Emissions test reports shall be submitted to DAQ within forty-five days of completion of the emissions test; and

ii. Submit a report demonstrating compliance to DAQ by February 28, 2020. This report shall include GenX Compounds emissions in pounds per year based on test data or established emission factors where test data are not available, hours of operation for each campaign, and production data. The report shall quantify any other emissions including but not limited to fugitive, maintenance, malfunction and accidental emissions. The report shall also include a summary of control device operating parameters throughout the year.

c. By December 31, 2019 and for each consecutive twelve-month period following that date, Chemours shall reduce Facility-wide annual air emissions of GenX Compounds by at least 99% from 2017 Total Reported Emissions. To demonstrate compliance with this paragraph, Chemours shall:

i. Conduct emissions testing for the thermal oxidizer to determine the emissions rate of GenX Compounds. Emissions testing shall be completed by March 31, 2020. Emissions test reports shall be submitted to DAQ within forty-five days of completion of the emissions test; and

ii. Submit a report demonstrating compliance to DAQ by February 28, 2021. This report shall include GenX Compounds emissions in pounds per year based on test data, or established emission factors where test data are not available, hours of operation, and production data. The report shall quantify any other emissions including but not limited to fugitive, maintenance, malfunction and accidental emissions. The report shall also include a summary of control device operating parameters throughout the year.

iii. Chemours shall repeat this compliance demonstration for each subsequent calendar year unless and until DAQ issues a modified Air Quality Permit to Chemours, incorporating a 99% or greater reduction requirement.

d. To provide ongoing assurance of compliance with the interim emissions reductions required under subparagraphs (a) and (b), Chemours shall submit an inventory of emissions of GenX Compounds from all sources on a monthly basis within 21 days of the end of each month. This inventory shall include (1) a detailed summary of emissions during the previous calendar month; (2) cumulative emissions to date during the relevant annual compliance period; and

(3) projected emissions during the relevant annual compliance period.

9. Disclosure of PFAS emissions: Chemours shall have an ongoing duty to disclose to DAQ (i) any identified previously undisclosed PFAS and emissions rates for those PFAS, and (ii) any new process or production that may lead to the addition of any previously undisclosed PFAS in the Facility's air emissions. For any such PFAS, Chemours shall provide DAQ with any available analytical test methods and lab standards. Chemours shall provide DAQ with all known test methods and lab standards for PFAS in air emissions at the facility by December 31, 2018.

D. COMPLIANCE MEASURES – SURFACE WATER

10. No Discharge of Process Wastewater from Chemours' Manufacturing Areas: Chemours shall not discharge process wastewater from Chemours' manufacturing areas until issuance of an NPDES Permit issued under N.C. Gen. Stat. § 143-215.1 and 15A NCAC 2B ("NPDES Permit") expressly authorizing the discharge of such process wastewater and with such limits as DEQ reasonably deems necessary and appropriate to control the discharge of GenX Compounds and other PFAS. In accordance with applicable law, in setting such limits, DEQ shall take into account available health information including any information produced pursuant to this Consent Order.

11. Characterization of PFAS in Process and Non-process Wastewater and Stormwater at the Facility:

a. *Test methods and lab standards*: By January 31, 2019, Chemours shall (a) provide DWR with all known analytical test methods and lab standards for all PFAS in all process and non-process wastewater and stormwater at the Facility, including but not limited to all process and non-process wastewater and stormwater discharged through Outfall 002, and (b) submit a plan and schedule for conducting non-targeted analysis of all process and non-process wastewater and stormwater streams to identify any additional PFAS and developing test methods and lab standards for such compounds. Chemours shall commence implementation of such plan within thirty (30) days of approval by DEQ. Chemours shall follow the EPA's Protocol for Review and Validation of New Methods for Regulated Organic and Inorganic Analytes in Wastewater under EPA's Alternate Test Procedure Program, *see* https://www.epa.gov/sites/production/files/2016-03/documents/chemical-new-method-protocol_feb-2016.pdf, and shall write each test procedure in the standard EPA format.

b. *Sampling plan*: By December 31, 2018, Chemours shall submit a sampling plan to DWR for approval. This sampling plan shall include proposed locations for the sampling to carry out the initial characterization of all PFAS described in subparagraph (c).

c. *Initial characterization*: Within thirty (30) days of approval of the sampling plan, Chemours shall commence submission of quarterly reports to DEQ identifying PFAS constituents and initial concentrations at any level above the practical quantitation limit in all process and non-process wastewater and stormwater at the Facility, including, but not limited to, all process and non-process wastewater and stormwater discharged through Outfall 002. As part of these reports, process and non-process wastewater and stormwater shall be characterized from each of Chemours' manufacturing areas as well as from the manufacturing areas of Chemours' tenants, Kuraray and DuPont. Similar testing for PFAS constituents in the raw water intake shall be performed in conjunction with other sampling in order to assess background concentrations. The final quarterly report shall be submitted, and initial characterization of all PFAS completed, no later than eighteen (18) months after approval of the sampling plan.

d. *Ongoing sampling*: For all PFAS for which test methods and lab standards have been developed Chemours, at least every two months, shall sample for each such PFAS at approved locations and report the results to DWR. Approved locations shall, at a minimum, include the locations described in subparagraph 11(c), unless Chemours has demonstrated through its initial characterization that a manufacturing area does not contribute to PFAS loading. After two years of such sampling, Chemours may request that DWR agree to a reduced sampling frequency.

e. *Ongoing duty to disclose*: Chemours shall have an ongoing duty to disclose (i) any previously undisclosed PFAS and concentrations of any previously undisclosed PFAS in all process and non-process wastewater and stormwater at the Facility, and (ii) any new process or production that may lead to the addition of any previously undisclosed PFAS in process and non-process wastewater and stormwater at the Facility. For any such PFAS, Chemours shall provide DWR with available test methods and lab standards as specified in subparagraph (a) above.

11.1 Characterization of PFAS Contamination in Downstream Raw Water Intakes: Within six months of entry of this Order, Chemours shall submit an analysis to DEQ reporting contributions of PFAS (including identification and mass loading of each PFAS) from the Facility to the raw water intakes of downstream public water utilities.

11.2 Characterization of PFAS Contamination in River Sediment: Within six months of entry of this Order, Chemours shall develop a plan for assessing the nature and extent of PFAS sediment contamination in the Cape Fear River originating from the Facility, and submit the plan and a schedule for implementation to DWR for approval. Within thirty (30) days of DEQ's approval of the plan and schedule by DWR, Chemours shall commence implementation of the plan. Upon completion, Chemours shall summarize its findings in a report to be submitted to DEQ, Cape Fear River Watch, and to downstream water utilities.

12. Accelerated Reduction of PFAS Contamination in the Cape Fear River and Downstream Water Intakes:

a. In order to reduce PFAS contamination in the Cape Fear River and in the raw water intakes of downstream public water utilities on an accelerated basis, within six months of entry of this Order, Chemours shall submit to DEQ and Cape Fear River Watch a plan demonstrating the maximum reductions in PFAS loading from the Facility (including loading from contaminated stormwater, non-process wastewater, and groundwater) to surface waters, including Old Outfall 002, that are economically and technologically feasible, and can be achieved within a two-year period ("PFAS reduction targets"). The plan shall be supported by interim benchmarks to ensure continuous progress in reduction of PFAS loading. If significantly greater reductions can be achieved in a longer implementation period, Chemours may propose, in addition, an implementation period of up to five years supported by interim benchmarks to ensure continuous progress in reduction of PFAS loading. In demonstrating maximum reductions in PFAS loading to the Cape Fear River, Chemours may take into account the PFAS loading reductions to be achieved pursuant to subparagraph 12(e). Subject to approval by DEQ, the plan may include actions to be undertaken by other entities that have contributed to the need for such remediation. Chemours shall simultaneously transmit the plan to downstream public water utilities. DEQ will make DEQ staff available to meet with downstream public water utilities to receive input on the plan.

b. The plan shall include a model accounting for all sources of PFAS (including identification and mass loading of all PFAS) from the Facility contributing to the loading of PFAS into the Cape Fear River, Willis Creek, Georgia Branch, and Old Outfall 002.

c. The model shall be prepared by a third party approved by DEQ after consultation with Cape Fear River Watch. Prior to conducting the modeling analysis, the third party shall submit to DEQ for approval a scope of work describing the modeling analysis. DEQ shall consider all timely comments received from Cape Fear River Watch prior to agency approval of any such document.

d. DEQ and Cape Fear River Watch shall review the plan developed by Chemours, and the Parties shall work together in good faith to determine if the PFAS reduction targets identified by Chemours represent the maximum reductions that are economically and technologically feasible, and can be implemented over a two-year period (or longer as proposed in an alternate plan), or whether the Parties can identify and agree upon further reductions. The burden is on Chemours to demonstrate that the concentrations of GenX and perfluoro-1-methoxyacetic acid (PFMOAA) detected in Outfall 002 cannot be reduced by at least 80% from baseline levels, including after measurable storm events, as defined in 40 C.F.R. 122.21(g)(7)(ii), within 2 years.

e. By September 30, 2019, Chemours shall complete, at a minimum, monthly surface water sampling in Old Outfall 002 (beginning no later than March 2019) at the locations marked A (mouth of stream), A (seep), B, C, D, E, Option B (proposed dam), and Creek A2 in **Attachment A** for any PFAS for which test methods and laboratory standards have been developed as of the date of entry of the Consent Order. Also by September 30, 2019, Chemours shall complete pilot scale testing of treatment equipment to determine its control efficiency for all PFAS identified in Old Outfall 002. The results of this pilot testing shall be supported by at least three (3) months of sampling data, and submitted to DWR for review and approval. In addition, within ninety (90) days of entry of this Consent Order, Chemours shall submit a plan analyzing the options below and implement one of them upon approval by DEQ and Cape Fear River Watch:

i. Provided that DEQ issues any necessary permits authorizing such discharge and subject to any conditions imposed by such permits, and provided that any other permitting authority with jurisdiction over the project issues any other necessary permits, by September 30, 2020, at or near the Option B location (proposed dam) depicted in **Attachment A**, Chemours shall implement a system to capture the dry weather flow at that location and treat such water prior to discharge pursuant to such permits or authorizations as DEQ may issue. Chemours shall submit timely and complete applications and take all other actions necessary to obtain any necessary permits or authorizations to carry out the requirements of this paragraph. The treatment system shall meet such discharge standards as shall be set by DEQ, and shall, in addition and at a minimum, be at least 99% effective in controlling indicator parameters, GenX and PFMOAA;

ii. By September 30, 2020, Chemours shall implement such measures to reduce PFAS loading from Old Outfall 002 to the Cape Fear River that will achieve results that are demonstrated to be equivalent to or greater than the reductions that would be obtained under subparagraph (i) above.

Following the completion of the groundwater remediation set forth in Paragraph 16, Chemours shall remove any dam(s) placed within Old Outfall 002 and restore the channel to its condition prior to the installation of the dam.

f. Provided that the Parties come to an agreement regarding additional PFAS reductions, within eight months after entry of this Order, DEQ, Cape Fear River Watch and Chemours shall jointly move to amend this Consent Order to incorporate any agreed upon reductions as enforceable requirements of this Consent Order as well as stipulated penalties for non-compliance. If DEQ, Cape Fear River Watch, and Chemours are unable to mutually agree upon additional PFAS reductions within eight months after entry of this Order: (i) the Parties may jointly stipulate to additional time in which to submit a joint motion to amend, or (ii) Cape Fear River Watch, DEQ, and Chemours may bring any dispute regarding the additional reductions before the Court for resolution. In resolving any such dispute, the Court shall, in addition to considering testimony by qualified experts presented by the parties, give due regard to the demonstrated knowledge and expertise of DEQ with respect to the evaluation of the economic and technological feasibility of environmental remediation and the application of that knowledge and expertise to other remediation projects. After the Court amends this Consent Order or otherwise resolves this issue, Chemours shall commence implementation within thirty days of such an amendment or other resolution of the issue, and comply with the reduction targets mandated.

g. Nothing in this paragraph shall be construed to limit Chemours' obligations to submit and implement a complete Corrective Action Plan pursuant to paragraph 16, but Chemours may propose such a Corrective Action Plan that integrates the requirements of this paragraph.

13. Facility Site Visit: By February 28, 2019, Chemours shall provide DEQ and Cape Fear River Watch with a tour of the exterior grounds of the Facility, including Old Outfall 002, Outfall 002, the terracotta pipe (which formerly carried industrial process wastewater), discharge locations to surface waters, and the proposed sampling locations contemplated by paragraph 11(b).

14. Toxicity Studies: Within thirty (30) days of entry of this Consent Order, Chemours shall submit a plan and proposed schedule for review and approval by DEQ for funding and facilitating the conducting of an initial set of toxicity studies by a qualified third party approved by DEQ relating to both toxicity assays informative to human health and aquatic life sufficient to aid in development of surface water and groundwater regulatory standards for up to five PFAS as determined by DEQ. The plan shall provide for the studies and parameters identified in **Attachment B** as well as technologically feasible dosing parameters to be agreed upon by

Chemours and DEQ. Chemours shall implement the measures set forth in the approved plan. DEQ reserves the right to seek additional toxicity studies or additional health, chemical persistence and environmental fate information beyond the scope of the initial set of studies required by this paragraph. DEQ shall consider public comments in determining what additional toxicity studies or additional health, chemical persistence and environmental fate information are needed. Chemours reserves the right to contest any efforts by DEQ to seek additional toxicity studies or additional health, chemical persistence and environmental fate information from Chemours beyond the scope of the initial set of studies required by this paragraph. Additionally, modification of toxicity study(ies) specified in Attachment B shall permitted, upon agreement between DEQ and Chemours, only if DEQ determines that such modification will provide substantially better information. Any dispute with respect to this paragraph that the parties are unable to resolve after good faith negotiations shall be resolved by the Court, which shall determine whether the disputed activity is reasonably necessary to achieve the objectives of this paragraph.

15. Notice to and Coordination With Water Utilities: In the event of an upset or other operating condition at the Facility that has the potential to cause (i) a discharge of GenX Compounds or any PFAS for which analytical test methods and lab standards have been developed into the Cape Fear River through Outfall 002 at concentrations exceeding 140 ng/L, or any applicable health advisory, whichever is lower, or (ii) a material increase in the concentration of any PFAS in effluent being discharged into the Cape Fear River through Outfall 002 or any future permitted discharge, Chemours shall provide notice to downstream public water utilities, DEQ, and Cape Fear River Watch within one (1) hour of knowledge of the condition. Chemours shall

maintain a list of appropriate contacts of downstream public water utilities, which Chemours shall routinely update by requesting contact information from DEQ. Chemours shall also post a description of the condition including any estimated quantity of the release on a publicly available website within twenty-four (24) hours of knowledge of the condition.

E. COMPLIANCE MEASURES – GROUNDWATER

16. Groundwater Remediation:

a. By December 31, 2019, Chemours shall submit for approval by DEQ a complete Corrective Action Plan that complies with the requirements of the 2L Rules and guidance provided by DEQ. DEQ shall put the draft Corrective Action Plan to public notice and provide at least 30 days thereafter in which to provide written comments. DEQ shall consider any written comments received prior to approving the Corrective Action Plan.

b. Chemours shall implement the Corrective Action Plan in accordance with a schedule approved by DEQ. Except as otherwise allowed in or provided under the 2L Rules, the Corrective Action Plan must provide, upon full implementation, for the remediation of groundwater to the standards set forth in 15A NCAC 2L.0202. Subject to approval by DEQ, the Corrective Action Plan may include actions to be undertaken by other entities that have contributed to the need for such remediation.

c. The Corrective Action Plan shall include the installation of groundwater monitoring wells along Old Outfall 002, Willis Creek, Georgia Branch, and the

Cape Fear River in sufficient number and in locations adequate for monitoring the quality of groundwater entering surface waters, and include the collection and reporting of accurate baseline concentrations for all PFAS for which test methods and lab standards have been developed within each groundwater monitoring well installed pursuant to this paragraph, in addition to existing long-term wells (LTWs) along the Cape Fear River. As test methods and lab standards are developed for additional PFAS, the Corrective Action Plan shall be amended to address those PFAS.

d. At a minimum, in addition to any measures that might be otherwise required to comply with the 2L Rules, and notwithstanding any provisions of the 2L rules or other exceptions that might apply to corrective action plans, the Corrective Action Plan must require Chemours to reduce the PFAS loading to surface water (Old Outfall 002, Willis Creek, Georgia Branch, and the Cape Fear River), for the PFAS for which test methods and lab standards have been developed, by at least 75% from baseline. The baseline will be established using the average of the concentrations of the PFAS in the groundwater monitoring wells for each surface water and LTWs along the Cape Fear River over the first four (4) quarters of sampling. To demonstrate compliance, mass loading to surface water (Old Outfall 002, Willis Creek, Georgia Branch, and the Cape Fear River), must be reduced by at least 75% from baseline for at least eight (8) consecutive quarters and determined using measured concentrations in groundwater monitoring wells and LTW wells.

17. Lining of Nafion Ditch and Sedimentation Ponds: Chemours completed permanent lining of the Nafion Ditch by November 7, 2018 and permanent lining of the south sedimentation pond by November 8, 2018. Chemours completed permanent lining of the north sedimentation pond by December 31, 2018.

18. On and Offsite Assessment: Chemours shall fund a third party contractor(s), approved by DEQ after consultation with Cape Fear River Watch, to conduct a comprehensive assessment of on and offsite groundwater contamination that complies with the requirements of the 2L Rules. This assessment shall include an analysis of: (i) the source and cause of contamination; (ii) any imminent hazards to public health and safety and any actions taken to mitigate them; (iii) all receptors (to include as potential receptors drinking water wells and surface waters) and significant exposure pathways; (iv) the horizontal and vertical extent of soil and groundwater contamination and all significant factors affecting contaminant transport; and (v) geological and hydrogeological features influencing the movement, chemical, and physical character of the contaminants. This assessment shall also identify any groundwater seeps contributing to surface water contamination at the site and areas with significantly contaminated sediment. The assessment shall be submitted to DWM and Cape Fear River Watch by September 30, 2019.

F. COMPLIANCE MEASURES – REPLACEMENT DRINKING WATER SUPPLIES

19. <u>Provision of Public Water Supplies or Whole Building Filtration Systems:</u> Chemours shall establish and properly maintain permanent replacement drinking water supplies in the form of public water or a whole building filtration system for any party (i.e., household, business, school, or public building) with a private drinking water well that has been found through testing validated by DEQ to be contaminated by concentrations of GenX compounds in exceedance of 140 ng/L, or any applicable health advisory, whichever is lower. Under this provision, permanent replacement water supplies shall be established by connection to a public water supply, except that:

a. in lieu of a connection to public water supply, an affected party may elect to receive either a whole building filtration system approved by DEQ or under sink reverse osmosis systems (installed at every kitchen and bathroom sink at the election of the affected party) approved by DEQ, in which case Chemours shall install and properly maintain such filtration systems;

b. an affected party may elect to decline any permanent replacement drinking water supply;

c. if DEQ determines that connection to a public water supply to a an affected party would be cost-prohibitive (i.e., greater than $75,000) or unsafe, DEQ may authorize provision of a permanent replacement water supply to that affected party through installation and ongoing maintenance of either a whole building filtration system approved by DEQ or reverse osmosis systems approved by

DEQ installed at every kitchen and bathroom sink (at the election of the affected party).

Permanent replacement drinking water supplies established pursuant to this paragraph shall be installed no later than: (i) nine (9) months from the date Chemours becomes aware that the affected party qualifies for replacement drinking water; or (ii) if Chemours is aware that an affected party qualifies for replacement drinking water at the time this Consent Order is entered, nine (9) months from the date of entry of this Consent Order. For affected parties, Chemours shall be liable to pay for any water bills from public utilities for a period of twenty (20) years up to $75/month/affected party, provided that the monthly cap on public utility bills may be reevaluated by DEQ every two (2) years and adjusted by the average percentage increase or decrease in utility rates a given county.

20. Provision of Reverse Osmosis Drinking Water Systems: Chemours shall provide for and properly maintain permanent replacement water supplies through the installation of three under sink reverse osmosis drinking water systems approved by DEQ for any party (i.e., household, business, school, or public building) that does not qualify for permanent replacement of a private drinking water supply pursuant to paragraph 19 with a drinking water supply well contaminated by:

a. combined quantifiable concentrations of PFAS listed in **Attachment C** in exceedance of 70 ng/L; or

b. quantifiable concentrations of any individual PFAS listed in **Attachment C** in exceedance of 10 ng/L.

In the event that the water from more than one sink may be filtered using a single reverse osmosis system with the same or better results for finished water, Chemours may request approval from DEQ to implement such a system in lieu of a reverse osmosis system under each sink. For any public building (e.g., schools or government buildings) that qualifies for permanent replacement drinking water pursuant to this paragraph, Chemours shall either (i) provide and properly maintain under sink reverse osmosis drinking water systems approved by DEQ at each drinking fountain and at each sink that is used for drinking water, or (ii) provide, after consultation between DEQ, Chemours, and the management of the school or building, and subject to DEQ's approval, another effective system or equipment (such as, without limitation, construction of a deeper well, installation of a whole building filtration system, provision and supply of drinking water coolers). Permanent replacement drinking water supplies established pursuant to this paragraph shall be installed by Chemours by no later than: (i) six (6) months from the date Chemours becomes aware that an affected party qualifies for replacement drinking water; or (ii) if Chemours is aware that an affected party qualifies for replacement of drinking water at the time this Consent Order is entered, six (6) months from the date of entry of this Consent Order.

21. Private Well Testing: Chemours shall fund sampling by a third party laboratory approved by DEQ of drinking water wells for a distance of at least one-quarter (1/4) mile beyond the nearest well with test results showing a quantifiable level of any PFAS listed in **Attachment C** above 10 ng/L. Such testing shall be completed within eighteen (18) months of entry of this Order. Additionally, by December 31, 2018, Chemours shall fund re-analysis by a third party laboratory approved by DEQ for all PFAS listed in **Attachment C** of any previously collected

groundwater samples that were analyzed only for GenX, GenX Compounds, or a subset of the PFAS listed in **Attachment C**. Chemours shall retest annually to determine the extent of PFAS contamination. Chemours shall request incorporation of a plan to carry out this requirement in its Corrective Action Plan.

22. Provision of Sampling Results: On an ongoing basis and within seven (7) days of receiving any groundwater or finished water sampling results, Chemours shall provide these results to DEQ, with samples identified by both address and sample ID. Within seven (7) days of receiving test results, Chemours shall also provide sampling results to parties who have had their wells or finished water tested. For parties whose wells were tested prior to the lodging of this Consent Order, Chemours shall ensure that they have received sampling results within seven (7) days of the lodging of this Consent Order.

23. Interim Replacement of Private Drinking Water Supplies: Within three (3) days of Chemours becoming aware that a party qualifies for permanent replacement of private drinking water pursuant to paragraph 19 or 20 (or, for parties whose wells were previously tested and found to qualify for permanent replacement water pursuant to paragraph 19 or 20, as soon as practicable and no later than thirty (30) days after entry of this Consent Order), Chemours shall offer temporary replacement water supplies (i.e., bottled water) until such time as permanent replacement water supplies have been provided. For any party that is eligible for permanent replacement water supplies pursuant to paragraph 19 or 20 but declines to receive such permanent replacement water supplies, Chemours shall provide bottled water for at least three (3) months

after receiving written confirmation that an affected party declines to receive permanent replacement water supplies.

24. Drinking Water Compliance Plan:

a. By no later than sixty (60) days after entry of this Order, Chemours shall submit a plan for compliance with paragraphs 19-23 to DEQ for approval. This plan shall include a detailed schedule with milestones for Chemours to fund a third party to (1) sample private drinking water wells, (2) flush the drinking water supply plumbing (including flushing hot water heaters to remove solids) and replace, when deemed necessary by DEQ, previously installed water treatment systems (such as water softeners or filters) for any building receiving permanent replacement drinking water supplies under paragraph 19, (3) implement a testing program of finished water, as acceptable to DEQ, to demonstrate the effectiveness of filter systems, and (4) maintain filtration systems installed pursuant to paragraph 19 or 20 for a minimum of 20 years or until such a time as testing of groundwater demonstrates that each PFAS listed in **Attachment C** is below any applicable health advisory, whichever is longer.

b. DEQ shall establish a process for addressing citizen complaints related to implementation of the plan.

c. In the event that a filtration system does not function properly or effectively as determined by DEQ, Chemours shall, within 30 days, submit a plan and schedule to DEQ for providing an alternative source of drinking water. Chemours shall implement the plan upon approval by DEQ.

25. Extension of Deadlines: For good cause shown, Chemours may submit to DEQ one or more requests for extensions of up three months each for any deadline specified in paragraphs 19-24.

G. OTHER COMPLIANCE MEASURES

25.1 Split Samples: Whenever Chemours collects any water sample pursuant to this Consent Order, it shall, if DEQ so requests for that sample, send a split sample to DEQ at a location to be specified by DEQ in its request, for additional analysis. DEQ retains its authority to take independent samples and to observe any sampling taken by Chemours or Chemours' contractor(s).

26. Total Organic Fluorine: Chemours shall fund development by a third party contractor(s) of a sampling and analytical methodology for the measurement of Total Organic Fluorine in its process air emissions and process wastewater. Chemours' contractor(s) shall (i) be approved by DEQ, (ii) submit quarterly reports to DEQ, and (iii) submit the completed methodology to DEQ for review by December 31, 2020.

27. Fate and Transport: Chemours shall fund development by a third party contractor(s) of a study, based on the best available data and information, analyzing the fate and transport of identified PFAS originating from the Facility in air, surface water and groundwater. Chemours' contractor(s) shall (i) be approved by DEQ, and (ii) submit the completed study to

DEQ for review by June 30, 2019. This study may be done as part of another study required by this Order.

28. Reporting: Chemours shall submit quarterly progress reports to DEQ detailing the work and activities undertaken and completed pursuant to the requirements set forth in this Order. The quarterly reports are due no later than the thirtieth (30th) day of January, April, July, and October for the duration of this Order.

H. COMPLIANCE MEASURES-PUBLIC INFORMATION

29. Whenever Chemours proposes to make a change to its facility operations that would result in (i) the use, production, or release into the environment of a previously undisclosed PFAS or (ii) the material increase in the release to the environment of a previously disclosed PFAS, Chemours shall conduct at least one public meeting in Bladen County or, at the request of DEQ, two public meetings—one in Bladen County and one in another county down river from the Facility—and, at least four weeks prior to the meetings, notify DEQ and Cape Fear River Watch when and where the meetings will occur. Chemours shall notify the public at least two weeks before the public hearing by issuing a press release and posting the release on a publicly available website. Any meeting shall be held prior to permit applications for the change, if any, being submitted to DEQ.

30. Chemours shall post all submissions made by Chemours to DEQ pursuant to this Order, other than any submissions containing (i) confidential business information of Chemours, (ii) information concerning specific residents or other individuals, or (iii) other information that

DEQ determines would be exempt from disclosure under the North Carolina Public Records Act and should not be posted, to a publicly accessible website within 30 days of submission.

I. PENALTIES AND INVESTIGATIVE COSTS

31. Stipulated Penalties: Unless excused under paragraph 32, Chemours shall pay, by certified check payable to the North Carolina Department of Environmental Quality, stipulated penalties according to the following schedule for failure to perform activities described in paragraphs 7-30.

Failure to meet 82% emissions reduction milestone in paragraph 8	$200,000
Failure to meet 92% emissions reduction milestone in paragraph 8	$350,000
Failure to meet 99% emissions reduction milestone in paragraph 8	$1,000,000
Failure to meet technology milestone in paragraph 7 (not including control efficiency requirements).	$5,000/day for first 14 days; $30,000/day thereafter
Failure to meet any control efficiency requirements in paragraph 7.	$50,000 for the first failed test. $25,000/week thereafter until the date of testing showing compliance.
Failure to meet PFAS loading reductions incorporated pursuant to paragraph 12.	To be incorporated in amended Order pursuant to paragraph 12
Failure to meet any other deadline in this Consent Order to which no other stipulated penalties are applicable.	$1,000/day for first 7 days; $2,000/day thereafter

32. Force Majeure: The stipulated penalties specified in paragraph 31 are not due if Chemours satisfies DEQ that noncompliance was caused solely by:

a. An act of God;

b. An act of war;

c. An intentional act or omission of a third party, but this defense shall not be available if the act or omission is that of an employee or agent of Chemours or if the act or omission occurs in connection with a contractual relationship with Chemours;

d. An extraordinary event beyond the Chemours' control, specifically including any court order staying the effectiveness of any necessary permit or approval. Contractor delays or failure to obtain funding will not be considered as events beyond Chemours' control; or

e. Any combination of the above causes.

33. Civil Penalty and Investigative Costs: By no later than thirty (30) days following entry of this Order, Chemours shall pay, by certified check payable to the North Carolina Department of Environmental Quality, a civil penalty in the amount of $12,000,000 and investigative costs in the amount of $1,000,000.

J. RELEASE AND RESERVATION OF RIGHTS

34. Subject to paragraph 35, this Consent Order releases and resolves civil and administrative claims for injunctive relief and civil penalties by Plaintiff against Chemours relating to the release of PFAS from the Facility that have been or could have been brought based on information known to DEQ prior to the lodging of the original Proposed Consent Order on November 28, 2018 for past and continuing violations of the following statutes and regulations:

the Clean Water Act and regulations promulgated thereunder; the Clean Air Act and regulations promulgated thereunder; and the North Carolina statutes and regulations referenced in the Complaint, the Amended Complaint and the NOVs (collectively, the "Subject Statutes and Regulations"). Furthermore, DEQ agrees that, based on information known to DEQ prior to the lodging of the original Proposed Consent Order on November 28, 2018, this Consent Order addresses and resolves any violation or condition at the Facility insofar as it could serve as the basis for a claim, proceeding, or action pursuant to Section 13.1(a) or (c) of North Carolina Session Law 2018-5.

35. Plaintiff reserves all legal and equitable remedies available to enforce the provisions of this Consent Order, including requesting the Court to exercise its contempt powers, provided that the stipulated penalties set forth in paragraph 31 shall be the exclusive monetary remedy for any violation of this Consent Order to which they apply. Plaintiff retains all legal and equitable remedies to address any imminent and substantial endangerment to the public health or welfare or the environment arising as a result of activities at the Facility whether related to the violations addressed in this Consent Order or otherwise. Nothing in this Order shall prevent Plaintiff, acting pursuant to applicable law, from requiring Chemours to take further interim measures to reduce air emissions of PFAS other than GenX Compounds prior to installation of the thermal oxidizer. Nothing in this Consent Order shall restrict the right of DEQ to inspect or take enforcement action against Chemours for any new or subsequent violations (violations not addressed in paragraph 34) of the Subject Statutes and Regulations, or the right of Chemours to

contest any subsequent enforcement action based on allegations of new, subsequent or repeated violations, to the extent provided by law.

35.1 Nothing in this Consent Order releases any other entity, including DuPont, from any liability they may have resulting from their actions.

36. Nothing in this Consent Order releases Chemours from any liability it may have to any third parties arising from Chemours' actions or releases any claims by any third party, including the claims in: (a) Nix v. The Chemours Co. FC, LLC, No. 7:17-CV-0189-D (E.D.N.C.); (b) Cape Fear Public Utility Authority v. The Chemours Co. FC, LLC, No. 7:17-CV-00195-D (E.D.N.C.); (c) Morton v. The Chemours Co., No. 7:17-CV-00197-D (E.D.N.C.); (d) Carey v. E.I. du Pont de Nemours & Co., No. 7:17-CV-00201-D (E.D.N.C.); (d) Brunswick Co. v. DowDuPont, Inc., No. 7:17-CV-00209-D (E.D.N.C.) (including the claims asserted by Town of Wrightsville Beach and Lower Cape Fear Water and Sewer Authority in the Master Complaint of Public Water Suppliers filed January 31, 2018); and (e) Dew v. E.I. du Pont de Nemours & Co., No. 7:18-cv-00073-D (E.D.N.C.).

K. INTERVENTION OF CAPE FEAR RIVER WATCH

37. For the purpose of entering into this Consent Order and resolving Cape Fear River Watch's pending actions in Cape Fear River Watch v. North Carolina Department of Environmental Quality, 18 CVS 2462 (New Hanover Cty. Sup. Ct.) and Cape Fear River Watch v. Chemours Company FC, LLC, No. 7:18-cv-00159 (E.D.N.C.), Plaintiff and Chemours consent to the intervention of Cape Fear River Watch as a Plaintiff in this matter.

38. Plaintiff shall have sole authority to enforce of the requirements of this Consent Order in this Court against Chemours, except that Cape Fear River Watch shall also have authority to enforce paragraphs 7, 8, 10, 11, 11.1, 11.2, 12, 15, 16(d), 29, 40, and 46, provided that Cape Fear River Watch's authority to enforce a requirement under paragraph 7 or 8 shall cease upon incorporation of that requirement into the Facility's air permit, and further provided that Cape Fear River Watch shall provide Chemours and DEQ with at least 14 days advance notice of any compliance concern that could result in an enforcement action, and the parties shall confer in an effort to resolve any dispute prior to its presentation to the Court. Furthermore, Cape Fear River Watch shall have the right to be heard in any proceeding before this Court in which Plaintiff is seeking to have the terms of this Consent Order enforced.

39. Within fifteen (15) days of entry of this Consent Order, Cape Fear River Watch agrees to voluntarily dismiss with prejudice its Petition for Judicial Review in Cape Fear River Watch v. North Carolina Department of Environmental Quality, 18 CVS 2462 (New Hanover Cty. Sup. Ct.). Within sixty (60) days of entry of this Consent Order, Cape Fear River Watch agrees to voluntarily dismiss with prejudice its action in Cape Fear River Watch v. Chemours Company FC, LLC, No. 7:18-cv-00159 (E.D.N.C.) for Chemours' alleged violations of the Clean Water Act and the Toxic Substances Control Act alleged by the Cape Fear River Watch prior to the date of entry of this Order.

40. Chemours shall provide quarterly progress reports submitted to DEQ concurrently to Cape Fear River Watch. Within thirty (30) days of receiving those reports, DEQ shall make relevant staff available for an in person meeting with Cape Fear River Watch to discuss the status

of Chemours' performance of its obligations under the Consent Order and DEQ's review of any relevant submissions.

L. MISCELLANEOUS

41. Effect of this Order: This Consent Order (a) shall be binding on the parties as an order of the Court, (b) is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation, and (c) is not, and shall not be construed to be, a determination on the merits of any of the factual allegations or legal claims advanced by any party in this action, including in DEQ's Complaint or Amended Complaint, Chemours' Answer, any Notices of Violation, or the proposed findings of fact or conclusions of law filed by DEQ in connection with prior motions or status reports. Nothing in this Consent Order limits Chemours' obligations to comply with the requirements of all applicable state and federal laws and regulations, provided that nothing in this sentence limits the scope of the release under paragraph 34.

42. No Admission: By agreeing to entry of this Consent Order, Chemours makes no admission of law or fact with respect to the allegations in the Complaint or Amended Complaint, any Notices of Violation, or the proposed findings of fact or conclusions of law filed by DEQ in connection with prior motions or status reports, and does not admit to any other factual or legal determination, and denies any non-compliance or violation of any law, regulation or permit referenced therein or in this Consent Order. In particular, and without limiting the foregoing, Chemours does not admit that any concentration-based standard referenced herein for GenX compounds or other PFAS is scientifically supported or legally or factually appropriate.

43. Findings of Fact and Conclusions of Law: The Parties waive any requirement for formal findings of fact and conclusions of law and agree that this Consent Order shall be binding upon them the same as if entered by a Superior Court Judge after a hearing on the merits of all matters now pending.

44. Carbon Filtration Systems: DEQ and Chemours have cooperated to develop and implement a program for testing the efficacy of granular activated carbon filtration systems in removing GenX and PFAS compounds from drinking water. Under test conditions, PFAS tested in post-treatment water were either not detected at all or detected at concentrations below 10 ng/L and near the reporting limit.

45. Cooperation: The Parties acknowledge that this Consent Order is the product of good faith efforts and discussions since the filing of the draft Proposed Order, and that Chemours has cooperated with DEQ in responding to issues and requests raised by DEQ and in voluntarily undertaking significant corrective and remedial measures while these discussions were ongoing.

46. Notices and Submissions:

a. Whenever notice is required to be given or a document is required to be sent by one Party to another under the terms of this Consent Order, it shall be provided to all parties, directed to the individuals at the addresses specified below, unless those individuals or their successors give notice of a change to the other Parties in writing. Notice or submission by electronic mail is acceptable.

As to DEQ:

Sheila Holman

Assistant Secretary for the Environment
1601 Mail Service Center
Raleigh, NC 27699-1601
sheila.holman@ncdenr.gov

Cc: William F. Lane
General Counsel
1601 Mail Service Center
Raleigh, NC 27699-1601
Bill.Lane@ncdenr.gov

Francisco Benzoni
Special Deputy Attorney General
PO Box 629
Raleigh, NC 27602
fbenzoni@ncdoj.gov

As to DAQ:

Michael Abraczinskas
Director, Division of Air Quality
1641 Mail Service Center
Raleigh, NC 27699-1641
michael.abraczinskas@ncdenr.gov

As to DWM:

Michael Scott
Director, Division of Waste Management
1646 Mail Service Center
Raleigh, NC 27699-1646
michael.scott@ncdenr.gov

As to DWR:

Linda Culpepper
Interim Director, Division of Water Resources
1611 Mail Service Center
Raleigh, NC 27699-1611

As to Chemours:

David C. Shelton, Esq.
Senior Vice President, General Counsel & Corporate Secretary
The Chemours Company
1007 Market Street
Wilmington, DE 19898
(302) 773-2588
David.c.shelton@chemours.com

Cc: John F. Savarese, Esq.
Wachtell, Lipton, Rosen & Katz
51 West 52nd Street
New York, NY 10019
(212) 403-1000
jfsavarese@wlrk.com

As to Cape Fear River Watch:

Kemp Burdette
Cape Fear River Watch
617 Surry Street
Wilmington, NC 28401
(910) 762-5606
kemp@cfrw.us

cc: Geoff Gisler
Southern Environmental Law Center
601 West Rosemary Street, Suite 220
Chapel Hill, NC 27516-2356
(919) 967-1450
ggisler@selcnc.org

b. Chemours shall provide all submissions and notices made by Chemours to DEQ, DAQ, DWM, DWR pursuant to this Order concurrently to Cape Fear River Watch, redacting confidential business information of Chemours, and information concerning specific residents or other individuals. DEQ shall consider all timely comments received from Cape Fear River Watch prior to agency approval of any such document.

47. Permits: In accordance with applicable law, DEQ agrees to review and act timely on all applications by Chemours for permits necessary for Chemours to undertake the actions required under this Consent Order, including without limitation all permits necessary for Chemours to construct, install and operate the thermal oxidizer system. In accordance with applicable law, DEQ agrees (i) to review and act timely on an application by Chemours for a new NPDES permit; (ii) to meet monthly with Chemours and work in good faith with Chemours to identify, review and discuss information necessary for Chemours to complete its application; and (iii) to review and act on Chemours' application in a manner consistent with the Clean Water Act and associated regulations as well as N.C. Gen. Stat. § 143-215.1 and associated regulations, practices, and procedures for permitting the discharge of industrial process wastewater with conditions and limitations necessary to protect public health and the environment.

48. Public Participation: The original Proposed Consent Order was previously released for public notice and comment by DEQ for a period of forty seven (47) days. DEQ reserved the right to withdraw or withhold its consent if the comments regarding the Consent Order disclosed facts or considerations indicating that the Consent Order is inappropriate, improper, inadequate, or required modification. Following the close of that comment period and DEQ's consideration of comments received, (i) DEQ fully addressed the comments it received, (ii) the Parties agreed to the modifications that are reflected in this Consent Order in response to public comment, and (iii) the Parties support and will seek the entry of this Consent Order by the Court. The Parties consent

to entry of this Consent Order and agree not to withdraw from or oppose entry of this Consent Order by the Court or to challenge any provision of the Consent Order.

49. Successors and Assigns: This Consent Order shall be binding upon, and inure to the benefit of, the Parties and their respective successors and assigns (who shall not be considered third parties). No third party shall be deemed the beneficiary of, or as having the right to enforce, this Consent Order.

50. Effective Date: This Consent Order shall become effective on the date that it is entered by the Court. In the event that deadlines for any obligations under this Consent Order arise prior to its entry by the Court, such obligations shall take effect upon such entry by the Court.

51. Duration: This Court retains jurisdiction over both the subject matter of this Consent Order and the Parties for the duration of the performance of the terms and provisions of this Consent Order to effectuate or enforce compliance with the terms of this Consent Order, provided that after January 1, 2023, any provision of this Consent Order may be terminated under the following circumstances:

a. (i) Chemours has discharged the obligations set forth in the provision and six months have elapsed since the date on which Chemours discharged its obligations; or (ii) If the requirements of the provision have not been fully discharged, requirements at least as stringent have been incorporated into a permit, Corrective Action Plan, or other regulatory instrument enforceable by DEQ; and

b. (i) The Parties stipulate that the above conditions have been met and file a notice of full or partial termination with the Court; or (ii) After all parties have been heard, Chemours demonstrates to the Court that the conditions specified in subparagraph (a) above have been met.

52. This Consent Order may be signed out-of-court, out-of-term, and out-of-county.

This the 25th day of February, 2019.

Douglas B. Sasser
Superior Court Judge

CONSENTED TO BY:

NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY

By: ______________________ Date: 2-20-19
Michael Regan
Secretary

By: ______________________ Date: 02/20/2019
Francisco Benzoni, as to form only
Special Deputy Attorney General

THE CHEMOURS COMPANY FC, LLC

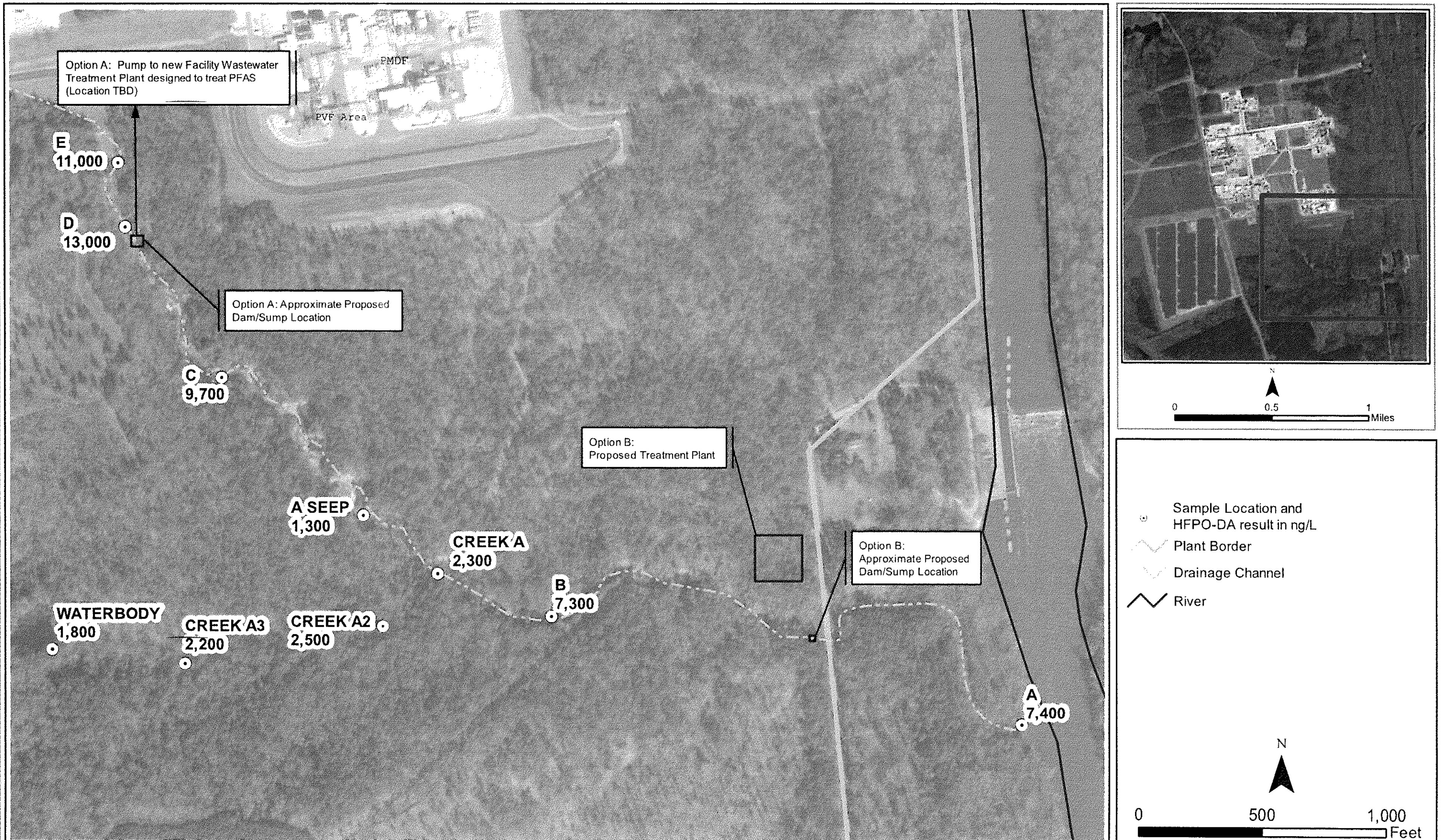
By: ______________________ Date: 19 February 2019
David Shelton
Senior Vice President, General Counsel, and Corporate Secretary

By: ______________________ Date: 2/19/2019
John Savarese
Counsel for Chemours

CAPE FEAR RIVER WATCH

By: ______________________ Date: 2/19/2019
Kemp Burdette
Cape Fear Riverkeeper

By: ______________________ Date: 2/20/2019
Geoff Gisler
Counsel for Cape Fear River Watch



PARSONS
PE&I
4701 Hedgemore Dr.
Charlotte, NC 28209

Old Outfall No. 2- Treatment Options
Focused Feasability Study Report - PFAS
Chemours Fayetteville Works
Fayetteville, North Carolina

Attachment A

Drawn:	Date:	File Project Number:
C. Oneal	3/26/2018	449338.01050
Revision: 1	Figure Number: 5	
Name: Option_F4		

Path: D:\GIS\Fayetteville\Gis\Project_figures\2018\Option_F4.mxd

ATTACHMENT B

Chemours' proposed plan to conduct toxicity studies pursuant to paragraph 14 shall include:

(i) Testing of the following PFAS compounds:*

<table>
<tr><th colspan="2">Common Name</th><th colspan="2">Chemical Name</th><th colspan="2">CASN</th><th>Chemical Formula</th></tr>
<tr><td colspan="2">PFMOAA</td><td colspan="2">Perfluoro- 2-methoxyacetic acid</td><td colspan="2">674-13-5</td><td>C3HF5O3</td></tr>
<tr><td>PMPA</td><td>PFMOPrA</td><td>Perfluoro-2-methoxypropanoic acid</td><td>Perfluoro-3-methoxypropanoic acid</td><td>13140-29-9</td><td>377-73-1</td><td>C4HF7O3</td></tr>
<tr><td colspan="2">PFO2HXA</td><td colspan="2">Perfluoro(3,5-dioxahexanoic) acid</td><td colspan="2">39492-88-1</td><td>C4HF7O4</td></tr>
<tr><td>PEPA</td><td>PFMOBA</td><td>2,3,3,3-Tetrafluoro-2-(pentafluoroethoxy) propanoic acid</td><td>Perfluoro-4-methoxybutanoic acid</td><td>267239-61-2</td><td>863090-89-5</td><td>C5HF9O3</td></tr>
<tr><td colspan="2">PFESA-BP2 / Nafion BP #2</td><td colspan="2">Nafion Byproduct 2</td><td colspan="2">749836-20-2</td><td>C7H2F14O5S</td></tr>
</table>

* For clarification, compounds identified with two common names in Attachment B or C shall be tested using a single CASN, to be proposed by Chemours and approved by DEQ.

(ii) The following studies, which shall be conducted following applicable USEPA, OECD protocols as defined in the USEPA TSCA, OPPT or other appropriate programs as determined by DEQ:

a. Toxicity Studies:
- 28-day oral immunotoxicity study in rats
- 28-day oral immunotoxicity study in mice
- 90-day repeated dose oral toxicity study in rats
- 90-day repeated dose oral toxicity study in mice

b. Ecological Toxicity Studies:
- Algal acute (72-hour growth) toxicity study
- Daphnid acute toxicity study
- Daphnid chronic (reproduction) toxicity study
- Fish acute toxicity study
- Sediment 10-day freshwater invertebrates toxicity test

(iii) A detailed proposed schedule of work.

ATTACHMENT C

For purposes of paragraphs 19-21 and 24 "PFAS" shall mean the following compounds, unless Chemours demonstrates to the reasonable satisfaction of DEQ that the PFAS in a given well did not originate from the Facility:

<table>
<tr><th colspan="2">Common Name</th><th colspan="2">Chemical Name</th><th colspan="2">CASN</th><th>Chemical Formula</th></tr>
<tr><td colspan="2">PFMOAA</td><td colspan="2">Perfluoro- 2-methoxyacetic acid</td><td colspan="2">674-13-5</td><td>C3HF5O3</td></tr>
<tr><td>PMPA</td><td>PFMOPrA</td><td>Perfluoro-2-methoxypropanoic acid</td><td>Perfluoro-3-methoxypropanoic acid</td><td>13140-29-9</td><td>377-73-1</td><td>C4HF7O3</td></tr>
<tr><td colspan="2">PFO2HXA</td><td colspan="2">Perfluoro(3,5-dioxahexanoic) acid</td><td colspan="2">39492-88-1</td><td>C4HF7O4</td></tr>
<tr><td>PEPA</td><td>PFMOBA</td><td>2,3,3,3-Tetrafluoro-2-(pentafluoroethoxy) propanoic acid</td><td>Perfluoro-4-methoxybutanoic acid</td><td>267239-61-2</td><td>863090-89-5</td><td>C5HF9O3</td></tr>
<tr><td colspan="2">PFO3OA</td><td colspan="2">Perfluoro(3,5,7-trioxaoctanoic) acid</td><td colspan="2">39492-89-2</td><td>C5HF9O5</td></tr>
<tr><td colspan="2">PFO4DA</td><td colspan="2">Perfluoro(3,5,7,9-tetraoxadecanoic) acid</td><td colspan="2">39492-90-5</td><td>C6HF11O6</td></tr>
<tr><td colspan="2">PFESA-BP1 / Nafion BP #1</td><td colspan="2">Nafion Byproduct 1</td><td colspan="2">66796-30-3; 29311-67-9</td><td>C7HF13O5S</td></tr>
<tr><td colspan="2">PFESA-BP2 / Nafion BP #2</td><td colspan="2">Nafion Byproduct 2</td><td colspan="2">749836-20-2</td><td>C7H2F14O5S</td></tr>
<tr><td colspan="2">PFECA-G</td><td colspan="2">Hexanoic acid, 2,2,3,3,4,4,5,5,6,6-decafluoro-6-(trifluoromethoxy)-; Butanoic acid, 2,2,3,3,4,4- hexafluoro-4-[1,2,2,2-tetrafluoro-1- (trifluoromethyl)ethoxy]-</td><td colspan="2">174767-10-3; 801212-59-9</td><td>C7HF13O3</td></tr>
<tr><td colspan="2">TAFN4 / PF05DA</td><td colspan="2">Perfluoro(3,5,7,9,11-pentadodecanoic) acid</td><td colspan="2">39492-91-6</td><td>C7HF13O7</td></tr>
<tr><td colspan="2">PFHpA</td><td colspan="2">Perfluoroheptanoic acid</td><td colspan="2">375-85-9</td><td>C7HF13O2</td></tr>
<tr><td colspan="2">HFPO-DA / PFPrOPrA / "GenX"</td><td colspan="2">2,3,3,3-Tetrafluoro-2 (1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid)</td><td colspan="2">13252-13-6</td><td>C6HF11O3</td></tr>
</table>

APPENDIX B

Analytical Data Used in the SLEA

Table B-1
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Surface and Subsurface Soil

Exposure Unit [1]	Depth (ft bgs)	Sample ID [2]	Sample Date	Units	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2	Byproduct 4	Byproduct 5	Byproduct 6	NVHOS	EVE Acid	Hydro-EVE Acid	R-EVE	PES	PFECA B	PFECA-G
EU-01	0-0.5	EU-1-SOIL-0-.5-091219	9/12/2019	ng/kg	**2,600**	<1,000	**2,300**	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU-2	0-0.5	EU2-soil-0-0.5	7/25/2019	ng/kg	<250 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU-3	0-0.5	EU-3-soil-0-0.5	7/31/2019	ng/kg	**360 J**	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU-4	0-0.5	EU-4-SOIL-0-.5-081919	8/19/2019	ng/kg	<250 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU-5	0-0.5	EU-5-SOIL-0-.5-082319	8/23/2019	ng/kg	<250	<1,000 UJ	**1,400 J**	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU-6	0-0.5	EU6-soil-0-0.5	7/25/2019	ng/kg	<250 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU-7	0-0.5	EU-7-SOIL-0-.5-081919	8/19/2019	ng/kg	<250 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU-8	0-0.5	EU-8-SOIL-0-.5-081619	8/16/2019	ng/kg	<250 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU-9	0-0.5	EU-9-SOIL-0-.5-082119	8/21/2019	ng/kg	<250	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU-10	0-0.5	EU-10-SOIL-0-.5-082119	8/21/2019	ng/kg	<250	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU-11	0-0.5	EU-11-soil-0-0.5	7/31/2019	ng/kg	<250 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU-12	0-0.5	EU-12-SOIL-0-.5-082019	8/20/2019	ng/kg	<250 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU-12 DUP	0-0.5	EU-12-SOIL-0-.5-082019-D [3]	8/20/2019	ng/kg	<250 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU-01	4-4.5	EU-1-Soil-4-4.5-081419	8/14/2019	ng/kg	**430 J**	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000
EU-2	4-4.5	EU-2-SOIL-4-4.5-082219	8/22/2019	ng/kg	<250	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000
EU-3	4-4.5	EU-3-SOIL-4-4.5-082219	8/22/2019	ng/kg	<250	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU-4	4-4.5	EU-4-Soil-4-4.5-081319	8/13/2019	ng/kg	**590**	<1,000 UJ	**2,300 J**	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000 R	<1,000 R	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000 R	<1,000	<1,000 UJ	<1,000 UJ
EU-5	4-4.5	EU-5-SOIL-4-4.5-081519	8/15/2019	ng/kg	<250	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000 R	<1,000 R	<1,000	<1,000	<1,000	<1,000	<1,000 R	<1,000	<1,000	<1,000
EU-6	4-4.5	EU-6-SOIL-4-4.5-081519	8/15/2019	ng/kg	<250	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000 R	<1,000	<1,000	<1,000
EU-7	4-4.5	EU-7-Soil-4-4.5-081419	8/14/2019	ng/kg	<250	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000 R	<1,000 R	<1,000	<1,000	<1,000	<1,000	<1,000 R	<1,000	<1,000	<1,000 UJ
EU-8	4-4.5	EU-8-Soil-4-4.5-081319	8/13/2019	ng/kg	**260**	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000 R	<1,000 R	<1,000	<1,000	<1,000	<1,000	<1,000 R	<1,000	<1,000	<1,000
EU-8 DUP	4-4.5	EU-8-Soil-4-4.5-081319-D [3]	8/13/2019	ng/kg	**400**	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000 R	<1,000 R	<1,000	<1,000	<1,000	<1,000	<1,000 R	<1,000	<1,000	<1,000
EU-9	4-4.5	EU9-SOIL-4-4.5-082719	8/27/2019	ng/kg	<250 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000
EU-10	4-4.5	EU10-SOIL-4-4.5-082719	8/27/2019	ng/kg	<250 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000
EU-11	4-4.5	EU-11-SOIL-4-4.5-081519	8/15/2019	ng/kg	<250	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000 R	<1,000 R	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000 R	<1,000	<1,000 UJ	<1,000 UJ
EU-12	4-4.5	EU-12-SOIL-4-4.5-082219	8/22/2019	ng/kg	<250	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000 R	<1,000 R	<1,000	<1,000	<1,000	<1,000	<1,000 R	<1,000	<1,000	<1,000

Definitions:
[1] Exposure Units (EUs) are defined as follows:
EU1 - 2.5 kilometer radius, northeast
EU2 - 2.5 kilometer radius, southeast
EU3 - 2.5 kilometer radius, southwest
EU4 - 2.5 kilometer radius, northwest
EU5 - 5 kilometer radius, northeast
EU6 - 5 kilometer radius, southeast
EU7 - 5 kilometer radius, southwest
EU8 - 5 kilometer radius, northwest
EU9 - 10 kilometer radius, northeast
EU10 - 10 kilometer radius, southeast
EU11 - 10 kilometer radius, southwest
EU12 - 10 kilometer radius, northwest
[2] Surface soil (0-0.5 ft bgs) results represent composite samples. Subsurface soil (4-4.5 ft bgs) results represent discrete samples
[3] The higher of the duplicate and parent result was used in the SLEA intake and risk characterization

Notes:
Bold - Analyte detected above associated reporting limit
< - Analyte not detected above associated reporting limit.
"--" - Data not available
ft bgs = feet below ground surface
J - Analyte detected. Reported value may not be accurate or precise
ng/kg - nanogram(s) per kilogram
DUP - field duplicate sample
R - Result rejected based on quality assurance/quality control criteria
UJ – Analyte not detected. Reporting limit may not be accurate or precise.

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU1	177	9/15/2017	9/15/2017	ng/L	260	--	--	--	--	--	--	--	--	--	--
EU1	178	9/15/2017	9/21/2017	ng/L	343	--	--	--	--	--	--	--	--	--	--
EU1	176	9/25/2017	9/25/2017	ng/L	1000	--	--	--	--	--	--	--	--	--	--
EU1	175	9/15/2017	3/14/2018	ng/L	530	--	--	--	--	--	--	--	--	--	--
EU1	154	4/11/2018	4/11/2018	ng/L	1.81	--	--	--	--	--	--	--	--	--	--
EU1	174	9/13/2017	11/7/2017	ng/L	26.7	--	--	--	--	--	--	--	--	--	--
EU1	173	9/6/2017	3/28/2018	ng/L	586	--	--	--	--	--	--	--	--	--	--
EU1	173	3/28/2018	3/28/2018	ng/L	313	--	--	--	--	--	--	--	--	--	--
EU1	153	9/22/2017	12/13/2017	ng/L	523	<20	<2	<2	<2	<5	<2	<2	<2	<2	60
EU1	172	9/6/2017	3/9/2018	ng/L	300	--	--	--	--	--	--	--	--	--	--
EU1	171	9/8/2017	9/8/2017	ng/L	820	--	--	--	--	--	--	--	--	--	--
EU1	169	9/15/2017	9/15/2017	ng/L	660	--	--	--	--	--	--	--	--	--	--
EU1	169	9/18/2017	9/18/2017	ng/L	430	--	--	--	--	--	--	--	--	--	--
EU1	168	8/15/2018	8/15/2018	ng/L	840	--	--	--	--	--	--	--	--	--	--
EU1	166	9/14/2017	9/14/2017	ng/L	730	--	--	--	--	--	--	--	--	--	--
EU1	151	9/14/2017	10/8/2019	ng/L	4200	820	<2	<2	77	800	4400	580	120	18	2300
EU1	165	9/6/2017	11/7/2017	ng/L	26.5	--	--	--	--	--	--	--	--	--	--
EU1	164	9/28/2017	9/3/2019	ng/L	1000	400	<2	<2	32	270	870	86	35	13	1400
EU1	163	9/6/2017	9/11/2019	ng/L	1200	370	<1.1	<1.1	28	290	830	86	22	12	1600
EU1	162	9/28/2017	9/3/2019	ng/L	890	370	<2	<2	5	200	510	44	11	<2	1300
EU1	160	9/6/2017	9/25/2019	ng/L	<1.76	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU1	254	7/20/2018	7/20/2018	ng/L	1000	--	--	--	--	--	--	--	--	--	--
EU1	179	9/6/2017	9/6/2017	ng/L	260	--	--	--	--	--	--	--	--	--	--
EU1	181	9/20/2017	9/20/2017	ng/L	<1.76	--	--	--	--	--	--	--	--	--	--
EU2	239	9/18/2017	9/18/2017	ng/L	<2.01	--	--	--	--	--	--	--	--	--	--
EU2	240	9/22/2017	8/28/2019	ng/L	1200	780	<2	<2	130	410	1300	160	60	16	3100
EU2	240	8/6/2018	8/6/2018	ng/L	780	--	--	--	--	--	--	--	--	--	--
EU3	284	6/15/2018	6/15/2018	ng/L	530	--	--	--	--	--	--	--	--	--	--
EU3	297	10/17/2017	10/17/2017	ng/L	400	--	--	--	--	--	--	--	--	--	--
EU3	302	2/5/2018	2/5/2018	ng/L	240	--	--	--	--	--	--	--	--	--	--
EU3	305	10/17/2017	10/17/2017	ng/L	390	--	--	--	--	--	--	--	--	--	--
EU3	312	10/17/2017	11/7/2017	ng/L	442	--	--	--	--	--	--	--	--	--	--
EU3	236	9/7/2017	9/20/2017	ng/L	670	--	--	--	--	--	--	--	--	--	--
EU3	237	9/19/2017	9/10/2019	ng/L	1200	570	<2	<2	27	250	810	160	41	<2	1800
EU3	726	9/18/2017	10/20/2017	ng/L	453	--	--	--	--	--	--	--	--	--	--
EU3	391	12/20/2017	5/2/2018	ng/L	140	--	--	--	--	--	--	--	--	--	--
EU3	636	9/18/2019	9/18/2019	ng/L	62	55	<2	<2	11	17	20	<2	<2	<2	310
EU3	573	9/18/2017	10/23/2017	ng/L	176	190	<50	<50	<50	74	110	<50	<50	<100	920
EU3	689	10/18/2017	10/18/2017	ng/L	350	--	--	--	--	--	--	--	--	--	--
EU4	439	10/25/2017	10/25/2017	ng/L	360	140	<2	<2	25	88	220	17	4.8	<2	470
EU4	262	9/21/2017	7/16/2019	ng/L	460	220	<2	<2	33	140	470	38	12	<2	760
EU4	443	9/29/2017	10/19/2018	ng/L	105	--	--	--	--	--	--	--	--	--	--
EU4	444	10/5/2017	10/5/2017	ng/L	420	--	--	--	--	--	--	--	--	--	--

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU4	450	10/20/2017	10/20/2017	ng/L	**380**	--	--	--	--	--	--	--	--	--	--
EU4	462	10/24/2017	10/3/2019	ng/L	**1100**	**400**	<2	<2	**44**	**270**	**730**	**48**	**10**	<2	**1600**
EU4	256	9/15/2017	12/13/2017	ng/L	**76.9**	--	--	--	--	--	--	--	--	--	--
EU4	255	9/19/2017	9/19/2017	ng/L	**440**	**170**	<50	<50	<50	**83**	**280**	<50	<50	<100	**680**
EU4	261	9/15/2017	12/13/2017	ng/L	**72.8**	--	--	--	--	--	--	--	--	--	--
EU4	185	9/7/2017	9/7/2017	ng/L	**670**	**310**	<50	<50	<50	**170**	**560**	**88**	<50	<100	**1000**
EU4	190	9/7/2017	9/7/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU4	189	9/15/2017	9/10/2019	ng/L	**160**	**130**	<2	<2	**5.6**	**52**	**120**	**7.8**	<2	<2	**440**
EU4	186	9/20/2017	9/20/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU4	148	9/7/2017	9/19/2017	ng/L	**20.8**	<20	<2	<2	<2	<5	**2.1**	<2	<2	<2	**37**
EU4	191	9/8/2017	9/8/2017	ng/L	<10	--	--	--	--	--	--	--	--	--	--
EU4	147	9/13/2017	9/20/2017	ng/L	**55.2**	--	--	--	--	--	--	--	--	--	--
EU4	498	12/4/2017	8/13/2019	ng/L	**190**	**100**	<1.1	<1.1	**8.1**	**62**	**120**	**7.8**	**1.8**	<1.1	**410**
EU4	192	9/15/2017	9/15/2017	ng/L	**14**	--	--	--	--	--	--	--	--	--	--
EU4	180	9/18/2017	9/20/2017	ng/L	<2.29	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU4	250	9/13/2017	9/18/2017	ng/L	**30**	--	--	--	--	--	--	--	--	--	--
EU4	249	9/13/2017	9/18/2017	ng/L	**78.2**	--	--	--	--	--	--	--	--	--	--
EU4	248	9/13/2017	9/18/2017	ng/L	**8.4**	<20	<2	<2	<2	**6.7**	**7.6**	<2	<2	<2	**22**
EU4	247	9/15/2017	9/15/2017	ng/L	**0.684**	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU4	246	9/19/2017	9/19/2017	ng/L	<1.83	--	--	--	--	--	--	--	--	--	--
EU4	245	9/19/2017	9/19/2017	ng/L	**7.79**	--	--	--	--	--	--	--	--	--	--
EU4	244	9/19/2017	9/19/2017	ng/L	**21.1**	--	--	--	--	--	--	--	--	--	--
EU4	243	10/31/2018	10/31/2018	ng/L	**10**	<20	<2	<2	<2	<5	<2	<2	<2	<2	**33**
EU4	260	9/15/2017	9/21/2017	ng/L	**170**	--	--	--	--	--	--	--	--	--	--
EU4	199	9/20/2017	9/20/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU4	198	9/8/2017	9/8/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU4	196	9/8/2017	10/23/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU4	215	10/6/2017	10/6/2017	ng/L	**140**	--	--	--	--	--	--	--	--	--	--
EU4	212	9/8/2017	10/6/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU4	213	10/6/2017	10/6/2017	ng/L	**19**	--	--	--	--	--	--	--	--	--	--
EU4	214	7/26/2019	7/26/2019	ng/L	**21**	<20	<2	<2	<2	**7.2**	**14**	<2	<2	<2	**45**
EU4	218	9/20/2017	9/20/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**15**
EU4	210	9/8/2017	10/10/2017	ng/L	**150**	--	--	--	--	--	--	--	--	--	--
EU4	219	9/8/2017	7/5/2019	ng/L	**12**	<20	<2	<2	<2	<5	**4.4**	<2	<2	<2	**24**
EU4	220	9/8/2017	10/1/2019	ng/L	**280**	**110**	<2	<2	**13**	**100**	**180**	**21**	**3.9**	<2	**460**
EU4	234	9/13/2017	10/10/2019	ng/L	**350**	**140**	<2	<2	**22**	**130**	**320**	**25**	**9**	<2	**460**
EU4	229	9/7/2017	9/19/2017	ng/L	**43**	--	--	--	--	--	--	--	--	--	--
EU4	229	9/7/2017	9/7/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU4	231	9/19/2017	9/19/2017	ng/L	<1.75	--	--	--	--	--	--	--	--	--	--
EU4	232	4/23/2019	4/23/2019	ng/L	**330**	**86**	<2	<2	**10**	**96**	**210**	**20**	**4.9**	<2	**310**
EU4	242	9/7/2017	9/7/2017	ng/L	**47**	--	--	--	--	--	--	--	--	--	--
EU4	2485 [3]	1/10/2018	1/10/2018	ng/L	**0**	--	--	--	--	--	--	--	--	--	--
EU5	700	10/18/2017	10/18/2017	ng/L	**49**	--	--	--	--	--	--	--	--	--	--

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU5	989	12/15/2017	12/15/2017	ng/L	<5.4	<20	<2	<2	<2	<5	2.3	<2	<2	<2	11
EU5	701	10/25/2017	1/31/2018	ng/L	527	--	--	--	--	--	--	--	--	--	--
EU5	945	11/30/2017	11/30/2017	ng/L	20	--	--	--	--	--	--	--	--	--	--
EU5	880	11/29/2017	11/29/2017	ng/L	<4	<100	<50	<50	<50	<50	<50	<50	<50	<100	<50
EU5	1212	8/14/2018	8/14/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	2279	2/8/2018	2/8/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	2349	1/31/2018	3/28/2018	ng/L	1.87	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	2283	2/7/2018	2/7/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	2378	1/31/2018	4/30/2018	ng/L	151	--	--	--	--	--	--	--	--	--	--
EU5	2276	1/30/2018	9/17/2019	ng/L	150	80	<2	<2	<2	32	27	<2	<2	<2	450
EU5	3165	6/25/2019	6/25/2019	ng/L	110	80	<2	<2	<2	30	27	<2	<2	<2	460
EU5	825	9/20/2019	9/20/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	2282	2/19/2018	2/19/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	2281	1/31/2018	1/31/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	2350	1/31/2018	1/31/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	2277	2/6/2018	2/6/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	2347	2/8/2018	3/28/2018	ng/L	1.85	<20	<2	<2	<2	<5	<2	<2	<2	<2	21
EU5	2272	1/31/2018	1/31/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	47
EU5	2348	2/20/2018	6/3/2019	ng/L	26	<20	<2	<2	<2	<5	<2	<2	<2	<2	100
EU5	2270	1/31/2018	1/31/2018	ng/L	190	--	--	--	--	--	--	--	--	--	--
EU5	2275	1/31/2018	1/31/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	2269	1/31/2018	1/31/2018	ng/L	12	<100	<50	<50	<50	<50	<50	<50	<50	<100	66
EU5	503	5/2/2018	11/27/2018	ng/L	98	--	--	--	--	--	--	--	--	--	--
EU5	765	9/29/2017	10/17/2017	ng/L	132	--	--	--	--	--	--	--	--	--	--
EU5	765	9/29/2017	10/17/2017	ng/L	267	--	--	--	--	--	--	--	--	--	--
EU5	765	9/29/2017	9/29/2017	ng/L	112	--	--	--	--	--	--	--	--	--	--
EU5	766	5/2/2018	11/27/2018	ng/L	150	140	<50	<50	<50	51	78	<50	<50	<100	580
EU5	826	11/30/2017	11/30/2017	ng/L	89	--	--	--	--	--	--	--	--	--	--
EU5	827	11/30/2017	11/30/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	828	11/30/2017	11/30/2017	ng/L	34	--	--	--	--	--	--	--	--	--	--
EU5	144	10/17/2017	8/6/2019	ng/L	290	160	<1.1	<1.1	1.5	59	79	1.8	<1.1	<1.1	600
EU5	144	10/17/2017	10/17/2017	ng/L	770	--	--	--	--	--	--	--	--	--	--
EU5	138	10/17/2017	8/6/2019	ng/L	310	260	<1.1	<1.1	6.7	89	150	6.1	<1.1	<1.1	840
EU5	139	12/5/2017	12/5/2017	ng/L	260	--	--	--	--	--	--	--	--	--	--
EU5	137	10/13/2017	10/26/2018	ng/L	2500	<1000	<960	<1200	<950	<950	2400	<880	<970	<1100	2500
EU5	822	11/22/2017	8/13/2019	ng/L	970	660	<1.1	<1.1	19	140	300	18	1.8	<1.1	2800
EU5	822	11/22/2017	11/22/2017	ng/L	670	--	--	--	--	--	--	--	--	--	--
EU5	505	10/27/2017	7/30/2019	ng/L	630	240	<1.1	<1.1	41	170	340	18	6.6	<1.1	1100
EU5	506	11/22/2017	9/24/2019	ng/L	570	400	<2	<2	22	230	430	29	9.2	2.9	1600
EU5	512	10/19/2017	8/21/2019	ng/L	1800	980	<2	<2	65	380	910	100	28	5	3500
EU5	922	11/29/2017	10/22/2018	ng/L	120	--	--	--	--	--	--	--	--	--	--
EU5	829	12/5/2017	12/5/2017	ng/L	280	190	<50	<50	<50	97	270	<50	<50	<100	630
EU5	915	11/29/2017	9/16/2019	ng/L	3400	2400	<2	<2	60	460	2500	170	4.7	<2	9300

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU5	515	11/21/2017	8/7/2019	ng/L	510	260	<1.1	<1.1	34	170	530	130	28	5.7	1100
EU5	516	10/24/2017	8/27/2019	ng/L	700	290	<2	<2	70	220	730	150	38	4	1300
EU5	830	12/20/2017	7/9/2019	ng/L	31	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	1020	2/13/2019	2/13/2019	ng/L	17	<2	<2	<2	<2	<5	2.7	<2	<2	<2	28
EU5	1000	12/12/2017	12/12/2017	ng/L	76	--	--	--	--	--	--	--	--	--	--
EU5	2335	2/5/2018	2/5/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	2356	2/7/2018	2/7/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	2327	3/9/2018	11/30/2018	ng/L	130	--	--	--	--	--	--	--	--	--	--
EU5	2320	2/6/2018	2/6/2018	ng/L	49	--	--	--	--	--	--	--	--	--	--
EU5	2305	2/6/2018	2/6/2018	ng/L	92	--	--	--	--	--	--	--	--	--	--
EU5	2304	2/13/2018	2/13/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	832	11/29/2017	11/29/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	14
EU5	839	11/29/2017	11/29/2017	ng/L	13	--	--	--	--	--	--	--	--	--	--
EU5	539	11/27/2017	11/27/2017	ng/L	53	--	--	--	--	--	--	--	--	--	--
EU5	851	5/29/2019	8/6/2019	ng/L	490	280	<1.1	<1.1	12	130	300	14	2.1	<1.1	770
EU5	852	12/15/2017	8/6/2019	ng/L	590	290	<1.1	<1.1	13	160	330	18	2.1	<1.1	880
EU5	852	5/1/2018	5/1/2018	ng/L	34	--	--	--	--	--	--	--	--	--	--
EU5	853	11/29/2017	11/29/2017	ng/L	16	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	545	10/18/2017	9/10/2019	ng/L	1200	240	<2	<2	66	250	560	16	<2	<2	700
EU5	546	10/27/2017	10/1/2019	ng/L	260	170	<2	<2	23	120	330	32	6.8	<2	590
EU5	930	12/14/2017	12/14/2017	ng/L	78	--	--	--	--	--	--	--	--	--	--
EU5	1021	11/29/2017	11/29/2017	ng/L	30	--	--	--	--	--	--	--	--	--	--
EU5	548	10/24/2017	6/26/2019	ng/L	3.56	<20	<2	<1.38	<1.38	<1.38	<1.38	<1.38	<1.38	<2	<10
EU5	548	10/24/2017	2/13/2018	ng/L	1.85	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	548	10/25/2017	2/13/2018	ng/L	1.85	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	1022	11/30/2017	11/30/2017	ng/L	53	--	--	--	--	--	--	--	--	--	--
EU5	855	11/30/2017	11/30/2017	ng/L	17	--	--	--	--	--	--	--	--	--	--
EU5	551	10/27/2017	10/27/2017	ng/L	370	--	--	--	--	--	--	--	--	--	--
EU5	269	9/28/2017	6/26/2019	ng/L	<0.647	<20	<2	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<2	<10
EU5	977	8/2/2019	8/2/2019	ng/L	<2.6	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	<5.3
EU5	931	11/29/2017	7/23/2018	ng/L	170	--	--	--	--	--	--	--	--	--	--
EU5	862	12/19/2017	12/19/2017	ng/L	22	--	--	--	--	--	--	--	--	--	--
EU5	864	11/29/2017	9/18/2019	ng/L	760	220	<2	<2	27	150	830	130	28	<2	530
EU5	865	11/29/2017	9/24/2019	ng/L	620	210	<2	<2	38	110	310	46	13	<2	610
EU5	866	11/30/2017	1/31/2018	ng/L	30.2	--	--	--	--	--	--	--	--	--	--
EU5	867	12/29/2017	12/29/2017	ng/L	480	--	--	--	--	--	--	--	--	--	--
EU5	933	11/30/2017	9/26/2019	ng/L	1600	160	<2	<2	38	150	690	58	11	2.4	540
EU5	868	12/7/2017	12/7/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	934	7/22/2019	7/22/2019	ng/L	1200	290	<2	<2	67	240	870	100	21	<2	800
EU5	935	11/30/2017	1/31/2018	ng/L	99	--	--	--	--	--	--	--	--	--	--
EU5	869	12/14/2017	9/24/2019	ng/L	690	180	<2	<2	22	110	290	39	6.4	<2	670
EU5	869	12/14/2017	12/14/2017	ng/L	640	--	--	--	--	--	--	--	--	--	--
EU5	1173	12/14/2017	10/1/2019	ng/L	330	230	<2	<2	34	170	470	57	6.7	<2	830

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU5	936	12/14/2017	12/14/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	628	10/24/2017	10/24/2017	ng/L	**540**	--	--	--	--	--	--	--	--	--	--
EU5	628	10/24/2017	10/24/2017	ng/L	**960**	--	--	--	--	--	--	--	--	--	--
EU5	628	10/24/2017	10/24/2017	ng/L	**960**	--	--	--	--	--	--	--	--	--	--
EU5	628	10/24/2017	10/24/2017	ng/L	**1500**	**1100**	<50	<50	**57**	**450**	**1200**	**160**	**55**	<100	**3800**
EU5	628	10/24/2017	10/24/2017	ng/L	**630**	--	--	--	--	--	--	--	--	--	--
EU5	628	10/24/2017	10/24/2017	ng/L	**630**	--	--	--	--	--	--	--	--	--	--
EU5	628	10/25/2017	10/25/2017	ng/L	**790**	--	--	--	--	--	--	--	--	--	--
EU5	787	10/18/2017	12/12/2017	ng/L	**39**	--	--	--	--	--	--	--	--	--	--
EU5	633	10/20/2017	11/7/2017	ng/L	**15.5**	<20	<2	<2	<2	<5	**5.6**	<2	<2	<2	**42**
EU5	633	10/20/2017	11/7/2017	ng/L	**21**	<20	<2	<2	<2	<5	**6.9**	<2	<2	<2	**32**
EU5	905	12/14/2017	12/14/2017	ng/L	**78**	<100	<50	<50	<50	<50	**150**	<50	<50	<100	**390**
EU5	874	12/7/2017	12/7/2017	ng/L	**450**	**250**	<50	<50	<50	**140**	**370**	**83**	<50	<100	**1100**
EU5	944	12/7/2017	8/28/2019	ng/L	**210**	**97**	<2	<2	**29**	**120**	**550**	**77**	**30**	<2	**300**
EU5	943	12/7/2017	8/28/2019	ng/L	**410**	**170**	<2	<2	**53**	**170**	**560**	**36**	**19**	**9.8**	**820**
EU5	875	12/13/2017	11/20/2018	ng/L	**370**	<10000	<9600	<12000	<9500	<9500	<9200	<8800	<9700	<11000	<8400
EU5	876 [3]	12/13/2017	1/31/2018	ng/L	**0**	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	682	12/13/2017	10/22/2018	ng/L	**104**	--	--	--	--	--	--	--	--	--	--
EU5	1234	1/5/2018	1/5/2018	ng/L	**12**	--	--	--	--	--	--	--	--	--	--
EU5	1208	1/5/2018	1/5/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU5	877	12/12/2017	12/12/2017	ng/L	**230**	--	--	--	--	--	--	--	--	--	--
EU5	877	12/15/2017	12/15/2017	ng/L	**5.4**	<20	<2	<2	<2	<5	**9.9**	<2	<2	<2	<10
EU5	909	12/7/2017	12/7/2017	ng/L	**12**	<20	<2	<2	**17**	**16**	**16**	**2.1**	<2	<2	**110**
EU5	1184	12/6/2017	12/6/2017	ng/L	**85**	--	--	--	--	--	--	--	--	--	--
EU6	879	3/27/2019	3/27/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU6	1503	2/1/2018	2/1/2018	ng/L	**18**	--	--	--	--	--	--	--	--	--	--
EU6	321	11/13/2017	11/13/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU6	887	12/6/2017	12/6/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU6	957	12/7/2017	12/7/2017	ng/L	**420**	--	--	--	--	--	--	--	--	--	--
EU6	1211	12/7/2017	12/7/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU6	350	12/7/2017	12/7/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**20**
EU6	353	9/18/2017	7/27/2018	ng/L	**129**	--	--	--	--	--	--	--	--	--	--
EU6	353	7/27/2018	7/27/2018	ng/L	**22**	--	--	--	--	--	--	--	--	--	--
EU6	722	9/21/2017	10/20/2017	ng/L	**360**	--	--	--	--	--	--	--	--	--	--
EU6	723	10/16/2017	10/16/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**26**
EU6	364	3/18/2019	8/28/2019	ng/L	**270**	**190**	<2	<2	**42**	**170**	**500**	**39**	**11**	**2.5**	**650**
EU6	365	10/18/2017	9/24/2019	ng/L	**370**	**250**	<2	<2	**60**	**130**	**350**	**41**	**12**	<2	**830**
EU6	377	10/26/2017	7/16/2019	ng/L	**400**	**430**	<2	<2	**72**	**140**	**250**	**8.9**	**3.7**	<2	**1500**
EU6	396	10/20/2017	10/20/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU6	491	10/23/2017	10/23/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU6	491	10/23/2017	10/23/2017	ng/L	**95**	--	--	--	--	--	--	--	--	--	--
EU6	491	10/23/2017	10/23/2017	ng/L	**9.2**	<20	<2	<2	<2	<5	**2.5**	<2	<2	<2	<10
EU6	491	10/23/2017	10/23/2017	ng/L	**32**	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU6	2458	5/9/2018	5/9/2018	ng/L	**36**	--	--	--	--	--	--	--	--	--	--
EU6	1019	1/4/2018	1/4/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU6	2230	2/8/2018	2/8/2018	ng/L	**14**	--	--	--	--	--	--	--	--	--	--
EU6	241	9/22/2017	9/22/2017	ng/L	**250**	--	--	--	--	--	--	--	--	--	--
EU6	634	11/6/2017	11/6/2017	ng/L	**340**	--	--	--	--	--	--	--	--	--	--
EU6	1003	12/14/2017	12/14/2017	ng/L	**78**	--	--	--	--	--	--	--	--	--	--
EU6	907	12/5/2017	12/5/2017	ng/L	**24**	--	--	--	--	--	--	--	--	--	--
EU6	908	12/6/2017	12/6/2017	ng/L	**63**	--	--	--	--	--	--	--	--	--	--
EU6	983	3/29/2019	3/29/2019	ng/L	**37**	**23**	<2	<2	**14**	**20**	**47**	**8**	**2.1**	<2	**130**
EU6	1013	12/5/2017	12/5/2017	ng/L	**94**	--	--	--	--	--	--	--	--	--	--
EU6	1005	12/5/2017	12/5/2017	ng/L	**150**	<100	<50	<50	<50	<50	**72**	<50	<50	<100	**380**
EU7	271	10/17/2017	10/17/2017	ng/L	**250**	<100	<50	<50	<50	**51**	**94**	<50	<50	<100	**510**
EU7	276	10/19/2017	10/19/2017	ng/L	**260**	--	--	--	--	--	--	--	--	--	--
EU7	277	11/9/2017	11/9/2017	ng/L	**240**	--	--	--	--	--	--	--	--	--	--
EU7	278	10/19/2017	9/30/2019	ng/L	**480**	**290**	<2	<2	**24**	**100**	**190**	**9.8**	**2.2**	<2	**1200**
EU7	279	10/2/2017	10/2/2017	ng/L	**400**	--	--	--	--	--	--	--	--	--	--
EU7	282	10/17/2017	4/11/2018	ng/L	**53.4**	--	--	--	--	--	--	--	--	--	--
EU7	259	9/20/2017	9/20/2017	ng/L	**280**	--	--	--	--	--	--	--	--	--	--
EU7	294	10/19/2017	10/19/2017	ng/L	**21**	<20	<2	<2	**8.2**	**8.6**	**4.1**	<2	<2	<2	**150**
EU7	298	10/19/2017	10/19/2017	ng/L	**8.5**	<20	<2	<2	<2	<5	<2	<2	<2	<2	**53**
EU7	299	10/25/2017	10/25/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**14**
EU7	301	10/19/2017	10/19/2017	ng/L	**12**	<20	<2	<2	**3.7**	**7.1**	**17**	**2**	<2	<2	**43**
EU7	303	10/23/2017	10/23/2017	ng/L	**39**	--	--	--	--	--	--	--	--	--	--
EU7	304	10/19/2017	10/19/2017	ng/L	**59**	--	--	--	--	--	--	--	--	--	--
EU7	306	10/24/2017	9/26/2019	ng/L	**330**	**190**	<2	<2	**7.3**	**53**	**85**	**7.5**	<2	<2	**750**
EU7	308	10/6/2017	10/6/2017	ng/L	**230**	**210**	<50	<50	<50	**71**	**120**	<50	<50	<100	**1000**
EU7	310	10/3/2017	10/3/2017	ng/L	**360**	--	--	--	--	--	--	--	--	--	--
EU7	313	10/17/2017	10/17/2017	ng/L	**380**	--	--	--	--	--	--	--	--	--	--
EU7	315	11/20/2017	11/20/2017	ng/L	**210**	**150**	<50	<50	**58**	**87**	**200**	<50	<50	<100	**630**
EU7	263	9/25/2017	9/25/2017	ng/L	**1100**	**370**	<50	<50	<50	**140**	**290**	<50	<50	<100	**1200**
EU7	1018	11/30/2017	11/30/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU7	325	10/23/2017	4/11/2019	ng/L	**4000**	**770**	<2	<2	**65**	**480**	**1200**	**130**	**67**	<2	**2500**
EU7	325	10/23/2017	10/23/2017	ng/L	**98**	--	--	--	--	--	--	--	--	--	--
EU7	327	10/19/2017	8/27/2019	ng/L	**150**	**150**	<2	<2	**5.4**	**44**	**63**	**2.1**	<2	<2	**840**
EU7	331	3/27/2018	3/27/2018	ng/L	**88**	--	--	--	--	--	--	--	--	--	--
EU7	1218	12/12/2017	12/12/2017	ng/L	**260**	**200**	<50	<50	**59**	**79**	**170**	<50	<50	<100	**980**
EU7	1543	2/7/2018	2/7/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**15**
EU7	707	10/18/2017	10/18/2017	ng/L	**86**	**120**	<50	<50	<50	<50	**88**	<50	<50	<100	**720**
EU7	1222	12/12/2017	9/27/2019	ng/L	**141**	**54**	<2	<2	**31**	**45**	**87**	**6.6**	**3.3**	<2	**270**
EU7	951	12/12/2017	12/12/2017	ng/L	**25**	--	--	--	--	--	--	--	--	--	--
EU7	349	10/23/2017	10/23/2017	ng/L	**33**	--	--	--	--	--	--	--	--	--	--
EU7	351	10/23/2017	10/23/2017	ng/L	**21**	--	--	--	--	--	--	--	--	--	--
EU7	359	10/17/2017	7/9/2019	ng/L	**690**	**540**	<2	<2	**61**	**98**	**330**	**35**	**5.1**	<2	**1700**

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU7	362	10/23/2017	10/23/2017	ng/L	**19**	--	--	--	--	--	--	--	--	--	--
EU7	363	10/26/2017	10/26/2017	ng/L	**99**	--	--	--	--	--	--	--	--	--	--
EU7	800	10/5/2017	10/5/2017	ng/L	**370**	--	--	--	--	--	--	--	--	--	--
EU7	960	11/27/2017	11/27/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU7	961	12/14/2017	12/14/2017	ng/L	**5.2**	<20	<2	<2	<2	<5	<2	<2	<2	<2	**12**
EU7	372	10/30/2017	2/8/2018	ng/L	**11**	--	--	--	--	--	--	--	--	--	--
EU7	891	12/7/2017	12/7/2017	ng/L	**6.8**	<20	<2	<2	<2	<5	<2	<2	<2	<2	**32**
EU7	892	12/7/2017	12/7/2017	ng/L	**7.9**	<100	<50	<50	<50	<50	<50	<50	<50	<100	**210**
EU7	267	9/28/2017	1/10/2018	ng/L	**32.9**	--	--	--	--	--	--	--	--	--	--
EU7	267	9/28/2017	1/10/2018	ng/L	**21.5**	**25**	<2	<2	**19**	**22**	**19**	<2	<2	<2	**280**
EU7	375	10/17/2017	10/17/2017	ng/L	**12**	**20**	<2	<2	**8.9**	**10**	**8.2**	<2	<2	<2	**220**
EU7	729	10/25/2017	10/25/2017	ng/L	**12**	--	--	--	--	--	--	--	--	--	--
EU7	376	11/27/2017	11/27/2017	ng/L	**67**	--	--	--	--	--	--	--	--	--	--
EU7	378	10/17/2017	12/20/2017	ng/L	**51.6**	--	--	--	--	--	--	--	--	--	--
EU7	379	12/1/2017	12/1/2017	ng/L	**33**	--	--	--	--	--	--	--	--	--	--
EU7	2412	2/15/2018	2/15/2018	ng/L	**86**	--	--	--	--	--	--	--	--	--	--
EU7	2412	2/15/2018	2/15/2018	ng/L	**200**	--	--	--	--	--	--	--	--	--	--
EU7	386	10/24/2017	10/24/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**42**
EU7	388	10/17/2017	10/17/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**40**
EU7	1509	1/31/2018	1/31/2018	ng/L	**6.6**	<20	<2	<2	<2	**9.9**	**5.3**	<2	<2	<2	**150**
EU7	733	10/18/2017	10/18/2017	ng/L	**16**	**30**	<2	<2	**11**	**18**	**17**	<2	<2	<2	**320**
EU7	389	10/18/2017	10/18/2017	ng/L	**340**	--	--	--	--	--	--	--	--	--	--
EU7	735	10/24/2017	10/24/2017	ng/L	**22**	--	--	--	--	--	--	--	--	--	--
EU7	394	10/26/2017	10/26/2017	ng/L	**10**	**24**	<2	<2	**15**	<5	**14**	<2	<2	<2	**330**
EU7	897	2/9/2018	2/9/2018	ng/L	**32**	--	--	--	--	--	--	--	--	--	--
EU7	2098	1/31/2018	1/31/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU7	811	10/25/2017	1/10/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU7	798	2/13/2018	8/1/2019	ng/L	**170**	**130**	<1.1	<1.1	**36**	**87**	**300**	**35**	**6.8**	<1.1	**690**
EU7	426	10/18/2017	10/31/2018	ng/L	**920**	<10000	<9600	<12000	<9500	<9500	<9200	<8800	<9700	<11000	<8400
EU7	495	2/15/2018	11/27/2018	ng/L	**640**	<10000	<9600	<12000	<9500	<9500	<9200	<8800	<9700	<11000	<8400
EU7	974	12/7/2017	12/7/2017	ng/L	**31**	--	--	--	--	--	--	--	--	--	--
EU7	507	10/27/2017	10/27/2017	ng/L	**16**	--	--	--	--	--	--	--	--	--	--
EU7	511	10/5/2017	11/6/2018	ng/L	**350**	--	--	--	--	--	--	--	--	--	--
EU7	2117	2/1/2018	2/1/2018	ng/L	**16**	--	--	--	--	--	--	--	--	--	--
EU7	771	10/19/2017	10/19/2017	ng/L	**250**	--	--	--	--	--	--	--	--	--	--
EU7	531	10/18/2017	1/28/2019	ng/L	**122**	**100**	<2	<2	**21**	**40**	**85**	**10**	**2.2**	<2	**490**
EU7	773	10/19/2017	10/19/2017	ng/L	**18**	--	--	--	--	--	--	--	--	--	--
EU7	550	10/17/2017	1/9/2019	ng/L	**115**	<100	<50	<1.21	**24.4**	**70.5**	**82**	**6.3**	**1.71**	<100	**320**
EU7	2977	7/19/2019	7/19/2019	ng/L	**42**	**21**	<2	<2	**5.3**	**29**	**50**	**6**	**2.5**	<2	**150**
EU7	578	10/5/2017	10/5/2017	ng/L	**140**	--	--	--	--	--	--	--	--	--	--
EU7	603	10/19/2017	9/27/2019	ng/L	**250**	**250**	<2	<2	**14**	**68**	**120**	**11**	<2	<2	**760**
EU7	605	10/20/2017	8/29/2018	ng/L	**26**	--	--	--	--	--	--	--	--	--	--
EU7	614	10/18/2017	1/28/2019	ng/L	**100**	**91**	<2	<2	**24**	**49**	**80**	**7.6**	<3.9	<2	**580**

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU7	786	10/18/2017	10/18/2017	ng/L	**180**	--	--	--	--	--	--	--	--	--	--
EU7	626	10/5/2017	10/5/2017	ng/L	**430**	--	--	--	--	--	--	--	--	--	--
EU7	809	10/19/2017	10/19/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU7	631	10/19/2017	10/19/2017	ng/L	**420**	--	--	--	--	--	--	--	--	--	--
EU7	635	10/20/2017	10/20/2017	ng/L	**42**	--	--	--	--	--	--	--	--	--	--
EU7	789	10/19/2017	10/19/2017	ng/L	**44**	<100	<50	<50	<50	<50	<50	<50	<50	<100	**270**
EU7	789	10/19/2017	10/19/2017	ng/L	**31**	--	--	--	--	--	--	--	--	--	--
EU7	3036	8/8/2019	8/8/2019	ng/L	**47**	**55**	<1.1	<1.1	**10**	**25**	**34**	**2.8**	<1.1	<1.1	**340**
EU7	3036	8/8/2019	8/8/2019	ng/L	**94**	**52**	<1.1	<1.1	**24**	**53**	**76**	**8**	**4.5**	<1.1	**290**
EU7	252	9/14/2017	9/14/2017	ng/L	**11**	--	--	--	--	--	--	--	--	--	--
EU7	794	10/18/2017	10/18/2017	ng/L	**62**	--	--	--	--	--	--	--	--	--	--
EU7	674	10/18/2017	10/31/2018	ng/L	**630**	<10000	<9600	<12000	<9500	<9500	<9200	<8800	<9700	<11000	<8400
EU7	680	10/19/2017	10/19/2017	ng/L	**250**	--	--	--	--	--	--	--	--	--	--
EU7	684	10/26/2017	8/6/2019	ng/L	**230**	**110**	<1.1	<1.1	**3.8**	**51**	**110**	**2.2**	**2**	<1.1	**740**
EU7	795	10/19/2017	10/19/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU7	691	10/19/2017	8/27/2019	ng/L	**390**	**290**	<2	<2	**60**	**150**	**530**	**93**	**17**	<2	**880**
EU7	693	12/13/2017	11/30/2018	ng/L	**131**	--	--	--	--	--	--	--	--	--	--
EU8	222	9/13/2017	10/24/2018	ng/L	**124**	--	--	--	--	--	--	--	--	--	--
EU8	221	9/7/2017	8/6/2019	ng/L	**190**	**85**	<1.1	<1.1	**7.4**	**69**	**150**	**3.7**	<1.1	<1.1	**380**
EU8	223	9/7/2017	9/29/2017	ng/L	<1.88	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	2415	2/13/2018	7/25/2019	ng/L	**1.21**	<20	<2	<2	<2	<5	<2	<2	<2	<2	**11**
EU8	7797	9/25/2019	9/25/2019	ng/L	**11**	<20	<2	<2	**11**	**30**	**38**	**4**	<2	<2	**140**
EU8	8282	10/17/2019	10/17/2019	ng/L	**6.3**	<20	<2	<2	**2.2**	**6.4**	**3.6**	<2	<2	<2	**76**
EU8	7555	8/19/2019	8/19/2019	ng/L	**13**	<11	<1.1	<1.1	**9.4**	**21**	**24**	**1.4**	<1.1	<1.1	**110**
EU8	7796	9/26/2019	9/26/2019	ng/L	**21**	<20	<2	<2	**9.8**	**19**	**28**	**2.7**	<2	<2	**110**
EU8	8021	9/26/2019	9/26/2019	ng/L	**7.9**	<20	<2	<2	**6.6**	**20**	**20**	**2.4**	<2	<2	**100**
EU8	8294	10/8/2019	10/8/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	8296	10/8/2019	10/8/2019	ng/L	<2.7	<20	<2	<2	**2.8**	**8.2**	**5**	<2	<2	<2	**57**
EU8	7557	8/19/2019	8/19/2019	ng/L	<2.6	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	<5.3
EU8	8298	10/9/2019	10/9/2019	ng/L	**15**	<20	<2	<2	**7.6**	**10**	**18**	<2	<2	<2	**110**
EU8	8299	10/9/2019	10/9/2019	ng/L	**10**	<20	<2	<2	**4.1**	<5	**2.3**	<2	<2	<2	**92**
EU8	2663	7/25/2019	7/25/2019	ng/L	**40**	**23**	<1.1	<1.1	**30**	**53**	**110**	**13**	**4.8**	<1.1	**170**
EU8	2664	8/15/2019	8/15/2019	ng/L	**13**	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	<5.3
EU8	2665	9/11/2019	9/11/2019	ng/L	**6.9**	<20	<2	<2	**23**	**33**	**120**	**18**	**3.4**	<2	**150**
EU8	2666	9/17/2019	9/17/2019	ng/L	**14**	<20	<2	<2	**7.9**	**18**	**24**	**3**	<2	<2	**84**
EU8	2669	7/23/2019	7/23/2019	ng/L	**3.8**	<20	<2	<2	**2.2**	**6**	**3.2**	<2	<2	<2	**49**
EU8	2670	8/28/2019	8/28/2019	ng/L	**3.2**	<20	<2	<2	<2	**6.6**	<2	<2	<2	<2	**67**
EU8	2671	8/28/2019	8/28/2019	ng/L	<2.8	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	2674	8/28/2019	8/28/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	2474	4/11/2018	4/11/2018	ng/L	**26.3**	--	--	--	--	--	--	--	--	--	--
EU8	2676	7/23/2019	7/23/2019	ng/L	**28**	<20	<2	<2	**3.6**	**17**	**35**	**3.2**	<2	<2	**97**
EU8	2683	8/8/2019	8/8/2019	ng/L	**10**	**15**	<1.1	**1.5**	<1.1	**14**	**11**	<1.1	<1.1	<1.1	**110**
EU8	2391	12/20/2017	12/20/2017	ng/L	**17.3**	--	--	--	--	--	--	--	--	--	--

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU8	2689	9/3/2019	9/3/2019	ng/L	**13**	<20	<2	<2	**9.7**	**31**	**35**	<2	<2	<2	**77**
EU8	2690	8/8/2019	8/8/2019	ng/L	**19**	**12**	<1.1	<1.1	**15**	**32**	**50**	**2.9**	**1.2**	<1.1	**73**
EU8	2465	3/28/2018	3/28/2018	ng/L	**2.04**	--	--	--	--	--	--	--	--	--	--
EU8	1228	3/20/2018	3/20/2018	ng/L	**24**	--	--	--	--	--	--	--	--	--	--
EU8	2693	7/29/2019	7/29/2019	ng/L	**36**	**29**	<1.1	<1.1	**26**	**70**	**91**	**5**	<1.1	<1.1	**200**
EU8	736	7/2/2019	7/2/2019	ng/L	**34**	**21**	<2	<2	**17**	**27**	**40**	**2.9**	<2	<2	**130**
EU8	2100	5/16/2018	5/16/2018	ng/L	**41**	--	--	--	--	--	--	--	--	--	--
EU8	2101	1/31/2018	3/27/2019	ng/L	**50.3**	--	--	<1.29	**9.28**	**50.6**	**50.7**	**5.58**	**1.35**	--	--
EU8	737	2/13/2018	2/13/2018	ng/L	**81.2**	--	--	--	--	--	--	--	--	--	--
EU8	2703	5/29/2019	5/29/2019	ng/L	**14**	<20	<2	<2	**20**	<5	**40**	**2**	<2	<2	**76**
EU8	738	10/16/2017	10/16/2017	ng/L	**60**	--	--	--	--	--	--	--	--	--	--
EU8	739	10/19/2017	10/19/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**21**
EU8	1231	12/20/2017	12/20/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	401	10/26/2017	8/1/2019	ng/L	**250**	**72**	<1.1	<1.1	**18**	**80**	**230**	**20**	**11**	<1.1	**290**
EU8	402	10/16/2017	10/16/2017	ng/L	**57**	--	--	--	--	--	--	--	--	--	--
EU8	2102	2/1/2018	2/1/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	2722	9/11/2019	9/11/2019	ng/L	**39**	**26**	<2	<2	**12**	**30**	**48**	**2.1**	<2	<2	**150**
EU8	2103	1/24/2018	1/24/2018	ng/L	**18**	--	--	--	--	--	--	--	--	--	--
EU8	403	10/16/2017	10/16/2017	ng/L	**77**	--	--	--	--	--	--	--	--	--	--
EU8	404	10/16/2017	10/16/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	405	10/16/2017	10/16/2017	ng/L	**50**	<100	<50	<50	<50	<50	<50	<50	<50	<100	**140**
EU8	2728	7/25/2019	7/25/2019	ng/L	**41**	**25**	<2	<2	**7.6**	**31**	**55**	**2.9**	<2	<2	**120**
EU8	2104	1/25/2018	1/25/2018	ng/L	**12**	<20	<2	<2	**11**	**28**	**39**	**3.9**	**2.2**	<2	**88**
EU8	406	10/16/2017	10/16/2017	ng/L	**36**	--	--	--	--	--	--	--	--	--	--
EU8	407	10/10/2017	10/16/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	920	2/7/2018	2/7/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**22**
EU8	408	10/10/2017	10/10/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	2105	2/19/2018	2/19/2018	ng/L	**15**	<20	<2	<2	**11**	**25**	**34**	**3.4**	<2	<2	**81**
EU8	410	2/15/2018	2/15/2018	ng/L	**54**	--	--	--	--	--	--	--	--	--	--
EU8	415	11/10/2017	11/10/2017	ng/L	**15**	<20	<2	<2	<2	<5	**3.6**	<2	<2	<2	**23**
EU8	265	9/28/2017	9/28/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	2107	1/31/2018	8/7/2019	ng/L	**130**	**27**	<2	<1.24	**7.18**	**39.5**	**47**	**6.5**	**2.17**	<2	**150**
EU8	416	10/24/2017	10/24/2017	ng/L	**42**	--	--	--	--	--	--	--	--	--	--
EU8	1246	2/7/2018	2/7/2018	ng/L	**38**	--	--	--	--	--	--	--	--	--	--
EU8	2108	1/31/2018	1/31/2018	ng/L	**310**	**180**	<50	<50	<50	**70**	**200**	<50	<50	<100	**760**
EU8	1247	1/23/2018	1/23/2018	ng/L	**13**	<20	<2	<2	**11**	**27**	**32**	<2	<2	<2	**120**
EU8	417	10/19/2017	10/19/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	418	10/13/2017	10/13/2017	ng/L	**16**	<20	<2	<2	**19**	**27**	**45**	**2.5**	<2	<2	**130**
EU8	419	10/26/2017	6/6/2019	ng/L	**12**	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	420	12/20/2017	9/18/2019	ng/L	**205**	**110**	<2	<2	**19**	**65**	**160**	**9.3**	**4.8**	<2	**310**
EU8	2109	1/23/2018	8/7/2019	ng/L	**63**	--	--	<1.22	**12.1**	**57.6**	**51.6**	**5.7**	**2.11**	--	--
EU8	1249	8/7/2019	8/7/2019	ng/L	**133**	--	--	<1.25	**5.19**	**40.8**	**37.7**	**2.78**	<1.25	--	--
EU8	421	10/30/2017	10/30/2017	ng/L	**270**	--	--	--	--	--	--	--	--	--	--

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU8	422	10/26/2017	10/26/2017	ng/L	16	--	--	--	--	--	--	--	--	--	--
EU8	423	11/7/2017	11/7/2017	ng/L	11	--	--	--	--	--	--	--	--	--	--
EU8	741	10/20/2017	10/20/2017	ng/L	11	--	--	--	--	--	--	--	--	--	--
EU8	427	12/18/2017	12/18/2017	ng/L	35	--	--	--	--	--	--	--	--	--	--
EU8	428	10/18/2017	10/18/2017	ng/L	97	--	--	--	--	--	--	--	--	--	--
EU8	258	9/20/2017	9/29/2017	ng/L	83.8	--	--	--	--	--	--	--	--	--	--
EU8	742	6/13/2019	6/13/2019	ng/L	130	110	<2	<2	8	72	150	9	<2	<2	450
EU8	744	10/20/2017	10/20/2017	ng/L	13	<20	<2	<2	<2	<5	6.3	<2	<2	<2	36
EU8	432	11/15/2017	11/15/2017	ng/L	84	--	--	--	--	--	--	--	--	--	--
EU8	435	10/17/2017	10/17/2017	ng/L	26	--	--	--	--	--	--	--	--	--	--
EU8	747	10/17/2017	10/17/2017	ng/L	74	--	--	--	--	--	--	--	--	--	--
EU8	436	10/26/2017	10/26/2017	ng/L	70	--	--	--	--	--	--	--	--	--	--
EU8	814	10/26/2017	10/26/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	15
EU8	437	10/5/2017	10/5/2017	ng/L	170	--	--	--	--	--	--	--	--	--	--
EU8	440	10/20/2017	10/20/2017	ng/L	60	--	--	--	--	--	--	--	--	--	--
EU8	748	10/20/2017	10/20/2017	ng/L	16	<20	<2	<2	<2	9	17	<2	<2	<2	74
EU8	442	1/23/2018	1/23/2018	ng/L	18	--	--	--	--	--	--	--	--	--	--
EU8	266	9/28/2017	1/28/2019	ng/L	130	44	<2	<2	<2	17	57	<2	<2	<2	280
EU8	446	12/28/2017	12/28/2017	ng/L	170	--	--	--	--	--	--	--	--	--	--
EU8	449	10/17/2017	7/24/2018	ng/L	110	--	--	--	--	--	--	--	--	--	--
EU8	753	10/17/2017	10/17/2017	ng/L	4.4	<20	<2	<2	<2	5.3	<2	<2	<2	<2	74
EU8	754	10/30/2017	10/30/2017	ng/L	340	--	--	--	--	--	--	--	--	--	--
EU8	452	10/17/2017	10/17/2017	ng/L	140	--	--	--	--	--	--	--	--	--	--
EU8	453	11/16/2018	11/16/2018	ng/L	50	--	--	--	--	--	--	--	--	--	--
EU8	455	10/10/2017	10/10/2017	ng/L	15	<20	<2	<2	<2	6.6	5.9	<2	<2	<2	81
EU8	456	10/26/2017	10/26/2017	ng/L	89	--	--	--	--	--	--	--	--	--	--
EU8	457	10/19/2017	10/19/2017	ng/L	140	--	--	--	--	--	--	--	--	--	--
EU8	459	10/3/2017	10/27/2017	ng/L	8.18	<20	<2	<2	<2	6.6	<2	<2	<2	<2	47
EU8	460	10/20/2017	10/20/2017	ng/L	13	--	--	--	--	--	--	--	--	--	--
EU8	461	10/17/2017	10/17/2017	ng/L	33	--	--	--	--	--	--	--	--	--	--
EU8	758	10/23/2017	10/23/2017	ng/L	10	<20	<2	<2	<2	<5	<2	<2	<2	<2	35
EU8	464	10/17/2017	9/5/2018	ng/L	36	--	--	--	--	--	--	--	--	--	--
EU8	759	10/17/2017	1/28/2019	ng/L	120	110	<2	<2	19	45	110	14	<3.9	<2	520
EU8	468	10/16/2017	4/18/2018	ng/L	36	--	--	--	--	--	--	--	--	--	--
EU8	257	9/20/2017	9/20/2017	ng/L	43	--	--	--	--	--	--	--	--	--	--
EU8	1202	1/15/2018	8/21/2019	ng/L	<0.567	<20	<2	<1.13	<1.13	<1.13	<1.13	<1.13	<1.13	<2	<10
EU8	469	10/24/2017	10/24/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	471	10/16/2017	10/16/2017	ng/L	30	--	--	--	--	--	--	--	--	--	--
EU8	472	9/19/2019	9/19/2019	ng/L	43	21	<2	<2	<2	16	23	<2	<2	<2	160
EU8	473	11/10/2017	11/10/2017	ng/L	<4.3	<20	<2	<2	<2	<5	<2	<2	<2	<2	13
EU8	478	10/16/2017	10/16/2017	ng/L	98	--	--	--	--	--	--	--	--	--	--
EU8	480	10/18/2017	10/18/2017	ng/L	15	<20	<2	<2	<2	5.7	12	<2	<2	<2	39
EU8	764	10/26/2017	10/26/2017	ng/L	87	--	--	--	--	--	--	--	--	--	--

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU8	486	11/9/2017	11/9/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	7583	10/3/2019	10/3/2019	ng/L	**11**	<20	<2	<2	<2	**7.9**	**22**	**2.2**	<2	<2	**72**
EU8	145	9/8/2017	9/18/2017	ng/L	**320**	--	--	--	--	--	--	--	--	--	--
EU8	7584	8/26/2019	8/26/2019	ng/L	**98**	**59**	<2	<2	**2.8**	**53**	**110**	**17**	<2	<2	**280**
EU8	497	10/3/2017	12/13/2017	ng/L	**5.69**	<20	<2	<2	<2	<5	<2	<2	<2	<2	**38**
EU8	2750	6/21/2019	6/21/2019	ng/L	**7.2**	<20	<2	<2	<2	**22**	**16**	<2	<2	<2	**180**
EU8	2752	6/19/2019	6/19/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	1250	2/13/2018	2/13/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	1251	1/24/2018	1/24/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	1252	1/24/2018	1/24/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	1254	4/2/2019	4/2/2019	ng/L	**71**	**48**	<2	<2	**9.5**	**17**	**63**	**5.7**	<2	<2	**190**
EU8	2171	1/24/2018	1/24/2018	ng/L	**37**	--	--	--	--	--	--	--	--	--	--
EU8	2173	1/24/2018	1/24/2018	ng/L	**19**	--	--	--	--	--	--	--	--	--	--
EU8	1255	1/24/2018	1/24/2018	ng/L	**37**	--	--	--	--	--	--	--	--	--	--
EU8	1256	2/2/2018	2/2/2018	ng/L	**50**	--	--	--	--	--	--	--	--	--	--
EU8	2175	2/15/2018	2/15/2018	ng/L	**18**	--	--	--	--	--	--	--	--	--	--
EU8	1257	2/7/2018	2/7/2018	ng/L	**14**	<20	<2	<2	**4.5**	**33**	**41**	<2	<2	<2	**140**
EU8	923	12/14/2017	12/14/2017	ng/L	**25**	--	--	--	--	--	--	--	--	--	--
EU8	924	12/14/2017	12/14/2017	ng/L	**13**	<20	<2	<2	**6.6**	**18**	**22**	<2	<2	<2	**99**
EU8	831	12/13/2017	12/13/2017	ng/L	**29**	--	--	--	--	--	--	--	--	--	--
EU8	925	12/5/2017	12/5/2017	ng/L	**62**	--	--	--	--	--	--	--	--	--	--
EU8	878	11/30/2017	11/30/2017	ng/L	**250**	--	--	--	--	--	--	--	--	--	--
EU8	835	11/28/2017	11/28/2017	ng/L	**43**	--	--	--	--	--	--	--	--	--	--
EU8	534	10/30/2017	10/30/2017	ng/L	**84**	--	--	--	--	--	--	--	--	--	--
EU8	836	11/30/2017	11/30/2017	ng/L	**47**	--	--	--	--	--	--	--	--	--	--
EU8	837	11/28/2017	11/28/2017	ng/L	**41**	<100	<50	<50	<50	<50	<50	<50	<50	<100	**210**
EU8	535	10/18/2017	10/18/2017	ng/L	**200**	**190**	<50	<50	<50	**110**	**300**	<50	<50	<100	**570**
EU8	840	12/4/2017	12/4/2017	ng/L	**45**	--	--	--	--	--	--	--	--	--	--
EU8	927	11/28/2017	11/28/2017	ng/L	**17**	--	--	--	--	--	--	--	--	--	--
EU8	842	11/29/2017	11/29/2017	ng/L	**44**	--	--	--	--	--	--	--	--	--	--
EU8	843	12/14/2017	12/14/2017	ng/L	**34**	--	--	--	--	--	--	--	--	--	--
EU8	844	12/14/2017	12/14/2017	ng/L	**36**	--	--	--	--	--	--	--	--	--	--
EU8	845	12/14/2017	12/14/2017	ng/L	**32**	--	--	--	--	--	--	--	--	--	--
EU8	928	11/29/2017	11/29/2017	ng/L	**11**	<20	<2	<2	<2	**5**	**8.3**	<2	<2	<2	**55**
EU8	846	11/29/2017	11/29/2017	ng/L	**20**	--	--	--	--	--	--	--	--	--	--
EU8	847	12/20/2017	12/20/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**19**
EU8	848	12/4/2017	12/4/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**17**
EU8	540	10/31/2017	7/5/2019	ng/L	**54**	**40**	<2	<2	**29**	**78**	**140**	**5.8**	<2	<2	**230**
EU8	850	11/29/2017	11/29/2017	ng/L	**4.8**	<20	<2	<2	<2	<5	<2	<2	<2	<2	**36**
EU8	541	2/19/2018	2/19/2018	ng/L	**22**	--	--	--	--	--	--	--	--	--	--
EU8	542	10/26/2017	10/26/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	543	11/29/2017	11/29/2017	ng/L	**45**	--	--	--	--	--	--	--	--	--	--
EU8	554	3/18/2019	4/9/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU8	554	3/18/2019	4/9/2019	ng/L	36	<20	<2	<2	<2	9.1	19	<2	<2	<2	100
EU8	856	12/1/2017	12/1/2017	ng/L	65	--	--	--	--	--	--	--	--	--	--
EU8	558	11/30/2017	11/30/2017	ng/L	61	--	--	--	--	--	--	--	--	--	--
EU8	560	7/10/2019	7/10/2019	ng/L	60	38	<2	<2	<2	23	62	3.3	<2	<2	190
EU8	858	11/30/2017	11/30/2017	ng/L	52	--	--	--	--	--	--	--	--	--	--
EU8	565	10/19/2017	10/19/2017	ng/L	<4	<20	<2	<2	<2	<5	2.7	<2	<2	<2	13
EU8	566	12/13/2017	11/21/2018	ng/L	1300	<10000	<9600	<12000	<9500	<9500	<9200	<8800	<9700	<11000	<8400
EU8	859	12/1/2017	12/1/2017	ng/L	350	--	--	--	--	--	--	--	--	--	--
EU8	861	12/1/2017	12/1/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	567	10/18/2017	8/12/2019	ng/L	960	200	<1.1	<1.1	11	83	200	17	3.3	<1.1	850
EU8	568	10/18/2017	10/18/2017	ng/L	69	--	--	--	--	--	--	--	--	--	--
EU8	569	10/24/2017	10/24/2017	ng/L	630	380	<50	<50	63	220	560	66	<50	<100	1600
EU8	570	10/18/2017	10/18/2017	ng/L	80	--	--	--	--	--	--	--	--	--	--
EU8	932	12/13/2017	7/10/2019	ng/L	44.4	--	--	<1.16	1.19	9.36	7.24	<1.16	<1.16	--	--
EU8	863	12/5/2017	12/5/2017	ng/L	380	--	--	--	--	--	--	--	--	--	--
EU8	863	12/5/2017	12/5/2017	ng/L	590	--	--	--	--	--	--	--	--	--	--
EU8	2978	7/19/2019	7/19/2019	ng/L	37	<20	<2	<2	4.2	23	37	5.1	<2	<2	120
EU8	2981	7/19/2019	7/19/2019	ng/L	220	89	<2	<2	11	96	200	23	5.3	<2	380
EU8	2425	3/14/2018	3/14/2018	ng/L	82	--	--	--	--	--	--	--	--	--	--
EU8	2982	9/20/2019	9/20/2019	ng/L	61	39	<2	<2	6.6	33	78	13	3.4	<2	200
EU8	778	10/13/2017	10/13/2017	ng/L	14	<20	<2	<2	<2	6	6.2	<2	<2	<2	69
EU8	2426	3/14/2018	3/14/2018	ng/L	20	--	--	--	--	--	--	--	--	--	--
EU8	582	9/29/2017	1/28/2019	ng/L	112	42	<2	<2	24	57	110	7.7	4.1	<2	220
EU8	583	11/21/2017	11/21/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	584	3/14/2018	3/14/2018	ng/L	1.84	--	--	--	--	--	--	--	--	--	--
EU8	264	9/22/2017	9/29/2017	ng/L	39.2	--	--	--	--	--	--	--	--	--	--
EU8	585	10/10/2017	10/10/2017	ng/L	170	--	--	--	--	--	--	--	--	--	--
EU8	586	10/23/2017	10/23/2017	ng/L	25	--	--	--	--	--	--	--	--	--	--
EU8	589	10/26/2017	10/26/2017	ng/L	150	--	--	--	--	--	--	--	--	--	--
EU8	197	9/8/2017	9/29/2017	ng/L	<1.8	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	590	6/6/2019	6/6/2019	ng/L	120	51	<2	<2	25	64	130	14	6.3	<2	230
EU8	591	1/3/2018	1/3/2018	ng/L	240	--	--	--	--	--	--	--	--	--	--
EU8	195	9/7/2017	9/7/2017	ng/L	26	--	--	--	--	--	--	--	--	--	--
EU8	201	9/14/2017	9/14/2017	ng/L	67	--	--	--	--	--	--	--	--	--	--
EU8	594	10/26/2017	10/26/2017	ng/L	91	--	--	--	--	--	--	--	--	--	--
EU8	194	9/7/2017	9/7/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	202	9/20/2017	9/20/2017	ng/L	67	--	--	--	--	--	--	--	--	--	--
EU8	595	10/12/2017	10/12/2017	ng/L	84	--	--	--	--	--	--	--	--	--	--
EU8	205	9/20/2017	11/7/2017	ng/L	68.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	200	10/5/2017	11/7/2017	ng/L	190	--	--	--	--	--	--	--	--	--	--
EU8	204	9/14/2017	11/7/2017	ng/L	236	--	--	--	--	--	--	--	--	--	--
EU8	597	10/12/2017	10/12/2017	ng/L	77	--	--	--	--	--	--	--	--	--	--
EU8	206	9/7/2017	9/7/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU8	598	10/12/2017	10/12/2017	ng/L	50	--	--	--	--	--	--	--	--	--	--
EU8	207	9/25/2017	9/25/2017	ng/L	24	--	--	--	--	--	--	--	--	--	--
EU8	599	10/12/2017	10/12/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	208	9/20/2017	9/20/2017	ng/L	36	--	--	--	--	--	--	--	--	--	--
EU8	209	9/8/2017	10/25/2018	ng/L	220	<200	<200	<200	<200	<200	250	<200	<200	<200	600
EU8	601	10/19/2017	10/19/2017	ng/L	28	--	--	--	--	--	--	--	--	--	--
EU8	216	9/7/2017	10/3/2017	ng/L	41.1	--	--	--	--	--	--	--	--	--	--
EU8	602	10/18/2017	10/18/2017	ng/L	6.4	<20	<2	<2	<2	<5	4.4	<2	<2	<2	25
EU8	604	8/29/2019	8/29/2019	ng/L	42	30	<2	<2	9.7	37	58	3.2	<2	<2	190
EU8	780	10/13/2017	10/13/2017	ng/L	33	--	--	--	--	--	--	--	--	--	--
EU8	2989	7/19/2019	7/19/2019	ng/L	8.2	<20	<2	<2	4.7	21	18	<2	<2	<2	92
EU8	609	11/28/2017	11/28/2017	ng/L	28	--	--	--	--	--	--	--	--	--	--
EU8	611	10/27/2017	10/27/2017	ng/L	71	--	--	--	--	--	--	--	--	--	--
EU8	781	10/13/2017	2/13/2018	ng/L	37.6	--	--	--	--	--	--	--	--	--	--
EU8	613	10/5/2017	10/22/2018	ng/L	101	--	--	--	--	--	--	--	--	--	--
EU8	615	10/26/2017	10/26/2017	ng/L	24	--	--	--	--	--	--	--	--	--	--
EU8	617	12/18/2017	12/18/2017	ng/L	84	--	--	--	--	--	--	--	--	--	--
EU8	618	10/24/2017	10/24/2017	ng/L	18	--	--	--	--	--	--	--	--	--	--
EU8	619	10/18/2017	6/13/2018	ng/L	15.9	<20	<2	<2	7.4	12	5.6	<2	<2	<2	110
EU8	620	10/18/2017	9/3/2019	ng/L	500	210	<2	<2	43	120	300	8.7	<2	<2	650
EU8	7498	8/14/2019	8/14/2019	ng/L	30	15	<1.1	<1.1	12	31	50	1.7	<1.1	<1.1	120
EU8	623	10/26/2017	10/26/2017	ng/L	7.2	<20	<2	<2	<2	7.1	2.2	<2	<2	<2	63
EU8	782	10/16/2017	10/16/2017	ng/L	20	--	--	--	--	--	--	--	--	--	--
EU8	3002	8/29/2019	8/29/2019	ng/L	7.5	<20	<2	<2	6	23	65	3.9	<2	<2	51
EU8	625	10/17/2017	10/17/2017	ng/L	6	<20	<2	<2	<2	5.7	2.3	<2	<2	<2	68
EU8	784	10/17/2017	9/24/2019	ng/L	210	87	<2	<2	31	92	150	12	3.1	<2	420
EU8	3003	9/4/2019	9/4/2019	ng/L	9	<20	<2	<2	7.9	23	24	<2	<2	<2	100
EU8	785	10/16/2017	10/16/2017	ng/L	14	--	--	--	--	--	--	--	--	--	--
EU8	3004	7/23/2019	7/23/2019	ng/L	16	<20	<2	<2	11	17	18	<2	<2	<2	70
EU8	2427	3/14/2018	3/14/2018	ng/L	9.25	--	--	--	--	--	--	--	--	--	--
EU8	2253	1/25/2018	1/25/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	8346	10/9/2019	10/9/2019	ng/L	20	<20	<2	<2	12	18	36	2.1	<2	<2	150
EU8	7574	8/26/2019	8/26/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	3006	9/25/2019	9/25/2019	ng/L	7.6	<20	<2	<2	8.2	21	7.9	<2	<2	<2	180
EU8	3007	9/26/2019	9/26/2019	ng/L	43	32	<2	<2	12	51	130	16	3.1	<2	160
EU8	3008	5/29/2019	8/7/2019	ng/L	124	--	--	<1.3	33.5	73.8	61.3	3.31	<1.3	--	--
EU8	2257	2/1/2018	2/1/2018	ng/L	26	--	--	--	--	--	--	--	--	--	--
EU8	3009	9/17/2019	9/17/2019	ng/L	21	24	<2	<2	4.2	24	10	<2	<2	<2	170
EU8	7503	8/15/2019	8/15/2019	ng/L	24	19	<1.1	<1.1	7.6	20	25	2.1	<1.1	<1.1	110
EU8	3010	10/4/2019	10/4/2019	ng/L	13	<20	<2	<2	12	31	30	<2	<2	<2	130
EU8	7575	10/10/2019	10/10/2019	ng/L	42	21	<2	<2	21	25	62	6.1	<2	<2	180
EU8	7494	8/15/2019	8/15/2019	ng/L	<2.6	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	<5.3
EU8	2415	2/13/2018	2/13/2018	ng/L	17.2	--	--	--	--	--	--	--	--	--	--

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU8	630	9/23/2019	9/23/2019	ng/L	7.3	<20	<2	<2	3.1	13	6.6	<2	<2	<2	110
EU8	2261	2/1/2018	2/1/2018	ng/L	48	--	--	--	--	--	--	--	--	--	--
EU8	1230	12/18/2017	12/18/2017	ng/L	44	--	--	--	--	--	--	--	--	--	--
EU8	8353	10/7/2019	10/7/2019	ng/L	13	<20	<2	<2	15	23	17	<2	<2	<2	140
EU8	3021	8/8/2019	8/8/2019	ng/L	25	15	<1.1	<1.1	12	28	49	5.3	1.4	<1.1	79
EU8	1232	12/18/2017	12/18/2017	ng/L	63	--	--	--	--	--	--	--	--	--	--
EU8	870	12/4/2017	12/4/2017	ng/L	71	--	--	--	--	--	--	--	--	--	--
EU8	2484	3/28/2018	3/28/2018	ng/L	14.9	--	--	--	--	--	--	--	--	--	--
EU8	871	12/4/2017	12/4/2017	ng/L	380	--	--	--	--	--	--	--	--	--	--
EU8	1032	12/5/2017	12/5/2017	ng/L	31	--	--	--	--	--	--	--	--	--	--
EU8	1031	12/5/2017	12/5/2017	ng/L	420	--	--	--	--	--	--	--	--	--	--
EU8	1033	12/5/2017	12/5/2017	ng/L	330	--	--	--	--	--	--	--	--	--	--
EU8	7551	8/22/2019	8/22/2019	ng/L	19	<20	<2	<2	9.1	19	31	<2	<2	<2	61
EU8	3024	7/25/2019	7/25/2019	ng/L	15	<11	<1.1	<1.1	9.7	27	41	<1.1	1.1	<1.1	67
EU8	7552	10/4/2019	10/4/2019	ng/L	31	<20	<2	<2	8.2	21	38	2.5	<2	<2	73
EU8	7550	8/19/2019	8/19/2019	ng/L	33	26	<1.1	<1.1	6.2	20	37	2.5	<1.1	<1.1	86
EU8	872	12/4/2017	10/8/2019	ng/L	570	270	<2	<2	31	200	440	30	8.4	<2	900
EU8	872	12/4/2017	12/4/2017	ng/L	320	--	--	--	--	--	--	--	--	--	--
EU8	3025	7/19/2019	7/19/2019	ng/L	29	<20	<2	<2	12	25	43	3	<2	<2	56
EU8	7554	8/26/2019	8/26/2019	ng/L	42	44	<2	<2	44	46	60	3.8	<2	<2	240
EU8	8357	10/7/2019	10/7/2019	ng/L	42	27	<2	<2	8.9	21	36	3.9	<2	<2	120
EU8	8360	10/10/2019	10/10/2019	ng/L	20	<20	<2	<2	7	9	25	<2	<2	<2	78
EU8	8362	10/7/2019	10/7/2019	ng/L	14	<20	<2	<2	9.3	15	23	2.7	<2	<2	99
EU8	3027	5/29/2019	5/29/2019	ng/L	44	<20	<2	<2	16	6.4	74	7	<2	<2	75
EU8	8364	10/10/2019	10/10/2019	ng/L	39	<20	<2	<2	12	11	35	<2	<2	<2	90
EU8	873	12/4/2017	3/14/2018	ng/L	163	--	--	--	--	--	--	--	--	--	--
EU8	873	12/4/2017	12/4/2017	ng/L	4	<20	<2	<2	<2	<5	<2	<2	<2	<2	29
EU8	873	12/4/2017	12/4/2017	ng/L	18	--	--	--	--	--	--	--	--	--	--
EU8	8366	10/18/2019	10/18/2019	ng/L	11	<20	<2	<2	8.3	17	26	<2	<2	<2	58
EU8	8367	10/9/2019	10/9/2019	ng/L	23	<20	<2	<2	9.5	9.8	30	2.5	<2	<2	82
EU8	8369	10/9/2019	10/9/2019	ng/L	16	<20	<2	<2	6.5	<5	4.4	<2	<2	<2	78
EU8	639	10/19/2017	10/19/2017	ng/L	16	--	--	--	--	--	--	--	--	--	--
EU8	640	10/19/2017	7/23/2019	ng/L	480	280	<2	<2	49	260	350	25	<2	<2	1300
EU8	641	10/20/2017	10/20/2017	ng/L	47	--	--	--	--	--	--	--	--	--	--
EU8	643	10/18/2017	2/13/2018	ng/L	89.1	--	--	--	--	--	--	--	--	--	--
EU8	643	2/13/2018	2/13/2018	ng/L	30.3	--	--	--	--	--	--	--	--	--	--
EU8	644	10/19/2017	10/19/2017	ng/L	430	--	--	--	--	--	--	--	--	--	--
EU8	646	11/9/2017	11/9/2017	ng/L	89	--	--	--	--	--	--	--	--	--	--
EU8	648	10/20/2017	10/20/2017	ng/L	19	--	--	--	--	--	--	--	--	--	--
EU8	649	10/18/2017	10/18/2017	ng/L	78	--	--	--	--	--	--	--	--	--	--
EU8	650	10/18/2017	10/18/2017	ng/L	170	--	--	--	--	--	--	--	--	--	--
EU8	651	10/18/2017	10/18/2017	ng/L	34	--	--	--	--	--	--	--	--	--	--
EU8	653	10/18/2017	10/10/2019	ng/L	290	120	<2	<2	17	99	260	18	5.7	<2	450

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU8	655	11/21/2018	11/21/2018	ng/L	**52**	--	--	--	--	--	--	--	--	--	--
EU8	657	10/19/2017	10/19/2017	ng/L	**13**	<20	<2	<2	<2	**8.2**	**11**	<2	<2	<2	**46**
EU8	657	10/19/2017	10/19/2017	ng/L	**12**	--	--	--	--	--	--	--	--	--	--
EU8	657	10/19/2017	10/19/2017	ng/L	**21**	--	--	--	--	--	--	--	--	--	--
EU8	657	10/19/2017	10/19/2017	ng/L	**14**	--	--	--	--	--	--	--	--	--	--
EU8	661	1/10/2018	1/10/2018	ng/L	**16.7**	--	--	--	--	--	--	--	--	--	--
EU8	662	10/30/2017	10/30/2017	ng/L	**17**	--	--	--	--	--	--	--	--	--	--
EU8	663	12/26/2018	12/26/2018	ng/L	**16**	**6.5**	<2	<2	<2	**5.1**	**5**	<2	<2	<2	**74**
EU8	664	10/24/2017	10/24/2017	ng/L	**11**	--	--	--	--	--	--	--	--	--	--
EU8	665	6/13/2019	6/13/2019	ng/L	**22.8**	--	--	<1.21	<1.21	**28.3**	**33.4**	**1.46**	<1.21	--	--
EU8	791	10/26/2017	10/26/2017	ng/L	**11**	<20	<2	<2	<2	**6.5**	**2**	<2	<2	<2	**45**
EU8	792	10/17/2017	10/17/2017	ng/L	**14**	<20	<2	<2	<2	**5.7**	<2	<2	<2	<2	**52**
EU8	7490	8/15/2019	8/15/2019	ng/L	<2.6	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	<5.3
EU8	670	1/12/2018	10/1/2019	ng/L	**250**	**130**	<2	<2	**18**	**140**	**430**	**69**	**17**	<2	**560**
EU8	3041	9/11/2019	9/11/2019	ng/L	**4.1**	<20	<2	<2	**3.3**	**8.8**	**5.2**	<2	<2	<2	**89**
EU8	3042	7/25/2019	7/25/2019	ng/L	**81**	**37**	<1.1	<1.1	**21**	**59**	**130**	**7.5**	**1.6**	<1.1	**180**
EU8	3045	7/22/2019	7/22/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	**27**
EU8	238	9/8/2017	1/28/2019	ng/L	**140**	**63**	<2	<2	**11**	**51**	**120**	**6.7**	<2	<2	**300**
EU8	233	9/13/2017	10/3/2017	ng/L	**35.5**	--	--	--	--	--	--	--	--	--	--
EU8	670	9/15/2017	9/15/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	3052	7/19/2019	7/19/2019	ng/L	**5.4**	<20	<2	<2	**2.3**	**6.1**	**8.6**	<2	<2	<2	**26**
EU8	3054	7/25/2019	7/25/2019	ng/L	**3.5**	<11	<1.1	<1.1	**1.2**	**10**	**2.6**	<1.1	<1.1	<1.1	**98**
EU8	3055	8/8/2019	8/8/2019	ng/L	**37**	**24**	<1.1	<1.1	**15**	**35**	**88**	**14**	**3.5**	<1.1	**120**
EU8	3056	7/19/2019	7/19/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	3057	7/25/2019	7/25/2019	ng/L	**3.4**	<11	<1.1	<1.1	<1.1	**4.6**	<1.1	<1.1	<1.1	<1.1	**94**
EU8	3058	7/19/2019	7/19/2019	ng/L	**17**	<20	<2	<2	**6.2**	**15**	**28**	**2.4**	<2	<2	**60**
EU8	3059	8/29/2019	8/29/2019	ng/L	**9.2**	<20	<2	<2	**3.1**	**18**	**15**	<2	<2	<2	**96**
EU8	3060	8/28/2019	8/28/2019	ng/L	**13**	<20	<2	<2	**6.6**	**24**	**41**	**4.1**	<2	<2	**83**
EU8	3061	7/19/2019	7/19/2019	ng/L	**19**	<20	<2	<2	**5.8**	**18**	**32**	**2.7**	<2	<2	**76**
EU8	3062	8/9/2019	8/9/2019	ng/L	**4.8**	<11	<1.1	<1.1	**1.1**	**5.1**	<1.1	<1.1	<1.1	<1.1	**92**
EU8	2406	1/10/2018	1/10/2018	ng/L	**31.8**	--	--	--	--	--	--	--	--	--	--
EU8	3064	7/19/2019	7/19/2019	ng/L	**8.4**	<20	<2	<2	<2	**9.2**	**13**	<2	<2	<2	**41**
EU8	3065	7/17/2019	7/17/2019	ng/L	**5**	<20	<2	<2	**2.7**	**6.8**	**6.3**	<2	<2	<2	**42**
EU8	3066	8/19/2019	8/19/2019	ng/L	**8.9**	<20	<2	<2	**6.3**	**21**	**15**	<2	<2	<2	**110**
EU8	3068	7/2/2019	7/2/2019	ng/L	**9.6**	<20	<2	<2	<2	**11**	**18**	**2.7**	<2	<2	**56**
EU8	3069	7/23/2019	7/23/2019	ng/L	**3.5**	<20	<2	<2	**2.4**	**6.9**	**6.9**	<2	<2	<2	**49**
EU8	3071	7/24/2019	7/24/2019	ng/L	**25**	<20	<2	<2	**5.5**	**29**	**61**	**8**	<2	<2	**110**
EU8	3072	8/23/2019	8/23/2019	ng/L	**17**	<20	<2	<2	**8.8**	**24**	**31**	**3**	<2	<2	**120**
EU8	3073	8/28/2019	8/28/2019	ng/L	**7.8**	<20	<2	<2	<2	**5.9**	**10**	<2	<2	<2	**32**
EU8	3074	7/23/2019	7/23/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	3075	7/23/2019	7/23/2019	ng/L	**26**	<20	<2	<2	**5.6**	**23**	**50**	**4.6**	**2.1**	<2	**76**
EU8	3076	8/9/2019	8/9/2019	ng/L	**12**	**13**	<1.1	<1.1	**3.4**	**14**	**14**	<1.1	<1.1	<1.1	**98**
EU8	3076	8/23/2019	8/23/2019	ng/L	**14**	<20	<2	<2	**7.5**	**19**	**18**	<2	<2	<2	**110**

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU8	3077	10/3/2019	10/3/2019	ng/L	2.8	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	3078	8/28/2019	8/28/2019	ng/L	21	<20	<2	<2	5.8	14	20	<2	<2	<2	110
EU8	3079	9/3/2019	9/3/2019	ng/L	2.9	<20	<2	<2	4.4	15	15	<2	<2	<2	84
EU8	3080	7/23/2019	7/23/2019	ng/L	3.9	<20	<2	<2	<2	<5	3.7	<2	<2	<2	41
EU8	3082	9/17/2019	9/17/2019	ng/L	59	22	<2	<2	7	43	78	5.8	<2	<2	130
EU8	2487	10/25/2018	10/25/2018	ng/L	9	<20	<2	<2	6.8	16	26	3.4	<2	<2	72
EU8	3083	8/23/2019	8/23/2019	ng/L	<2.6	<20	<2	<2	4.4	<5	2.8	<2	<2	<2	32
EU8	3084	7/23/2019	7/23/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	22
EU8	3085	7/22/2019	7/22/2019	ng/L	6.4	<20	<2	<2	5.9	21	14	<2	<2	<2	76
EU8	3086	7/22/2019	7/22/2019	ng/L	4.5	<20	<2	<2	<2	<5	4	<2	<2	<2	45
EU8	3088	7/24/2019	7/24/2019	ng/L	58	45	<2	<2	5.5	51	87	5.6	<2	<2	180
EU8	3089	7/29/2019	7/29/2019	ng/L	35	35	<1.1	<1.1	9.6	31	86	6.5	1.8	<1.1	170
EU8	2407	1/10/2018	8/28/2019	ng/L	5.27	<20	<2	<2	3.2	5	3.5	<2	<2	<2	29
EU8	7613	8/28/2019	8/28/2019	ng/L	2.7	<20	<2	<2	2	6.4	2.7	<2	<2	<2	47
EU8	3091	7/24/2019	7/24/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	3092	7/22/2019	7/22/2019	ng/L	59	31	<2	<2	3.5	36	71	6.2	<2	<2	210
EU8	3095	7/24/2019	7/24/2019	ng/L	53	43	<2	<2	5.4	47	77	5.2	<2	<2	180
EU8	3096	7/24/2019	7/24/2019	ng/L	14	<20	<2	<2	3	15	9.9	<2	<2	<2	100
EU8	2408	1/10/2018	1/10/2018	ng/L	5.02	--	--	--	--	--	--	--	--	--	--
EU8	3099	7/23/2019	7/23/2019	ng/L	6.6	<20	<2	<2	3.3	9.5	12	<2	<2	<2	52
EU8	2409	1/10/2018	8/28/2019	ng/L	5.1	<20	<2	<2	4.2	<5	<2	<2	<2	<2	41
EU8	2410	1/10/2018	9/4/2019	ng/L	<2.6	<20	<2	<2	2.6	<5	4.6	<2	<2	<2	17
EU8	3100	8/8/2019	8/8/2019	ng/L	5.6	<11	<1.1	<1.1	14	20	17	<1.1	<1.1	<1.1	84
EU8	3102	7/26/2019	7/26/2019	ng/L	5.4	<20	<2	<2	9.5	21	28	2.6	<2	<2	50
EU8	3103	7/22/2019	7/22/2019	ng/L	15	<20	<2	<2	5.7	9.9	8.4	<2	<2	<2	38
EU8	2411	1/10/2018	5/13/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU8	227	9/8/2017	9/8/2017	ng/L	48	--	--	--	--	--	--	--	--	--	--
EU8	226	9/8/2017	9/8/2017	ng/L	39	--	--	--	--	--	--	--	--	--	--
EU8	224	9/13/2017	11/7/2017	ng/L	37	--	--	--	--	--	--	--	--	--	--
EU8	225	9/13/2017	9/29/2017	ng/L	0.92	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2556	9/12/2019	9/12/2019	ng/L	20	<20	<2	<2	<2	7	2.1	<2	<2	<2	160
EU9	2557	7/26/2019	7/26/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	49
EU9	2073	1/23/2018	1/23/2018	ng/L	7.4	<20	<2	<2	<2	<5	<2	<2	<2	<2	13
EU9	2074	1/24/2018	1/24/2018	ng/L	9.4	<20	<2	<2	<2	<5	2	<2	<2	<2	14
EU9	2075	6/3/2019	6/3/2019	ng/L	200	120	<2	<2	26	16	200	19	<2	<2	570
EU9	1332	2/13/2018	2/13/2018	ng/L	25	--	--	--	--	--	--	--	--	--	--
EU9	2076	1/23/2018	9/11/2019	ng/L	130	75	<2	<2	27	79	130	11	2.5	<2	450
EU9	2076	3/27/2018	3/27/2018	ng/L	180	130	<50	<50	<50	70	170	<50	<50	<100	610
EU9	1315	1/23/2018	10/8/2019	ng/L	310	220	<2	<2	31	170	400	59	9.3	<2	920
EU9	1334	1/25/2018	1/25/2018	ng/L	15	<20	<2	<2	<2	<5	3.2	<2	<2	<2	33
EU9	1317	1/23/2018	8/27/2019	ng/L	550	460	<2	<2	32	150	310	24	5.5	<2	2300
EU9	2078	1/25/2018	5/3/2018	ng/L	150	--	--	--	--	--	--	--	--	--	--
EU9	1318	3/7/2018	3/7/2018	ng/L	11	<20	<2	<2	8.4	22	25	2.3	<2	<2	89

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU9	2079	1/23/2018	6/5/2019	ng/L	**18**	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	1300	7/23/2018	7/23/2018	ng/L	**13**	--	--	--	--	--	--	--	--	--	--
EU9	2080	2/13/2018	2/13/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	1303	5/7/2018	5/7/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	3153	5/15/2019	5/15/2019	ng/L	<0.591	--	--	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	--	--
EU9	2091	1/29/2018	1/29/2018	ng/L	**18**	--	--	--	--	--	--	--	--	--	--
EU9	2092	9/9/2019	9/9/2019	ng/L	**25**	<20	<2	<2	**9.1**	**26**	**49**	**5.4**	<2	<2	**98**
EU9	1298	8/31/2018	8/31/2018	ng/L	**44**	--	--	--	--	--	--	--	--	--	--
EU9	1305	2/2/2018	2/2/2018	ng/L	**55**	--	--	--	--	--	--	--	--	--	--
EU9	2095	1/25/2018	1/25/2018	ng/L	**31**	--	--	--	--	--	--	--	--	--	--
EU9	2096	2/5/2018	2/5/2018	ng/L	**45**	--	--	--	--	--	--	--	--	--	--
EU9	2097	2/16/2018	2/16/2018	ng/L	**39**	--	--	--	--	--	--	--	--	--	--
EU9	8189	10/1/2019	10/1/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2490	12/26/2018	12/26/2018	ng/L	**53**	**35**	<2	<2	**9.3**	**28**	**33**	<2	<2	<2	**150**
EU9	2705	6/20/2019	6/20/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**69**
EU9	2706	6/20/2019	6/20/2019	ng/L	**56**	**57**	<2	<2	**3.5**	**17**	**12**	<2	<2	<2	**290**
EU9	2707	7/30/2019	7/30/2019	ng/L	<2.6	**250**	<1.1	<1.1	**26**	**190**	**530**	**41**	**15**	**6**	**860**
EU9	2709	6/20/2019	6/20/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**10**
EU9	2711	4/10/2019	4/10/2019	ng/L	**30.1**	--	--	<1.24	**12.3**	**32.4**	**33.4**	**1.93**	**1.26**	--	--
EU9	2713	6/20/2019	6/20/2019	ng/L	**8.7**	<20	<2	<2	<2	<5	**2.2**	<2	<2	<2	**91**
EU9	2715	6/20/2019	6/20/2019	ng/L	**4.4**	<20	<2	<2	<2	<5	<2	<2	<2	<2	**78**
EU9	2491	12/26/2018	12/26/2018	ng/L	**23**	**12**	<2	<2	**8.8**	**20**	**36**	**2.2**	<2	<2	**89**
EU9	2721	8/9/2019	8/9/2019	ng/L	<2.6	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	**43**
EU9	2726	8/7/2019	8/7/2019	ng/L	**4.4**	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	**66**
EU9	8191	10/1/2019	10/1/2019	ng/L	**13**	<20	<2	<2	**6.2**	**16**	**24**	<2	<2	<2	**86**
EU9	2731	7/17/2019	7/17/2019	ng/L	**9.4**	<20	<2	<2	<2	**5.2**	**2.7**	<2	<2	<2	**110**
EU9	2493	2/6/2019	9/11/2019	ng/L	**17.6**	--	--	<1.22	**6.36**	**26.3**	**22.4**	<1.22	<1.22	--	--
EU9	2271	3/2/2018	3/2/2018	ng/L	**6**	<20	<2	<2	<2	<5	<2	<2	<2	<2	**37**
EU9	2274	3/16/2018	7/10/2019	ng/L	**1.71**	<20	<2	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	<2	<10
EU9	2285	2/7/2018	3/28/2018	ng/L	**21.9**	--	--	--	--	--	--	--	--	--	--
EU9	2280	1/31/2018	1/31/2018	ng/L	**21**	--	--	--	--	--	--	--	--	--	--
EU9	2302	1/30/2018	1/30/2018	ng/L	**4.9**	<20	<2	<2	<2	<5	<2	<2	<2	<2	**81**
EU9	2355	1/30/2018	3/25/2019	ng/L	**13**	<20	<2	<2	<2	**5.4**	<2	<2	<2	<2	**150**
EU9	8194	10/1/2019	10/1/2019	ng/L	**71**	**44**	<2	<2	**17**	**40**	**81**	**8.3**	**3.9**	<2	**280**
EU9	7605	8/26/2019	8/26/2019	ng/L	**20**	**23**	<2	<2	**3.2**	**18**	**13**	<2	<2	<2	**200**
EU9	2363	2/8/2018	2/8/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2325	1/30/2018	1/30/2018	ng/L	**18**	<20	<2	<2	<2	<5	**2.2**	<2	<2	<2	**69**
EU9	2317	1/30/2018	1/30/2018	ng/L	**30**	--	--	--	--	--	--	--	--	--	--
EU9	2383	2/6/2018	2/6/2018	ng/L	**12**	--	--	--	--	--	--	--	--	--	--
EU9	2307	2/6/2018	2/6/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2309	1/30/2018	1/30/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**30**
EU9	2316	2/6/2018	2/6/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**41**
EU9	2312	2/6/2018	2/6/2018	ng/L	**5.3**	<20	<2	<2	<2	<5	<2	<2	<2	<2	**32**

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU9	2315	4/11/2018	4/11/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2311	1/26/2018	1/26/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**44**
EU9	2360	1/30/2018	1/30/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**31**
EU9	2314	1/30/2018	1/30/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**24**
EU9	2313	2/6/2018	2/6/2018	ng/L	**15**	--	--	--	--	--	--	--	--	--	--
EU9	2324	2/6/2018	2/6/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2364	2/21/2018	2/21/2018	ng/L	**41**	--	--	--	--	--	--	--	--	--	--
EU9	2310	1/30/2018	1/30/2018	ng/L	**12**	--	--	--	--	--	--	--	--	--	--
EU9	2310	1/30/2018	1/30/2018	ng/L	**16**	--	--	--	--	--	--	--	--	--	--
EU9	2308	1/30/2018	1/30/2018	ng/L	**14**	--	--	--	--	--	--	--	--	--	--
EU9	2306	1/30/2018	1/30/2018	ng/L	**14**	--	--	--	--	--	--	--	--	--	--
EU9	2382	1/30/2018	1/30/2018	ng/L	**15**	--	--	--	--	--	--	--	--	--	--
EU9	2357	4/30/2019	4/30/2019	ng/L	**67**	**49**	<2	<2	**4.4**	**33**	**49**	**2.9**	<2	<2	**300**
EU9	2297	2/6/2018	2/6/2018	ng/L	**67**	--	--	--	--	--	--	--	--	--	--
EU9	2298	1/30/2018	1/30/2018	ng/L	**63**	<100	<50	<50	<50	<50	**64**	<50	<50	<100	**390**
EU9	2296	1/30/2018	1/30/2018	ng/L	**80**	--	--	--	--	--	--	--	--	--	--
EU9	2291	2/13/2018	6/4/2019	ng/L	**44**	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2289	1/30/2018	1/30/2018	ng/L	**11**	<20	<2	<2	<2	<5	<2	<2	<2	<2	**120**
EU9	2294	2/7/2018	2/7/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**33**
EU9	2286	8/7/2019	8/7/2019	ng/L	**49**	**36**	<1.1	<1.1	**4.4**	**22**	**17**	<1.1	<1.1	<1.1	**260**
EU9	2288	3/9/2018	3/9/2018	ng/L	**10**	<20	<2	<2	<2	**5.8**	**2.1**	<2	<2	<2	**110**
EU9	2293	2/13/2018	2/13/2018	ng/L	**11**	<20	<2	<2	<2	<5	<2	<2	<2	<2	**48**
EU9	2352	2/13/2018	2/13/2018	ng/L	**4.4**	<20	<2	<2	<2	<5	<2	<2	<2	<2	**31**
EU9	2292	1/30/2018	10/19/2018	ng/L	**130**	--	--	--	--	--	--	--	--	--	--
EU9	2351	1/30/2018	1/30/2018	ng/L	**64**	--	--	--	--	--	--	--	--	--	--
EU9	2287	1/31/2018	1/31/2018	ng/L	**12**	--	--	--	--	--	--	--	--	--	--
EU9	2290	2/8/2018	7/24/2019	ng/L	**5.2**	<20	<2	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<2	<10
EU9	2284	1/31/2018	1/31/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**19**
EU9	2337	2/5/2018	2/5/2018	ng/L	**87**	--	--	--	--	--	--	--	--	--	--
EU9	2339	2/5/2018	2/5/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2344	2/15/2018	2/15/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2340	2/14/2018	2/14/2018	ng/L	**66**	--	--	--	--	--	--	--	--	--	--
EU9	2345	2/14/2018	2/14/2018	ng/L	**610**	--	--	--	--	--	--	--	--	--	--
EU9	2343	2/14/2018	2/14/2018	ng/L	**74**	--	--	--	--	--	--	--	--	--	--
EU9	2414	2/9/2018	2/9/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2376	2/15/2018	6/3/2019	ng/L	**27**	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2387	2/6/2018	2/6/2018	ng/L	**85**	<100	<50	<50	<50	<50	**84**	<50	<50	<100	**420**
EU9	2334	10/3/2019	10/3/2019	ng/L	**4.4**	<20	<2	<2	<2	<5	**7.3**	<2	<2	<2	**34**
EU9	2375	2/1/2018	4/5/2018	ng/L	**57**	--	--	--	--	--	--	--	--	--	--
EU9	2341	2/1/2018	2/1/2018	ng/L	**37**	--	--	--	--	--	--	--	--	--	--
EU9	2390	2/7/2018	2/7/2018	ng/L	**12**	--	--	--	--	--	--	--	--	--	--
EU9	8316	10/7/2019	10/7/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2764	7/12/2019	7/12/2019	ng/L	**150**	**86**	<2	<2	**8.8**	**47**	**120**	**8.1**	<2	<2	**340**

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU9	8318	10/7/2019	10/7/2019	ng/L	11	<20	<2	<2	14	22	22	<2	<2	<2	110
EU9	2767	7/29/2019	7/29/2019	ng/L	52	55	<1.1	<1.1	9.8	30	45	2.6	<1.1	<1.1	320
EU9	2770	7/29/2019	7/29/2019	ng/L	52	51	<1.1	<1.1	12	35	51	5	1.1	<1.1	220
EU9	2773	7/30/2019	7/30/2019	ng/L	56	46	<1.1	<1.1	17	58	39	2.4	<1.1	<1.1	210
EU9	2775	8/5/2019	8/5/2019	ng/L	69	55	<1.1	<1.1	15	35	73	9.8	3	<1.1	270
EU9	8319	10/7/2019	10/7/2019	ng/L	52	54	<2	<2	14	38	70	5.9	<2	<2	220
EU9	2780	4/10/2019	4/10/2019	ng/L	107	--	--	<1.2	10.4	72	60.1	5.71	<1.2	--	--
EU9	2790	7/11/2019	7/11/2019	ng/L	<2.8	<20	2.3	<2	3.4	10	11	<2	<2	7.7	36
EU9	2799	7/29/2019	7/29/2019	ng/L	4	<11	<1.1	<1.1	7.7	27	26	<1.1	<1.1	<1.1	120
EU9	2801	7/17/2019	7/17/2019	ng/L	63	49	<2	<2	6.8	28	61	6.6	<2	<2	270
EU9	2115	9/9/2019	9/9/2019	ng/L	140	65	<2	<2	26	38	88	8.2	<2	<2	260
EU9	2489	12/26/2018	10/2/2019	ng/L	180	69	<2	<2	23	66	270	25	<2	<2	220
EU9	2820	7/31/2019	7/31/2019	ng/L	33	29	<1.1	<1.1	5.5	26	41	<1.1	<1.1	<1.1	150
EU9	2822	6/19/2019	6/19/2019	ng/L	45	25	<2	<2	30	26	91	18	7	<2	110
EU9	2823	7/26/2019	7/26/2019	ng/L	59	58	<1.1	<1.1	9	30	47	2.2	<1.1	<1.1	230
EU9	2824	6/19/2019	6/19/2019	ng/L	64	57	<2	<2	7.5	23	56	4.1	<2	<2	230
EU9	2826	7/3/2019	7/3/2019	ng/L	6.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	30
EU9	2119	2/8/2018	2/8/2018	ng/L	27	--	--	--	--	--	--	--	--	--	--
EU9	1361	1/31/2018	1/31/2018	ng/L	26	--	--	--	--	--	--	--	--	--	--
EU9	1368	1/31/2018	1/7/2019	ng/L	170	77	<2	<2	6.7	73	55	7.1	<2	<2	350
EU9	2841	8/7/2019	8/7/2019	ng/L	<2.6	<11	<1.1	<1.1	<1.1	6.7	5.4	<1.1	<1.1	<1.1	16
EU9	2120	1/31/2018	1/31/2018	ng/L	360	--	--	--	--	--	--	--	--	--	--
EU9	2844	8/7/2019	8/7/2019	ng/L	17	<11	<1.1	<1.1	9.2	16	35	4.2	1.5	<1.1	46
EU9	1369	1/31/2018	1/31/2018	ng/L	180	--	--	--	--	--	--	--	--	--	--
EU9	1364	1/31/2018	1/31/2018	ng/L	26	--	--	--	--	--	--	--	--	--	--
EU9	2122	1/31/2018	1/31/2018	ng/L	87	--	--	--	--	--	--	--	--	--	--
EU9	8323	10/7/2019	10/7/2019	ng/L	46	23	<2	<2	13	27	61	6.5	<2	<2	100
EU9	3163	7/10/2019	7/10/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	3164	7/10/2019	7/10/2019	ng/L	20	<20	<2	<2	2.7	15	6.7	<2	<2	<2	94
EU9	2124	1/31/2018	11/20/2018	ng/L	220	<10000	<9600	<12000	<9500	<9500	<9200	<8800	<9700	<11000	<8400
EU9	1370	2/16/2018	2/16/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2126	7/18/2019	7/18/2019	ng/L	66	55	<2	<2	3.6	26	40	2.8	<2	<2	280
EU9	1310	7/18/2019	7/18/2019	ng/L	97	74	<2	<2	6.8	36	55	4	<2	<2	330
EU9	2856	6/19/2019	6/19/2019	ng/L	26	<20	<2	<2	9.1	18	43	6.4	2	<2	78
EU9	2127	1/30/2018	1/30/2018	ng/L	65	--	--	--	--	--	--	--	--	--	--
EU9	1313	1/30/2018	1/30/2018	ng/L	79	--	--	--	--	--	--	--	--	--	--
EU9	2128	1/31/2018	11/28/2018	ng/L	170	--	--	--	--	--	--	--	--	--	--
EU9	2326	2/1/2018	2/1/2018	ng/L	31	--	--	--	--	--	--	--	--	--	--
EU9	2333	2/1/2018	2/1/2018	ng/L	15	--	--	--	--	--	--	--	--	--	--
EU9	2131	2/1/2018	1/28/2019	ng/L	140	48	<2	<2	17	41	98	3.9	<2	<2	200
EU9	1372	2/6/2018	2/6/2018	ng/L	18	--	--	--	--	--	--	--	--	--	--
EU9	2132	2/5/2018	2/5/2018	ng/L	15	--	--	--	--	--	--	--	--	--	--
EU9	2332	2/1/2018	2/1/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU9	2133	2/15/2018	11/28/2018	ng/L	130	--	--	--	--	--	--	--	--	--	--
EU9	1336	2/2/2018	2/2/2018	ng/L	22	--	--	--	--	--	--	--	--	--	--
EU9	2330	2/2/2018	2/2/2018	ng/L	6.2	<20	<2	<2	<2	<5	<2	<2	<2	<2	19
EU9	2134	1/26/2018	8/15/2019	ng/L	150	180	<1.1	<1.1	21	58	110	7.9	2.5	<1.1	690
EU9	2135	1/26/2018	1/26/2018	ng/L	84	--	--	--	--	--	--	--	--	--	--
EU9	2136	1/30/2018	1/30/2018	ng/L	81	--	--	--	--	--	--	--	--	--	--
EU9	2137	1/31/2018	1/31/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2331	2/2/2018	2/2/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	1338	6/19/2019	6/19/2019	ng/L	180	110	<2	<2	18	54	130	15	3.9	<2	480
EU9	2365	2/2/2018	2/2/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	1339	2/5/2018	2/5/2018	ng/L	33	--	--	--	--	--	--	--	--	--	--
EU9	1340	2/13/2018	2/13/2018	ng/L	57	--	--	--	--	--	--	--	--	--	--
EU9	1341	2/12/2018	2/12/2018	ng/L	28	--	--	--	--	--	--	--	--	--	--
EU9	2863	6/19/2019	7/30/2019	ng/L	8	<11	<1.1	<1.1	7.3	17	18	<1.1	<1.1	<1.1	50
EU9	2138	1/30/2018	1/30/2018	ng/L	53	--	--	--	--	--	--	--	--	--	--
EU9	2139	2/6/2018	4/24/2019	ng/L	131	--	--	<1.3	17.2	80.2	50.5	9.16	3.22	--	--
EU9	2140	1/30/2018	1/30/2018	ng/L	31	--	--	--	--	--	--	--	--	--	--
EU9	2141	4/11/2018	4/11/2018	ng/L	14.6	--	--	--	--	--	--	--	--	--	--
EU9	2143	1/24/2018	1/24/2018	ng/L	12	--	--	--	--	--	--	--	--	--	--
EU9	2144	1/26/2018	1/26/2018	ng/L	65	--	--	--	--	--	--	--	--	--	--
EU9	1344	1/26/2018	1/26/2018	ng/L	41	--	--	--	--	--	--	--	--	--	--
EU9	2145	1/24/2018	1/24/2018	ng/L	10	23	<2	<2	2.6	12	12	<2	<2	<2	81
EU9	1345	2/5/2018	2/5/2018	ng/L	87	--	--	--	--	--	--	--	--	--	--
EU9	2146	1/24/2018	1/24/2018	ng/L	10	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2146	5/7/2018	5/7/2018	ng/L	11	<20	<2	<2	3	14	2.9	<2	<2	<2	180
EU9	2147	1/24/2018	1/24/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2148	2/6/2018	2/6/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2322	1/31/2018	2/5/2018	ng/L	18.1	--	--	--	--	--	--	--	--	--	--
EU9	2369	2/7/2018	2/7/2018	ng/L	12	--	--	--	--	--	--	--	--	--	--
EU9	2323	2/2/2018	2/2/2018	ng/L	34	--	--	--	--	--	--	--	--	--	--
EU9	2367	2/14/2018	2/14/2018	ng/L	87	--	--	--	--	--	--	--	--	--	--
EU9	2149	1/24/2018	1/24/2018	ng/L	58	--	--	--	--	--	--	--	--	--	--
EU9	1347	4/23/2019	4/23/2019	ng/L	100	65	<2	<2	13	30	47	5.5	<2	<2	210
EU9	2150	2/15/2018	7/16/2018	ng/L	160	170	<50	<50	<50	<50	140	<50	<50	<100	500
EU9	2368	2/7/2018	2/7/2018	ng/L	64	--	--	--	--	--	--	--	--	--	--
EU9	1349	9/11/2019	9/11/2019	ng/L	99	53	<2	<2	11	54	48	3	<2	<2	230
EU9	2153	1/30/2018	1/30/2018	ng/L	140	--	--	--	--	--	--	--	--	--	--
EU9	8195	10/1/2019	10/1/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2154	1/30/2018	1/30/2018	ng/L	37	--	--	--	--	--	--	--	--	--	--
EU9	8183	10/1/2019	10/1/2019	ng/L	18	<20	<2	<2	11	20	68	7.1	<2	<2	77
EU9	3291	9/13/2019	9/13/2019	ng/L	8.6	<20	<2	<2	8.5	19	37	5.3	<2	<2	49
EU9	2157	1/30/2018	1/30/2018	ng/L	65	--	--	--	--	--	--	--	--	--	--
EU9	2158	3/6/2018	3/6/2018	ng/L	73	--	--	--	--	--	--	--	--	--	--

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU9	2159	1/30/2018	1/30/2018	ng/L	**20**	--	--	--	--	--	--	--	--	--	--
EU9	2338	2/5/2018	2/5/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2160	2/16/2018	2/16/2018	ng/L	**20**	--	--	--	--	--	--	--	--	--	--
EU9	2372	2/14/2018	2/14/2018	ng/L	**78**	<100	<50	<50	<50	**54**	**87**	<50	<50	<100	**350**
EU9	2329	2/12/2018	2/12/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2162	2/15/2018	2/15/2018	ng/L	**52**	--	--	--	--	--	--	--	--	--	--
EU9	2336	2/5/2018	8/8/2019	ng/L	**150**	**110**	<1.1	<1.1	**8.7**	**29**	**87**	**10**	<1.1	<1.1	**560**
EU9	2165	3/13/2018	3/13/2018	ng/L	**28**	--	--	--	--	--	--	--	--	--	--
EU9	2166	9/16/2019	9/16/2019	ng/L	**22**	<20	<2	<2	**5.8**	**15**	**29**	**4**	<2	<2	**68**
EU9	3293	8/14/2019	8/14/2019	ng/L	<2.6	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	<5.3
EU9	2328	2/5/2018	2/5/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2342	7/23/2018	9/24/2018	ng/L	**23**	--	--	--	--	--	--	--	--	--	--
EU9	1351	2/14/2018	2/14/2018	ng/L	**28**	--	--	--	--	--	--	--	--	--	--
EU9	2169	1/24/2018	1/24/2018	ng/L	**15**	<20	<2	<2	**7.4**	**16**	**19**	**2.3**	<2	<2	**58**
EU9	7607	8/26/2019	8/26/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	1353	2/8/2018	2/8/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**11**
EU9	3295	8/14/2019	8/14/2019	ng/L	**12**	<11	<1.1	<1.1	<1.1	**3.2**	**6.7**	<1.1	<1.1	<1.1	**25**
EU9	8338	10/7/2019	10/7/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	7606	8/26/2019	8/26/2019	ng/L	**45**	**31**	<2	<2	**5.5**	**31**	**38**	**2.5**	<2	<2	**180**
EU9	1355	1/25/2018	8/28/2018	ng/L	**110**	--	--	--	--	--	--	--	--	--	--
EU9	2884	6/28/2019	6/28/2019	ng/L	**37**	**35**	<2	<2	**14**	**50**	**71**	**6.3**	<2	<2	**240**
EU9	3296	8/14/2019	8/14/2019	ng/L	**35**	<20	<2	<2	**5.9**	**17**	**44**	**5.7**	**2.8**	<2	**62**
EU9	3297	8/14/2019	8/14/2019	ng/L	**32**	**15**	<1.1	<1.1	**6.4**	**18**	**25**	**2.5**	<1.1	<1.1	**83**
EU9	2895	6/28/2019	6/28/2019	ng/L	**33**	<20	<2	<2	**2.3**	**11**	**35**	**4.6**	**2.4**	<2	**89**
EU9	1357	2/6/2018	6/18/2018	ng/L	**210**	--	--	--	--	--	--	--	--	--	--
EU9	533	3/27/2019	3/27/2019	ng/L	**5.24**	--	--	<1.21	**4.07**	**6.34**	**8.74**	<1.21	<1.21	--	--
EU9	2910	7/29/2019	7/29/2019	ng/L	**100**	**70**	<1.1	<1.1	**18**	**49**	**64**	**2.7**	<1.1	<1.1	**240**
EU9	2501	3/27/2019	3/27/2019	ng/L	**143**	--	--	<1.36	**9.9**	**53.2**	**50.1**	**4.34**	<1.36	--	--
EU9	2488	11/28/2018	11/28/2018	ng/L	**146**	--	--	--	--	--	--	--	--	--	--
EU9	2921	9/23/2019	9/23/2019	ng/L	**80**	**47**	<2	<2	**12**	**36**	**46**	**2.1**	<2	<2	**230**
EU9	2922	7/29/2019	7/29/2019	ng/L	**180**	**100**	<1.1	<1.1	**21**	**75**	**180**	**15**	<1.1	<1.1	**320**
EU9	3299	10/4/2019	10/4/2019	ng/L	**13**	<20	<2	<2	<2	**6.1**	**4.8**	<2	<2	<2	**110**
EU9	2923	7/8/2019	7/8/2019	ng/L	**44**	**33**	<2	<2	**8.1**	**24**	**26**	<2	<2	<2	**140**
EU9	2925	7/22/2019	7/22/2019	ng/L	**67**	**31**	<2	<2	**5.3**	**26**	**37**	<2	<2	<2	**150**
EU9	2927	7/8/2019	7/8/2019	ng/L	**56**	**24**	<2	<2	**6.2**	**24**	**22**	<2	<2	<2	**140**
EU9	2929	7/8/2019	7/22/2019	ng/L	**59**	**30**	<2	<2	**9.9**	**27**	**41**	<2	<2	<2	**150**
EU9	2930	7/11/2019	7/11/2019	ng/L	**15**	<20	**2.5**	<2	**8**	**18**	**20**	<2	<2	**8.9**	**96**
EU9	2934	8/7/2019	8/7/2019	ng/L	**48**	**19**	<1.1	<1.1	**5.4**	**26**	**66**	**6.2**	<1.1	<1.1	**72**
EU9	2934	8/7/2019	8/7/2019	ng/L	<2.6	<11	<1.1	<1.1	**15**	**15**	**12**	<1.1	<1.1	<1.1	**37**
EU9	2935	4/10/2019	7/24/2019	ng/L	**8.2**	--	--	<1.17	**5.01**	**13.9**	**11**	**1.44**	<1.17	--	--
EU9	8344	9/18/2019	9/18/2019	ng/L	**22.7**	--	<1.23	<1.23	**5.47**	**24.7**	**21.2**	<1.23	<1.23	<1.23	--
EU9	2936	4/10/2019	9/25/2019	ng/L	**270**	**80**	<2	<1.23	**17**	**161**	**240**	**37**	**2.05**	<2	**290**
EU9	2939	10/17/2019	10/17/2019	ng/L	**44**	**47**	<2	<2	**5.4**	**35**	**58**	**6.6**	<2	<2	**260**

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU9	2940	7/12/2019	7/12/2019	ng/L	**65**	**73**	<2	<2	**5.9**	**44**	**94**	**9.9**	<2	<2	**380**
EU9	2942	8/6/2019	8/6/2019	ng/L	**63**	**54**	<1.1	<1.1	**7.2**	**42**	**63**	**5.5**	<1.1	<1.1	**270**
EU9	1377	2/1/2018	2/1/2018	ng/L	**12**	--	--	--	--	--	--	--	--	--	--
EU9	1378	2/26/2018	2/26/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	1380	2/12/2018	2/12/2018	ng/L	**10**	<20	<2	<2	**6.8**	**18**	**29**	**2.5**	<2	<2	**53**
EU9	2197	2/9/2018	2/9/2018	ng/L	**13**	--	--	--	--	--	--	--	--	--	--
EU9	2946	9/19/2019	9/19/2019	ng/L	**120**	**67**	<2	<2	**19**	**36**	**100**	**9.3**	<2	<2	**280**
EU9	860	11/29/2017	11/20/2018	ng/L	**390**	<500	<480	<580	<470	<470	<460	<440	<490	<530	**630**
EU9	2199	2/1/2018	2/1/2018	ng/L	**38**	--	--	--	--	--	--	--	--	--	--
EU9	2203	2/14/2018	2/14/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**12**
EU9	2319	2/1/2018	2/1/2018	ng/L	**16**	--	--	--	--	--	--	--	--	--	--
EU9	2962	6/21/2019	6/21/2019	ng/L	**9.4**	<20	<2	<2	<2	<5	**2**	<2	<2	<2	**100**
EU9	1385	2/1/2018	2/1/2018	ng/L	<4	<100	<50	<50	<50	<50	<50	<50	<50	<100	<50
EU9	1385	2/1/2018	2/1/2018	ng/L	**12**	<20	<2	<2	**3.4**	**18**	**13**	<2	<2	<2	**140**
EU9	1386	9/4/2019	9/4/2019	ng/L	**64**	**53**	<2	<2	**6.3**	**50**	**70**	**3.7**	<2	<2	**270**
EU9	1388	2/7/2018	2/7/2018	ng/L	**21**	--	--	--	--	--	--	--	--	--	--
EU9	2205	4/10/2019	4/10/2019	ng/L	<0.648	--	--	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	--	--
EU9	2392	1/26/2018	1/26/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2210	2/14/2018	2/14/2018	ng/L	**24**	--	--	--	--	--	--	--	--	--	--
EU9	2303	2/1/2018	2/1/2018	ng/L	**6.4**	<20	<2	<2	<2	<5	<2	<2	<2	<2	**17**
EU9	2506	3/27/2019	3/27/2019	ng/L	**4.31**	--	--	<1.47	<1.47	<1.47	<1.47	<1.47	<1.47	--	--
EU9	2507	3/27/2019	7/24/2019	ng/L	**16.3**	--	--	<1.18	<1.18	**6.98**	**7.41**	<1.18	<1.18	--	--
EU9	2301	2/6/2018	2/6/2018	ng/L	**11**	--	--	--	--	--	--	--	--	--	--
EU9	1394	2/1/2018	2/1/2018	ng/L	**14**	**21**	<2	<2	<2	**11**	**8.4**	<2	<2	<2	**120**
EU9	2300	2/1/2018	2/1/2018	ng/L	**21**	--	--	--	--	--	--	--	--	--	--
EU9	2224	2/1/2018	2/1/2018	ng/L	**12**	--	--	--	--	--	--	--	--	--	--
EU9	2224	2/1/2018	2/1/2018	ng/L	**13**	**23**	<2	<2	<2	**13**	**11**	<2	<2	<2	**120**
EU9	2299	2/6/2018	2/6/2018	ng/L	**79**	--	--	--	--	--	--	--	--	--	--
EU9	1320	1/25/2018	1/25/2018	ng/L	**63**	--	--	--	--	--	--	--	--	--	--
EU9	1395	2/1/2018	2/1/2018	ng/L	**25**	--	--	--	--	--	--	--	--	--	--
EU9	2353	1/31/2018	1/31/2018	ng/L	**61**	--	--	--	--	--	--	--	--	--	--
EU9	2381	1/31/2018	1/31/2018	ng/L	**14**	--	--	--	--	--	--	--	--	--	--
EU9	2380	2/1/2018	2/1/2018	ng/L	**42**	--	--	--	--	--	--	--	--	--	--
EU9	2227	1/30/2018	1/30/2018	ng/L	**30**	--	--	--	--	--	--	--	--	--	--
EU9	2228	2/12/2018	7/25/2019	ng/L	**21**	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2229	2/7/2018	2/7/2018	ng/L	**42**	--	--	--	--	--	--	--	--	--	--
EU9	2231	2/6/2018	2/6/2018	ng/L	**36**	--	--	--	--	--	--	--	--	--	--
EU9	1323	2/7/2018	6/5/2019	ng/L	**13**	<20	<2	<2	<2	<5	**2.2**	<2	<2	<2	**34**
EU9	1325	2/7/2018	2/7/2018	ng/L	**16**	--	--	--	--	--	--	--	--	--	--
EU9	1396	1/24/2018	1/24/2018	ng/L	**31**	--	--	--	--	--	--	--	--	--	--
EU9	2242	2/1/2018	1/28/2019	ng/L	**180**	**110**	<2	<2	**8.9**	**83**	**130**	**11**	<2	<2	**450**
EU9	2247	3/11/2019	3/11/2019	ng/L	**290**	**100**	<2	<2	**18**	**100**	**190**	**26**	**3.8**	<2	**350**
EU9	1399	1/24/2018	1/24/2018	ng/L	**220**	**230**	<50	<50	<50	**80**	**210**	<50	<50	<100	**940**

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU9	2486	8/1/2018	8/1/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2260	2/22/2018	9/25/2019	ng/L	**250**	**180**	<1.1	<1.1	**19**	**170**	**230**	**25**	**2.7**	<1.1	**780**
EU9	2459	5/1/2018	7/23/2018	ng/L	**180**	**180**	<50	<50	<50	**56**	**77**	<50	<50	<100	**660**
EU9	2461	4/25/2018	4/25/2018	ng/L	**8.86**	--	--	--	--	--	--	--	--	--	--
EU9	2263	3/5/2018	3/5/2018	ng/L	**330**	--	--	--	--	--	--	--	--	--	--
EU9	1400	2/7/2018	2/7/2018	ng/L	**16**	--	--	--	--	--	--	--	--	--	--
EU9	2265	2/9/2018	2/9/2018	ng/L	**200**	--	--	--	--	--	--	--	--	--	--
EU9	2266	1/31/2018	1/31/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	2267	2/22/2018	9/25/2019	ng/L	**200**	**230**	<2	<2	**7.8**	**74**	**180**	**14**	**3.3**	<2	**840**
EU9	1402	2/1/2018	2/1/2018	ng/L	**150**	--	--	--	--	--	--	--	--	--	--
EU9	1404	2/1/2018	2/1/2018	ng/L	**29**	--	--	--	--	--	--	--	--	--	--
EU9	2404	2/1/2018	10/22/2018	ng/L	**100**	--	--	--	--	--	--	--	--	--	--
EU9	3037	6/18/2019	6/18/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU9	938	12/6/2017	12/6/2017	ng/L	**91**	--	--	--	--	--	--	--	--	--	--
EU9	2463	4/25/2018	4/25/2018	ng/L	**1.88**	--	--	--	--	--	--	--	--	--	--
EU9	2462	4/25/2018	4/25/2018	ng/L	**80**	--	--	--	--	--	--	--	--	--	--
EU10	1007	12/14/2017	12/14/2017	ng/L	**21**	<100	<50	<50	<50	<50	<50	<50	<50	<100	**230**
EU10	2083	3/1/2018	3/1/2018	ng/L	**14**	**38**	<2	<2	**32**	**16**	**4.4**	<2	<2	<2	**220**
EU10	1526	2/7/2018	2/7/2018	ng/L	**9.9**	**29**	<2	<2	**35**	**27**	**3.4**	<2	<2	<2	**220**
EU10	8221	10/2/2019	10/2/2019	ng/L	**8.8**	**20**	<2	<2	**18**	**21**	**11**	<2	<2	<2	**160**
EU10	8386	10/10/2019	10/10/2019	ng/L	**12**	<20	<2	<2	<2	<5	**12**	<2	<2	<2	**68**
EU10	910	12/12/2017	12/12/2017	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU10	954	12/15/2017	12/15/2017	ng/L	**23**	<100	<50	<50	<50	<50	<50	<50	<50	<100	**180**
EU10	972	12/13/2017	12/13/2017	ng/L	**38**	<100	<50	<50	<50	<50	**79**	<50	<50	<100	**150**
EU10	2116	2/8/2018	2/8/2018	ng/L	<4	<20	<2	<2	**6.4**	**5.5**	<2	<2	<2	<2	**41**
EU10	1010	1/24/2018	1/24/2018	ng/L	**50**	<100	<50	<50	<50	**62**	**98**	<50	<50	<100	**580**
EU10	911	1/24/2018	1/24/2018	ng/L	**15**	--	--	--	--	--	--	--	--	--	--
EU10	2481	4/11/2018	4/11/2018	ng/L	**1.82**	--	--	--	--	--	--	--	--	--	--
EU10	912	1/24/2018	1/24/2018	ng/L	**4.5**	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU10	2496	3/13/2019	3/13/2019	ng/L	**76.4**	--	--	<1.21	**19.1**	**40.4**	**32.5**	**6.91**	**2.34**	--	--
EU10	2498	9/18/2019	9/18/2019	ng/L	**0.902**	--	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	--
EU10	2498	3/13/2019	3/13/2019	ng/L	**0.866**	--	--	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	--	--
EU10	3016	8/7/2019	8/7/2019	ng/L	**59**	**49**	<1.1	<1.1	**19**	**65**	**230**	**15**	<1.1	<1.1	**250**
EU10	3018	8/6/2019	8/6/2019	ng/L	<2.6	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	**5.8**
EU10	8232	10/2/2019	10/2/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU10	8229	10/2/2019	10/2/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU10	2471	4/25/2018	4/25/2018	ng/L	**1.79**	--	--	--	--	--	--	--	--	--	--
EU10	8285	10/4/2019	10/4/2019	ng/L	<2.9	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU10	2470	4/25/2018	4/25/2018	ng/L	**1.79**	--	--	--	--	--	--	--	--	--	--
EU10	2472	4/25/2018	4/25/2018	ng/L	**1.79**	--	--	--	--	--	--	--	--	--	--
EU10	3040	9/23/2019	9/23/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU10	982	1/9/2018	1/9/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU10	2480	7/24/2019	7/24/2019	ng/L	**24.9**	--	--	<1.16	**2.37**	**5.82**	**5.2**	<1.16	<1.16	--	--

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU10	Unknown	4/11/2018	4/11/2018	ng/L	36.9	--	--	--	--	--	--	--	--	--	--
EU10	913	12/11/2017	12/11/2017	ng/L	6.3	<20	<2	<2	4.9	7.9	17	4.1	<2	<2	42
EU10	913	1/15/2018	1/15/2018	ng/L	4.8	<20	<2	<2	<2	<5	3	<2	<2	<2	14
EU10	1011	11/30/2017	11/30/2017	ng/L	13	--	--	--	--	--	--	--	--	--	--
EU10	8238	10/4/2019	10/4/2019	ng/L	4.1	<20	<2	<2	5.7	10	7	<2	<2	<2	32
EU10	906	11/30/2017	11/30/2017	ng/L	8.3	21	<2	<2	18	20	28	<2	<2	<2	150
EU10	2479	4/11/2018	4/11/2018	ng/L	1.86	--	--	--	--	--	--	--	--	--	--
EU10	3131	8/1/2019	8/1/2019	ng/L	31	38	<1.1	<1.1	23	43	130	13	3.4	<1.1	190
EU11	2082	1/30/2018	1/30/2018	ng/L	29	<100	<50	<50	<50	<50	<50	<50	<50	<100	140
EU11	1483	1/26/2018	1/26/2018	ng/L	14	22	<2	<2	29	24	21	<2	<2	<2	160
EU11	2521	7/26/2019	7/26/2019	ng/L	3.3	<20	<2	<2	<2	<5	<2	<2	<2	<2	28
EU11	8022	9/27/2019	9/27/2019	ng/L	7.7	<20	<2	<2	7.9	8	14	<2	<2	<2	110
EU11	2444	1/29/2018	1/29/2018	ng/L	5.53	--	--	--	--	--	--	--	--	--	--
EU11	7719	9/20/2019	9/20/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU11	2447	1/29/2018	1/29/2018	ng/L	11.9	--	--	--	--	--	--	--	--	--	--
EU11	7657	9/19/2019	9/19/2019	ng/L	11	<20	<2	<2	3	6.2	8.2	<2	<2	<2	110
EU11	2418	3/7/2018	3/7/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU11	1537	2/7/2018	2/7/2018	ng/L	23	--	--	--	--	--	--	--	--	--	--
EU11	1521	1/26/2018	1/26/2018	ng/L	26	--	--	--	--	--	--	--	--	--	--
EU11	1491	1/30/2018	1/28/2019	ng/L	170	120	<2	<2	31	34	40	<2.9	<3.9	<2	570
EU11	2430	2/13/2018	2/13/2018	ng/L	2.5	--	--	--	--	--	--	--	--	--	--
EU11	2431	2/13/2018	2/13/2018	ng/L	2.68	--	--	--	--	--	--	--	--	--	--
EU11	2530	7/31/2019	7/31/2019	ng/L	19	12	<1.1	<1.1	8.3	26	60	3.9	1.7	<1.1	85
EU11	2531	7/31/2019	7/31/2019	ng/L	<2.6	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	5.5
EU11	2451	1/29/2018	1/29/2018	ng/L	8.25	--	--	--	--	--	--	--	--	--	--
EU11	8383	10/7/2019	10/7/2019	ng/L	14	<20	<2	<2	4.8	9.6	13	<2	<2	<2	150
EU11	2535	8/29/2019	8/29/2019	ng/L	31	35	<2	<2	8.6	17	22	<2	<2	<2	96
EU11	2448	1/29/2018	1/29/2018	ng/L	17.6	--	--	--	--	--	--	--	--	--	--
EU11	2537	7/31/2019	7/31/2019	ng/L	35	18	<1.1	<1.1	6.8	19	26	<1.1	<1.1	<1.1	110
EU11	2432	4/16/2018	4/17/2018	ng/L	232	--	--	--	--	--	--	--	--	--	--
EU11	2440	1/29/2018	1/29/2018	ng/L	22	--	--	--	--	--	--	--	--	--	--
EU11	1489	2/6/2018	2/6/2018	ng/L	25	--	--	--	--	--	--	--	--	--	--
EU11	2539	7/26/2019	7/26/2019	ng/L	6.1	<20	<2	<2	<2	5.1	2.5	<2	<2	<2	120
EU11	8132	9/30/2019	9/30/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	24
EU11	2540	9/16/2019	9/16/2019	ng/L	4.4	<20	<2	<2	2.3	11	9.2	<2	<2	<2	52
EU11	2541	7/29/2019	7/29/2019	ng/L	39	35	<1.1	<1.1	19	35	46	3.8	<1.1	<1.1	230
EU11	1538	4/9/2018	4/9/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU11	2396	1/30/2018	1/30/2018	ng/L	22	--	--	--	--	--	--	--	--	--	--
EU11	2450	1/29/2018	1/29/2018	ng/L	6.07	--	--	--	--	--	--	--	--	--	--
EU11	2548	7/30/2019	7/30/2019	ng/L	12	16	<1.1	<1.1	4.4	5	5.4	<1.1	<1.1	<1.1	92
EU11	1204	12/8/2017	12/8/2017	ng/L	70	--	--	--	--	--	--	--	--	--	--
EU11	2088	1/24/2018	6/12/2019	ng/L	65	<20	<2	<2	<2	<5	<2	<2	<2	<2	560
EU11	7693	9/20/2019	9/20/2019	ng/L	<2.8	<20	<2	<2	6.6	11	<2	<2	<2	<2	73

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU11	7720	9/20/2019	9/20/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU11	2433	2/13/2018	2/13/2018	ng/L	5.98	--	--	--	--	--	--	--	--	--	--
EU11	1539	2/7/2018	2/7/2018	ng/L	12	--	--	--	--	--	--	--	--	--	--
EU11	2565	9/16/2019	9/16/2019	ng/L	3.5	<20	<2	<2	5	14	9.7	<2	<2	<2	69
EU11	2394	1/30/2018	1/30/2018	ng/L	5.7	<20	<2	<2	2.8	<5	5.3	<2	<2	<2	31
EU11	2439 [3]	1/29/2018	1/29/2018	ng/L	0	--	--	--	--	--	--	--	--	--	--
EU11	889	12/12/2017	12/12/2017	ng/L	56	--	--	--	--	--	--	--	--	--	--
EU11	2454	1/29/2018	1/29/2018	ng/L	16.3	--	--	--	--	--	--	--	--	--	--
EU11	2574	7/31/2019	7/31/2019	ng/L	8.9	11	<1.1	<1.1	11	24	18	<1.1	<1.1	<1.1	100
EU11	2582	8/1/2019	8/1/2019	ng/L	370	200	<2	<2	27	78	210	27	4.6	<2	550
EU11	2464	3/26/2018	3/26/2018	ng/L	19.4	--	--	--	--	--	--	--	--	--	--
EU11	2446	2/13/2018	2/13/2018	ng/L	1.17	--	--	--	--	--	--	--	--	--	--
EU11	2469	3/26/2018	3/26/2018	ng/L	19.4	--	--	--	--	--	--	--	--	--	--
EU11	2456	1/29/2018	1/29/2018	ng/L	34.1	--	--	--	--	--	--	--	--	--	--
EU11	2434	2/13/2018	2/13/2018	ng/L	1.37	--	--	--	--	--	--	--	--	--	--
EU11	2441	1/29/2018	6/12/2019	ng/L	1.84	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU11	3170	2/13/2018	2/13/2018	ng/L	0.742	--	--	--	--	--	--	--	--	--	--
EU11	2460	4/23/2018	4/23/2018	ng/L	70	--	--	--	--	--	--	--	--	--	--
EU11	2460	5/24/2018	5/24/2018	ng/L	49.4	--	--	--	--	--	--	--	--	--	--
EU11	2077	2/7/2018	7/24/2019	ng/L	120	--	--	<1.17	40	77.6	74.9	8.15	1.89	--	--
EU11	2638	8/2/2019	8/2/2019	ng/L	14	16	<1.1	<1.1	7.2	9.8	12	<1.1	<1.1	<1.1	110
EU11	2452	2/13/2018	2/13/2018	ng/L	20.8	--	--	--	--	--	--	--	--	--	--
EU11	2639	7/31/2019	7/31/2019	ng/L	13	16	<1.1	<1.1	4.8	15	19	<1.1	<1.1	<1.1	110
EU11	2436 [3]	2/13/2018	2/13/2018	ng/L	0	--	--	--	--	--	--	--	--	--	--
EU11	2437	2/13/2018	2/13/2018	ng/L	0.723	--	--	--	--	--	--	--	--	--	--
EU11	9047	10/23/2019	10/23/2019	ng/L	40	26	<2	<2	17	22	37	2.6	<2	<2	140
EU11	2653	7/30/2019	7/30/2019	ng/L	14	11	<1.1	<1.1	10	23	56	6.5	2.5	<1.1	59
EU11	2482	3/26/2018	3/26/2018	ng/L	1.82	--	--	--	--	--	--	--	--	--	--
EU11	2658	7/30/2019	7/30/2019	ng/L	11	11	<1.1	<1.1	11	22	54	6.6	2.4	<1.1	60
EU11	2659	9/30/2019	9/30/2019	ng/L	8.5	<20	<2	<2	5.9	<5	<2	<2	<2	<2	74
EU11	1520	1/26/2018	1/26/2018	ng/L	31	<100	<50	<50	<50	<50	<50	<50	<50	<100	370
EU11	2438	2/13/2018	2/13/2018	ng/L	1.38	--	--	--	--	--	--	--	--	--	--
EU11	2445	1/29/2018	1/29/2018	ng/L	3.17	--	--	--	--	--	--	--	--	--	--
EU11	2449	1/29/2018	1/29/2018	ng/L	41.8	--	--	--	--	--	--	--	--	--	--
EU11	7701	9/20/2019	9/20/2019	ng/L	5.5	<20	<2	<2	22	14	24	<2	<2	<2	50
EU11	1513	1/31/2018	1/31/2018	ng/L	28	--	--	--	--	--	--	--	--	--	--
EU11	2685	9/19/2019	9/19/2019	ng/L	5.6	<20	<2	<2	2.2	7.2	6.5	<2	<2	<2	84
EU11	1412	1/22/2018	1/22/2018	ng/L	44	--	--	--	--	--	--	--	--	--	--
EU11	8393	10/23/2019	10/23/2019	ng/L	8.9	<20	<2	<2	9.7	23	22	2	<2	<2	130
EU11	2429	1/29/2018	1/29/2018	ng/L	7.32	--	--	--	--	--	--	--	--	--	--
EU11	2744	7/26/2019	7/26/2019	ng/L	<2.7	<20	<2	<2	<2	5.3	<2	<2	<2	<2	56
EU11	1220	12/14/2017	12/14/2017	ng/L	46	--	--	--	--	--	--	--	--	--	--
EU11	1494	1/24/2018	1/24/2018	ng/L	12	<20	<2	<2	<2	<5	<2	<2	<2	<2	45

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU11	1407	1/22/2018	1/22/2018	ng/L	<4	<100	<50	<50	<50	<50	<50	<50	<50	<100	<50
EU11	1478	1/26/2018	1/26/2018	ng/L	**64**	--	--	--	--	--	--	--	--	--	--
EU11	2759	7/31/2019	7/31/2019	ng/L	**80**	**67**	<1.1	<1.1	**10**	**30**	**69**	**3.8**	**2**	<1.1	**360**
EU11	1549	2/6/2018	2/6/2018	ng/L	**63**	--	--	--	--	--	--	--	--	--	--
EU11	2442	1/29/2018	1/29/2018	ng/L	**4.38**	--	--	--	--	--	--	--	--	--	--
EU11	2395	1/30/2018	1/30/2018	ng/L	**12**	<20	<2	<2	**5.3**	<5	**2.7**	<2	<2	<2	**72**
EU11	2813	7/29/2019	7/29/2019	ng/L	**75**	**57**	<1.1	<1.1	**81**	**77**	**100**	**2.6**	<1.1	<1.1	**290**
EU11	2475	3/26/2018	3/26/2018	ng/L	**13.9**	--	--	--	--	--	--	--	--	--	--
EU11	1479	2/7/2018	2/7/2018	ng/L	**31**	--	--	--	--	--	--	--	--	--	--
EU11	8327	10/7/2019	10/7/2019	ng/L	**11**	<20	<2	<2	**8.7**	**22**	**30**	<2	<2	<2	**67**
EU11	1493	8/7/2019	8/7/2019	ng/L	**120**	**53**	<1.1	<1.1	**14**	**11**	**16**	<1.1	<1.1	<1.1	**300**
EU11	1426	2/6/2018	2/6/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU11	2170	8/8/2019	8/8/2019	ng/L	**68**	**43**	<1.1	<1.1	**7.2**	**12**	**13**	<1.1	<1.1	<1.1	**210**
EU11	2453	1/29/2018	1/29/2018	ng/L	**14.7**	--	--	--	--	--	--	--	--	--	--
EU11	1427	2/13/2018	2/13/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU11	2174	2/8/2018	2/8/2018	ng/L	**27**	--	--	--	--	--	--	--	--	--	--
EU11	2176	2/12/2018	2/12/2018	ng/L	**5.2**	<20	<2	<2	<2	<5	**2.8**	<2	<2	<2	<10
EU11	2183	2/2/2018	2/2/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU11	2186	1/30/2018	1/30/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU11	2187	2/2/2018	2/2/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU11	2188	1/22/2018	1/22/2018	ng/L	**52**	--	--	--	--	--	--	--	--	--	--
EU11	1442	1/22/2018	1/22/2018	ng/L	**33**	--	--	--	--	--	--	--	--	--	--
EU11	1445	2/1/2018	2/1/2018	ng/L	**52**	--	--	--	--	--	--	--	--	--	--
EU11	2400	2/6/2018	2/6/2018	ng/L	**90**	--	--	--	--	--	--	--	--	--	--
EU11	2966	8/1/2019	8/1/2019	ng/L	**21**	**13**	<1.1	<1.1	**3.1**	**6.3**	**9.6**	<1.1	<1.1	<1.1	**65**
EU11	2207	1/30/2018	1/30/2018	ng/L	**71**	--	--	--	--	--	--	--	--	--	--
EU11	2209	2/1/2018	2/1/2018	ng/L	**83**	--	--	--	--	--	--	--	--	--	--
EU11	2215	2/2/2018	11/9/2018	ng/L	**110**	--	--	--	--	--	--	--	--	--	--
EU11	2217	2/2/2018	2/2/2018	ng/L	**67**	--	--	--	--	--	--	--	--	--	--
EU11	1458	1/23/2018	1/23/2018	ng/L	**270**	--	--	--	--	--	--	--	--	--	--
EU11	1459	2/2/2018	2/2/2018	ng/L	**20**	--	--	--	--	--	--	--	--	--	--
EU11	2219	2/16/2018	2/16/2018	ng/L	**72**	--	--	--	--	--	--	--	--	--	--
EU11	2476	3/26/2018	3/26/2018	ng/L	**38.4**	--	--	--	--	--	--	--	--	--	--
EU11	2984	10/18/2019	10/18/2019	ng/L	**22**	**27**	<2	<2	**8.8**	**14**	**19**	<2	<2	<2	**69**
EU11	7651	9/19/2019	9/19/2019	ng/L	**6.3**	<20	<2	<2	**6.1**	**5.7**	<2	<2	<2	<2	**110**
EU11	1468	1/23/2018	1/23/2018	ng/L	**55**	--	--	--	--	--	--	--	--	--	--
EU11	2248	2/14/2018	2/14/2018	ng/L	**52**	--	--	--	--	--	--	--	--	--	--
EU11	2529	7/29/2019	7/29/2019	ng/L	**71**	**79**	<1.1	<1.1	**27**	**54**	**98**	**11**	**2.4**	<1.1	**430**
EU11	1497	2/8/2018	2/8/2018	ng/L	**34**	--	--	--	--	--	--	--	--	--	--
EU11	3019	7/31/2019	7/31/2019	ng/L	**16**	**25**	<1.1	<1.1	**10**	**15**	**16**	<1.1	<1.1	<1.1	**61**
EU11	2455	1/29/2018	1/29/2018	ng/L	**11.6**	--	--	--	--	--	--	--	--	--	--
EU11	2477	3/26/2018	3/26/2018	ng/L	**1.84**	--	--	--	--	--	--	--	--	--	--
EU11	3107	10/18/2019	10/18/2019	ng/L	**44**	**37**	<2	<2	**8.3**	**15**	**24**	<2	<2	<2	**110**

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU11	3108	7/29/2019	7/29/2019	ng/L	48	55	<1.1	<1.1	21	44	66	5.5	<1.1	<1.1	330
EU11	7699	9/20/2019	9/20/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU11	3108	7/29/2019	7/29/2019	ng/L	54	49	<1.1	<1.1	23	46	66	3.3	<1.1	<1.1	310
EU11	2443	1/29/2018	1/29/2018	ng/L	7.58	--	--	--	--	--	--	--	--	--	--
EU11	3180	8/12/2019	8/12/2019	ng/L	3.8	<11	<1.1	<1.1	4.4	5.2	2.4	<1.1	<1.1	<1.1	120
EU11	1481	1/30/2018	1/30/2018	ng/L	61	<100	<50	<50	<50	<50	75	<50	<50	<100	310
EU11	2114	8/7/2018	7/24/2019	ng/L	528	--	--	<1.16	140	685	646	92.8	25.7	--	--
EU12	7846	10/3/2019	10/3/2019	ng/L	4	<20	<2	<2	2.1	15	3.7	<2	<2	<2	180
EU12	2085	2/2/2018	2/2/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	7849	10/21/2019	10/21/2019	ng/L	7.4	<20	<2	<2	<2	6.1	<2	<2	<2	<2	91
EU12	1292	1/22/2018	1/22/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2086	1/23/2018	1/23/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	1295	5/2/2018	5/2/2018	ng/L	5.7	<100	<50	<50	<50	<50	<50	<50	<50	<100	<50
EU12	7852	10/3/2019	10/3/2019	ng/L	4.4	<20	<2	<2	<2	<5	2.3	<2	<2	<2	52
EU12	7616	8/21/2019	8/21/2019	ng/L	<0.589	--	--	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	--	--
EU12	8089	9/30/2019	9/30/2019	ng/L	<2.9	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	8889	10/21/2019	10/21/2019	ng/L	21	<20	<2	<2	<2	7.9	2.1	<2	<2	<2	210
EU12	2551	7/17/2019	7/17/2019	ng/L	27	31	<2	<2	2.4	17	11	<2	<2	<2	220
EU12	2554	7/26/2019	7/26/2019	ng/L	19	26	<2	<2	<2	8	2.9	<2	<2	<2	190
EU12	8565	10/21/2019	10/21/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	8673	10/21/2019	10/21/2019	ng/L	16	<20	<2	<2	2.7	13	12	<2	<2	<2	110
EU12	8115	10/23/2019	10/23/2019	ng/L	2.8	<20	<2	<2	8.5	7.3	10	<2	<2	<2	60
EU12	3176	6/26/2019	6/26/2019	ng/L	3.02	--	--	<1.32	6.84	13.4	11.5	<1.32	<1.32	--	--
EU12	9357	10/23/2019	10/23/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	22
EU12	8098	10/4/2019	10/4/2019	ng/L	<2.6	<20	<2	<2	4.5	15	8	<2	<2	<2	40
EU12	8149	10/1/2019	10/1/2019	ng/L	8.7	<20	<2	<2	2.9	9.5	10	<2	<2	<2	57
EU12	8092	9/30/2019	9/30/2019	ng/L	2.8	<20	<2	<2	5.2	19	13	<2	<2	<2	29
EU12	7856	9/25/2019	9/25/2019	ng/L	4.8	<20	<2	<2	<2	<5	<2	<2	<2	<2	110
EU12	8097	9/30/2019	9/30/2019	ng/L	<2.9	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	9112	10/18/2019	10/18/2019	ng/L	8	<20	<2	<2	3.8	<5	2.2	<2	<2	<2	54
EU12	9113	10/18/2019	10/18/2019	ng/L	6.9	<20	<2	<2	8.3	12	9.8	<2	<2	<2	53
EU12	8854	10/18/2019	10/18/2019	ng/L	27	<20	<2	<2	4.5	<5	4.3	<2	<2	<2	42
EU12	9353	10/18/2019	10/18/2019	ng/L	<2.8	<20	<2	<2	2.3	<5	2.8	<2	<2	<2	16
EU12	9120	10/23/2019	10/23/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2466	4/25/2018	4/25/2018	ng/L	19.1	--	--	--	--	--	--	--	--	--	--
EU12	2577	9/18/2019	9/18/2019	ng/L	8.5	<20	<2	<2	<2	<5	7.3	<2	<2	<2	62
EU12	2578	9/16/2019	9/16/2019	ng/L	16	<20	<2	<2	<2	13	19	<2	<2	<2	120
EU12	8857	10/23/2019	10/23/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2579	8/14/2019	8/14/2019	ng/L	11	<11	<1.1	<1.1	<1.1	7.1	7.5	<1.1	<1.1	<1.1	83
EU12	8858	10/23/2019	10/23/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	38
EU12	8861	9/18/2019	9/18/2019	ng/L	29.4	--	<1.28	<1.28	3.13	21.6	19.3	<1.28	<1.28	<1.28	--
EU12	2468	3/28/2018	4/11/2018	ng/L	1.88	--	--	--	--	--	--	--	--	--	--
EU12	2585	9/16/2019	9/16/2019	ng/L	12	<20	<2	<2	<2	6.7	9	<2	<2	<2	36

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU12	2586	9/9/2019	9/9/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2587	8/22/2019	8/22/2019	ng/L	<2.6	<20	<2	<2	<2	<5	2.2	<2	<2	<2	41
EU12	2589	9/20/2019	9/20/2019	ng/L	<2.7	<20	<2	<2	<2	<5	5.1	<2	<2	<2	46
EU12	2590	9/13/2019	9/13/2019	ng/L	15	<20	<2	<2	<2	<5	5.2	<2	<2	<2	71
EU12	8862	10/23/2019	10/23/2019	ng/L	27	<20	<2	<2	3.8	6.1	13	<2	<2	<2	85
EU12	2592	7/22/2019	7/22/2019	ng/L	13	<20	<2	<2	<2	<5	4.6	<2	<2	<2	150
EU12	2593	9/16/2019	9/16/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2595	6/18/2019	6/18/2019	ng/L	11	<20	<2	<2	<2	<5	5.6	<2	<2	<2	140
EU12	9122	10/23/2019	10/23/2019	ng/L	25	20	<2	<2	5.1	14	27	2.8	<2	<2	170
EU12	2596	10/2/2019	10/2/2019	ng/L	4.3	<20	<2	<2	<2	<5	<2	<2	<2	<2	44
EU12	2597	8/8/2019	8/8/2019	ng/L	3.4	<11	<1.1	<1.1	<1.1	3.4	5.5	<1.1	<1.1	<1.1	36
EU12	3167	6/13/2019	6/13/2019	ng/L	26.3	--	--	<1.2	1.35	7.24	7.98	<1.2	<1.2	--	--
EU12	2598	6/21/2019	6/21/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	14
EU12	2599	8/14/2019	8/14/2019	ng/L	<2.6	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	18
EU12	2600	9/12/2019	9/12/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2601	9/20/2019	9/20/2019	ng/L	3.9	<20	<2	<2	5.1	9.2	12	<2	<2	<2	78
EU12	2467	3/28/2018	3/28/2018	ng/L	0.844	--	--	--	--	--	--	--	--	--	--
EU12	3168	6/13/2019	6/13/2019	ng/L	0.749	--	--	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	--	--
EU12	8122	9/30/2019	9/30/2019	ng/L	3.3	<20	<2	<2	2.9	<5	3.4	<2	<2	<2	34
EU12	2419	3/14/2018	3/14/2018	ng/L	0.773	--	--	--	--	--	--	--	--	--	--
EU12	2605	6/18/2019	6/18/2019	ng/L	24	<20	<2	<2	<2	<5	18	<2	<2	<2	230
EU12	2606	9/12/2019	9/12/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	31
EU12	2607	7/19/2019	7/19/2019	ng/L	<2.6	<20	<2	<2	<2	<5	2.2	<2	<2	<2	20
EU12	2428	3/14/2018	3/14/2018	ng/L	29.3	--	--	--	--	--	--	--	--	--	--
EU12	2608	6/18/2019	6/18/2019	ng/L	15	<20	<2	<2	6.7	27	22	<2	<2	<2	180
EU12	2609	9/11/2019	9/11/2019	ng/L	3	<20	<2	<2	3.6	8	8.8	<2	<2	<2	75
EU12	2610	6/21/2019	6/21/2019	ng/L	<4	<20	<2	<2	<2	<5	3.1	<2	<2	<2	110
EU12	2611	6/18/2019	6/18/2019	ng/L	25	<20	<2	<2	<2	<5	17	<2	<2	<2	200
EU12	2612	9/27/2019	9/27/2019	ng/L	10	<20	<2	<2	2.1	7.6	3	<2	<2	<2	210
EU12	2614	7/29/2019	7/29/2019	ng/L	<2.6	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	27
EU12	2615	6/21/2019	6/21/2019	ng/L	<4	<20	<2	<2	<2	<5	3.6	<2	<2	<2	65
EU12	2617	7/18/2019	7/18/2019	ng/L	<2.9	<20	<2	<2	<2	<5	<2	<2	<2	<2	22
EU12	2620	7/25/2019	7/25/2019	ng/L	<2.6	<11	<1.1	<1.1	2.2	5	2.8	<1.1	<1.1	<1.1	18
EU12	2624	8/29/2019	8/29/2019	ng/L	64	38	<2	<2	8.3	46	99	9.1	2.5	<2	180
EU12	2625	7/25/2019	7/25/2019	ng/L	31	27	<2	<2	9.6	35	47	4.1	<2	<2	150
EU12	2417	2/13/2018	2/13/2018	ng/L	10.1	--	--	--	--	--	--	--	--	--	--
EU12	2628	7/25/2019	7/25/2019	ng/L	8.9	<20	<2	<2	3.7	19	14	<2	<2	<2	99
EU12	2632	7/24/2019	7/24/2019	ng/L	5.1	<20	<2	<2	5.4	13	11	<2	<2	<2	54
EU12	8424	10/21/2019	10/21/2019	ng/L	38	<20	<2	<2	<2	<5	<2	<2	<2	<2	16
EU12	2634	8/19/2019	8/19/2019	ng/L	14	<20	<2	<2	6.5	22	27	<2	<2	<2	130
EU12	7861	9/26/2019	9/26/2019	ng/L	<2.8	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	8427	10/21/2019	10/21/2019	ng/L	5.8	<20	<2	<2	<2	11	9.7	<2	<2	<2	120
EU12	8116	9/30/2019	9/30/2019	ng/L	<2.6	<20	<2	<2	<2	<5	2.1	<2	<2	<2	<10

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU12	3277	9/25/2019	9/25/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	7865	10/3/2019	10/3/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	74
EU12	7867	9/26/2019	9/26/2019	ng/L	<2.7	<20	<2	<2	<2	8.6	<2	<2	<2	<2	210
EU12	7869	9/26/2019	9/26/2019	ng/L	<2.9	<20	<2	<2	<2	6.1	2.3	<2	<2	<2	130
EU12	3278	8/14/2019	8/14/2019	ng/L	<2.7	<20	<2	<2	<2	6.3	2.3	<2	<2	<2	110
EU12	9081	10/18/2019	10/18/2019	ng/L	9.4	<20	<2	<2	2.9	40	51	2.2	<2	<2	160
EU12	3175	6/26/2019	6/26/2019	ng/L	14.8	--	--	<1.24	<1.24	6.22	6.61	<1.24	<1.24	--	--
EU12	2641	9/17/2019	9/17/2019	ng/L	40	33	<2	<2	7.4	32	41	2.4	<2	<2	240
EU12	8288	10/8/2019	10/8/2019	ng/L	4	<20	<2	<2	7.5	25	16	<2	<2	<2	140
EU12	8754	10/18/2019	10/18/2019	ng/L	3.4	<20	<2	<2	<2	<5	<2	<2	<2	<2	30
EU12	7506	8/15/2019	8/15/2019	ng/L	<2.6	<11	<1.1	<1.1	<1.1	<2.6	1.5	<1.1	<1.1	<1.1	18
EU12	9181	10/21/2019	10/21/2019	ng/L	14	<20	<2	<2	<2	18	15	<2	<2	<2	160
EU12	8806	10/18/2019	10/18/2019	ng/L	19	<20	<2	<2	<2	14	9.7	<2	<2	<2	110
EU12	8696	10/23/2019	10/23/2019	ng/L	15	30	<2	<2	2.3	33	35	<2	<2	<2	250
EU12	8700	10/23/2019	10/23/2019	ng/L	14	22	<2	<2	5.8	31	63	8.7	<2	<2	220
EU12	8920	10/23/2019	10/23/2019	ng/L	<2.8	<20	<2	<2	<2	9.9	2.9	<2	<2	<2	130
EU12	7871	9/25/2019	9/25/2019	ng/L	22	<20	<2	<2	2.2	13	51	5.3	2.3	<2	100
EU12	3166	6/13/2019	6/13/2019	ng/L	1.16	--	--	<1.15	<1.15	2.61	1.46	<1.15	<1.15	--	--
EU12	9185	10/23/2019	10/23/2019	ng/L	16	40	<2	<2	<2	32	38	<2	<2	<2	260
EU12	7497	8/15/2019	8/15/2019	ng/L	<2.6	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	7.9
EU12	7578	8/26/2019	8/26/2019	ng/L	10	<20	<2	<2	<2	7.2	5.4	<2	<2	<2	110
EU12	3279	8/14/2019	8/14/2019	ng/L	33	24	<1.1	<1.1	1.3	25	79	4.6	2.3	<1.1	180
EU12	7872	10/17/2019	10/17/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	734	10/19/2017	10/22/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	8207	10/2/2019	10/2/2019	ng/L	<2.8	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	7873	10/2/2019	10/2/2019	ng/L	<2.7	<20	<2	<2	<2	6.1	<2	<2	<2	<2	76
EU12	8867	10/21/2019	10/21/2019	ng/L	9.6	<20	<2	<2	4.2	18	31	3	<2	<2	72
EU12	8867	10/21/2019	10/21/2019	ng/L	8.8	<20	<2	<2	4	18	30	2.2	<2	<2	71
EU12	7577	8/26/2019	8/26/2019	ng/L	9.6	<20	<2	<2	2.2	25	45	4.2	<2	<2	100
EU12	7874	9/25/2019	9/25/2019	ng/L	<2.8	<20	<2	<2	<2	<5	<2	<2	<2	<2	51
EU12	2657	6/19/2019	6/19/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	8118	9/30/2019	9/30/2019	ng/L	15	<20	<2	<2	7.2	16	27	2.6	<2	<2	87
EU12	8297	10/8/2019	10/8/2019	ng/L	18	30	<2	<2	2.7	55	130	15	2.1	<2	200
EU12	8624	10/17/2019	10/17/2019	ng/L	<2.6	<20	<2	<2	<2	6.9	2.8	<2	<2	<2	51
EU12	8868	10/21/2019	10/21/2019	ng/L	2.8	<20	<2	<2	13	19	36	4.2	<2	<2	59
EU12	8625	10/17/2019	10/17/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	15
EU12	8627	10/17/2019	10/17/2019	ng/L	8.1	<20	<2	<2	2.9	18	19	<2	<2	<2	110
EU12	8628	10/17/2019	10/17/2019	ng/L	12	<20	<2	<2	3	15	15	<2	<2	<2	120
EU12	8630	10/17/2019	10/17/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	42
EU12	7500	8/15/2019	8/15/2019	ng/L	<2.8	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	<5.3
EU12	3280	8/14/2019	8/14/2019	ng/L	3.2	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	75
EU12	7580	8/26/2019	8/26/2019	ng/L	3	<20	<2	<2	<2	9.2	8.2	<2	<2	<2	78
EU12	8632	10/17/2019	10/17/2019	ng/L	5.6	<20	<2	<2	<2	6.2	3.6	<2	<2	<2	93

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU12	8633	10/17/2019	10/17/2019	ng/L	**31**	**35**	<2	<2	**4.2**	**16**	**9.4**	<2	<2	<2	**180**
EU12	9125	10/21/2019	10/21/2019	ng/L	**6**	<20	<2	<2	<2	<5	**13**	<2	<2	<2	**34**
EU12	3155	5/8/2019	5/8/2019	ng/L	<0.599	--	--	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	--	--
EU12	3179	7/10/2019	7/10/2019	ng/L	**6.81**	--	--	<1.18	<1.18	**25.9**	**25.8**	<1.18	<1.18	--	--
EU12	8377	9/11/2019	9/11/2019	ng/L	**3.49**	--	--	<1.2	<1.2	**14.6**	**15.4**	**2.2**	<1.2	--	--
EU12	8381	9/11/2019	9/11/2019	ng/L	**8.03**	--	--	<1.56	**3.1**	**42.3**	**42**	**2.86**	<1.56	--	--
EU12	3178	7/10/2019	7/10/2019	ng/L	**15**	--	--	<1.18	**1.58**	**35.8**	**32.6**	<1.18	<1.18	--	--
EU12	7878	9/25/2019	9/25/2019	ng/L	<2.8	<20	<2	<2	<2	<5	<2	<2	<2	<2	**11**
EU12	8205	10/2/2019	10/2/2019	ng/L	**16**	<20	<2	<2	**2.1**	**15**	**30**	<2	<2	<2	**91**
EU12	2684	7/2/2019	7/2/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2499	3/13/2019	3/13/2019	ng/L	<0.615	--	--	<1.23	<1.23	<1.23	<1.23	<1.23	<1.23	--	--
EU12	2687	9/13/2019	9/13/2019	ng/L	**7.7**	<20	<2	<2	**4.1**	**19**	**29**	<2	<2	<2	**140**
EU12	7567	8/7/2019	8/7/2019	ng/L	<0.603	--	--	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	--	--
EU12	193	10/17/2019	10/17/2019	ng/L	**1.15**	--	<1.18	<1.18	<1.18	**2.54**	**1.27**	<1.18	<1.18	<1.18	--
EU12	9222	9/18/2019	9/18/2019	ng/L	<0.602	--	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	--
EU12	2697	5/8/2019	6/19/2019	ng/L	**19**	**29**	<2	<1.26	<1.26	**10**	**2**	<1.26	<1.26	<2	**190**
EU12	2509	4/24/2019	4/24/2019	ng/L	**10.1**	--	--	<1.31	**5.06**	**25.5**	**19.9**	**3.17**	**1.76**	--	--
EU12	2698	8/1/2019	8/1/2019	ng/L	<2.6	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	<5.3
EU12	9223	9/18/2019	9/18/2019	ng/L	<0.575	--	<1.15	<1.15	<1.15	<1.15	<1.15	<1.15	<1.15	<1.15	--
EU12	2714	9/9/2019	9/9/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2717	8/9/2019	8/9/2019	ng/L	<2.6	<11	<1.1	<1.1	<1.1	<2.6	<1.1	<1.1	<1.1	<1.1	<5.3
EU12	2720	8/28/2019	8/28/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2732	9/12/2019	9/12/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	8917	10/22/2019	10/22/2019	ng/L	<2.9	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	3160	5/29/2019	5/29/2019	ng/L	<0.61	--	--	<1.22	<1.22	<1.22	<1.22	<1.22	<1.22	--	--
EU12	7931	10/2/2019	10/2/2019	ng/L	<2.9	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	7951	10/4/2019	10/4/2019	ng/L	<2.8	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	7956	9/27/2019	9/27/2019	ng/L	<2.8	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2881	7/11/2019	7/11/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2900	8/19/2019	8/19/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	8768	10/17/2019	10/17/2019	ng/L	<0.674	--	<1.35	<1.35	<1.35	<1.35	<1.35	<1.35	<1.35	<1.35	--
EU12	9140	10/23/2019	10/23/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2913	9/30/2019	9/30/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2915	7/11/2019	7/11/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	3300	8/28/2019	8/28/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	8171	10/1/2019	10/1/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2972	7/18/2019	7/24/2019	ng/L	<2.5	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	1274	4/24/2018	4/24/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	7970	10/2/2019	10/2/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2996	7/18/2019	7/18/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2997	9/26/2019	9/26/2019	ng/L	<2.8	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2998	7/18/2019	7/18/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2999	7/18/2019	7/18/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU12	3000	10/7/2019	10/7/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	8111	9/30/2019	9/30/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2256	1/23/2018	1/23/2018	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2259	2/5/2018	6/13/2019	ng/L	<0.575	<20	<2	<1.15	<1.15	<1.15	<1.15	<1.15	<1.15	<2	<10
EU12	7566	8/22/2019	8/22/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	8157	10/1/2019	10/1/2019	ng/L	<2.8	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	3120	9/17/2019	9/17/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	3121	6/21/2019	6/21/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	3136	9/9/2019	9/9/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	3142	7/11/2019	7/11/2019	ng/L	<2.8	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	2225	8/16/2019	8/16/2019	ng/L	**270**	**130**	<1.1	<1.1	**12**	**110**	**190**	**5.7**	<1.1	<1.1	**580**
EU12	7959	9/30/2019	9/30/2019	ng/L	**41**	**55**	<2	<2	**3.9**	**28**	**57**	**3.3**	<2	<2	**570**
EU12	3149	6/26/2019	8/7/2019	ng/L	**187**	**36**	<2	<1.22	<1.22	**146**	**150**	**7.9**	**1.57**	<2	**220**
EU12	2832	7/24/2019	7/24/2019	ng/L	**120**	**41**	<2	<2	**7.8**	**50**	**290**	**70**	**6.7**	<2	**140**
EU12	2755	6/24/2019	6/24/2019	ng/L	**120**	**69**	<2	<2	**2.5**	**38**	**81**	**2.3**	<2	<5	**370**
EU12	2758	6/19/2019	6/19/2019	ng/L	**120**	**70**	<2	<2	**2.8**	**39**	**93**	**8.8**	<2	<2	**340**
EU12	2957	7/19/2019	7/19/2019	ng/L	**250**	**63**	<2	<2	<2	**35**	**110**	**20**	**4.8**	<2	**170**
EU12	2960	7/24/2019	7/24/2019	ng/L	**220**	**62**	<2	<2	<2	**35**	**120**	**19**	**4.2**	<2	**190**
EU12	2951	7/24/2019	7/24/2019	ng/L	**210**	**66**	<2	<2	<2	**34**	**110**	**22**	**5.5**	<2	**200**
EU12	2968	7/19/2019	7/19/2019	ng/L	**160**	**51**	<2	<2	**2.9**	**39**	**110**	**13**	**2.8**	<2	**240**
EU12	2947	7/15/2019	7/15/2019	ng/L	**93**	**53**	<2	<2	**4**	**36**	**48**	**3**	<2	<2	**280**
EU12	7922	10/4/2019	10/4/2019	ng/L	**65**	**52**	<2	<2	**8.6**	**46**	**86**	**4.6**	<2	<2	**250**
EU12	3282	10/9/2019	10/9/2019	ng/L	**24**	**35**	<2	<2	**7.3**	**33**	**65**	**4**	<2	<2	**330**
EU12	2840	9/13/2019	9/13/2019	ng/L	**79**	**55**	<2	<2	**3.5**	**23**	**13**	<2	<2	<2	**320**
EU12	2976	7/31/2019	7/31/2019	ng/L	**23**	**41**	<1.1	<1.1	<1.1	**37**	**19**	<1.1	<1.1	<1.1	**350**
EU12	7969	9/25/2019	9/25/2019	ng/L	**73**	**49**	<2	<2	**4.4**	**25**	**44**	**4.2**	<2	<2	**270**
EU12	2240	8/14/2019	8/14/2019	ng/L	**48**	**51**	<2	<2	**7.7**	**37**	**38**	<2	<2	<2	**280**
EU12	2969	7/15/2019	7/15/2019	ng/L	**81**	**44**	<2	<2	**4**	**22**	**15**	<2	<2	<2	**290**
EU12	3023	7/25/2019	7/25/2019	ng/L	**22**	**29**	<2	<2	**8.7**	**63**	**49**	**2.1**	<2	<2	**280**
EU12	2864	7/15/2019	7/15/2019	ng/L	**44**	**39**	<2	<2	**4.1**	**43**	**52**	<2	<2	<2	**230**
EU12	3284	8/14/2019	8/14/2019	ng/L	**38**	**30**	<1.1	<1.1	**4.3**	**27**	**47**	**2.2**	<1.1	<1.1	**260**
EU12	2964	7/19/2019	7/19/2019	ng/L	**85**	**38**	<2	<2	**4.2**	**30**	**70**	**5.3**	<2	<2	**170**
EU12	2112	7/30/2019	7/30/2019	ng/L	**45**	**33**	<1.1	<1.1	**8.8**	**37**	**61**	**1.5**	<1.1	<1.1	**180**
EU12	2772	9/11/2019	9/11/2019	ng/L	**12**	**31**	<2	<2	**2.2**	**33**	**68**	**5.2**	<2	<2	**170**
EU12	2973	7/18/2019	7/18/2019	ng/L	**18**	<20	<2	<2	<2	**42**	**22**	<2	<2	<2	**220**
EU12	8213	10/2/2019	10/2/2019	ng/L	**11**	<20	<2	<2	**3.2**	**42**	**21**	<2	<2	<2	**210**
EU12	1239	1/23/2018	1/23/2018	ng/L	**18**	<20	<2	<2	**10**	**17**	**14**	<2	<2	<2	**190**
EU12	2950	7/29/2019	7/29/2019	ng/L	**20**	**25**	<1.1	<1.1	**1.5**	**21**	**8.9**	<1.1	<1.1	<1.1	**170**
EU12	8147	10/1/2019	10/1/2019	ng/L	**33**	**22**	<2	<2	**5.5**	**24**	**59**	**5.9**	<2	<2	**96**
EU12	8655	10/18/2019	10/18/2019	ng/L	**35**	<20	<2	<2	**2**	**17**	**15**	<2	<2	<2	**170**
EU12	3301	8/14/2019	8/14/2019	ng/L	**20**	**24**	<1.1	<1.1	**1.1**	**15**	**8.2**	<1.1	<1.1	<1.1	**170**
EU12	9017	10/17/2019	10/17/2019	ng/L	**25**	<20	<2	<2	**3.2**	**16**	**44**	**6.6**	**2.3**	<2	**140**
EU12	2959	7/19/2019	7/19/2019	ng/L	**62**	<20	<2	<2	**3.3**	**19**	**34**	**2.6**	<2	<2	**100**

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU12	2704	7/22/2019	7/22/2019	ng/L	28	23	<2	<2	<2	6.1	2.2	<2	<2	<2	160
EU12	517	8/21/2019	8/21/2019	ng/L	17	<20	<2	<2	<2	8	3.3	<2	<2	<2	190
EU12	2828	8/19/2019	8/19/2019	ng/L	7.9	<20	<2	<2	9.8	27	89	12	3.6	<2	68
EU12	7943	9/25/2019	9/25/2019	ng/L	3	<20	<2	<2	2.2	26	14	<2	<2	<2	170
EU12	7911	10/10/2019	10/10/2019	ng/L	9.5	<20	<2	<2	3	13	9	<2	<2	<2	180
EU12	3289	8/14/2019	8/14/2019	ng/L	4.9	<11	<1.1	<1.1	2.4	32	40	1.3	<1.1	<1.1	130
EU12	2838	9/26/2019	9/26/2019	ng/L	10	<20	<2	<2	<2	7.7	<2	<2	<2	<2	190
EU12	2730	7/11/2019	7/11/2019	ng/L	19	<20	<2	<2	9	28	32	<2	<2	5	110
EU12	7902	10/7/2019	10/7/2019	ng/L	12	<20	<2	<2	2.1	19	12	<2	<2	<2	150
EU12	2729	6/24/2019	6/24/2019	ng/L	16	<20	<2	<2	<2	<5	19	<2	<2	<5	160
EU12	9130	10/23/2019	10/23/2019	ng/L	40	<20	<2	<2	4.8	7.1	13	<2	<2	<2	130
EU12	3147	7/15/2019	7/15/2019	ng/L	33	<20	<2	<2	<2	8.6	55	2.2	<2	<2	96
EU12	8780	10/17/2019	10/17/2019	ng/L	24	<20	<2	<2	4	15	31	<2	<2	<2	120
EU12	7562	8/22/2019	8/22/2019	ng/L	7	<20	<2	<2	12	29	32	<2	2	<2	110
EU12	7888	10/10/2019	10/10/2019	ng/L	17	<20	<2	<2	6.5	8.9	24	2.2	<2	<2	130
EU12	2850	7/24/2019	7/24/2019	ng/L	16	24	<2	<2	7.1	9.9	11	<2	<2	<2	120
EU12	2870	7/31/2019	7/31/2019	ng/L	12	19	<1.1	<1.1	1.1	11	13	1.5	<1.1	<1.1	130
EU12	1297	7/11/2018	9/26/2019	ng/L	23	<20	<2	<2	<2	9.7	<2	<2	<2	<2	150
EU12	7556	8/19/2019	8/19/2019	ng/L	<2.7	<11	<1.1	<1.1	3	24	11	<1.1	<1.1	<1.1	140
EU12	2967	7/19/2019	7/19/2019	ng/L	18	<20	<2	<2	<2	15	13	<2	<2	<2	130
EU12	7953	9/25/2019	9/25/2019	ng/L	15	<20	<2	<2	<2	7.9	29	<2	<2	<2	120
EU12	7924	10/17/2019	10/17/2019	ng/L	54.9	--	<1.29	<1.29	9.23	50.3	52.6	3.78	<1.29	<1.29	--
EU12	8693	10/22/2019	10/22/2019	ng/L	9.4	<20	<2	<2	<2	14	7.4	<2	<2	<2	140
EU12	9215	10/21/2019	10/21/2019	ng/L	6.7	<20	<2	<2	<2	16	7.8	<2	<2	<2	140
EU12	3144	7/11/2019	7/11/2019	ng/L	5	<20	2.3	<2	2.9	8.4	14	<2	<2	7.7	130
EU12	7954	10/2/2019	10/2/2019	ng/L	5.9	<20	<2	<2	<2	7.1	23	<2	<2	<2	130
EU12	3288	8/14/2019	8/14/2019	ng/L	2.8	<11	<1.1	<1.1	2.1	15	3.7	<1.1	<1.1	<1.1	140
EU12	7919	9/25/2019	9/25/2019	ng/L	7.4	<20	<2	<2	4.5	18	13	<2	<2	<2	120
EU12	1276	1/30/2018	1/30/2018	ng/L	12	<100	<50	<50	<50	<50	<50	<50	<50	<100	150
EU12	2837	7/29/2019	7/29/2019	ng/L	12	15	<1.1	<1.1	7.1	9.2	8.4	<1.1	<1.1	<1.1	110
EU12	3129	10/4/2019	10/4/2019	ng/L	20	<20	<2	<2	3.6	5.7	12	<2	<2	<2	120
EU12	7957	9/25/2019	9/25/2019	ng/L	6.8	<20	<2	<2	<2	8.1	5.3	<2	<2	<2	140
EU12	8173	10/1/2019	10/1/2019	ng/L	27	<20	<2	<2	2.2	12	42	7.8	2.5	<2	66
EU12	2835	6/19/2019	6/19/2019	ng/L	9.2	<20	<2	<2	<2	<5	<2	<2	<2	<2	150
EU12	1238	1/24/2018	1/24/2018	ng/L	9.9	<20	<2	<2	3.3	11	4.9	<2	<2	<2	130
EU12	7947	10/3/2019	10/3/2019	ng/L	8.6	<20	<2	<2	<2	11	7.4	<2	<2	<2	130
EU12	8123	10/21/2019	10/21/2019	ng/L	14	<20	<2	<2	3.3	13	50	9.8	5.5	<2	58
EU12	2914	7/22/2019	7/22/2019	ng/L	15	<20	<2	<2	<2	10	29	<2	<2	<2	99
EU12	3285	8/19/2019	8/19/2019	ng/L	4	<11	<1.1	<1.1	<1.1	7.1	7.6	<1.1	<1.1	<1.1	130
EU12	9066	10/21/2019	10/21/2019	ng/L	7.8	<20	<2	<2	2.5	18	<2	<2	<2	<2	120
EU12	7566	8/22/2019	8/22/2019	ng/L	<2.7	<20	<2	<2	5.5	20	12	<2	<2	<2	110
EU12	7504	8/22/2019	8/22/2019	ng/L	<2.8	<20	<2	<2	<2	20	5	<2	<2	<2	120
EU12	3143	9/11/2019	9/11/2019	ng/L	5.9	<20	<2	<2	3.3	12	23	3.7	<2	<2	95

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU12	2847	6/19/2019	6/19/2019	ng/L	12	<20	<2	<2	<2	<5	<2	<2	<2	<2	130
EU12	8592	10/21/2019	10/21/2019	ng/L	7.5	<20	<2	<2	2.3	9.8	<2	<2	<2	<2	120
EU12	2814	9/13/2019	9/13/2019	ng/L	20	<20	<2	<2	4.9	12	21	2	<2	<2	76
EU12	2980	9/17/2019	9/17/2019	ng/L	11	<20	<2	<2	5.6	11	13	<2	<2	<2	94
EU12	8774	10/17/2019	10/17/2019	ng/L	9.7	<20	<2	<2	<2	5.4	3	<2	<2	<2	110
EU12	7921	9/27/2019	9/27/2019	ng/L	<2.9	<20	<2	<2	<2	7.4	<2	<2	<2	<2	120
EU12	8656	10/18/2019	10/18/2019	ng/L	16	<20	<2	<2	2.4	13	8.8	<2	<2	<2	87
EU12	7895	10/3/2019	10/3/2019	ng/L	<2.6	<20	<2	<2	2.8	15	4.4	<2	<2	<2	99
EU12	7898	10/2/2019	10/2/2019	ng/L	2.8	<20	<2	<2	<2	6.3	<2	<2	<2	<2	110
EU12	1272	1/23/2018	1/23/2018	ng/L	7.1	23	<2	<2	8.4	10	13	<2	<2	<2	54
EU12	2754	6/19/2019	6/19/2019	ng/L	8.8	<20	<2	<2	<2	<5	6.8	<2	<2	<2	99
EU12	2164	1/23/2018	1/23/2018	ng/L	12	21	<2	<2	<2	5.6	2.8	<2	<2	<2	73
EU12	2956	8/8/2019	8/8/2019	ng/L	11	<11	<1.1	<1.1	3.6	15	13	<1.1	<1.1	<1.1	71
EU12	2834	8/29/2019	8/29/2019	ng/L	2.8	<20	<2	<2	<2	<5	<2	<2	<2	<2	110
EU12	2110	1/25/2018	1/25/2018	ng/L	13	<20	<2	<2	2.3	8.7	<2	<2	<2	<2	87
EU12	8783	10/22/2019	10/22/2019	ng/L	5.6	<20	<2	<2	2.4	11	3.5	<2	<2	<2	88
EU12	2156	2/14/2018	11/21/2018	ng/L	110	--	--	--	--	--	--	--	--	--	--
EU12	2262	1/22/2018	1/22/2018	ng/L	9.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	100
EU12	8722	10/23/2019	10/23/2019	ng/L	2.8	<20	<2	<2	<2	6.5	<2	<2	<2	<2	100
EU12	8654	10/18/2019	10/18/2019	ng/L	11	<20	<2	<2	5.1	10	5.7	<2	<2	<2	77
EU12	8781	10/23/2019	10/23/2019	ng/L	6.1	<20	<2	<2	2.9	7.6	5	<2	<2	<2	87
EU12	9022	10/23/2019	10/23/2019	ng/L	6.1	<20	<2	<2	<2	5.3	<2	<2	<2	<2	97
EU12	7896	10/2/2019	10/2/2019	ng/L	2.7	<20	<2	<2	2.3	15	4.4	<2	<2	<2	83
EU12	7894	10/3/2019	10/3/2019	ng/L	2.7	<20	<2	<2	<2	5.9	<2	<2	<2	<2	98
EU12	7923	10/3/2019	10/3/2019	ng/L	13	<20	<2	<2	<2	<5	<2	<2	<2	<2	93
EU12	7933	9/25/2019	9/25/2019	ng/L	<2.7	<20	<2	<2	<2	12	<2	<2	<2	<2	94
EU12	8658	10/18/2019	10/18/2019	ng/L	8.3	<20	<2	<2	2.6	11	11	<2	<2	<2	70
EU12	8375	9/11/2019	9/11/2019	ng/L	12.9	--	--	<1.18	4.4	44.1	40	1.45	<1.18	--	--
EU12	7938	10/3/2019	10/3/2019	ng/L	8.5	<20	<2	<2	<2	<5	<2	<2	<2	<2	93
EU12	3140	7/3/2019	7/3/2019	ng/L	<4	<20	<2	<2	<2	<5	5.4	<2	<2	<2	96
EU12	8187	10/4/2019	10/4/2019	ng/L	15	<20	<2	<2	2.1	7.6	13	2.1	<2	<2	58
EU12	8660	10/18/2019	10/18/2019	ng/L	3.7	<20	<2	<2	<2	13	4.1	<2	<2	<2	75
EU12	9067	10/21/2019	10/21/2019	ng/L	<2.6	<20	<2	<2	4.2	18	<2	<2	<2	<2	71
EU12	3134	7/3/2019	7/10/2019	ng/L	24	<20	<2	<2	<2	<5	14	<2	<2	<2	55
EU12	7934	9/26/2019	9/26/2019	ng/L	<2.7	<20	<2	<2	<2	5.2	2.3	<2	<2	<2	85
EU12	2974	7/19/2019	7/19/2019	ng/L	10	<20	<2	<2	<2	8.2	7.8	<2	<2	<2	65
EU12	8665	10/18/2019	10/18/2019	ng/L	6	<20	<2	<2	2.5	12	12	<2	<2	<2	58
EU12	2255	2/1/2018	2/1/2018	ng/L	89	--	--	--	--	--	--	--	--	--	--
EU12	821	10/21/2019	10/21/2019	ng/L	<2.7	<20	<2	<2	3.6	18	<2	<2	<2	<2	67
EU12	8661	10/18/2019	10/18/2019	ng/L	10	<20	<2	<2	2	11	15	<2	<2	<2	50
EU12	8380	9/11/2019	9/11/2019	ng/L	21.7	--	--	<1.21	<1.21	33.4	28.9	2.49	<1.21	--	--
EU12	2113	1/24/2018	1/24/2018	ng/L	5.9	<100	<50	<50	<50	<50	<50	<50	<50	<100	78
EU12	8899	10/22/2019	10/22/2019	ng/L	3.3	<20	<2	<2	<2	<5	<2	<2	<2	<2	80

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU12	8782	10/22/2019	10/22/2019	ng/L	5.5	<20	<2	<2	<2	<5	2.4	<2	<2	<2	75
EU12	2249	1/22/2018	1/22/2018	ng/L	80	--	--	--	--	--	--	--	--	--	--
EU12	7936	9/26/2019	9/26/2019	ng/L	<2.7	<20	<2	<2	<2	<5	2.8	<2	<2	<2	74
EU12	8785	10/22/2019	10/22/2019	ng/L	3.2	<20	<2	<2	2.8	7.6	3.8	<2	<2	<2	59
EU12	2700	7/22/2019	7/22/2019	ng/L	6.7	<20	<2	<2	3.6	12	17	<2	<2	<2	37
EU12	8379	9/11/2019	9/11/2019	ng/L	13.4	--	--	<1.27	4.07	28.6	28.4	1.53	<1.27	--	--
EU12	8382	9/11/2019	9/11/2019	ng/L	18.9	--	--	<1.34	3.84	27.8	24.9	<1.34	<1.34	--	--
EU12	8177	10/1/2019	10/1/2019	ng/L	6.2	<20	<2	<2	2.2	8.4	6.3	<2	<2	<2	52
EU12	8210	10/2/2019	10/2/2019	ng/L	3.8	<20	<2	<2	<2	6.7	10	<2	<2	<2	53
EU12	8779	10/18/2019	10/18/2019	ng/L	5.2	<20	<2	<2	3.4	9.7	17	<2	<2	<2	34
EU12	8933	10/17/2019	10/17/2019	ng/L	5.1	<20	<2	<2	<2	5	8.7	<2	<2	<2	50
EU12	7917	9/25/2019	9/25/2019	ng/L	3.1	<20	<2	<2	2.1	8.4	3.1	<2	<2	<2	52
EU12	8106	9/30/2019	9/30/2019	ng/L	<2.6	<20	<2	<2	<2	15	<2	<2	<2	<2	53
EU12	3152	5/15/2019	5/15/2019	ng/L	27.8	--	--	<1.21	2.57	19.6	13.8	1.39	<1.21	--	--
EU12	8663	10/18/2019	10/18/2019	ng/L	<2.7	<20	<2	<2	<2	8.5	6.1	<2	<2	<2	48
EU12	7568	8/7/2019	8/7/2019	ng/L	10.6	--	--	<1.2	<1.2	23.6	23.4	3.87	<1.2	--	--
EU12	2250	2/1/2018	2/1/2018	ng/L	61	--	--	--	--	--	--	--	--	--	--
EU12	3151	7/18/2019	7/18/2019	ng/L	17	<20	<2	<2	<2	<5	16	<2	<2	<2	28
EU12	3138	9/23/2019	9/23/2019	ng/L	7.9	<20	<2	<2	<2	<5	6.3	<2	<2	<2	46
EU12	2421	3/14/2018	3/14/2018	ng/L	60.2	--	--	--	--	--	--	--	--	--	--
EU12	8167	10/1/2019	10/1/2019	ng/L	6.2	<20	<2	<2	<2	6	9.7	<2	<2	<2	37
EU12	8662	10/18/2019	10/18/2019	ng/L	5	<20	<2	<2	<2	6.1	<2	<2	<2	<2	47
EU12	9815	10/17/2019	10/17/2019	ng/L	8	--	<1.22	<1.22	2.52	23.2	23.8	<1.22	<1.22	<1.22	--
EU12	8148	10/1/2019	10/1/2019	ng/L	5.8	<20	<2	<2	2.8	7.1	12	<2	<2	<2	29
EU12	7569	8/7/2019	8/7/2019	ng/L	8.5	--	--	<1.17	<1.17	23.5	20.4	2.54	<1.17	--	--
EU12	8667	10/18/2019	10/18/2019	ng/L	3.8	<20	<2	<2	<2	6.3	6.1	<2	<2	<2	38
EU12	8789	10/23/2019	10/23/2019	ng/L	<2.7	<20	<2	<2	<2	<5	4.1	<2	<2	<2	48
EU12	2254	1/23/2018	1/23/2018	ng/L	51	--	--	--	--	--	--	--	--	--	--
EU12	7570	8/7/2019	8/7/2019	ng/L	5.21	--	--	<1.18	8.84	18.7	17.6	<1.18	<1.18	--	--
EU12	2379	1/24/2018	1/24/2018	ng/L	47	--	--	--	--	--	--	--	--	--	--
EU12	3162	5/29/2019	5/29/2019	ng/L	10.9	--	--	<1.18	1.19	16.6	14	<1.18	<1.18	--	--
EU12	2723	9/12/2019	9/12/2019	ng/L	5.4	<20	<2	<2	<2	<5	5.2	<2	<2	<2	32
EU12	8522	10/17/2019	10/17/2019	ng/L	2.6	<20	<2	<2	3.7	<5	2.9	<2	<2	<2	33
EU12	8188	10/1/2019	10/1/2019	ng/L	3	<20	<2	<2	<2	<5	2.5	<2	<2	<2	36
EU12	2508	7/10/2019	7/10/2019	ng/L	14	--	--	<1.18	1.22	14.2	11.9	<1.18	<1.18	--	--
EU12	7899	10/2/2019	10/2/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	39
EU12	2212	1/30/2018	1/30/2018	ng/L	38	--	--	--	--	--	--	--	--	--	--
EU12	2423	3/14/2018	3/14/2018	ng/L	36.4	--	--	--	--	--	--	--	--	--	--
EU12	3125	7/3/2019	7/3/2019	ng/L	5.1	<20	<2	<2	<2	<5	4.6	<2	<2	<2	26
EU12	7955	10/10/2019	10/10/2019	ng/L	<4	<20	<2	<2	<2	<5	3.3	<2	<2	<2	32
EU12	3287	8/19/2019	8/19/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	32
EU12	8376	9/11/2019	9/11/2019	ng/L	10.2	--	--	<1.2	<1.2	10.6	10.8	<1.2	<1.2	--	--
EU12	2424	3/14/2018	3/14/2018	ng/L	31.6	--	--	--	--	--	--	--	--	--	--

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU12	8804	10/21/2019	10/21/2019	ng/L	<2.6	<20	<2	<2	<2	**6.1**	**2.3**	<2	<2	<2	**23**
EU12	7615	8/21/2019	8/21/2019	ng/L	**2.02**	--	--	<1.14	**1.16**	**14.4**	**11.8**	**1.99**	<1.14	--	--
EU12	3139	7/22/2019	7/22/2019	ng/L	**4.1**	<20	<2	<2	<2	<5	**9.6**	<2	<2	<2	**17**
EU12	8787	10/22/2019	10/22/2019	ng/L	<2.7	<20	<2	<2	<2	<5	**2.1**	<2	<2	<2	**28**
EU12	2920	8/22/2019	8/22/2019	ng/L	**2.9**	<20	<2	<2	<2	<5	**5.1**	<2	<2	<2	**22**
EU12	2258	1/25/2018	1/25/2018	ng/L	**30**	--	--	--	--	--	--	--	--	--	--
EU12	8208	10/2/2019	10/2/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	**28**
EU12	2237	1/22/2018	1/22/2018	ng/L	**27**	--	--	--	--	--	--	--	--	--	--
EU12	2908	7/15/2019	7/15/2019	ng/L	<2.6	<20	<2	<2	<2	<5	**8.7**	<2	<2	<2	**18**
EU12	2422	3/14/2018	3/14/2018	ng/L	**26.3**	--	--	--	--	--	--	--	--	--	--
EU12	790	10/22/2019	10/22/2019	ng/L	<2.7	<20	<2	<2	<2	<5	**2.2**	<2	<2	<2	**24**
EU12	2836	5/8/2019	5/8/2019	ng/L	**23.8**	--	--	<1.3	**1.33**	<1.3	<1.3	<1.3	<1.3	--	--
EU12	8791	10/22/2019	10/22/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	**25**
EU12	3150	10/2/2019	10/2/2019	ng/L	<2.7	<20	<2	<2	<2	<5	**8.6**	<2	<2	<2	**16**
EU12	8378	9/11/2019	9/11/2019	ng/L	**4.17**	--	--	<1.29	**3.89**	**8.61**	**7.79**	<1.29	<1.29	--	--
EU12	2422	3/14/2018	3/14/2018	ng/L	**24.4**	--	--	--	--	--	--	--	--	--	--
EU12	3154	5/8/2019	5/8/2019	ng/L	**13.5**	--	--	<1.28	**1.29**	**5.48**	**3.79**	<1.28	<1.28	--	--
EU12	8549	10/18/2019	10/18/2019	ng/L	<3.1	<20	<2	<2	<2	<5	<2	<2	<2	<2	**24**
EU12	8144	10/1/2019	10/1/2019	ng/L	<2.7	<20	<2	<2	<2	<5	<2	<2	<2	<2	**23**
EU12	2880	6/21/2019	6/24/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**22**
EU12	2221	1/25/2018	1/25/2018	ng/L	**22**	--	--	--	--	--	--	--	--	--	--
EU12	2246	1/23/2018	1/23/2018	ng/L	**22**	--	--	--	--	--	--	--	--	--	--
EU12	1241	1/23/2018	1/23/2018	ng/L	**22**	--	--	--	--	--	--	--	--	--	--
EU12	3161	5/29/2019	5/29/2019	ng/L	**3.36**	--	--	<1.22	**3.54**	**7.76**	**7.24**	<1.22	<1.22	--	--
EU12	2251	1/24/2018	1/24/2018	ng/L	**21**	--	--	--	--	--	--	--	--	--	--
EU12	2251	1/24/2018	1/24/2018	ng/L	**21**	--	--	--	--	--	--	--	--	--	--
EU12	2719	6/18/2019	6/18/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**19**
EU12	8485	10/17/2019	10/17/2019	ng/L	<2.8	<20	<2	<2	<2	<5	**3.8**	<2	<2	<2	**15**
EU12	2916	9/27/2019	9/27/2019	ng/L	<2.7	<20	<2	<2	<2	<5	**5.4**	<2	<2	<2	**13**
EU12	8879	10/23/2019	10/23/2019	ng/L	<2.6	<20	<2	<2	<2	<5	<2	<2	<2	<2	**17**
EU12	2899	6/21/2019	6/21/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**16**
EU12	7571	8/7/2019	8/7/2019	ng/L	**7.47**	--	--	<1.19	<1.19	**4.37**	**3.4**	<1.19	<1.19	--	--
EU12	2702	6/24/2019	6/24/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<5	**14**
EU12	3135	7/11/2019	7/11/2019	ng/L	<2.7	<20	<2	<2	<2	<5	**2.9**	<2	<2	<2	**11**
EU12	2420	3/14/2018	3/14/2018	ng/L	**12.7**	--	--	--	--	--	--	--	--	--	--
EU12	3169	6/13/2019	6/13/2019	ng/L	**10.3**	--	--	<1.18	<1.18	**1.84**	<1.18	<1.18	<1.18	--	--
EU12	2111	1/23/2018	1/23/2018	ng/L	**12**	--	--	--	--	--	--	--	--	--	--
EU12	8790	10/22/2019	10/22/2019	ng/L	<2.8	<20	<2	<2	<2	<5	<2	<2	<2	<2	**12**
EU12	2898	6/21/2019	6/21/2019	ng/L	<4	<20	<2	<2	<2	<5	<2	<2	<2	<2	**12**
EU12	2710	7/11/2019	7/11/2019	ng/L	<2.7	<20	**2.1**	<2	<2	<5	<2	<2	<2	**9.7**	<10
EU12	3177	7/10/2019	7/10/2019	ng/L	**3.57**	--	--	<1.19	<1.19	**4.53**	**3.16**	<1.19	<1.19	--	--
EU12	2918	7/11/2019	7/24/2019	ng/L	<0.598	<20	**2.2**	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	**8.4**	<10

Table B-2
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Untreated Drinking Water

Exposure Unit [1]	Residence ID	Range of Sampling Dates [2]		Units	HFPO-DA	PEPA	PFECA-G	PFESA-BP1	PFESA-BP2	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA
EU12	3148	10/21/2019	10/21/2019	ng/L	**9.9**	<20	<2	<2	<2	<5	<2	<2	<2	<2	<10
EU12	8090	9/30/2019	9/30/2019	ng/L	<2.7	<20	<2	<2	<2	<5	**5.1**	<2	<2	<2	<10
EU12	2909	7/24/2019	7/24/2019	ng/L	<2.7	<20	<2	<2	<2	<5	**4**	<2	<2	<2	<10
EU12	3137	7/11/2019	7/11/2019	ng/L	<2.7	<20	<2	<2	<2	<5	**2.9**	<2	<2	<2	<10
EU12	7614	8/21/2019	8/21/2019	ng/L	**0.825**	--	--	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	--	--

Definitions:
[1] Exposure Units (EUs) are defined as follows:

EU5 - 5 kilometer radius, northeast
EU6 - 5 kilometer radius, southeast
EU7 - 5 kilometer radius, southwest
EU8 - 5 kilometer radius, northwest
EU9 - 10 kilometer radius, northeast
EU10 - 10 kilometer radius, southeast
EU11 - 10 kilometer radius, southwest
EU12 - 10 kilometer radius, northwest

[2] The analytical results presented in the table represent the maximum concentration reported within the sampling date range. Not all maximums co-occurred such that the sum of maximums at each location is an "artificial composite sample
[3] Reporting limits for a limited number of samples with non-detect HFPO-DA results were not available (shown as "0" in the table); these samples were excluded from the statistical summary calculations.

Notes:
Bold - Analyte detected above associated reporting limit
< - Analyte not detected above associated reporting limit.
"--" - Data not available
ng/L - nanogram(s) per liter

Table B-3
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Surface Water Data

Exposure Unit [1]	Sample ID	Sample Date	Units	HFPO-DA	PEPA	PFECA-G	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PMPA	Hydro-EVE Acid	EVE Acid	PFECA B	R-EVE	PFO5DA	Byproduct 4	Byproduct 5	Byproduct 6	NVHOS	PES	PFESA-BP1	PFESA-BP2
EU13	CFR-01-A	05/09/18	ng/L	<4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU13	CFR-01-B	05/09/18	ng/L	<4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU13	CFR-01-B4	05/09/18	ng/L	<4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU13	CFR-01-C	05/09/18	ng/L	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU13	CFR-MILE-68	06/06/18	ng/L	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU13	CFR-RM-56-052219	05/22/19	ng/L	<4 U	<20 UJ	<2 UJ	<5 UJ	<2 UJ	<2 UJ	<2 UJ	<10 UJ	<2 UJ	<2 UJ	<2 UJ	<2 UJ	<2 UJ	**4 J**	**12 J**	<2 UJ	**2.8 J**	<2 UJ	<2 UJ	<2 UJ
EU13	CFR-RM-56-060719	06/07/19	ng/L	<4 U	<20 U	<2 U	<5 UJ	<2 U	<2 U	<2 U	<10 U	<2 U	<2 U	<2 U	<2 U	<2 U	**8.5 J**	**8.1 J**	<2 U	**7.5**	<2 U	<2 U	<2 U
EU13	CFR-RM-56-060719-D	06/07/19	ng/L	<4 U	<20 U	<2 U	<5 UJ	<2 U	<2 U	<2 U	<10 U	<2 U	<2 U	<2 U	<2 U	<2 U	**8.1 J**	**4.5 J**	<2 U	**7.2**	<2 U	<2 U	<2 U
EU13	CFR-RM-68-052219	05/22/19	ng/L	<4 U	<20 UJ	<2 UJ	<5 UJ	**2.8 J**	<2 UJ	<2 UJ	**21 J**	<2 UJ	<2 UJ	<2 UJ	<2 UJ	<2 UJ	**4.9 J**	**7.9 J**	<2 UJ	**7.6 J**	<2 UJ	<2 UJ	<2 UJ
EU13	CFR-RM-68-060719	06/07/19	ng/L	**5**	<20 U	<2 U	<5 U	<2 U	<2 U	<2 U	**12**	<2 U	<2 U	<2 U	**23 J**	<2 U	**20 J**	**320 J**	<2 U	**8.2**	<2 U	<2 U	<2 U
EU14	CFR-04-A	09/26/17	ng/L	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-04-A12	05/09/18	ng/L	<4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-04-A13	05/09/18	ng/L	<4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-04-B	09/26/17	ng/L	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-04-B14	05/09/18	ng/L	<4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-04-B15	05/09/18	ng/L	**4**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-04-B7	09/26/17	ng/L	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-04-B8	09/26/17	ng/L	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-04-C	09/26/17	ng/L	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-04-C16	05/09/18	ng/L	<4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-04-CM-072519	07/25/19	ng/L	<2	<20	<2	<5	**2.2**	<2	<2	<10	<2	<2	<2	**2.7**	<2	<2	<2	<2	**6.2**	<2	<2	<2
EU14	CFR-04-CT-072519	07/25/19	ng/L	**2.1**	<20	<2	<5	**2.3**	<2	<2	<10	<2	<2	<2	**3.8**	<2	**5.5**	<2	<2	**6.6**	<2	<2	<2
EU14	CFR-04-E-072519	07/25/19	ng/L	<2	<20	<2	<5	**2.2**	<2	<2	<10	<2	<2	<2	<2	<2	**7.6**	<2	<2	**6.1**	<2	<2	<2
EU14	CFR-04-W-072519	07/25/19	ng/L	**3.4**	<20	<2	**8.8**	**4**	<2	<2	<10	<2	<2	<2	<2	<2	**4.8**	**2.5**	<2	**6.6**	<2	<2	<2
EU14	CFR-05-A	09/26/17	ng/L	**160**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-05-A17	05/09/18	ng/L	<4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-05-B	09/26/17	ng/L	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-05-B18	05/09/18	ng/L	**7.4**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-05-B19	05/09/18	ng/L	<4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-05-B9	09/26/17	ng/L	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-05-C	09/26/17	ng/L	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-05-C20	05/09/18	ng/L	**49**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-06-A	09/26/17	ng/L	**43**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-06-A21	05/09/18	ng/L	<4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-06-B	09/26/17	ng/L	**43**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-06-B10	09/26/17	ng/L	**12**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-06-B22	05/09/18	ng/L	**5.5**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-06-B23	05/09/18	ng/L	<4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-06-C	09/26/17	ng/L	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-06-C24	05/09/18	ng/L	**35**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-07-A	09/27/17	ng/L	**54**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-07-A25	05/10/18	ng/L	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-07-B	09/27/17	ng/L	**28**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-07-B11	09/27/17	ng/L	**27**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-07-B26	05/10/18	ng/L	**11**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-07-B27	05/10/18	ng/L	**12**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-07-C	09/26/17	ng/L	**25**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-07-C28	05/10/18	ng/L	**19**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-07-C29	05/10/18	ng/L	**19**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-07-CM-072519	07/25/19	ng/L	**10**	<20	<2	**36**	**13**	**3.2**	<2	**13**	<2	<2	<2	**3.6**	<2	**5.4**	**9.6**	<2	**6.6**	<2	<2	<2
EU14	CFR-07-CT-072519	07/25/19	ng/L	**5.5**	<20	<2	**21**	**8.1**	**2**	<2	**12**	<2	<2	<2	**2.7**	<2	**8.9**	**6.6**	<2	**6.7**	<2	<2	<2
EU14	CFR-07-E-072519	07/25/19	ng/L	**3.7**	<20	<2	**9.9**	**4.5**	<2	<2	<10	<2	<2	<2	**2.9**	<2	**7.5**	**3.1**	<2	**6.8**	<2	<2	<2
EU14	CFR-07-E-072519-2	07/25/19	ng/L	**4.3**	<20	<2	**12**	**4.9**	<2	<2	<10	<2	<2	<2	**2.8**	<2	**6.9**	**3.1**	<2	**6**	<2	<2	<2
EU14	CFR-07-W-072519	07/25/19	ng/L	**15**	<20	<2	**71**	**25**	**6.4**	**2.3**	**19**	<2	<2	<2	**3.3**	<2	**6.5**	**19**	<2	**7.2**	<2	<2	<2

Table B-3
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Surface Water Data

Exposure Unit [1]	Sample ID	Sample Date	Units	HFPO-DA	PEPA	PFECA-G	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PMPA	Hydro-EVE Acid	EVE Acid	PFECA B	R-EVE	PFO5DA	Byproduct 4	Byproduct 5	Byproduct 6	NVHOS	PES	PFESA-BP1	PFESA-BP2
EU14	CFR-MILE-76	06/06/18	ng/L	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU14	CFR-MILE-7631	11/01/18	ng/L	<4	<200	<200	<200	<200	<200	<200	<200	--	--	--	--	<200	--	--	--	--	--	<200	<200
EU14	CFR-MILE-7633	02/04/19	ng/L	**2.9**	<50	<50	<50	<50	<50	<50	<50	--	--	--	--	<100	--	--	--	--	--	<50	<50
EU14	CFR-RM-76-052219	05/22/19	ng/L	<4 U	<20 UJ	<2 UJ	<5 UJ	**3.5 J**	<2 UJ	<2 UJ	<10 UJ	<2 UJ	<2 UJ	<2 UJ	<2 UJ	<2 UJ	**3.8 J**	**5.2 J**	<2 UJ	**4.1 J**	<2 UJ	<2 UJ	<2 UJ
EU14	CFR-RM-76-060719	06/07/19	ng/L	**6.9**	<20 U	<2 U	<5 U	**4.4**	<2 U	<2 U	**18**	<2 U	<2 U	<2 U	**4 J**	<2 U	**7.9 J**	**23 J**	<2 U	**7.4**	<2 U	<2 U	<2 U
EU16	Bladen Bluffs Raw - NCDEQ; EPA [2]	06/19/17	ng/L	**501**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU16	Bladen Bluffs Raw - NCDEQ; EPA [2]	06/26/17	ng/L	**31**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU16	Bladen Bluffs Raw - NCDEQ; EPA [2]	07/03/17	ng/L	**168**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU16	Bladen Bluffs Raw - NCDEQ; EPA [2]	07/12/17	ng/L	**77**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU16	Bladen Bluffs Raw - NCDEQ; EPA [2]	07/17/17	ng/L	**54**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU16	Bladen Bluffs Raw - NCDEQ; EPA [2]	07/24/17	ng/L	**30.4**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU16	Bladen Bluffs Raw - NCDEQ; TA [2]	06/19/17	ng/L	**580**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU16	Bladen Bluffs Raw - NCDEQ; TA [2]	06/26/17	ng/L	**36**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU16	Bladen Bluffs Raw - NCDEQ; TA [2]	07/03/17	ng/L	**240**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU16	Bladen Bluffs Raw - NCDEQ; TA [2]	07/12/17	ng/L	**310**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU16	Bladen Bluffs Raw - NCDEQ; TA [2]	07/17/17	ng/L	**70**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU16	Bladen Bluffs Raw - NCDEQ; TA [2]	07/24/17	ng/L	**51**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU16	CFR-BLADEN-052219	05/22/19	ng/L	**28**	<20 UJ	<2 UJ	**130 J**	**40 J**	**9.9 J**	**3.5 J**	**31 J**	<2 UJ	<2 UJ	<2 UJ	**4 J**	<2 UJ	**9.6 J**	**31 J**	<2 UJ	**6.1 J**	<2 UJ	<2 UJ	<2 UJ
EU16	CFR-BLADEN-060719	06/07/19	ng/L	**57**	<20 U	<2 U	**180**	**64**	**16**	**6.4**	**55**	<2 U	<2 U	<2 U	**6.3 J**	**3.4**	**19 J**	**69 J**	<2 U	**8.7**	<2 U	**2.4**	**4.9**
EU16	CFR-MILE-84	06/06/18	ng/L	**17**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EU16	CFR-MILE-8432	11/01/18	ng/L	**8.6**	<200	<200	<200	<200	<200	<200	<200	--	--	--	--	<200	--	--	--	--	--	<200	<200
EU16	CFR-MILE-8434	02/04/19	ng/L	**13**	**50**	<50	**56**	<50	<50	<50	<50	--	--	--	--	<100	--	--	--	--	--	<50	<50
EU17	CFR-KINGS-052319	05/23/19	ng/L	**17**	<20 U	<2 U	**7.8 J**	**29**	**7.5**	**2.4**	**29**	<2 U	<2 U	<2 U	**10 J**	<2 U	**20 J**	**7.6 J**	<2 U	**6.2 J**	<2 U	<2 U	<2 U
EU17	CFR-KINGS-052319-D	05/23/19	ng/L	**16**	<20 U	<2 U	**8.4 J**	**29**	**7.6**	**2.4**	**21**	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U	**8.3 J**	<2 U	<2 U	<2 U	<2 U	<2 U
EU17	CFR-KINGS-060719	06/07/19	ng/L	**37**	<20 U	<2 U	**230 J**	**66**	**20**	**8.2**	**35**	<2 U	<2 U	<2 U	**8.3 J**	**3.2**	**19 J**	**82 J**	<2 U	**9**	<2 U	<2 U	**5**
EU17	CFR-MILE-132	11/01/18	ng/L	**15**	--	--	**26**	**13**	**3.2**	--	**16**	--	--	--	--	--	--	--	--	--	--	--	--
EU17	Sweeney Raw [3]	09/12/18	ng/L	**16.9**	**7.29**	ND	**14.3**	**13.4**	**10.9**	**3.41**	**4.47**	--	--	--	--	--	--	--	--	--	--	ND	**1.7**
EU17	Sweeney Raw [3]	09/14/18	ng/L	**15.5**	**2.83**	ND	**51.5**	**43.9**	**43.4**	**14.6**	ND	--	--	--	--	--	--	--	--	--	--	ND	**3.29**
EU17	Sweeney Raw [3]	09/15/18	ng/L	**18.8**	**5.37**	ND	**26.3**	**25.5**	**22.4**	**5.84**	**5.14**	--	--	--	--	--	--	--	--	--	--	ND	**1.85**
EU17	Sweeney Raw [3]	09/16/18	ng/L	**15.2**	**9.7**	ND	**33.4**	**28.1**	**28**	**8.67**	ND	--	--	--	--	--	--	--	--	--	--	ND	**1.97**
EU17	Sweeney Raw [3]	09/17/18	ng/L	**33.8**	**13.8**	ND	**13.9**	**11.2**	**7.35**	**3.19**	**7.61**	--	--	--	--	--	--	--	--	--	--	**1.33**	**2.35**
EU17	Sweeney Raw [3]	09/18/18	ng/L	**18.6**	ND	ND	**10.6**	**9.06**	**5.66**	**2.32**	ND	--	--	--	--	--	--	--	--	--	--	ND	**1.34**
EU17	Sweeney Raw [3]	09/19/18	ng/L	**17.6**	ND	ND	**9.9**	**6.94**	**4.43**	**2.77**	ND	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	09/20/18	ng/L	**18.9**	ND	ND	**10.2**	**8.44**	**5.14**	**2.16**	ND	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	09/21/18	ng/L	**12.6**	ND	ND	**10.7**	**7.05**	**5.28**	**1.67**	**10.2**	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	09/22/18	ng/L	**8.44**	ND	ND	**6.82**	**6.89**	**5.9**	**2.09**	ND	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	09/23/18	ng/L	**5.11**	ND	ND	**5.73**	**4.59**	**3.22**	**1.96**	ND	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	09/24/18	ng/L	**6.32**	**8.71**	ND	**4.05**	**4.96**	**2.88**	ND	ND	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	09/25/18	ng/L	**8.54**	ND	ND	**6.7**	**6.31**	**3.63**	**1.25**	**3.35**	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	09/26/18	ng/L	**15.9**	**24.8**	ND	**13.7**	**13.4**	**7.87**	**2.66**	**8.6**	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	09/27/18	ng/L	**17.5**	**21**	ND	**16**	**12.6**	**5.14**	**2.05**	**2.12**	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	09/28/18	ng/L	**27.7**	ND	ND	**21.2**	**18.9**	**9.97**	**3.95**	**12.2**	--	--	--	--	--	--	--	--	--	--	ND	**1.68**
EU17	Sweeney Raw [3]	09/29/18	ng/L	**25.1**	**9.31**	ND	**17.5**	**18.6**	**8.66**	**3.46**	**9.19**	--	--	--	--	--	--	--	--	--	--	ND	**1.4**
EU17	Sweeney Raw [3]	09/30/18	ng/L	**12.4**	**14.3**	ND	**7.53**	**9.26**	**4.6**	**1.69**	**5.32**	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	10/01/18	ng/L	**10.3**	**10.3**	ND	**8.03**	**7.05**	**4.37**	**1.2**	**4.82**	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	10/02/18	ng/L	**9.79**	**17.1**	ND	**7.02**	**4.93**	ND	**1.74**	**5.32**	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	10/03/18	ng/L	**11.7**	**17.3**	ND	**7.19**	**4.93**	**3.66**	**1.3**	**4.81**	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	10/04/18	ng/L	**10.4**	**21.7**	ND	**6.83**	**5.45**	**3.5**	ND	**4.15**	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	10/05/18	ng/L	**11**	**25.3**	ND	**8.27**	**4.23**	**3.77**	**2.2**	**4.59**	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	10/06/18	ng/L	**10.6**	**23.6**	ND	**7.77**	**5.29**	**4.74**	**1.56**	**4.58**	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	10/07/18	ng/L	**10.2**	**15.9**	ND	**6.17**	**5.63**	**4.63**	**1.22**	**3.9**	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	10/08/18	ng/L	**11**	ND	ND	**7.69**	**5.23**	ND	**1.55**	**4.15**	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	10/09/18	ng/L	**10.2**	ND	ND	**6.15**	**5.57**	**4.49**	**1.83**	**4.21**	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	10/10/18	ng/L	**9.94**	ND	ND	**5.42**	**4.32**	ND	**1.33**	**4.01**	--	--	--	--	--	--	--	--	--	--	ND	ND

Table B-3
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Surface Water Data

Exposure Unit [1]	Sample ID	Sample Date	Units	HFPO-DA	PEPA	PFECA-G	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PMPA	Hydro-EVE Acid	EVE Acid	PFECA B	R-EVE	PFO5DA	Byproduct 4	Byproduct 5	Byproduct 6	NVHOS	PES	PFESA-BP1	PFESA-BP2
EU17	Sweeney Raw [3]	10/11/18	ng/L	9.58	ND	ND	6.27	4.54	4.53	2.02	2.95	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	10/12/18	ng/L	10.8	ND	ND	9.81	8.25	4.47	2.29	4.87	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	11/20/18	ng/L	3.96	ND	ND	5.21	4.65	3.02	ND	ND	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	11/27/18	ng/L	12	ND	ND	12.3	6.14	2.59	ND	5.48	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	12/03/18	ng/L	6.93	ND	ND	6.34	4.21	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	12/10/18	ng/L	16	13.6	ND	15.3	11.7	4.38	ND	ND	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	12/17/18	ng/L	25.6	ND	ND	15.3	9.33	ND	1.2	9.99	--	--	--	--	--	--	--	--	--	--	ND	1.39
EU17	Sweeney Raw [3]	12/24/18	ng/L	5.46	ND	ND	5.98	3.09	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	12/31/18	ng/L	12.8	ND	ND	8.87	6.3	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	01/07/19	ng/L	6.92	ND	ND	6.33	5.58	1.87	ND	3.38	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	01/14/19	ng/L	6.83	ND	ND	8.19	5.59	1.34	ND	ND	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	01/21/19	ng/L	9.69	ND	ND	11.1	8.39	3.03	ND	13.1	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	01/28/19	ng/L	4.31	ND	ND	5.08	3.69	1.35	ND	9.74	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	02/04/19	ng/L	11.8	6.17	ND	16.9	10.7	5.46	1.72	4.25	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	02/11/19	ng/L	19	ND	ND	17.8	13.6	4.75	1.27	5.96	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	02/18/19	ng/L	11.9	7.23	ND	12.4	7.79	3.73	1.5	4.79	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	02/25/19	ng/L	4.08	ND	ND	3.82	2.78	ND	ND	1.61	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	03/04/19	ng/L	8.59	3.57	ND	7.68	6.54	1.61	ND	5.21	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	03/11/19	ng/L	6.75	2.31	ND	4.69	5.36	1.63	ND	10.6	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	03/18/19	ng/L	7.12	4.04	ND	7.07	5.29	1.67	ND	4.26	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	03/25/19	ng/L	3.14	ND	ND	4.36	3.08	ND	ND	1.32	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	04/01/19	ng/L	7.9	1.72	ND	12.2	9.98	3.87	ND	4.09	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	04/08/19	ng/L	18.7	6.02	ND	14.7	13	4.48	1.52	10.6	--	--	--	--	--	--	--	--	--	--	4.17	1.46
EU17	Sweeney Raw [3]	04/15/19	ng/L	8.39	2.17	ND	7.2	7.65	2.78	ND	5.05	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	04/22/19	ng/L	18	ND	ND	15.5	11.3	5.84	1.78	12.1	--	--	--	--	--	--	--	--	--	--	ND	1.48
EU17	Sweeney Raw [3]	04/29/19	ng/L	8.64	4.04	ND	11.8	8.79	3.83	ND	6.06	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	05/06/19	ng/L	6.79	3.03	ND	8.19	5.76	2.73	ND	2.47	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	05/13/19	ng/L	12	ND	ND	18.7	14.5	6.09	1.9	4.61	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	05/20/19	ng/L	19.6	3.96	ND	25.2	19.4	7.27	2.57	8.76	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	05/27/19	ng/L	23.6	1.82	ND	29.3	20.3	8.01	2.59	6.78	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	06/03/19	ng/L	31.9	6.34	ND	52.2	43.5	16.7	6.14	14.6	--	--	--	--	--	--	--	--	--	--	ND	3.51
EU17	Sweeney Raw [3]	06/10/19	ng/L	36.9	8.23	ND	57	46.8	18.4	7.09	14.7	--	--	--	--	--	--	--	--	--	--	ND	5.43
EU17	Sweeney Raw [3]	06/17/19	ng/L	9.66	2.4	ND	8.02	7.7	2.82	ND	2.07	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	06/24/19	ng/L	9.67	2.41	ND	14.7	13.7	4.13	1.65	5.46	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	07/01/19	ng/L	54.8	22.6	ND	63	57.7	11.3	ND	64.9	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	07/08/19	ng/L	28.6	9.52	ND	36.2	32.5	9.71	3.88	8.07	--	--	--	--	--	--	--	--	--	--	ND	3.08
EU17	Sweeney Raw [3]	07/15/19	ng/L	24.8	7.15	ND	34.9	24.7	7.43	3.31	7.58	--	--	--	--	--	--	--	--	--	--	ND	2.7
EU17	Sweeney Raw [3]	07/29/19	ng/L	24.8	7.9	ND	30	25.3	8.85	2.42	6.67	--	--	--	--	--	--	--	--	--	--	ND	2.1
EU17	Sweeney Raw [3]	08/12/19	ng/L	15.7	5.79	ND	22.2	15.5	5.1	2.04	5.51	--	--	--	--	--	--	--	--	--	--	ND	1.57
EU17	Sweeney Raw [3]	08/26/19	ng/L	28.3	ND	ND	38.9	28.7	9.93	3.15	8.3	--	--	--	--	--	--	--	--	--	--	ND	2.7
EU17	Sweeney Raw [3]	09/04/19	ng/L	11.3	3.24	ND	14.8	11.5	4.08	1.75	5.97	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	09/05/19	ng/L	11.6	6.6	ND	16.5	12.9	3.91	1.69	7.41	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	09/06/19	ng/L	11.1	ND	ND	15.8	12.7	3.69	ND	6.77	--	--	--	--	--	--	--	--	--	--	ND	ND
EU17	Sweeney Raw [3]	09/09/19	ng/L	76	16	ND	52.3	36.1	14.3	7.98	21.7	--	--	--	--	--	--	--	--	--	--	3.78	6.14
EU17	Sweeney Raw [3]	09/23/19	ng/L	28.4	15.6	ND	34.2	24.1	8.8	3.2	8.74	--	--	--	--	--	--	--	--	--	--	ND	2.98
EU17	Sweeney Raw [3]	10/01/19	ng/L	39.4	25.7	ND	46.8	40.3	14.3	3.74	10.4	--	--	--	--	--	--	--	--	--	--	ND	3.41
EU17	Sweeney Raw [3]	10/07/19	ng/L	38.8	11	ND	57.4	50.2	17.5	5.29	15.7	--	--	--	--	--	--	--	--	--	--	ND	2.91
EU18	Pond-1-NE-072419	07/24/19	ng/L	940	270	<2	240	690	91	37	820	3.4	<2	<2	52	9.7	90	<2	<2	5.6	<2	<2	31
EU18	Pond-1-NW-072419	07/24/19	ng/L	730	280	<2	250	700	90	38	820	3.4	<2	<2	55	9.9	96	<2	<2	6.1	<2	<2	31
EU18	Pond-1-SE-072419	07/24/19	ng/L	760	300	<2	260	720	97	40	850	3.5	<2	<2	58	10	94	<2	<2	6.2	<2	<2	32
EU18	Pond-1-SE-072419-2	07/24/19	ng/L	770	290	<2	250	730	95	40	850	3.6	<2	<2	57	10	99	<2	<2	6.3	<2	<2	33

Table B-3
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Surface Water Data

Exposure Unit [1]	Sample ID	Sample Date	Units	HFPO-DA	PEPA	PFECA-G	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PMPA	Hydro-EVE Acid	EVE Acid	PFECA B	R-EVE	PFO5DA	Byproduct 4	Byproduct 5	Byproduct 6	NVHOS	PES	PFESA-BP1	PFESA-BP2
EU19	POND-B-EAST-091219	09/12/19	ng/L	**310**	**110**	<2	**67**	**220**	**27**	**8.9**	**350**	<2	<2	<2	**53**	<2.1	**140**	<2	<2	<2	<2	<2	**25**
EU19	POND-B-SOUTH-091219	09/12/19	ng/L	**290**	**110**	<2	**71**	**220**	**26**	**8.4**	**350**	<2	<2	<2	**53**	**2.1**	**150**	<2	<2	<2	<2	<2	**25**
EU19	POND-B-WEST-091219	09/12/19	ng/L	**310**	**100**	<2	**65**	**210**	**26**	**8.7**	**340**	<2	<2	<2	**52**	<2	**130**	<2	<2	<2	<2	<2	**25**

Notes
[1] Exposure Units (EUs) are defined as follows:
EU13 - Upstream Cape Fear River
EU14 - Site-Adjacent Cape Fear River
EU16 - 8 Miles Downstream, Cape Fear River (Bladen Bluffs)
EU17 - 55 Miles Downstream Cape Fear River (Kings Bluffs)
EU18 - Onsite Pond 1
EU19 - Offsite Pond B
[2] https://www.ncwater.org/basins/Cape_Fear/GenXDataspreadsheet.pdf
[3] Data were provided by the Cape Fear Public Utility Authority.

Definitions:
Bold - Analyte detected above associated reporting limit
< - Analyte not detected above associated reporting limit
-- - No data reported
J - Analyte detected. Reported value may not be accurate or precise
UJ – Analyte not detected. Reporting limit may not be accurate or precise.
ng/L - nanogram(s) per liter

Table B-4
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Fish Tissue Fillets

Exposure Unit [1]	Sample ID [2]	Location	Specimen Common Name	Specimen Scientific Name	Weight (grams)	Length (mm)	Sample Date	Units	HFPO-DA	PFMOAA	PFO2HxA	PFO3OA	PFO4DA	PFO5DA	PMPA	PEPA	PFESA-BP1	PFESA-BP2
EU13	MM-68-1 FH	MM-68	Flathead catfish	*Pylodictis olivaris*	5443	813	8/1/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU13	MM-68-2 CC	MM-68	Channel catfish	*Ictalurus punctatus*	802	457	8/1/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU13	MM-68-3 BC	MM-68	Blue catfish	*Ictalurus furcatus*	4899	660	8/1/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU13	MM-68-4 LMB	MM-68	Largemouth bass	*Micropterus salmoides*	380	318	8/2/2019	ng/kg	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ
EU13	MM-68-5 LMB	MM-68	Largemouth bass	*Micropterus salmoides*	976	438	8/1/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU14	CFR-05-1 LMB [3]	CFR-06	Largemouth bass	*Micropterus salmoides*	631	358	8/1/2019	ng/kg	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	**2,600 J**	<1,100 UJ	**370 J**	<1,100 UJ	<1,100 UJ	<1,100 UJ
EU14	CFR-05-2 FH [3]	CFR-06	Flathead catfish	*Pylodictis olivaris*	5262	747	8/1/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU14	CFR-05-3 BC [3]	CFR-06	Blue catfish	*Ictalurus furcatus*	5262	767	8/1/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU14	CFR-05-4 CC [3]	CFR-06	Channel catfish	*Ictalurus punctatus*	607	445	8/1/2019	ng/kg	<1,200 UJ	<1,200 UJ	<1,200 UJ	<1,200 UJ	<1,200 UJ	<1,200 UJ	**270 J**	<1,200 UJ	<1,200 UJ	<1,200 UJ
EU14	CFR-06-1 BC [4]	CFR-07	Blue catfish	*Ictalurus furcatus*	4899	660	7/31/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU14	CFR-06-2 BC [4]	CFR-07	Blue catfish	*Ictalurus furcatus*	2812	597	7/31/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**280 J**	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU14	CFR-06-3 BC [4]	CFR-07	Blue catfish	*Ictalurus furcatus*	4354	622	7/31/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU15	CFR-09-1 BC	CFR-09	Blue catfish	*Ictalurus furcatus*	12156	914	7/31/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU15	CFR-09-1 LMB	CFR-09	Largemouth bass	*Micropterus salmoides*	160	226	7/30/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**5,400 J**	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU15	CFR-09-2 BC	CFR-09	Blue catfish	*Ictalurus furcatus*	2903	663	7/31/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**1,700 J**	<1,000 UJ	**300 J**	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU16	CFR Bladen-01-Bluegill	Bladen Bluffs	Bluegill	*Lepomis macrochirus*	76	158	9/26/2019	ng/kg	<1,300 UJ	**6,700 J**	<1,000	<1,000	**110,000 J**	**1,400**	<1,000	<1,000	<1,000	<1,000
EU16	CFR Bladen-01-Channel catfish	Bladen Bluffs	Channel catfish	*Ictalurus punctatus*	86	234	9/27/2019	ng/kg	<1,300	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU16	CFR Bladen-01-LMB	Bladen Bluffs	Largemouth bass	*Micropterus salmoides*	78	191	9/27/2019	ng/kg	<4,300	**4,900 J**	<1,000	<1,000	**400**	**310**	<1,000	<1,000	<1,000	<1,000
EU16	CFR Bladen-02-LMB	Bladen Bluffs	Largemouth bass	*Micropterus salmoides*	575	356	9/27/2019	ng/kg	**68,000**	**1,400 J**	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU16	CFR Bladen-02-Redbreast	Bladen Bluffs	Redbreast sunfish	*Lepomis auritus*	109	196	9/27/2019	ng/kg	<1,300	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU16	CFR Bladen-03-LMB	Bladen Bluffs	Largemouth bass	*Micropterus salmoides*	835	384	9/27/2019	ng/kg	**54,000**	**8,200 J**	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU16	CFR Bladen-03-Redbreast	Bladen Bluffs	Redbreast sunfish	*Lepomis auritus*	138	206	9/27/2019	ng/kg	<1,300	**2,400 J**	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU16	CFR Bladen-04-LMB	Bladen Bluffs	Largemouth bass	*Micropterus salmoides*	1397	442	9/27/2019	ng/kg	**24,000**	**2,300**	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU16	CFR Bladen-04-Redbreast	Bladen Bluffs	Redbreast sunfish	*Lepomis auritus*	145	218	9/27/2019	ng/kg	<1,300	**2,600 J**	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU18	DERC-1 LMB	Pond 1	Largemouth bass	*Micropterus salmoides*	816	343	7/30/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU18	DERC-2 LMB	Pond 1	Largemouth bass	*Micropterus salmoides*	1270	406	7/30/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU18	DERC-3 LMB	Pond 1	Largemouth bass	*Micropterus salmoides*	998	394	7/30/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**270 J**	<1,000 UJ	**270 J**	<1,000 UJ	<1,000 UJ	<1,000 UJ

Notes

[1] Exposure Units are defined as follows:
- EU13 - Upstream Cape Fear River
- EU14 - Site-Adjacent Cape Fear River
- EU15 - 4 Miles Downstream, Cape Fear River
- EU16 - 8 Miles Downstream, Cape Fear River (Bladen Bluffs)
- EU18 - Onsite Pond 1

[2] Sample IDs use the following abbreviations to indicate fish species. Only fillet samples were evaluated in the human health SLEA.
- LMB - Largemouth Bass
- BC - Blue Catfish
- CC - Channel Catfish
- FH - Flathead Catfish
- Redbreast - Redbreasted Sunfish

[3] Field staff mistakenly labeled samples collected from CFR-06 as location CFR-05. Coordinates confirmed CFR-06 was correct.
[4] Field staff mistakenly labeled samples collected from CFR-07 as location CFR-06. Coordinates confirmed CFR-07 was correct.

Definitions:
Bold - Analyte detected above associated reporting limit
< - Analyte not detected above associated reporting limit
-- - No data reported
J - Analyte detected. Reported value may not be accurate or precise
UJ – Analyte not detected. Reporting limit may not be accurate or precise.
ng/kg - nanogram(s) per kilogram
mm - millimeters

Table B-4
Screening-Level Exposure Assessment
Analytical Data Used in the SLEA
Fish Tissue Fillets

Exposure Unit [1]	Sample ID [2]	Location	Specimen Common Name	Specimen Scientific Name	Weight (grams)	Length (mm)	Sample Date	Units	Byproduct 4	Byproduct 5	Byproduct 6	NVHOS	EVE Acid	Hydro-EVE Acid	R-EVE	PES	PFECA B	PFECA-G
EU13	MM-68-1 FH	MM-68	Flathead catfish	*Pylodictis olivaris*	5443	813	8/1/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU13	MM-68-2 CC	MM-68	Channel catfish	*Ictalurus punctatus*	802	457	8/1/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU13	MM-68-3 BC	MM-68	Blue catfish	*Ictalurus furcatus*	4899	660	8/1/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU13	MM-68-4 LMB	MM-68	Largemouth bass	*Micropterus salmoides*	380	318	8/2/2019	ng/kg	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ
EU13	MM-68-5 LMB	MM-68	Largemouth bass	*Micropterus salmoides*	976	438	8/1/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU14	CFR-05-1 LMB [3]	CFR-06	Largemouth bass	*Micropterus salmoides*	631	358	8/1/2019	ng/kg	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ
EU14	CFR-05-2 FH [3]	CFR-06	Flathead catfish	*Pylodictis olivaris*	5262	747	8/1/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU14	CFR-05-3 BC [3]	CFR-06	Blue catfish	*Ictalurus furcatus*	5262	767	8/1/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU14	CFR-05-4 CC [3]	CFR-06	Channel catfish	*Ictalurus punctatus*	607	445	8/1/2019	ng/kg	<1,200 UJ	<1,200 UJ	<1,200 UJ	<1,200 UJ	<1,200 UJ	<1,200 UJ	<1,200 UJ	<1,200 UJ	<1,200 UJ	<1,200 UJ
EU14	CFR-06-1 BC [4]	CFR-07	Blue catfish	*Ictalurus furcatus*	4899	660	7/31/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU14	CFR-06-2 BC [4]	CFR-07	Blue catfish	*Ictalurus furcatus*	2812	597	7/31/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU14	CFR-06-3 BC [4]	CFR-07	Blue catfish	*Ictalurus furcatus*	4354	622	7/31/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU15	CFR-09-1 BC	CFR-09	Blue catfish	*Ictalurus furcatus*	12156	914	7/31/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU15	CFR-09-1 LMB	CFR-09	Largemouth bass	*Micropterus salmoides*	160	226	7/30/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU15	CFR-09-2 BC	CFR-09	Blue catfish	*Ictalurus furcatus*	2903	663	7/31/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU16	CFR Bladen-01-Bluegill	Bladen Bluffs	Bluegill	*Lepomis macrochirus*	76	158	9/26/2019	ng/kg	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	**1,000 J**	<1,000	<1,000	<1,000 UJ
EU16	CFR Bladen-01-Channel catfish	Bladen Bluffs	Channel catfish	*Ictalurus punctatus*	86	234	9/27/2019	ng/kg	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU16	CFR Bladen-01-LMB	Bladen Bluffs	Largemouth bass	*Micropterus salmoides*	78	191	9/27/2019	ng/kg	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU16	CFR Bladen-02-LMB	Bladen Bluffs	Largemouth bass	*Micropterus salmoides*	575	356	9/27/2019	ng/kg	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU16	CFR Bladen-02-Redbreast	Bladen Bluffs	Redbreast sunfish	*Lepomis auritus*	109	196	9/27/2019	ng/kg	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU16	CFR Bladen-03-LMB	Bladen Bluffs	Largemouth bass	*Micropterus salmoides*	835	384	9/27/2019	ng/kg	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU16	CFR Bladen-03-Redbreast	Bladen Bluffs	Redbreast sunfish	*Lepomis auritus*	138	206	9/27/2019	ng/kg	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU16	CFR Bladen-04-LMB	Bladen Bluffs	Largemouth bass	*Micropterus salmoides*	1397	442	9/27/2019	ng/kg	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU16	CFR Bladen-04-Redbreast	Bladen Bluffs	Redbreast sunfish	*Lepomis auritus*	145	218	9/27/2019	ng/kg	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EU18	DERC-1 LMB	Pond 1	Largemouth bass	*Micropterus salmoides*	816	343	7/30/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU18	DERC-2 LMB	Pond 1	Largemouth bass	*Micropterus salmoides*	1270	406	7/30/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
EU18	DERC-3 LMB	Pond 1	Largemouth bass	*Micropterus salmoides*	998	394	7/30/2019	ng/kg	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ

Notes

[1] Exposure Units are defined as follows:
- EU13 - Upstream Cape Fear River
- EU14 - Site-Adjacent Cape Fear River
- EU15 - 4 Miles Downstream, Cape Fear River
- EU16 - 8 Miles Downstream, Cape Fear River (Bladen Bluffs)
- EU18 - Onsite Pond 1

[2] Sample IDs use the following abbreviations to indicate fish species. Only fillet samples were evaluated in the human health SLEA.
- LMB - Largemouth Bass
- BC - Blue Catfish
- CC - Channel Catfish
- FH - Flathead Catfish
- Redbreast - Redbreasted Sunfish

[3] Field staff mistakenly labeled samples collected from CFR-06 as location CFR-05. Coordinates confirmed CFR-06 was correct.
[4] Field staff mistakenly labeled samples collected from CFR-07 as location CFR-06. Coordinates confirmed CFR-07 was correct.

Definitions:
Bold - Analyte detected above associated reporting limit
< - Analyte not detected above associated reporting limit
-- - No data reported
J - Analyte detected. Reported value may not be accurate or precise
UJ – Analyte not detected. Reporting limit may not be accurate or precise.
ng/kg - nanogram(s) per kilogram
mm - millimeters

APPENDIX C

ProUCL Output

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.112/6/2019 11:41:28 AM
User Selected Options	
From File	WorkSheet.xls
Full Precision	OFF

From File: WorkSheet.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
DW_EU1_HFPO-DA	24	0	22	2	8.33%	1.76	1.76	664.3	673003	820.4	1.235
DW_EU1_PEPA	6	0	4	2	33.33%	20	20	333.3	73389	270.9	0.813
DW_EU1_PFECA-G	6	0	0	6	100.00%	1.1	2	N/A	N/A	N/A	N/A
DW_EU1_PFESA-BP1	6	0	0	6	100.00%	1.1	2	N/A	N/A	N/A	N/A
DW_EU1_PFESA-BP2	6	0	4	2	33.33%	2	2	24.33	702.9	26.51	1.09
DW_EU1_PFMOAA	6	0	4	2	33.33%	5	5	261.7	71039	266.5	1.019
DW_EU1_PFO2HxA	6	0	4	2	33.33%	2	2	1102	2295846	1515	1.375
DW_EU1_PFO3OA	6	0	4	2	33.33%	2	2	133.3	41078	202.7	1.52
DW_EU1_PFO4DA	6	0	4	2	33.33%	2	2	32	1682	41.02	1.282
DW_EU1_PFO5DA	6	0	3	3	50.00%	2	2	8.167	41.47	6.44	0.789
DW_EU1_PMPA	6	0	5	1	16.67%	10	10	1112	681481	825.5	0.743
DW_EU2_HFPO-DA	3	0	2	1	33.33%	2.01	2.01	660.7	246316	496.3	0.751
DW_EU2_PEPA	1	0	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU2_PFECA-G	1	0	0	1	100.00%	2	2	N/A	N/A	N/A	N/A
DW_EU2_PFESA-BP1	1	0	0	1	100.00%	2	2	N/A	N/A	N/A	N/A
DW_EU2_PFESA-BP2	1	0	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU2_PFMOAA	1	0	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU2_PFO2HxA	1	0	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU2_PFO3OA	1	0	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU2_PFO4DA	1	0	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU2_PFO5DA	1	0	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU2_PMPA	1	0	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU3_HFPO-DA	12	0	12	0	0.00%	N/A	N/A	421.1	89933	299.9	0.712
DW_EU3_PEPA	3	0	3	0	0.00%	N/A	N/A	271.7	71308	267	0.983
DW_EU3_PFECA-G	3	0	0	3	100.00%	2	50	N/A	N/A	N/A	N/A
DW_EU3_PFESA-BP1	3	0	0	3	100.00%	2	50	N/A	N/A	N/A	N/A
DW_EU3_PFESA-BP2	3	0	2	1	33.33%	50	50	19	64	8	0.421
DW_EU3_PFMOAA	3	0	3	0	0.00%	N/A	N/A	113.7	14752	121.5	1.069
DW_EU3_PFO2HxA	3	0	3	0	0.00%	N/A	N/A	313.3	187033	432.5	1.38
DW_EU3_PFO3OA	3	0	1	2	66.67%	2	50	54.67	5548	74.48	1.362
DW_EU3_PFO4DA	3	0	1	2	66.67%	2	50	21.5	380.3	19.5	0.907
DW_EU3_PFO5DA	3	0	0	3	100.00%	2	100	N/A	N/A	N/A	N/A
DW_EU3_PMPA	3	0	3	0	0.00%	N/A	N/A	1010	561100	749.1	0.742
DW_EU4_HFPO-DA	45	0	33	12	26.67%	1.75	10	138.9	47266	217.4	1.565
DW_EU4_PEPA	25	0	10	15	60.00%	20	20	84.24	9903	99.52	1.181
DW_EU4_PFECA-G	25	0	0	25	100.00%	1.1	50	N/A	N/A	N/A	N/A
DW_EU4_PFESA-BP1	25	0	0	25	100.00%	1.1	50	N/A	N/A	N/A	N/A
DW_EU4_PFESA-BP2	25	0	8	17	68.00%	2	50	8.291	129.5	11.38	1.373
DW_EU4_PFMOAA	25	0	12	13	52.00%	5	5	50.8	4585	67.71	1.333
DW_EU4_PFO2HxA	25	0	14	11	44.00%	2	2	130.4	39084	197.7	1.516
DW_EU4_PFO3OA	25	0	9	16	64.00%	2	50	12.48	391.4	19.78	1.586
DW_EU4_PFO4DA	25	0	7	18	72.00%	2	50	3.27	8.542	2.923	0.894
DW_EU4_PFO5DA	25	0	0	25	100.00%	1.1	100	N/A	N/A	N/A	N/A
DW_EU4_PMPA	25	0	16	9	36.00%	10	10	274.2	153135	391.3	1.427

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
DW_EU1_HFPO-DA	22	0	1.81	4200	724.5	558	723538	850.6	429.9	3.46	1.174
DW_EU1_PEPA	4	0	370	820	490	385	48600	220.5	22.24	1.976	0.45
DW_EU1_PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU1_PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU1_PFESA-BP2	4	0	5	77	35.5	30	907	30.12	20.01	1.041	0.848
DW_EU1_PFMOAA	4	0	200	800	390	280	76200	276	66.72	1.881	0.708
DW_EU1_PFO2HxA	4	0	510	4400	1653	850	3380958	1839	266.9	1.953	1.113
DW_EU1_PFO3OA	4	0	44	580	199	86	64908	254.8	31.13	1.963	1.28
DW_EU1_PFO4DA	4	0	11	120	47	28.5	2465	49.65	17.79	1.771	1.056
DW_EU1_PFO5DA	3	0	12	18	14.33	13	10.33	3.215	1.483	1.545	0.224
DW_EU1_PMPA	5	0	60	2300	1332	1400	658120	811.2	296.5	-0.883	0.609
DW_EU2_HFPO-DA	2	0	780	1200	990	990	88200	297	311.3	N/A	0.3
DW_EU2_PEPA	1	0	780	780	780	780	N/A	N/A	0	N/A	N/A
DW_EU2_PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU2_PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU2_PFESA-BP2	1	0	130	130	130	130	N/A	N/A	0	N/A	N/A
DW_EU2_PFMOAA	1	0	410	410	410	410	N/A	N/A	0	N/A	N/A
DW_EU2_PFO2HxA	1	0	1300	1300	1300	1300	N/A	N/A	0	N/A	N/A
DW_EU2_PFO3OA	1	0	160	160	160	160	N/A	N/A	0	N/A	N/A
DW_EU2_PFO4DA	1	0	60	60	60	60	N/A	N/A	0	N/A	N/A
DW_EU2_PFO5DA	1	0	16	16	16	16	N/A	N/A	0	N/A	N/A
DW_EU2_PMPA	1	0	3100	3100	3100	3100	N/A	N/A	0	N/A	N/A
DW_EU3_HFPO-DA	12	0	62	1200	421.1	395	89933	299.9	215	1.617	0.712
DW_EU3_PEPA	3	0	55	570	271.7	190	71308	267	200.1	1.248	0.983
DW_EU3_PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU3_PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU3_PFESA-BP2	2	0	11	27	19	19	128	11.31	11.86	N/A	0.595
DW_EU3_PFMOAA	3	0	17	250	113.7	74	14752	121.5	84.51	1.313	1.069
DW_EU3_PFO2HxA	3	0	20	810	313.3	110	187033	432.5	133.4	1.648	1.38
DW_EU3_PFO3OA	1	0	160	160	160	160	N/A	N/A	0	N/A	N/A
DW_EU3_PFO4DA	1	0	41	41	41	41	N/A	N/A	0	N/A	N/A
DW_EU3_PFO5DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU3_PMPA	3	0	310	1800	1010	920	561100	749.1	904.4	0.533	0.742
DW_EU4_HFPO-DA	33	0	0.684	1100	189.2	78.2	56706	238.1	103.5	2.124	1.259
DW_EU4_PEPA	10	0	86	400	180.6	140	10315	101.6	51.89	1.432	0.562
DW_EU4_PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU4_PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU4_PFESA-BP2	8	0	5.6	44	20.09	17.5	181.7	13.48	12.53	0.763	0.671
DW_EU4_PFMOAA	12	0	6.7	270	100.4	92	5256	72.5	57.82	1	0.722
DW_EU4_PFO2HxA	14	0	2.1	730	231.3	195	50248	224.2	226.8	1.003	0.969
DW_EU4_PFO3OA	9	0	7.8	88	30.29	21	639	25.28	19.57	1.702	0.835
DW_EU4_PFO4DA	7	0	1.8	12	6.629	4.9	13.82	3.718	4.596	0.284	0.561
DW_EU4_PFO5DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU4_PMPA	16	0	15	1600	422.9	425	189766	435.6	530	1.393	1.03

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
DW_EU1_HFPO-DA	24	0	9.217	166.7	260	526.5	852.5	934	1000	1170	3510
DW_EU1_PEPA	6	0	20	20	107.5	370	392.5	400	610	715	799
DW_EU1_PFECA-G	6	0	1.55	2	2	2	2	2	2	2	2
DW_EU1_PFESA-BP1	6	0	1.55	2	2	2	2	2	2	2	2
DW_EU1_PFESA-BP2	6	0	2	2	2.75	16.5	31	32	54.5	65.75	74.75
DW_EU1_PFMOAA	6	0	5	5	53.75	235	285	290	545	672.5	774.5
DW_EU1_PFO2HxA	6	0	2	2	129	670	860	870	2635	3518	4224
DW_EU1_PFO3OA	6	0	2	2	12.5	65	86	86	333	456.5	555.3
DW_EU1_PFO4DA	6	0	2	2	4.25	16.5	31.75	35	77.5	98.75	115.8
DW_EU1_PFO5DA	6	0	2	2	2	7	12.75	13	15.5	16.75	17.75
DW_EU1_PMPA	6	0	35	60	370	1350	1550	1600	1950	2125	2265
DW_EU2_HFPO-DA	3	0	157.6	313.2	391	780	990	1032	1116	1158	1192
DW_EU2_PEPA	1	0	780	780	780	780	780	780	780	780	780
DW_EU2_PFECA-G	1	0	2	2	2	2	2	2	2	2	2
DW_EU2_PFESA-BP1	1	0	2	2	2	2	2	2	2	2	2
DW_EU2_PFESA-BP2	1	0	130	130	130	130	130	130	130	130	130
DW_EU2_PFMOAA	1	0	410	410	410	410	410	410	410	410	410
DW_EU2_PFO2HxA	1	0	1300	1300	1300	1300	1300	1300	1300	1300	1300
DW_EU2_PFO3OA	1	0	160	160	160	160	160	160	160	160	160
DW_EU2_PFO4DA	1	0	60	60	60	60	60	60	60	60	60
DW_EU2_PFO5DA	1	0	16	16	16	16	16	16	16	16	16
DW_EU2_PMPA	1	0	3100	3100	3100	3100	3100	3100	3100	3100	3100
DW_EU3_HFPO-DA	12	0	143.6	188.8	224	395	472.3	514.6	656	908.5	1142
DW_EU3_PEPA	3	0	82	109	122.5	190	380	418	494	532	562.4
DW_EU3_PFECA-G	3	0	2	2	2	2	26	30.8	40.4	45.2	49.04
DW_EU3_PFESA-BP1	3	0	2	2	2	2	26	30.8	40.4	45.2	49.04
DW_EU3_PFESA-BP2	3	0	14.2	17.4	19	27	38.5	40.8	45.4	47.7	49.54
DW_EU3_PFMOAA	3	0	28.4	39.8	45.5	74	162	179.6	214.8	232.4	246.5
DW_EU3_PFO2HxA	3	0	38	56	65	110	460	530	670	740	796
DW_EU3_PFO3OA	3	0	11.6	21.2	26	50	105	116	138	149	157.8
DW_EU3_PFO4DA	3	0	9.8	17.6	21.5	41	45.5	46.4	48.2	49.1	49.82
DW_EU3_PFO5DA	3	0	2	2	2	2	51	60.8	80.4	90.2	98.04
DW_EU3_PMPA	3	0	432	554	615	920	1360	1448	1624	1712	1782
DW_EU4_HFPO-DA	45	0	4	4	4	30	170	290	404	456	910.8
DW_EU4_PEPA	25	0	20	20	20	20	130	140	200	292	378.4
DW_EU4_PFECA-G	25	0	2	2	2	2	2	2	2	40.4	50
DW_EU4_PFESA-BP1	25	0	2	2	2	2	2	2	2	40.4	50
DW_EU4_PFESA-BP2	25	0	2	2	2	2	13	22.6	39.6	48.8	50
DW_EU4_PFMOAA	25	0	5	5	5	5	88	96.8	136	164	246
DW_EU4_PFO2HxA	25	0	2	2	2	4.4	210	232	410	542	689.2
DW_EU4_PFO3OA	25	0	2	2	2	2	20	21.8	44	49.6	78.88
DW_EU4_PFO4DA	25	0	2	2	2	2	4.8	5.72	11.2	42.4	50
DW_EU4_PFO5DA	25	0	2	2	2	2	2	2	2	80.4	100
DW_EU4_PMPA	25	0	10	10	10	33	460	462	728	952	1456

	General Statistics on Uncensored Data
Date/Time of Computation	ProUCL 5.112/6/2019 11:46:29 AM
User Selected Options	
From File	WorkSheet.xls
Full Precision	OFF

From File: WorkSheet.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
DW_EU5_HFPO-DA	110	0	88	22	20.00%	0.647	5.4	311.3	269527	519.2	1.668
DW_EU5_PEPA	67	0	27	40	59.70%	2	10000	155	121090	348	2.245
DW_EU5_PFECA-G	67	0	0	67	100.00%	1.1	9600	N/A	N/A	N/A	N/A
DW_EU5_PFESA-BP1	67	0	0	67	100.00%	1.1	12000	N/A	N/A	N/A	N/A
DW_EU5_PFESA-BP2	67	0	23	44	65.67%	1.1	9500	13.95	419.5	20.48	1.468
DW_EU5_PFMOAA	67	0	28	39	58.21%	1.29	9500	71.81	11782	108.5	1.512
DW_EU5_PFO2HxA	67	0	35	32	47.76%	1.1	9200	252.5	228864	478.4	1.895
DW_EU5_PFO3OA	67	0	24	43	64.18%	1.1	8800	24.14	1870	43.24	1.791
DW_EU5_PFO4DA	67	0	19	48	71.64%	1.1	9700	6.117	113.4	10.65	1.741
DW_EU5_PFO5DA	67	0	6	61	91.04%	1.1	11000	1.5	2.002	1.415	0.943
DW_EU5_PMPA	67	0	39	28	41.79%	5.3	8400	614.8	1772942	1332	2.166
DW_EU6_HFPO-DA	30	0	21	9	30.00%	4	4	108.2	19166	138.4	1.279
DW_EU6_PEPA	16	0	4	12	75.00%	20	100	70.83	13036	114.2	1.612
DW_EU6_PFECA-G	16	0	0	16	100.00%	2	50	N/A	N/A	N/A	N/A
DW_EU6_PFESA-BP1	16	0	0	16	100.00%	2	50	N/A	N/A	N/A	N/A
DW_EU6_PFESA-BP2	16	0	4	12	75.00%	2	50	13.5	501.6	22.4	1.659
DW_EU6_PFMOAA	16	0	4	12	75.00%	5	50	32.58	3072	55.42	1.701
DW_EU6_PFO2HxA	16	0	6	10	62.50%	2	2	77.59	21632	147.1	1.895
DW_EU6_PFO3OA	16	0	4	12	75.00%	2	50	7.927	163.1	12.77	1.611
DW_EU6_PFO4DA	16	0	4	12	75.00%	2	50	3.387	10.34	3.215	0.949
DW_EU6_PFO5DA	16	0	1	15	93.75%	2	100	2.033	0.0156	0.125	0.0613
DW_EU6_PMPA	16	0	7	9	56.25%	10	10	226.6	168933	411	1.814
DW_EU7_HFPO-DA	92	0	82	10	10.87%	4	4	195.7	200610	447.9	2.289
DW_EU7_PEPA	47	0	24	23	48.94%	20	10000	106.2	22839	151.1	1.423
DW_EU7_PFECA-G	47	0	0	47	100.00%	1.1	9600	N/A	N/A	N/A	N/A
DW_EU7_PFESA-BP1	47	0	0	47	100.00%	1.1	12000	N/A	N/A	N/A	N/A
DW_EU7_PFESA-BP2	47	0	24	23	48.94%	2	9500	15.59	345.9	18.6	1.193
DW_EU7_PFMOAA	47	0	27	20	42.55%	5	9500	46.81	5788	76.08	1.625
DW_EU7_PFO2HxA	47	0	29	18	38.30%	2	9200	102.5	39875	199.7	1.949
DW_EU7_PFO3OA	47	0	17	30	63.83%	2	8800	10.4	561.3	23.69	2.278
DW_EU7_PFO4DA	47	0	11	36	76.60%	1.1	9700	3.821	100.5	10.02	2.623
DW_EU7_PFO5DA	47	0	0	47	100.00%	1.1	11000	N/A	N/A	N/A	N/A
DW_EU7_PMPA	47	0	38	9	19.15%	10	8400	449.6	258886	508.8	1.132
DW_EU8_HFPO-DA	357	0	309	48	13.45%	0.567	4.3	63.11	15588	124.9	1.978
DW_EU8_PEPA	208	0	53	155	74.52%	11	10000	25.12	2279	47.73	1.9
DW_EU8_PFECA-G	208	0	0	208	100.00%	1.1	9600	N/A	N/A	N/A	N/A
DW_EU8_PFESA-BP1	214	0	1	213	99.53%	1.1	12000	1.112	0.0047	0.0686	0.0617
DW_EU8_PFESA-BP2	214	0	122	92	42.99%	1.1	9500	7.008	83.06	9.114	1.3
DW_EU8_PFMOAA	214	0	144	70	32.71%	1.13	9500	22.86	1185	34.43	1.506
DW_EU8_PFO2HxA	214	0	150	64	29.91%	1.1	9200	43.15	6144	78.39	1.817
DW_EU8_PFO3OA	214	0	79	135	63.08%	1.1	8800	3.88	59.3	7.7	1.985
DW_EU8_PFO4DA	214	0	25	189	88.32%	1.1	9700	1.525	2.459	1.568	1.028
DW_EU8_PFO5DA	208	0	0	208	100.00%	1.1	11000	N/A	N/A	N/A	N/A
DW_EU8_PMPA	208	0	166	42	20.19%	5.3	8400	124.2	37952	194.8	1.569

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
DW_EU5_HFPO-DA	88	0	1.85	3400	388.6	150.5	310506	557.2	204.6	2.914	1.434
DW_EU5_PEPA	27	0	80	2400	371.4	240	223484	472.7	88.95	3.473	1.273
DW_EU5_PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU5_PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU5_PFESA-BP2	23	0	1.5	70	35.44	34	440.6	20.99	25.2	0.28	0.592
DW_EU5_PFMOAA	28	0	16	460	164.8	145	12610	112.3	61.53	1.361	0.681
DW_EU5_PFO2HxA	35	0	2.3	2500	475	330	335754	579.4	372.1	2.406	1.22
DW_EU5_PFO3OA	24	0	1.8	170	62.13	42.5	2864	53.52	46.7	0.755	0.861
DW_EU5_PFO4DA	19	0	1.8	55	16.71	11	211.4	14.54	13.19	1.142	0.87
DW_EU5_PFO5DA	6	0	2.4	9.8	4.967	4.5	7.139	2.672	2.076	1.363	0.538
DW_EU5_PMPA	39	0	11	9300	1040	610	2659311	1631	726.5	3.815	1.568
DW_EU6_HFPO-DA	21	0	9.2	420	152.9	94	21764	147.5	106.7	0.746	0.965
DW_EU6_PEPA	4	0	23	430	223.3	220	28222	168	168.3	0.111	0.752
DW_EU6_PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU6_PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU6_PFESA-BP2	4	0	14	72	47	51	636	25.22	22.24	-0.758	0.537
DW_EU6_PFMOAA	4	0	20	170	115	135	4300	65.57	29.65	-1.589	0.57
DW_EU6_PFO2HxA	6	0	2.5	500	203.6	161	38744	196.8	202	0.591	0.967
DW_EU6_PFO3OA	4	0	8	41	24.23	23.95	332.6	18.24	22.98	0.0083	0.753
DW_EU6_PFO4DA	4	0	2.1	12	7.2	7.35	25.25	5.025	6.153	-0.0529	0.698
DW_EU6_PFO5DA	1	0	2.5	2.5	2.5	2.5	N/A	N/A	0	N/A	N/A
DW_EU6_PMPA	7	0	20	1500	505.1	380	289598	538.1	524.8	1.112	1.065
DW_EU7_HFPO-DA	82	0	5.2	4000	219.1	91	222764	472	117.1	6.631	2.154
DW_EU7_PEPA	24	0	20	770	176.8	125	32208	179.5	118.6	1.987	1.015
DW_EU7_PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU7_PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU7_PFESA-BP2	24	0	3.7	65	24.96	20	423.9	20.59	16.98	0.945	0.825
DW_EU7_PFMOAA	27	0	7.1	480	72.08	51	8047	89.71	41.51	3.862	1.245
DW_EU7_PFO2HxA	29	0	4.1	1200	154.1	85	54557	233.6	97.85	3.558	1.516
DW_EU7_PFO3OA	17	0	2	130	22.05	7.6	1273	35.68	5.041	2.437	1.618
DW_EU7_PFO4DA	11	0	1.71	67	10.39	3.3	371.6	19.28	1.927	3.038	1.855
DW_EU7_PFO5DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU7_PMPA	38	0	12	2500	519	325	271585	521.1	421.1	1.849	1.004
DW_EU8_HFPO-DA	309	0	0.92	1300	72.67	32	17387	131.9	31.13	4.857	1.815
DW_EU8_PEPA	53	0	6.5	380	70.86	39	6130	78.29	26.69	2.157	1.105
DW_EU8_PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU8_PFESA-BP1	1	0	1.5	1.5	1.5	1.5	N/A	N/A	0	N/A	N/A
DW_EU8_PFESA-BP2	122	0	1.1	63	11.17	8.2	101.1	10.06	5.634	2.443	0.9
DW_EU8_PFMOAA	144	0	4.6	260	32.74	21	1451	38.1	17.15	3.344	1.163
DW_EU8_PFO2HxA	150	0	2	560	60.66	31.5	7736	87.96	34.32	3.053	1.45
DW_EU8_PFO3OA	79	0	1.4	69	8.335	4.6	127.8	11.3	2.965	3.932	1.356
DW_EU8_PFO4DA	25	0	1.1	17	4.169	3.3	12.72	3.567	2.224	2.351	0.855
DW_EU8_PFO5DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU8_PMPA	166	0	11	1600	153.5	93	43233	207.9	66.72	4.044	1.354

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
DW_EU5_HFPO-DA	110	0	4	4	7.05	90.5	472.5	574	772	1200	2437
DW_EU5_PEPA	67	0	20	20	20	20	225	248	334	994	4984
DW_EU5_PFECA-G	67	0	1.1	2	2	2	2	2	50	50	3898
DW_EU5_PFESA-BP1	67	0	1.1	2	2	2	2	2	50	50	4872
DW_EU5_PFESA-BP2	67	0	2	2	2	2	38	50	58.2	66.7	3857
DW_EU5_PFMOAA	67	0	5	5	5	5	140	158	234	429	3857
DW_EU5_PFO2HxA	67	0	2	2	2	9.9	335	462	770	1113	4778
DW_EU5_PFO3OA	67	0	2	2	2	2	50	50	112	157	3573
DW_EU5_PFO4DA	67	0	2	2	2	2	12	26.6	50	50	3938
DW_EU5_PFO5DA	67	0	1.64	2	2	2	2	2.8	100	100	4466
DW_EU5_PMPA	67	0	10	10	10	50	735	828	1420	3290	8706
DW_EU6_HFPO-DA	30	0	4	4	4	34	144.8	254	361	386.5	414.2
DW_EU6_PEPA	16	0	20	20	20	20	42.25	100	220	295	403
DW_EU6_PFECA-G	16	0	2	2	2	2	2	2	2	14	42.8
DW_EU6_PFESA-BP1	16	0	2	2	2	2	2	2	2	14	42.8
DW_EU6_PFESA-BP2	16	0	2	2	2	2	21	42	55	63	70.2
DW_EU6_PFMOAA	16	0	5	5	5	5	27.5	50	135	147.5	165.5
DW_EU6_PFO2HxA	16	0	2	2	2	2	53.25	72	300	387.5	477.5
DW_EU6_PFO3OA	16	0	2	2	2	2	8.225	8.9	40	43.25	48.65
DW_EU6_PFO4DA	16	0	2	2	2	2	2.5	3.7	11.5	21.5	44.3
DW_EU6_PFO5DA	16	0	2	2	2	2	2	2	2.25	26.88	85.38
DW_EU6_PMPA	16	0	10	10	10	10	192.5	380	740	997.5	1400
DW_EU7_HFPO-DA	92	0	4.12	12	16	60.5	250	260	399	634.5	1361
DW_EU7_PEPA	47	0	20	20	20	55	170	208	438	7231	10000
DW_EU7_PFECA-G	47	0	2	2	2	2	26	50	50	6735	9600
DW_EU7_PFESA-BP1	47	0	1.684	2	2	2	2	50	50	8415	12000
DW_EU7_PFESA-BP2	47	0	2	2	2	14	50	50	60.4	6669	9500
DW_EU7_PFMOAA	47	0	5	5	5	44	70.75	85.4	144	6794	9500
DW_EU7_PFO2HxA	47	0	2	2	2	50	120	186	410	6800	9200
DW_EU7_PFO3OA	47	0	2	2	2	6	50	50	67.2	6199	8800
DW_EU7_PFO4DA	47	0	2	2	2	2	33.5	50	50	6810	9700
DW_EU7_PFO5DA	47	0	2	2	2	2	51	100	100	7730	11000
DW_EU7_PMPA	47	0	10	33.6	42.5	320	755	872	1400	6630	8400
DW_EU8_HFPO-DA	357	0	4	5.4	8.2	24	59	73.4	155.2	274	578.8
DW_EU8_PEPA	208	0	20	20	20	20	20	25.6	60.2	116.5	279.3
DW_EU8_PFECA-G	208	0	1.1	2	2	2	2	2	2	2	50
DW_EU8_PFESA-BP1	214	0	1.1	2	2	2	2	2	2	2	50
DW_EU8_PFESA-BP2	214	0	2	2	2	3.85	9.7	11.4	19.7	31.88	61.31
DW_EU8_PFMOAA	214	0	5	5	5	13.5	28.23	33	58.58	86.15	217.4
DW_EU8_PFO2HxA	214	0	2	2	2	16.5	48.75	58.8	120	200	438.7
DW_EU8_PFO3OA	214	0	2	2	2	2	3.4	5.14	12.7	21.05	68.61
DW_EU8_PFO4DA	214	0	1.265	2	2	2	2	2	3.1	5.91	50
DW_EU8_PFO5DA	208	0	1.1	2	2	2	2	2	2	2	100
DW_EU8_PMPA	208	0	10	11.8	24.5	76	130	160	252	495.5	1272

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.112/6/2019 11:52:51 AM
User Selected Options	
From File	WorkSheet.xls
Full Precision	OFF

From File: WorkSheet.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
DW_EU9_HFPO-DA	287	0	236	51	17.77%	0.591	4	53.91	6274	79.21	1.469
DW_EU9_PEPA	167	0	63	104	62.28%	11	10000	38.48	3251	57.01	1.482
DW_EU9_PFECA-G	168	0	2	166	98.81%	1.1	9600	1.116	0.0212	0.146	0.131
DW_EU9_PFESA-BP1	179	0	0	179	100.00%	1.1	12000	N/A	N/A	N/A	N/A
DW_EU9_PFESA-BP2	179	0	86	93	51.96%	1.1	9500	6.159	50.36	7.096	1.152
DW_EU9_PFMOAA	179	0	100	79	44.13%	1.14	9500	22.83	1089	33	1.446
DW_EU9_PFO2HxA	179	0	109	70	39.11%	1.1	9200	41.75	5192	72.06	1.726
DW_EU9_PFO3OA	179	0	63	116	64.80%	1.1	8800	4.188	54.32	7.37	1.76
DW_EU9_PFO4DA	179	0	20	159	88.83%	1.1	9700	1.448	2.034	1.426	0.985
DW_EU9_PFO5DA	168	0	3	165	98.21%	1.1	11000	1.222	0.798	0.893	0.731
DW_EU9_PMPA	167	0	127	40	23.95%	5.3	8400	169.1	66300	257.5	1.523
DW_EU10_HFPO-DA	35	0	27	8	22.86%	2.6	4	13.83	331.3	18.2	1.316
DW_EU10_PEPA	23	0	6	17	73.91%	11	100	17.79	133.2	11.54	0.649
DW_EU10_PFECA-G	24	0	0	24	100.00%	1.1	50	N/A	N/A	N/A	N/A
DW_EU10_PFESA-BP1	27	0	0	27	100.00%	1.1	50	N/A	N/A	N/A	N/A
DW_EU10_PFESA-BP2	27	0	11	16	59.26%	1.1	50	8.551	112.5	10.61	1.24
DW_EU10_PFMOAA	27	0	12	15	55.56%	1.17	50	13.57	348.3	18.66	1.375
DW_EU10_PFO2HxA	27	0	14	13	48.15%	1.1	50	25.39	2630	51.28	2.02
DW_EU10_PFO3OA	27	0	4	23	85.19%	1.1	50	2.605	14.15	3.762	1.444
DW_EU10_PFO4DA	27	0	2	25	92.59%	1.1	50	1.254	0.273	0.523	0.417
DW_EU10_PFO5DA	24	0	0	24	100.00%	1.1	100	N/A	N/A	N/A	N/A
DW_EU10_PMPA	23	0	16	7	30.43%	10	10	111.9	17797	133.4	1.192
DW_EU11_HFPO-DA	126	0	111	15	11.90%	2.6	4	37.3	4510	67.15	1.8
DW_EU11_PEPA	63	0	25	38	60.32%	11	100	25.14	881.5	29.69	1.181
DW_EU11_PFECA-G	63	0	0	63	100.00%	1.1	50	N/A	N/A	N/A	N/A
DW_EU11_PFESA-BP1	65	0	0	65	100.00%	1.1	50	N/A	N/A	N/A	N/A
DW_EU11_PFESA-BP2	65	0	42	23	35.38%	1.1	50	11.37	415.9	20.39	1.794
DW_EU11_PFMOAA	65	0	41	24	36.92%	2.6	50	25.97	7110	84.32	3.247
DW_EU11_PFO2HxA	65	0	42	23	35.38%	1.1	50	32.68	7056	84	2.57
DW_EU11_PFO3OA	65	0	14	51	78.46%	1.1	50	3.701	137.9	11.74	3.173
DW_EU11_PFO4DA	65	0	8	57	87.69%	1.1	50	1.716	9.897	3.146	1.833
DW_EU11_PFO5DA	63	0	0	63	100.00%	1.1	100	N/A	N/A	N/A	N/A
DW_EU11_PMPA	63	0	50	13	20.63%	10	50	127.7	19925	141.2	1.105
DW_EU12_HFPO-DA	384	0	254	130	33.85%	0.575	4	15.54	1015	31.87	2.05
DW_EU12_PEPA	315	0	46	269	85.40%	11	100	15.69	155.9	12.48	0.796
DW_EU12_PFECA-G	322	0	3	319	99.07%	1.1	50	1.11	0.0113	0.106	0.0959
DW_EU12_PFESA-BP1	357	0	0	357	100.00%	1.1	50	N/A	N/A	N/A	N/A
DW_EU12_PFESA-BP2	357	0	138	219	61.34%	1.1	50	2.346	4.734	2.176	0.928
DW_EU12_PFMOAA	357	0	205	152	42.58%	1.15	50	11.26	217.5	14.75	1.31
DW_EU12_PFO2HxA	357	0	231	126	35.29%	1.1	50	15.11	797.2	28.23	1.869
DW_EU12_PFO3OA	357	0	57	300	84.03%	1.1	50	1.977	18.71	4.325	2.188
DW_EU12_PFO4DA	357	0	16	341	95.52%	1.1	50	1.211	0.315	0.561	0.463
DW_EU12_PFO5DA	322	0	4	318	98.76%	1.1	100	1.183	0.576	0.759	0.642
DW_EU12_PMPA	315	0	255	60	19.05%	5.3	50	89.19	7368	85.84	0.962

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
DW_EU9_HFPO-DA	236	0	1.71	610	65.31	35.5	6928	83.23	35.58	3.111	1.274
DW_EU9_PEPA	63	0	12	460	80.65	55	5686	75.4	35.58	2.688	0.935
DW_EU9_PFECA-G	2	0	2.3	2.5	2.4	2.4	0.02	0.141	0.148	N/A	0.0589
DW_EU9_PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU9_PFESA-BP2	86	0	2.3	32	11.04	8.8	51.01	7.142	5.041	1.209	0.647
DW_EU9_PFMOAA	100	0	3.2	190	38.93	27	1333	36.51	17.05	2.37	0.938
DW_EU9_PFO2HxA	109	0	2	530	67.03	44	6841	82.71	42.99	2.891	1.234
DW_EU9_PFO3OA	63	0	1.44	59	9.344	5.9	107.3	10.36	4.744	2.779	1.109
DW_EU9_PFO4DA	20	0	1.1	15	3.937	2.9	10.66	3.265	1.334	2.446	0.829
DW_EU9_PFO5DA	3	0	6	8.9	7.533	7.7	2.123	1.457	1.779	-0.508	0.193
DW_EU9_PMPA	127	0	10	2300	219.3	120	76533	276.6	131.9	4.042	1.262
DW_EU10_HFPO-DA	27	0	0.866	76.4	17.47	9.9	385.7	19.64	12.02	1.597	1.124
DW_EU10_PEPA	6	0	20	49	32.5	33.5	126.7	11.26	12.6	0.275	0.346
DW_EU10_PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU10_PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU10_PFESA-BP2	11	0	2.37	35	16.68	18	119.5	10.93	17.2	0.286	0.655
DW_EU10_PFMOAA	12	0	5.5	65	26.97	20.5	443.2	21.05	20.22	0.836	0.781
DW_EU10_PFO2HxA	14	0	3	230	47.18	14.5	4384	66.21	16.75	1.956	1.403
DW_EU10_PFO3OA	4	0	4.1	15	9.753	9.955	26.04	5.103	5.997	-0.125	0.523
DW_EU10_PFO4DA	2	0	2.34	3.4	2.87	2.87	0.562	0.75	0.786	N/A	0.261
DW_EU10_PFO5DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU10_PMPA	16	0	5.8	580	158.3	155	19739	140.5	120.1	1.763	0.888
DW_EU11_HFPO-DA	111	0	0.723	528	42.11	20.8	4970	70.5	22.68	4.496	1.674
DW_EU11_PEPA	25	0	11	200	42.16	27	1755	41.9	22.24	2.613	0.994
DW_EU11_PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU11_PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU11_PFESA-BP2	42	0	2.2	140	16.31	8.65	576.7	24.02	5.708	3.98	1.472
DW_EU11_PFMOAA	41	0	5	685	38.73	15	11082	105.3	11.86	6.072	2.718
DW_EU11_PFO2HxA	42	0	2.4	646	49.31	21.5	10370	101.8	22.61	5.226	2.065
DW_EU11_PFO3OA	14	0	2	92.8	12.83	4.7	570.3	23.88	2.965	3.34	1.862
DW_EU11_PFO4DA	8	0	1.7	25.7	5.399	2.4	68.1	8.252	0.675	2.764	1.529
DW_EU11_PFO5DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU11_PMPA	50	0	5.5	570	159.4	110	20661	143.7	69.68	1.586	0.902
DW_EU12_HFPO-DA	254	0	0.749	270	23.03	12	1375	37.08	10.38	4.112	1.61
DW_EU12_PEPA	46	0	15	130	39.22	34	397.6	19.94	14.83	2.306	0.508
DW_EU12_PFECA-G	3	0	2.1	2.3	2.2	2.2	0.01	0.1	0.148	-1.98E-14	0.0455
DW_EU12_PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DW_EU12_PFESA-BP2	138	0	1.1	13	4.237	3.57	6.311	2.512	1.883	1.286	0.593
DW_EU12_PFMOAA	205	0	1.84	146	18.3	14	260.1	16.13	9.489	3.741	0.881
DW_EU12_PFO2HxA	231	0	1.27	290	22.63	12	1074	32.77	12.16	3.973	1.448
DW_EU12_PFO3OA	57	0	1.3	70	6.342	3.7	95.74	9.785	2.224	5.244	1.543
DW_EU12_PFO4DA	16	0	1.57	6.7	3.277	2.5	2.494	1.579	0.919	0.976	0.482
DW_EU12_PFO5DA	4	0	5	9.7	7.7	8.05	3.927	1.982	1.483	-0.972	0.257
DW_EU12_PMPA	255	0	7.9	580	108.7	94	7121	84.39	68.2	1.929	0.776

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
DW_EU9_HFPO-DA	287	0	4	4.4	8.78	24	65	79.8	150	194	364.2
DW_EU9_PEPA	167	0	20	20	20	20	53	57.8	100	180	473.6
DW_EU9_PFECA-G	168	0	1.1	2	2	2	2	2	2	50	191.9
DW_EU9_PFESA-BP1	179	0	1.1	1.276	2	2	2	2	2	50	166.6
DW_EU9_PFESA-BP2	179	0	2	2	2	3.4	9.85	13	21.4	50	142.4
DW_EU9_PFMOAA	179	0	5	5	5	15	34	40.4	59.6	80.48	251.6
DW_EU9_PFO2HxA	179	0	2	2	2	12	55	64.8	122	201	475.4
DW_EU9_PFO3OA	179	0	1.412	2	2	2	5.5	6.6	18.2	50	142.8
DW_EU9_PFO4DA	179	0	1.1	2	2	2	2	2	3.236	50	146.8
DW_EU9_PFO5DA	168	0	1.1	2	2	2	2	2	2	100	241.9
DW_EU9_PMPA	167	0	10	10	13.5	83	235	270	432	651	1402
DW_EU10_HFPO-DA	35	0	1.79	2.452	2.7	4.8	18	23.38	37.56	52.7	70.48
DW_EU10_PEPA	23	0	20	20	20	20	38	44.6	100	100	100
DW_EU10_PFECA-G	24	0	1.121	2	2	2	2	2	50	50	50
DW_EU10_PFESA-BP1	27	0	1.136	1.228	1.65	2	2	2	50	50	50
DW_EU10_PFESA-BP2	27	0	1.72	2	2	4.9	21.05	30.2	50	50	50
DW_EU10_PFMOAA	27	0	4.04	5	5	5.82	33.7	42.48	50	58.4	64.22
DW_EU10_PFO2HxA	27	0	1.72	2	2	4.4	30.25	46.5	86.6	120.4	204
DW_EU10_PFO3OA	27	0	1.248	2	2	2	5.505	11.78	50	50	50
DW_EU10_PFO4DA	27	0	1.166	2	2	2	2	2.272	50	50	50
DW_EU10_PFO5DA	24	0	1.121	2	2	2	2	2	100	100	100
DW_EU10_PMPA	23	0	10	10	10	42	185	208	228	248	507.4
DW_EU11_HFPO-DA	126	0	2.69	4	5.275	15.35	45.5	54	71.5	117.5	345
DW_EU11_PEPA	63	0	13.6	20	20	20	31	40.6	76.6	100	150.4
DW_EU11_PFECA-G	63	0	1.1	1.1	1.1	2	2	2	2	45.2	50
DW_EU11_PFESA-BP1	65	0	1.1	1.1	1.1	2	2	2	2	40.4	50
DW_EU11_PFESA-BP2	65	0	2	2	2	6.6	14	21.2	36.4	50	102.2
DW_EU11_PFMOAA	65	0	5	5	5	11	24	30.8	50	72.4	296.5
DW_EU11_PFO2HxA	65	0	2	2	2	13	40	50	67.8	93.4	367
DW_EU11_PFO3OA	65	0	1.1	2	2	2	2.6	3.8	9.86	50	65.41
DW_EU11_PFO4DA	65	0	1.1	1.1	1.89	2	2	2	3.34	45.14	50
DW_EU11_PFO5DA	63	0	1.1	1.1	1.1	2	2	2	2	90.2	100
DW_EU11_PMPA	63	0	10	15.6	38	84	140	190	326	424	563.8
DW_EU12_HFPO-DA	384	0	2.6	2.7	2.7	5.9	16	20	32.58	61.85	190.9
DW_EU12_PEPA	315	0	20	20	20	20	20	20	30	45.5	95.8
DW_EU12_PFECA-G	322	0	2	2	2	2	2	2	2	2	2.279
DW_EU12_PFESA-BP1	357	0	1.18	2	2	2	2	2	2	2	2
DW_EU12_PFESA-BP2	357	0	1.216	2	2	2	2.9	3.588	5.28	8.3	12.44
DW_EU12_PFMOAA	357	0	5	5	5	6.7	15	18.94	31.4	39	52.37
DW_EU12_PFO2HxA	357	0	2	2	2	5	15	21	44	61.4	124.4
DW_EU12_PFO3OA	357	0	1.2	2	2	2	2	2	2.916	5.74	34.32
DW_EU12_PFO4DA	357	0	1.18	2	2	2	2	2	2	2	6.028
DW_EU12_PFO5DA	322	0	2	2	2	2	2	2	2	2	9.427
DW_EU12_PMPA	315	0	10	12	18.5	72	130	140	190	243	348.6

	General Statistics on Uncensored Full Data
Date/Time of Computation	ProUCL 5.112/11/2019 12:48:28 PM
User Selected Options	
From File	WorkSheet.xls
Full Precision	OFF

From File: WorkSheet.xls

General Statistics for Uncensored Data Sets

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Geo-Mean	SD	SEM	MAD/0.675	Skewness	CV
SW_EU13_HFPO-DA	1	0	5	5	5	5	N/A	N/A	0	N/A	N/A
SW_EU13_PFO2HxA	1	0	2.8	2.8	2.8	2.8	N/A	N/A	0	N/A	N/A
SW_EU13_PMPA	2	0	12	21	16.5	15.87	6.364	4.5	6.672	N/A	0.386
SW_EU13_R-EVE	1	0	23	23	23	23	N/A	N/A	0	N/A	N/A
SW_EU13_Byproduct 4	5	0	4	20	9.1	7.696	6.4	2.862	4.744	1.728	0.703
SW_EU13_Byproduct 5	5	0	4.5	320	70.5	16.17	139.5	62.39	5.337	2.234	1.979
SW_EU13_NVHOS	5	0	2.8	8.2	6.66	6.235	2.188	0.979	0.445	-2.079	0.329
SW_EU14_HFPO-DA	26	0	2.1	160	23.37	12.99	31.92	6.259	12.08	3.381	1.365
SW_EU14_PFMOAA	6	0	8.8	71	26.45	19.57	24.08	9.832	10.6	1.634	0.91
SW_EU14_PFO2HxA	11	0	2.2	25	6.736	4.908	6.836	2.061	3.113	2.289	1.015
SW_EU14_PFO3OA	3	0	2	6.4	3.867	3.447	2.274	1.313	1.779	1.206	0.588
SW_EU14_PFO4DA	1	0	2.3	2.3	2.3	2.3	N/A	N/A	0	N/A	N/A
SW_EU14_PMPA	4	0	12	19	15.5	15.2	3.512	1.756	4.448	0	0.227
SW_EU14_R-EVE	8	0	2.7	4	3.225	3.189	0.523	0.185	0.593	0.41	0.162
SW_EU14_Byproduct 4	10	0	3.8	8.9	6.48	6.293	1.58	0.5	1.779	-0.233	0.244
SW_EU14_Byproduct 5	8	0	2.5	23	9.013	6.567	7.823	2.766	4.596	1.183	0.868
SW_EU14_NVHOS	11	0	4.1	7.4	6.391	6.326	0.871	0.263	0.593	-1.929	0.136
SW_EU16_HFPO-DA	17	0	8.6	580	133.6	64.34	175	42.43	38.55	1.768	1.309
SW_EU16_PEPA	1	0	50	50	50	50	N/A	N/A	0	N/A	N/A
SW_EU16_PFMOAA	3	0	56	180	122	109.4	62.39	36.02	74.13	-0.568	0.511
SW_EU16_PFO2HxA	2	0	40	64	52	50.6	16.97	12	17.79	N/A	0.326
SW_EU16_PFO3OA	2	0	9.9	16	12.95	12.59	4.313	3.05	4.522	N/A	0.333
SW_EU16_PFO4DA	2	0	3.5	6.4	4.95	4.733	2.051	1.45	2.15	N/A	0.414
SW_EU16_PMPA	2	0	31	55	43	41.29	16.97	12	17.79	N/A	0.395
SW_EU16_R-EVE	2	0	4	6.3	5.15	5.02	1.626	1.15	1.705	N/A	0.316
SW_EU16_PFO5DA	1	0	3.4	3.4	3.4	3.4	N/A	N/A	0	N/A	N/A
SW_EU16_Byproduct 4	2	0	9.6	19	14.3	13.51	6.647	4.7	6.968	N/A	0.465
SW_EU16_Byproduct 5	2	0	31	69	50	46.25	26.87	19	28.17	N/A	0.537
SW_EU16_NVHOS	2	0	6.1	8.7	7.4	7.285	1.838	1.3	1.927	N/A	0.248
SW_EU16_PFESA-BP1	1	0	2.4	2.4	2.4	2.4	N/A	N/A	0	N/A	N/A
SW_EU16_PFESA-BP2	1	0	4.9	4.9	4.9	4.9	N/A	N/A	0	N/A	N/A
SW_EU17_HFPO-DA	79	0	3.14	76	16.38	13.42	11.92	1.341	7.265	2.366	0.728
SW_EU17_PEPA	45	0	1.72	25.7	10.19	7.687	7.302	1.089	7.22	0.796	0.717
SW_EU17_PFMOAA	79	0	3.82	230	19.64	13.22	27.97	3.147	7.383	5.744	1.425
SW_EU17_PFO2HxA	79	0	2.78	66	14.81	10.7	13.63	1.534	6.138	1.838	0.92
SW_EU17_PFO3OA	70	0	1.34	43.4	7.188	5.43	6.82	0.815	2.572	3.008	0.949
SW_EU17_PFO4DA	54	0	1.2	14.6	3.044	2.502	2.44	0.332	0.927	2.731	0.802
SW_EU17_PMPA	65	0	1.32	64.9	8.866	6.677	9.32	1.156	3.054	4.041	1.051
SW_EU17_R-EVE	2	0	8.3	10	9.15	9.11	1.202	0.85	1.26	N/A	0.131
SW_EU17_PFO5DA	1	0	3.2	3.2	3.2	3.2	N/A	N/A	0	N/A	N/A
SW_EU17_Byproduct 4	2	0	19	20	19.5	19.49	0.707	0.5	0.741	N/A	0.0363
SW_EU17_Byproduct 5	3	0	7.6	82	32.63	17.29	42.75	24.68	1.038	1.732	1.31
SW_EU17_NVHOS	2	0	6.2	9	7.6	7.47	1.98	1.4	2.076	N/A	0.261
SW_EU17_PFESA-BP1	3	0	1.33	4.17	3.093	2.757	1.539	0.889	0.578	-1.608	0.498
SW_EU17_PFESA-BP2	23	0	1.34	6.14	2.671	2.405	1.343	0.28	1.156	1.282	0.503
SW_EU18_HFPO-DA	4	0	730	940	800	796	94.87	47.43	29.65	1.804	0.119
SW_EU18_PEPA	4	0	270	300	285	284.8	12.91	6.455	14.83	0	0.0453

SW_EU18_PFMOAA	4	0	240	260	250	249.9	8.165	4.082	7.413	0	0.0327
SW_EU18_PFO2HxA	4	0	690	730	710	709.8	18.26	9.129	22.24	0	0.0257
SW_EU18_PFO3OA	4	0	90	97	93.25	93.21	3.304	1.652	3.706	0.229	0.0354
SW_EU18_PFO4DA	4	0	37	40	38.75	38.73	1.5	0.75	1.483	-0.37	0.0387
SW_EU18_PMPA	4	0	820	850	835	834.9	17.32	8.66	22.24	0	0.0207
SW_EU18_Hydro-EVE Acid	4	0	3.4	3.6	3.475	3.474	0.0957	0.0479	0.0741	0.855	0.0276
SW_EU18_R-EVE	4	0	52	58	55.5	55.45	2.646	1.323	2.224	-0.864	0.0477
SW_EU18_PFO5DA	4	0	9.7	10	9.9	9.899	0.141	0.0707	0.0741	-1.414	0.0143
SW_EU18_Byproduct 4	4	0	90	99	94.75	94.69	3.775	1.887	3.706	-0.358	0.0398
SW_EU18_NVHOS	4	0	5.6	6.3	6.05	6.044	0.311	0.155	0.148	-1.597	0.0514
SW_EU18_PFESA-BP2	4	0	31	33	31.75	31.74	0.957	0.479	0.741	0.855	0.0302
SW_EU19_HFPO-DA	3	0	290	310	303.3	303.2	11.55	6.667	0	-1.732	0.0381
SW_EU19_PEPA	3	0	100	110	106.7	106.6	5.774	3.333	0	-1.732	0.0541
SW_EU19_PFMOAA	3	0	65	71	67.67	67.62	3.055	1.764	2.965	0.935	0.0451
SW_EU19_PFO2HxA	3	0	210	220	216.7	216.6	5.774	3.333	0	-1.732	0.0266
SW_EU19_PFO3OA	3	0	26	27	26.33	26.33	0.577	0.333	0	1.732	0.0219
SW_EU19_PFO4DA	3	0	8.4	8.9	8.667	8.664	0.252	0.145	0.297	-0.586	0.029
SW_EU19_PMPA	3	0	340	350	346.7	346.6	5.774	3.333	0	-1.732	0.0167
SW_EU19_R-EVE	3	0	52	53	52.67	52.66	0.577	0.333	0	-1.732	0.011
SW_EU19_PFO5DA	1	0	2.1	2.1	2.1	2.1	N/A	N/A	0	N/A	N/A
SW_EU19_Byproduct 4	3	0	130	150	140	139.8	10	5.774	14.83	0	0.0714
SW_EU19_PFESA-BP2	3	0	25	25	25	25	0	0	0	N/A	N/A

Percentiles for Uncensored Data Sets

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
SW_EU13_HFPO-DA	1	0	5	5	5	5	5	5	5	5	5
SW_EU13_PFO2HxA	1	0	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
SW_EU13_PMPA	2	0	12.9	13.8	14.25	16.5	18.75	19.2	20.1	20.55	20.91
SW_EU13_R-EVE	1	0	23	23	23	23	23	23	23	23	23
SW_EU13_Byproduct 4	5	0	4.36	4.72	4.9	8.1	8.5	10.8	15.4	17.7	19.54
SW_EU13_Byproduct 5	5	0	5.86	7.22	7.9	8.1	12	73.6	196.8	258.4	307.7
SW_EU13_NVHOS	5	0	4.56	6.32	7.2	7.5	7.6	7.72	7.96	8.08	8.176
SW_EU14_HFPO-DA	26	0	3.55	4.3	5.5	12	27.75	35	46	52.75	133.5
SW_EU14_PFMOAA	6	0	9.35	9.9	10.43	16.5	32.25	36	53.5	62.25	69.25
SW_EU14_PFO2HxA	11	0	2.2	2.3	2.9	4.4	6.5	8.1	13	19	23.8
SW_EU14_PFO3OA	3	0	2.24	2.48	2.6	3.2	4.8	5.12	5.76	6.08	6.336
SW_EU14_PFO4DA	1	0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
SW_EU14_PMPA	4	0	12.3	12.6	12.75	15.5	18.25	18.4	18.7	18.85	18.97
SW_EU14_R-EVE	8	0	2.7	2.74	2.775	3.1	3.65	3.72	3.86	3.93	3.986
SW_EU14_Byproduct 4	10	0	4.7	5.28	5.425	6.7	7.575	7.66	8	8.45	8.81
SW_EU14_Byproduct 5	8	0	2.92	3.1	3.1	5.9	11.95	15.24	20.2	21.6	22.72
SW_EU14_NVHOS	11	0	6	6.1	6.15	6.6	6.75	6.8	7.2	7.3	7.38
SW_EU16_HFPO-DA	17	0	15.4	28.48	30.4	54	168	225.6	386.4	516.8	567.4
SW_EU16_PEPA	1	0	50	50	50	50	50	50	50	50	50
SW_EU16_PFMOAA	3	0	70.8	85.6	93	130	155	160	170	175	179
SW_EU16_PFO2HxA	2	0	42.4	44.8	46	52	58	59.2	61.6	62.8	63.76
SW_EU16_PFO3OA	2	0	10.51	11.12	11.43	12.95	14.48	14.78	15.39	15.7	15.94
SW_EU16_PFO4DA	2	0	3.79	4.08	4.225	4.95	5.675	5.82	6.11	6.255	6.371
SW_EU16_PMPA	2	0	33.4	35.8	37	43	49	50.2	52.6	53.8	54.76
SW_EU16_R-EVE	2	0	4.23	4.46	4.575	5.15	5.725	5.84	6.07	6.185	6.277
SW_EU16_PFO5DA	1	0	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
SW_EU16_Byproduct 4	2	0	10.54	11.48	11.95	14.3	16.65	17.12	18.06	18.53	18.91

SW_EU16_Byproduct 5	2	0	34.8	38.6	40.5	50	59.5	61.4	65.2	67.1	68.62
SW_EU16_NVHOS	2	0	6.36	6.62	6.75	7.4	8.05	8.18	8.44	8.57	8.674
SW_EU16_PFESA-BP1	1	0	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
SW_EU16_PFESA-BP2	1	0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
SW_EU17_HFPO-DA	79	0	6.782	8.5	9.62	12	18.85	24.08	29.26	37.18	59.46
SW_EU17_PEPA	45	0	2.404	3.504	4.04	7.9	15.6	16.22	22.24	24.56	25.52
SW_EU17_PFMOAA	79	0	5.93	6.826	7.195	11.8	19.95	26.12	40.48	52.77	99.74
SW_EU17_PFO2HxA	79	0	4.58	5.332	5.585	9.26	18.75	24.34	33.22	44.19	59.53
SW_EU17_PFO3OA	70	0	2.716	3.216	3.668	4.685	7.975	9.022	14.54	19.28	32.77
SW_EU17_PFO4DA	54	0	1.309	1.614	1.69	2.18	3.283	3.572	6.05	8.057	11.46
SW_EU17_PMPA	65	0	3.362	4.198	4.47	5.96	9.99	10.6	15.3	21.56	45.76
SW_EU17_R-EVE	2	0	8.47	8.64	8.725	9.15	9.575	9.66	9.83	9.915	9.983
SW_EU17_PFO5DA	1	0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
SW_EU17_Byproduct 4	2	0	19.1	19.2	19.25	19.5	19.75	19.8	19.9	19.95	19.99
SW_EU17_Byproduct 5	3	0	7.74	7.88	7.95	8.3	45.15	52.52	67.26	74.63	80.53
SW_EU17_NVHOS	2	0	6.48	6.76	6.9	7.6	8.3	8.44	8.72	8.86	8.972
SW_EU17_PFESA-BP1	3	0	1.82	2.31	2.555	3.78	3.975	4.014	4.092	4.131	4.162
SW_EU17_PFESA-BP2	23	0	1.412	1.516	1.625	2.35	3.185	3.362	4.702	5.387	5.984
SW_EU18_HFPO-DA	4	0	739	748	752.5	765	812.5	838	889	914.5	934.9
SW_EU18_PEPA	4	0	273	276	277.5	285	292.5	294	297	298.5	299.7
SW_EU18_PFMOAA	4	0	243	246	247.5	250	252.5	254	257	258.5	259.7
SW_EU18_PFO2HxA	4	0	693	696	697.5	710	722.5	724	727	728.5	729.7
SW_EU18_PFO3OA	4	0	90.3	90.6	90.75	93	95.5	95.8	96.4	96.7	96.94
SW_EU18_PFO4DA	4	0	37.3	37.6	37.75	39	40	40	40	40	40
SW_EU18_PMPA	4	0	820	820	820	835	850	850	850	850	850
SW_EU18_Hydro-EVE Acid	4	0	3.4	3.4	3.4	3.45	3.525	3.54	3.57	3.585	3.597
SW_EU18_R-EVE	4	0	52.9	53.8	54.25	56	57.25	57.4	57.7	57.85	57.97
SW_EU18_PFO5DA	4	0	9.76	9.82	9.85	9.95	10	10	10	10	10
SW_EU18_Byproduct 4	4	0	91.2	92.4	93	95	96.75	97.2	98.1	98.55	98.91
SW_EU18_NVHOS	4	0	5.75	5.9	5.975	6.15	6.225	6.24	6.27	6.285	6.297
SW_EU18_PFESA-BP2	4	0	31	31	31	31.5	32.25	32.4	32.7	32.85	32.97
SW_EU19_HFPO-DA	3	0	294	298	300	310	310	310	310	310	310
SW_EU19_PEPA	3	0	102	104	105	110	110	110	110	110	110
SW_EU19_PFMOAA	3	0	65.4	65.8	66	67	69	69.4	70.2	70.6	70.92
SW_EU19_PFO2HxA	3	0	212	214	215	220	220	220	220	220	220
SW_EU19_PFO3OA	3	0	26	26	26	26	26.5	26.6	26.8	26.9	26.98
SW_EU19_PFO4DA	3	0	8.46	8.52	8.55	8.7	8.8	8.82	8.86	8.88	8.896
SW_EU19_PMPA	3	0	342	344	345	350	350	350	350	350	350
SW_EU19_R-EVE	3	0	52.2	52.4	52.5	53	53	53	53	53	53
SW_EU19_PFO5DA	1	0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
SW_EU19_Byproduct 4	3	0	132	134	135	140	145	146	148	149	149.8
SW_EU19_PFESA-BP2	3	0	25	25	25	25	25	25	25	25	25

	General Statistics on Uncensored Full Data
Date/Time of Computation	ProUCL 5.112/11/2019 1:08:57 PM
User Selected Options	
From File	WorkSheet.xls
Full Precision	OFF

From File: WorkSheet.xls

General Statistics for Uncensored Data Sets

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Geo-Mean	SD	SEM	MAD/0.675	Skewness	CV
SW_EU16 (Intake Point)_HFPO-DA	12	0	30.4	580	179	105.2	191.7	55.34	63.45	1.308	1.071
SW_EU17 (Intake Point)_HFPO-DA	75	0	3.14	76	16.12	13.14	11.99	1.385	7.22	2.446	0.744
SW_EU17 (Intake Point)_PEPA	45	0	1.72	25.7	10.19	7.687	7.302	1.089	7.22	0.796	0.717
SW_EU17 (Intake Point)_PFMOAA	75	0	3.82	63	17.05	12.78	14.7	1.697	7.383	1.659	0.862
SW_EU17 (Intake Point)_PFO2HxA	75	0	2.78	57.7	13.77	10.14	12.4	1.432	5.723	1.816	0.901
SW_EU17 (Intake Point)_PFO3OA	66	0	1.34	43.4	7.043	5.314	6.825	0.84	2.357	3.155	0.969
SW_EU17 (Intake Point)_PFO4DA	51	0	1.2	14.6	2.968	2.449	2.4	0.336	0.845	2.944	0.809
SW_EU17 (Intake Point)_PMPA	61	0	1.32	64.9	7.792	6.137	8.369	1.072	2.861	5.538	1.074
SW_EU17 (Intake Point)_PFESA-BP1	3	0	1.33	4.17	3.093	2.757	1.539	0.889	0.578	-1.608	0.498
SW_EU17 (Intake Point)_PFESA-BP2	22	0	1.34	6.14	2.565	2.326	1.272	0.271	1.112	1.54	0.496

Percentiles for Uncensored Data Sets

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
SW_EU16 (Intake Point)_HFPO-DA	12	0	31.5	39	47.25	73.5	257.5	296	481.9	536.6	571.3
SW_EU17 (Intake Point)_HFPO-DA	75	0	6.766	8.43	9.11	11.8	18.85	23.84	28.52	37.47	60.31
SW_EU17 (Intake Point)_PEPA	45	0	2.404	3.504	4.04	7.9	15.6	16.22	22.24	24.56	25.52
SW_EU17 (Intake Point)_PFMOAA	75	0	5.83	6.796	7.13	11.8	18.25	25.42	37.82	52.23	58.86
SW_EU17 (Intake Point)_PFO2HxA	75	0	4.56	5.29	5.575	8.79	15	19.58	30.98	43.62	52.15
SW_EU17 (Intake Point)_PFO3OA	66	0	2.66	3.22	3.668	4.615	7.975	8.85	14.3	18.18	33.39
SW_EU17 (Intake Point)_PFO4DA	51	0	1.3	1.56	1.68	2.09	3.255	3.46	5.84	7.535	11.64
SW_EU17 (Intake Point)_PMPA	61	0	3.35	4.15	4.26	5.48	8.76	9.99	12.2	14.7	38.98
SW_EU17 (Intake Point)_PFESA-BP1	3	0	1.82	2.31	2.555	3.78	3.975	4.014	4.092	4.131	4.162
SW_EU17 (Intake Point)_PFESA-BP2	22	0	1.406	1.498	1.598	2.225	3.055	3.248	3.5	5.334	5.991

	General Statistics on Uncensored Data
Date/Time of Computation	ProUCL 5.112/9/2019 12:51:41 PM
User Selected Options	
From File	WorkSheet.xls
Full Precision	OFF

From File: WorkSheet.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Filet_EU14_PFO4DA	7	0	1	6	85.71%	1000	1200	1229	313469	559.9	0.456
Filet_EU14_PMPA	7	0	3	4	57.14%	1000	1000	306.7	2022	44.97	0.147
Filet_EU15_PFO4DA	3	0	2	1	33.33%	1000	1000	2700	3726667	1930	0.715
Filet_EU15_PMPA	3	0	1	2	66.67%	1000	1000	300	0	0	N/A
Filet_EU16_HFPO-DA	9	0	3	6	66.67%	1300	4300	17089	6.109E+8	24716	1.446
Filet_EU16_PFMOAA	9	0	7	2	22.22%	1000	1000	3389	6060988	2462	0.726
Filet_EU16_PFO4DA	9	0	2	7	77.78%	1000	1000	12578	1.186E+9	34444	2.738
Filet_EU16_PFO5DA	9	0	2	7	77.78%	1000	1000	431.1	117343	342.6	0.795
Filet_EU16_R-EVE	9	0	1	8	88.89%	1000	1000	1000	0	0	N/A
Filet_EU18_PFO4DA	3	0	1	2	66.67%	1000	1000	270	0	0	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Filet_EU14_PFO4DA	1	0	2600	2600	2600	2600	N/A	N/A	0	N/A	N/A
Filet_EU14_PMPA	3	0	270	370	306.7	280	3033	55.08	14.83	1.668	0.18
Filet_EU15_PFO4DA	2	0	1700	5400	3550	3550	6845000	2616	2743	N/A	0.737
Filet_EU15_PMPA	1	0	300	300	300	300	N/A	N/A	0	N/A	N/A
Filet_EU16_HFPO-DA	3	0	24000	68000	48667	54000	5.053E+8	22480	20756	-1.008	0.462
Filet_EU16_PFMOAA	7	0	1400	8200	4071	2600	6645714	2578	1779	0.771	0.633
Filet_EU16_PFO4DA	2	0	400	110000	55200	55200	6.006E+9	77499	81245	N/A	1.404
Filet_EU16_PFO5DA	2	0	310	1400	855	855	594050	770.7	808	N/A	0.901
Filet_EU16_R-EVE	1	0	1000	1000	1000	1000	N/A	N/A	0	N/A	N/A
Filet_EU18_PFO4DA	1	0	270	270	270	270	N/A	N/A	0	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Filet_EU14_PFO4DA	7	0	1000	1000	1000	1000	1100	1160	1760	2180	2516
Filet_EU14_PMPA	7	0	276	298	325	1000	1000	1000	1000	1000	1000
Filet_EU15_PFO4DA	3	0	1140	1280	1350	1700	3550	3920	4660	5030	5326
Filet_EU15_PMPA	3	0	440	580	650	1000	1000	1000	1000	1000	1000
Filet_EU16_HFPO-DA	9	0	1300	1300	1300	1300	24000	36000	56800	62400	66880
Filet_EU16_PFMOAA	9	0	1000	1240	1400	2400	4900	5620	7000	7600	8080
Filet_EU16_PFO4DA	9	0	880	1000	1000	1000	1000	1000	22800	66400	101280
Filet_EU16_PFO5DA	9	0	862	1000	1000	1000	1000	1000	1080	1240	1368
Filet_EU16_R-EVE	9	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Filet_EU18_PFO4DA	3	0	416	562	635	1000	1000	1000	1000	1000	1000
Filet_EU18_PMPA	3	12	416	562	635	1000	1000	1000	1000	1000	1000

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.112/6/2019 11:41:58 AM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

DW_EU1_HFPO-DA

General Statistics

Total Number of Observations	24	Number of Distinct Observations	20
Number of Detects	22	Number of Non-Detects	2
Number of Distinct Detects	19	Number of Distinct Non-Detects	1
Minimum Detect	1.81	Minimum Non-Detect	1.76
Maximum Detect	4200	Maximum Non-Detect	1.76
Variance Detects	723538	Percent Non-Detects	8.333%
Mean Detects	724.5	SD Detects	850.6
Median Detects	558	CV Detects	1.174
Skewness Detects	3.46	Kurtosis Detects	14.31
Mean of Logged Detects	5.91	SD of Logged Detects	1.634

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.611	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.911	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.282	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.184	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	664.3	KM Standard Error of Mean	171.4
KM SD	820.4	95% KM (BCA) UCL	988.1
95% KM (t) UCL	958.1	95% KM (Percentile Bootstrap) UCL	977.8
95% KM (z) UCL	946.2	95% KM Bootstrap t UCL	1210
90% KM Chebyshev UCL	1179	95% KM Chebyshev UCL	1411
97.5% KM Chebyshev UCL	1735	99% KM Chebyshev UCL	2370

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.94	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.777	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.195	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.192	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.869	k star (bias corrected MLE)	0.78
Theta hat (MLE)	834.1	Theta star (bias corrected MLE)	928.3
nu hat (MLE)	38.22	nu star (bias corrected)	34.34
Mean (detects)	724.5		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	664.2
Maximum	4200	Median	526.5
SD	838.1	CV	1.262
k hat (MLE)	0.442	k star (bias corrected MLE)	0.415
Theta hat (MLE)	1503	Theta star (bias corrected MLE)	1602
nu hat (MLE)	21.21	nu star (bias corrected)	19.9
Adjusted Level of Significance (β)	0.0392		
Approximate Chi Square Value (19.90, α)	10.77	Adjusted Chi Square Value (19.90, β)	10.3
95% Gamma Approximate UCL (use when n>=50)	1226	95% Gamma Adjusted UCL (use when n<50)	1283

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	664.3	SD (KM)	820.4
Variance (KM)	673003	SE of Mean (KM)	171.4
k hat (KM)	0.656	k star (KM)	0.602
nu hat (KM)	31.48	nu star (KM)	28.87
theta hat (KM)	1013	theta star (KM)	1104
80% gamma percentile (KM)	1095	90% gamma percentile (KM)	1727
95% gamma percentile (KM)	2388	99% gamma percentile (KM)	3988

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (28.87, α)	17.61	Adjusted Chi Square Value (28.87, β)	16.99
95% Gamma Approximate KM-UCL (use when n>=50)	1089	95% Gamma Adjusted KM-UCL (use when n<50)	1129

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.778	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.911	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.279	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.184	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	665.4	Mean in Log Scale	5.64
SD in Original Scale	837.1	SD in Log Scale	1.811
95% t UCL (assumes normality of ROS data)	958.3	95% Percentile Bootstrap UCL	957.6
95% BCA Bootstrap UCL	1094	95% Bootstrap t UCL	1215
95% H-UCL (Log ROS)	6035		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	5.464	KM Geo Mean	236.1
KM SD (logged)	2.126	95% Critical H Value (KM-Log)	4.302
KM Standard Error of Mean (logged)	0.444	95% H-UCL (KM -Log)	15222

KM SD (logged)	2.126	95% Critical H Value (KM-Log)	4.302
KM Standard Error of Mean (logged)	0.444		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	664.2	Mean in Log Scale	5.406
SD in Original Scale	838.1	SD in Log Scale	2.312
95% t UCL (Assumes normality)	957.4	95% H-Stat UCL	29893

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 1411

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU1_PEPA

General Statistics

Total Number of Observations	6	Number of Distinct Observations	4
Number of Detects	4	Number of Non-Detects	2
Number of Distinct Detects	3	Number of Distinct Non-Detects	1
Minimum Detect	370	Minimum Non-Detect	20
Maximum Detect	820	Maximum Non-Detect	20
Variance Detects	48600	Percent Non-Detects	33.33%
Mean Detects	490	SD Detects	220.5
Median Detects	385	CV Detects	0.45
Skewness Detects	1.976	Kurtosis Detects	3.914
Mean of Logged Detects	6.132	SD of Logged Detects	0.387

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.677	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.408	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	333.3	KM Standard Error of Mean	127.7
KM SD	270.9	95% KM (BCA) UCL	N/A
95% KM (t) UCL	590.7	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	543.4	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	716.4	95% KM Chebyshev UCL	890
97.5% KM Chebyshev UCL	1131	99% KM Chebyshev UCL	1604

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.804	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.658	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.421	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.395	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	8.168	k star (bias corrected MLE)	2.209
Theta hat (MLE)	59.99	Theta star (bias corrected MLE)	221.9
nu hat (MLE)	65.34	nu star (bias corrected)	17.67
Mean (detects)	490		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	340.3
Maximum	820	Median	370
SD	289.2	CV	0.85
k hat (MLE)	0.375	k star (bias corrected MLE)	0.298
Theta hat (MLE)	908.5	Theta star (bias corrected MLE)	1140
nu hat (MLE)	4.494	nu star (bias corrected)	3.58
Adjusted Level of Significance (β)	0.0122		
Approximate Chi Square Value (3.58, α)	0.563	Adjusted Chi Square Value (3.58, β)	0.263
95% Gamma Approximate UCL (use when n>=50)	2163	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	333.3	SD (KM)	270.9
Variance (KM)	73389	SE of Mean (KM)	127.7
k hat (KM)	1.514	k star (KM)	0.868
nu hat (KM)	18.17	nu star (KM)	10.42
theta hat (KM)	220.2	theta star (KM)	384

80% gamma percentile (KM)	542.1	90% gamma percentile (KM)	794.6
95% gamma percentile (KM)	1050	99% gamma percentile (KM)	1650

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (10.42, α)	4.204	Adjusted Chi Square Value (10.42, β)	2.905
95% Gamma Approximate KM-UCL (use when n>=50)	825.9	95% Gamma Adjusted KM-UCL (use when n<50)	1195

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.699	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.392	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	385.8	Mean in Log Scale	5.811
SD in Original Scale	235.5	SD in Log Scale	0.589
95% t UCL (assumes normality of ROS data)	579.6	95% Percentile Bootstrap UCL	535
95% BCA Bootstrap UCL	567.3	95% Bootstrap t UCL	683.5
95% H-UCL (Log ROS)	843		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	5.087	KM Geo Mean	161.8
KM SD (logged)	1.503	95% Critical H Value (KM-Log)	5.893
KM Standard Error of Mean (logged)	0.709	95% H-UCL (KM -Log)	26340
KM SD (logged)	1.503	95% Critical H Value (KM-Log)	5.893
KM Standard Error of Mean (logged)	0.709		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	330	Mean in Log Scale	4.855
SD in Original Scale	301	SD in Log Scale	2
95% t UCL (Assumes normality)	577.6	95% H-Stat UCL	930699

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	590.7	KM H-UCL	26340
95% KM (BCA) UCL	N/A		

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU1_PFECA-G

General Statistics

Total Number of Observations	6	Number of Distinct Observations	2
Number of Detects	0	Number of Non-Detects	6
Number of Distinct Detects	0	Number of Distinct Non-Detects	2

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU1_PFECA-G was not processed!

DW_EU1_PFESA-BP1

General Statistics

Total Number of Observations	6	Number of Distinct Observations	2
Number of Detects	0	Number of Non-Detects	6
Number of Distinct Detects	0	Number of Distinct Non-Detects	2

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU1_PFESA-BP1 was not processed!

DW_EU1_PFESA-BP2

General Statistics

Total Number of Observations	6	Number of Distinct Observations	5
Number of Detects	4	Number of Non-Detects	2
Number of Distinct Detects	4	Number of Distinct Non-Detects	1
Minimum Detect	5	Minimum Non-Detect	2
Maximum Detect	77	Maximum Non-Detect	2
Variance Detects	907	Percent Non-Detects	33.33%
Mean Detects	35.5	SD Detects	30.12
Median Detects	30	CV Detects	0.848
Skewness Detects	1.041	Kurtosis Detects	2.039
Mean of Logged Detects	3.188	SD of Logged Detects	1.144

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.924	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.296	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	24.33	KM Standard Error of Mean	12.5
KM SD	26.51	95% KM (BCA) UCL	N/A
95% KM (t) UCL	49.52	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	44.89	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	61.83	95% KM Chebyshev UCL	78.81
97.5% KM Chebyshev UCL	102.4	99% KM Chebyshev UCL	148.7

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.289	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.663	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.254	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.4	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.454	k star (bias corrected MLE)	0.53
Theta hat (MLE)	24.42	Theta star (bias corrected MLE)	66.96
nu hat (MLE)	11.63	nu star (bias corrected)	4.241
Mean (detects)	35.5		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	23.67
Maximum	77	Median	16.5
SD	29.67	CV	1.253
k hat (MLE)	0.272	k star (bias corrected MLE)	0.247
Theta hat (MLE)	86.97	Theta star (bias corrected MLE)	95.75
nu hat (MLE)	3.266	nu star (bias corrected)	2.966

Adjusted Level of Significance (β)	0.0122		
Approximate Chi Square Value (2.97, α)	0.363	Adjusted Chi Square Value (2.97, β)	0.163
95% Gamma Approximate UCL (use when n>=50)	193.7	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	24.33	SD (KM)	26.51
Variance (KM)	702.9	SE of Mean (KM)	12.5
k hat (KM)	0.842	k star (KM)	0.532
nu hat (KM)	10.11	nu star (KM)	6.388
theta hat (KM)	28.89	theta star (KM)	45.71
80% gamma percentile (KM)	40.05	90% gamma percentile (KM)	64.97
95% gamma percentile (KM)	91.41	99% gamma percentile (KM)	156

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (6.39, α)	1.841	Adjusted Chi Square Value (6.39, β)	1.093
95% Gamma Approximate KM-UCL (use when n>=50)	84.42	95% Gamma Adjusted KM-UCL (use when n<50)	142.3

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.921	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.3	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	24.1	Mean in Log Scale	2.177
SD in Original Scale	29.26	SD in Log Scale	1.824
95% t UCL (assumes normality of ROS data)	48.17	95% Percentile Bootstrap UCL	44.08
95% BCA Bootstrap UCL	48.15	95% Bootstrap t UCL	65.56
95% H-UCL (Log ROS)	14680		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.356	KM Geo Mean	10.55
KM SD (logged)	1.427	95% Critical H Value (KM-Log)	5.618
KM Standard Error of Mean (logged)	0.673	95% H-UCL (KM -Log)	1055
KM SD (logged)	1.427	95% Critical H Value (KM-Log)	5.618
KM Standard Error of Mean (logged)	0.673		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	24	Mean in Log Scale	2.125
SD in Original Scale	29.35	SD in Log Scale	1.869
95% t UCL (Assumes normality)	48.15	95% H-Stat UCL	20150

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	49.52

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU1_PFMOAA

General Statistics

Total Number of Observations	6	Number of Distinct Observations	5
Number of Detects	4	Number of Non-Detects	2
Number of Distinct Detects	4	Number of Distinct Non-Detects	1
Minimum Detect	200	Minimum Non-Detect	5
Maximum Detect	800	Maximum Non-Detect	5
Variance Detects	76200	Percent Non-Detects	33.33%
Mean Detects	390	SD Detects	276
Median Detects	280	CV Detects	0.708
Skewness Detects	1.881	Kurtosis Detects	3.647
Mean of Logged Detects	5.813	SD of Logged Detects	0.603

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.756	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.391	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data Not Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	261.7	KM Standard Error of Mean	125.6
KM SD	266.5	95% KM (BCA) UCL	N/A
95% KM (t) UCL	514.8	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	468.3	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	638.6	95% KM Chebyshev UCL	809.3
97.5% KM Chebyshev UCL	1046	99% KM Chebyshev UCL	1512

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.552	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.659	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.382	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.396	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	3.418	k star (bias corrected MLE)	1.021
Theta hat (MLE)	114.1	Theta star (bias corrected MLE)	381.9
nu hat (MLE)	27.35	nu star (bias corrected)	8.17
Mean (detects)	390		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	260
Maximum	800	Median	235
SD	293.7	CV	1.13
k hat (MLE)	0.224	k star (bias corrected MLE)	0.223
Theta hat (MLE)	1159	Theta star (bias corrected MLE)	1164
nu hat (MLE)	2.693	nu star (bias corrected)	2.68
Adjusted Level of Significance (β)	0.0122		
Approximate Chi Square Value (2.68, α)	0.284	Adjusted Chi Square Value (2.68, β)	0.129
95% Gamma Approximate UCL (use when n>=50)	2451	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	261.7	SD (KM)	266.5
Variance (KM)	71039	SE of Mean (KM)	125.6
k hat (KM)	0.964	k star (KM)	0.593
nu hat (KM)	11.57	nu star (KM)	7.116
theta hat (KM)	271.5	theta star (KM)	441.2
80% gamma percentile (KM)	431.3	90% gamma percentile (KM)	682.3
95% gamma percentile (KM)	945.5	99% gamma percentile (KM)	1583

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (7.12, α)	2.235	Adjusted Chi Square Value (7.12, β)	1.379
95% Gamma Approximate KM-UCL (use when n>=50)	833.3	95% Gamma Adjusted KM-UCL (use when n<50)	1351

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.853	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	

Lilliefors Test Statistic	0.344	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	282.8	Mean in Log Scale	5.273
SD in Original Scale	271	SD in Log Scale	0.971
95% t UCL (assumes normality of ROS data)	505.7	95% Percentile Bootstrap UCL	461.7
95% BCA Bootstrap UCL	515	95% Bootstrap t UCL	693.3
95% H-UCL (Log ROS)	1787		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	4.412	KM Geo Mean	82.41
KM SD (logged)	2.027	95% Critical H Value (KM-Log)	7.8
KM Standard Error of Mean (logged)	0.955	95% H-UCL (KM -Log)	755856
KM SD (logged)	2.027	95% Critical H Value (KM-Log)	7.8
KM Standard Error of Mean (logged)	0.955		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	260.8	Mean in Log Scale	4.181
SD in Original Scale	292.9	SD in Log Scale	2.571
95% t UCL (Assumes normality)	501.7	95% H-Stat UCL	1.414E+8

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 514.8

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU1_PFO2HxA

General Statistics

Total Number of Observations	6	Number of Distinct Observations	5
Number of Detects	4	Number of Non-Detects	2
Number of Distinct Detects	4	Number of Distinct Non-Detects	1

Minimum Detect	510	Minimum Non-Detect	2
Maximum Detect	4400	Maximum Non-Detect	2
Variance Detects	3380958	Percent Non-Detects	33.33%
Mean Detects	1653	SD Detects	1839
Median Detects	850	CV Detects	1.113
Skewness Detects	1.953	Kurtosis Detects	3.857
Mean of Logged Detects	7.028	SD of Logged Detects	0.939

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.708	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.415	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1102	KM Standard Error of Mean	714.3
KM SD	1515	95% KM (BCA) UCL	N/A
95% KM (t) UCL	2542	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	2277	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	3245	95% KM Chebyshev UCL	4216
97.5% KM Chebyshev UCL	5563	99% KM Chebyshev UCL	8209

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.617	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.663	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.408	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.4	Detected Data Not Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.454	k star (bias corrected MLE)	0.53
Theta hat (MLE)	1136	Theta star (bias corrected MLE)	3116
nu hat (MLE)	11.64	nu star (bias corrected)	4.242
Mean (detects)	1653		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1102
Maximum	4400	Median	670
SD	1660	CV	1.507
k hat (MLE)	0.192	k star (bias corrected MLE)	0.207
Theta hat (MLE)	5734	Theta star (bias corrected MLE)	5317
nu hat (MLE)	2.306	nu star (bias corrected)	2.486
Adjusted Level of Significance (β)	0.0122		
Approximate Chi Square Value (2.49, α)	0.238	Adjusted Chi Square Value (2.49, β)	0.112
95% Gamma Approximate UCL (use when n>=50)	11507	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1102	SD (KM)	1515
Variance (KM)	2295846	SE of Mean (KM)	714.3
k hat (KM)	0.529	k star (KM)	0.376
nu hat (KM)	6.351	nu star (KM)	4.509
theta hat (KM)	2083	theta star (KM)	2934
80% gamma percentile (KM)	1765	90% gamma percentile (KM)	3147
95% gamma percentile (KM)	4680	99% gamma percentile (KM)	8559

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (4.51, α)	0.932	Adjusted Chi Square Value (4.51, β)	0.479
95% Gamma Approximate KM-UCL (use when n>=50)	5330	95% Gamma Adjusted KM-UCL (use when n<50)	10378

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.838	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.359	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1135	Mean in Log Scale	6.196
SD in Original Scale	1635	SD in Log Scale	1.5
95% t UCL (assumes normality of ROS data)	2480	95% Percentile Bootstrap UCL	2378
95% BCA Bootstrap UCL	2568	95% Bootstrap t UCL	5327
95% H-UCL (Log ROS)	78255		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	4.917	KM Geo Mean	136.5
KM SD (logged)	3.059	95% Critical H Value (KM-Log)	11.62
KM Standard Error of Mean (logged)	1.442	95% H-UCL (KM -Log)	1.183E+11
KM SD (logged)	3.059	95% Critical H Value (KM-Log)	11.62
KM Standard Error of Mean (logged)	1.442		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1102	Mean in Log Scale	4.686
SD in Original Scale	1660	SD in Log Scale	3.702
95% t UCL (Assumes normality)	2468	95% H-Stat UCL	1.238E+15

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Bootstrap t UCL	N/A	95% Hall's Bootstrap	1.183E+11

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU1_PFO3OA

General Statistics

Total Number of Observations	6	Number of Distinct Observations	4
Number of Detects	4	Number of Non-Detects	2
Number of Distinct Detects	3	Number of Distinct Non-Detects	1
Minimum Detect	44	Minimum Non-Detect	2
Maximum Detect	580	Maximum Non-Detect	2
Variance Detects	64908	Percent Non-Detects	33.33%
Mean Detects	199	SD Detects	254.8
Median Detects	86	CV Detects	1.28
Skewness Detects	1.963	Kurtosis Detects	3.886
Mean of Logged Detects	4.764	SD of Logged Detects	1.112

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.697	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.748	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.421	**Lilliefors GOF Test**	

5% Lilliefors Critical Value	0.375	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	133.3	KM Standard Error of Mean	95.54
KM SD	202.7	95% KM (BCA) UCL	N/A
95% KM (t) UCL	325.9	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	290.5	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	420	95% KM Chebyshev UCL	549.8
97.5% KM Chebyshev UCL	730	99% KM Chebyshev UCL	1084

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.618	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.666	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.415	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.402	Detected Data Not Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.081	k star (bias corrected MLE)	0.437
Theta hat (MLE)	184.1	Theta star (bias corrected MLE)	455.5
nu hat (MLE)	8.646	nu star (bias corrected)	3.495
Mean (detects)	199		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	132.7
Maximum	580	Median	65
SD	222.5	CV	1.677
k hat (MLE)	0.223	k star (bias corrected MLE)	0.223
Theta hat (MLE)	595.4	Theta star (bias corrected MLE)	596.2
nu hat (MLE)	2.674	nu star (bias corrected)	2.67
Adjusted Level of Significance (β)	0.0122		
Approximate Chi Square Value (2.67, α)	0.282	Adjusted Chi Square Value (2.67, β)	0.128
95% Gamma Approximate UCL (use when n>=50)	1257	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	133.3	SD (KM)	202.7
Variance (KM)	41078	SE of Mean (KM)	95.54
k hat (KM)	0.433	k star (KM)	0.328
nu hat (KM)	5.193	nu star (KM)	3.93

theta hat (KM)	308.1	theta star (KM)	407.1
80% gamma percentile (KM)	208.5	90% gamma percentile (KM)	388.8
95% gamma percentile (KM)	592.8	99% gamma percentile (KM)	1117

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (3.93, α)	0.694	Adjusted Chi Square Value (3.93, β)	0.336
95% Gamma Approximate KM-UCL (use when n>=50)	754.8	95% Gamma Adjusted KM-UCL (use when n<50)	1559

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.847	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.36	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	134.9	Mean in Log Scale	3.777
SD in Original Scale	220.9	SD in Log Scale	1.778
95% t UCL (assumes normality of ROS data)	316.6	95% Percentile Bootstrap UCL	305.3
95% BCA Bootstrap UCL	388.9	95% Bootstrap t UCL	863.1
95% H-UCL (Log ROS)	50881		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.407	KM Geo Mean	30.18
KM SD (logged)	2.074	95% Critical H Value (KM-Log)	7.972
KM Standard Error of Mean (logged)	0.978	95% H-UCL (KM -Log)	421272
KM SD (logged)	2.074	95% Critical H Value (KM-Log)	7.972
KM Standard Error of Mean (logged)	0.978		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	133	Mean in Log Scale	3.176
SD in Original Scale	222.3	SD in Log Scale	2.607
95% t UCL (Assumes normality)	315.8	95% H-Stat UCL	77038566

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Bootstrap t UCL	N/A	95% Hall's Bootstrap	421272

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU1_PFO4DA

General Statistics

Total Number of Observations	6	Number of Distinct Observations	5
Number of Detects	4	Number of Non-Detects	2
Number of Distinct Detects	4	Number of Distinct Non-Detects	1
Minimum Detect	11	Minimum Non-Detect	2
Maximum Detect	120	Maximum Non-Detect	2
Variance Detects	2465	Percent Non-Detects	33.33%
Mean Detects	47	SD Detects	49.65
Median Detects	28.5	CV Detects	1.056
Skewness Detects	1.771	Kurtosis Detects	3.23
Mean of Logged Detects	3.458	SD of Logged Detects	1.006

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.804	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.345	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	32	KM Standard Error of Mean	19.34
KM SD	41.02	95% KM (BCA) UCL	N/A
95% KM (t) UCL	70.96	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	63.8	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	90.01	95% KM Chebyshev UCL	116.3
97.5% KM Chebyshev UCL	152.7	99% KM Chebyshev UCL	224.4

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.324	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.663	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.268	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.4	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.418	k star (bias corrected MLE)	0.521
Theta hat (MLE)	33.14	Theta star (bias corrected MLE)	90.16
nu hat (MLE)	11.35	nu star (bias corrected)	4.17
Mean (detects)	47		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	31.34
Maximum	120	Median	16.5
SD	45.47	CV	1.451
k hat (MLE)	0.263	k star (bias corrected MLE)	0.243
Theta hat (MLE)	119	Theta star (bias corrected MLE)	129.1
nu hat (MLE)	3.16	nu star (bias corrected)	2.913
Adjusted Level of Significance (β)	0.0122		
Approximate Chi Square Value (2.91, α)	0.347	Adjusted Chi Square Value (2.91, β)	0.156
95% Gamma Approximate UCL (use when n>=50)	262.9	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	32	SD (KM)	41.02
Variance (KM)	1682	SE of Mean (KM)	19.34
k hat (KM)	0.609	k star (KM)	0.415
nu hat (KM)	7.304	nu star (KM)	4.985
theta hat (KM)	52.57	theta star (KM)	77.02
80% gamma percentile (KM)	51.86	90% gamma percentile (KM)	89.77
95% gamma percentile (KM)	131.2	99% gamma percentile (KM)	235

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (4.99, α)	1.145	Adjusted Chi Square Value (4.99, β)	0.615
95% Gamma Approximate KM-UCL (use when n>=50)	139.3	95% Gamma Adjusted KM-UCL (use when n<50)	259.5

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.975	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.211	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	32	Mean in Log Scale	2.505

SD in Original Scale	44.93	SD in Log Scale	1.693
95% t UCL (assumes normality of ROS data)	68.96	95% Percentile Bootstrap UCL	64.06
95% BCA Bootstrap UCL	75.33	95% Bootstrap t UCL	133.8
95% H-UCL (Log ROS)	7478		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.536	KM Geo Mean	12.63
KM SD (logged)	1.485	95% Critical H Value (KM-Log)	5.825
KM Standard Error of Mean (logged)	0.7	95% H-UCL (KM -Log)	1820
KM SD (logged)	1.485	95% Critical H Value (KM-Log)	5.825
KM Standard Error of Mean (logged)	0.7		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	31.67	Mean in Log Scale	2.305
SD in Original Scale	45.2	SD in Log Scale	1.948
95% t UCL (Assumes normality)	68.85	95% H-Stat UCL	46507

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 70.96

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU1_PFO5DA

General Statistics

Total Number of Observations	6	Number of Distinct Observations	4
Number of Detects	3	Number of Non-Detects	3
Number of Distinct Detects	3	Number of Distinct Non-Detects	1
Minimum Detect	12	Minimum Non-Detect	2
Maximum Detect	18	Maximum Non-Detect	2
Variance Detects	10.33	Percent Non-Detects	50%
Mean Detects	14.33	SD Detects	3.215
Median Detects	13	CV Detects	0.224
Skewness Detects	1.545	Kurtosis Detects	N/A
Mean of Logged Detects	2.647	SD of Logged Detects	0.215

Warning: Data set has only 3 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.871	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.328	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	8.167	KM Standard Error of Mean	3.22
KM SD	6.44	95% KM (BCA) UCL	N/A
95% KM (t) UCL	14.66	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	13.46	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	17.83	95% KM Chebyshev UCL	22.2
97.5% KM Chebyshev UCL	28.28	99% KM Chebyshev UCL	40.2

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	31.72	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.452	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	190.3	nu star (bias corrected)	N/A
Mean (detects)	14.33		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	1.908	Mean	9.466
Maximum	18	Median	9.542
SD	5.938	CV	0.627
k hat (MLE)	2.338	k star (bias corrected MLE)	1.28
Theta hat (MLE)	4.048	Theta star (bias corrected MLE)	7.394
nu hat (MLE)	28.06	nu star (bias corrected)	15.36
Adjusted Level of Significance (β)	0.0122		

Approximate Chi Square Value (15.36, α)	7.514	Adjusted Chi Square Value (15.36, β)	5.649
95% Gamma Approximate UCL (use when n>=50)	19.35	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	8.167	SD (KM)	6.44
Variance (KM)	41.47	SE of Mean (KM)	3.22
k hat (KM)	1.608	k star (KM)	0.915
nu hat (KM)	19.3	nu star (KM)	10.98
theta hat (KM)	5.078	theta star (KM)	8.923
80% gamma percentile (KM)	13.23	90% gamma percentile (KM)	19.22
95% gamma percentile (KM)	25.25	99% gamma percentile (KM)	39.34

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (10.98, α)	4.565	Adjusted Chi Square Value (10.98, β)	3.196
95% Gamma Approximate KM-UCL (use when n>=50)	19.65	95% Gamma Adjusted KM-UCL (use when n<50)	28.07

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.891	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.315	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	10.68	Mean in Log Scale	2.291
SD in Original Scale	4.582	SD in Log Scale	0.433
95% t UCL (assumes normality of ROS data)	14.45	95% Percentile Bootstrap UCL	13.57
95% BCA Bootstrap UCL	13.74	95% Bootstrap t UCL	15.62
95% H-UCL (Log ROS)	17.57		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.67	KM Geo Mean	5.312
KM SD (logged)	0.985	95% Critical H Value (KM-Log)	4.068
KM Standard Error of Mean (logged)	0.492	95% H-UCL (KM -Log)	51.72
KM SD (logged)	0.985	95% Critical H Value (KM-Log)	4.068
KM Standard Error of Mean (logged)	0.492		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	7.667	Mean in Log Scale	1.323
SD in Original Scale	7.581	SD in Log Scale	1.456
95% t UCL (Assumes normality)	13.9	95% H-Stat UCL	449.9

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	14.66

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU1_PMPA

General Statistics

Total Number of Observations	6	Number of Distinct Observations	6
Number of Detects	5	Number of Non-Detects	1
Number of Distinct Detects	5	Number of Distinct Non-Detects	1
Minimum Detect	60	Minimum Non-Detect	10
Maximum Detect	2300	Maximum Non-Detect	10
Variance Detects	658120	Percent Non-Detects	16.67%
Mean Detects	1332	SD Detects	811.2
Median Detects	1400	CV Detects	0.609
Skewness Detects	-0.883	Kurtosis Detects	2.104
Mean of Logged Detects	6.725	SD of Logged Detects	1.487

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.926	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.284	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.343	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1112	KM Standard Error of Mean	376.8
KM SD	825.5	95% KM (BCA) UCL	1635
95% KM (t) UCL	1871	95% KM (Percentile Bootstrap) UCL	1652
95% KM (z) UCL	1731	95% KM Bootstrap t UCL	1639
90% KM Chebyshev UCL	2242	95% KM Chebyshev UCL	2754
97.5% KM Chebyshev UCL	3465	99% KM Chebyshev UCL	4861

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.774	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.689	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.411	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.363	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.205	k star (bias corrected MLE)	0.616
Theta hat (MLE)	1105	Theta star (bias corrected MLE)	2164
nu hat (MLE)	12.05	nu star (bias corrected)	6.155
Mean (detects)	1332		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	60	Mean	1144
Maximum	2300	Median	1350
SD	859	CV	0.751
k hat (MLE)	1.044	k star (bias corrected MLE)	0.633
Theta hat (MLE)	1096	Theta star (bias corrected MLE)	1808
nu hat (MLE)	12.53	nu star (bias corrected)	7.596
Adjusted Level of Significance (β)	0.0122		
Approximate Chi Square Value (7.60, α)	2.503	Adjusted Chi Square Value (7.60, β)	1.579
95% Gamma Approximate UCL (use when n>=50)	3472	95% Gamma Adjusted UCL (use when n<50)	5505

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1112	SD (KM)	825.5
Variance (KM)	681481	SE of Mean (KM)	376.8
k hat (KM)	1.813	k star (KM)	1.018
nu hat (KM)	21.76	nu star (KM)	12.21
theta hat (KM)	613	theta star (KM)	1092
80% gamma percentile (KM)	1787	90% gamma percentile (KM)	2549
95% gamma percentile (KM)	3310	99% gamma percentile (KM)	5074

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (12.21, α)	5.368	Adjusted Chi Square Value (12.21, β)	3.852
95% Gamma Approximate KM-UCL (use when n>=50)	2529	95% Gamma Adjusted KM-UCL (use when n<50)	3525

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.692	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.762	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.418	**Lilliefors GOF Test**	

5% Lilliefors Critical Value	0.343	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1117	Mean in Log Scale	6.219
SD in Original Scale	897.1	SD in Log Scale	1.818
95% t UCL (assumes normality of ROS data)	1855	95% Percentile Bootstrap UCL	1660
95% BCA Bootstrap UCL	1607	95% Bootstrap t UCL	1813
95% H-UCL (Log ROS)	799995		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	5.988	KM Geo Mean	398.7
KM SD (logged)	2.047	95% Critical H Value (KM-Log)	7.874
KM Standard Error of Mean (logged)	0.934	95% H-UCL (KM -Log)	4383294
KM SD (logged)	2.047	95% Critical H Value (KM-Log)	7.874
KM Standard Error of Mean (logged)	0.934		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1111	Mean in Log Scale	5.873
SD in Original Scale	905.5	SD in Log Scale	2.476
95% t UCL (Assumes normality)	1856	95% H-Stat UCL	2.693E+8

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1871

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU2_HFPO-DA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
Number of Detects	2	Number of Non-Detects	1
Number of Distinct Detects	2	Number of Distinct Non-Detects	1
Minimum Detect	780	Minimum Non-Detect	2.01
Maximum Detect	1200	Maximum Non-Detect	2.01
Variance Detects	88200	Percent Non-Detects	33.33%
Mean Detects	990	SD Detects	297

Median Detects	990	CV Detects	0.3
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	6.875	SD of Logged Detects	0.305

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	660.7	KM Standard Error of Mean	405.2
KM SD	496.3	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1844	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1327	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1876	95% KM Chebyshev UCL	2427
97.5% KM Chebyshev UCL	3191	99% KM Chebyshev UCL	4693

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	21.89	k star (bias corrected MLE)	N/A
Theta hat (MLE)	45.23	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	87.54	nu star (bias corrected)	N/A
Mean (detects)	990		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	660.7	SD (KM)	496.3
Variance (KM)	246316	SE of Mean (KM)	405.2
k hat (KM)	1.772	k star (KM)	N/A
nu hat (KM)	10.63	nu star (KM)	N/A
theta hat (KM)	372.8	theta star (KM)	N/A
80% gamma percentile (KM)	N/A	90% gamma percentile (KM)	N/A
95% gamma percentile (KM)	N/A	99% gamma percentile (KM)	N/A

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.00136
Approximate Chi Square Value (N/A, α)	N/A	Adjusted Chi Square Value (N/A, β)	N/A

95% Gamma Approximate KM-UCL (use when n>=50)	N/A	95% Gamma Adjusted KM-UCL (use when n<50)	N/A

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	781.2	Mean in Log Scale	6.549
SD in Original Scale	418.2	SD in Log Scale	0.605
95% t UCL (assumes normality of ROS data)	1486	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A	95% Bootstrap t UCL	N/A
95% H-UCL (Log ROS)	24214		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	4.816	KM Geo Mean	123.4
KM SD (logged)	2.917	95% Critical H Value (KM-Log)	38.14
KM Standard Error of Mean (logged)	2.382	95% H-UCL (KM -Log)	1.283E+38
KM SD (logged)	2.917	95% Critical H Value (KM-Log)	38.14
KM Standard Error of Mean (logged)	2.382		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	660.3	Mean in Log Scale	4.585
SD in Original Scale	608.4	SD in Log Scale	3.972
95% t UCL (Assumes normality)	1686	95% H-Stat UCL	6.009E+68

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1844	KM H-UCL	1.283E+38
95% KM (BCA) UCL	N/A		

Warning: One or more Recommended UCL(s) not available!

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU2_PEPA

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1

		Number of Missing Observations	0
Minimum	780	Mean	780
Maximum	780	Median	780

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DW_EU2_PEPA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DW_EU2_PFECA-G

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	1
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DW_EU2_PFECA-G was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DW_EU2_PFESA-BP1

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	1
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DW_EU2_PFESA-BP1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DW_EU2_PFESA-BP2

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	130	Mean	130
Maximum	130	Median	130

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DW_EU2_PFESA-BP2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DW_EU2_PFMOAA

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	410	Mean	410
Maximum	410	Median	410

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DW_EU2_PFMOAA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DW_EU2_PFO2HxA

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	1300	Mean	1300
Maximum	1300	Median	1300

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DW_EU2_PFO2HxA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DW_EU2_PFO3OA

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	160	Mean	160
Maximum	160	Median	160

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DW_EU2_PFO3OA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DW_EU2_PFO4DA

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	60	Mean	60
Maximum	60	Median	60

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DW_EU2_PFO4DA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DW_EU2_PFO5DA

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	16	Mean	16
Maximum	16	Median	16

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DW_EU2_PFO5DA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DW_EU2_PMPA

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	3100	Mean	3100
Maximum	3100	Median	3100

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DW_EU2_PMPA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DW_EU3_HFPO-DA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	12
		Number of Missing Observations	0
Minimum	62	Mean	421.1
Maximum	1200	Median	395
SD	299.9	Std. Error of Mean	86.57
Coefficient of Variation	0.712	Skewness	1.617

Normal GOF Test

Shapiro Wilk Test Statistic	0.865	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.859	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.208	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.243	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	576.6	95% Adjusted-CLT UCL (Chen-1995)	606.7
		95% Modified-t UCL (Johnson-1978)	583.3

Gamma GOF Test

A-D Test Statistic	0.249	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.741	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.151	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.248	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.221	k star (bias corrected MLE)	1.721
Theta hat (MLE)	189.6	Theta star (bias corrected MLE)	244.7
nu hat (MLE)	53.29	nu star (bias corrected)	41.3
MLE Mean (bias corrected)	421.1	MLE Sd (bias corrected)	321
		Approximate Chi Square Value (0.05)	27.57
Adjusted Level of Significance	0.029	Adjusted Chi Square Value	25.87

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	630.8	95% Adjusted Gamma UCL (use when n<50)	672.3

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.955	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.859	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.196	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.243	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.127	Mean of logged Data	5.801
Maximum of Logged Data	7.09	SD of logged Data	0.779

Assuming Lognormal Distribution

95% H-UCL	812.4	90% Chebyshev (MVUE) UCL	741.6
95% Chebyshev (MVUE) UCL	880.8	97.5% Chebyshev (MVUE) UCL	1074
99% Chebyshev (MVUE) UCL	1454		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	563.5	95% Jackknife UCL	576.6
95% Standard Bootstrap UCL	558.5	95% Bootstrap-t UCL	656.5
95% Hall's Bootstrap UCL	1372	95% Percentile Bootstrap UCL	555.9

95% BCA Bootstrap UCL	605.5		
90% Chebyshev(Mean, Sd) UCL	680.8	95% Chebyshev(Mean, Sd) UCL	798.4
97.5% Chebyshev(Mean, Sd) UCL	961.7	99% Chebyshev(Mean, Sd) UCL	1282

Suggested UCL to Use

95% Student's-t UCL	576.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU3_PEPA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	55	Mean	271.7
Maximum	570	Median	190
SD	267	Std. Error of Mean	154.2
Coefficient of Variation	0.983	Skewness	1.248

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.93	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.287	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	721.9	95% Adjusted-CLT UCL (Chen-1995)	643.9
		95% Modified-t UCL (Johnson-1978)	740.4

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	1.379	k star (bias corrected MLE)	N/A

Theta hat (MLE)	197	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	8.272	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.999	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.183	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.007	Mean of logged Data	5.2
Maximum of Logged Data	6.346	SD of logged Data	1.17

Assuming Lognormal Distribution

95% H-UCL	1.107E+8	90% Chebyshev (MVUE) UCL	751.7
95% Chebyshev (MVUE) UCL	968.1	97.5% Chebyshev (MVUE) UCL	1269
99% Chebyshev (MVUE) UCL	1859		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	525.3	95% Jackknife UCL	721.9
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	734.2	95% Chebyshev(Mean, Sd) UCL	943.7
97.5% Chebyshev(Mean, Sd) UCL	1234	99% Chebyshev(Mean, Sd) UCL	1806

Suggested UCL to Use

95% Student's-t UCL	721.9

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU3_PFECA-G

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	2

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU3_PFECA-G was not processed!

DW_EU3_PFESA-BP1

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	2

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU3_PFESA-BP1 was not processed!

DW_EU3_PFESA-BP2

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
Number of Detects	2	Number of Non-Detects	1
Number of Distinct Detects	2	Number of Distinct Non-Detects	1
Minimum Detect	11	Minimum Non-Detect	50
Maximum Detect	27	Maximum Non-Detect	50
Variance Detects	128	Percent Non-Detects	33.33%
Mean Detects	19	SD Detects	11.31
Median Detects	19	CV Detects	0.595
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	2.847	SD of Logged Detects	0.635

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	19	KM Standard Error of Mean	8
KM SD	8	95% KM (BCA) UCL	N/A
95% KM (t) UCL	42.36	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	32.16	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	43	95% KM Chebyshev UCL	53.87
97.5% KM Chebyshev UCL	68.96	99% KM Chebyshev UCL	98.6

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	5.285	k star (bias corrected MLE)	N/A
Theta hat (MLE)	3.595	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	21.14	nu star (bias corrected)	N/A
Mean (detects)	19		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	19	SD (KM)	8
Variance (KM)	64	SE of Mean (KM)	8
k hat (KM)	5.641	k star (KM)	N/A
nu hat (KM)	33.84	nu star (KM)	N/A
theta hat (KM)	3.368	theta star (KM)	N/A
80% gamma percentile (KM)	N/A	90% gamma percentile (KM)	N/A
95% gamma percentile (KM)	N/A	99% gamma percentile (KM)	N/A

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.00136
Approximate Chi Square Value (N/A, α)	N/A	Adjusted Chi Square Value (N/A, β)	N/A
95% Gamma Approximate KM-UCL (use when n>=50)	N/A	95% Gamma Adjusted KM-UCL (use when n<50)	N/A

Lognormal GOF Test on Detected Observations Only
Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	18.41	Mean in Log Scale	2.847
SD in Original Scale	8.065	SD in Log Scale	0.449
95% t UCL (assumes normality of ROS data)	32.01	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A	95% Bootstrap t UCL	N/A
95% H-UCL (Log ROS)	121.1		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.847	KM Geo Mean	17.23
KM SD (logged)	0.449	95% Critical H Value (KM-Log)	5.824
KM Standard Error of Mean (logged)	0.449	95% H-UCL (KM -Log)	121.1
KM SD (logged)	0.449	95% Critical H Value (KM-Log)	5.824
KM Standard Error of Mean (logged)	0.449		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	21	Mean in Log Scale	2.971
SD in Original Scale	8.718	SD in Log Scale	0.498
95% t UCL (Assumes normality)	35.7	95% H-Stat UCL	214.8

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 53.87

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU3_PFMOAA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	17	Mean	113.7
Maximum	250	Median	74
SD	121.5	Std. Error of Mean	70.12
Coefficient of Variation	1.069	Skewness	1.313

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.

For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.92	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.295	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	318.4	95% Adjusted-CLT UCL (Chen-1995)	285.8
		95% Modified-t UCL (Johnson-1978)	327.3

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	1.11	k star (bias corrected MLE)	N/A
Theta hat (MLE)	102.4	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	6.662	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.997	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.192	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.833	Mean of logged Data	4.22
Maximum of Logged Data	5.521	SD of logged Data	1.346

Assuming Lognormal Distribution

95% H-UCL	3.138E+9	90% Chebyshev (MVUE) UCL	338.6
95% Chebyshev (MVUE) UCL	439.6	97.5% Chebyshev (MVUE) UCL	579.7
99% Chebyshev (MVUE) UCL	855		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	229	95% Jackknife UCL	318.4
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	324	95% Chebyshev(Mean, Sd) UCL	419.3
97.5% Chebyshev(Mean, Sd) UCL	551.6	99% Chebyshev(Mean, Sd) UCL	811.4

Suggested UCL to Use

95% Student's-t UCL	318.4

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU3_PFO2HxA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	20	Mean	313.3
Maximum	810	Median	110
SD	432.5	Std. Error of Mean	249.7
Coefficient of Variation	1.38	Skewness	1.648

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.834	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.348	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1042	95% Adjusted-CLT UCL (Chen-1995)	977.9
		95% Modified-t UCL (Johnson-1978)	1082

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	0.644	k star (bias corrected MLE)	N/A
Theta hat (MLE)	486.5	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	3.864	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.998	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.188	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.996	Mean of logged Data	4.798
Maximum of Logged Data	6.697	SD of logged Data	1.853

Assuming Lognormal Distribution

95% H-UCL	4.009E+16	90% Chebyshev (MVUE) UCL	1015
95% Chebyshev (MVUE) UCL	1337	97.5% Chebyshev (MVUE) UCL	1784
99% Chebyshev (MVUE) UCL	2661		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	724	95% Jackknife UCL	1042
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	1062	95% Chebyshev(Mean, Sd) UCL	1402
97.5% Chebyshev(Mean, Sd) UCL	1873	99% Chebyshev(Mean, Sd) UCL	2798

Suggested UCL to Use

95% Student's-t UCL 1042

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU3_PFO3OA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
Number of Detects	1	Number of Non-Detects	2
Number of Distinct Detects	1	Number of Distinct Non-Detects	2

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU3_PFO3OA was not processed!

DW_EU3_PFO4DA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
Number of Detects	1	Number of Non-Detects	2
Number of Distinct Detects	1	Number of Distinct Non-Detects	2

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU3_PFO4DA was not processed!

DW_EU3_PFO5DA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	2

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU3_PFO5DA was not processed!

DW_EU3_PMPA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	310	Mean	1010
Maximum	1800	Median	920
SD	749.1	Std. Error of Mean	432.5
Coefficient of Variation	0.742	Skewness	0.533

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.989	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.214	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	2273	95% Adjusted-CLT UCL (Chen-1995)	1864
		95% Modified-t UCL (Johnson-1978)	2295

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	2.306	k star (bias corrected MLE)	N/A
Theta hat (MLE)	438	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	13.84	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.982	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.229	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.737	Mean of logged Data	6.685
Maximum of Logged Data	7.496	SD of logged Data	0.888

Assuming Lognormal Distribution

95% H-UCL	1701519	90% Chebyshev (MVUE) UCL	2465
95% Chebyshev (MVUE) UCL	3117	97.5% Chebyshev (MVUE) UCL	4021
99% Chebyshev (MVUE) UCL	5799		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	1721	95% Jackknife UCL	2273
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	2307	95% Chebyshev(Mean, Sd) UCL	2895
97.5% Chebyshev(Mean, Sd) UCL	3711	99% Chebyshev(Mean, Sd) UCL	5313

Suggested UCL to Use

95% Student's-t UCL	2273

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU4_HFPO-DA

General Statistics

Total Number of Observations	45	Number of Distinct Observations	37
Number of Detects	33	Number of Non-Detects	12
Number of Distinct Detects	33	Number of Distinct Non-Detects	5

Minimum Detect	0.684	Minimum Non-Detect	1.75
Maximum Detect	1100	Maximum Non-Detect	10
Variance Detects	56706	Percent Non-Detects	26.67%
Mean Detects	189.2	SD Detects	238.1
Median Detects	78.2	CV Detects	1.259
Skewness Detects	2.124	Kurtosis Detects	5.715
Mean of Logged Detects	4.311	SD of Logged Detects	1.642

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.757	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.931	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.214	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.152	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	138.9	KM Standard Error of Mean	32.91
KM SD	217.4	95% KM (BCA) UCL	197.6
95% KM (t) UCL	194.2	95% KM (Percentile Bootstrap) UCL	196.5
95% KM (z) UCL	193.1	95% KM Bootstrap t UCL	215.2
90% KM Chebyshev UCL	237.7	95% KM Chebyshev UCL	282.4
97.5% KM Chebyshev UCL	344.5	99% KM Chebyshev UCL	466.4

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.393	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.797	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.109	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.16	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.655	k star (bias corrected MLE)	0.616
Theta hat (MLE)	288.9	Theta star (bias corrected MLE)	307.4
nu hat (MLE)	43.22	nu star (bias corrected)	40.62
Mean (detects)	189.2		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	138.7
Maximum	1100	Median	30
SD	220	CV	1.586

k hat (MLE)	0.239	k star (bias corrected MLE)	0.238
Theta hat (MLE)	581.4	Theta star (bias corrected MLE)	584.1
nu hat (MLE)	21.48	nu star (bias corrected)	21.38
Adjusted Level of Significance (β)	0.0447		
Approximate Chi Square Value (21.38, α)	11.87	Adjusted Chi Square Value (21.38, β)	11.64
95% Gamma Approximate UCL (use when n>=50)	249.8	95% Gamma Adjusted UCL (use when n<50)	254.9

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	138.9	SD (KM)	217.4
Variance (KM)	47266	SE of Mean (KM)	32.91
k hat (KM)	0.408	k star (KM)	0.396
nu hat (KM)	36.76	nu star (KM)	35.64
theta hat (KM)	340.2	theta star (KM)	350.9
80% gamma percentile (KM)	224	90% gamma percentile (KM)	393.1
95% gamma percentile (KM)	579.3	99% gamma percentile (KM)	1048

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (35.64, α)	22.98	Adjusted Chi Square Value (35.64, β)	22.64
95% Gamma Approximate KM-UCL (use when n>=50)	215.5	95% Gamma Adjusted KM-UCL (use when n<50)	218.7

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.953	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.931	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.104	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.152	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	139.5	Mean in Log Scale	3.398
SD in Original Scale	219.5	SD in Log Scale	2.107
95% t UCL (assumes normality of ROS data)	194.5	95% Percentile Bootstrap UCL	194.6
95% BCA Bootstrap UCL	205.4	95% Bootstrap t UCL	217.8
95% H-UCL (Log ROS)	934		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.068	KM Geo Mean	21.5
KM SD (logged)	2.487	95% Critical H Value (KM-Log)	4.409
KM Standard Error of Mean (logged)	0.377	95% H-UCL (KM -Log)	2477
KM SD (logged)	2.487	95% Critical H Value (KM-Log)	4.409
KM Standard Error of Mean (logged)	0.377		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	139.3	Mean in Log Scale	3.319
SD in Original Scale	219.7	SD in Log Scale	2.188

95% t UCL (Assumes normality)	194.3	95% H-Stat UCL	1115

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

ı Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1	218.7

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU4_PEPA

General Statistics

Total Number of Observations	25	Number of Distinct Observations	10
Number of Detects	10	Number of Non-Detects	15
Number of Distinct Detects	9	Number of Distinct Non-Detects	1
Minimum Detect	86	Minimum Non-Detect	20
Maximum Detect	400	Maximum Non-Detect	20
Variance Detects	10315	Percent Non-Detects	60%
Mean Detects	180.6	SD Detects	101.6
Median Detects	140	CV Detects	0.562
Skewness Detects	1.432	Kurtosis Detects	1.321
Mean of Logged Detects	5.077	SD of Logged Detects	0.495

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.831	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.255	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	84.24	KM Standard Error of Mean	20.98
KM SD	99.52	95% KM (BCA) UCL	114.2
95% KM (t) UCL	120.1	95% KM (Percentile Bootstrap) UCL	116.7
95% KM (z) UCL	118.7	95% KM Bootstrap t UCL	129.8
90% KM Chebyshev UCL	147.2	95% KM Chebyshev UCL	175.7
97.5% KM Chebyshev UCL	215.3	99% KM Chebyshev UCL	293

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.476	**Anderson-Darling GOF Test**

5% A-D Critical Value	0.729	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.235	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.268	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	4.345	k star (bias corrected MLE)	3.108
Theta hat (MLE)	41.56	Theta star (bias corrected MLE)	58.1
nu hat (MLE)	86.91	nu star (bias corrected)	62.17
Mean (detects)	180.6		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	74.47
Maximum	400	Median	3.659
SD	108.4	CV	1.455
k hat (MLE)	0.179	k star (bias corrected MLE)	0.184
Theta hat (MLE)	416	Theta star (bias corrected MLE)	404.3
nu hat (MLE)	8.952	nu star (bias corrected)	9.211
Adjusted Level of Significance (β)	0.0395		
Approximate Chi Square Value (9.21, α)	3.455	Adjusted Chi Square Value (9.21, β)	3.218
95% Gamma Approximate UCL (use when n>=50)	198.5	95% Gamma Adjusted UCL (use when n<50)	213.2

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	84.24	SD (KM)	99.52
Variance (KM)	9903	SE of Mean (KM)	20.98
k hat (KM)	0.717	k star (KM)	0.657
nu hat (KM)	35.83	nu star (KM)	32.86
theta hat (KM)	117.6	theta star (KM)	128.2
80% gamma percentile (KM)	138.7	90% gamma percentile (KM)	214.6
95% gamma percentile (KM)	293.3	99% gamma percentile (KM)	482.3

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (32.86, α)	20.76	Adjusted Chi Square Value (32.86, β)	20.1
95% Gamma Approximate KM-UCL (use when n>=50)	133.4	95% Gamma Adjusted KM-UCL (use when n<50)	137.7

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.934	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.208	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	94.33	Mean in Log Scale	4.103
SD in Original Scale	96.18	SD in Log Scale	0.982
95% t UCL (assumes normality of ROS data)	127.2	95% Percentile Bootstrap UCL	127.5
95% BCA Bootstrap UCL	131.7	95% Bootstrap t UCL	146.7
95% H-UCL (Log ROS)	160.9		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.828	KM Geo Mean	45.98
KM SD (logged)	1.062	95% Critical H Value (KM-Log)	2.575
KM Standard Error of Mean (logged)	0.224	95% H-UCL (KM -Log)	141.2
KM SD (logged)	1.062	95% Critical H Value (KM-Log)	2.575
KM Standard Error of Mean (logged)	0.224		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	78.24	Mean in Log Scale	3.412
SD in Original Scale	105.6	SD in Log Scale	1.42
95% t UCL (Assumes normality)	114.4	95% H-Stat UCL	202.7

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 120.1

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU4_PFECA-G

General Statistics

Total Number of Observations	25	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	25
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU4_PFECA-G was not processed!

DW_EU4_PFESA-BP1

General Statistics

Total Number of Observations	25	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	25
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU4_PFESA-BP1 was not processed!

DW_EU4_PFESA-BP2

General Statistics

Total Number of Observations	25	Number of Distinct Observations	10
Number of Detects	8	Number of Non-Detects	17
Number of Distinct Detects	8	Number of Distinct Non-Detects	2
Minimum Detect	5.6	Minimum Non-Detect	2
Maximum Detect	44	Maximum Non-Detect	50
Variance Detects	181.7	Percent Non-Detects	68%
Mean Detects	20.09	SD Detects	13.48
Median Detects	17.5	CV Detects	0.671
Skewness Detects	0.763	Kurtosis Detects	-0.404
Mean of Logged Detects	2.784	SD of Logged Detects	0.725

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.922	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.2	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	8.291	KM Standard Error of Mean	2.537
KM SD	11.38	95% KM (BCA) UCL	12.56
95% KM (t) UCL	12.63	95% KM (Percentile Bootstrap) UCL	12.24

95% KM (z) UCL	12.46	95% KM Bootstrap t UCL	14.22
90% KM Chebyshev UCL	15.9	95% KM Chebyshev UCL	19.35
97.5% KM Chebyshev UCL	24.13	99% KM Chebyshev UCL	33.53

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.229	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.723	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.162	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.297	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.469	k star (bias corrected MLE)	1.626
Theta hat (MLE)	8.137	Theta star (bias corrected MLE)	12.35
nu hat (MLE)	39.5	nu star (bias corrected)	26.02
Mean (detects)	20.09		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	6.578
Maximum	44	Median	0.01
SD	11.96	CV	1.817
k hat (MLE)	0.194	k star (bias corrected MLE)	0.198
Theta hat (MLE)	33.86	Theta star (bias corrected MLE)	33.29
nu hat (MLE)	9.714	nu star (bias corrected)	9.881
Adjusted Level of Significance (β)	0.0395		
Approximate Chi Square Value (9.88, α)	3.868	Adjusted Chi Square Value (9.88, β)	3.614
95% Gamma Approximate UCL (use when n>=50)	16.81	95% Gamma Adjusted UCL (use when n<50)	17.99

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	8.291	SD (KM)	11.38
Variance (KM)	129.5	SE of Mean (KM)	2.537
k hat (KM)	0.531	k star (KM)	0.494
nu hat (KM)	26.54	nu star (KM)	24.69
theta hat (KM)	15.62	theta star (KM)	16.79
80% gamma percentile (KM)	13.61	90% gamma percentile (KM)	22.49
95% gamma percentile (KM)	31.99	99% gamma percentile (KM)	55.39

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (24.69, α)	14.37	Adjusted Chi Square Value (24.69, β)	13.84
95% Gamma Approximate KM-UCL (use when n>=50)	14.24	95% Gamma Adjusted KM-UCL (use when n<50)	14.79

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.963	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.164	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.283	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	7.856	Mean in Log Scale	1.134
SD in Original Scale	11.33	SD in Log Scale	1.464
95% t UCL (assumes normality of ROS data)	11.73	95% Percentile Bootstrap UCL	11.75
95% BCA Bootstrap UCL	12.44	95% Bootstrap t UCL	13.92
95% H-UCL (Log ROS)	23.19		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.42	KM Geo Mean	4.139
KM SD (logged)	1.073	95% Critical H Value (KM-Log)	2.589
KM Standard Error of Mean (logged)	0.239	95% H-UCL (KM -Log)	12.98
KM SD (logged)	1.073	95% Critical H Value (KM-Log)	2.589
KM Standard Error of Mean (logged)	0.239		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	9.028	Mean in Log Scale	1.148
SD in Original Scale	12.46	SD in Log Scale	1.492
95% t UCL (Assumes normality)	13.29	95% H-Stat UCL	25.31

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	12.63

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU4_PFMOAA

General Statistics

Total Number of Observations	25	Number of Distinct Observations	13
Number of Detects	12	Number of Non-Detects	13

Number of Distinct Detects	12	Number of Distinct Non-Detects	1
Minimum Detect	6.7	Minimum Non-Detect	5
Maximum Detect	270	Maximum Non-Detect	5
Variance Detects	5256	Percent Non-Detects	52%
Mean Detects	100.4	SD Detects	72.5
Median Detects	92	CV Detects	0.722
Skewness Detects	1	Kurtosis Detects	1.753
Mean of Logged Detects	4.214	SD of Logged Detects	1.15

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.927	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.859	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.169	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.243	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	50.8	KM Standard Error of Mean	14.14
KM SD	67.71	95% KM (BCA) UCL	74.42
95% KM (t) UCL	74.99	95% KM (Percentile Bootstrap) UCL	73.83
95% KM (z) UCL	74.06	95% KM Bootstrap t UCL	82.25
90% KM Chebyshev UCL	93.23	95% KM Chebyshev UCL	112.4
97.5% KM Chebyshev UCL	139.1	99% KM Chebyshev UCL	191.5

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.559	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.748	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.194	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.25	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.407	k star (bias corrected MLE)	1.111
Theta hat (MLE)	71.35	Theta star (bias corrected MLE)	90.38
nu hat (MLE)	33.77	nu star (bias corrected)	26.66
Mean (detects)	100.4		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	48.43
Maximum	270	Median	5.614

SD	70.77	CV	1.461
k hat (MLE)	0.186	k star (bias corrected MLE)	0.19
Theta hat (MLE)	260.2	Theta star (bias corrected MLE)	254.3
nu hat (MLE)	9.305	nu star (bias corrected)	9.521
Adjusted Level of Significance (β)	0.0395		
Approximate Chi Square Value (9.52, α)	3.645	Adjusted Chi Square Value (9.52, β)	3.4
95% Gamma Approximate UCL (use when n>=50)	126.5	95% Gamma Adjusted UCL (use when n<50)	135.6

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	50.8	SD (KM)	67.71
Variance (KM)	4585	SE of Mean (KM)	14.14
k hat (KM)	0.563	k star (KM)	0.522
nu hat (KM)	28.14	nu star (KM)	26.1
theta hat (KM)	90.25	theta star (KM)	97.32
80% gamma percentile (KM)	83.56	90% gamma percentile (KM)	136.2
95% gamma percentile (KM)	192.2	99% gamma percentile (KM)	329.2

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (26.10, α)	15.45	Adjusted Chi Square Value (26.10, β)	14.9
95% Gamma Approximate KM-UCL (use when n>=50)	85.78	95% Gamma Adjusted KM-UCL (use when n<50)	88.99

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.816	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.859	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.243	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.243	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	51.14	Mean in Log Scale	2.735
SD in Original Scale	68.94	SD in Log Scale	1.788
95% t UCL (assumes normality of ROS data)	74.73	95% Percentile Bootstrap UCL	74.84
95% BCA Bootstrap UCL	78.81	95% Bootstrap t UCL	82.56
95% H-UCL (Log ROS)	287.9		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.859	KM Geo Mean	17.45
KM SD (logged)	1.508	95% Critical H Value (KM-Log)	3.207
KM Standard Error of Mean (logged)	0.315	95% H-UCL (KM -Log)	146.1
KM SD (logged)	1.508	95% Critical H Value (KM-Log)	3.207
KM Standard Error of Mean (logged)	0.315		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	49.5	Mean in Log Scale	2.499

SD in Original Scale	70.01	SD in Log Scale	1.853
95% t UCL (Assumes normality)	73.45	95% H-Stat UCL	278.8

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 74.99

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU4_PFO2HxA

General Statistics

Total Number of Observations	25	Number of Distinct Observations	14
Number of Detects	14	Number of Non-Detects	11
Number of Distinct Detects	13	Number of Distinct Non-Detects	1
Minimum Detect	2.1	Minimum Non-Detect	2
Maximum Detect	730	Maximum Non-Detect	2
Variance Detects	50248	Percent Non-Detects	44%
Mean Detects	231.3	SD Detects	224.2
Median Detects	195	CV Detects	0.969
Skewness Detects	1.003	Kurtosis Detects	0.39
Mean of Logged Detects	4.491	SD of Logged Detects	1.928

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.892	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.874	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.163	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.226	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	130.4	KM Standard Error of Mean	41.03
KM SD	197.7	95% KM (BCA) UCL	202.4
95% KM (t) UCL	200.6	95% KM (Percentile Bootstrap) UCL	200
95% KM (z) UCL	197.9	95% KM Bootstrap t UCL	225.6
90% KM Chebyshev UCL	253.5	95% KM Chebyshev UCL	309.3
97.5% KM Chebyshev UCL	386.6	99% KM Chebyshev UCL	538.7

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.536	**Anderson-Darling GOF Test**		
5% A-D Critical Value	0.78	Detected data appear Gamma Distributed at 5% Significance Level		
K-S Test Statistic	0.199	**Kolmogorov-Smirnov GOF**		
5% K-S Critical Value	0.239	Detected data appear Gamma Distributed at 5% Significance Level		

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.642	k star (bias corrected MLE)	0.552
Theta hat (MLE)	360.1	Theta star (bias corrected MLE)	418.8
nu hat (MLE)	17.98	nu star (bias corrected)	15.46
Mean (detects)	231.3		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	129.5
Maximum	730	Median	4.4
SD	202.4	CV	1.562
k hat (MLE)	0.172	k star (bias corrected MLE)	0.178
Theta hat (MLE)	752.5	Theta star (bias corrected MLE)	727.1
nu hat (MLE)	8.606	nu star (bias corrected)	8.907
Adjusted Level of Significance (β)	0.0395		
Approximate Chi Square Value (8.91, α)	3.271	Adjusted Chi Square Value (8.91, β)	3.041
95% Gamma Approximate UCL (use when n>=50)	352.7	95% Gamma Adjusted UCL (use when n<50)	379.3

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	130.4	SD (KM)	197.7
Variance (KM)	39084	SE of Mean (KM)	41.03
k hat (KM)	0.435	k star (KM)	0.41
nu hat (KM)	21.75	nu star (KM)	20.48
theta hat (KM)	299.7	theta star (KM)	318.4
80% gamma percentile (KM)	211	90% gamma percentile (KM)	366.8
95% gamma percentile (KM)	537.4	99% gamma percentile (KM)	965.4

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (20.48, α)	11.2	Adjusted Chi Square Value (20.48, β)	10.74
95% Gamma Approximate KM-UCL (use when n>=50)	238.3	95% Gamma Adjusted KM-UCL (use when n<50)	248.7

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.851	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.275	**Lilliefors GOF Test**

5% Lilliefors Critical Value	0.226	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	130.3	Mean in Log Scale	2.457
SD in Original Scale	201.8	SD in Log Scale	2.899
95% t UCL (assumes normality of ROS data)	199.4	95% Percentile Bootstrap UCL	192.4
95% BCA Bootstrap UCL	209.9	95% Bootstrap t UCL	222
95% H-UCL (Log ROS)	19881		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.82	KM Geo Mean	16.78
KM SD (logged)	2.342	95% Critical H Value (KM-Log)	4.538
KM Standard Error of Mean (logged)	0.486	95% H-UCL (KM -Log)	2283
KM SD (logged)	2.342	95% Critical H Value (KM-Log)	4.538
KM Standard Error of Mean (logged)	0.486		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	130	Mean in Log Scale	2.515
SD in Original Scale	202.1	SD in Log Scale	2.681
95% t UCL (Assumes normality)	199.1	95% H-Stat UCL	7372

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	200.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU4_PFO3OA

General Statistics

Total Number of Observations	25	Number of Distinct Observations	10
Number of Detects	9	Number of Non-Detects	16
Number of Distinct Detects	8	Number of Distinct Non-Detects	2
Minimum Detect	7.8	Minimum Non-Detect	2
Maximum Detect	88	Maximum Non-Detect	50
Variance Detects	639	Percent Non-Detects	64%
Mean Detects	30.29	SD Detects	25.28

Median Detects	21	CV Detects	0.835
Skewness Detects	1.702	Kurtosis Detects	3.141
Mean of Logged Detects	3.132	SD of Logged Detects	0.795

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.824	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.25	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	12.48	KM Standard Error of Mean	4.232
KM SD	19.78	95% KM (BCA) UCL	20.45
95% KM (t) UCL	19.72	95% KM (Percentile Bootstrap) UCL	19.56
95% KM (z) UCL	19.44	95% KM Bootstrap t UCL	23.84
90% KM Chebyshev UCL	25.17	95% KM Chebyshev UCL	30.92
97.5% KM Chebyshev UCL	38.91	99% KM Chebyshev UCL	54.59

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.287	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.73	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.172	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.283	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.943	k star (bias corrected MLE)	1.369
Theta hat (MLE)	15.59	Theta star (bias corrected MLE)	22.12
nu hat (MLE)	34.97	nu star (bias corrected)	24.65
Mean (detects)	30.29		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	10.91
Maximum	88	Median	0.01
SD	20.81	CV	1.907
k hat (MLE)	0.178	k star (bias corrected MLE)	0.183
Theta hat (MLE)	61.3	Theta star (bias corrected MLE)	59.52
nu hat (MLE)	8.9	nu star (bias corrected)	9.165
Adjusted Level of Significance (β)	0.0395		

Approximate Chi Square Value (9.16, α)	3.427	Adjusted Chi Square Value (9.16, β)	3.191
95% Gamma Approximate UCL (use when n>=50)	29.18	95% Gamma Adjusted UCL (use when n<50)	31.34

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	12.48	SD (KM)	19.78
Variance (KM)	391.4	SE of Mean (KM)	4.232
k hat (KM)	0.398	k star (KM)	0.377
nu hat (KM)	19.89	nu star (KM)	18.84
theta hat (KM)	31.37	theta star (KM)	33.12
80% gamma percentile (KM)	19.98	90% gamma percentile (KM)	35.61
95% gamma percentile (KM)	52.92	99% gamma percentile (KM)	96.74

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (18.84, α)	9.998	Adjusted Chi Square Value (18.84, β)	9.56
95% Gamma Approximate KM-UCL (use when n>=50)	23.51	95% Gamma Adjusted KM-UCL (use when n<50)	24.59

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.954	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.135	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	12.9	Mean in Log Scale	1.672
SD in Original Scale	19.82	SD in Log Scale	1.387
95% t UCL (assumes normality of ROS data)	19.68	95% Percentile Bootstrap UCL	19.8
95% BCA Bootstrap UCL	22.04	95% Bootstrap t UCL	25.61
95% H-UCL (Log ROS)	32.86		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.603	KM Geo Mean	4.966
KM SD (logged)	1.262	95% Critical H Value (KM-Log)	2.847
KM Standard Error of Mean (logged)	0.272	95% H-UCL (KM -Log)	22.94
KM SD (logged)	1.262	95% Critical H Value (KM-Log)	2.847
KM Standard Error of Mean (logged)	0.272		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	12.5	Mean in Log Scale	1.256
SD in Original Scale	20.51	SD in Log Scale	1.636
95% t UCL (Assumes normality)	19.52	95% H-Stat UCL	41.71

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	19.72

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU4_PFO4DA

General Statistics

Total Number of Observations	25	Number of Distinct Observations	9
Number of Detects	7	Number of Non-Detects	18
Number of Distinct Detects	7	Number of Distinct Non-Detects	2
Minimum Detect	1.8	Minimum Non-Detect	2
Maximum Detect	12	Maximum Non-Detect	50
Variance Detects	13.82	Percent Non-Detects	72%
Mean Detects	6.629	SD Detects	3.718
Median Detects	4.9	CV Detects	0.561
Skewness Detects	0.284	Kurtosis Detects	-1.462
Mean of Logged Detects	1.727	SD of Logged Detects	0.659

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.933	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.25	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.304	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3.27	KM Standard Error of Mean	0.658
KM SD	2.923	95% KM (BCA) UCL	4.639
95% KM (t) UCL	4.396	95% KM (Percentile Bootstrap) UCL	4.405
95% KM (z) UCL	4.352	95% KM Bootstrap t UCL	4.732
90% KM Chebyshev UCL	5.244	95% KM Chebyshev UCL	6.139
97.5% KM Chebyshev UCL	7.38	99% KM Chebyshev UCL	9.819

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.302	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.712	Detected data appear Gamma Distributed at 5% Significance Level

K-S Test Statistic	0.205	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.314	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	3.205	k star (bias corrected MLE)	1.927
Theta hat (MLE)	2.068	Theta star (bias corrected MLE)	3.441
nu hat (MLE)	44.87	nu star (bias corrected)	26.97
Mean (detects)	6.629		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	2.699
Maximum	12	Median	1.8
SD	3.336	CV	1.236
k hat (MLE)	0.383	k star (bias corrected MLE)	0.364
Theta hat (MLE)	7.04	Theta star (bias corrected MLE)	7.414
nu hat (MLE)	19.17	nu star (bias corrected)	18.2
Adjusted Level of Significance (β)	0.0395		
Approximate Chi Square Value (18.20, α)	9.535	Adjusted Chi Square Value (18.20, β)	9.108
95% Gamma Approximate UCL (use when n>=50)	5.151	95% Gamma Adjusted UCL (use when n<50)	5.392

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3.27	SD (KM)	2.923
Variance (KM)	8.542	SE of Mean (KM)	0.658
k hat (KM)	1.251	k star (KM)	1.128
nu hat (KM)	62.57	nu star (KM)	56.4
theta hat (KM)	2.613	theta star (KM)	2.899
80% gamma percentile (KM)	5.207	90% gamma percentile (KM)	7.308
95% gamma percentile (KM)	9.389	99% gamma percentile (KM)	14.18

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (56.40, α)	40.14	Adjusted Chi Square Value (56.40, β)	39.2
95% Gamma Approximate KM-UCL (use when n>=50)	4.594	95% Gamma Adjusted KM-UCL (use when n<50)	4.704

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.93	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.191	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.304	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3.185	Mean in Log Scale	0.812
SD in Original Scale	2.991	SD in Log Scale	0.843
95% t UCL (assumes normality of ROS data)	4.208	95% Percentile Bootstrap UCL	4.241
95% BCA Bootstrap UCL	4.428	95% Bootstrap t UCL	4.685
95% H-UCL (Log ROS)	4.778		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.935	KM Geo Mean	2.546
KM SD (logged)	0.623	95% Critical H Value (KM-Log)	2.07
KM Standard Error of Mean (logged)	0.14	95% H-UCL (KM -Log)	4.022
KM SD (logged)	0.623	95% Critical H Value (KM-Log)	2.07
KM Standard Error of Mean (logged)	0.14		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.496	Mean in Log Scale	0.741
SD in Original Scale	6.926	SD in Log Scale	1.127
95% t UCL (Assumes normality)	6.866	95% H-Stat UCL	7.302

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 4.396

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU4_PFO5DA

General Statistics

Total Number of Observations	25	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	25
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU4_PFO5DA was not processed!

DW_EU4_PMPA

General Statistics

Total Number of Observations	25	Number of Distinct Observations	16
Number of Detects	16	Number of Non-Detects	9
Number of Distinct Detects	15	Number of Distinct Non-Detects	1
Minimum Detect	15	Minimum Non-Detect	10
Maximum Detect	1600	Maximum Non-Detect	10
Variance Detects	189766	Percent Non-Detects	36%
Mean Detects	422.9	SD Detects	435.6
Median Detects	425	CV Detects	1.03
Skewness Detects	1.393	Kurtosis Detects	2.358
Mean of Logged Detects	5.224	SD of Logged Detects	1.591

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.842	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.887	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.207	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.213	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	274.2	KM Standard Error of Mean	80.83
KM SD	391.3	95% KM (BCA) UCL	418.1
95% KM (t) UCL	412.5	95% KM (Percentile Bootstrap) UCL	420
95% KM (z) UCL	407.2	95% KM Bootstrap t UCL	468.6
90% KM Chebyshev UCL	516.7	95% KM Chebyshev UCL	626.6
97.5% KM Chebyshev UCL	779	99% KM Chebyshev UCL	1079

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.835	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.776	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.211	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.224	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.73	k star (bias corrected MLE)	0.635
Theta hat (MLE)	579.2	Theta star (bias corrected MLE)	666
nu hat (MLE)	23.36	nu star (bias corrected)	20.32
Mean (detects)	422.9		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	270.6
Maximum	1600	Median	33
SD	401.9	CV	1.485
k hat (MLE)	0.19	k star (bias corrected MLE)	0.193
Theta hat (MLE)	1428	Theta star (bias corrected MLE)	1399
nu hat (MLE)	9.477	nu star (bias corrected)	9.673
Adjusted Level of Significance (β)	0.0395		
Approximate Chi Square Value (9.67, α)	3.738	Adjusted Chi Square Value (9.67, β)	3.49
95% Gamma Approximate UCL (use when n>=50)	700.3	95% Gamma Adjusted UCL (use when n<50)	750.2

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	274.2	SD (KM)	391.3
Variance (KM)	153135	SE of Mean (KM)	80.83
k hat (KM)	0.491	k star (KM)	0.459
nu hat (KM)	24.56	nu star (KM)	22.94
theta hat (KM)	558.4	theta star (KM)	597.7
80% gamma percentile (KM)	448.2	90% gamma percentile (KM)	755
95% gamma percentile (KM)	1086	99% gamma percentile (KM)	1907

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (22.94, α)	13.05	Adjusted Chi Square Value (22.94, β)	12.54
95% Gamma Approximate KM-UCL (use when n>=50)	482.2	95% Gamma Adjusted KM-UCL (use when n<50)	501.8

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.856	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.887	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.253	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.213	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	273	Mean in Log Scale	3.872
SD in Original Scale	400.3	SD in Log Scale	2.314
95% t UCL (assumes normality of ROS data)	409.9	95% Percentile Bootstrap UCL	406.8
95% BCA Bootstrap UCL	439.2	95% Bootstrap t UCL	496.7
95% H-UCL (Log ROS)	5817		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	4.172	KM Geo Mean	64.87
KM SD (logged)	1.867	95% Critical H Value (KM-Log)	3.763

KM Standard Error of Mean (logged)	0.386	95% H-UCL (KM -Log)	1554
KM SD (logged)	1.867	95% Critical H Value (KM-Log)	3.763
KM Standard Error of Mean (logged)	0.386		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	272.4	Mean in Log Scale	3.923
SD in Original Scale	400.6	SD in Log Scale	2.172
95% t UCL (Assumes normality)	409.5	95% H-Stat UCL	3528

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 412.5

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.112/6/2019 11:46:40 AM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

DW_EU5_HFPO-DA

General Statistics

Total Number of Observations	110	Number of Distinct Observations	75
Number of Detects	88	Number of Non-Detects	22
Number of Distinct Detects	72	Number of Distinct Non-Detects	4
Minimum Detect	1.85	Minimum Non-Detect	0.647
Maximum Detect	3400	Maximum Non-Detect	5.4
Variance Detects	310506	Percent Non-Detects	20%
Mean Detects	388.6	SD Detects	557.2
Median Detects	150.5	CV Detects	1.434
Skewness Detects	2.914	Kurtosis Detects	11.16
Mean of Logged Detects	4.867	SD of Logged Detects	1.79

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.689	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.244	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0946	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	311.3	KM Standard Error of Mean	49.78
KM SD	519.2	95% KM (BCA) UCL	394.3
95% KM (t) UCL	393.9	95% KM (Percentile Bootstrap) UCL	395.8
95% KM (z) UCL	393.2	95% KM Bootstrap t UCL	421.6
90% KM Chebyshev UCL	460.6	95% KM Chebyshev UCL	528.3
97.5% KM Chebyshev UCL	622.2	99% KM Chebyshev UCL	806.6

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.507	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.812	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.071	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.1	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.568	k star (bias corrected MLE)	0.557
Theta hat (MLE)	683.7	Theta star (bias corrected MLE)	698.2
nu hat (MLE)	100	nu star (bias corrected)	97.96
Mean (detects)	388.6		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	310.9
Maximum	3400	Median	90.5
SD	521.7	CV	1.678
k hat (MLE)	0.256	k star (bias corrected MLE)	0.255
Theta hat (MLE)	1216	Theta star (bias corrected MLE)	1220
nu hat (MLE)	56.27	nu star (bias corrected)	56.06
Adjusted Level of Significance (β)	0.0478		
Approximate Chi Square Value (56.06, α)	39.86	Adjusted Chi Square Value (56.06, β)	39.67
95% Gamma Approximate UCL (use when n>=50)	437.4	95% Gamma Adjusted UCL (use when n<50)	439.3

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	311.3	SD (KM)	519.2
Variance (KM)	269527	SE of Mean (KM)	49.78
k hat (KM)	0.359	k star (KM)	0.356
nu hat (KM)	79.08	nu star (KM)	78.26
theta hat (KM)	865.9	theta star (KM)	875
80% gamma percentile (KM)	494.2	90% gamma percentile (KM)	896.6
95% gamma percentile (KM)	1346	99% gamma percentile (KM)	2491

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (78.26, α)	58.88	Adjusted Chi Square Value (78.26, β)	58.66
95% Gamma Approximate KM-UCL (use when n>=50)	413.7	95% Gamma Adjusted KM-UCL (use when n<50)	415.3

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.944	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.0016	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0941	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0946	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	311.9	Mean in Log Scale	4.149
SD in Original Scale	521.2	SD in Log Scale	2.193
95% t UCL (assumes normality of ROS data)	394.3	95% Percentile Bootstrap UCL	396.7
95% BCA Bootstrap UCL	418.3	95% Bootstrap t UCL	418.5
95% H-UCL (Log ROS)	1479		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.986	KM Geo Mean	53.83
KM SD (logged)	2.385	95% Critical H Value (KM-Log)	3.798
KM Standard Error of Mean (logged)	0.233	95% H-UCL (KM -Log)	2204
KM SD (logged)	2.385	95% Critical H Value (KM-Log)	3.798
KM Standard Error of Mean (logged)	0.233		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	311.3	Mean in Log Scale	4.01
SD in Original Scale	521.5	SD in Log Scale	2.356
95% t UCL (Assumes normality)	393.8	95% H-Stat UCL	2066

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	413.7

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU5_PEPA

General Statistics

Total Number of Observations	67	Number of Distinct Observations	26
Number of Detects	27	Number of Non-Detects	40
Number of Distinct Detects	20	Number of Distinct Non-Detects	6
Minimum Detect	80	Minimum Non-Detect	2
Maximum Detect	2400	Maximum Non-Detect	10000
Variance Detects	223484	Percent Non-Detects	59.7%
Mean Detects	371.4	SD Detects	472.7
Median Detects	240	CV Detects	1.273
Skewness Detects	3.473	Kurtosis Detects	13.5
Mean of Logged Detects	5.545	SD of Logged Detects	0.764

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.538	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.383	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.167	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	155	KM Standard Error of Mean	43.74
KM SD	348	95% KM (BCA) UCL	245.8
95% KM (t) UCL	227.9	95% KM (Percentile Bootstrap) UCL	233.4
95% KM (z) UCL	226.9	95% KM Bootstrap t UCL	287.1

90% KM Chebyshev UCL	286.2	95% KM Chebyshev UCL	345.6
97.5% KM Chebyshev UCL	428.1	99% KM Chebyshev UCL	590.1

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.282	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.763	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.318	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.171	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.49	k star (bias corrected MLE)	1.349
Theta hat (MLE)	249.3	Theta star (bias corrected MLE)	275.3
nu hat (MLE)	80.45	nu star (bias corrected)	72.84
Mean (detects)	371.4		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	149.7
Maximum	2400	Median	0.01
SD	348.9	CV	2.331
k hat (MLE)	0.14	k star (bias corrected MLE)	0.144
Theta hat (MLE)	1065	Theta star (bias corrected MLE)	1038
nu hat (MLE)	18.82	nu star (bias corrected)	19.31
Adjusted Level of Significance (β)	0.0464		
Approximate Chi Square Value (19.31, α)	10.35	Adjusted Chi Square Value (19.31, β)	10.2
95% Gamma Approximate UCL (use when n>=50)	279.4	95% Gamma Adjusted UCL (use when n<50)	283.3

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	155	SD (KM)	348
Variance (KM)	121090	SE of Mean (KM)	43.74
k hat (KM)	0.198	k star (KM)	0.199
nu hat (KM)	26.58	nu star (KM)	26.72
theta hat (KM)	781.4	theta star (KM)	777.2
80% gamma percentile (KM)	203.9	90% gamma percentile (KM)	468.7
95% gamma percentile (KM)	799.1	99% gamma percentile (KM)	1709

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (26.72, α)	15.93	Adjusted Chi Square Value (26.72, β)	15.75
95% Gamma Approximate KM-UCL (use when n>=50)	259.9	95% Gamma Adjusted KM-UCL (use when n<50)	262.9

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.887	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.25	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.167	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	173.8	Mean in Log Scale	4.302
SD in Original Scale	339.3	SD in Log Scale	1.281
95% t UCL (assumes normality of ROS data)	242.9	95% Percentile Bootstrap UCL	247.9
95% BCA Bootstrap UCL	277.4	95% Bootstrap t UCL	323
95% H-UCL (Log ROS)	235.3		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.72	KM Geo Mean	15.18
KM SD (logged)	2.437	95% Critical H Value (KM-Log)	3.118
KM Standard Error of Mean (logged)	0.309	95% H-UCL (KM -Log)	753.8
KM SD (logged)	2.437	95% Critical H Value (KM-Log)	3.118
KM Standard Error of Mean (logged)	0.309		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	239	Mean in Log Scale	3.789
SD in Original Scale	685	SD in Log Scale	1.819
95% t UCL (Assumes normality)	378.6	95% H-Stat UCL	428.4

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	345.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU5_PFECA-G

General Statistics

Total Number of Observations	67	Number of Distinct Observations	5
Number of Detects	0	Number of Non-Detects	67
Number of Distinct Detects	0	Number of Distinct Non-Detects	5

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU5_PFECA-G was not processed!

DW_EU5_PFESA-BP1

General Statistics

Total Number of Observations	67	Number of Distinct Observations	7
Number of Detects	0	Number of Non-Detects	67
Number of Distinct Detects	0	Number of Distinct Non-Detects	7

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU5_PFESA-BP1 was not processed!

DW_EU5_PFESA-BP2

General Statistics

Total Number of Observations	67	Number of Distinct Observations	27
Number of Detects	23	Number of Non-Detects	44
Number of Distinct Detects	20	Number of Distinct Non-Detects	7
Minimum Detect	1.5	Minimum Non-Detect	1.1
Maximum Detect	70	Maximum Non-Detect	9500
Variance Detects	440.6	Percent Non-Detects	65.67%
Mean Detects	35.44	SD Detects	20.99
Median Detects	34	CV Detects	0.592
Skewness Detects	0.28	Kurtosis Detects	-1.125
Mean of Logged Detects	3.308	SD of Logged Detects	0.89

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.939	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.914	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.115	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.18	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	13.95	KM Standard Error of Mean	2.644

KM SD	20.48	95% KM (BCA) UCL	18.47
95% KM (t) UCL	18.36	95% KM (Percentile Bootstrap) UCL	18.23
95% KM (z) UCL	18.3	95% KM Bootstrap t UCL	19.07
90% KM Chebyshev UCL	21.88	95% KM Chebyshev UCL	25.47
97.5% KM Chebyshev UCL	30.46	99% KM Chebyshev UCL	40.26

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.394	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.754	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.106	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.184	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.074	k star (bias corrected MLE)	1.833
Theta hat (MLE)	17.09	Theta star (bias corrected MLE)	19.34
nu hat (MLE)	95.41	nu star (bias corrected)	84.3
Mean (detects)	35.44		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	14.02
Maximum	70	Median	4.948
SD	20.17	CV	1.438
k hat (MLE)	0.241	k star (bias corrected MLE)	0.24
Theta hat (MLE)	58.15	Theta star (bias corrected MLE)	58.36
nu hat (MLE)	32.32	nu star (bias corrected)	32.2
Adjusted Level of Significance (β)	0.0464		
Approximate Chi Square Value (32.20, α)	20.23	Adjusted Chi Square Value (32.20, β)	20.02
95% Gamma Approximate UCL (use when n>=50)	22.32	95% Gamma Adjusted UCL (use when n<50)	22.55

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	13.95	SD (KM)	20.48
Variance (KM)	419.5	SE of Mean (KM)	2.644
k hat (KM)	0.464	k star (KM)	0.453
nu hat (KM)	62.14	nu star (KM)	60.69
theta hat (KM)	30.07	theta star (KM)	30.79
80% gamma percentile (KM)	22.78	90% gamma percentile (KM)	38.49
95% gamma percentile (KM)	55.49	99% gamma percentile (KM)	97.68

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (60.69, α)	43.78	Adjusted Chi Square Value (60.69, β)	43.46
95% Gamma Approximate KM-UCL (use when n>=50)	19.34	95% Gamma Adjusted KM-UCL (use when n<50)	19.48

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.853	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.914	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.145	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.18	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	15.17	Mean in Log Scale	1.931
SD in Original Scale	19.32	SD in Log Scale	1.323
95% t UCL (assumes normality of ROS data)	19.11	95% Percentile Bootstrap UCL	18.99
95% BCA Bootstrap UCL	19.55	95% Bootstrap t UCL	20.07
95% H-UCL (Log ROS)	23.55		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.357	KM Geo Mean	3.884
KM SD (logged)	1.61	95% Critical H Value (KM-Log)	2.508
KM Standard Error of Mean (logged)	0.216	95% H-UCL (KM -Log)	23.33
KM SD (logged)	1.61	95% Critical H Value (KM-Log)	2.508
KM Standard Error of Mean (logged)	0.216		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	92.91	Mean in Log Scale	1.621
SD in Original Scale	580.6	SD in Log Scale	2.006
95% t UCL (Assumes normality)	211.3	95% H-Stat UCL	78.93

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	18.36

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU5_PFMOAA

General Statistics

Total Number of Observations	67	Number of Distinct Observations	28
Number of Detects	28	Number of Non-Detects	39
Number of Distinct Detects	21	Number of Distinct Non-Detects	7
Minimum Detect	16	Minimum Non-Detect	1.29
Maximum Detect	460	Maximum Non-Detect	9500
Variance Detects	12610	Percent Non-Detects	58.21%
Mean Detects	164.8	SD Detects	112.3
Median Detects	145	CV Detects	0.681
Skewness Detects	1.361	Kurtosis Detects	1.866
Mean of Logged Detects	4.86	SD of Logged Detects	0.779

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.864	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.231	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.164	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	71.81	KM Standard Error of Mean	13.71
KM SD	108.5	95% KM (BCA) UCL	94.6
95% KM (t) UCL	94.69	95% KM (Percentile Bootstrap) UCL	93.27
95% KM (z) UCL	94.37	95% KM Bootstrap t UCL	98.39
90% KM Chebyshev UCL	112.9	95% KM Chebyshev UCL	131.6
97.5% KM Chebyshev UCL	157.4	99% KM Chebyshev UCL	208.2

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.489	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.757	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.143	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.167	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.2	k star (bias corrected MLE)	1.988
Theta hat (MLE)	74.91	Theta star (bias corrected MLE)	82.89
nu hat (MLE)	123.2	nu star (bias corrected)	111.3
Mean (detects)	164.8		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	70.35
Maximum	460	Median	9.439
SD	108.1	CV	1.536
k hat (MLE)	0.18	k star (bias corrected MLE)	0.182
Theta hat (MLE)	391.3	Theta star (bias corrected MLE)	387.2
nu hat (MLE)	24.09	nu star (bias corrected)	24.35
Adjusted Level of Significance (β)	0.0464		
Approximate Chi Square Value (24.35, α)	14.11	Adjusted Chi Square Value (24.35, β)	13.94
95% Gamma Approximate UCL (use when n>=50)	121.4	95% Gamma Adjusted UCL (use when n<50)	122.9

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	71.81	SD (KM)	108.5
Variance (KM)	11782	SE of Mean (KM)	13.71
k hat (KM)	0.438	k star (KM)	0.428
nu hat (KM)	58.65	nu star (KM)	57.36
theta hat (KM)	164.1	theta star (KM)	167.8
80% gamma percentile (KM)	116.7	90% gamma percentile (KM)	200.4
95% gamma percentile (KM)	291.4	99% gamma percentile (KM)	518.8

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (57.36, α)	40.95	Adjusted Chi Square Value (57.36, β)	40.64
95% Gamma Approximate KM-UCL (use when n>=50)	100.6	95% Gamma Adjusted KM-UCL (use when n<50)	101.3

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.93	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.924	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.169	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.164	Detected Data Not Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	81.39	Mean in Log Scale	3.692
SD in Original Scale	101.6	SD in Log Scale	1.245
95% t UCL (assumes normality of ROS data)	102.1	95% Percentile Bootstrap UCL	101.9
95% BCA Bootstrap UCL	107.7	95% Bootstrap t UCL	108.5
95% H-UCL (Log ROS)	121.1		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.25	KM Geo Mean	9.485
KM SD (logged)	2.333	95% Critical H Value (KM-Log)	3.129
KM Standard Error of Mean (logged)	0.296	95% H-UCL (KM -Log)	354.1
KM SD (logged)	2.333	95% Critical H Value (KM-Log)	3.129
KM Standard Error of Mean (logged)	0.296		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	149.2	Mean in Log Scale	2.81
SD in Original Scale	582.6	SD in Log Scale	2.189
95% t UCL (Assumes normality)	267.9	95% H-Stat UCL	419.6

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	100.6	95% GROS Approximate Gamma UCL	121.4

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU5_PFO2HxA

General Statistics

Total Number of Observations	67	Number of Distinct Observations	36
Number of Detects	35	Number of Non-Detects	32
Number of Distinct Detects	30	Number of Distinct Non-Detects	6
Minimum Detect	2.3	Minimum Non-Detect	1.1
Maximum Detect	2500	Maximum Non-Detect	9200
Variance Detects	335754	Percent Non-Detects	47.76%
Mean Detects	475	SD Detects	579.4
Median Detects	330	CV Detects	1.22
Skewness Detects	2.406	Kurtosis Detects	6.476
Mean of Logged Detects	5.178	SD of Logged Detects	1.88

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.719	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.934	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.213	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.148	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	252.5	KM Standard Error of Mean	59.75
KM SD	478.4	95% KM (BCA) UCL	363
95% KM (t) UCL	352.1	95% KM (Percentile Bootstrap) UCL	351.1
95% KM (z) UCL	350.7	95% KM Bootstrap t UCL	396.4
90% KM Chebyshev UCL	431.7	95% KM Chebyshev UCL	512.9
97.5% KM Chebyshev UCL	625.6	99% KM Chebyshev UCL	846.9

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.694	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.8	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.17	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.156	Detected Data Not Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.623	k star (bias corrected MLE)	0.589
Theta hat (MLE)	761.8	Theta star (bias corrected MLE)	806.3
nu hat (MLE)	43.64	nu star (bias corrected)	41.24
Mean (detects)	475		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	248.1
Maximum	2500	Median	2.7
SD	479.7	CV	1.933
k hat (MLE)	0.153	k star (bias corrected MLE)	0.156
Theta hat (MLE)	1622	Theta star (bias corrected MLE)	1589
nu hat (MLE)	20.5	nu star (bias corrected)	20.92
Adjusted Level of Significance (β)	0.0464		
Approximate Chi Square Value (20.92, α)	11.53	Adjusted Chi Square Value (20.92, β)	11.38
95% Gamma Approximate UCL (use when n>=50)	450.1	95% Gamma Adjusted UCL (use when n<50)	456.2

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	252.5	SD (KM)	478.4
Variance (KM)	228864	SE of Mean (KM)	59.75
k hat (KM)	0.279	k star (KM)	0.276
nu hat (KM)	37.32	nu star (KM)	36.98
theta hat (KM)	906.5	theta star (KM)	914.8
80% gamma percentile (KM)	378.6	90% gamma percentile (KM)	751.5
95% gamma percentile (KM)	1186	99% gamma percentile (KM)	2327

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (36.98, α)	24.06	Adjusted Chi Square Value (36.98, β)	23.83
95% Gamma Approximate KM-UCL (use when n>=50)	388.1	95% Gamma Adjusted KM-UCL (use when n<50)	391.8

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.874	**Shapiro Wilk GOF Test**

5% Shapiro Wilk Critical Value	0.934	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.246	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.148	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	250.6	Mean in Log Scale	3.149
SD in Original Scale	478.4	SD in Log Scale	2.712
95% t UCL (assumes normality of ROS data)	348.1	95% Percentile Bootstrap UCL	348.4
95% BCA Bootstrap UCL	372.9	95% Bootstrap t UCL	390.7
95% H-UCL (Log ROS)	2787		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.804	KM Geo Mean	16.51
KM SD (logged)	2.866	95% Critical H Value (KM-Log)	3.533
KM Standard Error of Mean (logged)	0.359	95% H-UCL (KM -Log)	3493
KM SD (logged)	2.866	95% Critical H Value (KM-Log)	3.533
KM Standard Error of Mean (logged)	0.359		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	317.9	Mean in Log Scale	2.906
SD in Original Scale	714.6	SD in Log Scale	2.978
95% t UCL (Assumes normality)	463.6	95% H-Stat UCL	6038

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL 388.1

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU5_PFO3OA

General Statistics

Total Number of Observations	67	Number of Distinct Observations	27
Number of Detects	24	Number of Non-Detects	43

Number of Distinct Detects	20	Number of Distinct Non-Detects	7
Minimum Detect	1.8	Minimum Non-Detect	1.1
Maximum Detect	170	Maximum Non-Detect	8800
Variance Detects	2864	Percent Non-Detects	64.18%
Mean Detects	62.13	SD Detects	53.52
Median Detects	42.5	CV Detects	0.861
Skewness Detects	0.755	Kurtosis Detects	-0.724
Mean of Logged Detects	3.59	SD of Logged Detects	1.27

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.886	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.916	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.167	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.177	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	24.14	KM Standard Error of Mean	5.495
KM SD	43.24	95% KM (BCA) UCL	34.23
95% KM (t) UCL	33.31	95% KM (Percentile Bootstrap) UCL	33.29
95% KM (z) UCL	33.18	95% KM Bootstrap t UCL	36.54
90% KM Chebyshev UCL	40.63	95% KM Chebyshev UCL	48.09
97.5% KM Chebyshev UCL	58.46	99% KM Chebyshev UCL	78.82

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.29	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.771	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0952	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.183	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.063	k star (bias corrected MLE)	0.958
Theta hat (MLE)	58.43	Theta star (bias corrected MLE)	64.84
nu hat (MLE)	51.04	nu star (bias corrected)	45.99
Mean (detects)	62.13		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	22.58
Maximum	170	Median	0.01

SD	43.46	CV	1.925
k hat (MLE)	0.167	k star (bias corrected MLE)	0.169
Theta hat (MLE)	135.3	Theta star (bias corrected MLE)	133.3
nu hat (MLE)	22.36	nu star (bias corrected)	22.69
Adjusted Level of Significance (β)	0.0464		
Approximate Chi Square Value (22.69, α)	12.86	Adjusted Chi Square Value (22.69, β)	12.69
95% Gamma Approximate UCL (use when n>=50)	39.85	95% Gamma Adjusted UCL (use when n<50)	40.36

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	24.14	SD (KM)	43.24
Variance (KM)	1870	SE of Mean (KM)	5.495
k hat (KM)	0.312	k star (KM)	0.308
nu hat (KM)	41.77	nu star (KM)	41.23
theta hat (KM)	77.45	theta star (KM)	78.45
80% gamma percentile (KM)	37.25	90% gamma percentile (KM)	70.98
95% gamma percentile (KM)	109.5	99% gamma percentile (KM)	209.4

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (41.23, α)	27.52	Adjusted Chi Square Value (41.23, β)	27.27
95% Gamma Approximate KM-UCL (use when n>=50)	36.18	95% Gamma Adjusted KM-UCL (use when n<50)	36.5

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.91	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.916	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.112	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.177	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	23.93	Mean in Log Scale	1.506
SD in Original Scale	42.77	SD in Log Scale	2.017
95% t UCL (assumes normality of ROS data)	32.64	95% Percentile Bootstrap UCL	32.85
95% BCA Bootstrap UCL	33.43	95% Bootstrap t UCL	35.11
95% H-UCL (Log ROS)	72.48		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.508	KM Geo Mean	4.517
KM SD (logged)	1.811	95% Critical H Value (KM-Log)	2.743
KM Standard Error of Mean (logged)	0.243	95% H-UCL (KM -Log)	42.88
KM SD (logged)	1.811	95% Critical H Value (KM-Log)	2.743
KM Standard Error of Mean (logged)	0.243		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	96.88	Mean in Log Scale	1.721

SD in Original Scale	537.8	SD in Log Scale	2.16
95% t UCL (Assumes normality)	206.5	95% H-Stat UCL	130.8

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 33.31

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU5_PFO4DA

General Statistics

Total Number of Observations	67	Number of Distinct Observations	23
Number of Detects	19	Number of Non-Detects	48
Number of Distinct Detects	16	Number of Distinct Non-Detects	7
Minimum Detect	1.8	Minimum Non-Detect	1.1
Maximum Detect	55	Maximum Non-Detect	9700
Variance Detects	211.4	Percent Non-Detects	71.64%
Mean Detects	16.71	SD Detects	14.54
Median Detects	11	CV Detects	0.87
Skewness Detects	1.142	Kurtosis Detects	1.018
Mean of Logged Detects	2.389	SD of Logged Detects	1.029

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.871	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.901	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.18	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.197	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	6.117	KM Standard Error of Mean	1.405
KM SD	10.65	95% KM (BCA) UCL	8.684
95% KM (t) UCL	8.461	95% KM (Percentile Bootstrap) UCL	8.521
95% KM (z) UCL	8.428	95% KM Bootstrap t UCL	9.085
90% KM Chebyshev UCL	10.33	95% KM Chebyshev UCL	12.24

97.5% KM Chebyshev UCL	14.89	99% KM Chebyshev UCL	20.1

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.384	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.762	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.142	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.203	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.314	k star (bias corrected MLE)	1.142
Theta hat (MLE)	12.71	Theta star (bias corrected MLE)	14.63
nu hat (MLE)	49.93	nu star (bias corrected)	43.38
Mean (detects)	16.71		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	5.018
Maximum	55	Median	0.01
SD	10.73	CV	2.139
k hat (MLE)	0.19	k star (bias corrected MLE)	0.191
Theta hat (MLE)	26.41	Theta star (bias corrected MLE)	26.21
nu hat (MLE)	25.46	nu star (bias corrected)	25.65
Adjusted Level of Significance (β)	0.0464		
Approximate Chi Square Value (25.65, α)	15.11	Adjusted Chi Square Value (25.65, β)	14.93
95% Gamma Approximate UCL (use when n>=50)	8.518	95% Gamma Adjusted UCL (use when n<50)	8.62

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	6.117	SD (KM)	10.65
Variance (KM)	113.4	SE of Mean (KM)	1.405
k hat (KM)	0.33	k star (KM)	0.325
nu hat (KM)	44.21	nu star (KM)	43.57
theta hat (KM)	18.54	theta star (KM)	18.81
80% gamma percentile (KM)	9.552	90% gamma percentile (KM)	17.85
95% gamma percentile (KM)	27.26	99% gamma percentile (KM)	51.46

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (43.57, α)	29.43	Adjusted Chi Square Value (43.57, β)	29.18
95% Gamma Approximate KM-UCL (use when n>=50)	9.055	95% Gamma Adjusted KM-UCL (use when n<50)	9.134

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.941	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.901	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.136	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.197	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	5.6	Mean in Log Scale	0.384
SD in Original Scale	10.43	SD in Log Scale	1.705
95% t UCL (assumes normality of ROS data)	7.726	95% Percentile Bootstrap UCL	7.813
95% BCA Bootstrap UCL	8.283	95% Bootstrap t UCL	8.676
95% H-UCL (Log ROS)	10.89		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.878	KM Geo Mean	2.405
KM SD (logged)	1.187	95% Critical H Value (KM-Log)	2.202
KM Standard Error of Mean (logged)	0.166	95% H-UCL (KM -Log)	6.709
KM SD (logged)	1.187	95% Critical H Value (KM-Log)	2.202
KM Standard Error of Mean (logged)	0.166		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	87.17	Mean in Log Scale	1.146
SD in Original Scale	593.7	SD in Log Scale	1.798
95% t UCL (Assumes normality)	208.2	95% H-Stat UCL	28.97

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	8.461

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU5_PFO5DA

General Statistics

Total Number of Observations	67	Number of Distinct Observations	11

Number of Detects	6	Number of Non-Detects	61
Number of Distinct Detects	6	Number of Distinct Non-Detects	5
Minimum Detect	2.4	Minimum Non-Detect	1.1
Maximum Detect	9.8	Maximum Non-Detect	11000
Variance Detects	7.139	Percent Non-Detects	91.04%
Mean Detects	4.967	SD Detects	2.672
Median Detects	4.5	CV Detects	0.538
Skewness Detects	1.363	Kurtosis Detects	2.109
Mean of Logged Detects	1.493	SD of Logged Detects	0.505

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.889	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.225	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.5	KM Standard Error of Mean	0.204
KM SD	1.415	95% KM (BCA) UCL	1.855
95% KM (t) UCL	1.84	95% KM (Percentile Bootstrap) UCL	1.84
95% KM (z) UCL	1.835	95% KM Bootstrap t UCL	1.895
90% KM Chebyshev UCL	2.111	95% KM Chebyshev UCL	2.387
97.5% KM Chebyshev UCL	2.771	99% KM Chebyshev UCL	3.525

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.23	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.699	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.157	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.333	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	4.721	k star (bias corrected MLE)	2.472
Theta hat (MLE)	1.052	Theta star (bias corrected MLE)	2.009
nu hat (MLE)	56.66	nu star (bias corrected)	29.66
Mean (detects)	4.967		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.474

Maximum	9.8	Median	0.01
SD	1.603	CV	3.379
k hat (MLE)	0.228	k star (bias corrected MLE)	0.228
Theta hat (MLE)	2.082	Theta star (bias corrected MLE)	2.084
nu hat (MLE)	30.53	nu star (bias corrected)	30.5
Adjusted Level of Significance (β)	0.0464		
Approximate Chi Square Value (30.50, α)	18.88	Adjusted Chi Square Value (30.50, β)	18.68
95% Gamma Approximate UCL (use when n>=50)	0.766	95% Gamma Adjusted UCL (use when n<50)	0.774

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.5	SD (KM)	1.415
Variance (KM)	2.002	SE of Mean (KM)	0.204
k hat (KM)	1.124	k star (KM)	1.083
nu hat (KM)	150.6	nu star (KM)	145.2
theta hat (KM)	1.335	theta star (KM)	1.384
80% gamma percentile (KM)	2.398	90% gamma percentile (KM)	3.386
95% gamma percentile (KM)	4.369	99% gamma percentile (KM)	6.636

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (145.18, α)	118.3	Adjusted Chi Square Value (145.18, β)	117.8
95% Gamma Approximate KM-UCL (use when n>=50)	1.84	95% Gamma Adjusted KM-UCL (use when n<50)	1.849

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.974	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.145	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.822	Mean in Log Scale	-1.25
SD in Original Scale	1.564	SD in Log Scale	1.48
95% t UCL (assumes normality of ROS data)	1.141	95% Percentile Bootstrap UCL	1.152
95% BCA Bootstrap UCL	1.266	95% Bootstrap t UCL	1.333
95% H-UCL (Log ROS)	1.316		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.24	KM Geo Mean	1.271
KM SD (logged)	0.451	95% Critical H Value (KM-Log)	1.836
KM Standard Error of Mean (logged)	0.0648	95% H-UCL (KM -Log)	1.558
KM SD (logged)	0.451	95% Critical H Value (KM-Log)	1.836
KM Standard Error of Mean (logged)	0.0648		

DL/2 Statistics

DL/2 Normal | **DL/2 Log-Transformed**

Mean in Original Scale	96.7	Mean in Log Scale	0.703
SD in Original Scale	673.6	SD in Log Scale	1.763
95% t UCL (Assumes normality)	234	95% H-Stat UCL	17.12

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 1.84

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU5_PMPA

General Statistics

Total Number of Observations	67	Number of Distinct Observations	41
Number of Detects	39	Number of Non-Detects	28
Number of Distinct Detects	37	Number of Distinct Non-Detects	4
Minimum Detect	11	Minimum Non-Detect	5.3
Maximum Detect	9300	Maximum Non-Detect	8400
Variance Detects	2659311	Percent Non-Detects	41.79%
Mean Detects	1040	SD Detects	1631
Median Detects	610	CV Detects	1.568
Skewness Detects	3.815	Kurtosis Detects	17.56
Mean of Logged Detects	6.016	SD of Logged Detects	1.629

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.575	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.939	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.306	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.14	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	614.8	KM Standard Error of Mean	165.2
KM SD	1332	95% KM (BCA) UCL	924.3
95% KM (t) UCL	890.5	95% KM (Percentile Bootstrap) UCL	904
95% KM (z) UCL	886.6	95% KM Bootstrap t UCL	1113
90% KM Chebyshev UCL	1111	95% KM Chebyshev UCL	1335
97.5% KM Chebyshev UCL	1647	99% KM Chebyshev UCL	2259

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.935	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.798	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.143	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.148	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.655	k star (bias corrected MLE)	0.622
Theta hat (MLE)	1587	Theta star (bias corrected MLE)	1672
nu hat (MLE)	51.11	nu star (bias corrected)	48.52
Mean (detects)	1040		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	605.4
Maximum	9300	Median	42
SD	1341	CV	2.215
k hat (MLE)	0.158	k star (bias corrected MLE)	0.161
Theta hat (MLE)	3832	Theta star (bias corrected MLE)	3764
nu hat (MLE)	21.17	nu star (bias corrected)	21.55
Adjusted Level of Significance (β)	0.0464		
Approximate Chi Square Value (21.55, α)	12	Adjusted Chi Square Value (21.55, β)	11.85
95% Gamma Approximate UCL (use when n>=50)	1087	95% Gamma Adjusted UCL (use when n<50)	1101

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	614.8	SD (KM)	1332
Variance (KM)	1772942	SE of Mean (KM)	165.2
k hat (KM)	0.213	k star (KM)	0.214
nu hat (KM)	28.57	nu star (KM)	28.62
theta hat (KM)	2884	theta star (KM)	2878
80% gamma percentile (KM)	837.1	90% gamma percentile (KM)	1859
95% gamma percentile (KM)	3113	99% gamma percentile (KM)	6529

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (28.62, α)	17.41	Adjusted Chi Square Value (28.62, β)	17.22
95% Gamma Approximate KM-UCL (use when n>=50)	1011	95% Gamma Adjusted KM-UCL (use when n<50)	1022

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.911	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.939	Detected Data Not Lognormal at 5% Significance Level	

Lilliefors Test Statistic	0.215	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.14	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	613.5	Mean in Log Scale	4.522
SD in Original Scale	1337	SD in Log Scale	2.294
95% t UCL (assumes normality of ROS data)	886.1	95% Percentile Bootstrap UCL	909.6
95% BCA Bootstrap UCL	1046	95% Bootstrap t UCL	1109
95% H-UCL (Log ROS)	3092		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	4.241	KM Geo Mean	69.48
KM SD (logged)	2.465	95% Critical H Value (KM-Log)	3.11
KM Standard Error of Mean (logged)	0.307	95% H-UCL (KM -Log)	3727
KM SD (logged)	2.465	95% Critical H Value (KM-Log)	3.11
KM Standard Error of Mean (logged)	0.307		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	670.4	Mean in Log Scale	4.29
SD in Original Scale	1408	SD in Log Scale	2.538
95% t UCL (Assumes normality)	957.2	95% H-Stat UCL	4858

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	1011

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU6_HFPO-DA

General Statistics

Total Number of Observations	30	Number of Distinct Observations	22
Number of Detects	21	Number of Non-Detects	9
Number of Distinct Detects	21	Number of Distinct Non-Detects	1

Minimum Detect	9.2	Minimum Non-Detect	4
Maximum Detect	420	Maximum Non-Detect	4
Variance Detects	21764	Percent Non-Detects	30%
Mean Detects	152.9	SD Detects	147.5
Median Detects	94	CV Detects	0.965
Skewness Detects	0.746	Kurtosis Detects	-1.116
Mean of Logged Detects	4.425	SD of Logged Detects	1.238

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.829	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.908	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.224	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.188	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	108.2	KM Standard Error of Mean	25.9
KM SD	138.4	95% KM (BCA) UCL	154.4
95% KM (t) UCL	152.2	95% KM (Percentile Bootstrap) UCL	152.4
95% KM (z) UCL	150.8	95% KM Bootstrap t UCL	159.4
90% KM Chebyshev UCL	185.9	95% KM Chebyshev UCL	221.1
97.5% KM Chebyshev UCL	270	99% KM Chebyshev UCL	365.9

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.633	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.772	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.157	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.195	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.959	k star (bias corrected MLE)	0.854
Theta hat (MLE)	159.4	Theta star (bias corrected MLE)	179.1
nu hat (MLE)	40.28	nu star (bias corrected)	35.86
Mean (detects)	152.9		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	107
Maximum	420	Median	34
SD	141.7	CV	1.324

k hat (MLE)	0.242	k star (bias corrected MLE)	0.24
Theta hat (MLE)	443.2	Theta star (bias corrected MLE)	446.8
nu hat (MLE)	14.49	nu star (bias corrected)	14.38
Adjusted Level of Significance (β)	0.041		
Approximate Chi Square Value (14.38, α)	6.829	Adjusted Chi Square Value (14.38, β)	6.53
95% Gamma Approximate UCL (use when n>=50)	225.3	95% Gamma Adjusted UCL (use when n<50)	235.7

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	108.2	SD (KM)	138.4
Variance (KM)	19166	SE of Mean (KM)	25.9
k hat (KM)	0.611	k star (KM)	0.572
nu hat (KM)	36.68	nu star (KM)	34.34
theta hat (KM)	177.1	theta star (KM)	189.1
80% gamma percentile (KM)	178.4	90% gamma percentile (KM)	284.5
95% gamma percentile (KM)	396.1	99% gamma percentile (KM)	667.3

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (34.34, α)	21.94	Adjusted Chi Square Value (34.34, β)	21.37
95% Gamma Approximate KM-UCL (use when n>=50)	169.4	95% Gamma Adjusted KM-UCL (use when n<50)	174

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.93	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.908	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.145	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.188	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	108.7	Mean in Log Scale	3.543
SD in Original Scale	140.5	SD in Log Scale	1.761
95% t UCL (assumes normality of ROS data)	152.3	95% Percentile Bootstrap UCL	150.9
95% BCA Bootstrap UCL	156.9	95% Bootstrap t UCL	158.8
95% H-UCL (Log ROS)	522.3		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.513	KM Geo Mean	33.56
KM SD (logged)	1.721	95% Critical H Value (KM-Log)	3.498
KM Standard Error of Mean (logged)	0.322	95% H-UCL (KM -Log)	451
KM SD (logged)	1.721	95% Critical H Value (KM-Log)	3.498
KM Standard Error of Mean (logged)	0.322		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	107.6	Mean in Log Scale	3.305
SD in Original Scale	141.3	SD in Log Scale	2.02

95% t UCL (Assumes normality)	151.5	95% H-Stat UCL	930.1

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1	174

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU6_PEPA

General Statistics

Total Number of Observations	16	Number of Distinct Observations	6
Number of Detects	4	Number of Non-Detects	12
Number of Distinct Detects	4	Number of Distinct Non-Detects	2
Minimum Detect	23	Minimum Non-Detect	20
Maximum Detect	430	Maximum Non-Detect	100
Variance Detects	28222	Percent Non-Detects	75%
Mean Detects	223.3	SD Detects	168
Median Detects	220	CV Detects	0.752
Skewness Detects	0.111	Kurtosis Detects	0.884
Mean of Logged Detects	4.992	SD of Logged Detects	1.283

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.992	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.187	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	70.83	KM Standard Error of Mean	32.96
KM SD	114.2	95% KM (BCA) UCL	N/A
95% KM (t) UCL	128.6	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	125	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	169.7	95% KM Chebyshev UCL	214.5
97.5% KM Chebyshev UCL	276.7	99% KM Chebyshev UCL	398.8

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.349	**Anderson-Darling GOF Test**

5% A-D Critical Value	0.664	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.295	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.4	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.343	k star (bias corrected MLE)	0.502
Theta hat (MLE)	166.2	Theta star (bias corrected MLE)	444.3
nu hat (MLE)	10.75	nu star (bias corrected)	4.02
Mean (detects)	223.3		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	55.82
Maximum	430	Median	0.01
SD	124.9	CV	2.238
k hat (MLE)	0.126	k star (bias corrected MLE)	0.144
Theta hat (MLE)	441.5	Theta star (bias corrected MLE)	386.6
nu hat (MLE)	4.046	nu star (bias corrected)	4.62
Adjusted Level of Significance (β)	0.0335		
Approximate Chi Square Value (4.62, α)	0.981	Adjusted Chi Square Value (4.62, β)	0.808
95% Gamma Approximate UCL (use when n>=50)	262.9	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	70.83	SD (KM)	114.2
Variance (KM)	13036	SE of Mean (KM)	32.96
k hat (KM)	0.385	k star (KM)	0.354
nu hat (KM)	12.31	nu star (KM)	11.34
theta hat (KM)	184	theta star (KM)	199.9
80% gamma percentile (KM)	112.4	90% gamma percentile (KM)	204.1
95% gamma percentile (KM)	306.7	99% gamma percentile (KM)	568.1

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (11.34, α)	4.795	Adjusted Chi Square Value (11.34, β)	4.32
95% Gamma Approximate KM-UCL (use when n>=50)	167.5	95% Gamma Adjusted KM-UCL (use when n<50)	185.9

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.858	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.329	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	58.43	Mean in Log Scale	1.365
SD in Original Scale	123.8	SD in Log Scale	2.733
95% t UCL (assumes normality of ROS data)	112.7	95% Percentile Bootstrap UCL	112.2
95% BCA Bootstrap UCL	129.7	95% Bootstrap t UCL	173.1
95% H-UCL (Log ROS)	10477		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.496	KM Geo Mean	32.97
KM SD (logged)	1.027	95% Critical H Value (KM-Log)	2.746
KM Standard Error of Mean (logged)	0.297	95% H-UCL (KM -Log)	115.8
KM SD (logged)	1.027	95% Critical H Value (KM-Log)	2.746
KM Standard Error of Mean (logged)	0.297		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	65.81	Mean in Log Scale	3.076
SD in Original Scale	120.6	SD in Log Scale	1.339
95% t UCL (Assumes normality)	118.7	95% H-Stat UCL	164

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	128.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU6_PFECA-G

General Statistics

Total Number of Observations	16	Number of Distinct Observations	2
Number of Detects	0	Number of Non-Detects	16
Number of Distinct Detects	0	Number of Distinct Non-Detects	2

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU6_PFECA-G was not processed!

DW_EU6_PFESA-BP1

General Statistics

Total Number of Observations	16	Number of Distinct Observations	2
Number of Detects	0	Number of Non-Detects	16
Number of Distinct Detects	0	Number of Distinct Non-Detects	2

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU6_PFESA-BP1 was not processed!

DW_EU6_PFESA-BP2

General Statistics

Total Number of Observations	16	Number of Distinct Observations	6
Number of Detects	4	Number of Non-Detects	12
Number of Distinct Detects	4	Number of Distinct Non-Detects	2
Minimum Detect	14	Minimum Non-Detect	2
Maximum Detect	72	Maximum Non-Detect	50
Variance Detects	636	Percent Non-Detects	75%
Mean Detects	47	SD Detects	25.22
Median Detects	51	CV Detects	0.537
Skewness Detects	-0.758	Kurtosis Detects	-0.268
Mean of Logged Detects	3.687	SD of Logged Detects	0.734

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.964	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.197	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	13.5	KM Standard Error of Mean	6.517
KM SD	22.4	95% KM (BCA) UCL	N/A
95% KM (t) UCL	24.92	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	24.22	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	33.05	95% KM Chebyshev UCL	41.91
97.5% KM Chebyshev UCL	54.2	99% KM Chebyshev UCL	78.34

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.358	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.659	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.246	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.396	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	3.221	k star (bias corrected MLE)	0.972
Theta hat (MLE)	14.59	Theta star (bias corrected MLE)	48.36
nu hat (MLE)	25.76	nu star (bias corrected)	7.774
Mean (detects)	47		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	12.5
Maximum	72	Median	0.01
SD	23.58	CV	1.887
k hat (MLE)	0.175	k star (bias corrected MLE)	0.184
Theta hat (MLE)	71.31	Theta star (bias corrected MLE)	67.89
nu hat (MLE)	5.608	nu star (bias corrected)	5.889
Adjusted Level of Significance (β)	0.0335		
Approximate Chi Square Value (5.89, α)	1.584	Adjusted Chi Square Value (5.89, β)	1.345
95% Gamma Approximate UCL (use when n>=50)	46.47	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	13.5	SD (KM)	22.4
Variance (KM)	501.6	SE of Mean (KM)	6.517
k hat (KM)	0.363	k star (KM)	0.337
nu hat (KM)	11.63	nu star (KM)	10.78
theta hat (KM)	37.16	theta star (KM)	40.08
80% gamma percentile (KM)	21.23	90% gamma percentile (KM)	39.21
95% gamma percentile (KM)	59.46	99% gamma percentile (KM)	111.4

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (10.78, α)	4.435	Adjusted Chi Square Value (10.78, β)	3.981
95% Gamma Approximate KM-UCL (use when n>=50)	32.82	95% Gamma Adjusted KM-UCL (use when n<50)	36.55

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.87	**Shapiro Wilk GOF Test**

5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level		
Lilliefors Test Statistic	0.278	**Lilliefors GOF Test**		
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level		

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	15.59	Mean in Log Scale	1.915
SD in Original Scale	22.1	SD in Log Scale	1.345
95% t UCL (assumes normality of ROS data)	25.28	95% Percentile Bootstrap UCL	24.97
95% BCA Bootstrap UCL	28.11	95% Bootstrap t UCL	34.51
95% H-UCL (Log ROS)	52.19		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.466	KM Geo Mean	4.33
KM SD (logged)	1.345	95% Critical H Value (KM-Log)	3.27
KM Standard Error of Mean (logged)	0.394	95% H-UCL (KM -Log)	33.27
KM SD (logged)	1.345	95% Critical H Value (KM-Log)	3.27
KM Standard Error of Mean (logged)	0.394		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	14	Mean in Log Scale	1.123
SD in Original Scale	23.44	SD in Log Scale	1.755
95% t UCL (Assumes normality)	24.27	95% H-Stat UCL	88.05

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 24.92

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU6_PFMOAA

General Statistics

Total Number of Observations	16	Number of Distinct Observations	6
Number of Detects	4	Number of Non-Detects	12
Number of Distinct Detects	4	Number of Distinct Non-Detects	2
Minimum Detect	20	Minimum Non-Detect	5
Maximum Detect	170	Maximum Non-Detect	50

Variance Detects	4300	Percent Non-Detects	75%
Mean Detects	115	SD Detects	65.57
Median Detects	135	CV Detects	0.57
Skewness Detects	-1.589	Kurtosis Detects	2.913
Mean of Logged Detects	4.485	SD of Logged Detects	0.999

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.851	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.34	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	32.58	KM Standard Error of Mean	16
KM SD	55.42	95% KM (BCA) UCL	N/A
95% KM (t) UCL	60.63	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	58.9	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	80.59	95% KM Chebyshev UCL	102.3
97.5% KM Chebyshev UCL	132.5	99% KM Chebyshev UCL	191.8

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.663	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.66	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.41	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.398	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.076	k star (bias corrected MLE)	0.686
Theta hat (MLE)	55.39	Theta star (bias corrected MLE)	167.7
nu hat (MLE)	16.61	nu star (bias corrected)	5.486
Mean (detects)	115		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	29.76
Maximum	170	Median	0.01
SD	58.82	CV	1.977
k hat (MLE)	0.146	k star (bias corrected MLE)	0.161
Theta hat (MLE)	203.1	Theta star (bias corrected MLE)	185.2

nu hat (MLE)	4.688	nu star (bias corrected)	5.142
Adjusted Level of Significance (β)	0.0335		
Approximate Chi Square Value (5.14, α)	1.218	Adjusted Chi Square Value (5.14, β)	1.018
95% Gamma Approximate UCL (use when n>=50)	125.6	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	32.58	SD (KM)	55.42
Variance (KM)	3072	SE of Mean (KM)	16
k hat (KM)	0.346	k star (KM)	0.322
nu hat (KM)	11.06	nu star (KM)	10.32
theta hat (KM)	94.29	theta star (KM)	101.1
80% gamma percentile (KM)	50.79	90% gamma percentile (KM)	95.2
95% gamma percentile (KM)	145.6	99% gamma percentile (KM)	275.4

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (10.32, α)	4.14	Adjusted Chi Square Value (10.32, β)	3.705
95% Gamma Approximate KM-UCL (use when n>=50)	81.17	95% Gamma Adjusted KM-UCL (use when n<50)	90.71

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.734	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.399	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	32.64	Mean in Log Scale	1.893
SD in Original Scale	57.39	SD in Log Scale	1.961
95% t UCL (assumes normality of ROS data)	57.79	95% Percentile Bootstrap UCL	57.72
95% BCA Bootstrap UCL	64.42	95% Bootstrap t UCL	68.9
95% H-UCL (Log ROS)	421.1		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.336	KM Geo Mean	10.34
KM SD (logged)	1.318	95% Critical H Value (KM-Log)	3.225
KM Standard Error of Mean (logged)	0.382	95% H-UCL (KM -Log)	73.83
KM SD (logged)	1.318	95% Critical H Value (KM-Log)	3.225
KM Standard Error of Mean (logged)	0.382		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	32.03	Mean in Log Scale	1.952
SD in Original Scale	57.78	SD in Log Scale	1.675
95% t UCL (Assumes normality)	57.35	95% H-Stat UCL	152

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	60.63

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU6_PFO2HxA

General Statistics

Total Number of Observations	16	Number of Distinct Observations	7
Number of Detects	6	Number of Non-Detects	10
Number of Distinct Detects	6	Number of Distinct Non-Detects	1
Minimum Detect	2.5	Minimum Non-Detect	2
Maximum Detect	500	Maximum Non-Detect	2
Variance Detects	38744	Percent Non-Detects	62.5%
Mean Detects	203.6	SD Detects	196.8
Median Detects	161	CV Detects	0.967
Skewness Detects	0.591	Kurtosis Detects	-1.251
Mean of Logged Detects	4.44	SD of Logged Detects	1.956

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.913	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.248	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	77.59	KM Standard Error of Mean	40.28
KM SD	147.1	95% KM (BCA) UCL	139.8
95% KM (t) UCL	148.2	95% KM (Percentile Bootstrap) UCL	143.2
95% KM (z) UCL	143.8	95% KM Bootstrap t UCL	175.7
90% KM Chebyshev UCL	198.4	95% KM Chebyshev UCL	253.2
97.5% KM Chebyshev UCL	329.1	99% KM Chebyshev UCL	478.4

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.276	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.725	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.218	**Kolmogorov-Smirnov GOF**

5% K-S Critical Value	0.345	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.691	k star (bias corrected MLE)	0.456
Theta hat (MLE)	294.7	Theta star (bias corrected MLE)	446
nu hat (MLE)	8.289	nu star (bias corrected)	5.478
Mean (detects)	203.6		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	76.35
Maximum	500	Median	0.01
SD	152.6	CV	1.998
k hat (MLE)	0.14	k star (bias corrected MLE)	0.155
Theta hat (MLE)	545.7	Theta star (bias corrected MLE)	491.5
nu hat (MLE)	4.477	nu star (bias corrected)	4.971
Adjusted Level of Significance (β)	0.0335		
Approximate Chi Square Value (4.97, α)	1.139	Adjusted Chi Square Value (4.97, β)	0.947
95% Gamma Approximate UCL (use when n>=50)	333.3	95% Gamma Adjusted UCL (use when n<50)	400.8

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	77.59	SD (KM)	147.1
Variance (KM)	21632	SE of Mean (KM)	40.28
k hat (KM)	0.278	k star (KM)	0.268
nu hat (KM)	8.907	nu star (KM)	8.57
theta hat (KM)	278.8	theta star (KM)	289.7
80% gamma percentile (KM)	115.3	90% gamma percentile (KM)	231.6
95% gamma percentile (KM)	367.8	99% gamma percentile (KM)	727.1

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (8.57, α)	3.069	Adjusted Chi Square Value (8.57, β)	2.706
95% Gamma Approximate KM-UCL (use when n>=50)	216.6	95% Gamma Adjusted KM-UCL (use when n<50)	245.7

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.87	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.215	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	76.87	Mean in Log Scale	0.659
SD in Original Scale	152.3	SD in Log Scale	3.665
95% t UCL (assumes normality of ROS data)	143.6	95% Percentile Bootstrap UCL	141
95% BCA Bootstrap UCL	168.7	95% Bootstrap t UCL	197.9
95% H-UCL (Log ROS)	2456053		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.098	KM Geo Mean	8.15
KM SD (logged)	2.118	95% Critical H Value (KM-Log)	4.694
KM Standard Error of Mean (logged)	0.58	95% H-UCL (KM -Log)	999.2
KM SD (logged)	2.118	95% Critical H Value (KM-Log)	4.694
KM Standard Error of Mean (logged)	0.58		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	76.97	Mean in Log Scale	1.665
SD in Original Scale	152.2	SD in Log Scale	2.49
95% t UCL (Assumes normality)	143.7	95% H-Stat UCL	3822

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 148.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU6_PFO3OA

General Statistics

Total Number of Observations	16	Number of Distinct Observations	6
Number of Detects	4	Number of Non-Detects	12
Number of Distinct Detects	4	Number of Distinct Non-Detects	2
Minimum Detect	8	Minimum Non-Detect	2
Maximum Detect	41	Maximum Non-Detect	50
Variance Detects	332.6	Percent Non-Detects	75%
Mean Detects	24.23	SD Detects	18.24
Median Detects	23.95	CV Detects	0.753
Skewness Detects	0.0083	Kurtosis Detects	-5.928
Mean of Logged Detects	2.911	SD of Logged Detects	0.9

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.77	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.3	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	7.927	KM Standard Error of Mean	3.808
KM SD	12.77	95% KM (BCA) UCL	N/A
95% KM (t) UCL	14.6	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	14.19	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	19.35	95% KM Chebyshev UCL	24.52
97.5% KM Chebyshev UCL	31.71	99% KM Chebyshev UCL	45.81

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.634	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.661	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.33	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.398	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.957	k star (bias corrected MLE)	0.656
Theta hat (MLE)	12.38	Theta star (bias corrected MLE)	36.93
nu hat (MLE)	15.66	nu star (bias corrected)	5.247
Mean (detects)	24.23		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	6.064
Maximum	41	Median	0.01
SD	13.56	CV	2.236
k hat (MLE)	0.167	k star (bias corrected MLE)	0.177
Theta hat (MLE)	36.3	Theta star (bias corrected MLE)	34.18
nu hat (MLE)	5.345	nu star (bias corrected)	5.677
Adjusted Level of Significance (β)	0.0335		
Approximate Chi Square Value (5.68, α)	1.477	Adjusted Chi Square Value (5.68, β)	1.248
95% Gamma Approximate UCL (use when n>=50)	23.31	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	7.927	SD (KM)	12.77
Variance (KM)	163.1	SE of Mean (KM)	3.808
k hat (KM)	0.385	k star (KM)	0.355
nu hat (KM)	12.33	nu star (KM)	11.35
theta hat (KM)	20.58	theta star (KM)	22.35
80% gamma percentile (KM)	12.58	90% gamma percentile (KM)	22.84
95% gamma percentile (KM)	34.32	99% gamma percentile (KM)	63.55

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (11.35, α)	4.801	Adjusted Chi Square Value (11.35, β)	4.326
95% Gamma Approximate KM-UCL (use when n>=50)	18.74	95% Gamma Adjusted KM-UCL (use when n<50)	20.8

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.774	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.299	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	6.853	Mean in Log Scale	0.282
SD in Original Scale	13.22	SD in Log Scale	2.005
95% t UCL (assumes normality of ROS data)	12.65	95% Percentile Bootstrap UCL	12.26
95% BCA Bootstrap UCL	14.54	95% Bootstrap t UCL	30.95
95% H-UCL (Log ROS)	100.6		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.284	KM Geo Mean	3.613
KM SD (logged)	1.06	95% Critical H Value (KM-Log)	2.797
KM Standard Error of Mean (logged)	0.316	95% H-UCL (KM -Log)	13.62
KM SD (logged)	1.06	95% Critical H Value (KM-Log)	2.797
KM Standard Error of Mean (logged)	0.316		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	8.306	Mean in Log Scale	0.929
SD in Original Scale	13.85	SD in Log Scale	1.48
95% t UCL (Assumes normality)	14.38	95% H-Stat UCL	28.95

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	14.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU6_PFO4DA

General Statistics

Total Number of Observations	16	Number of Distinct Observations	6
Number of Detects	4	Number of Non-Detects	12
Number of Distinct Detects	4	Number of Distinct Non-Detects	2
Minimum Detect	2.1	Minimum Non-Detect	2
Maximum Detect	12	Maximum Non-Detect	50
Variance Detects	25.25	Percent Non-Detects	75%
Mean Detects	7.2	SD Detects	5.025
Median Detects	7.35	CV Detects	0.698
Skewness Detects	-0.0529	Kurtosis Detects	-5.311
Mean of Logged Detects	1.733	SD of Logged Detects	0.85

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.851	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.275	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3.387	KM Standard Error of Mean	0.959
KM SD	3.215	95% KM (BCA) UCL	N/A
95% KM (t) UCL	5.067	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	4.963	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	6.262	95% KM Chebyshev UCL	7.565
97.5% KM Chebyshev UCL	9.373	99% KM Chebyshev UCL	12.92

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.433	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.66	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.315	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.398	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.229	k star (bias corrected MLE)	0.724

Theta hat (MLE)	3.231	Theta star (bias corrected MLE)	9.947
nu hat (MLE)	17.83	nu star (bias corrected)	5.791
Mean (detects)	7.2		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.808
Maximum	12	Median	0.01
SD	3.923	CV	2.17
k hat (MLE)	0.203	k star (bias corrected MLE)	0.207
Theta hat (MLE)	8.895	Theta star (bias corrected MLE)	8.741
nu hat (MLE)	6.503	nu star (bias corrected)	6.617
Adjusted Level of Significance (β)	0.0335		
Approximate Chi Square Value (6.62, α)	1.963	Adjusted Chi Square Value (6.62, β)	1.688
95% Gamma Approximate UCL (use when n>=50)	6.093	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3.387	SD (KM)	3.215
Variance (KM)	10.34	SE of Mean (KM)	0.959
k hat (KM)	1.11	k star (KM)	0.943
nu hat (KM)	35.51	nu star (KM)	30.18
theta hat (KM)	3.052	theta star (KM)	3.591
80% gamma percentile (KM)	5.476	90% gamma percentile (KM)	7.911
95% gamma percentile (KM)	10.36	99% gamma percentile (KM)	16.06

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (30.18, α)	18.64	Adjusted Chi Square Value (30.18, β)	17.61
95% Gamma Approximate KM-UCL (use when n>=50)	5.485	95% Gamma Adjusted KM-UCL (use when n<50)	5.805

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.878	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.283	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.061	Mean in Log Scale	-0.828
SD in Original Scale	3.812	SD in Log Scale	1.951
95% t UCL (assumes normality of ROS data)	3.732	95% Percentile Bootstrap UCL	3.806
95% BCA Bootstrap UCL	4.282	95% Bootstrap t UCL	7.939

95% H-UCL (Log ROS)	26.6		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.971	KM Geo Mean	2.639
KM SD (logged)	0.597	95% Critical H Value (KM-Log)	2.156
KM Standard Error of Mean (logged)	0.178	95% H-UCL (KM -Log)	4.397
KM SD (logged)	0.597	95% Critical H Value (KM-Log)	2.156
KM Standard Error of Mean (logged)	0.178		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.05	Mean in Log Scale	0.634
SD in Original Scale	6.616	SD in Log Scale	1.099
95% t UCL (Assumes normality)	6.95	95% H-Stat UCL	7.76

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	5.067

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU6_PFO5DA

General Statistics

Total Number of Observations	16	Number of Distinct Observations	3
Number of Detects	1	Number of Non-Detects	15
Number of Distinct Detects	1	Number of Distinct Non-Detects	2

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU6_PFO5DA was not processed!

DW_EU6_PMPA

General Statistics

Total Number of Observations	16	Number of Distinct Observations	8
Number of Detects	7	Number of Non-Detects	9

Number of Distinct Detects	7	Number of Distinct Non-Detects	1
Minimum Detect	20	Minimum Non-Detect	10
Maximum Detect	1500	Maximum Non-Detect	10
Variance Detects	289598	Percent Non-Detects	56.25%
Mean Detects	505.1	SD Detects	538.1
Median Detects	380	CV Detects	1.065
Skewness Detects	1.112	Kurtosis Detects	0.828
Mean of Logged Detects	5.368	SD of Logged Detects	1.708

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.884	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.186	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.304	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	226.6	KM Standard Error of Mean	111
KM SD	411	95% KM (BCA) UCL	441.4
95% KM (t) UCL	421.2	95% KM (Percentile Bootstrap) UCL	405.4
95% KM (z) UCL	409.2	95% KM Bootstrap t UCL	562.2
90% KM Chebyshev UCL	559.6	95% KM Chebyshev UCL	710.4
97.5% KM Chebyshev UCL	919.7	99% KM Chebyshev UCL	1331

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.277	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.739	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.181	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.323	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.704	k star (bias corrected MLE)	0.498
Theta hat (MLE)	717.2	Theta star (bias corrected MLE)	1015
nu hat (MLE)	9.861	nu star (bias corrected)	6.968
Mean (detects)	505.1		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	221
Maximum	1500	Median	0.01

SD	427.6	CV	1.935
k hat (MLE)	0.138	k star (bias corrected MLE)	0.154
Theta hat (MLE)	1602	Theta star (bias corrected MLE)	1438
nu hat (MLE)	4.413	nu star (bias corrected)	4.919
Adjusted Level of Significance (β)	0.0335		
Approximate Chi Square Value (4.92, α)	1.115	Adjusted Chi Square Value (4.92, β)	0.926
95% Gamma Approximate UCL (use when n>=50)	975	95% Gamma Adjusted UCL (use when n<50)	1174

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	226.6	SD (KM)	411
Variance (KM)	168933	SE of Mean (KM)	111
k hat (KM)	0.304	k star (KM)	0.289
nu hat (KM)	9.729	nu star (KM)	9.238
theta hat (KM)	745.4	theta star (KM)	785
80% gamma percentile (KM)	344.1	90% gamma percentile (KM)	671.4
95% gamma percentile (KM)	1049	99% gamma percentile (KM)	2037

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (9.24, α)	3.471	Adjusted Chi Square Value (9.24, β)	3.08
95% Gamma Approximate KM-UCL (use when n>=50)	603.1	95% Gamma Adjusted KM-UCL (use when n<50)	679.8

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.899	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.203	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.304	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	222.8	Mean in Log Scale	2.442
SD in Original Scale	426.6	SD in Log Scale	3.169
95% t UCL (assumes normality of ROS data)	409.8	95% Percentile Bootstrap UCL	396.4
95% BCA Bootstrap UCL	453.3	95% Bootstrap t UCL	581.1
95% H-UCL (Log ROS)	439963		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.644	KM Geo Mean	38.23
KM SD (logged)	1.845	95% Critical H Value (KM-Log)	4.178
KM Standard Error of Mean (logged)	0.498	95% H-UCL (KM -Log)	1536
KM SD (logged)	1.845	95% Critical H Value (KM-Log)	4.178
KM Standard Error of Mean (logged)	0.498		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	223.8	Mean in Log Scale	3.254

SD in Original Scale	426	SD in Log Scale	2.208
95% t UCL (Assumes normality)	410.5	95% H-Stat UCL	4747

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	421.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU7_HFPO-DA

General Statistics

Total Number of Observations	92	Number of Distinct Observations	68
Number of Detects	82	Number of Non-Detects	10
Number of Distinct Detects	67	Number of Distinct Non-Detects	1
Minimum Detect	5.2	Minimum Non-Detect	4
Maximum Detect	4000	Maximum Non-Detect	4
Variance Detects	222764	Percent Non-Detects	10.87%
Mean Detects	219.1	SD Detects	472
Median Detects	91	CV Detects	2.154
Skewness Detects	6.631	Kurtosis Detects	51.91
Mean of Logged Detects	4.406	SD of Logged Detects	1.443

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.422	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.325	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.098	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	195.7	KM Standard Error of Mean	46.98
KM SD	447.9	95% KM (BCA) UCL	283.1
95% KM (t) UCL	273.8	95% KM (Percentile Bootstrap) UCL	284.1
95% KM (z) UCL	273	95% KM Bootstrap t UCL	364.3
90% KM Chebyshev UCL	336.7	95% KM Chebyshev UCL	400.5
97.5% KM Chebyshev UCL	489.1	99% KM Chebyshev UCL	663.2

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.562	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.806	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.102	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.103	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.624	k star (bias corrected MLE)	0.61
Theta hat (MLE)	350.9	Theta star (bias corrected MLE)	359.4
nu hat (MLE)	102.4	nu star (bias corrected)	99.98
Mean (detects)	219.1		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	195.3
Maximum	4000	Median	60.5
SD	450.5	CV	2.307
k hat (MLE)	0.362	k star (bias corrected MLE)	0.357
Theta hat (MLE)	539.6	Theta star (bias corrected MLE)	546.5
nu hat (MLE)	66.58	nu star (bias corrected)	65.74
Adjusted Level of Significance (β)	0.0474		
Approximate Chi Square Value (65.74, α)	48.09	Adjusted Chi Square Value (65.74, β)	47.85
95% Gamma Approximate UCL (use when n>=50)	267	95% Gamma Adjusted UCL (use when n<50)	268.3

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	195.7	SD (KM)	447.9
Variance (KM)	200610	SE of Mean (KM)	46.98
k hat (KM)	0.191	k star (KM)	0.192
nu hat (KM)	35.13	nu star (KM)	35.32
theta hat (KM)	1025	theta star (KM)	1020
80% gamma percentile (KM)	252.2	90% gamma percentile (KM)	591.6
95% gamma percentile (KM)	1019	99% gamma percentile (KM)	2204

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (35.32, α)	22.72	Adjusted Chi Square Value (35.32, β)	22.56
95% Gamma Approximate KM-UCL (use when n>=50)	304.2	95% Gamma Adjusted KM-UCL (use when n<50)	306.4

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.965	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk P Value	0.0923	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0922	**Lilliefors GOF Test**	

5% Lilliefors Critical Value	0.098	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	195.6	Mean in Log Scale	4.047
SD in Original Scale	450.4	SD in Log Scale	1.719
95% t UCL (assumes normality of ROS data)	273.7	95% Percentile Bootstrap UCL	279.7
95% BCA Bootstrap UCL	343.5	95% Bootstrap t UCL	355
95% H-UCL (Log ROS)	433.7		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	4.077	KM Geo Mean	58.99
KM SD (logged)	1.648	95% Critical H Value (KM-Log)	2.958
KM Standard Error of Mean (logged)	0.173	95% H-UCL (KM -Log)	382.3
KM SD (logged)	1.648	95% Critical H Value (KM-Log)	2.958
KM Standard Error of Mean (logged)	0.173		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	195.5	Mean in Log Scale	4.002
SD in Original Scale	450.4	SD in Log Scale	1.79
95% t UCL (Assumes normality)	273.5	95% H-Stat UCL	488.1

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	304.2

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU7_PEPA

General Statistics

Total Number of Observations	47	Number of Distinct Observations	23
Number of Detects	24	Number of Non-Detects	23
Number of Distinct Detects	22	Number of Distinct Non-Detects	3
Minimum Detect	20	Minimum Non-Detect	20

Maximum Detect	770	Maximum Non-Detect	10000
Variance Detects	32208	Percent Non-Detects	48.94%
Mean Detects	176.8	SD Detects	179.5
Median Detects	125	CV Detects	1.015
Skewness Detects	1.987	Kurtosis Detects	4.543
Mean of Logged Detects	4.703	SD of Logged Detects	1.044

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.791	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.916	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.191	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.177	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	106.2	KM Standard Error of Mean	23.29
KM SD	151.1	95% KM (BCA) UCL	147.3
95% KM (t) UCL	145.3	95% KM (Percentile Bootstrap) UCL	145.8
95% KM (z) UCL	144.5	95% KM Bootstrap t UCL	158.5
90% KM Chebyshev UCL	176.1	95% KM Chebyshev UCL	207.7
97.5% KM Chebyshev UCL	251.6	99% KM Chebyshev UCL	337.9

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.279	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.768	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.105	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.182	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.2	k star (bias corrected MLE)	1.078
Theta hat (MLE)	147.3	Theta star (bias corrected MLE)	164
nu hat (MLE)	57.61	nu star (bias corrected)	51.74
Mean (detects)	176.8		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	93.73
Maximum	770	Median	21
SD	154.6	CV	1.65
k hat (MLE)	0.189	k star (bias corrected MLE)	0.191

Theta hat (MLE)	495.8	Theta star (bias corrected MLE)	490.3
nu hat (MLE)	17.77	nu star (bias corrected)	17.97
Adjusted Level of Significance (β)	0.0449		
Approximate Chi Square Value (17.97, α)	9.368	Adjusted Chi Square Value (17.97, β)	9.171
95% Gamma Approximate UCL (use when n>=50)	179.8	95% Gamma Adjusted UCL (use when n<50)	183.6

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	106.2	SD (KM)	151.1
Variance (KM)	22839	SE of Mean (KM)	23.29
k hat (KM)	0.494	k star (KM)	0.476
nu hat (KM)	46.42	nu star (KM)	44.79
theta hat (KM)	215.1	theta star (KM)	222.9
80% gamma percentile (KM)	174	90% gamma percentile (KM)	290.2
95% gamma percentile (KM)	415	99% gamma percentile (KM)	723.4

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (44.79, α)	30.44	Adjusted Chi Square Value (44.79, β)	30.06
95% Gamma Approximate KM-UCL (use when n>=50)	156.3	95% Gamma Adjusted KM-UCL (use when n<50)	158.2

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.959	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.916	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.102	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.177	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	98.42	Mean in Log Scale	3.537
SD in Original Scale	151.2	SD in Log Scale	1.575
95% t UCL (assumes normality of ROS data)	135.5	95% Percentile Bootstrap UCL	136.3
95% BCA Bootstrap UCL	149.6	95% Bootstrap t UCL	151.7
95% H-UCL (Log ROS)	239.4		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.947	KM Geo Mean	51.76
KM SD (logged)	1.13	95% Critical H Value (KM-Log)	2.473
KM Standard Error of Mean (logged)	0.175	95% H-UCL (KM -Log)	148
KM SD (logged)	1.13	95% Critical H Value (KM-Log)	2.473
KM Standard Error of Mean (logged)	0.175		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	417.1	Mean in Log Scale	4.062
SD in Original Scale	1219	SD in Log Scale	1.77
95% t UCL (Assumes normality)	715.5	95% H-Stat UCL	654.5

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Adjusted Gamma UCL	158.2	95% GROS Adjusted Gamma UCL	183.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU7_PFECA-G

General Statistics

Total Number of Observations	47	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	47
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU7_PFECA-G was not processed!

DW_EU7_PFESA-BP1

General Statistics

Total Number of Observations	47	Number of Distinct Observations	5
Number of Detects	0	Number of Non-Detects	47
Number of Distinct Detects	0	Number of Distinct Non-Detects	5

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU7_PFESA-BP1 was not processed!

DW_EU7_PFESA-BP2

General Statistics

Total Number of Observations	47	Number of Distinct Observations	25

Number of Detects	24	Number of Non-Detects	23
Number of Distinct Detects	22	Number of Distinct Non-Detects	3
Minimum Detect	3.7	Minimum Non-Detect	2
Maximum Detect	65	Maximum Non-Detect	9500
Variance Detects	423.9	Percent Non-Detects	48.94%
Mean Detects	24.96	SD Detects	20.59
Median Detects	20	CV Detects	0.825
Skewness Detects	0.945	Kurtosis Detects	-0.49
Mean of Logged Detects	2.857	SD of Logged Detects	0.908

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.833	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.916	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.219	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.177	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	15.59	KM Standard Error of Mean	2.928
KM SD	18.6	95% KM (BCA) UCL	21.03
95% KM (t) UCL	20.5	95% KM (Percentile Bootstrap) UCL	21.01
95% KM (z) UCL	20.4	95% KM Bootstrap t UCL	21.16
90% KM Chebyshev UCL	24.37	95% KM Chebyshev UCL	28.35
97.5% KM Chebyshev UCL	33.87	99% KM Chebyshev UCL	44.72

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.524	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.761	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.137	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.181	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.535	k star (bias corrected MLE)	1.371
Theta hat (MLE)	16.26	Theta star (bias corrected MLE)	18.21
nu hat (MLE)	73.67	nu star (bias corrected)	65.79
Mean (detects)	24.96		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	14.47

Maximum	65	Median	7.454
SD	18.85	CV	1.303
k hat (MLE)	0.28	k star (bias corrected MLE)	0.276
Theta hat (MLE)	51.68	Theta star (bias corrected MLE)	52.37
nu hat (MLE)	26.31	nu star (bias corrected)	25.96
Adjusted Level of Significance (β)	0.0449		
Approximate Chi Square Value (25.96, α)	15.35	Adjusted Chi Square Value (25.96, β)	15.09
95% Gamma Approximate UCL (use when n>=50)	24.47	95% Gamma Adjusted UCL (use when n<50)	24.89

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	15.59	SD (KM)	18.6
Variance (KM)	345.9	SE of Mean (KM)	2.928
k hat (KM)	0.702	k star (KM)	0.672
nu hat (KM)	66.03	nu star (KM)	63.15
theta hat (KM)	22.19	theta star (KM)	23.2
80% gamma percentile (KM)	25.66	90% gamma percentile (KM)	39.51
95% gamma percentile (KM)	53.85	99% gamma percentile (KM)	88.21

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (63.15, α)	45.87	Adjusted Chi Square Value (63.15, β)	45.4
95% Gamma Approximate KM-UCL (use when n>=50)	21.46	95% Gamma Adjusted KM-UCL (use when n<50)	21.68

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.943	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.916	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.116	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.177	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	15.1	Mean in Log Scale	2.025
SD in Original Scale	18.12	SD in Log Scale	1.245
95% t UCL (assumes normality of ROS data)	19.54	95% Percentile Bootstrap UCL	19.4
95% BCA Bootstrap UCL	20.02	95% Bootstrap t UCL	20.56
95% H-UCL (Log ROS)	26.53		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.018	KM Geo Mean	7.522
KM SD (logged)	1.238	95% Critical H Value (KM-Log)	2.599
KM Standard Error of Mean (logged)	0.201	95% H-UCL (KM -Log)	26.03
KM SD (logged)	1.238	95% Critical H Value (KM-Log)	2.599
KM Standard Error of Mean (logged)	0.201		

DL/2 Statistics

DL/2 Normal **DL/2 Log-Transformed**

Mean in Original Scale	319.4	Mean in Log Scale	2.41
SD in Original Scale	1170	SD in Log Scale	2.182
95% t UCL (Assumes normality)	605.8	95% H-Stat UCL	415.2

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Adjusted Gamma UCL	21.68	95% GROS Adjusted Gamma UCL	24.89

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU7_PFMOAA

General Statistics

Total Number of Observations	47	Number of Distinct Observations	27
Number of Detects	27	Number of Non-Detects	20
Number of Distinct Detects	24	Number of Distinct Non-Detects	3
Minimum Detect	7.1	Minimum Non-Detect	5
Maximum Detect	480	Maximum Non-Detect	9500
Variance Detects	8047	Percent Non-Detects	42.55%
Mean Detects	72.08	SD Detects	89.71
Median Detects	51	CV Detects	1.245
Skewness Detects	3.862	Kurtosis Detects	17.45
Mean of Logged Detects	3.837	SD of Logged Detects	0.961

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.574	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.267	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.167	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	46.81	KM Standard Error of Mean	11.7
KM SD	76.08	95% KM (BCA) UCL	69.69
95% KM (t) UCL	66.46	95% KM (Percentile Bootstrap) UCL	67.99
95% KM (z) UCL	66.06	95% KM Bootstrap t UCL	85.64
90% KM Chebyshev UCL	81.92	95% KM Chebyshev UCL	97.83
97.5% KM Chebyshev UCL	119.9	99% KM Chebyshev UCL	163.3

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.597	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.768	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.137	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.172	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.276	k star (bias corrected MLE)	1.159
Theta hat (MLE)	56.49	Theta star (bias corrected MLE)	62.2
nu hat (MLE)	68.9	nu star (bias corrected)	62.58
Mean (detects)	72.08		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	43.2
Maximum	480	Median	18
SD	76.16	CV	1.763
k hat (MLE)	0.235	k star (bias corrected MLE)	0.234
Theta hat (MLE)	183.9	Theta star (bias corrected MLE)	184.5
nu hat (MLE)	22.08	nu star (bias corrected)	22.01
Adjusted Level of Significance (β)	0.0449		
Approximate Chi Square Value (22.01, α)	12.34	Adjusted Chi Square Value (22.01, β)	12.11
95% Gamma Approximate UCL (use when n>=50)	77.03	95% Gamma Adjusted UCL (use when n<50)	78.49

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	46.81	SD (KM)	76.08
Variance (KM)	5788	SE of Mean (KM)	11.7
k hat (KM)	0.379	k star (KM)	0.369
nu hat (KM)	35.58	nu star (KM)	34.65
theta hat (KM)	123.7	theta star (KM)	127
80% gamma percentile (KM)	74.74	90% gamma percentile (KM)	134.1
95% gamma percentile (KM)	200	99% gamma percentile (KM)	367.4

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (34.65, α)	22.18	Adjusted Chi Square Value (34.65, β)	21.86
95% Gamma Approximate KM-UCL (use when n>=50)	73.12	95% Gamma Adjusted KM-UCL (use when n<50)	74.17

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.955	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Detected Data appear Lognormal at 5% Significance Level

Lilliefors Test Statistic	0.145	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.167	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	45.52	Mean in Log Scale	3.003
SD in Original Scale	74.66	SD in Log Scale	1.34
95% t UCL (assumes normality of ROS data)	63.8	95% Percentile Bootstrap UCL	64.66
95% BCA Bootstrap UCL	74.85	95% Bootstrap t UCL	77.99
95% H-UCL (Log ROS)	84.61		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.021	KM Geo Mean	20.52
KM SD (logged)	1.295	95% Critical H Value (KM-Log)	2.666
KM Standard Error of Mean (logged)	0.202	95% H-UCL (KM -Log)	78.93
KM SD (logged)	1.295	95% Critical H Value (KM-Log)	2.666
KM Standard Error of Mean (logged)	0.202		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	346.9	Mean in Log Scale	3.223
SD in Original Scale	1165	SD in Log Scale	2.039
95% t UCL (Assumes normality)	632.1	95% H-Stat UCL	599.9

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Adjusted Gamma UCL	74.17	95% GROS Adjusted Gamma UCL	78.49

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU7_PFO2HxA

General Statistics

Total Number of Observations	47	Number of Distinct Observations	28
Number of Detects	29	Number of Non-Detects	18
Number of Distinct Detects	26	Number of Distinct Non-Detects	3
Minimum Detect	4.1	Minimum Non-Detect	2
Maximum Detect	1200	Maximum Non-Detect	9200
Variance Detects	54557	Percent Non-Detects	38.3%

Mean Detects	154.1	SD Detects	233.6
Median Detects	85	CV Detects	1.516
Skewness Detects	3.558	Kurtosis Detects	14.82
Mean of Logged Detects	4.276	SD of Logged Detects	1.349

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.586	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.926	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.282	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.161	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	102.5	KM Standard Error of Mean	30.64
KM SD	199.7	95% KM (BCA) UCL	161.8
95% KM (t) UCL	153.9	95% KM (Percentile Bootstrap) UCL	156.7
95% KM (z) UCL	152.9	95% KM Bootstrap t UCL	205.6
90% KM Chebyshev UCL	194.4	95% KM Chebyshev UCL	236
97.5% KM Chebyshev UCL	293.8	99% KM Chebyshev UCL	407.3

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.58	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.783	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.154	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.169	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.782	k star (bias corrected MLE)	0.724
Theta hat (MLE)	197.2	Theta star (bias corrected MLE)	212.9
nu hat (MLE)	45.33	nu star (bias corrected)	41.97
Mean (detects)	154.1		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	98.37
Maximum	1200	Median	19
SD	197	CV	2.003
k hat (MLE)	0.208	k star (bias corrected MLE)	0.209
Theta hat (MLE)	472.1	Theta star (bias corrected MLE)	470.1
nu hat (MLE)	19.59	nu star (bias corrected)	19.67

Adjusted Level of Significance (β)	0.0449		
Approximate Chi Square Value (19.67, α)	10.61	Adjusted Chi Square Value (19.67, β)	10.4
95% Gamma Approximate UCL (use when n>=50)	182.4	95% Gamma Adjusted UCL (use when n<50)	186.1

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	102.5	SD (KM)	199.7
Variance (KM)	39875	SE of Mean (KM)	30.64
k hat (KM)	0.263	k star (KM)	0.261
nu hat (KM)	24.75	nu star (KM)	24.5
theta hat (KM)	389.2	theta star (KM)	393.1
80% gamma percentile (KM)	150.9	90% gamma percentile (KM)	306.6
95% gamma percentile (KM)	489.8	99% gamma percentile (KM)	974.7

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (24.50, α)	14.23	Adjusted Chi Square Value (24.50, β)	13.98
95% Gamma Approximate KM-UCL (use when n>=50)	176.4	95% Gamma Adjusted KM-UCL (use when n<50)	179.5

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.962	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.926	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.171	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.161	Detected Data Not Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	99.2	Mean in Log Scale	3.222
SD in Original Scale	195.8	SD in Log Scale	1.866
95% t UCL (assumes normality of ROS data)	147.1	95% Percentile Bootstrap UCL	150.9
95% BCA Bootstrap UCL	171.2	95% Bootstrap t UCL	191.5
95% H-UCL (Log ROS)	365.2		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.086	KM Geo Mean	21.88
KM SD (logged)	1.989	95% Critical H Value (KM-Log)	3.577
KM Standard Error of Mean (logged)	0.307	95% H-UCL (KM -Log)	451.8
KM SD (logged)	1.989	95% Critical H Value (KM-Log)	3.577
KM Standard Error of Mean (logged)	0.307		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	390	Mean in Log Scale	3.314
SD in Original Scale	1128	SD in Log Scale	2.55
95% t UCL (Assumes normality)	666.3	95% H-Stat UCL	3680

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

ı Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1	179.5

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU7_PFO3OA

General Statistics

Total Number of Observations	47	Number of Distinct Observations	18
Number of Detects	17	Number of Non-Detects	30
Number of Distinct Detects	16	Number of Distinct Non-Detects	3
Minimum Detect	2	Minimum Non-Detect	2
Maximum Detect	130	Maximum Non-Detect	8800
Variance Detects	1273	Percent Non-Detects	63.83%
Mean Detects	22.05	SD Detects	35.68
Median Detects	7.6	CV Detects	1.618
Skewness Detects	2.437	Kurtosis Detects	5.457
Mean of Logged Detects	2.258	SD of Logged Detects	1.236

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.589	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.892	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.386	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.207	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	10.4	KM Standard Error of Mean	3.727
KM SD	23.69	95% KM (BCA) UCL	16.83
95% KM (t) UCL	16.66	95% KM (Percentile Bootstrap) UCL	17.16
95% KM (z) UCL	16.53	95% KM Bootstrap t UCL	28.72
90% KM Chebyshev UCL	21.58	95% KM Chebyshev UCL	26.64
97.5% KM Chebyshev UCL	33.67	99% KM Chebyshev UCL	47.48

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.409	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.779	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.311	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.218	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.721	k star (bias corrected MLE)	0.633
Theta hat (MLE)	30.6	Theta star (bias corrected MLE)	34.86
nu hat (MLE)	24.5	nu star (bias corrected)	21.51
Mean (detects)	22.05		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	8.857
Maximum	130	Median	0.01
SD	23.65	CV	2.67
k hat (MLE)	0.192	k star (bias corrected MLE)	0.194
Theta hat (MLE)	46.1	Theta star (bias corrected MLE)	45.64
nu hat (MLE)	18.06	nu star (bias corrected)	18.24
Adjusted Level of Significance (β)	0.0449		
Approximate Chi Square Value (18.24, α)	9.566	Adjusted Chi Square Value (18.24, β)	9.366
95% Gamma Approximate UCL (use when n>=50)	16.89	95% Gamma Adjusted UCL (use when n<50)	17.25

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	10.4	SD (KM)	23.69
Variance (KM)	561.3	SE of Mean (KM)	3.727
k hat (KM)	0.193	k star (KM)	0.195
nu hat (KM)	18.11	nu star (KM)	18.29
theta hat (KM)	53.97	theta star (KM)	53.45
80% gamma percentile (KM)	13.5	90% gamma percentile (KM)	31.44
95% gamma percentile (KM)	53.97	99% gamma percentile (KM)	116.3

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (18.29, α)	9.601	Adjusted Chi Square Value (18.29, β)	9.401
95% Gamma Approximate KM-UCL (use when n>=50)	19.81	95% Gamma Adjusted KM-UCL (use when n<50)	20.23

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.901	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.892	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.22	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.207	Detected Data Not Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	8.962	Mean in Log Scale	0.478
SD in Original Scale	23.38	SD in Log Scale	1.909
95% t UCL (assumes normality of ROS data)	14.69	95% Percentile Bootstrap UCL	15.16
95% BCA Bootstrap UCL	18.11	95% Bootstrap t UCL	28.18
95% H-UCL (Log ROS)	26.48		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.397	KM Geo Mean	4.044
KM SD (logged)	1.09	95% Critical H Value (KM-Log)	2.429
KM Standard Error of Mean (logged)	0.18	95% H-UCL (KM -Log)	10.82
KM SD (logged)	1.09	95% Critical H Value (KM-Log)	2.429
KM Standard Error of Mean (logged)	0.18		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	293.5	Mean in Log Scale	1.9
SD in Original Scale	1084	SD in Log Scale	2.263
95% t UCL (Assumes normality)	558.9	95% H-Stat UCL	324.1

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 10.82

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU7_PFO4DA

General Statistics

Total Number of Observations	47	Number of Distinct Observations	14
Number of Detects	11	Number of Non-Detects	36
Number of Distinct Detects	10	Number of Distinct Non-Detects	5
Minimum Detect	1.71	Minimum Non-Detect	1.1
Maximum Detect	67	Maximum Non-Detect	9700
Variance Detects	371.6	Percent Non-Detects	76.6%
Mean Detects	10.39	SD Detects	19.28
Median Detects	3.3	CV Detects	1.855
Skewness Detects	3.038	Kurtosis Detects	9.504
Mean of Logged Detects	1.546	SD of Logged Detects	1.108

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.501	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.392	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.251	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3.821	KM Standard Error of Mean	1.606
KM SD	10.02	95% KM (BCA) UCL	7.303
95% KM (t) UCL	6.517	95% KM (Percentile Bootstrap) UCL	6.824
95% KM (z) UCL	6.463	95% KM Bootstrap t UCL	18.37
90% KM Chebyshev UCL	8.639	95% KM Chebyshev UCL	10.82
97.5% KM Chebyshev UCL	13.85	99% KM Chebyshev UCL	19.8

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.388	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.296	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.265	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.753	k star (bias corrected MLE)	0.608
Theta hat (MLE)	13.81	Theta star (bias corrected MLE)	17.09
nu hat (MLE)	16.56	nu star (bias corrected)	13.37
Mean (detects)	10.39		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	2.614
Maximum	67	Median	0.01
SD	10.05	CV	3.846
k hat (MLE)	0.187	k star (bias corrected MLE)	0.189
Theta hat (MLE)	14	Theta star (bias corrected MLE)	13.83
nu hat (MLE)	17.55	nu star (bias corrected)	17.76
Adjusted Level of Significance (β)	0.0449		
Approximate Chi Square Value (17.76, α)	9.22	Adjusted Chi Square Value (17.76, β)	9.025
95% Gamma Approximate UCL (use when n>=50)	5.037	95% Gamma Adjusted UCL (use when n<50)	5.146

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3.821	SD (KM)	10.02
Variance (KM)	100.5	SE of Mean (KM)	1.606
k hat (KM)	0.145	k star (KM)	0.15
nu hat (KM)	13.66	nu star (KM)	14.12
theta hat (KM)	26.29	theta star (KM)	25.43
80% gamma percentile (KM)	4.164	90% gamma percentile (KM)	11.33
95% gamma percentile (KM)	21.02	99% gamma percentile (KM)	49.14

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (14.12, α)	6.655	Adjusted Chi Square Value (14.12, β)	6.492
95% Gamma Approximate KM-UCL (use when n>=50)	8.108	95% Gamma Adjusted KM-UCL (use when n<50)	8.311

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.823	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.197	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.251	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.963	Mean in Log Scale	-0.414
SD in Original Scale	9.931	SD in Log Scale	1.609
95% t UCL (assumes normality of ROS data)	5.395	95% Percentile Bootstrap UCL	5.664
95% BCA Bootstrap UCL	7.565	95% Bootstrap t UCL	15.8
95% H-UCL (Log ROS)	4.992		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.67	KM Geo Mean	1.954
KM SD (logged)	0.799	95% Critical H Value (KM-Log)	2.129
KM Standard Error of Mean (logged)	0.176	95% H-UCL (KM -Log)	3.457
KM SD (logged)	0.799	95% Critical H Value (KM-Log)	2.129
KM Standard Error of Mean (logged)	0.176		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	316.8	Mean in Log Scale	1.453
SD in Original Scale	1197	SD in Log Scale	2.28
95% t UCL (Assumes normality)	609.8	95% H-Stat UCL	219.6

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 3.457

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU7_PFO5DA

General Statistics

Total Number of Observations	47	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	47
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU7_PFO5DA was not processed!

DW_EU7_PMPA

General Statistics

Total Number of Observations	47	Number of Distinct Observations	35
Number of Detects	38	Number of Non-Detects	9
Number of Distinct Detects	33	Number of Distinct Non-Detects	2
Minimum Detect	12	Minimum Non-Detect	10
Maximum Detect	2500	Maximum Non-Detect	8400
Variance Detects	271585	Percent Non-Detects	19.15%
Mean Detects	519	SD Detects	521.1
Median Detects	325	CV Detects	1.004
Skewness Detects	1.849	Kurtosis Detects	4.697
Mean of Logged Detects	5.602	SD of Logged Detects	1.392

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.83	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.187	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.142	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	449.6	KM Standard Error of Mean	77.74
KM SD	508.8	95% KM (BCA) UCL	580.5
95% KM (t) UCL	580.1	95% KM (Percentile Bootstrap) UCL	581.5

95% KM (z) UCL	577.4	95% KM Bootstrap t UCL	617.2
90% KM Chebyshev UCL	682.8	95% KM Chebyshev UCL	788.4
97.5% KM Chebyshev UCL	935	99% KM Chebyshev UCL	1223

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.406	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.782	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0941	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.148	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.899	k star (bias corrected MLE)	0.846
Theta hat (MLE)	577.2	Theta star (bias corrected MLE)	613.7
nu hat (MLE)	68.33	nu star (bias corrected)	64.27
Mean (detects)	519		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	440.9
Maximum	2500	Median	280
SD	504	CV	1.143
k hat (MLE)	0.369	k star (bias corrected MLE)	0.36
Theta hat (MLE)	1195	Theta star (bias corrected MLE)	1226
nu hat (MLE)	34.68	nu star (bias corrected)	33.8
Adjusted Level of Significance (β)	0.0449		
Approximate Chi Square Value (33.80, α)	21.5	Adjusted Chi Square Value (33.80, β)	21.19
95% Gamma Approximate UCL (use when n>=50)	693.1	95% Gamma Adjusted UCL (use when n<50)	703.2

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	449.6	SD (KM)	508.8
Variance (KM)	258886	SE of Mean (KM)	77.74
k hat (KM)	0.781	k star (KM)	0.745
nu hat (KM)	73.39	nu star (KM)	70.03
theta hat (KM)	575.9	theta star (KM)	603.4
80% gamma percentile (KM)	737.2	90% gamma percentile (KM)	1112
95% gamma percentile (KM)	1496	99% gamma percentile (KM)	2409

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (70.03, α)	51.77	Adjusted Chi Square Value (70.03, β)	51.27
95% Gamma Approximate KM-UCL (use when n>=50)	608.2	95% Gamma Adjusted KM-UCL (use when n<50)	614.1

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.911	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.157	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.142	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	438.6	Mean in Log Scale	5.191
SD in Original Scale	502.2	SD in Log Scale	1.635
95% t UCL (assumes normality of ROS data)	561.5	95% Percentile Bootstrap UCL	559.4
95% BCA Bootstrap UCL	577.8	95% Bootstrap t UCL	589.7
95% H-UCL (Log ROS)	1441		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	5.152	KM Geo Mean	172.7
KM SD (logged)	1.706	95% Critical H Value (KM-Log)	3.19
KM Standard Error of Mean (logged)	0.261	95% H-UCL (KM -Log)	1652
KM SD (logged)	1.706	95% Critical H Value (KM-Log)	3.19
KM Standard Error of Mean (logged)	0.261		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	688.3	Mean in Log Scale	5.267
SD in Original Scale	1052	SD in Log Scale	2.003
95% t UCL (Assumes normality)	946	95% H-Stat UCL	4168

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

ı Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1 614.1

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU8_HFPO-DA

General Statistics

Total Number of Observations	357	Number of Distinct Observations	168
Number of Detects	309	Number of Non-Detects	48

Number of Distinct Detects	163	Number of Distinct Non-Detects	8
Minimum Detect	0.92	Minimum Non-Detect	0.567
Maximum Detect	1300	Maximum Non-Detect	4.3
Variance Detects	17387	Percent Non-Detects	13.45%
Mean Detects	72.67	SD Detects	131.9
Median Detects	32	CV Detects	1.815
Skewness Detects	4.857	Kurtosis Detects	32.75
Mean of Logged Detects	3.455	SD of Logged Detects	1.256

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.524	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.293	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0508	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	63.11	KM Standard Error of Mean	6.619
KM SD	124.9	95% KM (BCA) UCL	74.13
95% KM (t) UCL	74.03	95% KM (Percentile Bootstrap) UCL	74.51
95% KM (z) UCL	74	95% KM Bootstrap t UCL	76.48
90% KM Chebyshev UCL	82.97	95% KM Chebyshev UCL	91.96
97.5% KM Chebyshev UCL	104.4	99% KM Chebyshev UCL	129

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	9.643	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.8	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.142	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0536	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.724	k star (bias corrected MLE)	0.719
Theta hat (MLE)	100.3	Theta star (bias corrected MLE)	101
nu hat (MLE)	447.6	nu star (bias corrected)	444.5
Mean (detects)	72.67		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	62.9
Maximum	1300	Median	24

SD	125.1	CV	1.989
k hat (MLE)	0.376	k star (bias corrected MLE)	0.374
Theta hat (MLE)	167.5	Theta star (bias corrected MLE)	168
nu hat (MLE)	268.2	nu star (bias corrected)	267.2
Adjusted Level of Significance (β)	0.0493		
Approximate Chi Square Value (267.25, α)	230.4	Adjusted Chi Square Value (267.25, β)	230.3
95% Gamma Approximate UCL (use when n>=50)	72.96	95% Gamma Adjusted UCL (use when n<50)	73.01

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	63.11	SD (KM)	124.9
Variance (KM)	15588	SE of Mean (KM)	6.619
k hat (KM)	0.256	k star (KM)	0.255
nu hat (KM)	182.4	nu star (KM)	182.2
theta hat (KM)	247	theta star (KM)	247.3
80% gamma percentile (KM)	92.32	90% gamma percentile (KM)	189.1
95% gamma percentile (KM)	303.6	99% gamma percentile (KM)	607.4

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (182.23, α)	152	Adjusted Chi Square Value (182.23, β)	151.9
95% Gamma Approximate KM-UCL (use when n>=50)	75.66	95% Gamma Adjusted KM-UCL (use when n<50)	75.71

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.983	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.389	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0436	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0508	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	63.22	Mean in Log Scale	3.09
SD in Original Scale	125	SD in Log Scale	1.508
95% t UCL (assumes normality of ROS data)	74.13	95% Percentile Bootstrap UCL	74.17
95% BCA Bootstrap UCL	77.42	95% Bootstrap t UCL	76.39
95% H-UCL (Log ROS)	84.2		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.028	KM Geo Mean	20.66
KM SD (logged)	1.608	95% Critical H Value (KM-Log)	2.688
KM Standard Error of Mean (logged)	0.0887	95% H-UCL (KM -Log)	94.6
KM SD (logged)	1.608	95% Critical H Value (KM-Log)	2.688
KM Standard Error of Mean (logged)	0.0887		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	63.13	Mean in Log Scale	3.057

SD in Original Scale	125	SD in Log Scale	1.551
95% t UCL (Assumes normality)	74.04	95% H-Stat UCL	87.9

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 94.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU8_PEPA

General Statistics

Total Number of Observations	208	Number of Distinct Observations	47
Number of Detects	53	Number of Non-Detects	155
Number of Distinct Detects	43	Number of Distinct Non-Detects	5
Minimum Detect	6.5	Minimum Non-Detect	11
Maximum Detect	380	Maximum Non-Detect	10000
Variance Detects	6130	Percent Non-Detects	74.52%
Mean Detects	70.86	SD Detects	78.29
Median Detects	39	CV Detects	1.105
Skewness Detects	2.157	Kurtosis Detects	4.744
Mean of Logged Detects	3.82	SD of Logged Detects	0.91

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.716	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	8.346E-13	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.26	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.121	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	25.12	KM Standard Error of Mean	3.437
KM SD	47.73	95% KM (BCA) UCL	32.91
95% KM (t) UCL	30.8	95% KM (Percentile Bootstrap) UCL	32.11
95% KM (z) UCL	30.78	95% KM Bootstrap t UCL	31.76
90% KM Chebyshev UCL	35.43	95% KM Chebyshev UCL	40.1
97.5% KM Chebyshev UCL	46.59	99% KM Chebyshev UCL	59.32

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.041	**Anderson-Darling GOF Test**		
5% A-D Critical Value	0.773	Detected Data Not Gamma Distributed at 5% Significance Level		
K-S Test Statistic	0.19	**Kolmogorov-Smirnov GOF**		
5% K-S Critical Value	0.125	Detected Data Not Gamma Distributed at 5% Significance Level		

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.275	k star (bias corrected MLE)	1.215
Theta hat (MLE)	55.59	Theta star (bias corrected MLE)	58.31
nu hat (MLE)	135.1	nu star (bias corrected)	128.8
Mean (detects)	70.86		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	18.34
Maximum	380	Median	0.01
SD	49.9	CV	2.721
k hat (MLE)	0.15	k star (bias corrected MLE)	0.151
Theta hat (MLE)	122	Theta star (bias corrected MLE)	121.2
nu hat (MLE)	62.51	nu star (bias corrected)	62.94
Adjusted Level of Significance (β)	0.0488		
Approximate Chi Square Value (62.94, α)	45.69	Adjusted Chi Square Value (62.94, β)	45.59
95% Gamma Approximate UCL (use when n>=50)	25.26	95% Gamma Adjusted UCL (use when n<50)	25.32

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	25.12	SD (KM)	47.73
Variance (KM)	2279	SE of Mean (KM)	3.437
k hat (KM)	0.277	k star (KM)	0.276
nu hat (KM)	115.2	nu star (KM)	114.9
theta hat (KM)	90.69	theta star (KM)	90.95
80% gamma percentile (KM)	37.68	90% gamma percentile (KM)	74.77
95% gamma percentile (KM)	118	99% gamma percentile (KM)	231.4

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (114.91, α)	91.17	Adjusted Chi Square Value (114.91, β)	91.02
95% Gamma Approximate KM-UCL (use when n>=50)	31.67	95% Gamma Adjusted KM-UCL (use when n<50)	31.72

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.958	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.112	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.128	**Lilliefors GOF Test**

5% Lilliefors Critical Value	0.121	Detected Data Not Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	23.13	Mean in Log Scale	2.062
SD in Original Scale	48.46	SD in Log Scale	1.458
95% t UCL (assumes normality of ROS data)	28.68	95% Percentile Bootstrap UCL	29.3
95% BCA Bootstrap UCL	29.76	95% Bootstrap t UCL	30.47
95% H-UCL (Log ROS)	29.52		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.575	KM Geo Mean	13.13
KM SD (logged)	0.929	95% Critical H Value (KM-Log)	2.086
KM Standard Error of Mean (logged)	0.0969	95% H-UCL (KM -Log)	23.12
KM SD (logged)	0.929	95% Critical H Value (KM-Log)	2.086
KM Standard Error of Mean (logged)	0.0969		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	50.1	Mean in Log Scale	2.717
SD in Original Scale	348.2	SD in Log Scale	0.938
95% t UCL (Assumes normality)	89.99	95% H-Stat UCL	26.92

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL	23.12

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU8_PFECA-G

General Statistics

Total Number of Observations	208	Number of Distinct Observations	5
Number of Detects	0	Number of Non-Detects	208
Number of Distinct Detects	0	Number of Distinct Non-Detects	5

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU8_PFECA-G was not processed!

DW_EU8_PFESA-BP1

General Statistics

Total Number of Observations	214	Number of Distinct Observations	14
Number of Detects	1	Number of Non-Detects	213
Number of Distinct Detects	1	Number of Distinct Non-Detects	13

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU8_PFESA-BP1 was not processed!

DW_EU8_PFESA-BP2

General Statistics

Total Number of Observations	214	Number of Distinct Observations	82
Number of Detects	122	Number of Non-Detects	92
Number of Distinct Detects	77	Number of Distinct Non-Detects	7
Minimum Detect	1.1	Minimum Non-Detect	1.1
Maximum Detect	63	Maximum Non-Detect	9500
Variance Detects	101.1	Percent Non-Detects	42.99%
Mean Detects	11.17	SD Detects	10.06
Median Detects	8.2	CV Detects	0.9
Skewness Detects	2.443	Kurtosis Detects	7.593
Mean of Logged Detects	2.105	SD of Logged Detects	0.79

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.76	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.234	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0806	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	7.008	KM Standard Error of Mean	0.634
KM SD	9.114	95% KM (BCA) UCL	8.043
95% KM (t) UCL	8.055	95% KM (Percentile Bootstrap) UCL	8.08
95% KM (z) UCL	8.05	95% KM Bootstrap t UCL	8.255
90% KM Chebyshev UCL	8.909	95% KM Chebyshev UCL	9.769
97.5% KM Chebyshev UCL	10.96	99% KM Chebyshev UCL	13.31

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.377	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.768	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.13	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.0851	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.771	k star (bias corrected MLE)	1.733
Theta hat (MLE)	6.306	Theta star (bias corrected MLE)	6.445
nu hat (MLE)	432.2	nu star (bias corrected)	422.9
Mean (detects)	11.17		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	6.48
Maximum	63	Median	3.3
SD	9.359	CV	1.444
k hat (MLE)	0.283	k star (bias corrected MLE)	0.282
Theta hat (MLE)	22.92	Theta star (bias corrected MLE)	22.99
nu hat (MLE)	121	nu star (bias corrected)	120.6
Adjusted Level of Significance (β)	0.0489		
Approximate Chi Square Value (120.62, α)	96.26	Adjusted Chi Square Value (120.62, β)	96.12
95% Gamma Approximate UCL (use when n>=50)	8.12	95% Gamma Adjusted UCL (use when n<50)	8.133

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	7.008	SD (KM)	9.114
Variance (KM)	83.06	SE of Mean (KM)	0.634
k hat (KM)	0.591	k star (KM)	0.586
nu hat (KM)	253.1	nu star (KM)	250.9
theta hat (KM)	11.85	theta star (KM)	11.96
80% gamma percentile (KM)	11.55	90% gamma percentile (KM)	18.32
95% gamma percentile (KM)	25.43	99% gamma percentile (KM)	42.66

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (250.86, α)	215.2	Adjusted Chi Square Value (250.86, β)	215
95% Gamma Approximate KM-UCL (use when n>=50)	8.17	95% Gamma Adjusted KM-UCL (use when n<50)	8.178

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.982	**Shapiro Wilk GOF Test**	

5% Shapiro Wilk P Value	0.606	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.082	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0806	Detected Data Not Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	7.079	Mean in Log Scale	1.321
SD in Original Scale	8.968	SD in Log Scale	1.174
95% t UCL (assumes normality of ROS data)	8.092	95% Percentile Bootstrap UCL	8.094
95% BCA Bootstrap UCL	8.261	95% Bootstrap t UCL	8.269
95% H-UCL (Log ROS)	8.98		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.28	KM Geo Mean	3.597
KM SD (logged)	1.152	95% Critical H Value (KM-Log)	2.279
KM Standard Error of Mean (logged)	0.0803	95% H-UCL (KM -Log)	8.361
KM SD (logged)	1.152	95% Critical H Value (KM-Log)	2.279
KM Standard Error of Mean (logged)	0.0803		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	29.88	Mean in Log Scale	1.3
SD in Original Scale	324.4	SD in Log Scale	1.356
95% t UCL (Assumes normality)	66.52	95% H-Stat UCL	11.57

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 8.361

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU8_PFMOAA

General Statistics

Total Number of Observations	214	Number of Distinct Observations	85
Number of Detects	144	Number of Non-Detects	70
Number of Distinct Detects	81	Number of Distinct Non-Detects	6
Minimum Detect	4.6	Minimum Non-Detect	1.13
Maximum Detect	260	Maximum Non-Detect	9500

Variance Detects	1451	Percent Non-Detects	32.71%
Mean Detects	32.74	SD Detects	38.1
Median Detects	21	CV Detects	1.163
Skewness Detects	3.344	Kurtosis Detects	14.25
Mean of Logged Detects	3.068	SD of Logged Detects	0.888

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.655	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.24	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0742	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	22.86	KM Standard Error of Mean	2.377
KM SD	34.43	95% KM (BCA) UCL	27.65
95% KM (t) UCL	26.79	95% KM (Percentile Bootstrap) UCL	27.08
95% KM (z) UCL	26.77	95% KM Bootstrap t UCL	27.34
90% KM Chebyshev UCL	29.99	95% KM Chebyshev UCL	33.22
97.5% KM Chebyshev UCL	37.71	99% KM Chebyshev UCL	46.51

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.794	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.775	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.125	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0798	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.331	k star (bias corrected MLE)	1.308
Theta hat (MLE)	24.61	Theta star (bias corrected MLE)	25.04
nu hat (MLE)	383.2	nu star (bias corrected)	376.6
Mean (detects)	32.74		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	22.17
Maximum	260	Median	11
SD	34.74	CV	1.567
k hat (MLE)	0.284	k star (bias corrected MLE)	0.284
Theta hat (MLE)	77.93	Theta star (bias corrected MLE)	78.17

nu hat (MLE)	121.7	nu star (bias corrected)	121.4
Adjusted Level of Significance (β)	0.0489		
Approximate Chi Square Value (121.36, α)	96.92	Adjusted Chi Square Value (121.36, β)	96.77
95% Gamma Approximate UCL (use when n>=50)	27.75	95% Gamma Adjusted UCL (use when n<50)	27.8

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	22.86	SD (KM)	34.43
Variance (KM)	1185	SE of Mean (KM)	2.377
k hat (KM)	0.441	k star (KM)	0.438
nu hat (KM)	188.8	nu star (KM)	187.5
theta hat (KM)	51.84	theta star (KM)	52.2
80% gamma percentile (KM)	37.24	90% gamma percentile (KM)	63.51
95% gamma percentile (KM)	92.04	99% gamma percentile (KM)	163.1

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (187.45, α)	156.8	Adjusted Chi Square Value (187.45, β)	156.6
95% Gamma Approximate KM-UCL (use when n>=50)	27.34	95% Gamma Adjusted KM-UCL (use when n<50)	27.37

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.959	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.00245	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0626	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0742	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	23.2	Mean in Log Scale	2.414
SD in Original Scale	34.12	SD in Log Scale	1.249
95% t UCL (assumes normality of ROS data)	27.05	95% Percentile Bootstrap UCL	27.38
95% BCA Bootstrap UCL	28.01	95% Bootstrap t UCL	27.56
95% H-UCL (Log ROS)	29.87		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.207	KM Geo Mean	9.087
KM SD (logged)	1.49	95% Critical H Value (KM-Log)	2.605
KM Standard Error of Mean (logged)	0.122	95% H-UCL (KM -Log)	35.95
KM SD (logged)	1.49	95% Critical H Value (KM-Log)	2.605
KM Standard Error of Mean (logged)	0.122		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	45.67	Mean in Log Scale	2.419
SD in Original Scale	324.9	SD in Log Scale	1.338
95% t UCL (Assumes normality)	82.37	95% H-Stat UCL	34.44

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL	35.95

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU8_PFO2HxA

General Statistics

Total Number of Observations	214	Number of Distinct Observations	100
Number of Detects	150	Number of Non-Detects	64
Number of Distinct Detects	97	Number of Distinct Non-Detects	5
Minimum Detect	2	Minimum Non-Detect	1.1
Maximum Detect	560	Maximum Non-Detect	9200
Variance Detects	7736	Percent Non-Detects	29.91%
Mean Detects	60.66	SD Detects	87.96
Median Detects	31.5	CV Detects	1.45
Skewness Detects	3.053	Kurtosis Detects	11.04
Mean of Logged Detects	3.34	SD of Logged Detects	1.291

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.64	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.252	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0727	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	43.15	KM Standard Error of Mean	5.39
KM SD	78.39	95% KM (BCA) UCL	52.61
95% KM (t) UCL	52.05	95% KM (Percentile Bootstrap) UCL	52.26
95% KM (z) UCL	52.02	95% KM Bootstrap t UCL	54.57
90% KM Chebyshev UCL	59.32	95% KM Chebyshev UCL	66.64
97.5% KM Chebyshev UCL	76.81	99% KM Chebyshev UCL	96.78

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.161	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.794	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.106	**Kolmogorov-Smirnov GOF**

5% K-S Critical Value	0.0795	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.778	k star (bias corrected MLE)	0.767
Theta hat (MLE)	77.97	Theta star (bias corrected MLE)	79.1
nu hat (MLE)	233.4	nu star (bias corrected)	230.1
Mean (detects)	60.66		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	42.57
Maximum	560	Median	15
SD	78.63	CV	1.847
k hat (MLE)	0.259	k star (bias corrected MLE)	0.258
Theta hat (MLE)	164.5	Theta star (bias corrected MLE)	164.8
nu hat (MLE)	110.8	nu star (bias corrected)	110.5
Adjusted Level of Significance (β)	0.0489		
Approximate Chi Square Value (110.54, α)	87.28	Adjusted Chi Square Value (110.54, β)	87.14
95% Gamma Approximate UCL (use when n>=50)	53.92	95% Gamma Adjusted UCL (use when n<50)	54

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	43.15	SD (KM)	78.39
Variance (KM)	6144	SE of Mean (KM)	5.39
k hat (KM)	0.303	k star (KM)	0.302
nu hat (KM)	129.7	nu star (KM)	129.2
theta hat (KM)	142.4	theta star (KM)	142.9
80% gamma percentile (KM)	66.28	90% gamma percentile (KM)	127.2
95% gamma percentile (KM)	197	99% gamma percentile (KM)	378.3

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (129.21, α)	104	Adjusted Chi Square Value (129.21, β)	103.8
95% Gamma Approximate KM-UCL (use when n>=50)	53.63	95% Gamma Adjusted KM-UCL (use when n<50)	53.71

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.968	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.0289	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0457	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0727	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	43.19	Mean in Log Scale	2.476
SD in Original Scale	78.31	SD in Log Scale	1.779
95% t UCL (assumes normality of ROS data)	52.03	95% Percentile Bootstrap UCL	52.33
95% BCA Bootstrap UCL	53.3	95% Bootstrap t UCL	54.3
95% H-UCL (Log ROS)	82.54		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.395	KM Geo Mean	10.97
KM SD (logged)	1.826	95% Critical H Value (KM-Log)	2.962
KM Standard Error of Mean (logged)	0.126	95% H-UCL (KM -Log)	84.11
KM SD (logged)	1.826	95% Critical H Value (KM-Log)	2.962
KM Standard Error of Mean (logged)	0.126		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	64.52	Mean in Log Scale	2.391
SD in Original Scale	321.2	SD in Log Scale	1.929
95% t UCL (Assumes normality)	100.8	95% H-Stat UCL	105.4

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 84.11

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU8_PFO3OA

General Statistics

Total Number of Observations	214	Number of Distinct Observations	60
Number of Detects	79	Number of Non-Detects	135
Number of Distinct Detects	54	Number of Distinct Non-Detects	7
Minimum Detect	1.4	Minimum Non-Detect	1.1
Maximum Detect	69	Maximum Non-Detect	8800
Variance Detects	127.8	Percent Non-Detects	63.08%
Mean Detects	8.335	SD Detects	11.3
Median Detects	4.6	CV Detects	1.356
Skewness Detects	3.932	Kurtosis Detects	18.11
Mean of Logged Detects	1.682	SD of Logged Detects	0.842

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.552	**Normal GOF Test on Detected Observations Only**	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.27	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0998	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3.88	KM Standard Error of Mean	0.535
KM SD	7.7	95% KM (BCA) UCL	4.869
95% KM (t) UCL	4.763	95% KM (Percentile Bootstrap) UCL	4.757
95% KM (z) UCL	4.759	95% KM Bootstrap t UCL	5.186
90% KM Chebyshev UCL	5.484	95% KM Chebyshev UCL	6.211
97.5% KM Chebyshev UCL	7.219	99% KM Chebyshev UCL	9.2

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.911	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.775	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.171	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.103	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.282	k star (bias corrected MLE)	1.242
Theta hat (MLE)	6.501	Theta star (bias corrected MLE)	6.711
nu hat (MLE)	202.6	nu star (bias corrected)	196.2
Mean (detects)	8.335		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	3.103
Maximum	69	Median	0.01
SD	7.936	CV	2.557
k hat (MLE)	0.215	k star (bias corrected MLE)	0.215
Theta hat (MLE)	14.45	Theta star (bias corrected MLE)	14.44
nu hat (MLE)	91.93	nu star (bias corrected)	91.97
Adjusted Level of Significance (β)	0.0489		
Approximate Chi Square Value (91.97, α)	70.86	Adjusted Chi Square Value (91.97, β)	70.73
95% Gamma Approximate UCL (use when n>=50)	4.028	95% Gamma Adjusted UCL (use when n<50)	4.035

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3.88	SD (KM)	7.7
Variance (KM)	59.3	SE of Mean (KM)	0.535
k hat (KM)	0.254	k star (KM)	0.253
nu hat (KM)	108.7	nu star (KM)	108.5
theta hat (KM)	15.28	theta star (KM)	15.31
80% gamma percentile (KM)	5.662	90% gamma percentile (KM)	11.63
95% gamma percentile (KM)	18.7	99% gamma percentile (KM)	37.49

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (108.47, α)	85.44	Adjusted Chi Square Value (108.47, β)	85.3
95% Gamma Approximate KM-UCL (use when n>=50)	4.926	95% Gamma Adjusted KM-UCL (use when n<50)	4.934

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.923	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	6.7185E-5	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.12	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0998	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3.525	Mean in Log Scale	0.16
SD in Original Scale	7.786	SD in Log Scale	1.494
95% t UCL (assumes normality of ROS data)	4.404	95% Percentile Bootstrap UCL	4.444
95% BCA Bootstrap UCL	4.655	95% Bootstrap t UCL	4.747
95% H-UCL (Log ROS)	4.683		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.731	KM Geo Mean	2.077
KM SD (logged)	0.909	95% Critical H Value (KM-Log)	2.073
KM Standard Error of Mean (logged)	0.0663	95% H-UCL (KM -Log)	3.573
KM SD (logged)	0.909	95% Critical H Value (KM-Log)	2.073
KM Standard Error of Mean (logged)	0.0663		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	25.15	Mean in Log Scale	0.706
SD in Original Scale	300.6	SD in Log Scale	1.206
95% t UCL (Assumes normality)	59.1	95% H-Stat UCL	5.08

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	6.211

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU8_PFO4DA

General Statistics

Total Number of Observations	214	Number of Distinct Observations	32
Number of Detects	25	Number of Non-Detects	189
Number of Distinct Detects	22	Number of Distinct Non-Detects	11
Minimum Detect	1.1	Minimum Non-Detect	1.1
Maximum Detect	17	Maximum Non-Detect	9700
Variance Detects	12.72	Percent Non-Detects	88.32%
Mean Detects	4.169	SD Detects	3.567
Median Detects	3.3	CV Detects	0.855
Skewness Detects	2.351	Kurtosis Detects	6.53
Mean of Logged Detects	1.173	SD of Logged Detects	0.698

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.747	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.918	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.214	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.173	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.525	KM Standard Error of Mean	0.115
KM SD	1.568	95% KM (BCA) UCL	1.736
95% KM (t) UCL	1.714	95% KM (Percentile Bootstrap) UCL	1.722
95% KM (z) UCL	1.714	95% KM Bootstrap t UCL	1.809
90% KM Chebyshev UCL	1.869	95% KM Chebyshev UCL	2.025
97.5% KM Chebyshev UCL	2.241	99% KM Chebyshev UCL	2.666

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.565	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.756	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.145	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.177	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.118	k star (bias corrected MLE)	1.891

Theta hat (MLE)	1.968	Theta star (bias corrected MLE)	2.205
nu hat (MLE)	105.9	nu star (bias corrected)	94.54
Mean (detects)	4.169		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.588
Maximum	17	Median	0.01
SD	1.807	CV	3.073
k hat (MLE)	0.237	k star (bias corrected MLE)	0.237
Theta hat (MLE)	2.476	Theta star (bias corrected MLE)	2.479
nu hat (MLE)	101.6	nu star (bias corrected)	101.5
Adjusted Level of Significance (β)	0.0489		
Approximate Chi Square Value (101.55, α)	79.3	Adjusted Chi Square Value (101.55, β)	79.16
95% Gamma Approximate UCL (use when n>=50)	0.753	95% Gamma Adjusted UCL (use when n<50)	0.754

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.525	SD (KM)	1.568
Variance (KM)	2.459	SE of Mean (KM)	0.115
k hat (KM)	0.946	k star (KM)	0.936
nu hat (KM)	404.7	nu star (KM)	400.4
theta hat (KM)	1.612	theta star (KM)	1.63
80% gamma percentile (KM)	2.467	90% gamma percentile (KM)	3.569
95% gamma percentile (KM)	4.677	99% gamma percentile (KM)	7.263

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (400.41, α)	355	Adjusted Chi Square Value (400.41, β)	354.7
95% Gamma Approximate KM-UCL (use when n>=50)	1.72	95% Gamma Adjusted KM-UCL (use when n<50)	1.721

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.968	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.918	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.109	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.173	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.929	Mean in Log Scale	-0.911
SD in Original Scale	1.744	SD in Log Scale	1.286
95% t UCL (assumes normality of ROS data)	1.126	95% Percentile Bootstrap UCL	1.133
95% BCA Bootstrap UCL	1.18	95% Bootstrap t UCL	1.189

95% H-UCL (Log ROS)	1.137		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.267	KM Geo Mean	1.305
KM SD (logged)	0.427	95% Critical H Value (KM-Log)	1.768
KM Standard Error of Mean (logged)	0.0366	95% H-UCL (KM -Log)	1.506
KM SD (logged)	0.427	95% Critical H Value (KM-Log)	1.768
KM Standard Error of Mean (logged)	0.0366		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	25.01	Mean in Log Scale	0.22
SD in Original Scale	331.5	SD in Log Scale	0.94
95% t UCL (Assumes normality)	62.45	95% H-Stat UCL	2.219

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	1.72	95% GROS Approximate Gamma UCL	0.753

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU8_PFO5DA

General Statistics

Total Number of Observations	208	Number of Distinct Observations	5
Number of Detects	0	Number of Non-Detects	208
Number of Distinct Detects	0	Number of Distinct Non-Detects	5

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU8_PFO5DA was not processed!

DW_EU8_PMPA

General Statistics

Total Number of Observations	208	Number of Distinct Observations	94

Number of Detects	166	Number of Non-Detects	42
Number of Distinct Detects	91	Number of Distinct Non-Detects	3
Minimum Detect	11	Minimum Non-Detect	5.3
Maximum Detect	1600	Maximum Non-Detect	8400
Variance Detects	43233	Percent Non-Detects	20.19%
Mean Detects	153.5	SD Detects	207.9
Median Detects	93	CV Detects	1.354
Skewness Detects	4.044	Kurtosis Detects	20.48
Mean of Logged Detects	4.571	SD of Logged Detects	0.908

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.572	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.263	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0692	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	124.2	KM Standard Error of Mean	13.58
KM SD	194.8	95% KM (BCA) UCL	145.8
95% KM (t) UCL	146.6	95% KM (Percentile Bootstrap) UCL	147.2
95% KM (z) UCL	146.5	95% KM Bootstrap t UCL	151.5
90% KM Chebyshev UCL	164.9	95% KM Chebyshev UCL	183.4
97.5% KM Chebyshev UCL	209	99% KM Chebyshev UCL	259.3

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	5.224	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.778	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.155	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0742	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.22	k star (bias corrected MLE)	1.202
Theta hat (MLE)	125.8	Theta star (bias corrected MLE)	127.7
nu hat (MLE)	405.1	nu star (bias corrected)	399.1
Mean (detects)	153.5		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	122.8

Maximum	1600	Median	76
SD	195.5	CV	1.592
k hat (MLE)	0.331	k star (bias corrected MLE)	0.329
Theta hat (MLE)	371.1	Theta star (bias corrected MLE)	372.9
nu hat (MLE)	137.6	nu star (bias corrected)	137
Adjusted Level of Significance (β)	0.0488		
Approximate Chi Square Value (136.99, α)	110.9	Adjusted Chi Square Value (136.99, β)	110.8
95% Gamma Approximate UCL (use when n>=50)	151.6	95% Gamma Adjusted UCL (use when n<50)	151.8

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	124.2	SD (KM)	194.8
Variance (KM)	37952	SE of Mean (KM)	13.58
k hat (KM)	0.406	k star (KM)	0.404
nu hat (KM)	169	nu star (KM)	167.9
theta hat (KM)	305.6	theta star (KM)	307.6
80% gamma percentile (KM)	200.6	90% gamma percentile (KM)	350.2
95% gamma percentile (KM)	514.3	99% gamma percentile (KM)	926.7

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (167.93, α)	139	Adjusted Chi Square Value (167.93, β)	138.8
95% Gamma Approximate KM-UCL (use when n>=50)	150.1	95% Gamma Adjusted KM-UCL (use when n<50)	150.3

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.973	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.0773	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0805	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0692	Detected Data Not Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	125.6	Mean in Log Scale	4.166
SD in Original Scale	193.9	SD in Log Scale	1.17
95% t UCL (assumes normality of ROS data)	147.8	95% Percentile Bootstrap UCL	148.8
95% BCA Bootstrap UCL	154.5	95% Bootstrap t UCL	153.9
95% H-UCL (Log ROS)	154		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.996	KM Geo Mean	54.39
KM SD (logged)	1.413	95% Critical H Value (KM-Log)	2.524
KM Standard Error of Mean (logged)	0.0985	95% H-UCL (KM -Log)	189
KM SD (logged)	1.413	95% Critical H Value (KM-Log)	2.524
KM Standard Error of Mean (logged)	0.0985		

DL/2 Statistics

DL/2 Normal | **DL/2 Log-Transformed**

Mean in Original Scale	143.7	Mean in Log Scale	3.993
SD in Original Scale	343.3	SD in Log Scale	1.486
95% t UCL (Assumes normality)	183	95% H-Stat UCL	213.9

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 189

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.112/6/2019 11:53:21 AM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

DW_EU9_HFPO-DA

General Statistics

Total Number of Observations	287	Number of Distinct Observations	120
Number of Detects	236	Number of Non-Detects	51
Number of Distinct Detects	115	Number of Distinct Non-Detects	6
Minimum Detect	1.71	Minimum Non-Detect	0.591
Maximum Detect	610	Maximum Non-Detect	4
Variance Detects	6928	Percent Non-Detects	17.77%
Mean Detects	65.31	SD Detects	83.23
Median Detects	35.5	CV Detects	1.274
Skewness Detects	3.111	Kurtosis Detects	13.45
Mean of Logged Detects	3.577	SD of Logged Detects	1.122

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.683	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.222	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0581	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	53.91	KM Standard Error of Mean	4.686
KM SD	79.21	95% KM (BCA) UCL	62.62
95% KM (t) UCL	61.65	95% KM (Percentile Bootstrap) UCL	61.96
95% KM (z) UCL	61.62	95% KM Bootstrap t UCL	62.64
90% KM Chebyshev UCL	67.97	95% KM Chebyshev UCL	74.34
97.5% KM Chebyshev UCL	83.18	99% KM Chebyshev UCL	100.5

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.442	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.786	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0894	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0613	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.963	k star (bias corrected MLE)	0.953
Theta hat (MLE)	67.85	Theta star (bias corrected MLE)	68.52
nu hat (MLE)	454.3	nu star (bias corrected)	449.9
Mean (detects)	65.31		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	53.71
Maximum	610	Median	24
SD	79.48	CV	1.48
k hat (MLE)	0.36	k star (bias corrected MLE)	0.358
Theta hat (MLE)	149.3	Theta star (bias corrected MLE)	149.9
nu hat (MLE)	206.5	nu star (bias corrected)	205.7
Adjusted Level of Significance (β)	0.0492		
Approximate Chi Square Value (205.68, α)	173.5	Adjusted Chi Square Value (205.68, β)	173.3
95% Gamma Approximate UCL (use when n>=50)	63.67	95% Gamma Adjusted UCL (use when n<50)	63.73

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	53.91	SD (KM)	79.21
Variance (KM)	6274	SE of Mean (KM)	4.686
k hat (KM)	0.463	k star (KM)	0.461
nu hat (KM)	265.9	nu star (KM)	264.5
theta hat (KM)	116.4	theta star (KM)	117
80% gamma percentile (KM)	88.15	90% gamma percentile (KM)	148.3
95% gamma percentile (KM)	213.2	99% gamma percentile (KM)	374.1

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (264.48, α)	227.8	Adjusted Chi Square Value (264.48, β)	227.7
95% Gamma Approximate KM-UCL (use when n>=50)	62.59	95% Gamma Adjusted KM-UCL (use when n<50)	62.64

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.978	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.146	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0542	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0581	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	54.3	Mean in Log Scale	3.133
SD in Original Scale	79.09	SD in Log Scale	1.416
95% t UCL (assumes normality of ROS data)	62.01	95% Percentile Bootstrap UCL	62.37
95% BCA Bootstrap UCL	63.36	95% Bootstrap t UCL	62.86
95% H-UCL (Log ROS)	77.14		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.942	KM Geo Mean	18.96
KM SD (logged)	1.717	95% Critical H Value (KM-Log)	2.822
KM Standard Error of Mean (logged)	0.113	95% H-UCL (KM -Log)	110.3

KM SD (logged)	1.717	95% Critical H Value (KM-Log)	2.822
KM Standard Error of Mean (logged)	0.113		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	54.02	Mean in Log Scale	3.032
SD in Original Scale	79.28	SD in Log Scale	1.561
95% t UCL (Assumes normality)	61.74	95% H-Stat UCL	89.7

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 110.3

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU9_PEPA

General Statistics

Total Number of Observations	167	Number of Distinct Observations	48
Number of Detects	63	Number of Non-Detects	104
Number of Distinct Detects	44	Number of Distinct Non-Detects	5
Minimum Detect	12	Minimum Non-Detect	11
Maximum Detect	460	Maximum Non-Detect	10000
Variance Detects	5686	Percent Non-Detects	62.28%
Mean Detects	80.65	SD Detects	75.4
Median Detects	55	CV Detects	0.935
Skewness Detects	2.688	Kurtosis Detects	9.744
Mean of Logged Detects	4.09	SD of Logged Detects	0.753

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.729	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	2.776E-15	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.234	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.111	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	38.48	KM Standard Error of Mean	4.499
KM SD	57.01	95% KM (BCA) UCL	46.71

95% KM (t) UCL	45.92	95% KM (Percentile Bootstrap) UCL	46.17
95% KM (z) UCL	45.88	95% KM Bootstrap t UCL	48.01
90% KM Chebyshev UCL	51.97	95% KM Chebyshev UCL	58.09
97.5% KM Chebyshev UCL	66.57	99% KM Chebyshev UCL	83.24

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.472	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.765	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.139	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.114	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.815	k star (bias corrected MLE)	1.739
Theta hat (MLE)	44.45	Theta star (bias corrected MLE)	46.38
nu hat (MLE)	228.6	nu star (bias corrected)	219.1
Mean (detects)	80.65		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	30.68
Maximum	460	Median	0.01
SD	60.43	CV	1.97
k hat (MLE)	0.165	k star (bias corrected MLE)	0.166
Theta hat (MLE)	185.6	Theta star (bias corrected MLE)	184.4
nu hat (MLE)	55.22	nu star (bias corrected)	55.56
Adjusted Level of Significance (β)	0.0486		
Approximate Chi Square Value (55.56, α)	39.43	Adjusted Chi Square Value (55.56, β)	39.31
95% Gamma Approximate UCL (use when n>=50)	43.23	95% Gamma Adjusted UCL (use when n<50)	43.36

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	38.48	SD (KM)	57.01
Variance (KM)	3251	SE of Mean (KM)	4.499
k hat (KM)	0.455	k star (KM)	0.451
nu hat (KM)	152.1	nu star (KM)	150.7
theta hat (KM)	84.48	theta star (KM)	85.27
80% gamma percentile (KM)	62.81	90% gamma percentile (KM)	106.3
95% gamma percentile (KM)	153.3	99% gamma percentile (KM)	270

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (150.71, α)	123.3	Adjusted Chi Square Value (150.71, β)	123.1

95% Gamma Approximate KM-UCL (use when n>=50)	47.02	95% Gamma Adjusted KM-UCL (use when n<50)	47.1

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.976	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk P Value	0.477	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0871	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.111	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	36.54	Mean in Log Scale	2.78
SD in Original Scale	57.78	SD in Log Scale	1.309
95% t UCL (assumes normality of ROS data)	43.93	95% Percentile Bootstrap UCL	44.05
95% BCA Bootstrap UCL	45.16	95% Bootstrap t UCL	46.09
95% H-UCL (Log ROS)	48.67		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.098	KM Geo Mean	22.16
KM SD (logged)	0.922	95% Critical H Value (KM-Log)	2.097
KM Standard Error of Mean (logged)	0.0782	95% H-UCL (KM -Log)	39.4
KM SD (logged)	0.922	95% Critical H Value (KM-Log)	2.097
KM Standard Error of Mean (logged)	0.0782		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	68.69	Mean in Log Scale	3.04
SD in Original Scale	388.5	SD in Log Scale	1.12
95% t UCL (Assumes normality)	118.4	95% H-Stat UCL	47.67

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL	39.4

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU9_PFECA-G

General Statistics

Total Number of Observations	168	Number of Distinct Observations	8

Number of Detects	2	Number of Non-Detects	166
Number of Distinct Detects	2	Number of Distinct Non-Detects	6
Minimum Detect	2.3	Minimum Non-Detect	1.1
Maximum Detect	2.5	Maximum Non-Detect	9600
Variance Detects	0.02	Percent Non-Detects	98.81%
Mean Detects	2.4	SD Detects	0.141
Median Detects	2.4	CV Detects	0.0589
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	0.875	SD of Logged Detects	0.059

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.116	KM Standard Error of Mean	0.0164
KM SD	0.146	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1.144	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1.143	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1.166	95% KM Chebyshev UCL	1.188
97.5% KM Chebyshev UCL	1.219	99% KM Chebyshev UCL	1.28

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	575.7	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.00417	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	2303	nu star (bias corrected)	N/A
Mean (detects)	2.4		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.116	SD (KM)	0.146
Variance (KM)	0.0212	SE of Mean (KM)	0.0164
k hat (KM)	58.66	k star (KM)	57.62
nu hat (KM)	19711	nu star (KM)	19360
theta hat (KM)	0.019	theta star (KM)	0.0194
80% gamma percentile (KM)	1.238	90% gamma percentile (KM)	1.309
95% gamma percentile (KM)	1.369	99% gamma percentile (KM)	1.487

Gamma Kaplan-Meier (KM) Statistics

Adjusted Level of Significance (β)	0.0486

Approximate Chi Square Value (N/A, α)	19037	Adjusted Chi Square Value (N/A, β)	19035
95% Gamma Approximate KM-UCL (use when n>=50)	1.135	95% Gamma Adjusted KM-UCL (use when n<50)	1.136

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.074	Mean in Log Scale	0.0194
SD in Original Scale	0.357	SD in Log Scale	0.323
95% t UCL (assumes normality of ROS data)	1.12	95% Percentile Bootstrap UCL	1.117
95% BCA Bootstrap UCL	1.124	95% Bootstrap t UCL	1.122
95% H-UCL (Log ROS)	1.122		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.105	KM Geo Mean	1.111
KM SD (logged)	0.0872	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	0.00982	95% H-UCL (KM -Log)	N/A
KM SD (logged)	0.0872	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	0.00982		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	32.08	Mean in Log Scale	0.155
SD in Original Scale	370.5	SD in Log Scale	1.071
95% t UCL (Assumes normality)	79.36	95% H-Stat UCL	2.49

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1.144	KM H-UCL	N/A
95% KM (BCA) UCL	N/A		

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU9_PFESA-BP1

General Statistics

Total Number of Observations	179	Number of Distinct Observations	17
Number of Detects	0	Number of Non-Detects	179

Number of Distinct Detects	0	Number of Distinct Non-Detects	17

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU9_PFESA-BP1 was not processed!

DW_EU9_PFESA-BP2

General Statistics

Total Number of Observations	179	Number of Distinct Observations	70
Number of Detects	86	Number of Non-Detects	93
Number of Distinct Detects	60	Number of Distinct Non-Detects	10
Minimum Detect	2.3	Minimum Non-Detect	1.1
Maximum Detect	32	Maximum Non-Detect	9500
Variance Detects	51.01	Percent Non-Detects	51.96%
Mean Detects	11.04	SD Detects	7.142
Median Detects	8.8	CV Detects	0.647
Skewness Detects	1.209	Kurtosis Detects	0.85
Mean of Logged Detects	2.208	SD of Logged Detects	0.631

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.865	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	8.933E-11	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.18	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0957	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	6.159	KM Standard Error of Mean	0.549
KM SD	7.096	95% KM (BCA) UCL	7.021
95% KM (t) UCL	7.067	95% KM (Percentile Bootstrap) UCL	7.063
95% KM (z) UCL	7.062	95% KM Bootstrap t UCL	7.215
90% KM Chebyshev UCL	7.806	95% KM Chebyshev UCL	8.553
97.5% KM Chebyshev UCL	9.588	99% KM Chebyshev UCL	11.62

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.871	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.76	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.109	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0973	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.733	k star (bias corrected MLE)	2.645
Theta hat (MLE)	4.04	Theta star (bias corrected MLE)	4.174
nu hat (MLE)	470.1	nu star (bias corrected)	455
Mean (detects)	11.04		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	5.718
Maximum	32	Median	2.7
SD	7.288	CV	1.275
k hat (MLE)	0.303	k star (bias corrected MLE)	0.301
Theta hat (MLE)	18.88	Theta star (bias corrected MLE)	18.97
nu hat (MLE)	108.4	nu star (bias corrected)	107.9
Adjusted Level of Significance (β)	0.0487		
Approximate Chi Square Value (107.91, α)	84.94	Adjusted Chi Square Value (107.91, β)	84.77
95% Gamma Approximate UCL (use when n>=50)	7.264	95% Gamma Adjusted UCL (use when n<50)	7.278

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	6.159	SD (KM)	7.096
Variance (KM)	50.36	SE of Mean (KM)	0.549
k hat (KM)	0.753	k star (KM)	0.744
nu hat (KM)	269.7	nu star (KM)	266.5
theta hat (KM)	8.176	theta star (KM)	8.274
80% gamma percentile (KM)	10.1	90% gamma percentile (KM)	15.24
95% gamma percentile (KM)	20.5	99% gamma percentile (KM)	33.02

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (266.50, α)	229.7	Adjusted Chi Square Value (266.50, β)	229.4
95% Gamma Approximate KM-UCL (use when n>=50)	7.146	95% Gamma Adjusted KM-UCL (use when n<50)	7.155

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.969	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.148	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0716	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0957	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	6.532	Mean in Log Scale	1.402
SD in Original Scale	6.707	SD in Log Scale	1.003

95% t UCL (assumes normality of ROS data)	7.36	95% Percentile Bootstrap UCL	7.409
95% BCA Bootstrap UCL	7.508	95% Bootstrap t UCL	7.491
95% H-UCL (Log ROS)	7.913		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.17	KM Geo Mean	3.223
KM SD (logged)	1.147	95% Critical H Value (KM-Log)	2.299
KM Standard Error of Mean (logged)	0.0888	95% H-UCL (KM -Log)	7.583
KM SD (logged)	1.147	95% Critical H Value (KM-Log)	2.299
KM Standard Error of Mean (logged)	0.0888		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	34.71	Mean in Log Scale	1.25
SD in Original Scale	354.9	SD in Log Scale	1.424
95% t UCL (Assumes normality)	78.57	95% H-Stat UCL	12.66

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 7.583

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU9_PFMOAA

General Statistics

Total Number of Observations	179	Number of Distinct Observations	72
Number of Detects	100	Number of Non-Detects	79
Number of Distinct Detects	63	Number of Distinct Non-Detects	10
Minimum Detect	3.2	Minimum Non-Detect	1.14
Maximum Detect	190	Maximum Non-Detect	9500
Variance Detects	1333	Percent Non-Detects	44.13%
Mean Detects	38.93	SD Detects	36.51
Median Detects	27	CV Detects	0.938
Skewness Detects	2.37	Kurtosis Detects	6.199
Mean of Logged Detects	3.331	SD of Logged Detects	0.819

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.733	**Normal GOF Test on Detected Observations Only**	

5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.202	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0889	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	22.83	KM Standard Error of Mean	2.499
KM SD	33	95% KM (BCA) UCL	27.2
95% KM (t) UCL	26.96	95% KM (Percentile Bootstrap) UCL	27.26
95% KM (z) UCL	26.94	95% KM Bootstrap t UCL	27.73
90% KM Chebyshev UCL	30.33	95% KM Chebyshev UCL	33.72
97.5% KM Chebyshev UCL	38.44	99% KM Chebyshev UCL	47.7

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.376	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.768	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.105	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.091	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.658	k star (bias corrected MLE)	1.615
Theta hat (MLE)	23.48	Theta star (bias corrected MLE)	24.1
nu hat (MLE)	331.7	nu star (bias corrected)	323
Mean (detects)	38.93		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	22
Maximum	190	Median	11
SD	33.32	CV	1.514
k hat (MLE)	0.231	k star (bias corrected MLE)	0.231
Theta hat (MLE)	95.17	Theta star (bias corrected MLE)	95.23
nu hat (MLE)	82.77	nu star (bias corrected)	82.72
Adjusted Level of Significance (β)	0.0487		
Approximate Chi Square Value (82.72, α)	62.76	Adjusted Chi Square Value (82.72, β)	62.62
95% Gamma Approximate UCL (use when n>=50)	29	95% Gamma Adjusted UCL (use when n<50)	29.07

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	22.83	SD (KM)	33
Variance (KM)	1089	SE of Mean (KM)	2.499

k hat (KM)	0.478	k star (KM)	0.474
nu hat (KM)	171.3	nu star (KM)	169.7
theta hat (KM)	47.71	theta star (KM)	48.15
80% gamma percentile (KM)	37.39	90% gamma percentile (KM)	62.43
95% gamma percentile (KM)	89.36	99% gamma percentile (KM)	155.9

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (169.74, α)	140.6	Adjusted Chi Square Value (169.74, β)	140.4
95% Gamma Approximate KM-UCL (use when n>=50)	27.56	95% Gamma Adjusted KM-UCL (use when n<50)	27.6

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.977	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.398	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0635	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0889	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	23.99	Mean in Log Scale	2.485
SD in Original Scale	32.1	SD in Log Scale	1.223
95% t UCL (assumes normality of ROS data)	27.95	95% Percentile Bootstrap UCL	28.32
95% BCA Bootstrap UCL	28.64	95% Bootstrap t UCL	29.16
95% H-UCL (Log ROS)	31.49		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.015	KM Geo Mean	7.5
KM SD (logged)	1.659	95% Critical H Value (KM-Log)	2.821
KM Standard Error of Mean (logged)	0.134	95% H-UCL (KM -Log)	42.2
KM SD (logged)	1.659	95% Critical H Value (KM-Log)	2.821
KM Standard Error of Mean (logged)	0.134		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	51.11	Mean in Log Scale	2.335
SD in Original Scale	355	SD in Log Scale	1.498
95% t UCL (Assumes normality)	94.98	95% H-Stat UCL	42.66

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 42.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU9_PFO2HxA

General Statistics

Total Number of Observations	179	Number of Distinct Observations	91
Number of Detects	109	Number of Non-Detects	70
Number of Distinct Detects	82	Number of Distinct Non-Detects	10
Minimum Detect	2	Minimum Non-Detect	1.1
Maximum Detect	530	Maximum Non-Detect	9200
Variance Detects	6841	Percent Non-Detects	39.11%
Mean Detects	67.03	SD Detects	82.71
Median Detects	44	CV Detects	1.234
Skewness Detects	2.891	Kurtosis Detects	10.91
Mean of Logged Detects	3.543	SD of Logged Detects	1.291

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.706	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.216	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0852	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	41.75	KM Standard Error of Mean	5.438
KM SD	72.06	95% KM (BCA) UCL	50.86
95% KM (t) UCL	50.74	95% KM (Percentile Bootstrap) UCL	50.63
95% KM (z) UCL	50.69	95% KM Bootstrap t UCL	52.63
90% KM Chebyshev UCL	58.06	95% KM Chebyshev UCL	65.45
97.5% KM Chebyshev UCL	75.71	99% KM Chebyshev UCL	95.85

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.643	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.789	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0741	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0901	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.885	k star (bias corrected MLE)	0.867
Theta hat (MLE)	75.74	Theta star (bias corrected MLE)	77.33
nu hat (MLE)	193	nu star (bias corrected)	189
Mean (detects)	67.03		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	40.85
Maximum	530	Median	11
SD	72.28	CV	1.769
k hat (MLE)	0.22	k star (bias corrected MLE)	0.22
Theta hat (MLE)	185.5	Theta star (bias corrected MLE)	185.5
nu hat (MLE)	78.82	nu star (bias corrected)	78.83
Adjusted Level of Significance (β)	0.0487		
Approximate Chi Square Value (78.83, α)	59.38	Adjusted Chi Square Value (78.83, β)	59.24
95% Gamma Approximate UCL (use when n>=50)	54.23	95% Gamma Adjusted UCL (use when n<50)	54.36

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	41.75	SD (KM)	72.06
Variance (KM)	5192	SE of Mean (KM)	5.438
k hat (KM)	0.336	k star (KM)	0.334
nu hat (KM)	120.2	nu star (KM)	119.5
theta hat (KM)	124.4	theta star (KM)	125.1
80% gamma percentile (KM)	65.53	90% gamma percentile (KM)	121.4
95% gamma percentile (KM)	184.4	99% gamma percentile (KM)	346.2

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (119.47, α)	95.23	Adjusted Chi Square Value (119.47, β)	95.06
95% Gamma Approximate KM-UCL (use when n>=50)	52.37	95% Gamma Adjusted KM-UCL (use when n<50)	52.47

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.945	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	3.5475E-4	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.109	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0852	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	41.92	Mean in Log Scale	2.426
SD in Original Scale	71.7	SD in Log Scale	1.821
95% t UCL (assumes normality of ROS data)	50.78	95% Percentile Bootstrap UCL	51.34
95% BCA Bootstrap UCL	52.94	95% Bootstrap t UCL	52.36
95% H-UCL (Log ROS)	89.34		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.226	KM Geo Mean	9.26
KM SD (logged)	1.955	95% Critical H Value (KM-Log)	3.153
KM Standard Error of Mean (logged)	0.148	95% H-UCL (KM -Log)	99.26
KM SD (logged)	1.955	95% Critical H Value (KM-Log)	3.153
KM Standard Error of Mean (logged)	0.148		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	68.3	Mean in Log Scale	2.23
SD in Original Scale	348.4	SD in Log Scale	2.082
95% t UCL (Assumes normality)	111.4	95% H-Stat UCL	136

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	52.37

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU9_PFO3OA

General Statistics

Total Number of Observations	179	Number of Distinct Observations	65
Number of Detects	63	Number of Non-Detects	116
Number of Distinct Detects	52	Number of Distinct Non-Detects	13
Minimum Detect	1.44	Minimum Non-Detect	1.1
Maximum Detect	59	Maximum Non-Detect	8800
Variance Detects	107.3	Percent Non-Detects	64.8%
Mean Detects	9.344	SD Detects	10.36
Median Detects	5.9	CV Detects	1.109
Skewness Detects	2.779	Kurtosis Detects	9.147
Mean of Logged Detects	1.848	SD of Logged Detects	0.833

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.677	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.253	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.111	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	4.188	KM Standard Error of Mean	0.568
KM SD	7.37	95% KM (BCA) UCL	5.306
95% KM (t) UCL	5.127	95% KM (Percentile Bootstrap) UCL	5.193
95% KM (z) UCL	5.122	95% KM Bootstrap t UCL	5.428
90% KM Chebyshev UCL	5.892	95% KM Chebyshev UCL	6.663
97.5% KM Chebyshev UCL	7.735	99% KM Chebyshev UCL	9.839

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.041	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.77	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.146	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.114	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.437	k star (bias corrected MLE)	1.38
Theta hat (MLE)	6.501	Theta star (bias corrected MLE)	6.773
nu hat (MLE)	181.1	nu star (bias corrected)	173.8
Mean (detects)	9.344		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	3.383
Maximum	59	Median	0.01
SD	7.591	CV	2.244
k hat (MLE)	0.21	k star (bias corrected MLE)	0.21
Theta hat (MLE)	16.12	Theta star (bias corrected MLE)	16.1
nu hat (MLE)	75.15	nu star (bias corrected)	75.22
Adjusted Level of Significance (β)	0.0487		
Approximate Chi Square Value (75.22, α)	56.24	Adjusted Chi Square Value (75.22, β)	56.11
95% Gamma Approximate UCL (use when n>=50)	4.525	95% Gamma Adjusted UCL (use when n<50)	4.536

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	4.188	SD (KM)	7.37
Variance (KM)	54.32	SE of Mean (KM)	0.568
k hat (KM)	0.323	k star (KM)	0.321
nu hat (KM)	115.6	nu star (KM)	115
theta hat (KM)	12.97	theta star (KM)	13.04
80% gamma percentile (KM)	6.523	90% gamma percentile (KM)	12.24
95% gamma percentile (KM)	18.74	99% gamma percentile (KM)	35.47

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (114.98, α)	91.22	Adjusted Chi Square Value (114.98, β)	91.05
95% Gamma Approximate KM-UCL (use when n>=50)	5.278	95% Gamma Adjusted KM-UCL (use when n<50)	5.288

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.954	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.0462	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0846	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.111	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3.871	Mean in Log Scale	0.311
SD in Original Scale	7.373	SD in Log Scale	1.467
95% t UCL (assumes normality of ROS data)	4.782	95% Percentile Bootstrap UCL	4.782
95% BCA Bootstrap UCL	4.996	95% Bootstrap t UCL	5.107
95% H-UCL (Log ROS)	5.331		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.769	KM Geo Mean	2.157
KM SD (logged)	0.976	95% Critical H Value (KM-Log)	2.147
KM Standard Error of Mean (logged)	0.0774	95% H-UCL (KM -Log)	4.063
KM SD (logged)	0.976	95% Critical H Value (KM-Log)	2.147
KM Standard Error of Mean (logged)	0.0774		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	30.76	Mean in Log Scale	0.814
SD in Original Scale	328.9	SD in Log Scale	1.357
95% t UCL (Assumes normality)	71.41	95% H-Stat UCL	7.309

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 4.063

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU9_PFO4DA

General Statistics

Total Number of Observations	179	Number of Distinct Observations	32
Number of Detects	20	Number of Non-Detects	159
Number of Distinct Detects	18	Number of Distinct Non-Detects	16
Minimum Detect	1.1	Minimum Non-Detect	1.1
Maximum Detect	15	Maximum Non-Detect	9700
Variance Detects	10.66	Percent Non-Detects	88.83%
Mean Detects	3.937	SD Detects	3.265
Median Detects	2.9	CV Detects	0.829
Skewness Detects	2.446	Kurtosis Detects	6.693
Mean of Logged Detects	1.149	SD of Logged Detects	0.64

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.714	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.905	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.304	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.192	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.448	KM Standard Error of Mean	0.113
KM SD	1.426	95% KM (BCA) UCL	1.659
95% KM (t) UCL	1.634	95% KM (Percentile Bootstrap) UCL	1.649
95% KM (z) UCL	1.633	95% KM Bootstrap t UCL	1.777
90% KM Chebyshev UCL	1.787	95% KM Chebyshev UCL	1.94
97.5% KM Chebyshev UCL	2.153	99% KM Chebyshev UCL	2.572

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.791	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.75	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.22	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.196	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.414	k star (bias corrected MLE)	2.085
Theta hat (MLE)	1.631	Theta star (bias corrected MLE)	1.888
nu hat (MLE)	96.55	nu star (bias corrected)	83.4
Mean (detects)	3.937		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.472
Maximum	15	Median	0.01
SD	1.636	CV	3.466
k hat (MLE)	0.234	k star (bias corrected MLE)	0.233
Theta hat (MLE)	2.02	Theta star (bias corrected MLE)	2.022
nu hat (MLE)	83.63	nu star (bias corrected)	83.56
Adjusted Level of Significance (β)	0.0487		
Approximate Chi Square Value (83.56, α)	63.49	Adjusted Chi Square Value (83.56, β)	63.35
95% Gamma Approximate UCL (use when n>=50)	0.621	95% Gamma Adjusted UCL (use when n<50)	0.622

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.448	SD (KM)	1.426
Variance (KM)	2.034	SE of Mean (KM)	0.113
k hat (KM)	1.03	k star (KM)	1.017
nu hat (KM)	368.9	nu star (KM)	364
theta hat (KM)	1.405	theta star (KM)	1.424
80% gamma percentile (KM)	2.327	90% gamma percentile (KM)	3.32
95% gamma percentile (KM)	4.311	99% gamma percentile (KM)	6.611

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (364.01, α)	320.8	Adjusted Chi Square Value (364.01, β)	320.5
95% Gamma Approximate KM-UCL (use when n>=50)	1.643	95% Gamma Adjusted KM-UCL (use when n<50)	1.644

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.955	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.905	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.17	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.192	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.736	Mean in Log Scale	-1.388
SD in Original Scale	1.598	SD in Log Scale	1.467
95% t UCL (assumes normality of ROS data)	0.933	95% Percentile Bootstrap UCL	0.947
95% BCA Bootstrap UCL	1.027	95% Bootstrap t UCL	1.041
95% H-UCL (Log ROS)	0.977		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.23	KM Geo Mean	1.258
KM SD (logged)	0.402	95% Critical H Value (KM-Log)	1.765
KM Standard Error of Mean (logged)	0.0328	95% H-UCL (KM -Log)	1.439
KM SD (logged)	0.402	95% Critical H Value (KM-Log)	1.765
KM Standard Error of Mean (logged)	0.0328		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	30.78	Mean in Log Scale	0.255
SD in Original Scale	362.7	SD in Log Scale	1.105
95% t UCL (Assumes normality)	75.61	95% H-Stat UCL	2.865

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL	1.439

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU9_PFO5DA

General Statistics

Total Number of Observations	168	Number of Distinct Observations	9
Number of Detects	3	Number of Non-Detects	165
Number of Distinct Detects	3	Number of Distinct Non-Detects	6
Minimum Detect	6	Minimum Non-Detect	1.1
Maximum Detect	8.9	Maximum Non-Detect	11000
Variance Detects	2.123	Percent Non-Detects	98.21%
Mean Detects	7.533	SD Detects	1.457
Median Detects	7.7	CV Detects	0.193
Skewness Detects	-0.508	Kurtosis Detects	N/A
Mean of Logged Detects	2.006	SD of Logged Detects	0.199

Warning: Data set has only 3 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.99	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.212	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.222	KM Standard Error of Mean	0.087
KM SD	0.893	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1.366	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1.365	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1.483	95% KM Chebyshev UCL	1.602
97.5% KM Chebyshev UCL	1.766	99% KM Chebyshev UCL	2.088

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	38.65	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.195	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	231.9	nu star (bias corrected)	N/A
Mean (detects)	7.533		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.292
Maximum	8.9	Median	0.01
SD	1.172	CV	4.022
k hat (MLE)	0.248	k star (bias corrected MLE)	0.247
Theta hat (MLE)	1.177	Theta star (bias corrected MLE)	1.179
nu hat (MLE)	83.22	nu star (bias corrected)	83.07
Adjusted Level of Significance (β)	0.0486		
Approximate Chi Square Value (83.07, α)	63.06	Adjusted Chi Square Value (83.07, β)	62.91
95% Gamma Approximate UCL (use when n>=50)	0.384	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.222	SD (KM)	0.893
Variance (KM)	0.798	SE of Mean (KM)	0.087
k hat (KM)	1.872	k star (KM)	1.843
nu hat (KM)	629.1	nu star (KM)	619.2
theta hat (KM)	0.653	theta star (KM)	0.663
80% gamma percentile (KM)	1.847	90% gamma percentile (KM)	2.423
95% gamma percentile (KM)	2.976	99% gamma percentile (KM)	4.206

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (619.16, α)	562.4	Adjusted Chi Square Value (619.16, β)	562
95% Gamma Approximate KM-UCL (use when n>=50)	1.345	95% Gamma Adjusted KM-UCL (use when n<50)	1.347

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.977	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.236	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.185	Mean in Log Scale	-0.228
SD in Original Scale	1.26	SD in Log Scale	0.894
95% t UCL (assumes normality of ROS data)	1.346	95% Percentile Bootstrap UCL	1.356
95% BCA Bootstrap UCL	1.378	95% Bootstrap t UCL	1.382
95% H-UCL (Log ROS)	1.37		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.132	KM Geo Mean	1.141
KM SD (logged)	0.262	95% Critical H Value (KM-Log)	1.707
KM Standard Error of Mean (logged)	0.0255	95% H-UCL (KM -Log)	1.222
KM SD (logged)	0.262	95% Critical H Value (KM-Log)	1.707
KM Standard Error of Mean (logged)	0.0255		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	37.69	Mean in Log Scale	0.218
SD in Original Scale	424.6	SD in Log Scale	1.201
95% t UCL (Assumes normality)	91.87	95% H-Stat UCL	3.179

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1.366

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU9_PMPA

General Statistics

Total Number of Observations	167	Number of Distinct Observations	82
Number of Detects	127	Number of Non-Detects	40
Number of Distinct Detects	80	Number of Distinct Non-Detects	4

Minimum Detect	10	Minimum Non-Detect	5.3
Maximum Detect	2300	Maximum Non-Detect	8400
Variance Detects	76533	Percent Non-Detects	23.95%
Mean Detects	219.3	SD Detects	276.6
Median Detects	120	CV Detects	1.262
Skewness Detects	4.042	Kurtosis Detects	25.22
Mean of Logged Detects	4.822	SD of Logged Detects	1.116

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.668	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.225	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.079	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	169.1	KM Standard Error of Mean	20.06
KM SD	257.5	95% KM (BCA) UCL	204.5
95% KM (t) UCL	202.2	95% KM (Percentile Bootstrap) UCL	202.9
95% KM (z) UCL	202.1	95% KM Bootstrap t UCL	212.6
90% KM Chebyshev UCL	229.2	95% KM Chebyshev UCL	256.5
97.5% KM Chebyshev UCL	294.4	99% KM Chebyshev UCL	368.7

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.939	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.783	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.085	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0849	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.015	k star (bias corrected MLE)	0.996
Theta hat (MLE)	216	Theta star (bias corrected MLE)	220.1
nu hat (MLE)	257.8	nu star (bias corrected)	253
Mean (detects)	219.3		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	167.1
Maximum	2300	Median	81
SD	258.4	CV	1.546

k hat (MLE)	0.279	k star (bias corrected MLE)	0.278
Theta hat (MLE)	599.2	Theta star (bias corrected MLE)	601.4
nu hat (MLE)	93.16	nu star (bias corrected)	92.82
Adjusted Level of Significance (β)	0.0486		
Approximate Chi Square Value (92.82, α)	71.6	Adjusted Chi Square Value (92.82, β)	71.44
95% Gamma Approximate UCL (use when n>=50)	216.7	95% Gamma Adjusted UCL (use when n<50)	217.2

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	169.1	SD (KM)	257.5
Variance (KM)	66300	SE of Mean (KM)	20.06
k hat (KM)	0.431	k star (KM)	0.427
nu hat (KM)	144	nu star (KM)	142.7
theta hat (KM)	392.2	theta star (KM)	395.6
80% gamma percentile (KM)	274.7	90% gamma percentile (KM)	471.8
95% gamma percentile (KM)	686.5	99% gamma percentile (KM)	1223

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (142.72, α)	116.1	Adjusted Chi Square Value (142.72, β)	115.9
95% Gamma Approximate KM-UCL (use when n>=50)	207.8	95% Gamma Adjusted KM-UCL (use when n<50)	208.2

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.976	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.265	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0746	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.079	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	169.9	Mean in Log Scale	4.233
SD in Original Scale	256.7	SD in Log Scale	1.475
95% t UCL (assumes normality of ROS data)	202.8	95% Percentile Bootstrap UCL	205.2
95% BCA Bootstrap UCL	211.3	95% Bootstrap t UCL	211.1
95% H-UCL (Log ROS)	275.9		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	4.086	KM Geo Mean	59.48
KM SD (logged)	1.649	95% Critical H Value (KM-Log)	2.8
KM Standard Error of Mean (logged)	0.129	95% H-UCL (KM -Log)	331.7
KM SD (logged)	1.649	95% Critical H Value (KM-Log)	2.8
KM Standard Error of Mean (logged)	0.129		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	193.2	Mean in Log Scale	4.099
SD in Original Scale	404.5	SD in Log Scale	1.702

95% t UCL (Assumes normality)	244.9	95% H-Stat UCL	374.6

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL	331.7

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU10_HFPO-DA

General Statistics

Total Number of Observations	35	Number of Distinct Observations	29
Number of Detects	27	Number of Non-Detects	8
Number of Distinct Detects	25	Number of Distinct Non-Detects	4
Minimum Detect	0.866	Minimum Non-Detect	2.6
Maximum Detect	76.4	Maximum Non-Detect	4
Variance Detects	385.7	Percent Non-Detects	22.86%
Mean Detects	17.47	SD Detects	19.64
Median Detects	9.9	CV Detects	1.124
Skewness Detects	1.597	Kurtosis Detects	2.184
Mean of Logged Detects	2.164	SD of Logged Detects	1.318

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.802	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.217	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.167	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	13.83	KM Standard Error of Mean	3.136
KM SD	18.2	95% KM (BCA) UCL	19.61
95% KM (t) UCL	19.13	95% KM (Percentile Bootstrap) UCL	19.58
95% KM (z) UCL	18.99	95% KM Bootstrap t UCL	21.03
90% KM Chebyshev UCL	23.24	95% KM Chebyshev UCL	27.5
97.5% KM Chebyshev UCL	33.41	99% KM Chebyshev UCL	45.03

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.374	**Anderson-Darling GOF Test**

5% A-D Critical Value	0.78	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.127	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.174	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.846	k star (bias corrected MLE)	0.776
Theta hat (MLE)	20.66	Theta star (bias corrected MLE)	22.5
nu hat (MLE)	45.67	nu star (bias corrected)	41.93
Mean (detects)	17.47		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	13.52
Maximum	76.4	Median	4.8
SD	18.69	CV	1.383
k hat (MLE)	0.38	k star (bias corrected MLE)	0.366
Theta hat (MLE)	35.58	Theta star (bias corrected MLE)	36.9
nu hat (MLE)	26.59	nu star (bias corrected)	25.65
Adjusted Level of Significance (β)	0.0425		
Approximate Chi Square Value (25.65, α)	15.11	Adjusted Chi Square Value (25.65, β)	14.72
95% Gamma Approximate UCL (use when n>=50)	22.95	95% Gamma Adjusted UCL (use when n<50)	23.55

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	13.83	SD (KM)	18.2
Variance (KM)	331.3	SE of Mean (KM)	3.136
k hat (KM)	0.577	k star (KM)	0.547
nu hat (KM)	40.42	nu star (KM)	38.29
theta hat (KM)	23.95	theta star (KM)	25.29
80% gamma percentile (KM)	22.78	90% gamma percentile (KM)	36.71
95% gamma percentile (KM)	51.45	99% gamma percentile (KM)	87.4

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (38.29, α)	25.12	Adjusted Chi Square Value (38.29, β)	24.61
95% Gamma Approximate KM-UCL (use when n>=50)	21.08	95% Gamma Adjusted KM-UCL (use when n<50)	21.52

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.951	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.923	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.138	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.167	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	13.9	Mean in Log Scale	1.792
SD in Original Scale	18.42	SD in Log Scale	1.36
95% t UCL (assumes normality of ROS data)	19.17	95% Percentile Bootstrap UCL	19.45
95% BCA Bootstrap UCL	20.67	95% Bootstrap t UCL	21.11
95% H-UCL (Log ROS)	30		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.758	KM Geo Mean	5.801
KM SD (logged)	1.368	95% Critical H Value (KM-Log)	2.944
KM Standard Error of Mean (logged)	0.239	95% H-UCL (KM -Log)	29.49
KM SD (logged)	1.368	95% Critical H Value (KM-Log)	2.944
KM Standard Error of Mean (logged)	0.239		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	13.84	Mean in Log Scale	1.773
SD in Original Scale	18.46	SD in Log Scale	1.367
95% t UCL (Assumes normality)	19.12	95% H-Stat UCL	29.89

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

ı Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1	21.52

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU10_PEPA

General Statistics

Total Number of Observations	23	Number of Distinct Observations	7
Number of Detects	6	Number of Non-Detects	17
Number of Distinct Detects	5	Number of Distinct Non-Detects	3
Minimum Detect	20	Minimum Non-Detect	11
Maximum Detect	49	Maximum Non-Detect	100
Variance Detects	126.7	Percent Non-Detects	73.91%
Mean Detects	32.5	SD Detects	11.26
Median Detects	33.5	CV Detects	0.346

Skewness Detects	0.275	Kurtosis Detects	-1.104
Mean of Logged Detects	3.429	SD of Logged Detects	0.358

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.925	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.187	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.325	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	17.79	KM Standard Error of Mean	2.901
KM SD	11.54	95% KM (BCA) UCL	27.41
95% KM (t) UCL	22.77	95% KM (Percentile Bootstrap) UCL	26.2
95% KM (z) UCL	22.56	95% KM Bootstrap t UCL	21.48
90% KM Chebyshev UCL	26.49	95% KM Chebyshev UCL	30.43
97.5% KM Chebyshev UCL	35.9	99% KM Chebyshev UCL	46.65

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.339	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.698	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.228	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.332	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	9.752	k star (bias corrected MLE)	4.987
Theta hat (MLE)	3.333	Theta star (bias corrected MLE)	6.517
nu hat (MLE)	117	nu star (bias corrected)	59.84
Mean (detects)	32.5		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	11.88
Maximum	49	Median	4.865
SD	14.99	CV	1.262
k hat (MLE)	0.259	k star (bias corrected MLE)	0.254
Theta hat (MLE)	45.9	Theta star (bias corrected MLE)	46.77
nu hat (MLE)	11.91	nu star (bias corrected)	11.69
Adjusted Level of Significance (β)	0.0389		
Approximate Chi Square Value (11.69, α)	5.022	Adjusted Chi Square Value (11.69, β)	4.708

95% Gamma Approximate UCL (use when n>=50)	27.65	95% Gamma Adjusted UCL (use when n<50)	29.5

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	17.79	SD (KM)	11.54
Variance (KM)	133.2	SE of Mean (KM)	2.901
k hat (KM)	2.376	k star (KM)	2.095
nu hat (KM)	109.3	nu star (KM)	96.35
theta hat (KM)	7.489	theta star (KM)	8.493
80% gamma percentile (KM)	26.49	90% gamma percentile (KM)	34.23
95% gamma percentile (KM)	41.59	99% gamma percentile (KM)	57.87

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (96.35, α)	74.71	Adjusted Chi Square Value (96.35, β)	73.33
95% Gamma Approximate KM-UCL (use when n>=50)	22.94	95% Gamma Adjusted KM-UCL (use when n<50)	23.37

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.917	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.22	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	16.11	Mean in Log Scale	2.524
SD in Original Scale	12.25	SD in Log Scale	0.733
95% t UCL (assumes normality of ROS data)	20.5	95% Percentile Bootstrap UCL	20.46
95% BCA Bootstrap UCL	21.21	95% Bootstrap t UCL	21.58
95% H-UCL (Log ROS)	23.05		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.724	KM Geo Mean	15.23
KM SD (logged)	0.513	95% Critical H Value (KM-Log)	1.985
KM Standard Error of Mean (logged)	0.129	95% H-UCL (KM -Log)	21.59
KM SD (logged)	0.513	95% Critical H Value (KM-Log)	1.985
KM Standard Error of Mean (logged)	0.129		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	22.63	Mean in Log Scale	2.85
SD in Original Scale	17.09	SD in Log Scale	0.741
95% t UCL (Assumes normality)	28.75	95% H-Stat UCL	32.26

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	22.77

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU10_PFECA-G

General Statistics

Total Number of Observations	24	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	24
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU10_PFECA-G was not processed!

DW_EU10_PFESA-BP1

General Statistics

Total Number of Observations	27	Number of Distinct Observations	7
Number of Detects	0	Number of Non-Detects	27
Number of Distinct Detects	0	Number of Distinct Non-Detects	7

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU10_PFESA-BP1 was not processed!

DW_EU10_PFESA-BP2

General Statistics

Total Number of Observations	27	Number of Distinct Observations	15
Number of Detects	11	Number of Non-Detects	16
Number of Distinct Detects	10	Number of Distinct Non-Detects	5
Minimum Detect	2.37	Minimum Non-Detect	1.1
Maximum Detect	35	Maximum Non-Detect	50

Variance Detects	119.5	Percent Non-Detects	59.26%
Mean Detects	16.68	SD Detects	10.93
Median Detects	18	CV Detects	0.655
Skewness Detects	0.286	Kurtosis Detects	-0.875
Mean of Logged Detects	2.535	SD of Logged Detects	0.874

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.914	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.19	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.251	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	8.551	KM Standard Error of Mean	2.32
KM SD	10.61	95% KM (BCA) UCL	12.8
95% KM (t) UCL	12.51	95% KM (Percentile Bootstrap) UCL	12.46
95% KM (z) UCL	12.37	95% KM Bootstrap t UCL	13.34
90% KM Chebyshev UCL	15.51	95% KM Chebyshev UCL	18.66
97.5% KM Chebyshev UCL	23.04	99% KM Chebyshev UCL	31.63

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.553	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.739	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.272	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.259	Detected Data Not Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.938	k star (bias corrected MLE)	1.47
Theta hat (MLE)	8.604	Theta star (bias corrected MLE)	11.34
nu hat (MLE)	42.65	nu star (bias corrected)	32.35
Mean (detects)	16.68		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	7.715
Maximum	35	Median	1.658
SD	10.69	CV	1.385
k hat (MLE)	0.236	k star (bias corrected MLE)	0.235
Theta hat (MLE)	32.68	Theta star (bias corrected MLE)	32.89

nu hat (MLE)	12.75	nu star (bias corrected)	12.67
Adjusted Level of Significance (β)	0.0401		
Approximate Chi Square Value (12.67, α)	5.668	Adjusted Chi Square Value (12.67, β)	5.371
95% Gamma Approximate UCL (use when n>=50)	17.24	95% Gamma Adjusted UCL (use when n<50)	18.19

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	8.551	SD (KM)	10.61
Variance (KM)	112.5	SE of Mean (KM)	2.32
k hat (KM)	0.65	k star (KM)	0.602
nu hat (KM)	35.09	nu star (KM)	32.53
theta hat (KM)	13.16	theta star (KM)	14.2
80% gamma percentile (KM)	14.09	90% gamma percentile (KM)	22.22
95% gamma percentile (KM)	30.73	99% gamma percentile (KM)	51.29

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (32.53, α)	20.49	Adjusted Chi Square Value (32.53, β)	19.88
95% Gamma Approximate KM-UCL (use when n>=50)	13.57	95% Gamma Adjusted KM-UCL (use when n<50)	13.99

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.888	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.294	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.251	Detected Data Not Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	8.294	Mean in Log Scale	1.323
SD in Original Scale	10.11	SD in Log Scale	1.347
95% t UCL (assumes normality of ROS data)	11.61	95% Percentile Bootstrap UCL	11.67
95% BCA Bootstrap UCL	12	95% Bootstrap t UCL	12.42
95% H-UCL (Log ROS)	20.58		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.262	KM Geo Mean	3.532
KM SD (logged)	1.348	95% Critical H Value (KM-Log)	3.007
KM Standard Error of Mean (logged)	0.295	95% H-UCL (KM -Log)	19.4
KM SD (logged)	1.348	95% Critical H Value (KM-Log)	3.007
KM Standard Error of Mean (logged)	0.295		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	10.9	Mean in Log Scale	1.452
SD in Original Scale	11.7	SD in Log Scale	1.565
95% t UCL (Assumes normality)	14.74	95% H-Stat UCL	40.5

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	12.51

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU10_PFMOAA

General Statistics

Total Number of Observations	27	Number of Distinct Observations	17
Number of Detects	12	Number of Non-Detects	15
Number of Distinct Detects	12	Number of Distinct Non-Detects	5
Minimum Detect	5.5	Minimum Non-Detect	1.17
Maximum Detect	65	Maximum Non-Detect	50
Variance Detects	443.2	Percent Non-Detects	55.56%
Mean Detects	26.97	SD Detects	21.05
Median Detects	20.5	CV Detects	0.781
Skewness Detects	0.836	Kurtosis Detects	-0.55
Mean of Logged Detects	2.975	SD of Logged Detects	0.875

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.876	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.859	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.195	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.243	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	13.57	KM Standard Error of Mean	3.859
KM SD	18.66	95% KM (BCA) UCL	21.07
95% KM (t) UCL	20.15	95% KM (Percentile Bootstrap) UCL	19.87
95% KM (z) UCL	19.92	95% KM Bootstrap t UCL	22.22
90% KM Chebyshev UCL	25.15	95% KM Chebyshev UCL	30.39
97.5% KM Chebyshev UCL	37.67	99% KM Chebyshev UCL	51.97

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.298	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.744	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.134	**Kolmogorov-Smirnov GOF**

5% K-S Critical Value	0.249	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.714	k star (bias corrected MLE)	1.341
Theta hat (MLE)	15.73	Theta star (bias corrected MLE)	20.11
nu hat (MLE)	41.14	nu star (bias corrected)	32.19
Mean (detects)	26.97		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	12.63
Maximum	65	Median	1.018
SD	19.16	CV	1.517
k hat (MLE)	0.227	k star (bias corrected MLE)	0.226
Theta hat (MLE)	55.65	Theta star (bias corrected MLE)	55.78
nu hat (MLE)	12.26	nu star (bias corrected)	12.23
Adjusted Level of Significance (β)	0.0401		
Approximate Chi Square Value (12.23, α)	5.378	Adjusted Chi Square Value (12.23, β)	5.089
95% Gamma Approximate UCL (use when n>=50)	28.72	95% Gamma Adjusted UCL (use when n<50)	30.35

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	13.57	SD (KM)	18.66
Variance (KM)	348.3	SE of Mean (KM)	3.859
k hat (KM)	0.529	k star (KM)	0.495
nu hat (KM)	28.55	nu star (KM)	26.71
theta hat (KM)	25.67	theta star (KM)	27.43
80% gamma percentile (KM)	22.28	90% gamma percentile (KM)	36.8
95% gamma percentile (KM)	52.33	99% gamma percentile (KM)	90.57

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (26.71, α)	15.93	Adjusted Chi Square Value (26.71, β)	15.39
95% Gamma Approximate KM-UCL (use when n>=50)	22.76	95% Gamma Adjusted KM-UCL (use when n<50)	23.54

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.936	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.859	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.129	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.243	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	13.86	Mean in Log Scale	1.852
SD in Original Scale	18.3	SD in Log Scale	1.292
95% t UCL (assumes normality of ROS data)	19.87	95% Percentile Bootstrap UCL	19.95
95% BCA Bootstrap UCL	21.34	95% Bootstrap t UCL	22.35
95% H-UCL (Log ROS)	30.79		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.54	KM Geo Mean	4.665
KM SD (logged)	1.514	95% Critical H Value (KM-Log)	3.26
KM Standard Error of Mean (logged)	0.32	95% H-UCL (KM -Log)	38.64
KM SD (logged)	1.514	95% Critical H Value (KM-Log)	3.26
KM Standard Error of Mean (logged)	0.32		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	15.69	Mean in Log Scale	1.959
SD in Original Scale	18.49	SD in Log Scale	1.389
95% t UCL (Assumes normality)	21.76	95% H-Stat UCL	42.97

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	20.15

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU10_PFO2HxA

General Statistics

Total Number of Observations	27	Number of Distinct Observations	19
Number of Detects	14	Number of Non-Detects	13
Number of Distinct Detects	14	Number of Distinct Non-Detects	5
Minimum Detect	3	Minimum Non-Detect	1.1
Maximum Detect	230	Maximum Non-Detect	50
Variance Detects	4384	Percent Non-Detects	48.15%
Mean Detects	47.18	SD Detects	66.21
Median Detects	14.5	CV Detects	1.403
Skewness Detects	1.956	Kurtosis Detects	3.753
Mean of Logged Detects	2.942	SD of Logged Detects	1.435

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.716	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.302	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.226	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	25.39	KM Standard Error of Mean	10.25
KM SD	51.28	95% KM (BCA) UCL	45.02
95% KM (t) UCL	42.88	95% KM (Percentile Bootstrap) UCL	42.89
95% KM (z) UCL	42.26	95% KM Bootstrap t UCL	58.43
90% KM Chebyshev UCL	56.15	95% KM Chebyshev UCL	70.09
97.5% KM Chebyshev UCL	89.43	99% KM Chebyshev UCL	127.4

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.617	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.778	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.183	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.239	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.667	k star (bias corrected MLE)	0.572
Theta hat (MLE)	70.71	Theta star (bias corrected MLE)	82.5
nu hat (MLE)	18.68	nu star (bias corrected)	16.01
Mean (detects)	47.18		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	24.47
Maximum	230	Median	3
SD	52.62	CV	2.151
k hat (MLE)	0.191	k star (bias corrected MLE)	0.194
Theta hat (MLE)	128.3	Theta star (bias corrected MLE)	126
nu hat (MLE)	10.29	nu star (bias corrected)	10.48
Adjusted Level of Significance (β)	0.0401		
Approximate Chi Square Value (10.48, α)	4.246	Adjusted Chi Square Value (10.48, β)	3.995
95% Gamma Approximate UCL (use when n>=50)	60.41	95% Gamma Adjusted UCL (use when n<50)	64.21

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	25.39	SD (KM)	51.28
Variance (KM)	2630	SE of Mean (KM)	10.25
k hat (KM)	0.245	k star (KM)	0.243
nu hat (KM)	13.24	nu star (KM)	13.1
theta hat (KM)	103.6	theta star (KM)	104.7
80% gamma percentile (KM)	36.47	90% gamma percentile (KM)	76.36
95% gamma percentile (KM)	124	99% gamma percentile (KM)	251.3

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (13.10, α)	5.96	Adjusted Chi Square Value (13.10, β)	5.653
95% Gamma Approximate KM-UCL (use when n>=50)	55.81	95% Gamma Adjusted KM-UCL (use when n<50)	58.83

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.936	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.874	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.126	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.226	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	24.96	Mean in Log Scale	1.283
SD in Original Scale	52.39	SD in Log Scale	2.158
95% t UCL (assumes normality of ROS data)	42.16	95% Percentile Bootstrap UCL	42.86
95% BCA Bootstrap UCL	49.38	95% Bootstrap t UCL	61.07
95% H-UCL (Log ROS)	228.7		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.645	KM Geo Mean	5.183
KM SD (logged)	1.723	95% Critical H Value (KM-Log)	3.588
KM Standard Error of Mean (logged)	0.351	95% H-UCL (KM -Log)	76.9
KM SD (logged)	1.723	95% Critical H Value (KM-Log)	3.588
KM Standard Error of Mean (logged)	0.351		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	26.68	Mean in Log Scale	1.706
SD in Original Scale	51.96	SD in Log Scale	1.87
95% t UCL (Assumes normality)	43.73	95% H-Stat UCL	128.7

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

ı Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1	58.83

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU10_PFO3OA

General Statistics

Total Number of Observations	27	Number of Distinct Observations	10
Number of Detects	4	Number of Non-Detects	23
Number of Distinct Detects	4	Number of Distinct Non-Detects	6
Minimum Detect	4.1	Minimum Non-Detect	1.1
Maximum Detect	15	Maximum Non-Detect	50
Variance Detects	26.04	Percent Non-Detects	85.19%
Mean Detects	9.753	SD Detects	5.103
Median Detects	9.955	CV Detects	0.523
Skewness Detects	-0.125	Kurtosis Detects	-3.885
Mean of Logged Detects	2.154	SD of Logged Detects	0.599

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.928	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.238	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2.605	KM Standard Error of Mean	0.906
KM SD	3.762	95% KM (BCA) UCL	N/A
95% KM (t) UCL	4.15	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	4.095	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	5.322	95% KM Chebyshev UCL	6.553
97.5% KM Chebyshev UCL	8.261	99% KM Chebyshev UCL	11.62

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.321	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.659	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.282	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.396	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	4.215	k star (bias corrected MLE)	1.22

Theta hat (MLE)	2.314	Theta star (bias corrected MLE)	7.991
nu hat (MLE)	33.72	nu star (bias corrected)	9.764
Mean (detects)	9.753		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.53
Maximum	15	Median	0.01
SD	3.913	CV	2.559
k hat (MLE)	0.199	k star (bias corrected MLE)	0.202
Theta hat (MLE)	7.68	Theta star (bias corrected MLE)	7.583
nu hat (MLE)	10.75	nu star (bias corrected)	10.89
Adjusted Level of Significance (β)	0.0401		
Approximate Chi Square Value (10.89, α)	4.507	Adjusted Chi Square Value (10.89, β)	4.246
95% Gamma Approximate UCL (use when n>=50)	3.697	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	2.605	SD (KM)	3.762
Variance (KM)	14.15	SE of Mean (KM)	0.906
k hat (KM)	0.479	k star (KM)	0.451
nu hat (KM)	25.89	nu star (KM)	24.35
theta hat (KM)	5.433	theta star (KM)	5.777
80% gamma percentile (KM)	4.252	90% gamma percentile (KM)	7.196
95% gamma percentile (KM)	10.38	99% gamma percentile (KM)	18.29

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (24.35, α)	14.11	Adjusted Chi Square Value (24.35, β)	13.61
95% Gamma Approximate KM-UCL (use when n>=50)	4.494	95% Gamma Adjusted KM-UCL (use when n<50)	4.658

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.924	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.253	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.126	Mean in Log Scale	-0.309
SD in Original Scale	3.755	SD in Log Scale	1.477
95% t UCL (assumes normality of ROS data)	3.359	95% Percentile Bootstrap UCL	3.34
95% BCA Bootstrap UCL	3.9	95% Bootstrap t UCL	4.94

95% H-UCL (Log ROS)	5.528		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.453	KM Geo Mean	1.574
KM SD (logged)	0.81	95% Critical H Value (KM-Log)	2.287
KM Standard Error of Mean (logged)	0.195	95% H-UCL (KM -Log)	3.141
KM SD (logged)	0.81	95% Critical H Value (KM-Log)	2.287
KM Standard Error of Mean (logged)	0.195		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.792	Mean in Log Scale	0.718
SD in Original Scale	8.921	SD in Log Scale	1.363
95% t UCL (Assumes normality)	8.72	95% H-Stat UCL	11.66

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	4.15

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU10_PFO4DA

General Statistics

Total Number of Observations	27	Number of Distinct Observations	8
Number of Detects	2	Number of Non-Detects	25
Number of Distinct Detects	2	Number of Distinct Non-Detects	6
Minimum Detect	2.34	Minimum Non-Detect	1.1
Maximum Detect	3.4	Maximum Non-Detect	50
Variance Detects	0.562	Percent Non-Detects	92.59%
Mean Detects	2.87	SD Detects	0.75
Median Detects	2.87	CV Detects	0.261
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	1.037	SD of Logged Detects	0.264

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.254	KM Standard Error of Mean	0.154
KM SD	0.523	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1.517	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1.507	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1.716	95% KM Chebyshev UCL	1.926
97.5% KM Chebyshev UCL	2.216	99% KM Chebyshev UCL	2.787

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	28.99	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.099	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	115.9	nu star (bias corrected)	N/A
Mean (detects)	2.87		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.254	SD (KM)	0.523
Variance (KM)	0.273	SE of Mean (KM)	0.154
k hat (KM)	5.756	k star (KM)	5.141
nu hat (KM)	310.8	nu star (KM)	277.6
theta hat (KM)	0.218	theta star (KM)	0.244
80% gamma percentile (KM)	1.68	90% gamma percentile (KM)	1.994
95% gamma percentile (KM)	2.28	99% gamma percentile (KM)	2.883

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0401
Approximate Chi Square Value (277.62, α)	240	Adjusted Chi Square Value (277.62, β)	237.8
95% Gamma Approximate KM-UCL (use when n>=50)	1.45	95% Gamma Adjusted KM-UCL (use when n<50)	1.464

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.615	Mean in Log Scale	-0.942
SD in Original Scale	0.735	SD in Log Scale	0.94
95% t UCL (assumes normality of ROS data)	0.856	95% Percentile Bootstrap UCL	0.843
95% BCA Bootstrap UCL	0.926	95% Bootstrap t UCL	1.059
95% H-UCL (Log ROS)	0.952		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.177	KM Geo Mean	1.194
KM SD (logged)	0.271	95% Critical H Value (KM-Log)	1.802
KM Standard Error of Mean (logged)	0.0799	95% H-UCL (KM -Log)	1.363
KM SD (logged)	0.271	95% Critical H Value (KM-Log)	1.802
KM Standard Error of Mean (logged)	0.0799		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.617	Mean in Log Scale	0.453
SD in Original Scale	8.681	SD in Log Scale	1.234
95% t UCL (Assumes normality)	7.466	95% H-Stat UCL	6.703

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1.517	KM H-UCL	1.363
95% KM (BCA) UCL	N/A		

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU10_PFO5DA

General Statistics

Total Number of Observations	24	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	24
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU10_PFO5DA was not processed!

DW_EU10_PMPA

General Statistics

Total Number of Observations	23	Number of Distinct Observations	15
Number of Detects	16	Number of Non-Detects	7

Number of Distinct Detects	14	Number of Distinct Non-Detects	1
Minimum Detect	5.8	Minimum Non-Detect	10
Maximum Detect	580	Maximum Non-Detect	10
Variance Detects	19739	Percent Non-Detects	30.43%
Mean Detects	158.3	SD Detects	140.5
Median Detects	155	CV Detects	0.888
Skewness Detects	1.763	Kurtosis Detects	4.837
Mean of Logged Detects	4.574	SD of Logged Detects	1.215

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.819	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.887	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.194	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.213	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	111.9	KM Standard Error of Mean	28.73
KM SD	133.4	95% KM (BCA) UCL	159.5
95% KM (t) UCL	161.2	95% KM (Percentile Bootstrap) UCL	161.1
95% KM (z) UCL	159.1	95% KM Bootstrap t UCL	177.6
90% KM Chebyshev UCL	198.1	95% KM Chebyshev UCL	237.1
97.5% KM Chebyshev UCL	291.3	99% KM Chebyshev UCL	397.7

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.55	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.761	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.227	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.22	Detected Data Not Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.157	k star (bias corrected MLE)	0.982
Theta hat (MLE)	136.8	Theta star (bias corrected MLE)	161.2
nu hat (MLE)	37.02	nu star (bias corrected)	31.42
Mean (detects)	158.3		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	110.5
Maximum	580	Median	42

SD	137.6	CV	1.245
k hat (MLE)	0.267	k star (bias corrected MLE)	0.261
Theta hat (MLE)	414	Theta star (bias corrected MLE)	423.2
nu hat (MLE)	12.27	nu star (bias corrected)	12.01
Adjusted Level of Significance (β)	0.0389		
Approximate Chi Square Value (12.01, α)	5.231	Adjusted Chi Square Value (12.01, β)	4.91
95% Gamma Approximate UCL (use when n>=50)	253.5	95% Gamma Adjusted UCL (use when n<50)	270.2

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	111.9	SD (KM)	133.4
Variance (KM)	17797	SE of Mean (KM)	28.73
k hat (KM)	0.703	k star (KM)	0.641
nu hat (KM)	32.36	nu star (KM)	29.47
theta hat (KM)	159.1	theta star (KM)	174.6
80% gamma percentile (KM)	184.3	90% gamma percentile (KM)	286.7
95% gamma percentile (KM)	393.2	99% gamma percentile (KM)	649.3

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (29.47, α)	18.08	Adjusted Chi Square Value (29.47, β)	17.43
95% Gamma Approximate KM-UCL (use when n>=50)	182.4	95% Gamma Adjusted KM-UCL (use when n<50)	189.2

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.897	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.887	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.265	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.213	Detected Data Not Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	113.4	Mean in Log Scale	3.846
SD in Original Scale	135.3	SD in Log Scale	1.551
95% t UCL (assumes normality of ROS data)	161.8	95% Percentile Bootstrap UCL	160.3
95% BCA Bootstrap UCL	172.7	95% Bootstrap t UCL	181.8
95% H-UCL (Log ROS)	467.6		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.717	KM Geo Mean	41.13
KM SD (logged)	1.625	95% Critical H Value (KM-Log)	3.443
KM Standard Error of Mean (logged)	0.35	95% H-UCL (KM -Log)	507.7
KM SD (logged)	1.625	95% Critical H Value (KM-Log)	3.443
KM Standard Error of Mean (logged)	0.35		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	111.6	Mean in Log Scale	3.672

SD in Original Scale	136.6	SD in Log Scale	1.718
95% t UCL (Assumes normality)	160.6	95% H-Stat UCL	640.3

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	161.2

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU11_HFPO-DA

General Statistics

Total Number of Observations	126	Number of Distinct Observations	94
Number of Detects	111	Number of Non-Detects	15
Number of Distinct Detects	90	Number of Distinct Non-Detects	4
Minimum Detect	0.723	Minimum Non-Detect	2.6
Maximum Detect	528	Maximum Non-Detect	4
Variance Detects	4970	Percent Non-Detects	11.9%
Mean Detects	42.11	SD Detects	70.5
Median Detects	20.8	CV Detects	1.674
Skewness Detects	4.496	Kurtosis Detects	24.81
Mean of Logged Detects	2.944	SD of Logged Detects	1.326

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.541	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.279	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0844	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	37.3	KM Standard Error of Mean	6.01
KM SD	67.15	95% KM (BCA) UCL	47.53
95% KM (t) UCL	47.26	95% KM (Percentile Bootstrap) UCL	47.72
95% KM (z) UCL	47.19	95% KM Bootstrap t UCL	52.79
90% KM Chebyshev UCL	55.33	95% KM Chebyshev UCL	63.5

97.5% KM Chebyshev UCL	74.84	99% KM Chebyshev UCL	97.1

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.382	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.795	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0822	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.09	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.751	k star (bias corrected MLE)	0.737
Theta hat (MLE)	56.04	Theta star (bias corrected MLE)	57.13
nu hat (MLE)	166.8	nu star (bias corrected)	163.6
Mean (detects)	42.11		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	37.1
Maximum	528	Median	15.35
SD	67.53	CV	1.82
k hat (MLE)	0.417	k star (bias corrected MLE)	0.412
Theta hat (MLE)	89.01	Theta star (bias corrected MLE)	90.01
nu hat (MLE)	105	nu star (bias corrected)	103.9
Adjusted Level of Significance (β)	0.0481		
Approximate Chi Square Value (103.86, α)	81.34	Adjusted Chi Square Value (103.86, β)	81.11
95% Gamma Approximate UCL (use when n>=50)	47.37	95% Gamma Adjusted UCL (use when n<50)	47.5

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	37.3	SD (KM)	67.15
Variance (KM)	4510	SE of Mean (KM)	6.01
k hat (KM)	0.309	k star (KM)	0.307
nu hat (KM)	77.76	nu star (KM)	77.24
theta hat (KM)	120.9	theta star (KM)	121.7
80% gamma percentile (KM)	57.5	90% gamma percentile (KM)	109.7
95% gamma percentile (KM)	169.5	99% gamma percentile (KM)	324.3

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (77.24, α)	58	Adjusted Chi Square Value (77.24, β)	57.8
95% Gamma Approximate KM-UCL (use when n>=50)	49.68	95% Gamma Adjusted KM-UCL (use when n<50)	49.85

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.979	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk P Value	0.422	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.052	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0844	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	37.36	Mean in Log Scale	2.674
SD in Original Scale	67.4	SD in Log Scale	1.454
95% t UCL (assumes normality of ROS data)	47.3	95% Percentile Bootstrap UCL	48.26
95% BCA Bootstrap UCL	51.27	95% Bootstrap t UCL	52.47
95% H-UCL (Log ROS)	58.83		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.647	KM Geo Mean	14.11
KM SD (logged)	1.488	95% Critical H Value (KM-Log)	2.673
KM Standard Error of Mean (logged)	0.135	95% H-UCL (KM -Log)	60.92
KM SD (logged)	1.488	95% Critical H Value (KM-Log)	2.673
KM Standard Error of Mean (logged)	0.135		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	37.3	Mean in Log Scale	2.653
SD in Original Scale	67.43	SD in Log Scale	1.477
95% t UCL (Assumes normality)	47.25	95% H-Stat UCL	60.07

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	49.68

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU11_PEPA

General Statistics

Total Number of Observations	63	Number of Distinct Observations	22

Number of Detects	25	Number of Non-Detects	38
Number of Distinct Detects	20	Number of Distinct Non-Detects	3
Minimum Detect	11	Minimum Non-Detect	11
Maximum Detect	200	Maximum Non-Detect	100
Variance Detects	1755	Percent Non-Detects	60.32%
Mean Detects	42.16	SD Detects	41.9
Median Detects	27	CV Detects	0.994
Skewness Detects	2.613	Kurtosis Detects	8.158
Mean of Logged Detects	3.415	SD of Logged Detects	0.786

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.706	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.918	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.229	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.173	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	25.14	KM Standard Error of Mean	3.885
KM SD	29.69	95% KM (BCA) UCL	32.52
95% KM (t) UCL	31.62	95% KM (Percentile Bootstrap) UCL	31.81
95% KM (z) UCL	31.53	95% KM Bootstrap t UCL	35.61
90% KM Chebyshev UCL	36.79	95% KM Chebyshev UCL	42.07
97.5% KM Chebyshev UCL	49.4	99% KM Chebyshev UCL	63.79

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.673	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.76	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.126	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.177	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.678	k star (bias corrected MLE)	1.503
Theta hat (MLE)	25.12	Theta star (bias corrected MLE)	28.04
nu hat (MLE)	83.9	nu star (bias corrected)	75.17
Mean (detects)	42.16		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	20.74

Maximum	200	Median	12
SD	32.34	CV	1.56
k hat (MLE)	0.272	k star (bias corrected MLE)	0.269
Theta hat (MLE)	76.31	Theta star (bias corrected MLE)	76.98
nu hat (MLE)	34.24	nu star (bias corrected)	33.94
Adjusted Level of Significance (β)	0.0462		
Approximate Chi Square Value (33.94, α)	21.62	Adjusted Chi Square Value (33.94, β)	21.38
95% Gamma Approximate UCL (use when n>=50)	32.56	95% Gamma Adjusted UCL (use when n<50)	32.91

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	25.14	SD (KM)	29.69
Variance (KM)	881.5	SE of Mean (KM)	3.885
k hat (KM)	0.717	k star (KM)	0.693
nu hat (KM)	90.32	nu star (KM)	87.35
theta hat (KM)	35.07	theta star (KM)	36.26
80% gamma percentile (KM)	41.33	90% gamma percentile (KM)	63.24
95% gamma percentile (KM)	85.86	99% gamma percentile (KM)	139.9

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (87.35, α)	66.8	Adjusted Chi Square Value (87.35, β)	66.38
95% Gamma Approximate KM-UCL (use when n>=50)	32.87	95% Gamma Adjusted KM-UCL (use when n<50)	33.07

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.947	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.918	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.113	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.173	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	24.28	Mean in Log Scale	2.766
SD in Original Scale	30.42	SD in Log Scale	0.881
95% t UCL (assumes normality of ROS data)	30.68	95% Percentile Bootstrap UCL	30.91
95% BCA Bootstrap UCL	32.79	95% Bootstrap t UCL	35.95
95% H-UCL (Log ROS)	29.85		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.916	KM Geo Mean	18.47
KM SD (logged)	0.664	95% Critical H Value (KM-Log)	1.98
KM Standard Error of Mean (logged)	0.0945	95% H-UCL (KM -Log)	27.22
KM SD (logged)	0.664	95% Critical H Value (KM-Log)	1.98
KM Standard Error of Mean (logged)	0.0945		

DL/2 Statistics

DL/2 Normal **DL/2 Log-Transformed**

Mean in Original Scale	25.16	Mean in Log Scale	2.827
SD in Original Scale	31.1	SD in Log Scale	0.798
95% t UCL (Assumes normality)	31.7	95% H-Stat UCL	28.72

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	32.87	95% GROS Approximate Gamma UCL	32.56

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU11_PFECA-G

General Statistics

Total Number of Observations	63	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	63
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU11_PFECA-G was not processed!

DW_EU11_PFESA-BP1

General Statistics

Total Number of Observations	65	Number of Distinct Observations	5
Number of Detects	0	Number of Non-Detects	65
Number of Distinct Detects	0	Number of Distinct Non-Detects	5

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU11_PFESA-BP1 was not processed!

DW_EU11_PFESA-BP2

General Statistics

Total Number of Observations	65	Number of Distinct Observations	37
Number of Detects	42	Number of Non-Detects	23
Number of Distinct Detects	34	Number of Distinct Non-Detects	3
Minimum Detect	2.2	Minimum Non-Detect	1.1
Maximum Detect	140	Maximum Non-Detect	50
Variance Detects	576.7	Percent Non-Detects	35.38%
Mean Detects	16.31	SD Detects	24.02
Median Detects	8.65	CV Detects	1.472
Skewness Detects	3.98	Kurtosis Detects	18.19
Mean of Logged Detects	2.297	SD of Logged Detects	0.908

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.524	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.942	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.278	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.135	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	11.37	KM Standard Error of Mean	2.576
KM SD	20.39	95% KM (BCA) UCL	16.9
95% KM (t) UCL	15.67	95% KM (Percentile Bootstrap) UCL	16.21
95% KM (z) UCL	15.61	95% KM Bootstrap t UCL	19.36
90% KM Chebyshev UCL	19.1	95% KM Chebyshev UCL	22.6
97.5% KM Chebyshev UCL	27.46	99% KM Chebyshev UCL	37

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.893	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.775	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.22	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.14	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.148	k star (bias corrected MLE)	1.081
Theta hat (MLE)	14.22	Theta star (bias corrected MLE)	15.09
nu hat (MLE)	96.39	nu star (bias corrected)	90.84
Mean (detects)	16.31		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	10.93
Maximum	140	Median	5.36
SD	20.72	CV	1.896
k hat (MLE)	0.297	k star (bias corrected MLE)	0.294
Theta hat (MLE)	36.78	Theta star (bias corrected MLE)	37.21
nu hat (MLE)	38.64	nu star (bias corrected)	38.19
Adjusted Level of Significance (β)	0.0463		
Approximate Chi Square Value (38.19, α)	25.04	Adjusted Chi Square Value (38.19, β)	24.79
95% Gamma Approximate UCL (use when n>=50)	16.67	95% Gamma Adjusted UCL (use when n<50)	16.84

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	11.37	SD (KM)	20.39
Variance (KM)	415.9	SE of Mean (KM)	2.576
k hat (KM)	0.311	k star (KM)	0.307
nu hat (KM)	40.4	nu star (KM)	39.87
theta hat (KM)	36.58	theta star (KM)	37.07
80% gamma percentile (KM)	17.53	90% gamma percentile (KM)	33.44
95% gamma percentile (KM)	51.64	99% gamma percentile (KM)	98.81

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (39.87, α)	26.4	Adjusted Chi Square Value (39.87, β)	26.15
95% Gamma Approximate KM-UCL (use when n>=50)	17.17	95% Gamma Adjusted KM-UCL (use when n<50)	17.33

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.917	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.942	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.146	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.135	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	11.33	Mean in Log Scale	1.628
SD in Original Scale	20.45	SD in Log Scale	1.262
95% t UCL (assumes normality of ROS data)	15.56	95% Percentile Bootstrap UCL	15.89
95% BCA Bootstrap UCL	17.33	95% Bootstrap t UCL	19.59
95% H-UCL (Log ROS)	15.96		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.605	KM Geo Mean	4.976
KM SD (logged)	1.256	95% Critical H Value (KM-Log)	2.184
KM Standard Error of Mean (logged)	0.162	95% H-UCL (KM -Log)	15.43
KM SD (logged)	1.256	95% Critical H Value (KM-Log)	2.184
KM Standard Error of Mean (logged)	0.162		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	12.37	Mean in Log Scale	1.673
SD in Original Scale	20.69	SD in Log Scale	1.342
95% t UCL (Assumes normality)	16.65	95% H-Stat UCL	19.08

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 22.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU11_PFMOAA

General Statistics

Total Number of Observations	65	Number of Distinct Observations	33
Number of Detects	41	Number of Non-Detects	24
Number of Distinct Detects	31	Number of Distinct Non-Detects	3
Minimum Detect	5	Minimum Non-Detect	2.6
Maximum Detect	685	Maximum Non-Detect	50
Variance Detects	11082	Percent Non-Detects	36.92%
Mean Detects	38.73	SD Detects	105.3
Median Detects	15	CV Detects	2.718
Skewness Detects	6.072	Kurtosis Detects	38.03
Mean of Logged Detects	2.9	SD of Logged Detects	0.968

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.288	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.941	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.374	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.137	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	25.97	KM Standard Error of Mean	10.59
KM SD	84.32	95% KM (BCA) UCL	48.61
95% KM (t) UCL	43.65	95% KM (Percentile Bootstrap) UCL	47.29
95% KM (z) UCL	43.39	95% KM Bootstrap t UCL	95.55

90% KM Chebyshev UCL	57.75	95% KM Chebyshev UCL	72.15
97.5% KM Chebyshev UCL	92.13	99% KM Chebyshev UCL	131.4

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.455	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.788	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.233	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.143	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.786	k star (bias corrected MLE)	0.744
Theta hat (MLE)	49.29	Theta star (bias corrected MLE)	52.02
nu hat (MLE)	64.43	nu star (bias corrected)	61.05
Mean (detects)	38.73		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	24.95
Maximum	685	Median	9.6
SD	85.28	CV	3.418
k hat (MLE)	0.241	k star (bias corrected MLE)	0.24
Theta hat (MLE)	103.5	Theta star (bias corrected MLE)	103.9
nu hat (MLE)	31.34	nu star (bias corrected)	31.23
Adjusted Level of Significance (β)	0.0463		
Approximate Chi Square Value (31.23, α)	19.46	Adjusted Chi Square Value (31.23, β)	19.25
95% Gamma Approximate UCL (use when n>=50)	40.04	95% Gamma Adjusted UCL (use when n<50)	40.47

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	25.97	SD (KM)	84.32
Variance (KM)	7110	SE of Mean (KM)	10.59
k hat (KM)	0.0948	k star (KM)	0.101
nu hat (KM)	12.33	nu star (KM)	13.09
theta hat (KM)	273.8	theta star (KM)	257.8
80% gamma percentile (KM)	18.2	90% gamma percentile (KM)	69.31
95% gamma percentile (KM)	150.6	99% gamma percentile (KM)	411

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (13.09, α)	5.954	Adjusted Chi Square Value (13.09, β)	5.845
95% Gamma Approximate KM-UCL (use when n>=50)	57.09	95% Gamma Adjusted KM-UCL (use when n<50)	58.16

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.909	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.941	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.118	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.137	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	25.73	Mean in Log Scale	2.154
SD in Original Scale	85.01	SD in Log Scale	1.341
95% t UCL (assumes normality of ROS data)	43.33	95% Percentile Bootstrap UCL	46.45
95% BCA Bootstrap UCL	58.15	95% Bootstrap t UCL	97.42
95% H-UCL (Log ROS)	30.83		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.249	KM Geo Mean	9.475
KM SD (logged)	1.19	95% Critical H Value (KM-Log)	2.229
KM Standard Error of Mean (logged)	0.153	95% H-UCL (KM -Log)	26.81
KM SD (logged)	1.19	95% Critical H Value (KM-Log)	2.229
KM Standard Error of Mean (logged)	0.153		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	26.72	Mean in Log Scale	2.299
SD in Original Scale	84.87	SD in Log Scale	1.225
95% t UCL (Assumes normality)	44.29	95% H-Stat UCL	29.58

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 26.81

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU11_PFO2HxA

General Statistics

Total Number of Observations	65	Number of Distinct Observations	39
Number of Detects	42	Number of Non-Detects	23
Number of Distinct Detects	36	Number of Distinct Non-Detects	3

Minimum Detect	2.4	Minimum Non-Detect	1.1
Maximum Detect	646	Maximum Non-Detect	50
Variance Detects	10370	Percent Non-Detects	35.38%
Mean Detects	49.31	SD Detects	101.8
Median Detects	21.5	CV Detects	2.065
Skewness Detects	5.226	Kurtosis Detects	30.25
Mean of Logged Detects	3.1	SD of Logged Detects	1.21

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.411	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.942	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.323	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.135	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	32.68	KM Standard Error of Mean	10.55
KM SD	84	95% KM (BCA) UCL	54.03
95% KM (t) UCL	50.29	95% KM (Percentile Bootstrap) UCL	51.99
95% KM (z) UCL	50.03	95% KM Bootstrap t UCL	78.75
90% KM Chebyshev UCL	64.33	95% KM Chebyshev UCL	78.67
97.5% KM Chebyshev UCL	98.56	99% KM Chebyshev UCL	137.7

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.383	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.789	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.158	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.142	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.75	k star (bias corrected MLE)	0.712
Theta hat (MLE)	65.74	Theta star (bias corrected MLE)	69.22
nu hat (MLE)	63.01	nu star (bias corrected)	59.85
Mean (detects)	49.31		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	32.03
Maximum	646	Median	9.7
SD	84.85	CV	2.649

k hat (MLE)	0.24	k star (bias corrected MLE)	0.239
Theta hat (MLE)	133.7	Theta star (bias corrected MLE)	134.2
nu hat (MLE)	31.14	nu star (bias corrected)	31.03
Adjusted Level of Significance (β)	0.0463		
Approximate Chi Square Value (31.03, α)	19.31	Adjusted Chi Square Value (31.03, β)	19.1
95% Gamma Approximate UCL (use when n>=50)	51.48	95% Gamma Adjusted UCL (use when n<50)	52.05

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	32.68	SD (KM)	84
Variance (KM)	7056	SE of Mean (KM)	10.55
k hat (KM)	0.151	k star (KM)	0.155
nu hat (KM)	19.68	nu star (KM)	20.1
theta hat (KM)	215.9	theta star (KM)	211.3
80% gamma percentile (KM)	36.46	90% gamma percentile (KM)	97.3
95% gamma percentile (KM)	178.8	99% gamma percentile (KM)	413.8

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (20.10, α)	10.93	Adjusted Chi Square Value (20.10, β)	10.77
95% Gamma Approximate KM-UCL (use when n>=50)	60.12	95% Gamma Adjusted KM-UCL (use when n<50)	60.98

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.935	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.942	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0696	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.135	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	32.71	Mean in Log Scale	2.16
SD in Original Scale	84.6	SD in Log Scale	1.697
95% t UCL (assumes normality of ROS data)	50.22	95% Percentile Bootstrap UCL	52.89
95% BCA Bootstrap UCL	62.5	95% Bootstrap t UCL	80.51
95% H-UCL (Log ROS)	64.32		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.104	KM Geo Mean	8.202
KM SD (logged)	1.704	95% Critical H Value (KM-Log)	2.669
KM Standard Error of Mean (logged)	0.217	95% H-UCL (KM -Log)	61.88
KM SD (logged)	1.704	95% Critical H Value (KM-Log)	2.669
KM Standard Error of Mean (logged)	0.217		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	33.32	Mean in Log Scale	2.143
SD in Original Scale	84.51	SD in Log Scale	1.753

95% t UCL (Assumes normality)	50.81	95% H-Stat UCL	72.07

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 61.88

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU11_PFO3OA

General Statistics

Total Number of Observations	65	Number of Distinct Observations	15
Number of Detects	14	Number of Non-Detects	51
Number of Distinct Detects	12	Number of Distinct Non-Detects	4
Minimum Detect	2	Minimum Non-Detect	1.1
Maximum Detect	92.8	Maximum Non-Detect	50
Variance Detects	570.3	Percent Non-Detects	78.46%
Mean Detects	12.83	SD Detects	23.88
Median Detects	4.7	CV Detects	1.862
Skewness Detects	3.34	Kurtosis Detects	11.59
Mean of Logged Detects	1.83	SD of Logged Detects	1.03

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.474	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.388	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.226	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3.701	KM Standard Error of Mean	1.516
KM SD	11.74	95% KM (BCA) UCL	6.637
95% KM (t) UCL	6.232	95% KM (Percentile Bootstrap) UCL	6.449
95% KM (z) UCL	6.195	95% KM Bootstrap t UCL	15.93
90% KM Chebyshev UCL	8.25	95% KM Chebyshev UCL	10.31
97.5% KM Chebyshev UCL	13.17	99% KM Chebyshev UCL	18.79

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.632	**Anderson-Darling GOF Test**

5% A-D Critical Value	0.768	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.285	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.237	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.82	k star (bias corrected MLE)	0.692
Theta hat (MLE)	15.65	Theta star (bias corrected MLE)	18.54
nu hat (MLE)	22.95	nu star (bias corrected)	19.37
Mean (detects)	12.83		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	2.77
Maximum	92.8	Median	0.01
SD	12	CV	4.332
k hat (MLE)	0.177	k star (bias corrected MLE)	0.179
Theta hat (MLE)	15.66	Theta star (bias corrected MLE)	15.47
nu hat (MLE)	23	nu star (bias corrected)	23.27
Adjusted Level of Significance (β)	0.0463		
Approximate Chi Square Value (23.27, α)	13.3	Adjusted Chi Square Value (23.27, β)	13.13
95% Gamma Approximate UCL (use when n>=50)	4.848	95% Gamma Adjusted UCL (use when n<50)	4.912

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3.701	SD (KM)	11.74
Variance (KM)	137.9	SE of Mean (KM)	1.516
k hat (KM)	0.0994	k star (KM)	0.105
nu hat (KM)	12.92	nu star (KM)	13.65
theta hat (KM)	37.25	theta star (KM)	35.24
80% gamma percentile (KM)	2.751	90% gamma percentile (KM)	10.04
95% gamma percentile (KM)	21.41	99% gamma percentile (KM)	57.36

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (13.65, α)	6.335	Adjusted Chi Square Value (13.65, β)	6.221
95% Gamma Approximate KM-UCL (use when n>=50)	7.977	95% Gamma Adjusted KM-UCL (use when n<50)	8.122

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.85	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.192	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.226	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3.051	Mean in Log Scale	-1.037
SD in Original Scale	11.94	SD in Log Scale	2.059
95% t UCL (assumes normality of ROS data)	5.524	95% Percentile Bootstrap UCL	5.76
95% BCA Bootstrap UCL	7.873	95% Bootstrap t UCL	14.41
95% H-UCL (Log ROS)	6.528		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.49	KM Geo Mean	1.632
KM SD (logged)	0.861	95% Critical H Value (KM-Log)	2.15
KM Standard Error of Mean (logged)	0.113	95% H-UCL (KM -Log)	2.982
KM SD (logged)	0.861	95% Critical H Value (KM-Log)	2.15
KM Standard Error of Mean (logged)	0.113		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.955	Mean in Log Scale	0.497
SD in Original Scale	12.91	SD in Log Scale	1.187
95% t UCL (Assumes normality)	7.627	95% H-Stat UCL	4.627

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 2.982

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU11_PFO4DA

General Statistics

Total Number of Observations	65	Number of Distinct Observations	10
Number of Detects	8	Number of Non-Detects	57
Number of Distinct Detects	7	Number of Distinct Non-Detects	4
Minimum Detect	1.7	Minimum Non-Detect	1.1
Maximum Detect	25.7	Maximum Non-Detect	50
Variance Detects	68.1	Percent Non-Detects	87.69%
Mean Detects	5.399	SD Detects	8.252
Median Detects	2.4	CV Detects	1.529

Skewness Detects	2.764	Kurtosis Detects	7.709
Mean of Logged Detects	1.163	SD of Logged Detects	0.894

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.502	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.414	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.283	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.716	KM Standard Error of Mean	0.433
KM SD	3.146	95% KM (BCA) UCL	2.534
95% KM (t) UCL	2.438	95% KM (Percentile Bootstrap) UCL	2.503
95% KM (z) UCL	2.428	95% KM Bootstrap t UCL	4.687
90% KM Chebyshev UCL	3.015	95% KM Chebyshev UCL	3.603
97.5% KM Chebyshev UCL	4.419	99% KM Chebyshev UCL	6.023

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.53	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.734	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.396	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.301	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.091	k star (bias corrected MLE)	0.765
Theta hat (MLE)	4.947	Theta star (bias corrected MLE)	7.053
nu hat (MLE)	17.46	nu star (bias corrected)	12.25
Mean (detects)	5.399		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.673
Maximum	25.7	Median	0.01
SD	3.261	CV	4.843
k hat (MLE)	0.209	k star (bias corrected MLE)	0.209
Theta hat (MLE)	3.223	Theta star (bias corrected MLE)	3.214
nu hat (MLE)	27.15	nu star (bias corrected)	27.23
Adjusted Level of Significance (β)	0.0463		
Approximate Chi Square Value (27.23, α)	16.33	Adjusted Chi Square Value (27.23, β)	16.14

95% Gamma Approximate UCL (use when n>=50)	1.123	95% Gamma Adjusted UCL (use when n<50)	1.136

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.716	SD (KM)	3.146
Variance (KM)	9.897	SE of Mean (KM)	0.433
k hat (KM)	0.298	k star (KM)	0.294
nu hat (KM)	38.68	nu star (KM)	38.23
theta hat (KM)	5.767	theta star (KM)	5.835
80% gamma percentile (KM)	2.618	90% gamma percentile (KM)	5.073
95% gamma percentile (KM)	7.9	99% gamma percentile (KM)	15.27

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (38.23, α)	25.07	Adjusted Chi Square Value (38.23, β)	24.83
95% Gamma Approximate KM-UCL (use when n>=50)	2.617	95% Gamma Adjusted KM-UCL (use when n<50)	2.642

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.689	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.358	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.928	Mean in Log Scale	-1.517
SD in Original Scale	3.226	SD in Log Scale	1.61
95% t UCL (assumes normality of ROS data)	1.596	95% Percentile Bootstrap UCL	1.67
95% BCA Bootstrap UCL	2.085	95% Bootstrap t UCL	3.432
95% H-UCL (Log ROS)	1.342		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.272	KM Geo Mean	1.312
KM SD (logged)	0.478	95% Critical H Value (KM-Log)	1.851
KM Standard Error of Mean (logged)	0.0723	95% H-UCL (KM -Log)	1.643
KM SD (logged)	0.478	95% Critical H Value (KM-Log)	1.851
KM Standard Error of Mean (logged)	0.0723		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	2.929	Mean in Log Scale	0.213
SD in Original Scale	6.492	SD in Log Scale	0.974
95% t UCL (Assumes normality)	4.273	95% H-Stat UCL	2.612

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	3.603

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU11_PFO5DA

General Statistics

Total Number of Observations	63	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	63
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU11_PFO5DA was not processed!

DW_EU11_PMPA

General Statistics

Total Number of Observations	63	Number of Distinct Observations	41
Number of Detects	50	Number of Non-Detects	13
Number of Distinct Detects	40	Number of Distinct Non-Detects	2
Minimum Detect	5.5	Minimum Non-Detect	10
Maximum Detect	570	Maximum Non-Detect	50
Variance Detects	20661	Percent Non-Detects	20.63%
Mean Detects	159.4	SD Detects	143.7
Median Detects	110	CV Detects	0.902
Skewness Detects	1.586	Kurtosis Detects	1.777
Mean of Logged Detects	4.71	SD of Logged Detects	0.896

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.779	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.254	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.125	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	127.7	KM Standard Error of Mean	17.97
KM SD	141.2	95% KM (BCA) UCL	161.2
95% KM (t) UCL	157.7	95% KM (Percentile Bootstrap) UCL	157.7
95% KM (z) UCL	157.3	95% KM Bootstrap t UCL	163
90% KM Chebyshev UCL	181.6	95% KM Chebyshev UCL	206
97.5% KM Chebyshev UCL	239.9	99% KM Chebyshev UCL	306.5

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.32	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.767	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.163	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.127	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.53	k star (bias corrected MLE)	1.452
Theta hat (MLE)	104.1	Theta star (bias corrected MLE)	109.8
nu hat (MLE)	153	nu star (bias corrected)	145.2
Mean (detects)	159.4		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	126.5
Maximum	570	Median	84
SD	143.4	CV	1.134
k hat (MLE)	0.331	k star (bias corrected MLE)	0.326
Theta hat (MLE)	382.4	Theta star (bias corrected MLE)	388.5
nu hat (MLE)	41.67	nu star (bias corrected)	41.02
Adjusted Level of Significance (β)	0.0462		
Approximate Chi Square Value (41.02, α)	27.34	Adjusted Chi Square Value (41.02, β)	27.08
95% Gamma Approximate UCL (use when n>=50)	189.7	95% Gamma Adjusted UCL (use when n<50)	191.6

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	127.7	SD (KM)	141.2
Variance (KM)	19925	SE of Mean (KM)	17.97
k hat (KM)	0.818	k star (KM)	0.79
nu hat (KM)	103.1	nu star (KM)	99.55
theta hat (KM)	156	theta star (KM)	161.6
80% gamma percentile (KM)	208.8	90% gamma percentile (KM)	311.5
95% gamma percentile (KM)	416.1	99% gamma percentile (KM)	663.5

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (99.55, α)	77.53	Adjusted Chi Square Value (99.55, β)	77.08
95% Gamma Approximate KM-UCL (use when n>=50)	164	95% Gamma Adjusted KM-UCL (use when n<50)	164.9

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.954	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.947	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.106	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.125	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	130.2	Mean in Log Scale	4.318
SD in Original Scale	140.2	SD in Log Scale	1.129
95% t UCL (assumes normality of ROS data)	159.7	95% Percentile Bootstrap UCL	157.9
95% BCA Bootstrap UCL	163.4	95% Bootstrap t UCL	163.9
95% H-UCL (Log ROS)	196.6		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	4.096	KM Geo Mean	60.12
KM SD (logged)	1.443	95% Critical H Value (KM-Log)	2.404
KM Standard Error of Mean (logged)	0.184	95% H-UCL (KM -Log)	264.8
KM SD (logged)	1.443	95% Critical H Value (KM-Log)	2.404
KM Standard Error of Mean (logged)	0.184		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	127.8	Mean in Log Scale	4.096
SD in Original Scale	142.2	SD in Log Scale	1.465
95% t UCL (Assumes normality)	157.7	95% H-Stat UCL	276.6

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 264.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU12_HFPO-DA

General Statistics

Total Number of Observations	384	Number of Distinct Observations	153
Number of Detects	254	Number of Non-Detects	130
Number of Distinct Detects	143	Number of Distinct Non-Detects	16
Minimum Detect	0.749	Minimum Non-Detect	0.575
Maximum Detect	270	Maximum Non-Detect	4
Variance Detects	1375	Percent Non-Detects	33.85%
Mean Detects	23.03	SD Detects	37.08
Median Detects	12	CV Detects	1.61
Skewness Detects	4.112	Kurtosis Detects	19.71
Mean of Logged Detects	2.502	SD of Logged Detects	1.073

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.528	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.274	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.056	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	15.54	KM Standard Error of Mean	1.63
KM SD	31.87	95% KM (BCA) UCL	18.41
95% KM (t) UCL	18.23	95% KM (Percentile Bootstrap) UCL	18.36
95% KM (z) UCL	18.23	95% KM Bootstrap t UCL	18.8
90% KM Chebyshev UCL	20.43	95% KM Chebyshev UCL	22.65
97.5% KM Chebyshev UCL	25.72	99% KM Chebyshev UCL	31.76

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	7.783	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.788	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.129	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0593	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.919	k star (bias corrected MLE)	0.911
Theta hat (MLE)	25.06	Theta star (bias corrected MLE)	25.29
nu hat (MLE)	466.8	nu star (bias corrected)	462.7
Mean (detects)	23.03		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	15.24
Maximum	270	Median	5.9
SD	32.05	CV	2.103
k hat (MLE)	0.267	k star (bias corrected MLE)	0.267
Theta hat (MLE)	56.98	Theta star (bias corrected MLE)	57.06
nu hat (MLE)	205.4	nu star (bias corrected)	205.1
Adjusted Level of Significance (β)	0.0494		
Approximate Chi Square Value (205.09, α)	172.9	Adjusted Chi Square Value (205.09, β)	172.8
95% Gamma Approximate UCL (use when n>=50)	18.07	95% Gamma Adjusted UCL (use when n<50)	18.08

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	15.54	SD (KM)	31.87
Variance (KM)	1015	SE of Mean (KM)	1.63
k hat (KM)	0.238	k star (KM)	0.238
nu hat (KM)	182.8	nu star (KM)	182.7
theta hat (KM)	65.32	theta star (KM)	65.35
80% gamma percentile (KM)	22.16	90% gamma percentile (KM)	46.81
95% gamma percentile (KM)	76.36	99% gamma percentile (KM)	155.6

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (182.67, α)	152.4	Adjusted Chi Square Value (182.67, β)	152.3
95% Gamma Approximate KM-UCL (use when n>=50)	18.63	95% Gamma Adjusted KM-UCL (use when n<50)	18.64

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.975	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.0487	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0447	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.056	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	15.69	Mean in Log Scale	1.679
SD in Original Scale	31.84	SD in Log Scale	1.506
95% t UCL (assumes normality of ROS data)	18.37	95% Percentile Bootstrap UCL	18.49
95% BCA Bootstrap UCL	18.77	95% Bootstrap t UCL	18.83
95% H-UCL (Log ROS)	20.34		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.578	KM Geo Mean	4.845
KM SD (logged)	1.583	95% Critical H Value (KM-Log)	2.669
KM Standard Error of Mean (logged)	0.087	95% H-UCL (KM -Log)	21.05
KM SD (logged)	1.583	95% Critical H Value (KM-Log)	2.669
KM Standard Error of Mean (logged)	0.087		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	15.69	Mean in Log Scale	1.736
SD in Original Scale	31.84	SD in Log Scale	1.406
95% t UCL (Assumes normality)	18.37	95% H-Stat UCL	18.23

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL	21.05

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU12_PEPA

General Statistics

Total Number of Observations	315	Number of Distinct Observations	34
Number of Detects	46	Number of Non-Detects	269
Number of Distinct Detects	32	Number of Distinct Non-Detects	3
Minimum Detect	15	Minimum Non-Detect	11
Maximum Detect	130	Maximum Non-Detect	100
Variance Detects	397.6	Percent Non-Detects	85.4%
Mean Detects	39.22	SD Detects	19.94
Median Detects	34	CV Detects	0.508
Skewness Detects	2.306	Kurtosis Detects	8.405
Mean of Logged Detects	3.571	SD of Logged Detects	0.43

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.816	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.945	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.16	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.129	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	15.69	KM Standard Error of Mean	0.816
KM SD	12.48	95% KM (BCA) UCL	17.17
95% KM (t) UCL	17.04	95% KM (Percentile Bootstrap) UCL	17.13
95% KM (z) UCL	17.03	95% KM Bootstrap t UCL	17.24
90% KM Chebyshev UCL	18.14	95% KM Chebyshev UCL	19.25

97.5% KM Chebyshev UCL	20.79	99% KM Chebyshev UCL	23.81

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.655	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.753	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.101	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.131	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	5.28	k star (bias corrected MLE)	4.951
Theta hat (MLE)	7.427	Theta star (bias corrected MLE)	7.922
nu hat (MLE)	485.8	nu star (bias corrected)	455.5
Mean (detects)	39.22		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	6.987
Maximum	130	Median	0.01
SD	15.76	CV	2.255
k hat (MLE)	0.171	k star (bias corrected MLE)	0.172
Theta hat (MLE)	40.81	Theta star (bias corrected MLE)	40.69
nu hat (MLE)	107.9	nu star (bias corrected)	108.2
Adjusted Level of Significance (β)	0.0492		
Approximate Chi Square Value (108.18, α)	85.17	Adjusted Chi Square Value (108.18, β)	85.08
95% Gamma Approximate UCL (use when n>=50)	8.874	95% Gamma Adjusted UCL (use when n<50)	8.884

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	15.69	SD (KM)	12.48
Variance (KM)	155.9	SE of Mean (KM)	0.816
k hat (KM)	1.58	k star (KM)	1.567
nu hat (KM)	995.1	nu star (KM)	987
theta hat (KM)	9.934	theta star (KM)	10.02
80% gamma percentile (KM)	24.16	90% gamma percentile (KM)	32.35
95% gamma percentile (KM)	40.29	99% gamma percentile (KM)	58.15

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (986.97, α)	915	Adjusted Chi Square Value (986.97, β)	914.7
95% Gamma Approximate KM-UCL (use when n>=50)	16.92	95% Gamma Adjusted KM-UCL (use when n<50)	16.93

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.974	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.945	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0819	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.129	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	12.42	Mean in Log Scale	2.061
SD in Original Scale	14.27	SD in Log Scale	0.961
95% t UCL (assumes normality of ROS data)	13.75	95% Percentile Bootstrap UCL	13.75
95% BCA Bootstrap UCL	13.97	95% Bootstrap t UCL	13.95
95% H-UCL (Log ROS)	13.96		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.609	KM Geo Mean	13.59
KM SD (logged)	0.45	95% Critical H Value (KM-Log)	1.768
KM Standard Error of Mean (logged)	0.0378	95% H-UCL (KM -Log)	15.72
KM SD (logged)	0.45	95% Critical H Value (KM-Log)	1.768
KM Standard Error of Mean (logged)	0.0378		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	14.42	Mean in Log Scale	2.473
SD in Original Scale	13.37	SD in Log Scale	0.526
95% t UCL (Assumes normality)	15.66	95% H-Stat UCL	14.36

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	16.92	95% GROS Approximate Gamma UCL	8.874

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU12_PFECA-G

General Statistics

Total Number of Observations	322	Number of Distinct Observations	13
Number of Detects	3	Number of Non-Detects	319
Number of Distinct Detects	3	Number of Distinct Non-Detects	10
Minimum Detect	2.1	Minimum Non-Detect	1.1

Maximum Detect	2.3	Maximum Non-Detect	50
Variance Detects	0.01	Percent Non-Detects	99.07%
Mean Detects	2.2	SD Detects	0.1
Median Detects	2.2	CV Detects	0.0455
Skewness Detects	-1.98E-14	Kurtosis Detects	N/A
Mean of Logged Detects	0.788	SD of Logged Detects	0.0455

Warning: Data set has only 3 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	1	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.175	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.11	KM Standard Error of Mean	0.0073
KM SD	0.106	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1.122	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1.122	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1.132	95% KM Chebyshev UCL	1.142
97.5% KM Chebyshev UCL	1.156	99% KM Chebyshev UCL	1.183

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	725.4	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.00303	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	4352	nu star (bias corrected)	N/A
Mean (detects)	2.2		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.87
Maximum	2.3	Median	0.852
SD	0.467	CV	0.537
k hat (MLE)	1.856	k star (bias corrected MLE)	1.84

Theta hat (MLE)	0.469	Theta star (bias corrected MLE)	0.473
nu hat (MLE)	1195	nu star (bias corrected)	1185
Adjusted Level of Significance (β)	0.0493		
Approximate Chi Square Value (N/A, α)	1106	Adjusted Chi Square Value (N/A, β)	1106
95% Gamma Approximate UCL (use when n>=50)	0.932	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.11	SD (KM)	0.106
Variance (KM)	0.0113	SE of Mean (KM)	0.0073
k hat (KM)	108.8	k star (KM)	107.8
nu hat (KM)	70046	nu star (KM)	69394
theta hat (KM)	0.0102	theta star (KM)	0.0103
80% gamma percentile (KM)	1.199	90% gamma percentile (KM)	1.249
95% gamma percentile (KM)	1.292	99% gamma percentile (KM)	1.374

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (N/A, α)	68783	Adjusted Chi Square Value (N/A, β)	68780
95% Gamma Approximate KM-UCL (use when n>=50)	1.12	95% Gamma Adjusted KM-UCL (use when n<50)	1.12

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	1	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.176	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.204	Mean in Log Scale	0.159
SD in Original Scale	0.284	SD in Log Scale	0.232
95% t UCL (assumes normality of ROS data)	1.23	95% Percentile Bootstrap UCL	1.232
95% BCA Bootstrap UCL	1.231	95% Bootstrap t UCL	1.231
95% H-UCL (Log ROS)	1.231		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.102	KM Geo Mean	1.107
KM SD (logged)	0.0669	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	0.00459	95% H-UCL (KM -Log)	N/A
KM SD (logged)	0.0669	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	0.00459		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	1.192	Mean in Log Scale	-0.0195
SD in Original Scale	2.319	SD in Log Scale	0.368
95% t UCL (Assumes normality)	1.405	95% H-Stat UCL	1.087

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1.122

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU12_PFESA-BP1

General Statistics

Total Number of Observations	357	Number of Distinct Observations	23
Number of Detects	0	Number of Non-Detects	357
Number of Distinct Detects	0	Number of Distinct Non-Detects	23

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DW_EU12_PFESA-BP1 was not processed!

DW_EU12_PFESA-BP2

General Statistics

Total Number of Observations	357	Number of Distinct Observations	85
Number of Detects	138	Number of Non-Detects	219
Number of Distinct Detects	76	Number of Distinct Non-Detects	14
Minimum Detect	1.1	Minimum Non-Detect	1.1
Maximum Detect	13	Maximum Non-Detect	50
Variance Detects	6.311	Percent Non-Detects	61.34%
Mean Detects	4.237	SD Detects	2.512
Median Detects	3.57	CV Detects	0.593
Skewness Detects	1.286	Kurtosis Detects	1.217
Mean of Logged Detects	1.287	SD of Logged Detects	0.559

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.861	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.173	**Lilliefors GOF Test**

5% Lilliefors Critical Value	0.0758	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2.346	KM Standard Error of Mean	0.116
KM SD	2.176	95% KM (BCA) UCL	2.528
95% KM (t) UCL	2.538	95% KM (Percentile Bootstrap) UCL	2.546
95% KM (z) UCL	2.537	95% KM Bootstrap t UCL	2.559
90% KM Chebyshev UCL	2.695	95% KM Chebyshev UCL	2.853
97.5% KM Chebyshev UCL	3.072	99% KM Chebyshev UCL	3.504

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.924	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.758	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.1	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0801	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	3.344	k star (bias corrected MLE)	3.276
Theta hat (MLE)	1.267	Theta star (bias corrected MLE)	1.293
nu hat (MLE)	923	nu star (bias corrected)	904.3
Mean (detects)	4.237		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.801
Maximum	13	Median	0.616
SD	2.516	CV	1.397
k hat (MLE)	0.318	k star (bias corrected MLE)	0.317
Theta hat (MLE)	5.668	Theta star (bias corrected MLE)	5.682
nu hat (MLE)	226.8	nu star (bias corrected)	226.3
Adjusted Level of Significance (β)	0.0493		
Approximate Chi Square Value (226.27, α)	192.5	Adjusted Chi Square Value (226.27, β)	192.3
95% Gamma Approximate UCL (use when n>=50)	2.117	95% Gamma Adjusted UCL (use when n<50)	2.119

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	2.346	SD (KM)	2.176
Variance (KM)	4.734	SE of Mean (KM)	0.116
k hat (KM)	1.162	k star (KM)	1.154
nu hat (KM)	829.8	nu star (KM)	824.2

theta hat (KM)	2.018	theta star (KM)	2.032
80% gamma percentile (KM)	3.728	90% gamma percentile (KM)	5.213
95% gamma percentile (KM)	6.682	99% gamma percentile (KM)	10.06

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (824.17, α)	758.5	Adjusted Chi Square Value (824.17, β)	758.3
95% Gamma Approximate KM-UCL (use when n>=50)	2.549	95% Gamma Adjusted KM-UCL (use when n<50)	2.549

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.962	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.00908	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0707	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0758	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.203	Mean in Log Scale	0.347
SD in Original Scale	2.278	SD in Log Scale	0.954
95% t UCL (assumes normality of ROS data)	2.402	95% Percentile Bootstrap UCL	2.397
95% BCA Bootstrap UCL	2.422	95% Bootstrap t UCL	2.418
95% H-UCL (Log ROS)	2.478		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.578	KM Geo Mean	1.783
KM SD (logged)	0.667	95% Critical H Value (KM-Log)	1.887
KM Standard Error of Mean (logged)	0.0363	95% H-UCL (KM -Log)	2.382
KM SD (logged)	0.667	95% Critical H Value (KM-Log)	1.887
KM Standard Error of Mean (logged)	0.0363		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	2.409	Mean in Log Scale	0.467
SD in Original Scale	3.062	SD in Log Scale	0.814
95% t UCL (Assumes normality)	2.676	95% H-Stat UCL	2.42

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 2.382

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU12_PFMOAA

General Statistics

Total Number of Observations	357	Number of Distinct Observations	116
Number of Detects	205	Number of Non-Detects	152
Number of Distinct Detects	105	Number of Distinct Non-Detects	13
Minimum Detect	1.84	Minimum Non-Detect	1.15
Maximum Detect	146	Maximum Non-Detect	50
Variance Detects	260.1	Percent Non-Detects	42.58%
Mean Detects	18.3	SD Detects	16.13
Median Detects	14	CV Detects	0.881
Skewness Detects	3.741	Kurtosis Detects	23.15
Mean of Logged Detects	2.647	SD of Logged Detects	0.706

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.718	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.175	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0623	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	11.26	KM Standard Error of Mean	0.788
KM SD	14.75	95% KM (BCA) UCL	12.65
95% KM (t) UCL	12.56	95% KM (Percentile Bootstrap) UCL	12.63
95% KM (z) UCL	12.55	95% KM Bootstrap t UCL	12.74
90% KM Chebyshev UCL	13.62	95% KM Chebyshev UCL	14.69
97.5% KM Chebyshev UCL	16.18	99% KM Chebyshev UCL	19.1

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.524	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.766	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0967	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0639	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.075	k star (bias corrected MLE)	2.048
Theta hat (MLE)	8.821	Theta star (bias corrected MLE)	8.938
nu hat (MLE)	850.7	nu star (bias corrected)	839.6
Mean (detects)	18.3		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	10.62
Maximum	146	Median	6.3
SD	15.16	CV	1.428
k hat (MLE)	0.273	k star (bias corrected MLE)	0.273
Theta hat (MLE)	38.85	Theta star (bias corrected MLE)	38.91
nu hat (MLE)	195.1	nu star (bias corrected)	194.8
Adjusted Level of Significance (β)	0.0493		
Approximate Chi Square Value (194.81, α)	163.5	Adjusted Chi Square Value (194.81, β)	163.4
95% Gamma Approximate UCL (use when n>=50)	12.65	95% Gamma Adjusted UCL (use when n<50)	12.66

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	11.26	SD (KM)	14.75
Variance (KM)	217.5	SE of Mean (KM)	0.788
k hat (KM)	0.583	k star (KM)	0.58
nu hat (KM)	416	nu star (KM)	413.9
theta hat (KM)	19.32	theta star (KM)	19.42
80% gamma percentile (KM)	18.55	90% gamma percentile (KM)	29.51
95% gamma percentile (KM)	41.02	99% gamma percentile (KM)	68.94

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (413.85, α)	367.7	Adjusted Chi Square Value (413.85, β)	367.5
95% Gamma Approximate KM-UCL (use when n>=50)	12.67	95% Gamma Adjusted KM-UCL (use when n<50)	12.68

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.982	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.468	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.058	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0623	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	11.8	Mean in Log Scale	1.926
SD in Original Scale	14.4	SD in Log Scale	1.066
95% t UCL (assumes normality of ROS data)	13.06	95% Percentile Bootstrap UCL	13.04
95% BCA Bootstrap UCL	13.15	95% Bootstrap t UCL	13.32
95% H-UCL (Log ROS)	13.7		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.681	KM Geo Mean	5.371
KM SD (logged)	1.282	95% Critical H Value (KM-Log)	2.37

KM Standard Error of Mean (logged)	0.0772	95% H-UCL (KM -Log)	14.35
KM SD (logged)	1.282	95% Critical H Value (KM-Log)	2.37
KM Standard Error of Mean (logged)	0.0772		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	11.67	Mean in Log Scale	1.863
SD in Original Scale	14.59	SD in Log Scale	1.113
95% t UCL (Assumes normality)	12.94	95% H-Stat UCL	13.65

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 14.35

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU12_PFO2HxA

General Statistics

Total Number of Observations	357	Number of Distinct Observations	142
Number of Detects	231	Number of Non-Detects	126
Number of Distinct Detects	131	Number of Distinct Non-Detects	13
Minimum Detect	1.27	Minimum Non-Detect	1.1
Maximum Detect	290	Maximum Non-Detect	50
Variance Detects	1074	Percent Non-Detects	35.29%
Mean Detects	22.63	SD Detects	32.77
Median Detects	12	CV Detects	1.448
Skewness Detects	3.973	Kurtosis Detects	22.93
Mean of Logged Detects	2.478	SD of Logged Detects	1.111

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.619	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.257	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0587	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	15.11	KM Standard Error of Mean	1.499

KM SD	28.23	95% KM (BCA) UCL	17.81
95% KM (t) UCL	17.58	95% KM (Percentile Bootstrap) UCL	17.75
95% KM (z) UCL	17.57	95% KM Bootstrap t UCL	17.93
90% KM Chebyshev UCL	19.6	95% KM Chebyshev UCL	21.64
97.5% KM Chebyshev UCL	24.47	99% KM Chebyshev UCL	30.02

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	5.148	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.788	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.134	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0621	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.911	k star (bias corrected MLE)	0.902
Theta hat (MLE)	24.85	Theta star (bias corrected MLE)	25.09
nu hat (MLE)	420.8	nu star (bias corrected)	416.7
Mean (detects)	22.63		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	14.69
Maximum	290	Median	4.6
SD	28.47	CV	1.938
k hat (MLE)	0.262	k star (bias corrected MLE)	0.262
Theta hat (MLE)	56.03	Theta star (bias corrected MLE)	56.1
nu hat (MLE)	187.2	nu star (bias corrected)	187
Adjusted Level of Significance (β)	0.0493		
Approximate Chi Square Value (186.96, α)	156.3	Adjusted Chi Square Value (186.96, β)	156.2
95% Gamma Approximate UCL (use when n>=50)	17.57	95% Gamma Adjusted UCL (use when n<50)	17.58

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	15.11	SD (KM)	28.23
Variance (KM)	797.2	SE of Mean (KM)	1.499
k hat (KM)	0.286	k star (KM)	0.286
nu hat (KM)	204.5	nu star (KM)	204.1
theta hat (KM)	52.76	theta star (KM)	52.86
80% gamma percentile (KM)	22.88	90% gamma percentile (KM)	44.81
95% gamma percentile (KM)	70.19	99% gamma percentile (KM)	136.6

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (204.07, α)	172	Adjusted Chi Square Value (204.07, β)	171.9
95% Gamma Approximate KM-UCL (use when n>=50)	17.92	95% Gamma Adjusted KM-UCL (use when n<50)	17.94

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.966	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk P Value	0.00172	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0529	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0587	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	15.07	Mean in Log Scale	1.563
SD in Original Scale	28.28	SD in Log Scale	1.607
95% t UCL (assumes normality of ROS data)	17.54	95% Percentile Bootstrap UCL	17.68
95% BCA Bootstrap UCL	18	95% Bootstrap t UCL	18.13
95% H-UCL (Log ROS)	21.81		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.658	KM Geo Mean	5.247
KM SD (logged)	1.435	95% Critical H Value (KM-Log)	2.516
KM Standard Error of Mean (logged)	0.0766	95% H-UCL (KM -Log)	17.8
KM SD (logged)	1.435	95% Critical H Value (KM-Log)	2.516
KM Standard Error of Mean (logged)	0.0766		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	15.17	Mean in Log Scale	1.599
SD in Original Scale	28.3	SD in Log Scale	1.524
95% t UCL (Assumes normality)	17.64	95% H-Stat UCL	19.52

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 17.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU12_PFO3OA

General Statistics

Total Number of Observations	357	Number of Distinct Observations	61
Number of Detects	57	Number of Non-Detects	300
Number of Distinct Detects	44	Number of Distinct Non-Detects	19
Minimum Detect	1.3	Minimum Non-Detect	1.1
Maximum Detect	70	Maximum Non-Detect	50
Variance Detects	95.74	Percent Non-Detects	84.03%
Mean Detects	6.342	SD Detects	9.785
Median Detects	3.7	CV Detects	1.543
Skewness Detects	5.244	Kurtosis Detects	32.74
Mean of Logged Detects	1.411	SD of Logged Detects	0.812

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.472	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.303	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.117	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.977	KM Standard Error of Mean	0.232
KM SD	4.325	95% KM (BCA) UCL	2.449
95% KM (t) UCL	2.359	95% KM (Percentile Bootstrap) UCL	2.393
95% KM (z) UCL	2.358	95% KM Bootstrap t UCL	2.667
90% KM Chebyshev UCL	2.672	95% KM Chebyshev UCL	2.987
97.5% KM Chebyshev UCL	3.424	99% KM Chebyshev UCL	4.282

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.119	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.773	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.184	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.121	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.287	k star (bias corrected MLE)	1.231
Theta hat (MLE)	4.929	Theta star (bias corrected MLE)	5.154
nu hat (MLE)	146.7	nu star (bias corrected)	140.3
Mean (detects)	6.342		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.021
Maximum	70	Median	0.01
SD	4.523	CV	4.43
k hat (MLE)	0.201	k star (bias corrected MLE)	0.201
Theta hat (MLE)	5.088	Theta star (bias corrected MLE)	5.083
nu hat (MLE)	143.3	nu star (bias corrected)	143.4
Adjusted Level of Significance (β)	0.0493		
Approximate Chi Square Value (143.41, α)	116.7	Adjusted Chi Square Value (143.41, β)	116.6
95% Gamma Approximate UCL (use when n>=50)	1.254	95% Gamma Adjusted UCL (use when n<50)	1.255

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.977	SD (KM)	4.325
Variance (KM)	18.71	SE of Mean (KM)	0.232
k hat (KM)	0.209	k star (KM)	0.209
nu hat (KM)	149.1	nu star (KM)	149.2
theta hat (KM)	9.464	theta star (KM)	9.459
80% gamma percentile (KM)	2.663	90% gamma percentile (KM)	5.977
95% gamma percentile (KM)	10.07	99% gamma percentile (KM)	21.25

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (149.19, α)	122	Adjusted Chi Square Value (149.19, β)	121.9
95% Gamma Approximate KM-UCL (use when n>=50)	2.418	95% Gamma Adjusted KM-UCL (use when n<50)	2.42

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.921	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	9.6510E-4	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.12	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.117	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.319	Mean in Log Scale	-1.212
SD in Original Scale	4.473	SD in Log Scale	1.706
95% t UCL (assumes normality of ROS data)	1.71	95% Percentile Bootstrap UCL	1.78
95% BCA Bootstrap UCL	1.961	95% Bootstrap t UCL	1.983
95% H-UCL (Log ROS)	1.64		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.333	KM Geo Mean	1.395
KM SD (logged)	0.579	95% Critical H Value (KM-Log)	1.835
KM Standard Error of Mean (logged)	0.033	95% H-UCL (KM -Log)	1.745
KM SD (logged)	0.579	95% Critical H Value (KM-Log)	1.835
KM Standard Error of Mean (logged)	0.033		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.993	Mean in Log Scale	0.173
SD in Original Scale	4.85	SD in Log Scale	0.723
95% t UCL (Assumes normality)	2.417	95% H-Stat UCL	1.662

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	2.987

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU12_PFO4DA

General Statistics

Total Number of Observations	357	Number of Distinct Observations	33
Number of Detects	16	Number of Non-Detects	341
Number of Distinct Detects	12	Number of Distinct Non-Detects	22
Minimum Detect	1.57	Minimum Non-Detect	1.1
Maximum Detect	6.7	Maximum Non-Detect	50
Variance Detects	2.494	Percent Non-Detects	95.52%
Mean Detects	3.277	SD Detects	1.579
Median Detects	2.5	CV Detects	0.482
Skewness Detects	0.976	Kurtosis Detects	-0.278
Mean of Logged Detects	1.088	SD of Logged Detects	0.449

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.858	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.887	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.251	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.213	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.211	KM Standard Error of Mean	0.0324
KM SD	0.561	95% KM (BCA) UCL	1.265
95% KM (t) UCL	1.264	95% KM (Percentile Bootstrap) UCL	1.26
95% KM (z) UCL	1.264	95% KM Bootstrap t UCL	1.281
90% KM Chebyshev UCL	1.308	95% KM Chebyshev UCL	1.352
97.5% KM Chebyshev UCL	1.413	99% KM Chebyshev UCL	1.533

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.754	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.741	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.233	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.216	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	5.219	k star (bias corrected MLE)	4.282
Theta hat (MLE)	0.628	Theta star (bias corrected MLE)	0.765
nu hat (MLE)	167	nu star (bias corrected)	137
Mean (detects)	3.277		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.19
Maximum	6.7	Median	0.01
SD	0.767	CV	4.047
k hat (MLE)	0.278	k star (bias corrected MLE)	0.277
Theta hat (MLE)	0.683	Theta star (bias corrected MLE)	0.684
nu hat (MLE)	198.3	nu star (bias corrected)	198
Adjusted Level of Significance (β)	0.0493		
Approximate Chi Square Value (197.97, α)	166.4	Adjusted Chi Square Value (197.97, β)	166.3
95% Gamma Approximate UCL (use when n>=50)	0.226	95% Gamma Adjusted UCL (use when n<50)	0.226

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.211	SD (KM)	0.561
Variance (KM)	0.315	SE of Mean (KM)	0.0324
k hat (KM)	4.657	k star (KM)	4.62
nu hat (KM)	3325	nu star (KM)	3299
theta hat (KM)	0.26	theta star (KM)	0.262
80% gamma percentile (KM)	1.642	90% gamma percentile (KM)	1.965
95% gamma percentile (KM)	2.261	99% gamma percentile (KM)	2.888

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (N/A, α)	3166	Adjusted Chi Square Value (N/A, β)	3166
95% Gamma Approximate KM-UCL (use when n>=50)	1.261	95% Gamma Adjusted KM-UCL (use when n<50)	1.262

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.92	**Shapiro Wilk GOF Test**	

5% Shapiro Wilk Critical Value	0.887	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.211	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.213	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.429	Mean in Log Scale	-1.662
SD in Original Scale	0.77	SD in Log Scale	1.267
95% t UCL (assumes normality of ROS data)	0.497	95% Percentile Bootstrap UCL	0.503
95% BCA Bootstrap UCL	0.514	95% Bootstrap t UCL	0.511
95% H-UCL (Log ROS)	0.496		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.149	KM Geo Mean	1.161
KM SD (logged)	0.232	95% Critical H Value (KM-Log)	1.69
KM Standard Error of Mean (logged)	0.0147	95% H-UCL (KM -Log)	1.218
KM SD (logged)	0.232	95% Critical H Value (KM-Log)	1.69
KM Standard Error of Mean (logged)	0.0147		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	1.226	Mean in Log Scale	-0.0252
SD in Original Scale	2.275	SD in Log Scale	0.45
95% t UCL (Assumes normality)	1.424	95% H-Stat UCL	1.126

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM Student's t	1.211	KM H-UCL	1.218

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU12_PFO5DA

General Statistics

Total Number of Observations	322	Number of Distinct Observations	14
Number of Detects	4	Number of Non-Detects	318
Number of Distinct Detects	4	Number of Distinct Non-Detects	11
Minimum Detect	5	Minimum Non-Detect	1.1
Maximum Detect	9.7	Maximum Non-Detect	100

Variance Detects	3.927	Percent Non-Detects	98.76%
Mean Detects	7.7	SD Detects	1.982
Median Detects	8.05	CV Detects	0.257
Skewness Detects	-0.972	Kurtosis Detects	1.5
Mean of Logged Detects	2.013	SD of Logged Detects	0.285

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.951	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.25	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.183	KM Standard Error of Mean	0.0491
KM SD	0.759	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1.264	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1.263	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1.33	95% KM Chebyshev UCL	1.397
97.5% KM Chebyshev UCL	1.489	99% KM Chebyshev UCL	1.671

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.34	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.282	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	17.73	k star (bias corrected MLE)	4.599
Theta hat (MLE)	0.434	Theta star (bias corrected MLE)	1.674
nu hat (MLE)	141.8	nu star (bias corrected)	36.79
Mean (detects)	7.7		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.176
Maximum	9.7	Median	0.01
SD	0.97	CV	5.524
k hat (MLE)	0.27	k star (bias corrected MLE)	0.27
Theta hat (MLE)	0.65	Theta star (bias corrected MLE)	0.651

nu hat (MLE)	174.1	nu star (bias corrected)	173.8
Adjusted Level of Significance (β)	0.0493		
Approximate Chi Square Value (173.78, α)	144.3	Adjusted Chi Square Value (173.78, β)	144.2
95% Gamma Approximate UCL (use when n>=50)	0.211	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.183	SD (KM)	0.759
Variance (KM)	0.576	SE of Mean (KM)	0.0491
k hat (KM)	2.427	k star (KM)	2.407
nu hat (KM)	1563	nu star (KM)	1550
theta hat (KM)	0.487	theta star (KM)	0.491
80% gamma percentile (KM)	1.732	90% gamma percentile (KM)	2.204
95% gamma percentile (KM)	2.649	99% gamma percentile (KM)	3.626

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (N/A, α)	1460	Adjusted Chi Square Value (N/A, β)	1459
95% Gamma Approximate KM-UCL (use when n>=50)	1.256	95% Gamma Adjusted KM-UCL (use when n<50)	1.256

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.905	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.29	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.694	Mean in Log Scale	-1.041
SD in Original Scale	1.087	SD in Log Scale	1.164
95% t UCL (assumes normality of ROS data)	0.794	95% Percentile Bootstrap UCL	0.802
95% BCA Bootstrap UCL	0.816	95% Bootstrap t UCL	0.814
95% H-UCL (Log ROS)	0.805		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.119	KM Geo Mean	1.127
KM SD (logged)	0.215	95% Critical H Value (KM-Log)	1.685
KM Standard Error of Mean (logged)	0.0139	95% H-UCL (KM -Log)	1.177
KM SD (logged)	0.215	95% Critical H Value (KM-Log)	1.685
KM Standard Error of Mean (logged)	0.0139		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	1.511	Mean in Log Scale	0.0131
SD in Original Scale	4.776	SD in Log Scale	0.485
95% t UCL (Assumes normality)	1.95	95% H-Stat UCL	1.196

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1.264

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

DW_EU12_PMPA

General Statistics

Total Number of Observations	315	Number of Distinct Observations	101
Number of Detects	255	Number of Non-Detects	60
Number of Distinct Detects	99	Number of Distinct Non-Detects	3
Minimum Detect	7.9	Minimum Non-Detect	5.3
Maximum Detect	580	Maximum Non-Detect	50
Variance Detects	7121	Percent Non-Detects	19.05%
Mean Detects	108.7	SD Detects	84.39
Median Detects	94	CV Detects	0.776
Skewness Detects	1.929	Kurtosis Detects	6.69
Mean of Logged Detects	4.383	SD of Logged Detects	0.841

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.856	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.119	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0559	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	89.19	KM Standard Error of Mean	4.847
KM SD	85.84	95% KM (BCA) UCL	96.84
95% KM (t) UCL	97.19	95% KM (Percentile Bootstrap) UCL	97.22
95% KM (z) UCL	97.17	95% KM Bootstrap t UCL	98.11
90% KM Chebyshev UCL	103.7	95% KM Chebyshev UCL	110.3
97.5% KM Chebyshev UCL	119.5	99% KM Chebyshev UCL	137.4

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.561	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.769	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0445	**Kolmogorov-Smirnov GOF**

5% K-S Critical Value	0.0582	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.785	k star (bias corrected MLE)	1.766
Theta hat (MLE)	60.94	Theta star (bias corrected MLE)	61.57
nu hat (MLE)	910.1	nu star (bias corrected)	900.8
Mean (detects)	108.7		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	88.47
Maximum	580	Median	72
SD	86.69	CV	0.98
k hat (MLE)	0.464	k star (bias corrected MLE)	0.461
Theta hat (MLE)	190.8	Theta star (bias corrected MLE)	191.7
nu hat (MLE)	292.2	nu star (bias corrected)	290.7
Adjusted Level of Significance (β)	0.0492		
Approximate Chi Square Value (290.74, α)	252.2	Adjusted Chi Square Value (290.74, β)	252.1
95% Gamma Approximate UCL (use when n>=50)	102	95% Gamma Adjusted UCL (use when n<50)	102

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	89.19	SD (KM)	85.84
Variance (KM)	7368	SE of Mean (KM)	4.847
k hat (KM)	1.08	k star (KM)	1.072
nu hat (KM)	680.3	nu star (KM)	675.1
theta hat (KM)	82.6	theta star (KM)	83.23
80% gamma percentile (KM)	142.7	90% gamma percentile (KM)	201.9
95% gamma percentile (KM)	260.8	99% gamma percentile (KM)	396.8

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (675.11, α)	615.8	Adjusted Chi Square Value (675.11, β)	615.6
95% Gamma Approximate KM-UCL (use when n>=50)	97.78	95% Gamma Adjusted KM-UCL (use when n<50)	97.82

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.958	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	4.4952E-6	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0881	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0559	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	90.7	Mean in Log Scale	4.035
SD in Original Scale	84.58	SD in Log Scale	1.062
95% t UCL (assumes normality of ROS data)	98.56	95% Percentile Bootstrap UCL	98.87
95% BCA Bootstrap UCL	99.44	95% Bootstrap t UCL	99.19
95% H-UCL (Log ROS)	113.2		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.887	KM Geo Mean	48.74
KM SD (logged)	1.276	95% Critical H Value (KM-Log)	2.356
KM Standard Error of Mean (logged)	0.0739	95% H-UCL (KM -Log)	130.4
KM SD (logged)	1.276	95% Critical H Value (KM-Log)	2.356
KM Standard Error of Mean (logged)	0.0739		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	89.02	Mean in Log Scale	3.854
SD in Original Scale	86.14	SD in Log Scale	1.334
95% t UCL (Assumes normality)	97.03	95% H-Stat UCL	137.7

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	97.78	95% GROS Approximate Gamma UCL	102

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.112/11/2019 12:48:41 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

SW_EU13_HFPO-DA

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	5	Mean	5
Maximum	5	Median	5

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU13_HFPO-DA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU13_PFO2HxA

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	2.8	Mean	2.8
Maximum	2.8	Median	2.8

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU13_PFO2HxA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU13_PMPA

General Statistics

Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	12	Mean	16.5
Maximum	21	Median	16.5

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable SW_EU13_PMPA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU13_R-EVE

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	23	Mean	23
Maximum	23	Median	23

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU13_R-EVE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU13_Byproduct 4

General Statistics

Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	0
Minimum	4	Mean	9.1
Maximum	20	Median	8.1
SD	6.4	Std. Error of Mean	2.862
Coefficient of Variation	0.703	Skewness	1.728

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.808	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.337	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.343	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	15.2	95% Adjusted-CLT UCL (Chen-1995)	16.17
		95% Modified-t UCL (Johnson-1978)	15.57

Gamma GOF Test

A-D Test Statistic	0.384	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.682	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.272	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.359	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	3.139	k star (bias corrected MLE)	1.389
Theta hat (MLE)	2.899	Theta star (bias corrected MLE)	6.551
nu hat (MLE)	31.39	nu star (bias corrected)	13.89
MLE Mean (bias corrected)	9.1	MLE Sd (bias corrected)	7.721
		Approximate Chi Square Value (0.05)	6.497
Adjusted Level of Significance	0.0086	Adjusted Chi Square Value	4.466

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	19.46	95% Adjusted Gamma UCL (use when n<50)	28.31

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.929	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.762	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.237	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.343	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.386	Mean of logged Data	2.041
Maximum of Logged Data	2.996	SD of logged Data	0.624

Assuming Lognormal Distribution

95% H-UCL	26.77	90% Chebyshev (MVUE) UCL	16.34
95% Chebyshev (MVUE) UCL	19.69	97.5% Chebyshev (MVUE) UCL	24.34
99% Chebyshev (MVUE) UCL	33.46		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	13.81	95% Jackknife UCL	15.2

95% Standard Bootstrap UCL	13.28	95% Bootstrap-t UCL	22.46
95% Hall's Bootstrap UCL	34	95% Percentile Bootstrap UCL	13.78
95% BCA Bootstrap UCL	14.6		
90% Chebyshev(Mean, Sd) UCL	17.69	95% Chebyshev(Mean, Sd) UCL	21.58
97.5% Chebyshev(Mean, Sd) UCL	26.97	99% Chebyshev(Mean, Sd) UCL	37.58

Suggested UCL to Use

95% Student's-t UCL 15.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU13_Byproduct 5

General Statistics

Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	0
Minimum	4.5	Mean	70.5
Maximum	320	Median	8.1
SD	139.5	Std. Error of Mean	62.39
Coefficient of Variation	1.979	Skewness	2.234

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.57	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.463	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.343	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	203.5	95% Adjusted-CLT UCL (Chen-1995)	239.7
		95% Modified-t UCL (Johnson-1978)	213.9

Gamma GOF Test

A-D Test Statistic	0.997	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.719	Data Not Gamma Distributed at 5% Significance Level

K-S Test Statistic	0.447	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.374	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.44	k star (bias corrected MLE)	0.309
Theta hat (MLE)	160.2	Theta star (bias corrected MLE)	227.9
nu hat (MLE)	4.401	nu star (bias corrected)	3.094
MLE Mean (bias corrected)	70.5	MLE Sd (bias corrected)	126.7
		Approximate Chi Square Value (0.05)	0.401
Adjusted Level of Significance	0.0086	Adjusted Chi Square Value	0.15

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	544.3	95% Adjusted Gamma UCL (use when n<50)	1453

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.741	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.762	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.369	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.343	Data Not Lognormal at 5% Significance Level	

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.504	Mean of logged Data	2.783
Maximum of Logged Data	5.768	SD of logged Data	1.705

Assuming Lognormal Distribution

95% H-UCL	65847	90% Chebyshev (MVUE) UCL	131.2
95% Chebyshev (MVUE) UCL	170.8	97.5% Chebyshev (MVUE) UCL	225.7
99% Chebyshev (MVUE) UCL	333.6		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	173.1	95% Jackknife UCL	203.5
95% Standard Bootstrap UCL	159.7	95% Bootstrap-t UCL	4913
95% Hall's Bootstrap UCL	4917	95% Percentile Bootstrap UCL	193.8
95% BCA Bootstrap UCL	196		
90% Chebyshev(Mean, Sd) UCL	257.7	95% Chebyshev(Mean, Sd) UCL	342.4
97.5% Chebyshev(Mean, Sd) UCL	460.1	99% Chebyshev(Mean, Sd) UCL	691.2

Suggested UCL to Use

95% Hall's Bootstrap UCL	4917

Recommended UCL exceeds the maximum observation

In Case Bootstrap t and/or Hall's Bootstrap yields an unreasonably large UCL value, use 97.5% or 99% Chebyshev (Mean, Sd) UCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU13_NVHOS

General Statistics

Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	0
Minimum	2.8	Mean	6.66
Maximum	8.2	Median	7.5
SD	2.188	Std. Error of Mean	0.979
Coefficient of Variation	0.329	Skewness	-2.079

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.709	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.397	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.343	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	8.746	95% Adjusted-CLT UCL (Chen-1995)	7.297
		95% Modified-t UCL (Johnson-1978)	8.595

Gamma GOF Test

A-D Test Statistic	0.983	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.68	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.433	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.358	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	7.745	k star (bias corrected MLE)	3.231
Theta hat (MLE)	0.86	Theta star (bias corrected MLE)	2.061
nu hat (MLE)	77.45	nu star (bias corrected)	32.31
MLE Mean (bias corrected)	6.66	MLE Sd (bias corrected)	3.705
		Approximate Chi Square Value (0.05)	20.32
Adjusted Level of Significance	0.0086	Adjusted Chi Square Value	16.3

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	10.59	95% Adjusted Gamma UCL (use when n<50)	13.2

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.653	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.762	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.425	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.343	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.03	Mean of logged Data	1.83
Maximum of Logged Data	2.104	SD of logged Data	0.45

Assuming Lognormal Distribution

95% H-UCL	12.93	90% Chebyshev (MVUE) UCL	10.8
95% Chebyshev (MVUE) UCL	12.64	97.5% Chebyshev (MVUE) UCL	15.18
99% Chebyshev (MVUE) UCL	20.18		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	8.27	95% Jackknife UCL	8.746
95% Standard Bootstrap UCL	8.121	95% Bootstrap-t UCL	8.11
95% Hall's Bootstrap UCL	7.482	95% Percentile Bootstrap UCL	7.8
95% BCA Bootstrap UCL	7.68		
90% Chebyshev(Mean, Sd) UCL	9.596	95% Chebyshev(Mean, Sd) UCL	10.93
97.5% Chebyshev(Mean, Sd) UCL	12.77	99% Chebyshev(Mean, Sd) UCL	16.4

Suggested UCL to Use

95% Student's-t UCL	8.746	or 95% Modified-t UCL	8.595

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU14_HFPO-DA

	General Statistics		
Total Number of Observations	26	Number of Distinct Observations	22
		Number of Missing Observations	0
Minimum	2.1	Mean	23.37
Maximum	160	Median	12
SD	31.92	Std. Error of Mean	6.259
Coefficient of Variation	1.365	Skewness	3.381
	Normal GOF Test		
Shapiro Wilk Test Statistic	0.617	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.92	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.253	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.17	Data Not Normal at 5% Significance Level	
	Data Not Normal at 5% Significance Level		
	Assuming Normal Distribution		
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	34.06	95% Adjusted-CLT UCL (Chen-1995)	38.1
		95% Modified-t UCL (Johnson-1978)	34.76
	Gamma GOF Test		
A-D Test Statistic	0.587	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.774	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.134	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.176	Detected data appear Gamma Distributed at 5% Significance Level	
	Detected data appear Gamma Distributed at 5% Significance Level		
	Gamma Statistics		
k hat (MLE)	0.985	k star (bias corrected MLE)	0.897
Theta hat (MLE)	23.73	Theta star (bias corrected MLE)	26.06
nu hat (MLE)	51.21	nu star (bias corrected)	46.63
MLE Mean (bias corrected)	23.37	MLE Sd (bias corrected)	24.68
		Approximate Chi Square Value (0.05)	31.96
Adjusted Level of Significance	0.0398	Adjusted Chi Square Value	31.16
	Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50)	34.1	95% Adjusted Gamma UCL (use when n<50)	34.98

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.972	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.92	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0927	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.17	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.742	Mean of logged Data	2.564
Maximum of Logged Data	5.075	SD of logged Data	1.089

Assuming Lognormal Distribution

95% H-UCL	41.66	90% Chebyshev (MVUE) UCL	39.59
95% Chebyshev (MVUE) UCL	47.23	97.5% Chebyshev (MVUE) UCL	57.84
99% Chebyshev (MVUE) UCL	78.67		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	33.67	95% Jackknife UCL	34.06
95% Standard Bootstrap UCL	33.29	95% Bootstrap-t UCL	44.15
95% Hall's Bootstrap UCL	75.7	95% Percentile Bootstrap UCL	35.35
95% BCA Bootstrap UCL	38.23		
90% Chebyshev(Mean, Sd) UCL	42.15	95% Chebyshev(Mean, Sd) UCL	50.66
97.5% Chebyshev(Mean, Sd) UCL	62.46	99% Chebyshev(Mean, Sd) UCL	85.65

Suggested UCL to Use

95% Adjusted Gamma UCL	34.98

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU14_PFMOAA

General Statistics

Total Number of Observations	6	Number of Distinct Observations	6
		Number of Missing Observations	0
Minimum	8.8	Mean	26.45
Maximum	71	Median	16.5
SD	24.08	Std. Error of Mean	9.832

Coefficient of Variation	0.91	Skewness	1.634

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.798	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.256	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	46.26	95% Adjusted-CLT UCL (Chen-1995)	49.63
		95% Modified-t UCL (Johnson-1978)	47.35

Gamma GOF Test

A-D Test Statistic	0.413	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.706	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.251	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.336	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.808	k star (bias corrected MLE)	1.015
Theta hat (MLE)	14.63	Theta star (bias corrected MLE)	26.06
nu hat (MLE)	21.69	nu star (bias corrected)	12.18
MLE Mean (bias corrected)	26.45	MLE Sd (bias corrected)	26.26
		Approximate Chi Square Value (0.05)	5.345
Adjusted Level of Significance	0.0122	Adjusted Chi Square Value	3.833

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	60.27	95% Adjusted Gamma UCL (use when n<50)	84.04

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.91	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.788	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.224	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.325	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.175	Mean of logged Data	2.974
Maximum of Logged Data	4.263	SD of logged Data	0.822

Assuming Lognormal Distribution

95% H-UCL	100.9	90% Chebyshev (MVUE) UCL	51.28
95% Chebyshev (MVUE) UCL	62.89	97.5% Chebyshev (MVUE) UCL	78.99
99% Chebyshev (MVUE) UCL	110.6		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	42.62	95% Jackknife UCL	46.26
95% Standard Bootstrap UCL	41.2	95% Bootstrap-t UCL	101.6
95% Hall's Bootstrap UCL	116.5	95% Percentile Bootstrap UCL	42.67
95% BCA Bootstrap UCL	46.65		
90% Chebyshev(Mean, Sd) UCL	55.94	95% Chebyshev(Mean, Sd) UCL	69.31
97.5% Chebyshev(Mean, Sd) UCL	87.85	99% Chebyshev(Mean, Sd) UCL	124.3

Suggested UCL to Use

95% Student's-t UCL	46.26

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU14_PFO2HxA

General Statistics

Total Number of Observations	11	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	2.2	Mean	6.736
Maximum	25	Median	4.4
SD	6.836	Std. Error of Mean	2.061
Coefficient of Variation	1.015	Skewness	2.289

Normal GOF Test

Shapiro Wilk Test Statistic	0.685	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.333	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.251	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	10.47	95% Adjusted-CLT UCL (Chen-1995)	11.65
		95% Modified-t UCL (Johnson-1978)	10.71

Gamma GOF Test

A-D Test Statistic	0.776	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.741	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.281	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.259	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.727	k star (bias corrected MLE)	1.317
Theta hat (MLE)	3.901	Theta star (bias corrected MLE)	5.117
nu hat (MLE)	37.99	nu star (bias corrected)	28.96
MLE Mean (bias corrected)	6.736	MLE Sd (bias corrected)	5.871
		Approximate Chi Square Value (0.05)	17.68
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	16.26

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	11.04	95% Adjusted Gamma UCL (use when n<50)	12

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.891	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.85	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.228	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.251	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.788	Mean of logged Data	1.591
Maximum of Logged Data	3.219	SD of logged Data	0.767

Assuming Lognormal Distribution

95% H-UCL	12.31	90% Chebyshev (MVUE) UCL	10.99
95% Chebyshev (MVUE) UCL	13.08	97.5% Chebyshev (MVUE) UCL	15.98
99% Chebyshev (MVUE) UCL	21.68		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	10.13	95% Jackknife UCL	10.47
95% Standard Bootstrap UCL	9.872	95% Bootstrap-t UCL	17.85

95% Hall's Bootstrap UCL	24.01	95% Percentile Bootstrap UCL	10.16
95% BCA Bootstrap UCL	12.07		
90% Chebyshev(Mean, Sd) UCL	12.92	95% Chebyshev(Mean, Sd) UCL	15.72
97.5% Chebyshev(Mean, Sd) UCL	19.61	99% Chebyshev(Mean, Sd) UCL	27.24

Suggested UCL to Use

95% H-UCL	12.31

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

SW_EU14_PFO3OA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	2	Mean	3.867
Maximum	6.4	Median	3.2
SD	2.274	Std. Error of Mean	1.313
Coefficient of Variation	0.588	Skewness	1.206

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.936	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.282	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	7.701	95% Adjusted-CLT UCL (Chen-1995)	7.003
		95% Modified-t UCL (Johnson-1978)	7.853

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	4.513	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.857	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	27.08	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.988	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.217	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.693	Mean of logged Data	1.238
Maximum of Logged Data	1.856	SD of logged Data	0.585

Assuming Lognormal Distribution

95% H-UCL	95.32	90% Chebyshev (MVUE) UCL	7.598
95% Chebyshev (MVUE) UCL	9.295	97.5% Chebyshev (MVUE) UCL	11.65
99% Chebyshev (MVUE) UCL	16.28		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	6.027	95% Jackknife UCL	7.701
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	7.806	95% Chebyshev(Mean, Sd) UCL	9.591
97.5% Chebyshev(Mean, Sd) UCL	12.07	99% Chebyshev(Mean, Sd) UCL	16.93

Suggested UCL to Use

95% Student's-t UCL	7.701

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU14_PFO4DA

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	2.3	Mean	2.3
Maximum	2.3	Median	2.3

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU14_PFO4DA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU14_PMPA

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	12	Mean	15.5
Maximum	19	Median	15.5
SD	3.512	Std. Error of Mean	1.756
Coefficient of Variation	0.227	Skewness	0

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.862	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.262	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	19.63	95% Adjusted-CLT UCL (Chen-1995)	18.39
		95% Modified-t UCL (Johnson-1978)	19.63

Gamma GOF Test

A-D Test Statistic	0.453	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.3	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	25.58	k star (bias corrected MLE)	6.562
Theta hat (MLE)	0.606	Theta star (bias corrected MLE)	2.362
nu hat (MLE)	204.6	nu star (bias corrected)	52.49
MLE Mean (bias corrected)	15.5	MLE Sd (bias corrected)	6.051
		Approximate Chi Square Value (0.05)	36.85
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	22.08	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.864	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.269	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.485	Mean of logged Data	2.721
Maximum of Logged Data	2.944	SD of logged Data	0.23

Assuming Lognormal Distribution

95% H-UCL	21.89	90% Chebyshev (MVUE) UCL	20.83
95% Chebyshev (MVUE) UCL	23.24	97.5% Chebyshev (MVUE) UCL	26.59
99% Chebyshev (MVUE) UCL	33.17		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	18.39	95% Jackknife UCL	19.63
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	20.77	95% Chebyshev(Mean, Sd) UCL	23.15
97.5% Chebyshev(Mean, Sd) UCL	26.47	99% Chebyshev(Mean, Sd) UCL	32.97

Suggested UCL to Use

95% Student's-t UCL	19.63

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU14_R-EVE

General Statistics

Total Number of Observations	8	Number of Distinct Observations	7
		Number of Missing Observations	0
Minimum	2.7	Mean	3.225
Maximum	4	Median	3.1
SD	0.523	Std. Error of Mean	0.185
Coefficient of Variation	0.162	Skewness	0.41

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.878	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.233	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	3.575	95% Adjusted-CLT UCL (Chen-1995)	3.558
		95% Modified-t UCL (Johnson-1978)	3.58

Gamma GOF Test

A-D Test Statistic	0.489	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.715	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.24	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.293	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	44.38	k star (bias corrected MLE)	27.82
Theta hat (MLE)	0.0727	Theta star (bias corrected MLE)	0.116
nu hat (MLE)	710	nu star (bias corrected)	445.1
MLE Mean (bias corrected)	3.225	MLE Sd (bias corrected)	0.611
		Approximate Chi Square Value (0.05)	397.2
Adjusted Level of Significance	0.0195	Adjusted Chi Square Value	385.7

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	3.614	95% Adjusted Gamma UCL (use when n<50)	3.722

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.879	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.818	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.223	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.283	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.993	Mean of logged Data	1.16
Maximum of Logged Data	1.386	SD of logged Data	0.16

Assuming Lognormal Distribution

95% H-UCL	3.624	90% Chebyshev (MVUE) UCL	3.773
95% Chebyshev (MVUE) UCL	4.021	97.5% Chebyshev (MVUE) UCL	4.365
99% Chebyshev (MVUE) UCL	5.042		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	3.529	95% Jackknife UCL	3.575
95% Standard Bootstrap UCL	3.504	95% Bootstrap-t UCL	3.646
95% Hall's Bootstrap UCL	3.483	95% Percentile Bootstrap UCL	3.538
95% BCA Bootstrap UCL	3.525		
90% Chebyshev(Mean, Sd) UCL	3.78	95% Chebyshev(Mean, Sd) UCL	4.031
97.5% Chebyshev(Mean, Sd) UCL	4.38	99% Chebyshev(Mean, Sd) UCL	5.065

Suggested UCL to Use

95% Student's-t UCL	3.575

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU14_Byproduct 4

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	3.8	Mean	6.48
Maximum	8.9	Median	6.7
SD	1.58	Std. Error of Mean	0.5
Coefficient of Variation	0.244	Skewness	-0.233

Normal GOF Test

Shapiro Wilk Test Statistic	0.974	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.141	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	7.396	95% Adjusted-CLT UCL (Chen-1995)	7.263
		95% Modified-t UCL (Johnson-1978)	7.39

Gamma GOF Test

A-D Test Statistic	0.256	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.725	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.158	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.266	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	17.22	k star (bias corrected MLE)	12.12
Theta hat (MLE)	0.376	Theta star (bias corrected MLE)	0.535
nu hat (MLE)	344.4	nu star (bias corrected)	242.4
MLE Mean (bias corrected)	6.48	MLE Sd (bias corrected)	1.861
		Approximate Chi Square Value (0.05)	207.4
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	201.7

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	7.575	95% Adjusted Gamma UCL (use when n<50)	7.787

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.951	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.149	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.335	Mean of logged Data	1.839
Maximum of Logged Data	2.186	SD of logged Data	0.262

Assuming Lognormal Distribution

95% H-UCL	7.713	90% Chebyshev (MVUE) UCL	8.11
95% Chebyshev (MVUE) UCL	8.845	97.5% Chebyshev (MVUE) UCL	9.864
99% Chebyshev (MVUE) UCL	11.87		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	7.302	95% Jackknife UCL	7.396
95% Standard Bootstrap UCL	7.258	95% Bootstrap-t UCL	7.362
95% Hall's Bootstrap UCL	7.211	95% Percentile Bootstrap UCL	7.24
95% BCA Bootstrap UCL	7.22		
90% Chebyshev(Mean, Sd) UCL	7.979	95% Chebyshev(Mean, Sd) UCL	8.658
97.5% Chebyshev(Mean, Sd) UCL	9.601	99% Chebyshev(Mean, Sd) UCL	11.45

Suggested UCL to Use

95% Student's-t UCL	7.396

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU14_Byproduct 5

General Statistics

Total Number of Observations	8	Number of Distinct Observations	7
		Number of Missing Observations	0
Minimum	2.5	Mean	9.013
Maximum	23	Median	5.9
SD	7.823	Std. Error of Mean	2.766
Coefficient of Variation	0.868	Skewness	1.183

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.812	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.246	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	14.25	95% Adjusted-CLT UCL (Chen-1995)	14.8
		95% Modified-t UCL (Johnson-1978)	14.45

Gamma GOF Test

A-D Test Statistic	0.452	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.726	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.196	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.298	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.727	k star (bias corrected MLE)	1.163
Theta hat (MLE)	5.217	Theta star (bias corrected MLE)	7.749
nu hat (MLE)	27.64	nu star (bias corrected)	18.61
MLE Mean (bias corrected)	9.013	MLE Sd (bias corrected)	8.357
		Approximate Chi Square Value (0.05)	9.832
Adjusted Level of Significance	0.0195	Adjusted Chi Square Value	8.268

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	17.06	95% Adjusted Gamma UCL (use when n<50)	20.28

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.913	**Shapiro Wilk Lognormal GOF Test**

5% Shapiro Wilk Critical Value	0.818	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.189	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.283	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.916	Mean of logged Data	1.882
Maximum of Logged Data	3.135	SD of logged Data	0.842

Assuming Lognormal Distribution

95% H-UCL	24.66	90% Chebyshev (MVUE) UCL	16.93
95% Chebyshev (MVUE) UCL	20.58	97.5% Chebyshev (MVUE) UCL	25.66
99% Chebyshev (MVUE) UCL	35.62		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	13.56	95% Jackknife UCL	14.25
95% Standard Bootstrap UCL	13.17	95% Bootstrap-t UCL	21.59
95% Hall's Bootstrap UCL	36.66	95% Percentile Bootstrap UCL	13.43
95% BCA Bootstrap UCL	13.86		
90% Chebyshev(Mean, Sd) UCL	17.31	95% Chebyshev(Mean, Sd) UCL	21.07
97.5% Chebyshev(Mean, Sd) UCL	26.29	99% Chebyshev(Mean, Sd) UCL	36.53

Suggested UCL to Use

95% Student's-t UCL	14.25

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU14_NVHOS

General Statistics

Total Number of Observations	11	Number of Distinct Observations	9
		Number of Missing Observations	0
Minimum	4.1	Mean	6.391
Maximum	7.4	Median	6.6
SD	0.871	Std. Error of Mean	0.263

Coefficient of Variation	0.136	Skewness	-1.929

Normal GOF Test

Shapiro Wilk Test Statistic	0.808	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.85	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.236	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.251	Data appear Normal at 5% Significance Level	

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	6.867	95% Adjusted-CLT UCL (Chen-1995)	6.66
		95% Modified-t UCL (Johnson-1978)	6.842

Gamma GOF Test

A-D Test Statistic	1.029	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.728	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.257	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.255	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	49.16	k star (bias corrected MLE)	35.81
Theta hat (MLE)	0.13	Theta star (bias corrected MLE)	0.178
nu hat (MLE)	1082	nu star (bias corrected)	787.9
MLE Mean (bias corrected)	6.391	MLE Sd (bias corrected)	1.068
		Approximate Chi Square Value (0.05)	723.8
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	713.7

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	6.957	95% Adjusted Gamma UCL (use when n<50)	7.055

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.735	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.85	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.277	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.251	Data Not Lognormal at 5% Significance Level	

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.411	Mean of logged Data	1.845
Maximum of Logged Data	2.001	SD of logged Data	0.157

Assuming Lognormal Distribution

95% H-UCL	7.015	90% Chebyshev (MVUE) UCL	7.311

95% Chebyshev (MVUE) UCL	7.724	97.5% Chebyshev (MVUE) UCL	8.299
99% Chebyshev (MVUE) UCL	9.426		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	6.823	95% Jackknife UCL	6.867
95% Standard Bootstrap UCL	6.805	95% Bootstrap-t UCL	6.738
95% Hall's Bootstrap UCL	6.717	95% Percentile Bootstrap UCL	6.755
95% BCA Bootstrap UCL	6.691		
90% Chebyshev(Mean, Sd) UCL	7.179	95% Chebyshev(Mean, Sd) UCL	7.536
97.5% Chebyshev(Mean, Sd) UCL	8.031	99% Chebyshev(Mean, Sd) UCL	9.004

Suggested UCL to Use

95% Student's-t UCL	6.867

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU16_HFPO-DA

General Statistics

Total Number of Observations	17	Number of Distinct Observations	17
		Number of Missing Observations	0
Minimum	8.6	Mean	133.6
Maximum	580	Median	54
SD	175	Std. Error of Mean	42.43
Coefficient of Variation	1.309	Skewness	1.768

Normal GOF Test

Shapiro Wilk Test Statistic	0.708	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.892	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.333	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.207	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	207.7	95% Adjusted-CLT UCL (Chen-1995)	222.9
		95% Modified-t UCL (Johnson-1978)	210.8

Gamma GOF Test

A-D Test Statistic	0.804	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.774	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.233	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.217	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.81	k star (bias corrected MLE)	0.707
Theta hat (MLE)	164.9	Theta star (bias corrected MLE)	189.1
nu hat (MLE)	27.56	nu star (bias corrected)	24.03
MLE Mean (bias corrected)	133.6	MLE Sd (bias corrected)	159
		Approximate Chi Square Value (0.05)	13.87
Adjusted Level of Significance	0.0346	Adjusted Chi Square Value	13.06

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	231.5	95% Adjusted Gamma UCL (use when n<50)	245.8

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.954	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.892	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.149	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.207	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.152	Mean of logged Data	4.164
Maximum of Logged Data	6.363	SD of logged Data	1.245

Assuming Lognormal Distribution

95% H-UCL	361.6	90% Chebyshev (MVUE) UCL	264
95% Chebyshev (MVUE) UCL	324.7	97.5% Chebyshev (MVUE) UCL	408.9
99% Chebyshev (MVUE) UCL	574.4		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	203.4	95% Jackknife UCL	207.7

95% Standard Bootstrap UCL	200.5	95% Bootstrap-t UCL	260.6
95% Hall's Bootstrap UCL	231.3	95% Percentile Bootstrap UCL	205.4
95% BCA Bootstrap UCL	227.7		
90% Chebyshev(Mean, Sd) UCL	260.9	95% Chebyshev(Mean, Sd) UCL	318.6
97.5% Chebyshev(Mean, Sd) UCL	398.6	99% Chebyshev(Mean, Sd) UCL	555.9

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 318.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU16_PEPA

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	50	Mean	50
Maximum	50	Median	50

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU16_PEPA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU16_PFMOAA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	56	Mean	122
Maximum	180	Median	130
SD	62.39	Std. Error of Mean	36.02
Coefficient of Variation	0.511	Skewness	-0.568

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).

Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.988	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.218	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	227.2	95% Adjusted-CLT UCL (Chen-1995)	168.6
		95% Modified-t UCL (Johnson-1978)	225.2

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	4.758	k star (bias corrected MLE)	N/A
Theta hat (MLE)	25.64	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	28.55	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.939	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.279	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.025	Mean of logged Data	4.695
Maximum of Logged Data	5.193	SD of logged Data	0.603

Assuming Lognormal Distribution

95% H-UCL	3705	90% Chebyshev (MVUE) UCL	246
95% Chebyshev (MVUE) UCL	301.7	97.5% Chebyshev (MVUE) UCL	379.1
99% Chebyshev (MVUE) UCL	530.9		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	181.2	95% Jackknife UCL	227.2
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	230.1	95% Chebyshev(Mean, Sd) UCL	279
97.5% Chebyshev(Mean, Sd) UCL	346.9	99% Chebyshev(Mean, Sd) UCL	480.4

Suggested UCL to Use

95% Student's-t UCL	227.2

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU16_PFO2HxA

General Statistics

Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	40	Mean	52
Maximum	64	Median	52

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU16_PFO2HxA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU16_PFO3OA

General Statistics

Total Number of Observations	2	Number of Distinct Observations	2

		Number of Missing Observations	0
Minimum	9.9	Mean	12.95
Maximum	16	Median	12.95

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU16_PFO3OA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU16_PFO4DA

General Statistics

Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	3.5	Mean	4.95
Maximum	6.4	Median	4.95

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU16_PFO4DA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU16_PMPA

General Statistics

Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	31	Mean	43
Maximum	55	Median	43

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU16_PMPA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU16_R-EVE

General Statistics

Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	4	Mean	5.15
Maximum	6.3	Median	5.15

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU16_R-EVE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU16_PFO5DA

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	3.4	Mean	3.4
Maximum	3.4	Median	3.4

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU16_PFO5DA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU16_Byproduct 4

General Statistics

Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	9.6	Mean	14.3
Maximum	19	Median	14.3

Warning: This data set only has 2 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU16_Byproduct 4 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU16_Byproduct 5

General Statistics

Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	31	Mean	50
Maximum	69	Median	50

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU16_Byproduct 5 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU16_NVHOS

General Statistics

Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	6.1	Mean	7.4
Maximum	8.7	Median	7.4

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU16_NVHOS was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU16_PFESA-BP1

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	2.4	Mean	2.4
Maximum	2.4	Median	2.4

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU16_PFESA-BP1 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU16_PFESA-BP2

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	4.9	Mean	4.9
Maximum	4.9	Median	4.9

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU16_PFESA-BP2 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU17_HFPO-DA

General Statistics

Total Number of Observations	79	Number of Distinct Observations	74
		Number of Missing Observations	0
Minimum	3.14	Mean	16.38
Maximum	76	Median	12
SD	11.92	Std. Error of Mean	1.341
Coefficient of Variation	0.728	Skewness	2.366

Normal GOF Test

Shapiro Wilk Test Statistic	0.794	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	1.110E-15	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.185	**Lilliefors GOF Test**

5% Lilliefors Critical Value	0.0998	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	18.61	95% Adjusted-CLT UCL (Chen-1995)	18.96
		95% Modified-t UCL (Johnson-1978)	18.67

Gamma GOF Test

A-D Test Statistic	1.142	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.76	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.127	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.101	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.663	k star (bias corrected MLE)	2.571
Theta hat (MLE)	6.149	Theta star (bias corrected MLE)	6.37
nu hat (MLE)	420.8	nu star (bias corrected)	406.1
MLE Mean (bias corrected)	16.38	MLE Sd (bias corrected)	10.21
		Approximate Chi Square Value (0.05)	360.4
Adjusted Level of Significance	0.047	Adjusted Chi Square Value	359.6

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	18.45	95% Adjusted Gamma UCL (use when n<50)	18.49

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.984	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk P Value	0.77	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0902	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.0998	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.144	Mean of logged Data	2.596
Maximum of Logged Data	4.331	SD of logged Data	0.621

Assuming Lognormal Distribution

95% H-UCL	18.65	90% Chebyshev (MVUE) UCL	19.9
95% Chebyshev (MVUE) UCL	21.57	97.5% Chebyshev (MVUE) UCL	23.88
99% Chebyshev (MVUE) UCL	28.43		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	18.58	95% Jackknife UCL	18.61
95% Standard Bootstrap UCL	18.55	95% Bootstrap-t UCL	19.31
95% Hall's Bootstrap UCL	19.46	95% Percentile Bootstrap UCL	18.58
95% BCA Bootstrap UCL	19.3		
90% Chebyshev(Mean, Sd) UCL	20.4	95% Chebyshev(Mean, Sd) UCL	22.22
97.5% Chebyshev(Mean, Sd) UCL	24.75	99% Chebyshev(Mean, Sd) UCL	29.72

Suggested UCL to Use

95% H-UCL	18.65

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

SW_EU17_PEPA

General Statistics

Total Number of Observations	45	Number of Distinct Observations	44
		Number of Missing Observations	0
Minimum	1.72	Mean	10.19
Maximum	25.7	Median	7.9
SD	7.302	Std. Error of Mean	1.089
Coefficient of Variation	0.717	Skewness	0.796

Normal GOF Test

Shapiro Wilk Test Statistic	0.88	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.945	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.149	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.131	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	12.02	95% Adjusted-CLT UCL (Chen-1995)	12.12
		95% Modified-t UCL (Johnson-1978)	12.04

Gamma GOF Test

A-D Test Statistic	0.511	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.762	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0929	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.134	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.925	k star (bias corrected MLE)	1.811
Theta hat (MLE)	5.293	Theta star (bias corrected MLE)	5.625
nu hat (MLE)	173.2	nu star (bias corrected)	163
MLE Mean (bias corrected)	10.19	MLE Sd (bias corrected)	7.57
		Approximate Chi Square Value (0.05)	134.5
Adjusted Level of Significance	0.0447	Adjusted Chi Square Value	133.6

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	12.35	95% Adjusted Gamma UCL (use when n<50)	12.43

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.943	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.945	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0962	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.131	Data appear Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.542	Mean of logged Data	2.039
Maximum of Logged Data	3.246	SD of logged Data	0.797

Assuming Lognormal Distribution

95% H-UCL	13.69	90% Chebyshev (MVUE) UCL	14.63
95% Chebyshev (MVUE) UCL	16.52	97.5% Chebyshev (MVUE) UCL	19.14
99% Chebyshev (MVUE) UCL	24.28		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	11.98	95% Jackknife UCL	12.02
95% Standard Bootstrap UCL	11.92	95% Bootstrap-t UCL	12.05
95% Hall's Bootstrap UCL	12.09	95% Percentile Bootstrap UCL	12.11
95% BCA Bootstrap UCL	12.11		
90% Chebyshev(Mean, Sd) UCL	13.45	95% Chebyshev(Mean, Sd) UCL	14.93
97.5% Chebyshev(Mean, Sd) UCL	16.99	99% Chebyshev(Mean, Sd) UCL	21.02

Suggested UCL to Use

95% Adjusted Gamma UCL	12.43		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU17_PFMOAA

General Statistics

Total Number of Observations	79	Number of Distinct Observations	76
		Number of Missing Observations	0
Minimum	3.82	Mean	19.64
Maximum	230	Median	11.8
SD	27.97	Std. Error of Mean	3.147
Coefficient of Variation	1.425	Skewness	5.744

Normal GOF Test

Shapiro Wilk Test Statistic	0.493	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.286	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0998	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	24.88	95% Adjusted-CLT UCL (Chen-1995)	26.99
		95% Modified-t UCL (Johnson-1978)	25.21

Gamma GOF Test

A-D Test Statistic	3.45	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.772	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.166	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.102	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.407	k star (bias corrected MLE)	1.362
Theta hat (MLE)	13.95	Theta star (bias corrected MLE)	14.42
nu hat (MLE)	222.3	nu star (bias corrected)	215.2
MLE Mean (bias corrected)	19.64	MLE Sd (bias corrected)	16.82
		Approximate Chi Square Value (0.05)	182.3
Adjusted Level of Significance	0.047	Adjusted Chi Square Value	181.7

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	23.19	95% Adjusted Gamma UCL (use when n<50)	23.26

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.933	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	4.8929E-4	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.122	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.0998	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.34	Mean of logged Data	2.582
Maximum of Logged Data	5.438	SD of logged Data	0.792

Assuming Lognormal Distribution

95% H-UCL	21.79	90% Chebyshev (MVUE) UCL	23.43
95% Chebyshev (MVUE) UCL	25.89	97.5% Chebyshev (MVUE) UCL	29.3
99% Chebyshev (MVUE) UCL	36		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	24.81	95% Jackknife UCL	24.88
95% Standard Bootstrap UCL	24.72	95% Bootstrap-t UCL	29.7
95% Hall's Bootstrap UCL	46.75	95% Percentile Bootstrap UCL	25.12
95% BCA Bootstrap UCL	27.79		
90% Chebyshev(Mean, Sd) UCL	29.08	95% Chebyshev(Mean, Sd) UCL	33.36
97.5% Chebyshev(Mean, Sd) UCL	39.29	99% Chebyshev(Mean, Sd) UCL	50.95

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	33.36

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU17_PFO2HxA

General Statistics

Total Number of Observations	79	Number of Distinct Observations	73
		Number of Missing Observations	0
Minimum	2.78	Mean	14.81

Maximum	66	Median	9.26
SD	13.63	Std. Error of Mean	1.534
Coefficient of Variation	0.92	Skewness	1.838

Normal GOF Test

Shapiro Wilk Test Statistic	0.761	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.241	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0998	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	17.36	95% Adjusted-CLT UCL (Chen-1995)	17.67
		95% Modified-t UCL (Johnson-1978)	17.41

Gamma GOF Test

A-D Test Statistic	2.543	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.768	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.145	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.102	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.685	k star (bias corrected MLE)	1.629
Theta hat (MLE)	8.79	Theta star (bias corrected MLE)	9.09
nu hat (MLE)	266.2	nu star (bias corrected)	257.4
MLE Mean (bias corrected)	14.81	MLE Sd (bias corrected)	11.6
		Approximate Chi Square Value (0.05)	221.3
Adjusted Level of Significance	0.047	Adjusted Chi Square Value	220.6

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	17.23	95% Adjusted Gamma UCL (use when n<50)	17.28

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.94	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0.00182	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.096	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.0998	Data appear Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.022	Mean of logged Data	2.37
Maximum of Logged Data	4.19	SD of logged Data	0.78

Assuming Lognormal Distribution

95% H-UCL	17.39	90% Chebyshev (MVUE) UCL	18.69
95% Chebyshev (MVUE) UCL	20.63	97.5% Chebyshev (MVUE) UCL	23.31
99% Chebyshev (MVUE) UCL	28.58		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	17.33	95% Jackknife UCL	17.36
95% Standard Bootstrap UCL	17.31	95% Bootstrap-t UCL	17.86
95% Hall's Bootstrap UCL	17.55	95% Percentile Bootstrap UCL	17.44
95% BCA Bootstrap UCL	17.6		
90% Chebyshev(Mean, Sd) UCL	19.41	95% Chebyshev(Mean, Sd) UCL	21.49
97.5% Chebyshev(Mean, Sd) UCL	24.39	99% Chebyshev(Mean, Sd) UCL	30.07

Suggested UCL to Use

95% H-UCL	17.39

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

SW_EU17_PFO3OA

General Statistics

Total Number of Observations	70	Number of Distinct Observations	68
		Number of Missing Observations	0
Minimum	1.34	Mean	7.188
Maximum	43.4	Median	4.685
SD	6.82	Std. Error of Mean	0.815
Coefficient of Variation	0.949	Skewness	3.008

Normal GOF Test

Shapiro Wilk Test Statistic	0.693	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.221	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.106	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	8.547	95% Adjusted-CLT UCL (Chen-1995)	8.842
		95% Modified-t UCL (Johnson-1978)	8.596

Gamma GOF Test

A-D Test Statistic	2.083	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.764	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.151	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.108	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.933	k star (bias corrected MLE)	1.86
Theta hat (MLE)	3.719	Theta star (bias corrected MLE)	3.865
nu hat (MLE)	270.6	nu star (bias corrected)	260.4
MLE Mean (bias corrected)	7.188	MLE Sd (bias corrected)	5.271
		Approximate Chi Square Value (0.05)	224
Adjusted Level of Significance	0.0466	Adjusted Chi Square Value	223.3

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	8.355	95% Adjusted Gamma UCL (use when n<50)	8.381

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.965	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk P Value	0.136	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.103	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.106	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.293	Mean of logged Data	1.692
Maximum of Logged Data	3.77	SD of logged Data	0.712

Assuming Lognormal Distribution

95% H-UCL	8.329	90% Chebyshev (MVUE) UCL	8.93
95% Chebyshev (MVUE) UCL	9.82	97.5% Chebyshev (MVUE) UCL	11.05
99% Chebyshev (MVUE) UCL	13.48		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	8.529	95% Jackknife UCL	8.547
95% Standard Bootstrap UCL	8.554	95% Bootstrap-t UCL	9.137
95% Hall's Bootstrap UCL	9.203	95% Percentile Bootstrap UCL	8.646
95% BCA Bootstrap UCL	8.892		
90% Chebyshev(Mean, Sd) UCL	9.633	95% Chebyshev(Mean, Sd) UCL	10.74
97.5% Chebyshev(Mean, Sd) UCL	12.28	99% Chebyshev(Mean, Sd) UCL	15.3

Suggested UCL to Use

95% H-UCL 8.329

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

SW_EU17_PFO4DA

General Statistics

Total Number of Observations	54	Number of Distinct Observations	51
		Number of Missing Observations	0
Minimum	1.2	Mean	3.044
Maximum	14.6	Median	2.18
SD	2.44	Std. Error of Mean	0.332
Coefficient of Variation	0.802	Skewness	2.731

Normal GOF Test

Shapiro Wilk Test Statistic	0.689	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	3.264E-14	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.23	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.12	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	3.6	95% Adjusted-CLT UCL (Chen-1995)	3.722
		95% Modified-t UCL (Johnson-1978)	3.62

Gamma GOF Test

A-D Test Statistic	2.662	**Anderson-Darling Gamma GOF Test**

5% A-D Critical Value	0.759	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.173	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.122	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.709	k star (bias corrected MLE)	2.57
Theta hat (MLE)	1.124	Theta star (bias corrected MLE)	1.184
nu hat (MLE)	292.5	nu star (bias corrected)	277.6
MLE Mean (bias corrected)	3.044	MLE Sd (bias corrected)	1.898
		Approximate Chi Square Value (0.05)	240
Adjusted Level of Significance	0.0456	Adjusted Chi Square Value	239.1

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	3.52	95% Adjusted Gamma UCL (use when n<50)	3.534

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.904	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	2.1133E-4	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.134	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.12	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.182	Mean of logged Data	0.917
Maximum of Logged Data	2.681	SD of logged Data	0.575

Assuming Lognormal Distribution

95% H-UCL	3.44	90% Chebyshev (MVUE) UCL	3.68
95% Chebyshev (MVUE) UCL	4.014	97.5% Chebyshev (MVUE) UCL	4.477
99% Chebyshev (MVUE) UCL	5.388		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	3.59	95% Jackknife UCL	3.6
95% Standard Bootstrap UCL	3.58	95% Bootstrap-t UCL	3.873
95% Hall's Bootstrap UCL	3.86	95% Percentile Bootstrap UCL	3.591
95% BCA Bootstrap UCL	3.816		
90% Chebyshev(Mean, Sd) UCL	4.04	95% Chebyshev(Mean, Sd) UCL	4.491
97.5% Chebyshev(Mean, Sd) UCL	5.118	99% Chebyshev(Mean, Sd) UCL	6.348

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	4.491

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU17_PMPA

General Statistics

Total Number of Observations	65	Number of Distinct Observations	62
		Number of Missing Observations	0
Minimum	1.32	Mean	8.866
Maximum	64.9	Median	5.96
SD	9.32	Std. Error of Mean	1.156
Coefficient of Variation	1.051	Skewness	4.041

Normal GOF Test

Shapiro Wilk Test Statistic	0.608	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.242	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.11	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	10.8	95% Adjusted-CLT UCL (Chen-1995)	11.39
		95% Modified-t UCL (Johnson-1978)	10.89

Gamma GOF Test

A-D Test Statistic	2.082	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.764	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.135	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.112	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.913	k star (bias corrected MLE)	1.835
Theta hat (MLE)	4.635	Theta star (bias corrected MLE)	4.832
nu hat (MLE)	248.7	nu star (bias corrected)	238.5
MLE Mean (bias corrected)	8.866	MLE Sd (bias corrected)	6.545
		Approximate Chi Square Value (0.05)	203.8
Adjusted Level of Significance	0.0463	Adjusted Chi Square Value	203.1

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	10.38	95% Adjusted Gamma UCL (use when n<50)	10.42

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.97	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk P Value	0.271	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.1	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.11	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.278	Mean of logged Data	1.899
Maximum of Logged Data	4.173	SD of logged Data	0.701

Assuming Lognormal Distribution

95% H-UCL	10.19	90% Chebyshev (MVUE) UCL	10.94
95% Chebyshev (MVUE) UCL	12.04	97.5% Chebyshev (MVUE) UCL	13.58
99% Chebyshev (MVUE) UCL	16.59		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	10.77	95% Jackknife UCL	10.8
95% Standard Bootstrap UCL	10.75	95% Bootstrap-t UCL	12.12
95% Hall's Bootstrap UCL	18.21	95% Percentile Bootstrap UCL	10.84
95% BCA Bootstrap UCL	11.68		
90% Chebyshev(Mean, Sd) UCL	12.33	95% Chebyshev(Mean, Sd) UCL	13.91
97.5% Chebyshev(Mean, Sd) UCL	16.09	99% Chebyshev(Mean, Sd) UCL	20.37

Suggested UCL to Use

95% H-UCL	10.19

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

SW_EU17_R-EVE

General Statistics

Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	8.3	Mean	9.15
Maximum	10	Median	9.15

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU17_R-EVE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU17_PFO5DA

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	3.2	Mean	3.2
Maximum	3.2	Median	3.2

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU17_PFO5DA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU17_Byproduct 4

General Statistics

Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	19	Mean	19.5
Maximum	20	Median	19.5

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU17_Byproduct 4 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU17_Byproduct 5

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	7.6	Mean	32.63
Maximum	82	Median	8.3
SD	42.75	Std. Error of Mean	24.68
Coefficient of Variation	1.31	Skewness	1.732

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.757	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.382	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	104.7	95% Adjusted-CLT UCL (Chen-1995)	99.6
		95% Modified-t UCL (Johnson-1978)	108.8

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	0.918	k star (bias corrected MLE)	N/A
Theta hat (MLE)	35.53	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	5.51	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.778	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.374	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.028	Mean of logged Data	2.85
Maximum of Logged Data	4.407	SD of logged Data	1.349

Assuming Lognormal Distribution

95% H-UCL	8.510E+8	90% Chebyshev (MVUE) UCL	86.33
95% Chebyshev (MVUE) UCL	112.1	97.5% Chebyshev (MVUE) UCL	147.8
99% Chebyshev (MVUE) UCL	218		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	73.24	95% Jackknife UCL	104.7
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	106.7	95% Chebyshev(Mean, Sd) UCL	140.2
97.5% Chebyshev(Mean, Sd) UCL	186.8	99% Chebyshev(Mean, Sd) UCL	278.2

Suggested UCL to Use

95% Student's-t UCL	104.7

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU17_NVHOS

General Statistics

Total Number of Observations	2	Number of Distinct Observations	2

		Number of Missing Observations	0
Minimum	6.2	Mean	7.6
Maximum	9	Median	7.6

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU17_NVHOS was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU17_PFESA-BP1

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	1.33	Mean	3.093
Maximum	4.17	Median	3.78
SD	1.539	Std. Error of Mean	0.889
Coefficient of Variation	0.498	Skewness	-1.608

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.851	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.339	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	5.689	95% Adjusted-CLT UCL (Chen-1995)	3.674
		95% Modified-t UCL (Johnson-1978)	5.551

Gamma GOF Test
Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	4.509	k star (bias corrected MLE)	N/A

Theta hat (MLE)	0.686	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	27.05	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.814	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.357	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.285	Mean of logged Data	1.014
Maximum of Logged Data	1.428	SD of logged Data	0.633

Assuming Lognormal Distribution

95% H-UCL	135.2	90% Chebyshev (MVUE) UCL	6.42
95% Chebyshev (MVUE) UCL	7.906	97.5% Chebyshev (MVUE) UCL	9.969
99% Chebyshev (MVUE) UCL	14.02		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	4.555	95% Jackknife UCL	5.689
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	5.76	95% Chebyshev(Mean, Sd) UCL	6.968
97.5% Chebyshev(Mean, Sd) UCL	8.644	99% Chebyshev(Mean, Sd) UCL	11.94

Suggested UCL to Use

95% Student's-t UCL	5.689

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU17_PFESA-BP2

General Statistics

Total Number of Observations	23	Number of Distinct Observations	22
		Number of Missing Observations	0
Minimum	1.34	Mean	2.671
Maximum	6.14	Median	2.35
SD	1.343	Std. Error of Mean	0.28
Coefficient of Variation	0.503	Skewness	1.282

Normal GOF Test

Shapiro Wilk Test Statistic	0.852	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.914	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.161	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.18	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	3.152	95% Adjusted-CLT UCL (Chen-1995)	3.212
		95% Modified-t UCL (Johnson-1978)	3.165

Gamma GOF Test

A-D Test Statistic	0.638	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.747	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.129	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.182	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	4.914	k star (bias corrected MLE)	4.302
Theta hat (MLE)	0.544	Theta star (bias corrected MLE)	0.621
nu hat (MLE)	226.1	nu star (bias corrected)	197.9
MLE Mean (bias corrected)	2.671	MLE Sd (bias corrected)	1.288
		Approximate Chi Square Value (0.05)	166.4
Adjusted Level of Significance	0.0389	Adjusted Chi Square Value	164.3

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	3.178	95% Adjusted Gamma UCL (use when n<50)	3.218

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.931	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.914	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.124	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.18	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.293	Mean of logged Data	0.877
Maximum of Logged Data	1.815	SD of logged Data	0.457

Assuming Lognormal Distribution

95% H-UCL	3.223	90% Chebyshev (MVUE) UCL	3.44
95% Chebyshev (MVUE) UCL	3.795	97.5% Chebyshev (MVUE) UCL	4.288
99% Chebyshev (MVUE) UCL	5.256		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	3.132	95% Jackknife UCL	3.152
95% Standard Bootstrap UCL	3.113	95% Bootstrap-t UCL	3.257
95% Hall's Bootstrap UCL	3.256	95% Percentile Bootstrap UCL	3.135
95% BCA Bootstrap UCL	3.192		
90% Chebyshev(Mean, Sd) UCL	3.511	95% Chebyshev(Mean, Sd) UCL	3.892
97.5% Chebyshev(Mean, Sd) UCL	4.42	99% Chebyshev(Mean, Sd) UCL	5.457

Suggested UCL to Use

95% Student's-t UCL	3.152

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU18_HFPO-DA

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	730	Mean	800

Maximum	940	Median	765
SD	94.87	Std. Error of Mean	47.43
Coefficient of Variation	0.119	Skewness	1.804

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.789	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.374	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	911.6	95% Adjusted-CLT UCL (Chen-1995)	923.7
		95% Modified-t UCL (Johnson-1978)	918.8

Gamma GOF Test

A-D Test Statistic	0.584	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.386	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	101.1	k star (bias corrected MLE)	25.44
Theta hat (MLE)	7.912	Theta star (bias corrected MLE)	31.44
nu hat (MLE)	808.9	nu star (bias corrected)	203.5
MLE Mean (bias corrected)	800	MLE Sd (bias corrected)	158.6
		Approximate Chi Square Value (0.05)	171.5
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	949.3	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.806	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.366	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	6.593	Mean of logged Data	6.68
Maximum of Logged Data	6.846	SD of logged Data	0.113

Assuming Lognormal Distribution

95% H-UCL	927.9	90% Chebyshev (MVUE) UCL	935.5
95% Chebyshev (MVUE) UCL	996.9	97.5% Chebyshev (MVUE) UCL	1082
99% Chebyshev (MVUE) UCL	1250		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	878	95% Jackknife UCL	911.6
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	942.3	95% Chebyshev(Mean, Sd) UCL	1007
97.5% Chebyshev(Mean, Sd) UCL	1096	99% Chebyshev(Mean, Sd) UCL	1272

Suggested UCL to Use

95% Student's-t UCL	911.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU18_PEPA

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	270	Mean	285
Maximum	300	Median	285
SD	12.91	Std. Error of Mean	6.455
Coefficient of Variation	0.0453	Skewness	0

**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1**

Normal GOF Test

Shapiro Wilk Test Statistic	0.994	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.151	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	300.2	95% Adjusted-CLT UCL (Chen-1995)	295.6
		95% Modified-t UCL (Johnson-1978)	300.2

Gamma GOF Test

A-D Test Statistic	0.201	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.176	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	649.1	k star (bias corrected MLE)	162.5
Theta hat (MLE)	0.439	Theta star (bias corrected MLE)	1.754
nu hat (MLE)	5193	nu star (bias corrected)	1300
MLE Mean (bias corrected)	285	MLE Sd (bias corrected)	22.36
		Approximate Chi Square Value (0.05)	1217
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	304.4	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.994	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.156	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.598	Mean of logged Data	5.652
Maximum of Logged Data	5.704	SD of logged Data	0.0453

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	304.4
95% Chebyshev (MVUE) UCL	313.2	97.5% Chebyshev (MVUE) UCL	325.3
99% Chebyshev (MVUE) UCL	349.3		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	295.6	95% Jackknife UCL	300.2
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	304.4	95% Chebyshev(Mean, Sd) UCL	313.1
97.5% Chebyshev(Mean, Sd) UCL	325.3	99% Chebyshev(Mean, Sd) UCL	349.2

Suggested UCL to Use

95% Student's-t UCL	300.2

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU18_PFMOAA

General Statistics

Total Number of Observations	4	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	240	Mean	250
Maximum	260	Median	250
SD	8.165	Std. Error of Mean	4.082
Coefficient of Variation	0.0327	Skewness	0

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.944	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.25	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	259.6	95% Adjusted-CLT UCL (Chen-1995)	256.7
		95% Modified-t UCL (Johnson-1978)	259.6

Gamma GOF Test

A-D Test Statistic	0.331	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.251	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1249	k star (bias corrected MLE)	312.5
Theta hat (MLE)	0.2	Theta star (bias corrected MLE)	0.8
nu hat (MLE)	9993	nu star (bias corrected)	2500
MLE Mean (bias corrected)	250	MLE Sd (bias corrected)	14.14
		Approximate Chi Square Value (0.05)	2385
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	262.1	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.944	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.255	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.481	Mean of logged Data	5.521
Maximum of Logged Data	5.561	SD of logged Data	0.0327

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	262.3
95% Chebyshev (MVUE) UCL	267.8	97.5% Chebyshev (MVUE) UCL	275.5
99% Chebyshev (MVUE) UCL	290.6		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	256.7	95% Jackknife UCL	259.6
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A

95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	262.2	95% Chebyshev(Mean, Sd) UCL	267.8
97.5% Chebyshev(Mean, Sd) UCL	275.5	99% Chebyshev(Mean, Sd) UCL	290.6

Suggested UCL to Use

95% Student's-t UCL	259.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU18_PFO2HxA

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	690	Mean	710
Maximum	730	Median	710
SD	18.26	Std. Error of Mean	9.129
Coefficient of Variation	0.0257	Skewness	0

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.951	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.208	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	731.5	95% Adjusted-CLT UCL (Chen-1995)	725
		95% Modified-t UCL (Johnson-1978)	731.5

Gamma GOF Test

A-D Test Statistic	0.285	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.238	**Kolmogorov-Smirnov Gamma GOF Test**

5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2016	k star (bias corrected MLE)	504.1
Theta hat (MLE)	0.352	Theta star (bias corrected MLE)	1.408
nu hat (MLE)	16127	nu star (bias corrected)	4033
MLE Mean (bias corrected)	710	MLE Sd (bias corrected)	31.62
		Approximate Chi Square Value (0.05)	3887
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	736.8	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.951	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.21	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	6.537	Mean of logged Data	6.565
Maximum of Logged Data	6.593	SD of logged Data	0.0257

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	737.4
95% Chebyshev (MVUE) UCL	749.8	97.5% Chebyshev (MVUE) UCL	767
99% Chebyshev (MVUE) UCL	800.8		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	725	95% Jackknife UCL	731.5
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	737.4	95% Chebyshev(Mean, Sd) UCL	749.8
97.5% Chebyshev(Mean, Sd) UCL	767	99% Chebyshev(Mean, Sd) UCL	800.8

Suggested UCL to Use

95% Student's-t UCL	731.5

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU18_PFO3OA

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	90	Mean	93.25
Maximum	97	Median	93
SD	3.304	Std. Error of Mean	1.652
Coefficient of Variation	0.0354	Skewness	0.229

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.917	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.252	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	97.14	95% Adjusted-CLT UCL (Chen-1995)	96.17
		95% Modified-t UCL (Johnson-1978)	97.17

Gamma GOF Test

A-D Test Statistic	0.346	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.283	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1064	k star (bias corrected MLE)	266.3
Theta hat (MLE)	0.0876	Theta star (bias corrected MLE)	0.35
nu hat (MLE)	8516	nu star (bias corrected)	2130

MLE Mean (bias corrected)	93.25	MLE Sd (bias corrected)	5.715
		Approximate Chi Square Value (0.05)	2024
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	98.14	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.917	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.251	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.5	Mean of logged Data	4.535
Maximum of Logged Data	4.575	SD of logged Data	0.0354

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	98.2
95% Chebyshev (MVUE) UCL	100.4	97.5% Chebyshev (MVUE) UCL	103.5
99% Chebyshev (MVUE) UCL	109.7		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	95.97	95% Jackknife UCL	97.14
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	98.21	95% Chebyshev(Mean, Sd) UCL	100.5
97.5% Chebyshev(Mean, Sd) UCL	103.6	99% Chebyshev(Mean, Sd) UCL	109.7

Suggested UCL to Use

95% Student's-t UCL	97.14

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU18_PFO4DA

General Statistics

Total Number of Observations	4	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	37	Mean	38.75
Maximum	40	Median	39
SD	1.5	Std. Error of Mean	0.75
Coefficient of Variation	0.0387	Skewness	-0.37

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.851	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.298	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	40.52	95% Adjusted-CLT UCL (Chen-1995)	39.84
		95% Modified-t UCL (Johnson-1978)	40.49

Gamma GOF Test

A-D Test Statistic	0.464	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.332	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	885.1	k star (bias corrected MLE)	221.4
Theta hat (MLE)	0.0438	Theta star (bias corrected MLE)	0.175
nu hat (MLE)	7081	nu star (bias corrected)	1772
MLE Mean (bias corrected)	38.75	MLE Sd (bias corrected)	2.604
		Approximate Chi Square Value (0.05)	1675
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	40.99	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.853	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.297	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.611	Mean of logged Data	3.657
Maximum of Logged Data	3.689	SD of logged Data	0.0389

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	41.01
95% Chebyshev (MVUE) UCL	42.03	97.5% Chebyshev (MVUE) UCL	43.45
99% Chebyshev (MVUE) UCL	46.24		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	39.98	95% Jackknife UCL	40.52
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	41	95% Chebyshev(Mean, Sd) UCL	42.02
97.5% Chebyshev(Mean, Sd) UCL	43.43	99% Chebyshev(Mean, Sd) UCL	46.21

Suggested UCL to Use

95% Student's-t UCL	40.52

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU18_PMPA

General Statistics

Total Number of Observations	4	Number of Distinct Observations	2

		Number of Missing Observations	0
Minimum	820	Mean	835
Maximum	850	Median	835
SD	17.32	Std. Error of Mean	8.66
Coefficient of Variation	0.0207	Skewness	0

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.731	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.307	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	855.4	95% Adjusted-CLT UCL (Chen-1995)	849.2
		95% Modified-t UCL (Johnson-1978)	855.4

Gamma GOF Test

A-D Test Statistic	0.725	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.657	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.344	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics

k hat (MLE)	3098	k star (bias corrected MLE)	774.8
Theta hat (MLE)	0.269	Theta star (bias corrected MLE)	1.078
nu hat (MLE)	24788	nu star (bias corrected)	6198
MLE Mean (bias corrected)	835	MLE Sd (bias corrected)	30
		Approximate Chi Square Value (0.05)	6016
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	860.3	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.731	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.307	**Lilliefors Lognormal GOF Test**

5% Lilliefors Critical Value	0.375	Data appear Lognormal at 5% Significance Level	

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	6.709	Mean of logged Data	6.727
Maximum of Logged Data	6.745	SD of logged Data	0.0207

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	861
95% Chebyshev (MVUE) UCL	872.8	97.5% Chebyshev (MVUE) UCL	889.1
99% Chebyshev (MVUE) UCL	921.2		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	849.2	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	861	95% Chebyshev(Mean, Sd) UCL	872.7
97.5% Chebyshev(Mean, Sd) UCL	889.1	99% Chebyshev(Mean, Sd) UCL	921.2

Suggested UCL to Use

95% Student's-t UCL	855.4

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU18_Hydro-EVE Acid

General Statistics

Total Number of Observations	4	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	3.4	Mean	3.475
Maximum	3.6	Median	3.45
SD	0.0957	Std. Error of Mean	0.0479

Coefficient of Variation	0.0276	Skewness	0.855

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.865	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.283	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	3.588	95% Adjusted-CLT UCL (Chen-1995)	3.576
		95% Modified-t UCL (Johnson-1978)	3.591

Gamma GOF Test

A-D Test Statistic	0.428	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.318	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1770	k star (bias corrected MLE)	442.6
Theta hat (MLE)	0.00196	Theta star (bias corrected MLE)	0.00785
nu hat (MLE)	14158	nu star (bias corrected)	3541
MLE Mean (bias corrected)	3.475	MLE Sd (bias corrected)	0.165
		Approximate Chi Square Value (0.05)	3403
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	3.615	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.865	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.284	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.224	Mean of logged Data	1.245
Maximum of Logged Data	1.281	SD of logged Data	0.0274

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	3.618
95% Chebyshev (MVUE) UCL	3.682	97.5% Chebyshev (MVUE) UCL	3.772
99% Chebyshev (MVUE) UCL	3.949		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	3.554	95% Jackknife UCL	3.588
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	3.619	95% Chebyshev(Mean, Sd) UCL	3.684
97.5% Chebyshev(Mean, Sd) UCL	3.774	99% Chebyshev(Mean, Sd) UCL	3.951

Suggested UCL to Use

95% Student's-t UCL	3.588

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU18_R-EVE

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	52	Mean	55.5
Maximum	58	Median	56
SD	2.646	Std. Error of Mean	1.323
Coefficient of Variation	0.0477	Skewness	-0.864

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.947	**Shapiro Wilk GOF Test**	

5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.215	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	58.61	95% Adjusted-CLT UCL (Chen-1995)	57.07
		95% Modified-t UCL (Johnson-1978)	58.52

Gamma GOF Test

A-D Test Statistic	0.286	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.245	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	578.1	k star (bias corrected MLE)	144.7
Theta hat (MLE)	0.096	Theta star (bias corrected MLE)	0.384
nu hat (MLE)	4624	nu star (bias corrected)	1157
MLE Mean (bias corrected)	55.5	MLE Sd (bias corrected)	4.614
		Approximate Chi Square Value (0.05)	1079
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	59.51	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.941	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.216	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.951	Mean of logged Data	4.016
Maximum of Logged Data	4.06	SD of logged Data	0.0482

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	59.51
95% Chebyshev (MVUE) UCL	61.33	97.5% Chebyshev (MVUE) UCL	63.85
99% Chebyshev (MVUE) UCL	68.81		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	57.68	95% Jackknife UCL	58.61
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	59.47	95% Chebyshev(Mean, Sd) UCL	61.27
97.5% Chebyshev(Mean, Sd) UCL	63.76	99% Chebyshev(Mean, Sd) UCL	68.66

Suggested UCL to Use

95% Student's-t UCL	58.61

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU18_PFO5DA

General Statistics

Total Number of Observations	4	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	9.7	Mean	9.9
Maximum	10	Median	9.95
SD	0.141	Std. Error of Mean	0.0707
Coefficient of Variation	0.0143	Skewness	-1.414

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.828	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.26	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	10.07	95% Adjusted-CLT UCL (Chen-1995)	9.963
		95% Modified-t UCL (Johnson-1978)	10.06

Gamma GOF Test

A-D Test Statistic	0.437	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.292	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	6489	k star (bias corrected MLE)	1623
Theta hat (MLE)	0.00153	Theta star (bias corrected MLE)	0.0061
nu hat (MLE)	51916	nu star (bias corrected)	12980
MLE Mean (bias corrected)	9.9	MLE Sd (bias corrected)	0.246
		Approximate Chi Square Value (0.05)	12716
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	10.11	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.827	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.26	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.272	Mean of logged Data	2.292
Maximum of Logged Data	2.303	SD of logged Data	0.0144

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	10.11
95% Chebyshev (MVUE) UCL	10.21	97.5% Chebyshev (MVUE) UCL	10.34
99% Chebyshev (MVUE) UCL	10.61		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	10.02	95% Jackknife UCL	10.07

95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	10.11	95% Chebyshev(Mean, Sd) UCL	10.21
97.5% Chebyshev(Mean, Sd) UCL	10.34	99% Chebyshev(Mean, Sd) UCL	10.6

Suggested UCL to Use

95% Student's-t UCL	10.07

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU18_Byproduct 4

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	90	Mean	94.75
Maximum	99	Median	95
SD	3.775	Std. Error of Mean	1.887
Coefficient of Variation	0.0398	Skewness	-0.358

**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1**

Normal GOF Test

Shapiro Wilk Test Statistic	0.994	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.171	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	99.19	95% Adjusted-CLT UCL (Chen-1995)	97.49

		95% Modified-t UCL (Johnson-1978)	99.14

Gamma GOF Test

A-D Test Statistic	0.205	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.178	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	835.3	k star (bias corrected MLE)	209
Theta hat (MLE)	0.113	Theta star (bias corrected MLE)	0.453
nu hat (MLE)	6682	nu star (bias corrected)	1672
MLE Mean (bias corrected)	94.75	MLE Sd (bias corrected)	6.554
		Approximate Chi Square Value (0.05)	1578
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	100.4	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.992	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.748	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.177	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.375	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.5	Mean of logged Data	4.551
Maximum of Logged Data	4.595	SD of logged Data	0.04

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	100.4
95% Chebyshev (MVUE) UCL	103	97.5% Chebyshev (MVUE) UCL	106.6
99% Chebyshev (MVUE) UCL	113.6		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	97.85	95% Jackknife UCL	99.19
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	100.4	95% Chebyshev(Mean, Sd) UCL	103

97.5% Chebyshev(Mean, Sd) UCL	106.5	99% Chebyshev(Mean, Sd) UCL	113.5

Suggested UCL to Use

95% Student's-t UCL	99.19

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU18_NVHOS

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	5.6	Mean	6.05
Maximum	6.3	Median	6.15
SD	0.311	Std. Error of Mean	0.155
Coefficient of Variation	0.0514	Skewness	-1.597

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.855	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.314	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	6.416	95% Adjusted-CLT UCL (Chen-1995)	6.173
		95% Modified-t UCL (Johnson-1978)	6.395

Gamma GOF Test

A-D Test Statistic	0.473	**Anderson-Darling Gamma GOF Test**

5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.328	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	490.5	k star (bias corrected MLE)	122.8
Theta hat (MLE)	0.0123	Theta star (bias corrected MLE)	0.0493
nu hat (MLE)	3924	nu star (bias corrected)	982.3
MLE Mean (bias corrected)	6.05	MLE Sd (bias corrected)	0.546
		Approximate Chi Square Value (0.05)	910.6
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	6.527	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.846	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.32	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.723	Mean of logged Data	1.799
Maximum of Logged Data	1.841	SD of logged Data	0.0525

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	6.527
95% Chebyshev (MVUE) UCL	6.743	97.5% Chebyshev (MVUE) UCL	7.042
99% Chebyshev (MVUE) UCL	7.631		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	6.306	95% Jackknife UCL	6.416
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	6.516	95% Chebyshev(Mean, Sd) UCL	6.728
97.5% Chebyshev(Mean, Sd) UCL	7.021	99% Chebyshev(Mean, Sd) UCL	7.597

Suggested UCL to Use

95% Student's-t UCL	6.416

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU18_PFESA-BP2

General Statistics

Total Number of Observations	4	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	31	Mean	31.75
Maximum	33	Median	31.5
SD	0.957	Std. Error of Mean	0.479
Coefficient of Variation	0.0302	Skewness	0.855

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.865	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.283	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	32.88	95% Adjusted-CLT UCL (Chen-1995)	32.76
		95% Modified-t UCL (Johnson-1978)	32.91

Gamma GOF Test

A-D Test Statistic	0.428	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.318	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1478	k star (bias corrected MLE)	369.7
Theta hat (MLE)	0.0215	Theta star (bias corrected MLE)	0.0859
nu hat (MLE)	11827	nu star (bias corrected)	2958
MLE Mean (bias corrected)	31.75	MLE Sd (bias corrected)	1.651
		Approximate Chi Square Value (0.05)	2833
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	33.16	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.865	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.284	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.375	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.434	Mean of logged Data	3.458
Maximum of Logged Data	3.497	SD of logged Data	0.03

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	33.18
95% Chebyshev (MVUE) UCL	33.82	97.5% Chebyshev (MVUE) UCL	34.72
99% Chebyshev (MVUE) UCL	36.48		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	32.54	95% Jackknife UCL	32.88
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	33.19	95% Chebyshev(Mean, Sd) UCL	33.84
97.5% Chebyshev(Mean, Sd) UCL	34.74	99% Chebyshev(Mean, Sd) UCL	36.51

Suggested UCL to Use

95% Student's-t UCL	32.88

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU19_HFPO-DA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	290	Mean	303.3
Maximum	310	Median	310
SD	11.55	Std. Error of Mean	6.667
Coefficient of Variation	0.0381	Skewness	-1.732

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.385	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	322.8	95% Adjusted-CLT UCL (Chen-1995)	307.2
		95% Modified-t UCL (Johnson-1978)	321.7

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	1020	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.298	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	6118	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk Lognormal GOF Test**		
5% Shapiro Wilk Critical Value	0.767	Data Not Lognormal at 5% Significance Level		
Lilliefors Test Statistic	0.385	**Lilliefors Lognormal GOF Test**		
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level		

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.67	Mean of logged Data	5.714
Maximum of Logged Data	5.737	SD of logged Data	0.0385

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	323.6
95% Chebyshev (MVUE) UCL	332.7	97.5% Chebyshev (MVUE) UCL	345.4
99% Chebyshev (MVUE) UCL	370.4		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	314.3	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	323.3	95% Chebyshev(Mean, Sd) UCL	332.4
97.5% Chebyshev(Mean, Sd) UCL	345	99% Chebyshev(Mean, Sd) UCL	369.7

Suggested UCL to Use

95% Student's-t UCL	322.8

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU19_PEPA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	100	Mean	106.7
Maximum	110	Median	110
SD	5.774	Std. Error of Mean	3.333
Coefficient of Variation	0.0541	Skewness	-1.732

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.385	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	116.4	95% Adjusted-CLT UCL (Chen-1995)	108.6
		95% Modified-t UCL (Johnson-1978)	115.8

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	501	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.213	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	3006	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.385	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.605	Mean of logged Data	4.669
Maximum of Logged Data	4.7	SD of logged Data	0.055

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	116.8
95% Chebyshev (MVUE) UCL	121.4	97.5% Chebyshev (MVUE) UCL	127.8
99% Chebyshev (MVUE) UCL	140.4		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	112.1	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	116.7	95% Chebyshev(Mean, Sd) UCL	121.2
97.5% Chebyshev(Mean, Sd) UCL	127.5	99% Chebyshev(Mean, Sd) UCL	139.8

Suggested UCL to Use

95% Student's-t UCL	116.4

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU19_PFMOAA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	65	Mean	67.67
Maximum	71	Median	67

SD	3.055	Std. Error of Mean	1.764
Coefficient of Variation	0.0451	Skewness	0.935

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.964	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.253	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	72.82	95% Adjusted-CLT UCL (Chen-1995)	71.59
		95% Modified-t UCL (Johnson-1978)	72.98

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	742.3	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.0912	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	4454	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.968	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.248	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.174	Mean of logged Data	4.214
Maximum of Logged Data	4.263	SD of logged Data	0.0449

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	72.92
95% Chebyshev (MVUE) UCL	75.3	97.5% Chebyshev (MVUE) UCL	78.61
99% Chebyshev (MVUE) UCL	85.1		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	70.57	95% Jackknife UCL	72.82
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	72.96	95% Chebyshev(Mean, Sd) UCL	75.36
97.5% Chebyshev(Mean, Sd) UCL	78.68	99% Chebyshev(Mean, Sd) UCL	85.22

Suggested UCL to Use

95% Student's-t UCL	72.82

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU19_PFO2HxA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	210	Mean	216.7
Maximum	220	Median	220
SD	5.774	Std. Error of Mean	3.333
Coefficient of Variation	0.0266	Skewness	-1.732

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level

Lilliefors Test Statistic	0.385	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level	

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	226.4	95% Adjusted-CLT UCL (Chen-1995)	218.6
		95% Modified-t UCL (Johnson-1978)	225.8

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	2090	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.104	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	12543	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.385	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level	

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.347	Mean of logged Data	5.378
Maximum of Logged Data	5.394	SD of logged Data	0.0269

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	226.7
95% Chebyshev (MVUE) UCL	231.3	97.5% Chebyshev (MVUE) UCL	237.6
99% Chebyshev (MVUE) UCL	250.1		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	222.1	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A

95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	226.7	95% Chebyshev(Mean, Sd) UCL	231.2
97.5% Chebyshev(Mean, Sd) UCL	237.5	99% Chebyshev(Mean, Sd) UCL	249.8

Suggested UCL to Use

95% Student's-t UCL 226.4

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU19_PFO3OA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	26	Mean	26.33
Maximum	27	Median	26
SD	0.577	Std. Error of Mean	0.333
Coefficient of Variation	0.0219	Skewness	1.732

**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1**

Normal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.385	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	27.31	95% Adjusted-CLT UCL (Chen-1995)	27.24
		95% Modified-t UCL (Johnson-1978)	27.36

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	3146	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.00837	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	18879	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.385	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.258	Mean of logged Data	3.271
Maximum of Logged Data	3.296	SD of logged Data	0.0218

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	27.33
95% Chebyshev (MVUE) UCL	27.78	97.5% Chebyshev (MVUE) UCL	28.4
99% Chebyshev (MVUE) UCL	29.63		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	26.88	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	27.33	95% Chebyshev(Mean, Sd) UCL	27.79
97.5% Chebyshev(Mean, Sd) UCL	28.41	99% Chebyshev(Mean, Sd) UCL	29.65

Suggested UCL to Use

95% Student's-t UCL	27.31

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU19_PFO4DA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	8.4	Mean	8.667
Maximum	8.9	Median	8.7
SD	0.252	Std. Error of Mean	0.145
Coefficient of Variation	0.029	Skewness	-0.586

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.987	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.219	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	9.091	95% Adjusted-CLT UCL (Chen-1995)	8.853
		95% Modified-t UCL (Johnson-1978)	9.083

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	1772	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.00489	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	10630	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.985	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.223	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.128	Mean of logged Data	2.159
Maximum of Logged Data	2.186	SD of logged Data	0.0291

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	9.104
95% Chebyshev (MVUE) UCL	9.302	97.5% Chebyshev (MVUE) UCL	9.577
99% Chebyshev (MVUE) UCL	10.12		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	8.906	95% Jackknife UCL	9.091
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	9.103	95% Chebyshev(Mean, Sd) UCL	9.3
97.5% Chebyshev(Mean, Sd) UCL	9.574	99% Chebyshev(Mean, Sd) UCL	10.11

Suggested UCL to Use

95% Student's-t UCL	9.091

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU19_PMPA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	340	Mean	346.7
Maximum	350	Median	350
SD	5.774	Std. Error of Mean	3.333
Coefficient of Variation	0.0167	Skewness	-1.732

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.385	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	356.4	95% Adjusted-CLT UCL (Chen-1995)	348.6
		95% Modified-t UCL (Johnson-1978)	355.8

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	5373	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.0645	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	32238	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.385	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level	

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.829	Mean of logged Data	5.848
Maximum of Logged Data	5.858	SD of logged Data	0.0167

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	356.7
95% Chebyshev (MVUE) UCL	361.3	97.5% Chebyshev (MVUE) UCL	367.6
99% Chebyshev (MVUE) UCL	380		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	352.1	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	356.7	95% Chebyshev(Mean, Sd) UCL	361.2
97.5% Chebyshev(Mean, Sd) UCL	367.5	99% Chebyshev(Mean, Sd) UCL	379.8

Suggested UCL to Use

95% Student's-t UCL	356.4

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU19_R-EVE

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	52	Mean	52.67
Maximum	53	Median	53
SD	0.577	Std. Error of Mean	0.333
Coefficient of Variation	0.011	Skewness	-1.732

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.385	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	53.64	95% Adjusted-CLT UCL (Chen-1995)	52.86
		95% Modified-t UCL (Johnson-1978)	53.58

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	12429	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.00424	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	74574	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Lognormal at 5% Significance Level

Lilliefors Test Statistic	0.385	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level	

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.951	Mean of logged Data	3.964
Maximum of Logged Data	3.97	SD of logged Data	0.011

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	53.67
95% Chebyshev (MVUE) UCL	54.12	97.5% Chebyshev (MVUE) UCL	54.75
99% Chebyshev (MVUE) UCL	55.99		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	53.21	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	53.67	95% Chebyshev(Mean, Sd) UCL	54.12
97.5% Chebyshev(Mean, Sd) UCL	54.75	99% Chebyshev(Mean, Sd) UCL	55.98

Suggested UCL to Use

95% Student's-t UCL	53.64

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU19_PFO5DA

General Statistics

Total Number of Observations	1	Number of Distinct Observations	1

		Number of Missing Observations	0
Minimum	2.1	Mean	2.1
Maximum	2.1	Median	2.1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SW_EU19_PFO5DA was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

SW_EU19_Byproduct 4

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	130	Mean	140
Maximum	150	Median	140
SD	10	Std. Error of Mean	5.774
Coefficient of Variation	0.0714	Skewness	0

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	1	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.175	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	156.9	95% Adjusted-CLT UCL (Chen-1995)	149.5
		95% Modified-t UCL (Johnson-1978)	156.9

Gamma GOF Test
Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	293.4	k star (bias corrected MLE)	N/A

Theta hat (MLE)	0.477	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	1760	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	1	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.177	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.868	Mean of logged Data	4.94
Maximum of Logged Data	5.011	SD of logged Data	0.0716

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	157.3
95% Chebyshev (MVUE) UCL	165.2	97.5% Chebyshev (MVUE) UCL	176.1
99% Chebyshev (MVUE) UCL	197.5		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	149.5	95% Jackknife UCL	156.9
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	157.3	95% Chebyshev(Mean, Sd) UCL	165.2
97.5% Chebyshev(Mean, Sd) UCL	176.1	99% Chebyshev(Mean, Sd) UCL	197.4

Suggested UCL to Use

95% Student's-t UCL	156.9

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU19_PFESA-BP2

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	25	Mean	25
Maximum	25	Median	25

Warning: There is only one distinct observation value in this data set - resulting in '0' variance!
ProUCL (or any other software) should not be used on such a data set!
The data set for variable SW_EU19_PFESA-BP2 was not processed!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.112/11/2019 1:09:03 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

SW_EU16 (Intake Point)_HFPO-DA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	12
		Number of Missing Observations	0
Minimum	30.4	Mean	179
Maximum	580	Median	73.5
SD	191.7	Std. Error of Mean	55.34
Coefficient of Variation	1.071	Skewness	1.308

Normal GOF Test

Shapiro Wilk Test Statistic	0.782	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.859	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.286	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.243	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	278.4	95% Adjusted-CLT UCL (Chen-1995)	292.4
		95% Modified-t UCL (Johnson-1978)	281.9

Gamma GOF Test

A-D Test Statistic	0.652	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.755	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.248	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.252	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.076	k star (bias corrected MLE)	0.862
Theta hat (MLE)	166.4	Theta star (bias corrected MLE)	207.6
nu hat (MLE)	25.82	nu star (bias corrected)	20.7
MLE Mean (bias corrected)	179	MLE Sd (bias corrected)	192.8
		Approximate Chi Square Value (0.05)	11.37
Adjusted Level of Significance	0.029	Adjusted Chi Square Value	10.33

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	326	95% Adjusted Gamma UCL (use when n<50)	358.9

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.9	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.859	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.197	**Lilliefors Lognormal GOF Test**

5% Lilliefors Critical Value	0.243	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.414	Mean of logged Data	4.655
Maximum of Logged Data	6.363	SD of logged Data	1.08

Assuming Lognormal Distribution

95% H-UCL	510.9	90% Chebyshev (MVUE) UCL	353
95% Chebyshev (MVUE) UCL	433.2	97.5% Chebyshev (MVUE) UCL	544.5
99% Chebyshev (MVUE) UCL	763.1		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	270.1	95% Jackknife UCL	278.4
95% Standard Bootstrap UCL	265.5	95% Bootstrap-t UCL	350.4
95% Hall's Bootstrap UCL	313.9	95% Percentile Bootstrap UCL	267.6
95% BCA Bootstrap UCL	291.7		
90% Chebyshev(Mean, Sd) UCL	345	95% Chebyshev(Mean, Sd) UCL	420.2
97.5% Chebyshev(Mean, Sd) UCL	524.6	99% Chebyshev(Mean, Sd) UCL	729.6

Suggested UCL to Use

95% Adjusted Gamma UCL	358.9

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU17 (Intake Point)_HFPO-DA

General Statistics

Total Number of Observations	75	Number of Distinct Observations	71
		Number of Missing Observations	0
Minimum	3.14	Mean	16.12
Maximum	76	Median	11.8
SD	11.99	Std. Error of Mean	1.385
Coefficient of Variation	0.744	Skewness	2.446

Normal GOF Test

Shapiro Wilk Test Statistic	0.782	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk P Value	1.887E-15	Data Not Normal at 5% Significance Level	

Lilliefors Test Statistic	0.196	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.102	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	18.42	95% Adjusted-CLT UCL (Chen-1995)	18.81
		95% Modified-t UCL (Johnson-1978)	18.49

Gamma GOF Test

A-D Test Statistic	1.237	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.76	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.145	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.104	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.607	k star (bias corrected MLE)	2.512
Theta hat (MLE)	6.181	Theta star (bias corrected MLE)	6.415
nu hat (MLE)	391.1	nu star (bias corrected)	376.8
MLE Mean (bias corrected)	16.12	MLE Sd (bias corrected)	10.17
		Approximate Chi Square Value (0.05)	332.8
Adjusted Level of Significance	0.0468	Adjusted Chi Square Value	332

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	18.25	95% Adjusted Gamma UCL (use when n<50)	18.29

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.982	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk P Value	0.687	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.105	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.102	Data Not Lognormal at 5% Significance Level	

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.144	Mean of logged Data	2.576
Maximum of Logged Data	4.331	SD of logged Data	0.625

Assuming Lognormal Distribution

95% H-UCL	18.4	90% Chebyshev (MVUE) UCL	19.67
95% Chebyshev (MVUE) UCL	21.36	97.5% Chebyshev (MVUE) UCL	23.71
99% Chebyshev (MVUE) UCL	28.32		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	18.39	95% Jackknife UCL	18.42
95% Standard Bootstrap UCL	18.44	95% Bootstrap-t UCL	19.07
95% Hall's Bootstrap UCL	19.13	95% Percentile Bootstrap UCL	18.39
95% BCA Bootstrap UCL	18.83		
90% Chebyshev(Mean, Sd) UCL	20.27	95% Chebyshev(Mean, Sd) UCL	22.15
97.5% Chebyshev(Mean, Sd) UCL	24.76	99% Chebyshev(Mean, Sd) UCL	29.89

Suggested UCL to Use

95% H-UCL	18.4

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

SW_EU17 (Intake Point)_PEPA

General Statistics

Total Number of Observations	45	Number of Distinct Observations	44
		Number of Missing Observations	0
Minimum	1.72	Mean	10.19
Maximum	25.7	Median	7.9
SD	7.302	Std. Error of Mean	1.089
Coefficient of Variation	0.717	Skewness	0.796

Normal GOF Test

Shapiro Wilk Test Statistic	0.88	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.945	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.149	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.131	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	12.02	95% Adjusted-CLT UCL (Chen-1995)	12.12
		95% Modified-t UCL (Johnson-1978)	12.04

Gamma GOF Test

A-D Test Statistic	0.511	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.762	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0929	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.134	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.925	k star (bias corrected MLE)	1.811
Theta hat (MLE)	5.293	Theta star (bias corrected MLE)	5.625
nu hat (MLE)	173.2	nu star (bias corrected)	163
MLE Mean (bias corrected)	10.19	MLE Sd (bias corrected)	7.57
		Approximate Chi Square Value (0.05)	134.5
Adjusted Level of Significance	0.0447	Adjusted Chi Square Value	133.6

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	12.35	95% Adjusted Gamma UCL (use when n<50)	12.43

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.943	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.945	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0962	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.131	Data appear Lognormal at 5% Significance Level	

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.542	Mean of logged Data	2.039
Maximum of Logged Data	3.246	SD of logged Data	0.797

Assuming Lognormal Distribution

95% H-UCL	13.69	90% Chebyshev (MVUE) UCL	14.63
95% Chebyshev (MVUE) UCL	16.52	97.5% Chebyshev (MVUE) UCL	19.14
99% Chebyshev (MVUE) UCL	24.28		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	11.98	95% Jackknife UCL	12.02
95% Standard Bootstrap UCL	11.97	95% Bootstrap-t UCL	12.2
95% Hall's Bootstrap UCL	12.12	95% Percentile Bootstrap UCL	11.96
95% BCA Bootstrap UCL	12.1		
90% Chebyshev(Mean, Sd) UCL	13.45	95% Chebyshev(Mean, Sd) UCL	14.93
97.5% Chebyshev(Mean, Sd) UCL	16.99	99% Chebyshev(Mean, Sd) UCL	21.02

Suggested UCL to Use

95% Adjusted Gamma UCL	12.43

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU17 (Intake Point)_PFMOAA

General Statistics

Total Number of Observations	75	Number of Distinct Observations	72
		Number of Missing Observations	0
Minimum	3.82	Mean	17.05
Maximum	63	Median	11.8
SD	14.7	Std. Error of Mean	1.697
Coefficient of Variation	0.862	Skewness	1.659

Normal GOF Test

Shapiro Wilk Test Statistic	0.759	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.226	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.102	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	19.88	95% Adjusted-CLT UCL (Chen-1995)	20.19
		95% Modified-t UCL (Johnson-1978)	19.94

Gamma GOF Test

A-D Test Statistic	2.599	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.765	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.135	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.105	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.882	k star (bias corrected MLE)	1.815
Theta hat (MLE)	9.063	Theta star (bias corrected MLE)	9.395
nu hat (MLE)	282.3	nu star (bias corrected)	272.3
MLE Mean (bias corrected)	17.05	MLE Sd (bias corrected)	12.66
		Approximate Chi Square Value (0.05)	235.1
Adjusted Level of Significance	0.0468	Adjusted Chi Square Value	234.4

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	19.75	95% Adjusted Gamma UCL (use when n<50)	19.81

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.93	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	4.3547E-4	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.124	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.102	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.34	Mean of logged Data	2.548
Maximum of Logged Data	4.143	SD of logged Data	0.733

Assuming Lognormal Distribution

95% H-UCL	19.84	90% Chebyshev (MVUE) UCL	21.33
95% Chebyshev (MVUE) UCL	23.46	97.5% Chebyshev (MVUE) UCL	26.41
99% Chebyshev (MVUE) UCL	32.2		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	19.85	95% Jackknife UCL	19.88
95% Standard Bootstrap UCL	19.81	95% Bootstrap-t UCL	20.17
95% Hall's Bootstrap UCL	20.3	95% Percentile Bootstrap UCL	20.03
95% BCA Bootstrap UCL	20.18		
90% Chebyshev(Mean, Sd) UCL	22.15	95% Chebyshev(Mean, Sd) UCL	24.45
97.5% Chebyshev(Mean, Sd) UCL	27.65	99% Chebyshev(Mean, Sd) UCL	33.94

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	24.45

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU17 (Intake Point)_PFO2HxA

General Statistics

Total Number of Observations	75	Number of Distinct Observations	71
		Number of Missing Observations	0

Minimum	2.78	Mean	13.77
Maximum	57.7	Median	8.79
SD	12.4	Std. Error of Mean	1.432
Coefficient of Variation	0.901	Skewness	1.816

Normal GOF Test

Shapiro Wilk Test Statistic	0.754	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.236	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.102	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	16.16	95% Adjusted-CLT UCL (Chen-1995)	16.45
		95% Modified-t UCL (Johnson-1978)	16.21

Gamma GOF Test

A-D Test Statistic	2.564	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.766	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.137	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.105	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.782	k star (bias corrected MLE)	1.72
Theta hat (MLE)	7.729	Theta star (bias corrected MLE)	8.009
nu hat (MLE)	267.3	nu star (bias corrected)	257.9
MLE Mean (bias corrected)	13.77	MLE Sd (bias corrected)	10.5
		Approximate Chi Square Value (0.05)	221.7
Adjusted Level of Significance	0.0468	Adjusted Chi Square Value	221.1

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	16.02	95% Adjusted Gamma UCL (use when n<50)	16.07

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.938	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0.0016	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0989	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.102	Data appear Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.022	Mean of logged Data	2.317
Maximum of Logged Data	4.055	SD of logged Data	0.752

Assuming Lognormal Distribution

95% H-UCL	16.07	90% Chebyshev (MVUE) UCL	17.28
95% Chebyshev (MVUE) UCL	19.05	97.5% Chebyshev (MVUE) UCL	21.49
99% Chebyshev (MVUE) UCL	26.3		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	16.13	95% Jackknife UCL	16.16
95% Standard Bootstrap UCL	16.09	95% Bootstrap-t UCL	16.33
95% Hall's Bootstrap UCL	16.35	95% Percentile Bootstrap UCL	16.19
95% BCA Bootstrap UCL	16.44		
90% Chebyshev(Mean, Sd) UCL	18.07	95% Chebyshev(Mean, Sd) UCL	20.01
97.5% Chebyshev(Mean, Sd) UCL	22.72	99% Chebyshev(Mean, Sd) UCL	28.02

Suggested UCL to Use

95% H-UCL	16.07

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

SW_EU17 (Intake Point)_PFO3OA

General Statistics

Total Number of Observations	66	Number of Distinct Observations	64
		Number of Missing Observations	0
Minimum	1.34	Mean	7.043
Maximum	43.4	Median	4.615
SD	6.825	Std. Error of Mean	0.84
Coefficient of Variation	0.969	Skewness	3.155

Normal GOF Test

Shapiro Wilk Test Statistic	0.676	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.237	**Lilliefors GOF Test**

5% Lilliefors Critical Value	0.109	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	8.445	95% Adjusted-CLT UCL (Chen-1995)	8.774
		95% Modified-t UCL (Johnson-1978)	8.5

Gamma GOF Test

A-D Test Statistic	2.107	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.764	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.164	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.111	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.924	k star (bias corrected MLE)	1.847
Theta hat (MLE)	3.661	Theta star (bias corrected MLE)	3.814
nu hat (MLE)	254	nu star (bias corrected)	243.8
MLE Mean (bias corrected)	7.043	MLE Sd (bias corrected)	5.183
		Approximate Chi Square Value (0.05)	208.6
Adjusted Level of Significance	0.0464	Adjusted Chi Square Value	207.9

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	8.23	95% Adjusted Gamma UCL (use when n<50)	8.259

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.962	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk P Value	0.112	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.11	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.109	Data Not Lognormal at 5% Significance Level	

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.293	Mean of logged Data	1.67
Maximum of Logged Data	3.77	SD of logged Data	0.71

Assuming Lognormal Distribution

95% H-UCL	8.17	90% Chebyshev (MVUE) UCL	8.772
95% Chebyshev (MVUE) UCL	9.662	97.5% Chebyshev (MVUE) UCL	10.9
99% Chebyshev (MVUE) UCL	13.33		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	8.425	95% Jackknife UCL	8.445
95% Standard Bootstrap UCL	8.415	95% Bootstrap-t UCL	8.977
95% Hall's Bootstrap UCL	9.359	95% Percentile Bootstrap UCL	8.522
95% BCA Bootstrap UCL	8.668		
90% Chebyshev(Mean, Sd) UCL	9.564	95% Chebyshev(Mean, Sd) UCL	10.71
97.5% Chebyshev(Mean, Sd) UCL	12.29	99% Chebyshev(Mean, Sd) UCL	15.4

Suggested UCL to Use

95% H-UCL	8.17

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

SW_EU17 (Intake Point)_PFO4DA

General Statistics

Total Number of Observations	51	Number of Distinct Observations	49
		Number of Missing Observations	0
Minimum	1.2	Mean	2.968
Maximum	14.6	Median	2.09
SD	2.4	Std. Error of Mean	0.336
Coefficient of Variation	0.809	Skewness	2.944

Normal GOF Test

Shapiro Wilk Test Statistic	0.675	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	9.626E-14	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.231	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.123	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	3.531	95% Adjusted-CLT UCL (Chen-1995)	3.669
		95% Modified-t UCL (Johnson-1978)	3.554

Gamma GOF Test

A-D Test Statistic	2.449	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.758	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.162	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.125	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.757	k star (bias corrected MLE)	2.608
Theta hat (MLE)	1.077	Theta star (bias corrected MLE)	1.138
nu hat (MLE)	281.2	nu star (bias corrected)	266
MLE Mean (bias corrected)	2.968	MLE Sd (bias corrected)	1.838
		Approximate Chi Square Value (0.05)	229.2
Adjusted Level of Significance	0.0453	Adjusted Chi Square Value	228.2

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	3.444	95% Adjusted Gamma UCL (use when n<50)	3.459

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.905	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	3.7387E-4	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.126	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.123	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.182	Mean of logged Data	0.896
Maximum of Logged Data	2.681	SD of logged Data	0.568

Assuming Lognormal Distribution

95% H-UCL	3.357	90% Chebyshev (MVUE) UCL	3.594
95% Chebyshev (MVUE) UCL	3.924	97.5% Chebyshev (MVUE) UCL	4.381
99% Chebyshev (MVUE) UCL	5.279		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	3.521	95% Jackknife UCL	3.531
95% Standard Bootstrap UCL	3.533	95% Bootstrap-t UCL	3.828
95% Hall's Bootstrap UCL	3.873	95% Percentile Bootstrap UCL	3.536
95% BCA Bootstrap UCL	3.705		
90% Chebyshev(Mean, Sd) UCL	3.976	95% Chebyshev(Mean, Sd) UCL	4.432
97.5% Chebyshev(Mean, Sd) UCL	5.066	99% Chebyshev(Mean, Sd) UCL	6.311

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	4.432

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

SW_EU17 (Intake Point)_PMPA

General Statistics

Total Number of Observations	61	Number of Distinct Observations	58
		Number of Missing Observations	0
Minimum	1.32	Mean	7.792
Maximum	64.9	Median	5.48
SD	8.369	Std. Error of Mean	1.072
Coefficient of Variation	1.074	Skewness	5.538

Normal GOF Test

Shapiro Wilk Test Statistic	0.508	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.237	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.113	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	9.582	95% Adjusted-CLT UCL (Chen-1995)	10.37
		95% Modified-t UCL (Johnson-1978)	9.709

Gamma GOF Test

A-D Test Statistic	1.75	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.762	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.128	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.115	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.247	k star (bias corrected MLE)	2.147
Theta hat (MLE)	3.468	Theta star (bias corrected MLE)	3.629
nu hat (MLE)	274.1	nu star (bias corrected)	261.9
MLE Mean (bias corrected)	7.792	MLE Sd (bias corrected)	5.318
		Approximate Chi Square Value (0.05)	225.5
Adjusted Level of Significance	0.0461	Adjusted Chi Square Value	224.6

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	9.053	95% Adjusted Gamma UCL (use when n<50)	9.086

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.966	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0.192	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.106	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.113	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.278	Mean of logged Data	1.814
Maximum of Logged Data	4.173	SD of logged Data	0.633

Assuming Lognormal Distribution

95% H-UCL	8.8	90% Chebyshev (MVUE) UCL	9.437
95% Chebyshev (MVUE) UCL	10.33	97.5% Chebyshev (MVUE) UCL	11.56
99% Chebyshev (MVUE) UCL	13.99		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	9.555	95% Jackknife UCL	9.582
95% Standard Bootstrap UCL	9.52	95% Bootstrap-t UCL	11.51
95% Hall's Bootstrap UCL	16.97	95% Percentile Bootstrap UCL	9.788
95% BCA Bootstrap UCL	10.96		
90% Chebyshev(Mean, Sd) UCL	11.01	95% Chebyshev(Mean, Sd) UCL	12.46
97.5% Chebyshev(Mean, Sd) UCL	14.48	99% Chebyshev(Mean, Sd) UCL	18.45

Suggested UCL to Use

95% H-UCL	8.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

SW_EU17 (Intake Point)_PFESA-BP1

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	1.33	Mean	3.093
Maximum	4.17	Median	3.78
SD	1.539	Std. Error of Mean	0.889
Coefficient of Variation	0.498	Skewness	-1.608

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.851	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.339	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	5.689	95% Adjusted-CLT UCL (Chen-1995)	3.674
		95% Modified-t UCL (Johnson-1978)	5.551

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	4.509	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.686	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	27.05	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.814	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.357	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.285	Mean of logged Data	1.014
Maximum of Logged Data	1.428	SD of logged Data	0.633

Assuming Lognormal Distribution

95% H-UCL	135.2	90% Chebyshev (MVUE) UCL	6.42
95% Chebyshev (MVUE) UCL	7.906	97.5% Chebyshev (MVUE) UCL	9.969
99% Chebyshev (MVUE) UCL	14.02		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	4.555	95% Jackknife UCL	5.689
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	5.76	95% Chebyshev(Mean, Sd) UCL	6.968
97.5% Chebyshev(Mean, Sd) UCL	8.644	99% Chebyshev(Mean, Sd) UCL	11.94

Suggested UCL to Use

95% Student's-t UCL	5.689

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

SW_EU17 (Intake Point)_PFESA-BP2

General Statistics

Total Number of Observations	22	Number of Distinct Observations	21
		Number of Missing Observations	0
Minimum	1.34	Mean	2.565
Maximum	6.14	Median	2.225
SD	1.272	Std. Error of Mean	0.271
Coefficient of Variation	0.496	Skewness	1.54

Normal GOF Test

Shapiro Wilk Test Statistic	0.83	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.911	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.168	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.184	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	3.032	95% Adjusted-CLT UCL (Chen-1995)	3.107
		95% Modified-t UCL (Johnson-1978)	3.047

Gamma GOF Test

A-D Test Statistic	0.643	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.746	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.132	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.186	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	5.262	k star (bias corrected MLE)	4.575
Theta hat (MLE)	0.488	Theta star (bias corrected MLE)	0.561
nu hat (MLE)	231.5	nu star (bias corrected)	201.3
MLE Mean (bias corrected)	2.565	MLE Sd (bias corrected)	1.199
		Approximate Chi Square Value (0.05)	169.5
Adjusted Level of Significance	0.0386	Adjusted Chi Square Value	167.3

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	3.047	95% Adjusted Gamma UCL (use when n<50)	3.087

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.928	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.911	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.127	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.184	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.293	Mean of logged Data	0.844
Maximum of Logged Data	1.815	SD of logged Data	0.438

Assuming Lognormal Distribution

95% H-UCL	3.082	90% Chebyshev (MVUE) UCL	3.283
95% Chebyshev (MVUE) UCL	3.617	97.5% Chebyshev (MVUE) UCL	4.079

99% Chebyshev (MVUE) UCL	4.987

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	3.012	95% Jackknife UCL	3.032
95% Standard Bootstrap UCL	3.011	95% Bootstrap-t UCL	3.24
95% Hall's Bootstrap UCL	3.303	95% Percentile Bootstrap UCL	3.035
95% BCA Bootstrap UCL	3.11		
90% Chebyshev(Mean, Sd) UCL	3.379	95% Chebyshev(Mean, Sd) UCL	3.748
97.5% Chebyshev(Mean, Sd) UCL	4.26	99% Chebyshev(Mean, Sd) UCL	5.265

Suggested UCL to Use

95% Student's-t UCL	3.032

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.112/9/2019 12:51:59 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Filet_EU14_PFO4DA

General Statistics

Total Number of Observations	7	Number of Distinct Observations	3
Number of Detects	1	Number of Non-Detects	6
Number of Distinct Detects	1	Number of Distinct Non-Detects	2

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Filet_EU14_PFO4DA was not processed!

Filet_EU14_PMPA

General Statistics

Total Number of Observations	7	Number of Distinct Observations	4
Number of Detects	3	Number of Non-Detects	4
Number of Distinct Detects	3	Number of Distinct Non-Detects	1
Minimum Detect	270	Minimum Non-Detect	1000
Maximum Detect	370	Maximum Non-Detect	1000
Variance Detects	3033	Percent Non-Detects	57.14%
Mean Detects	306.7	SD Detects	55.08
Median Detects	280	CV Detects	0.18
Skewness Detects	1.668	Kurtosis Detects	N/A
Mean of Logged Detects	5.716	SD of Logged Detects	0.172

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.824	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.353	Lilliefors GOF Test
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	306.7	KM Standard Error of Mean	31.8
KM SD	44.97	95% KM (BCA) UCL	N/A
95% KM (t) UCL	368.5	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	359	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	402.1	95% KM Chebyshev UCL	445.3
97.5% KM Chebyshev UCL	505.2	99% KM Chebyshev UCL	623.1

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	49.23	k star (bias corrected MLE)	N/A
Theta hat (MLE)	6.229	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	295.4	nu star (bias corrected)	N/A
Mean (detects)	306.7		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	245.2	Mean	306.8
Maximum	371	Median	286.9
SD	49.51	CV	0.161
k hat (MLE)	45.61	k star (bias corrected MLE)	26.16
Theta hat (MLE)	6.728	Theta star (bias corrected MLE)	11.73
nu hat (MLE)	638.5	nu star (bias corrected)	366.2
Adjusted Level of Significance (β)	0.0158		
Approximate Chi Square Value (366.19, α)	322.8	Adjusted Chi Square Value (366.19, β)	310.5
95% Gamma Approximate UCL (use when n>=50)	348	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	306.7	SD (KM)	44.97
Variance (KM)	2022	SE of Mean (KM)	31.8
k hat (KM)	46.51	k star (KM)	26.67
nu hat (KM)	651.1	nu star (KM)	373.4
theta hat (KM)	6.594	theta star (KM)	11.5
80% gamma percentile (KM)	355.2	90% gamma percentile (KM)	384.8
95% gamma percentile (KM)	410.4	99% gamma percentile (KM)	461.4

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (373.38, α)	329.6	Adjusted Chi Square Value (373.38, β)	317.1
95% Gamma Approximate KM-UCL (use when n>=50)	347.4	95% Gamma Adjusted KM-UCL (use when n<50)	361.1

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.835	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.347	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	306.7	Mean in Log Scale	5.716
SD in Original Scale	48.23	SD in Log Scale	0.155
95% t UCL (assumes normality of ROS data)	342.1	95% Percentile Bootstrap UCL	335.8
95% BCA Bootstrap UCL	336.7	95% Bootstrap t UCL	363.6
95% H-UCL (Log ROS)	347		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	5.716	KM Geo Mean	303.6
KM SD (logged)	0.141	95% Critical H Value (KM-Log)	1.915
KM Standard Error of Mean (logged)	0.0995	95% H-UCL (KM -Log)	342.2
KM SD (logged)	0.141	95% Critical H Value (KM-Log)	1.915
KM Standard Error of Mean (logged)	0.0995		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	417.1	Mean in Log Scale	6.001
SD in Original Scale	108.1	SD in Log Scale	0.285
95% t UCL (Assumes normality)	496.6	95% H-Stat UCL	541.2

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 368.5

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Filet_EU15_PFO4DA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
Number of Detects	2	Number of Non-Detects	1
Number of Distinct Detects	2	Number of Distinct Non-Detects	1

Minimum Detect	1700	Minimum Non-Detect	1000
Maximum Detect	5400	Maximum Non-Detect	1000
Variance Detects	6845000	Percent Non-Detects	33.33%
Mean Detects	3550	SD Detects	2616
Median Detects	3550	CV Detects	0.737
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	8.016	SD of Logged Detects	0.817

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2700	KM Standard Error of Mean	1576
KM SD	1930	95% KM (BCA) UCL	N/A
95% KM (t) UCL	7303	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	5293	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	7429	95% KM Chebyshev UCL	9571
97.5% KM Chebyshev UCL	12543	99% KM Chebyshev UCL	18383

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	3.313	k star (bias corrected MLE)	N/A
Theta hat (MLE)	1071	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	13.25	nu star (bias corrected)	N/A
Mean (detects)	3550		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	2700	SD (KM)	1930
Variance (KM)	3726667	SE of Mean (KM)	1576
k hat (KM)	1.956	k star (KM)	N/A
nu hat (KM)	11.74	nu star (KM)	N/A
theta hat (KM)	1380	theta star (KM)	N/A
80% gamma percentile (KM)	N/A	90% gamma percentile (KM)	N/A
95% gamma percentile (KM)	N/A	99% gamma percentile (KM)	N/A

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.00136
Approximate Chi Square Value (N/A, α)	N/A	Adjusted Chi Square Value (N/A, β)	N/A
95% Gamma Approximate KM-UCL (use when n>=50)	N/A	95% Gamma Adjusted KM-UCL (use when n<50)	N/A

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2440	Mean in Log Scale	7.141
SD in Original Scale	2668	SD in Log Scale	1.622
95% t UCL (assumes normality of ROS data)	6938	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A	95% Bootstrap t UCL	N/A
95% H-UCL (Log ROS)	1.705E+14		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.647	KM Geo Mean	2094
KM SD (logged)	0.704	95% Critical H Value (KM-Log)	9.173
KM Standard Error of Mean (logged)	0.575	95% H-UCL (KM -Log)	258199
KM SD (logged)	0.704	95% Critical H Value (KM-Log)	9.173
KM Standard Error of Mean (logged)	0.575		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2533	Mean in Log Scale	7.416
SD in Original Scale	2554	SD in Log Scale	1.19
95% t UCL (Assumes normality)	6839	95% H-Stat UCL	1.611E+9

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 9571

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Filet_EU15_PMPA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
Number of Detects	1	Number of Non-Detects	2
Number of Distinct Detects	1	Number of Distinct Non-Detects	1

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Filet_EU15_PMPA was not processed!

Filet_EU16_HFPO-DA

General Statistics

Total Number of Observations	9	Number of Distinct Observations	5
Number of Detects	3	Number of Non-Detects	6
Number of Distinct Detects	3	Number of Distinct Non-Detects	2
Minimum Detect	24000	Minimum Non-Detect	1300
Maximum Detect	68000	Maximum Non-Detect	4300
Variance Detects	5.053E+8	Percent Non-Detects	66.67%
Mean Detects	48667	SD Detects	22480
Median Detects	54000	CV Detects	0.462
Skewness Detects	-1.008	Kurtosis Detects	N/A
Mean of Logged Detects	10.7	SD of Logged Detects	0.547

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.958	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.26	Lilliefors GOF Test
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	17089	KM Standard Error of Mean	10090
KM SD	24716	95% KM (BCA) UCL	N/A
95% KM (t) UCL	35852	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	33686	95% KM Bootstrap t UCL	N/A

90% KM Chebyshev UCL	47360	95% KM Chebyshev UCL	61071
97.5% KM Chebyshev UCL	80102	99% KM Chebyshev UCL	117485

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	5.749	k star (bias corrected MLE)	N/A
Theta hat (MLE)	8465	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	34.5	nu star (bias corrected)	N/A
Mean (detects)	48667		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	16428
Maximum	68000	Median	0.01
SD	26670	CV	1.623
k hat (MLE)	0.103	k star (bias corrected MLE)	0.143
Theta hat (MLE)	159608	Theta star (bias corrected MLE)	115129
nu hat (MLE)	1.853	nu star (bias corrected)	2.568
Adjusted Level of Significance (β)	0.0231		
Approximate Chi Square Value (2.57, α)	0.257	Adjusted Chi Square Value (2.57, β)	0.164
95% Gamma Approximate UCL (use when n>=50)	164207	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	17089	SD (KM)	24716
Variance (KM)	6.109E+8	SE of Mean (KM)	10090
k hat (KM)	0.478	k star (KM)	0.393
nu hat (KM)	8.605	nu star (KM)	7.07
theta hat (KM)	35747	theta star (KM)	43508
80% gamma percentile (KM)	27520	90% gamma percentile (KM)	48424
95% gamma percentile (KM)	71451	99% gamma percentile (KM)	129469

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (7.07, α)	2.209	Adjusted Chi Square Value (7.07, β)	1.682
95% Gamma Approximate KM-UCL (use when n>=50)	54693	95% Gamma Adjusted KM-UCL (use when n<50)	71848

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.906	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.305	**Lilliefors GOF Test**

5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	20582	Mean in Log Scale	9.311
SD in Original Scale	24080	SD in Log Scale	1.203
95% t UCL (assumes normality of ROS data)	35508	95% Percentile Bootstrap UCL	33831
95% BCA Bootstrap UCL	37028	95% Bootstrap t UCL	63165
95% H-UCL (Log ROS)	110226		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	8.348	KM Geo Mean	4221
KM SD (logged)	1.685	95% Critical H Value (KM-Log)	4.904
KM Standard Error of Mean (logged)	0.688	95% H-UCL (KM -Log)	324640
KM SD (logged)	1.685	95% Critical H Value (KM-Log)	4.904
KM Standard Error of Mean (logged)	0.688		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	16822	Mean in Log Scale	8.019
SD in Original Scale	26400	SD in Log Scale	2.068
95% t UCL (Assumes normality)	33186	95% H-Stat UCL	1910447

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	35852

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Filet_EU16_PFMOAA

General Statistics

Total Number of Observations	9	Number of Distinct Observations	8
Number of Detects	7	Number of Non-Detects	2
Number of Distinct Detects	7	Number of Distinct Non-Detects	1
Minimum Detect	1400	Minimum Non-Detect	1000
Maximum Detect	8200	Maximum Non-Detect	1000
Variance Detects	6645714	Percent Non-Detects	22.22%
Mean Detects	4071	SD Detects	2578

Median Detects	2600	CV Detects	0.633
Skewness Detects	0.771	Kurtosis Detects	-1.047
Mean of Logged Detects	8.136	SD of Logged Detects	0.646

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.88	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.287	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.304	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3389	KM Standard Error of Mean	886.4
KM SD	2462	95% KM (BCA) UCL	4944
95% KM (t) UCL	5037	95% KM (Percentile Bootstrap) UCL	4844
95% KM (z) UCL	4847	95% KM Bootstrap t UCL	5992
90% KM Chebyshev UCL	6048	95% KM Chebyshev UCL	7253
97.5% KM Chebyshev UCL	8924	99% KM Chebyshev UCL	12208

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.396	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.712	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.271	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.314	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.997	k star (bias corrected MLE)	1.808
Theta hat (MLE)	1359	Theta star (bias corrected MLE)	2252
nu hat (MLE)	41.96	nu star (bias corrected)	25.31
Mean (detects)	4071		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	3167
Maximum	8200	Median	2400

SD	2865	CV	0.905
k hat (MLE)	0.257	k star (bias corrected MLE)	0.245
Theta hat (MLE)	12339	Theta star (bias corrected MLE)	12917
nu hat (MLE)	4.619	nu star (bias corrected)	4.413
Adjusted Level of Significance (β)	0.0231		
Approximate Chi Square Value (4.41, α)	0.891	Adjusted Chi Square Value (4.41, β)	0.61
95% Gamma Approximate UCL (use when n>=50)	15679	95% Gamma Adjusted UCL (use when n<50)	22923

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3389	SD (KM)	2462
Variance (KM)	6060988	SE of Mean (KM)	886.4
k hat (KM)	1.895	k star (KM)	1.337
nu hat (KM)	34.11	nu star (KM)	24.07
theta hat (KM)	1788	theta star (KM)	2534
80% gamma percentile (KM)	5308	90% gamma percentile (KM)	7263
95% gamma percentile (KM)	9177	99% gamma percentile (KM)	13531

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (24.07, α)	13.9	Adjusted Chi Square Value (24.07, β)	12.3
95% Gamma Approximate KM-UCL (use when n>=50)	5867	95% Gamma Adjusted KM-UCL (use when n<50)	6631

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.931	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.235	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.304	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3322	Mean in Log Scale	7.778
SD in Original Scale	2684	SD in Log Scale	0.909
95% t UCL (assumes normality of ROS data)	4985	95% Percentile Bootstrap UCL	4760
95% BCA Bootstrap UCL	5006	95% Bootstrap t UCL	5780
95% H-UCL (Log ROS)	9593		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.863	KM Geo Mean	2599
KM SD (logged)	0.734	95% Critical H Value (KM-Log)	2.682
KM Standard Error of Mean (logged)	0.264	95% H-UCL (KM -Log)	6824
KM SD (logged)	0.734	95% Critical H Value (KM-Log)	2.682
KM Standard Error of Mean (logged)	0.264		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	3278	Mean in Log Scale	7.709

SD in Original Scale	2732	SD in Log Scale	1.015
95% t UCL (Assumes normality)	4971	95% H-Stat UCL	12070

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 5037

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Filet_EU16_Filet_EU14_PFO4DA

General Statistics

Total Number of Observations	9	Number of Distinct Observations	3
Number of Detects	2	Number of Non-Detects	7
Number of Distinct Detects	2	Number of Distinct Non-Detects	1
Minimum Detect	400	Minimum Non-Detect	1000
Maximum Detect	110000	Maximum Non-Detect	1000
Variance Detects	6.006E+9	Percent Non-Detects	77.78%
Mean Detects	55200	SD Detects	77499
Median Detects	55200	CV Detects	1.404
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	8.8	SD of Logged Detects	3.972

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	12578	KM Standard Error of Mean	16237
KM SD	34444	95% KM (BCA) UCL	N/A
95% KM (t) UCL	42771	95% KM (Percentile Bootstrap) UCL	N/A

95% KM (z) UCL	39285	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	61289	95% KM Chebyshev UCL	83353
97.5% KM Chebyshev UCL	113978	99% KM Chebyshev UCL	174134

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	0.322	k star (bias corrected MLE)	N/A
Theta hat (MLE)	171565	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	1.287	nu star (bias corrected)	N/A
Mean (detects)	55200		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	12578	SD (KM)	34444
Variance (KM)	1.186E+9	SE of Mean (KM)	16237
k hat (KM)	0.133	k star (KM)	0.163
nu hat (KM)	2.4	nu star (KM)	2.933
theta hat (KM)	94324	theta star (KM)	77178
80% gamma percentile (KM)	14597	90% gamma percentile (KM)	37661
95% gamma percentile (KM)	68058	99% gamma percentile (KM)	154831

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0231
Approximate Chi Square Value (2.93, α)	0.353	Adjusted Chi Square Value (2.93, β)	0.223
95% Gamma Approximate KM-UCL (use when n>=50)	104526	95% Gamma Adjusted KM-UCL (use when n<50)	165788

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	13561	Mean in Log Scale	6.528
SD in Original Scale	36244	SD in Log Scale	2.717
95% t UCL (assumes normality of ROS data)	36027	95% Percentile Bootstrap UCL	37409
95% BCA Bootstrap UCL	49218	95% Bootstrap t UCL	600238
95% H-UCL (Log ROS)	40439969		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	6.616	KM Geo Mean	746.6
KM SD (logged)	1.765	95% Critical H Value (KM-Log)	5.104
KM Standard Error of Mean (logged)	0.832	95% H-UCL (KM -Log)	85692
KM SD (logged)	1.765	95% Critical H Value (KM-Log)	5.104
KM Standard Error of Mean (logged)	0.832		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	12656	Mean in Log Scale	6.789
SD in Original Scale	36504	SD in Log Scale	1.809
95% t UCL (Assumes normality)	35283	95% H-Stat UCL	127918

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL 174134

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Filet_EU16_PFO5DA

General Statistics

Total Number of Observations	9	Number of Distinct Observations	3
Number of Detects	2	Number of Non-Detects	7
Number of Distinct Detects	2	Number of Distinct Non-Detects	1
Minimum Detect	310	Minimum Non-Detect	1000
Maximum Detect	1400	Maximum Non-Detect	1000
Variance Detects	594050	Percent Non-Detects	77.78%
Mean Detects	855	SD Detects	770.7
Median Detects	855	CV Detects	0.901
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	6.49	SD of Logged Detects	1.066

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	431.1	KM Standard Error of Mean	161.5
KM SD	342.6	95% KM (BCA) UCL	N/A
95% KM (t) UCL	731.4	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	696.7	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	915.6	95% KM Chebyshev UCL	1135
97.5% KM Chebyshev UCL	1440	99% KM Chebyshev UCL	2038

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	2.069	k star (bias corrected MLE)	N/A
Theta hat (MLE)	413.2	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	8.276	nu star (bias corrected)	N/A
Mean (detects)	855		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	431.1	SD (KM)	342.6
Variance (KM)	117343	SE of Mean (KM)	161.5
k hat (KM)	1.584	k star (KM)	1.13
nu hat (KM)	28.51	nu star (KM)	20.34
theta hat (KM)	272.2	theta star (KM)	381.5
80% gamma percentile (KM)	686.5	90% gamma percentile (KM)	963.2
95% gamma percentile (KM)	1237	99% gamma percentile (KM)	1868

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0231
Approximate Chi Square Value (20.34, α)	11.1	Adjusted Chi Square Value (20.34, β)	9.695
95% Gamma Approximate KM-UCL (use when n>=50)	789.8	95% Gamma Adjusted KM-UCL (use when n<50)	904.5

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	460.8	Mean in Log Scale	5.881
SD in Original Scale	391.4	SD in Log Scale	0.729
95% t UCL (assumes normality of ROS data)	703.4	95% Percentile Bootstrap UCL	680.4
95% BCA Bootstrap UCL	756.9	95% Bootstrap t UCL	962.2
95% H-UCL (Log ROS)	930.7		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	5.904	KM Geo Mean	366.5
KM SD (logged)	0.474	95% Critical H Value (KM-Log)	2.206
KM Standard Error of Mean (logged)	0.223	95% H-UCL (KM -Log)	593.4
KM SD (logged)	0.474	95% Critical H Value (KM-Log)	2.206

KM Standard Error of Mean (logged)	0.223

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	578.9	Mean in Log Scale	6.276
SD in Original Scale	314.3	SD in Log Scale	0.396
95% t UCL (Assumes normality)	773.7	95% H-Stat UCL	774.6

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	1135

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Filet_EU16_R-EVE

General Statistics

Total Number of Observations	9	Number of Distinct Observations	1
Number of Detects	1	Number of Non-Detects	8
Number of Distinct Detects	1	Number of Distinct Non-Detects	1

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Filet_EU16_R-EVE was not processed!

Filet_EU18_PFO4DA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
Number of Detects	1	Number of Non-Detects	2
Number of Distinct Detects	1	Number of Distinct Non-Detects	1

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Filet_EU18_PFO4DA was not processed!

APPENDIX D

ERM Air Modeling Output

Table D-1
Screening-Level Exposure Assessment
ERM Air Modeling Output
2020 Stack Emission Estimates for HFPO-DA

Emissions Unit [1]	**HFPO-DA Emissions Rates** [2]			
	g/s	lb/hr	lb/yr	TPY
PPA	9.22E-06	7.32E-05	0.64	3.21E-04
SEMI	8.62E-06	6.84E-05	0.60	3.00E-04
TO	1.92E-04	1.52E-03	13.35	6.67E-03
VE_NF	9.57E-05	7.60E-04	6.65	3.33E-03
VE_SF	4.66E-06	3.70E-05	0.32	1.62E-04
PPAF	2.08E-05	1.65E-04	1.45	7.23E-04
Facility Total	3.31E-04	2.63E-03	23.01	1.15E-02

Notes:
[1] Facility emissions units are defined as follows:
PPA = Polymer Processing Aid Process Stacks
SEMI = Semi-Works Process Stacks
TO = Thermal Oxidizer
VE_NF = Vinyl Ethers North Division
VE_SF = Vinyl Ethers South Division
PPAF = PPA Fugitive Emissions
[2] Emission rate estimates were calculated by ERM based upon modeled 2020 air emissions rates, where rates are expressed in the following units:
g/s = grams per second
lb/hr = pounds per hour
lb/yr = pounds per year
TPY = tons per year

APPENDIX E

Modeled HFPO-DA Concentrations in Homegrown Produce

Table E-1
Screening-Level Exposure Assessment
Modeled HFPO-DA Concentrations in Homegrown Produce
Calculation of Aboveground and Belowground Produce Concentrations Due to Root Uptake

Common Name	Chemical Name	CASN	Chemical Formula	Calculation of Aboveground and Belowground Produce Concentrations for HFPO-DA [1]								
				Aboveground Calculations		Belowground Calculations						Log K_{ow} [7]
				PRag [2]	BRag [3]	PRbg [4]	$BR_{rootveg}$ [5]	RCF [5a]	Kd_s [5b]	Log K_{oc} [5c,8]	$VG_{rootveg}$ [6]	
				ng/kg dw	(unitless)	ng/kg dw	(unitless)	(unitless)	L/kg	L/kg	(unitless)	(unitless)
HFPO-DA	Hexafluoropropylene oxide dimer acid	13252-13-6	C6HF11O3	Table F-3-3	0.1372	Table F-3-3	753	56	0.074	1.09	0.010	4.24

Notes:
[1] Equations are consistent with the EPA 2005 Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (HHRAP) Appendix B; Table B-2-9 and Table B-2-10.
[2] PRag is the concentration of the COPC in aboveground produce due to root uptake (ng/kg dw), calculated as:

$$PR_{ag} = CS * BR_{ag}$$

where:
(a) CS is the Exposure Point Concentration of the constituent in soil (ng/kg dw)
(b) BRag is the unitless COPC-specific plant-soil bioconcentration factor for aboveground produce (see footnote 3)
[3] BRag is the COPC-specific plant-soil bioconcentration factor for aboveground produce, which is based on the following regression equation developed in a study of the uptake of 29 organic compounds by Travis and Arms (1988):

$$\log(BR_{ag}) = 1.588 - 0.578 * \log(K_{ow})$$

where:
(a) K_{ow} is the octanol-water partition coefficient; unitless. Units = [(mg COPC/L octanol)/(mg COPC/L water)]
[4] PRbg is the concentration of the COPC in belowground produce due to root uptake (ng/kg dw), calculated as:

$$PR_{bg} = CS * BR_{rootveg} * VG_{rootveg}$$

(a) CS is the Exposure Point Concentration of the constituent in soil (ng/kg dw)
(b) $BR_{rootveg}$ is the plant-soil bioconcentration factor for belowground produce (uniltess; see footnote 5)
(c) $VG_{rootveg}$ is the empirical correction factor for belowground produce (unitless; see footnote 6)
[5] $BR_{rootveg}$ is the plant-soil bioconcentration factor for belowground produce (unitless), calculated as:

$$BR_{rootveg} = \frac{RCF}{Kd_s}$$

where:
(a) RCF is the root concentration factor used to calculate the belowground transfer of contaminants from soil to a root vegetable.
(i) for compounds with a log K_{ow} >= 2.0:

$$\log(RCF) = 0.77 * \log(K_{ow}) - 1.52$$

(ii) for compounds with a log K_{ow} < 2.0:

$$\log(RCF - 0.82) = 0.77 * \log(K_{ow}) - 1.52$$

(b) Kd_s is the soil-water partition coefficient = K_{oc} x f_{oc}	chemical-specific	L/kg
(c) K_{oc} = Soil organic carbon-water partition coefficient	chemical-specific	L/kg
(d) f_{oc} = Fraction organic carbon in soil (NC DEQ, 2017)	0.006	g/g

[6] $VG_{rootveg}$ is the empirical correction factor for belowground produce (unitless), where:
(a) $VG_{rootveg}$ = 0.01 for COPCs with log K_{ow} > 4
(b) $VG_{rootveg}$ = 1.0 for COPCs with log K_{ow} < 4
[7] K_{ow} is the octanol-water partition coefficient. The SLEA uses the average of the following values reported in: Hopkins et., al, 2018. R*ecently detected drinking water contaminants: GenX and other per- and polyfluoroalkyl ether acids* .
(a) Chemicalize, ChemAxon, Cambridge, MA
(b) OPERA, CompTox Chemistry Dashboard, USEPA
(c) KOAWIN v1.10, EPI Suite, USEPA
(d) PhysChem Module, Percepta, ACD/Labs, Toronto, Ont., Canada.
[8] K_{oc} is the soil organic carbon-water partition coefficient. The SLEA uses the average of the following values reported in: Bloxham, P.A. 2008. *Trade secret documented in Study Number DuPont-17568-1675* .
(a) Measured for HFPO-DA ammonium salt in soil
(b) Measured for HFPO-DA ammonium salt in sludge

Table E-2
Screening-Level Exposure Assessment
Modeled HFPO-DA Concentrations in Homegrown Produce
Calculation of Dry and Wet Deposition Rates

		Modeled Deposition Flux Estimates for HFPO-DA, CY2020 [1]				HFPO-DA Emission Rate (Q) for 2020 [2]	Unitized Deposition Rates [3]			
Exposure Unit (EU)	EU Location Description	Dry Mass Average	Wet Mass Average	Dry Mass Maximum	Wet Mass Maximum		Dydp (Dry, Average)	Dywp (Wet, Average)	Dydp (Dry, Maximum)	Dywp (Wet, Maximum)
		(g/m^2-yr)	(g/m^2-yr)	(g/m^2-yr)	(g/m^2-yr)	(g/s)	(s/m^2-yr)	(s/m^2-yr)	(s/m^2-yr)	(s/m^2-yr)
EU1	2.5-km Radius - Northeast	2.76E-05	5.27E-09	5.55E-04	2.99E-08	3.31E-04	8.34E-02	1.59E-05	1.68E+00	9.03E-05
EU2	2.5-km Radius - Southeast	8.85E-06	3.62E-09	9.53E-05	1.79E-08	3.31E-04	2.67E-02	1.09E-05	2.88E-01	5.42E-05
EU3	2.5-km Radius - Southwest	6.12E-06	4.76E-09	2.40E-05	1.56E-08	3.31E-04	1.85E-02	1.44E-05	7.24E-02	4.73E-05
EU4	2.5-km Radius - Northwest	7.40E-06	2.73E-09	7.30E-05	1.33E-08	3.31E-04	2.24E-02	8.26E-06	2.21E-01	4.03E-05
EU5	5-km Radius - Northeast	1.77E-06	1.20E-09	4.44E-06	2.84E-09	3.31E-04	5.34E-03	3.62E-06	1.34E-02	8.57E-06
EU6	5-km Radius - Southeast	9.56E-07	1.07E-09	2.47E-06	2.68E-09	3.31E-04	2.89E-03	3.24E-06	7.47E-03	8.10E-06
EU7	5-km Radius - Southwest	1.31E-06	1.73E-09	3.19E-06	3.95E-09	3.31E-04	3.94E-03	5.22E-06	9.65E-03	1.19E-05
EU8	5-km Radius - Northwest	8.85E-07	7.49E-10	1.99E-06	2.27E-09	3.31E-04	2.67E-03	2.26E-06	6.01E-03	6.85E-06
EU9	10-km Radius - Northeast	5.53E-07	4.96E-10	1.29E-06	1.24E-09	3.31E-04	1.67E-03	1.50E-06	3.88E-03	3.76E-06
EU10	10-km Radius - Southeast	3.19E-07	4.59E-10	8.43E-07	1.37E-09	3.31E-04	9.65E-04	1.39E-06	2.55E-03	4.14E-06
EU11	10-km Radius - Southwest	4.59E-07	7.49E-10	1.26E-06	1.93E-09	3.31E-04	1.39E-03	2.26E-06	3.81E-03	5.82E-06
EU12	10-km Radius - Northwest	2.91E-07	3.17E-10	7.09E-07	9.95E-10	3.31E-04	8.79E-04	9.59E-07	2.14E-03	3.01E-06

Notes:
[1] Dry and wet mass deposition flux estimates of HFPO-DA, based upon the 2020 air emission predictions calculated by ERM.
[2] The source facility total emission rate of HFPO-DA for the 2020 air emission scenario as provided by ERM (per email dated 5 September 2019). Emission rate outputs are presented in Appendix D.
[3] Unitized dry and wet deposition rates, Dydp and Dywp, are calculated by dividing the flux estimates by the facilities total emission rate, Q.

Definitions:
g/s = grams per second
g/m^2-yr = grams per square meter per year
s/m^2-yr = grams per square meter per year

Table E-3
Screening-Level Exposure Assessment
Modeled HFPO-DA Concentrations in Homegrown Produce
Calculation of Aboveground Produce Concentrations Due to Airborne Deposition

			Calculation of Aboveground Produce Concentrations for HFPO-DA [1]													
Exposure Unit	**EU Location Description**	**Statistic**	**Pd [2]** (mg/kg dw)	**Q [3]** (g/s)	**Fv [4]** (unitless)	**c [4a]** (atm-cm)	**P_L [4b]** (atm)	**S_T [4c]** (cm^{-1})	**Dydp [5]** (s/m^2-yr)	**Fw [6]** (unitless)	**Dywp [7]** (s/m^2-yr)	**Rp [8]** (unitless)	**kp [9]** (yr^{-1})	**$t_{0.5}$ [9a]** days	**Tp [10]** (yr)	**Yp_{dw} [11]** (kg DW/m^2)
EU1	2.5-km Radius - Northeast	CTE	4.95E-11	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	8.34E-02	0.6	1.59E-05	0.39	18	14	0.16	2.24
EU2	2.5-km Radius - Southeast	CTE	1.59E-11	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	2.67E-02	0.6	1.09E-05	0.39	18	14	0.16	2.24
EU3	2.5-km Radius - Southwest	CTE	1.10E-11	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	1.85E-02	0.6	1.44E-05	0.39	18	14	0.16	2.24
EU4	2.5-km Radius - Northwest	CTE	1.33E-11	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	2.24E-02	0.6	8.26E-06	0.39	18	14	0.16	2.24
EU5	5-km Radius - Northeast	CTE	3.17E-12	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	5.34E-03	0.6	3.62E-06	0.39	18	14	0.16	2.24
EU6	5-km Radius - Southeast	CTE	1.72E-12	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	2.89E-03	0.6	3.24E-06	0.39	18	14	0.16	2.24
EU7	5-km Radius - Southwest	CTE	2.34E-12	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	3.94E-03	0.6	5.22E-06	0.39	18	14	0.16	2.24
EU8	5-km Radius - Northwest	CTE	1.59E-12	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	2.67E-03	0.6	2.26E-06	0.39	18	14	0.16	2.24
EU9	10-km Radius - Northeast	CTE	9.91E-13	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	1.67E-03	0.6	1.50E-06	0.39	18	14	0.16	2.24
EU10	10-km Radius - Southeast	CTE	5.73E-13	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	9.65E-04	0.6	1.39E-06	0.39	18	14	0.16	2.24
EU11	10-km Radius - Southwest	CTE	8.24E-13	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	1.39E-03	0.6	2.26E-06	0.39	18	14	0.16	2.24
EU12	10-km Radius - Northwest	CTE	5.22E-13	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	8.79E-04	0.6	9.59E-07	0.39	18	14	0.16	2.24
EU1	2.5-km Radius - Northeast	RME/MAX	9.94E-10	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	1.68E+00	0.6	9.03E-05	0.39	18	14	0.16	2.24
EU2	2.5-km Radius - Southeast	RME/MAX	1.71E-10	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	2.88E-01	1.6	5.42E-05	0.39	18	14	0.16	2.24
EU3	2.5-km Radius - Southwest	RME/MAX	4.30E-11	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	7.24E-02	2.6	4.73E-05	0.39	18	14	0.16	2.24
EU4	2.5-km Radius - Northwest	RME/MAX	1.31E-10	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	2.21E-01	3.6	4.03E-05	0.39	18	14	0.16	2.24
EU5	5-km Radius - Northeast	RME/MAX	7.98E-12	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	1.34E-02	4.6	8.57E-06	0.39	18	14	0.16	2.24
EU6	5-km Radius - Southeast	RME/MAX	4.46E-12	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	7.47E-03	5.6	8.10E-06	0.39	18	14	0.16	2.24
EU7	5-km Radius - Southwest	RME/MAX	5.77E-12	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	9.65E-03	6.6	1.19E-05	0.39	18	14	0.16	2.24
EU8	5-km Radius - Northwest	RME/MAX	3.60E-12	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	6.01E-03	7.6	6.85E-06	0.39	18	14	0.16	2.24
EU9	10-km Radius - Northeast	RME/MAX	2.32E-12	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	3.88E-03	8.6	3.76E-06	0.39	18	14	0.16	2.24
EU10	10-km Radius - Southeast	RME/MAX	1.53E-12	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	2.55E-03	9.6	4.14E-06	0.39	18	14	0.16	2.24
EU11	10-km Radius - Southwest	RME/MAX	2.30E-12	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	3.81E-03	10.6	5.82E-06	0.39	18	14	0.16	2.24
EU12	10-km Radius - Northwest	RME/MAX	1.29E-12	0.000331	0.999999803	1.70E-04	0.003019985	3.50E-06	2.14E-03	11.6	3.01E-06	0.39	18	14	0.16	2.24

Notes:
[1] Equations are consistent with the EPA 2005 Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (HHRAP) Appendix B; Table B-2-7.
[2] Pd is the concentration of the COPC in aboveground produce due to direct (wet and dry) deposition. Pd is exposure unit-specific.
where:

$$Pd = \frac{1000 * Q * (1 - F_v) * [Dydp + (Fw * Dywp)] * Rp * [1.0 - e^{(-kp*Tp)}]}{Yp_{dw} * kp}$$

[3] Q is the COPC-specific emission rate in grams per second (g/s).
[4] Fv is the fraction of the COPC air concentration in vapor phase. This parameter is unitless and COPC-specific, and was calculated as follows per HHRAP Appendix A-2:

$$Fv = 1 - \frac{c * S_T}{p_L + c * S_T}$$

where: (a) c is the Junge constant
(b) P_L is the liquid vapor pressure of the compound
(c) S_T is Whitby's average surface area of particulates (aerosols), for non-urban sites

[5] Dydp is the COPC- and EU-specific unitized yearly average dry deposition rate from particle phase determined by air dispersion modeling by ERM.
[6] Fw is the fraction of the COPC wet deposition that adheres to plant surfaces. The default value of 0.6 for organics, which was estimated by USEPA, is used.
[7] Dywp is the COPC- and site-specific unitized yearly wet deposition rate in particle phase determined by air dispersion modeling by ERM.
[8] Rp is the interception fraction of the edible portion of the plant. The USEPA recommended value of 0.39 is used.
[9] kp is the plant surface loss coefficient where $t_{0.5}$ is the half lif in days

$$\text{kp} = \frac{\ln(2)}{t_{0.5}} * 365 \; {}^{days}/_{year}$$

[10] Tp is the length of plant exposure to deposition per harvest of edible portion of the plant. The USEPA recommended value of 0.16 yrs is used.
[11] Yp_{dw} is the yield or standing crop biomass of the edible portion of the plant (productivity). The USEPA recommended value of 2.24 is used.

APPENDIX F

Intake and Hazard Calculations

Table F-1
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Table 3+ PFAS Evaluated in the SLEA

Chemical Abbreviation	Chemical Name	Chemical Formula	Consent Order Constituent	Table 3+ Constituent
HFPO-DA	Hexafluoropropylene oxide dimer acid	C6HF11O3	X	X
PEPA	Perfluoroethoxypropyl carboxylic acid	C5HF9O3	X	X
PFECA-G	Perfluoro-4-isopropoxybutanoic acid	C12H9F9O3S	X	X
PFMOAA	Perfluoro-2-methoxyaceticacid	C3HF5O3	X	X
PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	C4HF7O4	X	X
PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	C5HF9O5	X	X
PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	C6HF11O6	X	X
PMPA	Perfluoromethoxypropyl carboxylic acid	C4HF7O3	X	X
Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	C8H2F14O4		X
EVE Acid	Perflouroethoxypropionic acid	C8HF13O4		X
PFECA B	Perfluoro-3,6-dioxaheptanoic acid	C5HF9O4		X
R-EVE	R-EVE	C8H2F12O5		X
PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	C7HF13O7	X	X
Byproduct 4	Byproduct 4	C7H2F12O6S		X
Byproduct 6	Byproduct 6	C6H2F12O4S		X
Byproduct 5	Byproduct 5	C7H3F11O7S		X
NVHOS	Perflouroethoxysulfonic acid	C4H2F8O4S		X
PES	Perfluoroethoxyethanesulfonic acid	C4HF9O4S		X
PFESA-BP1	Byproduct 1	C7HF13O5S	X	X
PFESA-BP2	Byproduct 2	C7H2F14O5S	X	X

Notes:
CASN - Chemical Abstract Service Number

Table F-2-1
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Receptor-Specific Exposure Assumptions
Resident

Parameter	Parameter Definition	Units	Variables	Note	Equations for Intake
ADI-S	Average Daily Intake via Soil Exposure	mg/kg-day	calculated	[1] Calculated	
ADI-W	Average Daily Intake via Tapwater Use	mg/kg-day	calculated	[1] Calculated	Soil Ingestion:
CS	Exposure Point Concentration of Constituent in Soil	ng/kg	EU-specific	Table 3-1	$ADI\text{-}S_{adj} = CS \times IRS_{adj} \times RBA \times EF \times CFs \times (1/AT_{adj})$
CW	Exposure Point Concentration of Constituent in Tapwater	ng/L	EU-specific	Table 3-2	$ADI\text{-}S_{child} = CS \times IRS_{child} \times RBA \times EF \times ED_{child} \times CFs \times (1/BW_{child}) \times (1/AT_{child})$
IRS_{child}	Soil Ingestion Rate - Child	mg/day	200	[2] EPA, 2014	*where:*
IRS_{adult}	Soil Ingestion Rate - Adult	mg/day	100	[2] EPA, 2014	$IRS_{adj} = (ED_{child} \times IRS_{child} / BW_{child}) + (ED_{adult} \times IRS_{adult} / BW_{adult})$
IRS_{adj}	Age-Adjusted Soil Ingestion Rate	mg-year/kg-day	105	[3] EPA, 2019a	
RBA	Chemical-Specific Relative Bioavailability Factor	fraction	chemical-specific	Table 2 Series	Tapwater Ingestion:
IRW_{child}	Tapwater Ingestion Rate - Child	L/day	0.78	[4] EPA, 2014	$ADI\text{-}W_{adj} = CW \times IRW_{adj} \times EF \times CFm \times (1/AT_{adj})$
IRW_{adult}	Tapwater Ingestion Rate - Adult	L/day	2.5	[4] EPA, 2014	$ADI\text{-}W_{child} = CW \times IRW_{child} \times EF \times ED_{child} \times CFm \times (1/BW_{child}) \times (1/AT_{child})$
IRW_{adj}	Age-Adjusted Tapwater Ingestion Rate	L-yr/kg-day	0.937	[3] EPA, 2019a	*where:*
EF	Exposure Frequency	days/year	350	[5] EPA, 2014	$IRW_{adj} = (ED_{child} \times IRW_{child} / BW_{child}) + (ED_{adult} \times IRW_{adult} / BW_{adult})$
ED_{child}	Exposure Duration - Child	years	6	[6] EPA, 2014	
ED_{adult}	Exposure Duration - Adult	years	20	[6] EPA, 2014	
ED_{adj}	Age-Adjusted Exposure Duration	years	26	[6] EPA, 2014	
BW_{child}	Body Weight - Child	kg	15	[7] EPA, 2014	
BW_{adult}	Body Weight - Adult	kg	80	[7] EPA, 2014	
AT_{adj}	Age-Adjusted Averaging Time	days	9,490	[8] EPA, 2014	
AT_{child}	Child-Specific Averaging Time	days	2,190	[8] EPA, 2014	
CFm	Conversion Factor - ng to mg	mg/ng	1.0E-06	--	
CFs	Conversion Factor - ng to kg	kg/ng	1.0E-12	--	

Notes
[1] Receptor-specific intakes are calculated using the equations presented in this table for an age-adjusted resident (ages 0-26 years) and a child resident (ages 0-6 years)
[2] EPA default soil ingestion rates for child and adult residents.
[3] Equations for age-adjusted intake rates are based on the EPA's 2019 User's Guide to the RSL Tables. Equations are presented in the "Equations for Intake" column of the table.
[4] EPA default tapwater ingestion rates for child and adult residents.
[5] Default exposure frequency for residents.
[6] The default residential exposure duration is 26 years; EPA assumes 6 years are spent as a child.
[7] Default child and adult body weights.
[8] The averaging time is equivalent to the exposure duration - 26 years for the age-adjusted (child/adult) receptor and 6 years for the child.
[9] Time-weighted average (ages 0 to 6 and 6 to 26) of the 95th percentile long-term exposure values for inhalation as suggested in EPA's 2011 Exposure Factors Handbook, Table 6-1.
[10] Default air exposure time for child and adult residents.

Table F-2-2
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Receptor-Specific Exposure Assumptions
Farmer

Parameter	Parameter Definition	Units	Variables	Note	Equations for Intake
ADI-S	Average Daily Intake via Soil Exposure	mg/kg-day	calculated	[1] Calculated	
ADI-W	Average Daily Intake via Tapwater Use	mg/kg-day	calculated	[1] Calculated	Soil Ingestion:
ADI-HP	Average Daily Intake via Homegrown Produce	mg/kg-day	calculated	[1] Calculated	$ADI\text{-}S_{adj}$ = CS x IRS_{adj} x RBA x EF x CFs x (1/AT_{adj})
CS	Exposure Point Concentration of Constituent in Soil	ng/kg	EU-specific	Table 3-1	$ADI\text{-}S_{child}$ = CS x IRS_{child} x RBA x EF x ED_{child} x CFs x (1/BW_{child}) x (1/AT_{child})
CW	Exposure Point Concentration of Constituent in Tapwater	ng/L	EU-specific	Table 3-2	*where:*
IRS_{child}	Soil Ingestion Rate - Child	mg/day	200	[2] EPA, 2014	IRS_{adj} = (ED_{child} x IRS_{child} / BW_{child}) + (ED_{adult} x IRS_{adult} / BW_{adult})
IRS_{adult}	Soil Ingestion Rate - Adult	mg/day	330	[2] EPA, 2014	
IRS_{adj}	Age-Adjusted Soil Ingestion Rate	mg-year/kg-day	163	[3] EPA, 2019a	
RBA	Chemical-Specific Relative Bioavailability Factor	fraction	chemical-specific	Table 2 Series	Tapwater Ingestion:
IRW_{child}	Tapwater Ingestion Rate - Child	L/day	0.78	[4] EPA, 2014	$ADI\text{-}W_{adj}$ = CW x IRW_{adj} x EF x CFm x (1/AT_{adj})
IRW_{adult}	Tapwater Ingestion Rate - Adult	L/day	2.5	[4] EPA, 2014	$ADI\text{-}W_{child}$ = CW x IRW_{child} x EF x ED_{child} x CFm x (1/BW_{child}) x (1/AT_{child})
IRW_{adj}	Age-Adjusted Tapwater Ingestion Rate	L-yr/kg-day	0.937	[3] EPA, 2019a	*where:*
EF	Exposure Frequency	days/year	350	[5] EPA, 2014	IRW_{adj} = (ED_{child} x IRW_{child} / BW_{child}) + (ED_{adult} x IRW_{adult} / BW_{adult})
ED_{child}	Exposure Duration - Child	years	6	[6] EPA, 2014	
ED_{adult}	Exposure Duration - Adult	years	20	[6] EPA, 2014	Ingestion of Home Grown Produce:
ED_{adj}	Age-Adjusted Exposure Duration	years	26	[6] EPA, 2014	$ADI\text{-}HP_{adj}$ = IHP_{adj} x EF x (1/AT_{adj})
BW_{child}	Body Weight - Child	kg	15	[7] EPA, 2014	$ADI\text{-}HP_{child}$ = IHP_{child} x EF x ED x (1/AT_{child})
BW_{adult}	Body Weight - Adult	kg	80	[7] EPA, 2014	*where:*
AT_{adj}	Age-Adjusted Averaging Time	days	9,490	[8] EPA, 2014	IHP_{child} = [((Pd+PRag) x $CRag_{child}$) + (PRag x $CRpp_{child}$) + (PRbg x $CRbg_{child}$)] x Fp
AT_{child}	Child-Specific Averaging Time	days	2,190	[8] EPA, 2014	IHP_{adj} = [((Pd+PRag) x $CRag_{adj}$) + (PRag x $CRpp_{adj}$) + (PRbg x $CRbg_{adj}$)] x Fp
Pd	Aboveground Produce Concentration Due to Direct Deposition	mg/kg DW	chemical-specific	Table 3-3	*and:*
PRag	Aboveground Produce Concentration Due to Root Uptake	mg/kg DW	chemical-specific	Table 3-3	Pd = To be calculated in SLEA Attachment
PRbg	Belowground Produce Concentration Due to Root Uptake	mg/kg DW	chemical-specific	Table 3-3	PRag = CS x BRag
BRag	Plant-Soil Bioconcentration Factor for Aboveground Produce	([mg/kg DW]/[mg/kg])	chemical-specific	[9] EPA, 2005	PRbg = CS x BRrootveg x VGrootveg
BRrootveg	Plant-Soil Bioconcentration Factor for Belowground Produce	([mg/kg DW]/[mg/kg])	chemical-specific	[9] EPA, 2005	
VGrootveg	Empirical Correction Factor for Belowground Produce	unitless	chemical-specific	[9] EPA, 2005	*and:*
IHP_{child}	Daily Intake From Homegrown Produce - child	mg/kg-day	chemical-specific	[9] EPA, 2005	$CRag_{adj}$ = ($CRag_{child}$ x ED_{child} + $CRag_{adult}$ x ED_{adult})
IHP_{adult}	Daily Intake From Homegrown Produce - adult	mg/kg-day	chemical-specific	[9] EPA, 2005	$CRbg_{adj}$ = ($CRbg_{child}$ x ED_{child} + $CRbg_{adult}$ x ED_{adult})
IHP_{adj}	Age-Adjusted Daily Intake From Homegrown Produce	mg-yr/kg-day	chemical-specific	[3] EPA, 2019a	$CRpp_{adj}$ = ($CRpp_{child}$ x ED_{child} + $CRpp_{adult}$ x ED_{adult})
$CRag_{child}$	Aboveground Produce Ingestion Rate - Child	kg DW/kg-day	1.13E-03	[9] EPA, 2005	
$CRag_{adult}$	Aboveground Produce Ingestion Rate - Adult	kg DW/kg-day	4.70E-04	[9] EPA, 2005	
$CRag_{adj}$	Age-Adjusted Aboveground Produce Ingestion Rate	yr-kg DW/kg-day	1.62E-02	[3] EPA, 2019a	
$CRbg_{child}$	Belowground Produce Ingestion Rate - Child	kg DW/kg-day	2.80E-04	[9] EPA, 2005	
$CRbg_{adult}$	Belowground Produce Ingestion Rate - Adult	kg DW/kg-day	1.70E-04	[9] EPA, 2005	
$CRbg_{adj}$	Age-Adjusted Belowground Produce Ingestion Rate	yr-kg DW/kg-day	5.08E-03	[3] EPA, 2019a	
$CRpp_{child}$	Protected Aboveground Produce Ingestion Rate - Child	kg DW/kg-day	1.57E-03	[9] EPA, 2005	
$CRpp_{adult}$	Protected Aboveground Produce Ingestion Rate - Adult	kg DW/kg-day	6.40E-04	[9] EPA, 2005	
$CRpp_{adj}$	Age-Adjusted Protected Aboveground Produce Ingestion Rate	yr-kg DW/kg-day	2.22E-02	[3] EPA, 2019a	
Fp	Fraction of Homegrown Produce Ingested From Contaminated Source	unitless	1	[9] EPA, 2005	
CFm	Conversion Factor - ng to mg	mg/ng	1.00E-06	--	
CFs	Conversion Factor - ng to kg	kg/ng	1.00E-12	--	

Notes
[1] Receptor-specific intakes are calculated using the equations presented in this table for an age-adjusted farmer (ages 0-26 years) and a child farmer (ages 0-6 years).
[2] EPA default soil ingestion rates for child residents and construction workers represent child and adult farmers, respectively.
[3] Equations for age-adjusted intake rates are based on the EPA's 2019 User's Guide to the RSL Tables. Equations are presented in the "Equations for Intake" column of the table.
[4] EPA default tapwater ingestion rates for child and adult residents.
[5] Default exposure frequency for residents.
[6] The default residential exposure duration is 26 years; EPA assumes 6 years are spent as a child.
[7] Default child and adult body weights.
[8] The averaging time is equivalent to the exposure duration - 26 years for the age-adjusted (child/adult) receptor and 6 years for the child.
[9] Produce equations and inputs were developed from the EPA's 2005 Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (HHRAP) guidance. The child- and adult-specific intake adjustments are default recommended values presented in Appendix C of the HHRAP guidance, Table C-1-2.

Table F-2-3
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Receptor-Specific Exposure Assumptions
Gardener

Parameter	Parameter Definition	Units	Variables	Note	Equations for Intake
ADI-S	Average Daily Intake via Soil Exposure	mg/kg-day	calculated	[1] Calculated	
ADI-W	Average Daily Intake via Tapwater Use	mg/kg-day	calculated	[1] Calculated	Soil Ingestion:
ADI-HP	Average Daily Intake via Homegrown Produce	mg/kg-day	calculated	[1] Calculated	ADI-S_{adj} = CS x IRS_{adj} x RBA x EF x CFs x (1/AT_{adj})
CS	Exposure Point Concentration of Constituent in Soil	ng/kg	EU-specific	Table 3-1	
CW	Exposure Point Concentration of Constituent in Tapwater	ng/L	EU-specific	Table 3-2	ADI-S_{child} = CS x IRS_{child} x RBA x EF x ED_{child} x CFs x (1/BW_{child}) x (1/AT_{child})
IRS_{child}	Soil Ingestion Rate - Child	mg/day	200	[2] EPA, 2014	*where:*
IRS_{adult}	Soil Ingestion Rate - Adult	mg/day	100	[2] EPA, 2014	IRS_{adj} = (ED_{child} x IRS_{child} / BW_{child}) + (ED_{adult} x IRS_{adult} / BW_{adult})
IRS_{adj}	Age-Adjusted Soil Ingestion Rate	mg-year/kg-day	105	[3] EPA, 2019a	
RBA	Chemical-Specific Relative Bioavailability Factor	fraction	chemical-specific	Table 2 Series	Tapwater Ingestion:
IRW_{child}	Tapwater Ingestion Rate - Child	L/day	0.78	[4] EPA, 2014	ADI-W_{adj} = CW x IRW_{adj} x EF x CFm x (1/AT_{adj})
IRW_{adult}	Tapwater Ingestion Rate - Adult	L/day	2.5	[4] EPA, 2014	ADI-W_{child} = CW x IRW_{child} x EF x ED_{child} x CFm x (1/BW_{child}) x (1/AT_{child})
IRW_{adj}	Age-Adjusted Tapwater Ingestion Rate	L-yr/kg-day	0.937	[3] EPA, 2019a	*where:*
EF	Exposure Frequency	days/year	350	[5] EPA, 2014	IRW_{adj} = (ED_{child} x IRW_{child} / BW_{child}) + (ED_{adult} x IRW_{adult} / BW_{adult})
ED_{child}	Exposure Duration - Child	years	6	[6] EPA, 2014	
ED_{adult}	Exposure Duration - Adult	years	20	[6] EPA, 2014	Ingestion of Home Grown Produce:
ED_{adj}	Age-Adjusted Exposure Duration	years	26	[6] EPA, 2014	ADI-HP_{adj} = IHP_{adj} x EF x (1/AT_{adj})
BW_{child}	Body Weight - Child	kg	15	[7] EPA, 2014	ADI-HP_{child} = IHP_{child} x EF x ED x (1/AT_{child})
BW_{adult}	Body Weight - Adult	kg	80	[7] EPA, 2014	*where:*
AT_{adj}	Age-Adjusted Averaging Time	days	9,490	[8] EPA, 2014	IHP_{child} = [((Pd+PRag) x $CRag_{child}$) + (PRag x $CRpp_{child}$) + (PRbg x $CRbg_{child}$)] x Fp
AT_{child}	Child-Specific Averaging Time	days	2,190	[8] EPA, 2014	IHP_{adj} = [((Pd+PRag) x $CRag_{adj}$) + (PRag x $CRpp_{adj}$) + (PRbg x $CRbg_{adj}$)] x Fp
Pd	Aboveground Produce Concentration Due to Direct Deposition	mg/kg DW	chemical-specific	Table 3-3	
PRag	Aboveground Produce Concentration Due to Root Uptake	mg/kg DW	chemical-specific	Table 3-3	*and:*
PRbg	Belowground Produce Concentration Due to Root Uptake	mg/kg DW	chemical-specific	Table 3-3	Pd = To be calculated in SLEA Attachment
BRag	Plant-Soil Bioconcentration Factor for Aboveground Produce	([mg/kg DW]/[mg/kg])	chemical-specific	[9] EPA, 2005	PRag = CS x BRag
BRrootveg	Plant-Soil Bioconcentration Factor for Belowground Produce	([mg/kg DW]/[mg/kg])	chemical-specific	[9] EPA, 2005	PRbg = CS x BRrootveg x VGrootveg
VGrootveg	Empirical Correction Factor for Belowground Produce	unitless	chemical-specific	[9] EPA, 2005	
IHP_{child}	Daily Intake From Homegrown Produce - Child	mg/kg-day	chemical-specific	[9] EPA, 2005	*and:*
IHP_{adult}	Daily Intake From Homegrown Produce - Adult	mg/kg-day	chemical-specific	[9] EPA, 2005	$CRag_{adj}$ = ($CRag_{child}$ x ED_{child} + $CRag_{adult}$ x ED_{adult})
IHP_{adj}	Age-Adjusted Daily Intake From Homegrown Produce	mg-yr/kg-day	chemical-specific	[3] EPA, 2019a	$CRbg_{adj}$ = ($CRbg_{child}$ x ED_{child} + $CRbg_{adult}$ x ED_{adult})
$CRag_{child}$	Aboveground Produce Ingestion Rate - Child	kg DW/kg-day	1.13E-03	[9] EPA, 2005	$CRpp_{adj}$ = ($CRpp_{child}$ x ED_{child} + $CRpp_{adult}$ x ED_{adult})
$CRag_{adult}$	Aboveground Produce Ingestion Rate - Adult	kg DW/kg-day	4.70E-04	[9] EPA, 2005	
$CRag_{adj}$	Age-Adjusted Aboveground Produce Ingestion Rate	yr-kg DW/kg-day	1.62E-02	[3] EPA, 2019a	
$CRbg_{child}$	Belowground Produce Ingestion Rate - Child	kg DW/kg-day	2.80E-04	[9] EPA, 2005	
$CRbg_{adult}$	Belowground Produce Ingestion Rate - Adult	kg DW/kg-day	1.70E-04	[9] EPA, 2005	
$CRbg_{adj}$	Age-Adjusted Belowground Produce Ingestion Rate	yr-kg DW/kg-day	5.08E-03	[3] EPA, 2019a	
$CRpp_{child}$	Protected Aboveground Produce Ingestion Rate - Child	kg DW/kg-day	1.57E-03	[9] EPA, 2005	
$CRpp_{adult}$	Protected Aboveground Produce Ingestion Rate - Adult	kg DW/kg-day	6.40E-04	[9] EPA, 2005	
$CRpp_{adj}$	Age-Adjusted Protected Aboveground Produce Ingestion Rate	yr-kg DW/kg-day	2.22E-02	[3] EPA, 2019a	
Fp	Fraction of Homegrown Produce Ingested From Contaminated Source	unitless	1	[9] EPA, 2005	
CFm	Conversion Factor - ng to mg	mg/ng	1.00E-06	--	
CFs	Conversion Factor - ng to kg	kg/ng	1.00E-12	--	

Notes
[1] Receptor-specific intakes are calculated using the equations presented in this table for an age-adjusted gardener (ages 0-26 years) and a child gardener (ages 0-6 years).
[2] EPA default soil ingestion rates for child and adult residents.
[3] Equations for age-adjusted intake rates are based on the EPA's 2019 User's Guide to the RSL Tables. Equations are presented in the "Equations for Intake" column of the table.
[4] EPA default tapwater ingestion rates for child and adult residents.
[5] Default exposure frequency for residents.
[6] The default residential exposure duration is 26 years; EPA assumes 6 years are spent as a child.
[7] Default child and adult body weights.
[8] The averaging time is equivalent to the exposure duration - 26 years for the age-adjusted (child/adult) receptor and 6 years for the child.
[9] Produce equations and inputs were developed from the EPA's 2005 Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (HHRAP) guidance. The child- and adult-specific intake adjustments are default recommended values presented in Appendix C of the HHRAP guidance, Table C-1-2.

Table F-2-4
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Receptor-Specific Exposure Assumptions
Recreationalist

Parameter	Parameter Definition	Units	Variables	Note	Equations for Intake
ADI-SW	Average Daily Intake of Surface Water While Swimming	mg/kg-day	calculated	[1] Calculated	
CSW	Exposure Point Concentration of Constituent in Surface Water	ng/L	EU-specific	Table 3-4	Incidental Ingestion of Surface Water:
IRW_{child}	Surface Water Ingestion Rate for Swimming - Child	L/hr	0.12	[2] EPA, 2011	$ADI\text{-}SW_{adj} = CSW \times IRW_{adj} \times ET \times EF \times CFm \times (1/AT_{adj})$
IRW_{adult}	Surface Water Ingestion Rate for Swimming - Adult	L/hr	0.11	[4] EPA, 2019b	$ADI\text{-}SW_{child} = CSW \times IRW_{child} \times ET_{child} \times EF \times ED_{child} \times CFm \times (1/BW_{child}) \times (1/AT_{child})$
IRW_{adj}	Age-Adjusted Surface Water Ingestion Rate for Swimming	L-yr/kg-hr	0.37	[3] EPA, 2019a	*where:*
ET_{child}	Exposure Time - Child	hours/event	3.5	[4] EPA, 2019b	$IRW_{adj} = (ED_{child} \times IRW_{child} \times ET_{child} / BW_{child}) + (ED_{adult} \times IRW_{adult} \times ET_{adult} / BW_{adult})$
ET_{adult}	Exposure Time - Adult	hours/event	7.5	[4] EPA, 2019b	
EF	Exposure Frequency	events/year	12	[5] Prof. Judg.	
ED_{child}	Exposure Duration - Child	years	6	[5] EPA, 2014	
ED_{adult}	Exposure Duration - Adult	years	20	[6] EPA, 2014	
ED_{adj}	Age-Adjusted Exposure Duration	years	26	[6] EPA, 2014	
BW_{child}	Body Weight - Child	kg	15	[7] EPA, 2014	
BW_{adult}	Body Weight - Adult	kg	80	[7] EPA, 2014	
AT_{adj}	Age-Adjusted Averaging Time	days	9,490	[8] EPA, 2014	
AT_{child}	Child-Specific Averaging Time	days	2,190	[8] EPA, 2014	
CFm	Conversion Factor - ng to mg	mg/ng	1.0E-06	--	

Notes
[1] Receptor-specific intakes are calculated using the equations presented in this table for an age-adjusted recreator (ages 0-26 years) and a child recreator (ages 0-6 years).
[2] For children, value is the 95th percentile for children for swimming recommended in EPA's 2011 Exposure Factors Handbook, Table ES-1. For adults, value is calculated as the time-weighted average (ages 6 to 26) of the 95th percentile values for swimming as recommended in EPA's 2019 Updated to Chapter 3 of the Exposure Factors Handbook, Table 3-7. EPA's 2019 Update did not include recommendations for receptors <6 years.
[3] Equations for age-adjusted intake rates are based on the EPA's 2019 User's Guide to the RSL Tables. Equations are presented in the "Equations for Intake" column of the table.
[4] Values are the 95th percent upper confidence interval exposure time for fresh water swimming for children <15 years (270 minutes) and adults (210 minutes; average of males and females) as suggested in Table 3-95 of the EPA's 2019 Update to Chapter 3 of the Exposure Factors Handbook.
[5] One swimming event per month is assumed based on site-specific conditions, including accessibility, and professional judgment.
[6] The default residential exposure duration is 26 years; EPA assumes 6 years are spent as a child.
[7] Default child and adult body weights.
[8] The averaging time is equivalent to the exposure duration - 26 years for the age-adjusted (child/adult) receptor and 6 years for the child.

Table F-2-5
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Receptor-Specific Exposure Assumptions
Angler

Parameter	Parameter Definition	Units	Variables	Note	Equations for Intake
ADI-F	Average Daily Intake via Fish Consumption	mg/kg-day	calculated	[1] Calculated	
CFI	Exposure Point Concentration of Constituent in Fish Fillets	ng/kg	EU-specific	Table 3-5	Fish Ingestion:
IRF_{child}	Fish Ingestion Rate - Child	g/kg-day	0.369	[2] EPA, 2011	$ADI\text{-}F_{adj} = CFI \times IRF_{adj} \times FC \times EF \times CFm \times CFk \times (1/AT_{adj})$
IRF_{adult}	Fish Ingestion Rate - Adult	g/kg-day	0.165	[2] EPA, 2011	$ADI\text{-}F_{child} = CFI \times IRF_{child} \times FC \times EF \times ED_{child} \times CFm \times CFk \times (1/AT_{child})$
IRF_{adj}	Age-Adjusted Fish Ingestion Rate	g-year/kg-day	5.5	[3] EPA, 2019a	*where:*
FC	Fish Consumption Factor	fraction	1.0	[4] Proj. Judg.	$IRF_{adj} = (ED_{child} \times IRF_{child}) + (ED_{adult} \times IRF_{adult})$
EF	Exposure Frequency	days/year	365	[5] EPA, 2014	
ED_{child}	Exposure Duration - Child	years	6	[6] EPA, 2014	
ED_{adult}	Exposure Duration - Adult	years	20	[6] EPA, 2014	
ED_{adj}	Age-Adjusted Exposure Duration	years	26	[6] EPA, 2014	
BW_{child}	Body Weight - Child	kg	15	[7] EPA, 2014	
BW_{adult}	Body Weight - Adult	kg	80	[7] EPA, 2014	
AT_{adj}	Age-Adjusted Averaging Time	days	9,490	[8] EPA, 2014	
AT_{child}	Child-Specific Averaging Time	days	2,190	[8] EPA, 2014	
CFm	Conversion Factor - ng to mg	mg/ng	1.00E-06	--	
CFk	Conversion Factor - g to kg	kg/g	1.00E-03		

Notes
[1] Receptor-specific intakes are calculated using the equations presented in this table for an age-adjusted gardener (ages 0-26 years) and a child gardener (ages 0-6 years).
[2] Mean fish intake among individuals who eat fish and reside in households with recreational fish consumption, as indicated in the EPA's 2011 Exposure Factors Handbook, Table 10-69. The child-specific ingestion rate is based on the Table 10-69 age group 1 to 5 years and the adult-specific ingestion rate is a time-weighted average for age groups 6 to 26 years.
[3] Equations for age-adjusted intake rates are based on the EPA's 2019 User's Guide to the RSL Tables. Equations are presented in the "Equations for Intake" column of the table.
[4] Fraction of fish consumption originating from contamination source is assumed to be 1 for the SLEA but may be adjusted in future evaluations to reflect site-specific conditions.
[5] Default exposure frequency for daily consumption of fish.
[6] The default residential exposure duration is 26 years; EPA assumes 6 years are spent as a child.
[7] Default child and adult body weights.
[8] The averaging time is equivalent to the exposure duration - 26 years for the age-adjusted (child/adult) receptor and 6 years for the child.

Table F-3-1
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Summary of Exposure Point Concentrations
Offsite Soil

					Offiste Soil EPCs											
Exposure Medium	**EPC Statistic [2]**	**Chemical Abbreviation**	**Chemical Name**	**Units**	**EU1**	**EU2**	**EU3**	**EU4**	**EU5**	**EU6**	**EU7**	**EU8**	**EU9**	**EU10**	**EU11**	**EU12**
Surface Soil [1] (0 to 0.5 ft bgs)	CTE	HFPO-DA	Hexafluoropropylene oxide dimer acid	ng/kg dw	**2600**	ND	**360**	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PEPA	Perfluoroethoxypropyl carboxylic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFMOAA	Perfluoro-2-methoxyaceticacid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ng/kg dw	**2300**	ND	ND	ND	**1400**	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PMPA	Perfluoromethoxypropyl carboxylic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	EVE Acid	Perflouroethoxypropionic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	R-EVE	R-EVE	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Byproduct 4	Byproduct 4	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Byproduct 6	Byproduct 6	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Byproduct 5	Byproduct 5	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	NVHOS	Perflouroethoxysulfonic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PES	Perfluoroethoxyethanesulfonic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFESA-BP1	Byproduct 1	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFESA-BP2	Byproduct 2	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Subsurface Soil [2] (4 to 4.5 ft bgs)	CTE	HFPO-DA	Hexafluoropropylene oxide dimer acid	ng/kg dw	**430**	ND	ND	**590**	ND	ND	ND	**400**	ND	ND	ND	ND
	CTE	PEPA	Perfluoroethoxypropyl carboxylic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFMOAA	Perfluoro-2-methoxyaceticacid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ng/kg dw	ND	ND	ND	**2300**	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PMPA	Perfluoromethoxypropyl carboxylic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	EVE Acid	Perflouroethoxypropionic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	R-EVE	R-EVE	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Byproduct 4	Byproduct 4	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Byproduct 6	Byproduct 6	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Byproduct 5	Byproduct 5	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	NVHOS	Perflouroethoxysulfonic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PES	Perfluoroethoxyethanesulfonic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFESA-BP1	Byproduct 1	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFESA-BP2	Byproduct 2	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes
[1] Surface soil samples represent 30-point composite samples.
[2] Subsurface soil samples represent discrete samples. Subsurface soil samples are not quantitatively evaluated in the SLEA intake characterization; however, these results are discussed as part of the SLEA uncertainty assessment.
[3] One 30-point composite sample was collected from each EU. Therefore, the reported concentration in that sample inherently represents an average and, as such, is designated as the central tendency exposure (CTE) exposure point concentration. Note that these EPCs are combined with a range of EPCs for other media in the intake characterization.

Definitions
CASN - Chemical Abstract Service Number
EU - Exposure Unit
ft bgs - feet below ground surface
ND - constituent not detected in soil
ng/kg dw - nanogram(s) of constituent per kilogram of dry weight soil

Table F-3-2
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Summary of Exposure Point Concentrations
Offsite Untreated Well Water

Exposure Medium	EPC Statistic [2]	Chemical Abbreviation	Units	Offiste Untreated Well Water EPCs											
				EU1	EU2	EU3	EU4	EU5	EU6	EU7	EU8	EU9	EU10	EU11	EU12
Untreated Well Water	CTE	HFPO-DA	ng/L	**664.3**	**660.7**	**421.1**	**138.9**	**311.3**	**108.2**	**195.7**	**63.11**	**53.91**	**13.83**	**37.3**	**15.54**
	CTE	PEPA	ng/L	**333.3**	**780**	**271.7**	**84.24**	**155**	**70.83**	**106.2**	**25.12**	**38.48**	**17.79**	**25.14**	**15.69**
	CTE	PFECA-G	ng/L	ND	ND	ND	ND	ND	ND	ND	ND	**1.116**	ND	ND	**1.11**
	CTE	PFMOAA	ng/L	**261.7**	**410**	**113.7**	**50.8**	**71.81**	**32.58**	**46.81**	**22.86**	**22.83**	**13.57**	**25.97**	**11.26**
	CTE	PFO2HxA	ng/L	**1102**	**1300**	**313.3**	**130.4**	**252.5**	**77.59**	**102.5**	**43.15**	**41.75**	**25.39**	**32.68**	**15.11**
	CTE	PFO3OA	ng/L	**133.3**	**160**	**54.67**	**12.48**	**24.14**	**7.927**	**10.4**	**3.88**	**4.188**	**2.605**	**3.701**	**1.977**
	CTE	PFO4DA	ng/L	**32**	**60**	**21.5**	**3.27**	**6.117**	**3.387**	**3.821**	**1.525**	**1.448**	**1.254**	**1.716**	**1.211**
	CTE	PMPA	ng/L	**1112**	**3100**	**1010**	**274.2**	**614.8**	**226.6**	**449.6**	**124.2**	**169.1**	**111.9**	**127.7**	**89.19**
	CTE	Hydro-EVE Acid	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	CTE	EVE Acid	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	CTE	PFECA B	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	CTE	R-EVE	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	CTE	PFO5DA	ng/L	**8.167**	**16**	ND	ND	**1.5**	**2.033**	ND	ND	**1.222**	ND	ND	**1.183**
	CTE	Byproduct 4	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	CTE	Byproduct 6	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	CTE	Byproduct 5	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	CTE	NVHOS	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	CTE	PES	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	CTE	PFESA-BP1	ng/L	ND	ND	ND	ND	ND	ND	ND	**1.112**	ND	ND	ND	ND
	CTE	PFESA-BP2	ng/L	**24.33**	**130**	**19**	**8.291**	**13.95**	**13.5**	**15.59**	**7.008**	**6.159**	**8.551**	**11.37**	**2.346**
Untreated Well Water	RME	HFPO-DA	ng/L	**1411**	**1200**	**576.6**	**218.7**	**413.7**	**174**	**304.2**	**94.6**	**110.3**	**21.52**	**49.68**	**21.05**
	RME	PEPA	ng/L	**590.7**	**780**	**721.9**	**120.1**	**345.6**	**128.6**	**158.2**	**23.12**	**39.4**	**22.77**	**32.87**	**16.92**
	RME	PFECA-G	ng/L	ND	ND	ND	ND	ND	ND	ND	ND	**1.144**	ND	ND	**1.122**
	RME	PFMOAA	ng/L	**514.8**	**410**	**318.4**	**74.99**	**100.6**	**60.63**	**74.17**	**35.95**	**42.2**	**20.15**	**26.81**	**14.35**
	RME	PFO2HxA	ng/L	**4400**	**1300**	**810**	**200.6**	**388.1**	**148.2**	**179.5**	**84.11**	**52.37**	**58.83**	**61.88**	**17.8**
	RME	PFO3OA	ng/L	**580**	**160**	**160**	**19.72**	**33.31**	**14.6**	**10.82**	**6.211**	**4.063**	**4.15**	**2.982**	**2.987**
	RME	PFO4DA	ng/L	**70.96**	**60**	**41**	**4.396**	**8.461**	**5.067**	**3.457**	**1.72**	**1.439**	**1.517**	**3.603**	**1.211**
	RME	PMPA	ng/L	**1871**	**3100**	**2273**	**412.5**	**1011**	**421.2**	**614.1**	**189**	**331.7**	**161.2**	**264.8**	**97.78**
	RME	Hydro-EVE Acid	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	RME	EVE Acid	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	RME	PFECA B	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	RME	R-EVE	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	RME	PFO5DA	ng/L	**14.66**	**16**	ND	ND	**1.84**	**2.5**	ND	ND	**1.366**	ND	ND	**1.264**
	RME	Byproduct 4	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	RME	Byproduct 6	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	RME	Byproduct 5	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	RME	NVHOS	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	RME	PES	ng/L	--	--	--	--	--	--	--	--	--	--	--	--
	RME	PFESA-BP1	ng/L	ND	ND	ND	ND	ND	ND	ND	**1.5**	ND	ND	ND	ND
	RME	PFESA-BP2	ng/L	**49.52**	**130**	**53.87**	**12.63**	**18.36**	**24.92**	**21.68**	**8.361**	**7.583**	**12.51**	**22.6**	**2.382**

Notes
[1] The SLEA characterizes potential intake of Table 3+ PFAS from drinking water using untreated well water data collected from offsite private drinking water wells samples (i.e., mid- and post- filtration results were excluded).
[2] A range of exposure point concentrations (EPCs) was used to characterize the potential spectrum of domestic use and intake for offsite receptors, where:
CTE = central tendency EPC, which corresponds to the arithmetic average concentration
RME = reasonable maximum EPC, which corresponds to the 95% upper confidence limit on the mean or, if a UCL could not be reliably calculated (e.g., due to infrequent detection) or exceeded the maximum detected concentration, the maximum detected concentration

Definitions
CASN - Chemical Abstract Service Number
EU - Exposure Unit
"--" - constituent not analyzed in well water
ND - constituent not detected in well water
ng/L - nanogram(s) of constituent per liter of water

Table F-3-3
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Summary of Exposure Point Concentrations
Offsite Homegrown Produce

Exposure Medium	EPC Statistic [2]	Chemical Abbreviation	Chemical Name	Units	Modeled Offsite Homegrown Produce EPCs [1]											
					EU1	EU2	EU3	EU4	EU5	EU6	EU7	EU8	EU9	EU10	EU11	EU12
Aboveground Produce (Air Deposition)	CTE	HFPO-DA	Hexafluoropropylene oxide dimer acid	ng/kg dw	**4.9E-05**	**1.6E-05**	**1.1E-05**	**1.3E-05**	**3.2E-06**	**1.7E-06**	**2.3E-06**	**1.6E-06**	**9.9E-07**	**5.7E-07**	**8.2E-07**	**5.2E-07**
	RME	HFPO-DA	Hexafluoropropylene oxide dimer acid	ng/kg dw	**9.9E-04**	**1.7E-04**	**4.3E-05**	**1.3E-04**	**8.0E-06**	**4.5E-06**	**5.8E-06**	**3.6E-06**	**2.3E-06**	**1.5E-06**	**2.3E-06**	**1.3E-06**
Aboveground Produce (Root Uptake)	CTE	HFPO-DA	Hexafluoropropylene oxide dimer acid	ng/kg dw	**357**	ND	**49.4**	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PEPA	Perfluoroethoxypropyl carboxylic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFMOAA	Perfluoro-2-methoxyaceticacid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ng/kg dw	--	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PMPA	Perfluoromethoxypropyl carboxylic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	EVE Acid	Perflouroethoxypropionic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	R-EVE	R-EVE	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Byproduct 4	Byproduct 4	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Byproduct 6	Byproduct 6	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Byproduct 5	Byproduct 5	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	NVHOS	Perflouroethoxysulfonic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PES	Perfluoroethoxyethanesulfonic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFESA-BP1	Byproduct 1	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFESA-BP2	Byproduct 2	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Belowground Produce (Root Uptake)	CTE	HFPO-DA	Hexafluoropropylene oxide dimer acid	ng/kg dw	**19571**	ND	**2710**	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PEPA	Perfluoroethoxypropyl carboxylic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFMOAA	Perfluoro-2-methoxyaceticacid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ng/kg dw	--	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PMPA	Perfluoromethoxypropyl carboxylic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	EVE Acid	Perflouroethoxypropionic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	R-EVE	R-EVE	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Byproduct 4	Byproduct 4	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Byproduct 6	Byproduct 6	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	Byproduct 5	Byproduct 5	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	NVHOS	Perflouroethoxysulfonic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PES	Perfluoroethoxyethanesulfonic acid	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFESA-BP1	Byproduct 1	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	CTE	PFESA-BP2	Byproduct 2	ng/kg dw	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes
[1] The SLEA characterizes potential intake of Table 3+ PFAS from homegrown produce using produce exposure point concentrations (EPCs) modeled using (i) particulate deposition rate data modeled by ERM (SLEA Appendix D) and equations from the USEPA's Human Health Risk Assessment Protocol (HHRAP) for Hazardous Waste Combustion Facilities (SLEA Appendix E) and (ii) measured concentrations in soil (SLEA Table F-3-1) and root uptake factors (SLEA Appendix E).
[2] A range of EPCs was used to represent the range of potential exposures, where:
CTE = central tendency EPC, which corresponds to the Kaplan-Meier mean concentration reported by ProUCL
RME = reasonable maximum EPC, which corresponds to the 95% upper confidence limit on the mean or, if a UCL could not be reliably calculated (e.g., due to infrequent detection) or the 95% UCL exceeded the maximum detected concentration, the maximum detected concentration

Definitions
"--" = constituent was detected in source media but produce concentrations could not be calculated due to a lack of physico-chemical data
CASN - Chemical Abstract Service Number
EU - Exposure Unit
ft bgs = feet below ground surface
ND - constituent not detected in soil
ng/kg dw = nanogram(s) of constituent per kilogram of dry weight vegetation

Table F-3-4
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Summary of Exposure Point Concentrations
Cape Fear River and Pond Surface Water

					Cape Fear River and Pond Surface Water EPCs [3]							Water Supply Intake Points [4]	
Exposure Medium	**EPC Statistic [2]**	**Chemical Abbreviation**	**Chemical Name**	**Units**	**EU13** Upstream	**EU14** Site-Adjacent	**EU15** Downstream CFR-09	**EU16** Bladen Bluffs	**EU17** Kings Bluff	**EU18** Onsite Pond 1	**EU19** Offsite Pond B	**EU16 (Intake Point)** Bladen Bluffs	**EU17 (Intake Point)** Kings Bluff
Surface Water	CTE	HFPO-DA	Hexafluoropropylene oxide dimer acid	ng/L	**5**	**23**	NS	**133.6**	**16.38**	**800**	**303**	**179**	**16.12**
	CTE	PEPA	Perfluoroethoxypropyl carboxylic acid	ng/L	ND	ND	NS	**50**	**10.19**	**285**	**107**	NS	**10.19**
	CTE	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ng/L	ND	ND	NS	ND	ND	ND	ND	NS	ND
	CTE	PFMOAA	Perfluoro-2-methoxyaceticacid	ng/L	ND	**26.5**	NS	**122**	**19.6**	**250**	**67.7**	NS	**17.05**
	CTE	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ng/L	**2.8**	**6.74**	NS	**52**	**14.8**	**710**	**217**	NS	**13.77**
	CTE	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ng/L	ND	**3.87**	NS	**12.95**	**7.19**	**93.25**	**26.3**	NS	**7.043**
	CTE	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ng/L	ND	**2.30**	NS	**4.95**	**3.04**	**38.75**	**8.67**	NS	**2.968**
	CTE	PMPA	Perfluoromethoxypropyl carboxylic acid	ng/L	**16.5**	**15.5**	NS	**43**	**8.866**	**835**	**347**	NS	**7.792**
	CTE	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ng/L	ND	ND	NS	ND	ND	**3.475**	ND	NS	NS
	CTE	EVE Acid	Perflouroethoxypropionic acid	ng/L	ND	ND	NS	ND	ND	ND	ND	NS	NS
	CTE	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ng/L	ND	ND	NS	ND	ND	ND	ND	NS	NS
	CTE	R-EVE	R-EVE	ng/L	**23**	**3.23**	NS	**5.15**	**9.15**	**55.5**	**52.7**	NS	NS
	CTE	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ng/L	ND	ND	NS	**3.4**	**3.2**	**9.9**	**2.10**	NS	NS
	CTE	Byproduct 4	Byproduct 4	ng/L	**9.1**	**6.48**	NS	**14.3**	**19.5**	**94.75**	**140**	NS	NS
	CTE	Byproduct 6	Byproduct 6	ng/L	ND	ND	NS	ND	ND	ND	ND	NS	NS
	CTE	Byproduct 5	Byproduct 5	ng/L	**70.5**	**9.01**	NS	**50**	**32.63**	ND	ND	NS	NS
	CTE	NVHOS	Perflouroethoxysulfonic acid	ng/L	**6.66**	**6.39**	NS	**7.4**	**7.6**	**6.05**	ND	NS	NS
	CTE	PES	Perfluoroethoxyethanesulfonic acid	ng/L	ND	ND	NS	ND	ND	ND	ND	NS	NS
	CTE	PFESA-BP1	Byproduct 1	ng/L	ND	ND	NS	**2.4**	**3.093**	ND	ND	NS	**3.093**
	CTE	PFESA-BP2	Byproduct 2	ng/L	ND	ND	NS	**4.9**	**2.67**	**31.75**	**25.0**	NS	**2.565**
Surface Water	RME	HFPO-DA	Hexafluoropropylene oxide dimer acid	ng/L	**5**	**34.98**	NS	**318.6**	**18.65**	**911.6**	**310**	**358.9**	**18.4**
	RME	PEPA	Perfluoroethoxypropyl carboxylic acid	ng/L	ND	ND	NS	**50**	**12.43**	**300**	**110**	NS	**12.43**
	RME	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ng/L	ND	ND	NS	ND	ND	ND	ND	NS	ND
	RME	PFMOAA	Perfluoro-2-methoxyaceticacid	ng/L	ND	**46.26**	NS	**180**	**33.36**	**259.6**	**71**	NS	**24.45**
	RME	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ng/L	**2.8**	**12.31**	NS	**64**	**17.39**	**730**	**220**	NS	**16.07**
	RME	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ng/L	ND	**6.4**	NS	**16**	**8.329**	**97**	**27**	NS	**8.17**
	RME	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ng/L	ND	**2.3**	NS	**6.4**	**4.491**	**40**	**8.9**	NS	**4.432**
	RME	PMPA	Perfluoromethoxypropyl carboxylic acid	ng/L	**21**	**19**	NS	**55**	**10**	**850**	**350**	NS	**8.8**
	RME	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ng/L	ND	ND	NS	ND	ND	**3.588**	ND	NS	NS
	RME	EVE Acid	Perflouroethoxypropionic acid	ng/L	ND	ND	NS	ND	ND	ND	ND	NS	NS
	RME	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ng/L	ND	ND	NS	ND	ND	ND	ND	NS	NS
	RME	R-EVE	R-EVE	ng/L	**23**	**3.575**	NS	**6.3**	**10**	**58**	**53**	NS	NS
	RME	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ng/L	ND	ND	NS	**3.4**	**3.2**	**10**	**2.1**	NS	NS
	RME	Byproduct 4	Byproduct 4	ng/L	**15.2**	**7.396**	NS	**19**	**20**	**99**	**150**	NS	NS
	RME	Byproduct 6	Byproduct 6	ng/L	ND	ND	NS	ND	ND	ND	ND	NS	NS
	RME	Byproduct 5	Byproduct 5	ng/L	**320**	**14.25**	NS	**69**	**82**	ND	ND	NS	NS
	RME	NVHOS	Perflouroethoxysulfonic acid	ng/L	**8.2**	**6.867**	NS	**8.7**	**9**	**6.3**	ND	NS	NS
	RME	PES	Perfluoroethoxyethanesulfonic acid	ng/L	ND	ND	NS	ND	ND	ND	ND	NS	NS
	RME	PFESA-BP1	Byproduct 1	ng/L	ND	ND	NS	**2.4**	**4.17**	ND	ND	NS	**4.17**
	RME	PFESA-BP2	Byproduct 2	ng/L	ND	ND	NS	**4.9**	**3.152**	**32.88**	**25**	NS	**3.032**

Notes

[1] The SLEA characterizes potential intake of Table 3+ PFAS from surface water using raw samples collected from the Cape Fear River (untreated), an onsite pond, and offsite pond as well as untreated surface water results reported by the NC DEQ and Cape Fear Public Utility Authority.
[2] A range of exposure point concentrations (EPCs) was used to characterize the potential spectrum of intake for offsite receptors, where:
CTE = central tendency EPC, which corresponds to the arithmetic average concentration
RME = reasonable maximum EPC, which corresponds to the 95% upper confidence limit on the mean or, if a UCL could not be reliable calculated (e.g., due to infrequent detection), the maximum detected concentration
[3] Exposure point concentrations (EPCs) for each surface water exposure unit consider data from the following locations:
EU13 = Upstream of the Site, including samples from CFR-01 and MM-68
EU14 = Adjacent to the Site, including upstream and downstream of the Huske Dam as represented by samples CFR-03 through CFR-07 and MM-76
EU15 = CFR-09 located 4 miles downstream of the Site (not sampled)
EU16 = Bladen Bluffs at MM84, located 8 miles downstream of the Site
EU17 = Kings Bluffs at MM-132, located 55 miles downstream of the Site
EU18 = Onsite Pond 1
EU19 = Offsite Pond B
[3] Exposure point concentrations (EPCs) for hypothetical use of untreated surface water as drinking water are based on intake data available from:
EU16: https://deq.nc.gov/news/key-issues/genx-investigation
EU17: https://www.cfpua.org/692/Drinking-Water-Quality

Definitions

CASN - Chemical Abstract Service Number
EU - Exposure Unit
"--" - constituent not analyzed for/reported
NS - EU not sampled
ND - constituent not detected in surface water
ng/L - nanogram(s) of constituent per liter of water

Table F-3-5
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Summary of Exposure Point Concentrations
Cape Fear River and Pond Fish Tissue

					Cape Fear River and Pond Fish Tissue EPCs						
Exposure Medium	**EPC Statistic [2]**	**Chemical Abbreviation**	**Chemical Name**	**Units**	**EU13** Upstream	**EU14** Site-Adjacent	**EU15** CFR-09	**EU16** Bladen Bluffs	**EU17** Kings Bluff [2]	**EU18** Onsite Pond 1	**EU19** Offsite Pond B [3]
Fish Tissue (Filets)	CTE	HFPO-DA	Hexafluoropropylene oxide dimer acid	ng/kg ww	ND	ND	ND	**17089**	NS	ND	NS
	CTE	PEPA	Perfluoroethoxypropyl carboxylic acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	CTE	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	CTE	PFMOAA	Perfluoro-2-methoxyaceticacid	ng/kg ww	ND	ND	ND	**3389**	NS	ND	NS
	CTE	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	CTE	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	CTE	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ng/kg ww	ND	**1229**	**2700**	**12578**	NS	**270**	NS
	CTE	PMPA	Perfluoromethoxypropyl carboxylic acid	ng/kg ww	ND	**307**	**300**	ND	NS	**270**	NS
	CTE	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	CTE	EVE Acid	Perflouroethoxypropionic acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	CTE	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	CTE	R-EVE	R-EVE	ng/kg ww	ND	ND	ND	**1000**	NS	ND	NS
	CTE	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ng/kg ww	ND	ND	ND	**431.1**	NS	ND	NS
	CTE	Byproduct 4	Byproduct 4	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	CTE	Byproduct 6	Byproduct 6	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	CTE	Byproduct 5	Byproduct 5	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	CTE	NVHOS	Perflouroethoxysulfonic acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	CTE	PES	Perfluoroethoxyethanesulfonic acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	CTE	PFESA-BP1	Byproduct 1	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	CTE	PFESA-BP2	Byproduct 2	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
Fish Tissue (Filets)	RME	HFPO-DA	Hexafluoropropylene oxide dimer acid	ng/kg ww	ND	ND	ND	**35852**	NS	ND	NS
	RME	PEPA	Perfluoroethoxypropyl carboxylic acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	RME	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	RME	PFMOAA	Perfluoro-2-methoxyaceticacid	ng/kg ww	ND	ND	ND	**5037**	NS	ND	NS
	RME	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	RME	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	RME	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ng/kg ww	ND	**2600**	**5400**	**83353**	NS	**270**	NS
	RME	PMPA	Perfluoromethoxypropyl carboxylic acid	ng/kg ww	ND	**368.5**	**300**	ND	NS	**270**	NS
	RME	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	RME	EVE Acid	Perflouroethoxypropionic acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	RME	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	RME	R-EVE	R-EVE	ng/kg ww	ND	ND	ND	**1000**	NS	ND	NS
	RME	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ng/kg ww	ND	ND	ND	**1135**	NS	ND	NS
	RME	Byproduct 4	Byproduct 4	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	RME	Byproduct 6	Byproduct 6	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	RME	Byproduct 5	Byproduct 5	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	RME	NVHOS	Perflouroethoxysulfonic acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	RME	PES	Perfluoroethoxyethanesulfonic acid	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	RME	PFESA-BP1	Byproduct 1	ng/kg ww	ND	ND	ND	ND	NS	ND	NS
	RME	PFESA-BP2	Byproduct 2	ng/kg ww	ND	ND	ND	ND	NS	ND	NS

Table F-3-5
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Summary of Exposure Point Concentrations
Cape Fear River and Pond Fish Tissue

Notes
[1] The SLEA characterizes potential intake of Table 3+ PFAS from recreational fish consumption using fillet samples collected from the Cape Fear River and onsite Pond 1.
[2] A range of exposure point concentrations (EPCs) was used to characterize the potential spectrum of intake for offsite receptors, where:
CTE = central tendency EPC, which corresponds to the Kaplan-Meier mean concentration reported by ProUCL
RME = reasonable maximum EPC, which corresponds to the 95% upper confidence limit on the mean or, if a UCL could not be reliably calculated (e.g., due to infrequent detection) or the 95% UCL exceeded the maximum detected concentration, the maximum detected concentration
[3] Exposure point concentrations (EPCs) for each exposure unit consider fish fillet data from the following locations:
EU13 = Upstream of the Site
EU14 = Adjacent to the Site, including upstream and downstream of the Huske Dam as represented by samples CFR-04 through CFR-07
EU15 = CFR-09 located 4 miles downstream of the Site
EU16 = Bladen Bluffs, located 8 miles downstream of the Site
EU17 = Kings Bluffs (not sampled)
EU18 = Onsite Pond 1
EU19 = Offsite Pond B (not sampled because fish are stocked)

Definitions
CASN - Chemical Abstract Service Number
EU - Exposure Unit
NS - EU not sampled
ND - constituent not detected in surface water
ng/kg ww - nanogram(s) of constituent per kilogram of wet weight tissue

Table F-4-1
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Resident (Age 0-26) - Soil and Untreated Well Water

			Central Tendency Exposure Assessment					**Upper-Bound Exposure Estimate**				
			Average EPC		**Intake**		**Total CTE Intake**	**95% UCL EPC**		**Intake**		**Total RME Intake**
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Soil**	**Untreated Well Water**	**Soil**	**Untreated Well Water**		**Soil**	**Untreated Well Water**	**Soil**	**Untreated Well Water**	
			ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day
EU1	HFPO-DA	Hexafluoropropylene oxide dimer acid	2600	664.3	1.0E-08	2.3E-05	2.3E-05	2600	1411	1.0E-08	4.9E-05	4.9E-05
EU1	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	333.3	ND	1.2E-05	1.2E-05	ND	590.7	ND	2.0E-05	2.0E-05
EU1	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU1	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	261.7	ND	9.0E-06	9.0E-06	ND	514.8	ND	1.8E-05	1.8E-05
EU1	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	2300	1102	8.9E-09	3.8E-05	3.8E-05	2300	4400	8.9E-09	1.5E-04	1.5E-04
EU1	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	133.3	ND	4.6E-06	4.6E-06	ND	580	ND	2.0E-05	2.0E-05
EU1	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	32	ND	1.1E-06	1.1E-06	ND	70.96	ND	2.5E-06	2.5E-06
EU1	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	1112	ND	3.8E-05	3.8E-05	ND	1871	ND	6.5E-05	6.5E-05
EU1	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU1	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU1	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU1	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU1	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	8.167	ND	2.8E-07	2.8E-07	ND	14.66	ND	5.1E-07	5.1E-07
EU1	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU1	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU1	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU1	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU1	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU1	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU1	PFESA-BP2	Byproduct 2	ND	24.33	ND	8.4E-07	8.4E-07	ND	49.52	ND	1.7E-06	1.7E-06
			Total CTE Intake at EU1		1.9E-08	1.3E-04	1.3E-04	**Total RME Intake at EU1**		1.9E-08	3.3E-04	3.3E-04
EU2	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	660.7	ND	2.3E-05	2.3E-05	ND	1200	ND	4.1E-05	4.1E-05
EU2	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	780	ND	2.7E-05	2.7E-05	ND	780	ND	2.7E-05	2.7E-05
EU2	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU2	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	410	ND	1.4E-05	1.4E-05	ND	410	ND	1.4E-05	1.4E-05
EU2	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	1300	ND	4.5E-05	4.5E-05	ND	1300	ND	4.5E-05	4.5E-05
EU2	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	160	ND	5.5E-06	5.5E-06	ND	160	ND	5.5E-06	5.5E-06
EU2	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	60	ND	2.1E-06	2.1E-06	ND	60	ND	2.1E-06	2.1E-06
EU2	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	3100	ND	1.1E-04	1.1E-04	ND	3100	ND	1.1E-04	1.1E-04
EU2	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU2	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU2	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU2	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU2	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	16	ND	5.5E-07	5.5E-07	ND	16	ND	5.5E-07	5.5E-07
EU2	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU2	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU2	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU2	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU2	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU2	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU2	PFESA-BP2	Byproduct 2	ND	130	ND	4.5E-06	4.5E-06	ND	130	ND	4.5E-06	4.5E-06
			Total CTE Intake at EU2		ND	2.3E-04	2.3E-04	**Total RME Intake at EU2**		ND	2.5E-04	2.5E-04

Table F-4-1
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Resident (Age 0-26) - Soil and Untreated Well Water

			Central Tendency Exposure Assessment					Upper-Bound Exposure Estimate				
			Average EPC		Intake		Total CTE Intake	95% UCL EPC		Intake		Total RME Intake
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	mg/kg-day	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	mg/kg-day
EU3	HFPO-DA	Hexafluoropropylene oxide dimer acid	360	421.1	1.4E-09	1.5E-05	1.5E-05	360	576.6	1.4E-09	2.0E-05	2.0E-05
EU3	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	271.7	ND	9.4E-06	9.4E-06	ND	721.9	ND	2.5E-05	2.5E-05
EU3	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU3	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	113.7	ND	3.9E-06	3.9E-06	ND	318.4	ND	1.1E-05	1.1E-05
EU3	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	313.3	ND	1.1E-05	1.1E-05	ND	810	ND	2.8E-05	2.8E-05
EU3	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	54.67	ND	1.9E-06	1.9E-06	ND	160	ND	5.5E-06	5.5E-06
EU3	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	21.5	ND	7.4E-07	7.4E-07	ND	41	ND	1.4E-06	1.4E-06
EU3	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	1010	ND	3.5E-05	3.5E-05	ND	2273	ND	7.9E-05	7.9E-05
EU3	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU3	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU3	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU3	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU3	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU3	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU3	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU3	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU3	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU3	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU3	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU3	PFESA-BP2	Byproduct 2	ND	19	ND	6.6E-07	6.6E-07	ND	53.87	ND	1.9E-06	1.9E-06
			Total CTE Intake at EU3		1.4E-09	7.7E-05	7.7E-05	**Total RME Intake at EU3**		1.4E-09	1.7E-04	1.7E-04
EU4	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	138.9	ND	4.8E-06	4.8E-06	ND	218.7	ND	7.6E-06	7.6E-06
EU4	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	84.24	ND	2.9E-06	2.9E-06	ND	120.1	ND	4.2E-06	4.2E-06
EU4	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU4	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	50.8	ND	1.8E-06	1.8E-06	ND	74.99	ND	2.6E-06	2.6E-06
EU4	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	130.4	ND	4.5E-06	4.5E-06	ND	200.6	ND	6.9E-06	6.9E-06
EU4	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	12.48	ND	4.3E-07	4.3E-07	ND	19.72	ND	6.8E-07	6.8E-07
EU4	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	3.27	ND	1.1E-07	1.1E-07	ND	4.396	ND	1.5E-07	1.5E-07
EU4	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	274.2	ND	9.5E-06	9.5E-06	ND	412.5	ND	1.4E-05	1.4E-05
EU4	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU4	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU4	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU4	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU4	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU4	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU4	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU4	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU4	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU4	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU4	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU4	PFESA-BP2	Byproduct 2	ND	8.291	ND	2.9E-07	2.9E-07	ND	12.63	ND	4.4E-07	4.4E-07
			Total CTE Intake at EU4		ND	2.4E-05	2.4E-05	**Total RME Intake at EU4**		ND	3.7E-05	3.7E-05

Table F-4-1
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Resident (Age 0-26) - Soil and Untreated Well Water

			Central Tendency Exposure Assessment					**Upper-Bound Exposure Estimate**				
			Average EPC		**Intake**		**Total CTE Intake**	**95% UCL EPC**		**Intake**		**Total RME Intake**
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	mg/kg-day	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	mg/kg-day
EU5	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	311.3	ND	1.1E-05	1.1E-05	ND	413.7	ND	1.4E-05	1.4E-05
EU5	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	155	ND	5.4E-06	5.4E-06	ND	345.6	ND	1.2E-05	1.2E-05
EU5	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU5	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	71.81	ND	2.5E-06	2.5E-06	ND	100.6	ND	3.5E-06	3.5E-06
EU5	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	1400	252.5	5.4E-09	8.7E-06	8.7E-06	1400	388.1	5.4E-09	1.3E-05	1.3E-05
EU5	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	24.14	ND	8.3E-07	8.3E-07	ND	33.31	ND	1.2E-06	1.2E-06
EU5	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	6.117	ND	2.1E-07	2.1E-07	ND	8.461	ND	2.9E-07	2.9E-07
EU5	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	614.8	ND	2.1E-05	2.1E-05	ND	1011	ND	3.5E-05	3.5E-05
EU5	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU5	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU5	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU5	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU5	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	1.5	ND	5.2E-08	5.2E-08	ND	1.84	ND	6.4E-08	6.4E-08
EU5	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU5	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU5	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU5	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU5	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU5	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU5	PFESA-BP2	Byproduct 2	ND	13.95	ND	4.8E-07	4.8E-07	ND	18.36	ND	6.3E-07	6.3E-07
			Total CTE Intake at EU5		5.4E-09	5.0E-05	5.0E-05	**Total RME Intake at EU5**		5.4E-09	8.0E-05	8.0E-05
EU6	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	108.2	ND	3.7E-06	3.7E-06	ND	174	ND	6.0E-06	6.0E-06
EU6	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	70.83	ND	2.4E-06	2.4E-06	ND	128.6	ND	4.4E-06	4.4E-06
EU6	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU6	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	32.58	ND	1.1E-06	1.1E-06	ND	60.63	ND	2.1E-06	2.1E-06
EU6	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	77.59	ND	2.7E-06	2.7E-06	ND	148.2	ND	5.1E-06	5.1E-06
EU6	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	7.927	ND	2.7E-07	2.7E-07	ND	14.6	ND	5.0E-07	5.0E-07
EU6	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	3.387	ND	1.2E-07	1.2E-07	ND	5.067	ND	1.8E-07	1.8E-07
EU6	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	226.6	ND	7.8E-06	7.8E-06	ND	421.2	ND	1.5E-05	1.5E-05
EU6	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU6	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU6	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU6	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU6	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	2.033	ND	7.0E-08	7.0E-08	ND	2.5	ND	8.6E-08	8.6E-08
EU6	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU6	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU6	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU6	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU6	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU6	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU6	PFESA-BP2	Byproduct 2	ND	13.5	ND	4.7E-07	4.7E-07	ND	24.92	ND	8.6E-07	8.6E-07
			Total CTE Intake at EU6		ND	1.9E-05	1.9E-05	**Total RME Intake at EU6**		ND	3.4E-05	3.4E-05

Table F-4-1
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Resident (Age 0-26) - Soil and Untreated Well Water

			Central Tendency Exposure Assessment					Upper-Bound Exposure Estimate				
			Average EPC		Intake		Total CTE Intake	95% UCL EPC		Intake		Total RME Intake
Exposure Unit	Chemical Abbreviation	Chemical Name	Soil	Untreated Well Water	Soil	Untreated Well Water		Soil	Untreated Well Water	Soil	Untreated Well Water	
			ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day
EU7	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	195.7	ND	6.8E-06	6.8E-06	ND	304.2	ND	1.1E-05	1.1E-05
EU7	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	106.2	ND	3.7E-06	3.7E-06	ND	158.2	ND	5.5E-06	5.5E-06
EU7	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU7	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	46.81	ND	1.6E-06	1.6E-06	ND	74.17	ND	2.6E-06	2.6E-06
EU7	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	102.5	ND	3.5E-06	3.5E-06	ND	179.5	ND	6.2E-06	6.2E-06
EU7	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	10.4	ND	3.6E-07	3.6E-07	ND	10.82	ND	3.7E-07	3.7E-07
EU7	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	3.821	ND	1.3E-07	1.3E-07	ND	3.457	ND	1.2E-07	1.2E-07
EU7	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	449.6	ND	1.6E-05	1.6E-05	ND	614.1	ND	2.1E-05	2.1E-05
EU7	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU7	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU7	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU7	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU7	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU7	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU7	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU7	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU7	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU7	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU7	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU7	PFESA-BP2	Byproduct 2	ND	15.59	ND	5.4E-07	5.4E-07	ND	21.68	ND	7.5E-07	7.5E-07
			Total CTE Intake at EU7		ND	3.2E-05	3.2E-05	**Total RME Intake at EU7**		ND	4.7E-05	4.7E-05
EU8	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	63.11	ND	2.2E-06	2.2E-06	ND	94.6	ND	3.3E-06	3.3E-06
EU8	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	25.12	ND	8.7E-07	8.7E-07	ND	23.12	ND	8.0E-07	8.0E-07
EU8	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU8	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	22.86	ND	7.9E-07	7.9E-07	ND	35.95	ND	1.2E-06	1.2E-06
EU8	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	43.15	ND	1.5E-06	1.5E-06	ND	84.11	ND	2.9E-06	2.9E-06
EU8	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	3.88	ND	1.3E-07	1.3E-07	ND	6.211	ND	2.1E-07	2.1E-07
EU8	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	1.525	ND	5.3E-08	5.3E-08	ND	1.72	ND	5.9E-08	5.9E-08
EU8	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	124.2	ND	4.3E-06	4.3E-06	ND	189	ND	6.5E-06	6.5E-06
EU8	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU8	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU8	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU8	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU8	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU8	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU8	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU8	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU8	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU8	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU8	PFESA-BP1	Byproduct 1	ND	1.112	ND	3.8E-08	3.8E-08	ND	1.5	ND	5.2E-08	5.2E-08
EU8	PFESA-BP2	Byproduct 2	ND	7.008	ND	2.4E-07	2.4E-07	ND	8.361	ND	2.9E-07	2.9E-07
			Total CTE Intake at EU8		ND	1.0E-05	1.0E-05	**Total RME Intake at EU8**		ND	1.5E-05	1.5E-05

Table F-4-1
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Resident (Age 0-26) - Soil and Untreated Well Water

			Central Tendency Exposure Assessment					**Upper-Bound Exposure Estimate**				
			Average EPC		**Intake**		**Total CTE Intake**	**95% UCL EPC**		**Intake**		**Total RME Intake**
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Soil**	**Untreated Well Water**	**Soil**	**Untreated Well Water**		**Soil**	**Untreated Well Water**	**Soil**	**Untreated Well Water**	
			ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day
EU9	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	53.91	ND	1.9E-06	1.9E-06	ND	110.3	ND	3.8E-06	3.8E-06
EU9	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	38.48	ND	1.3E-06	1.3E-06	ND	39.4	ND	1.4E-06	1.4E-06
EU9	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	1.116	ND	3.9E-08	3.9E-08	ND	1.144	ND	4.0E-08	4.0E-08
EU9	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	22.83	ND	7.9E-07	7.9E-07	ND	42.2	ND	1.5E-06	1.5E-06
EU9	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	41.75	ND	1.4E-06	1.4E-06	ND	52.37	ND	1.8E-06	1.8E-06
EU9	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	4.188	ND	1.4E-07	1.4E-07	ND	4.063	ND	1.4E-07	1.4E-07
EU9	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	1.448	ND	5.0E-08	5.0E-08	ND	1.439	ND	5.0E-08	5.0E-08
EU9	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	169.1	ND	5.8E-06	5.8E-06	ND	331.7	ND	1.1E-05	1.1E-05
EU9	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU9	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU9	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU9	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU9	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	1.222	ND	4.2E-08	4.2E-08	ND	1.366	ND	4.7E-08	4.7E-08
EU9	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU9	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU9	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU9	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU9	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU9	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU9	PFESA-BP2	Byproduct 2	ND	6.159	ND	2.1E-07	2.1E-07	ND	7.583	ND	2.6E-07	2.6E-07
			Total CTE Intake at EU9		ND	1.2E-05	1.2E-05	**Total RME Intake at EU9**		ND	2.0E-05	2.0E-05
EU10	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	13.83	ND	4.8E-07	4.8E-07	ND	21.52	ND	7.4E-07	7.4E-07
EU10	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	17.79	ND	6.1E-07	6.1E-07	ND	22.77	ND	7.9E-07	7.9E-07
EU10	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU10	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	13.57	ND	4.7E-07	4.7E-07	ND	20.15	ND	7.0E-07	7.0E-07
EU10	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	25.39	ND	8.8E-07	8.8E-07	ND	58.83	ND	2.0E-06	2.0E-06
EU10	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	2.605	ND	9.0E-08	9.0E-08	ND	4.15	ND	1.4E-07	1.4E-07
EU10	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	1.254	ND	4.3E-08	4.3E-08	ND	1.517	ND	5.2E-08	5.2E-08
EU10	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	111.9	ND	3.9E-06	3.9E-06	ND	161.2	ND	5.6E-06	5.6E-06
EU10	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU10	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU10	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU10	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU10	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU10	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU10	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU10	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU10	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU10	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU10	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU10	PFESA-BP2	Byproduct 2	ND	8.551	ND	3.0E-07	3.0E-07	ND	12.51	ND	4.3E-07	4.3E-07
			Total CTE Intake at EU10		ND	6.7E-06	6.7E-06	**Total RME Intake at EU10**		ND	1.0E-05	1.0E-05

Table F-4-1
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Resident (Age 0-26) - Soil and Untreated Well Water

			Central Tendency Exposure Assessment					**Upper-Bound Exposure Estimate**				
			Average EPC		**Intake**		**Total CTE Intake**	**95% UCL EPC**		**Intake**		**Total RME Intake**
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Soil**	**Untreated Well Water**	**Soil**	**Untreated Well Water**		**Soil**	**Untreated Well Water**	**Soil**	**Untreated Well Water**	
			ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day
EU11	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	37.3	ND	1.3E-06	1.3E-06	ND	49.68	ND	1.7E-06	1.7E-06
EU11	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	25.14	ND	8.7E-07	8.7E-07	ND	32.87	ND	1.1E-06	1.1E-06
EU11	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU11	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	25.97	ND	9.0E-07	9.0E-07	ND	26.81	ND	9.3E-07	9.3E-07
EU11	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	32.68	ND	1.1E-06	1.1E-06	ND	61.88	ND	2.1E-06	2.1E-06
EU11	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	3.701	ND	1.3E-07	1.3E-07	ND	2.982	ND	1.0E-07	1.0E-07
EU11	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	1.716	ND	5.9E-08	5.9E-08	ND	3.603	ND	1.2E-07	1.2E-07
EU11	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	127.7	ND	4.4E-06	4.4E-06	ND	264.8	ND	9.2E-06	9.2E-06
EU11	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU11	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU11	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU11	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU11	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU11	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU11	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU11	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU11	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU11	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU11	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU11	PFESA-BP2	Byproduct 2	ND	11.37	ND	3.9E-07	3.9E-07	ND	22.6	ND	7.8E-07	7.8E-07
			Total CTE Intake at EU11		ND	9.2E-06	9.2E-06	**Total RME Intake at EU11**		ND	1.6E-05	1.6E-05
EU12	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	15.54	ND	5.4E-07	5.4E-07	ND	21.05	ND	7.3E-07	7.3E-07
EU12	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	15.69	ND	5.4E-07	5.4E-07	ND	16.92	ND	5.8E-07	5.8E-07
EU12	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	1.11	ND	3.8E-08	3.8E-08	ND	1.122	ND	3.9E-08	3.9E-08
EU12	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	11.26	ND	3.9E-07	3.9E-07	ND	14.35	ND	5.0E-07	5.0E-07
EU12	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	15.11	ND	5.2E-07	5.2E-07	ND	17.8	ND	6.2E-07	6.2E-07
EU12	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	1.977	ND	6.8E-08	6.8E-08	ND	2.987	ND	1.0E-07	1.0E-07
EU12	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	1.211	ND	4.2E-08	4.2E-08	ND	1.211	ND	4.2E-08	4.2E-08
EU12	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	89.19	ND	3.1E-06	3.1E-06	ND	97.78	ND	3.4E-06	3.4E-06
EU12	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU12	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU12	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU12	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU12	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	1.183	ND	4.1E-08	4.1E-08	ND	1.264	ND	4.4E-08	4.4E-08
EU12	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU12	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU12	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU12	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU12	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU12	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU12	PFESA-BP2	Byproduct 2	ND	2.346	ND	8.1E-08	8.1E-08	ND	2.382	ND	8.2E-08	8.2E-08
			Total CTE Intake at EU12		ND	5.3E-06	5.3E-06	**Total RME Intake at EU12**		ND	6.1E-06	6.1E-06

Definitions
CTE - central tendency exposure
EU - Exposure Unit
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ND - constituent not detected
ng/kg - nanogram(s) of constituent per kilogram of soil
ng/L - nanogram(s) of constituent per liter of water
RME - reasonable maximum exposure
UCL - upper confidence limit on the mean
"--" - not available/not calculated

Table F-4-2
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Resident (Age 0-6) - Soil and Untreated Well Water

			Central Tendency Exposure Assessment					**Upper-Bound Exposure Estimate**				
			Average EPC		**Intake**			**95% UCL EPC**		**Intake**		
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	**Total Intake** mg/kg-day	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	**Total Intake** mg/kg-day
EU1	HFPO-DA	Hexafluoropropylene oxide dimer acid	2600	664.3	3.3E-08	3.3E-05	3.3E-05	2600	1411	3.3E-08	7.0E-05	7.0E-05
EU1	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	333.3	ND	1.7E-05	1.7E-05	ND	590.7	ND	2.9E-05	2.9E-05
EU1	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU1	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	261.7	ND	1.3E-05	1.3E-05	ND	514.8	ND	2.6E-05	2.6E-05
EU1	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	2300	1102	2.9E-08	5.5E-05	5.5E-05	2300	4400	2.9E-08	2.2E-04	2.2E-04
EU1	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	133.3	ND	6.6E-06	6.6E-06	ND	580	ND	2.9E-05	2.9E-05
EU1	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	32	ND	1.6E-06	1.6E-06	ND	70.96	ND	3.5E-06	3.5E-06
EU1	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	1112	ND	5.5E-05	5.5E-05	ND	1871	ND	9.3E-05	9.3E-05
EU1	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU1	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU1	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU1	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU1	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	8.167	ND	4.1E-07	4.1E-07	ND	14.66	ND	7.3E-07	7.3E-07
EU1	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU1	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU1	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU1	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU1	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU1	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU1	PFESA-BP2	Byproduct 2	ND	24.33	ND	1.2E-06	1.2E-06	ND	49.52	ND	2.5E-06	2.5E-06
				Total CTE Intake at EU1	6.3E-08	1.8E-04	1.8E-04		**Total RME Intake at EU1**	6.3E-08	4.7E-04	4.7E-04
EU2	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	660.7	ND	3.3E-05	3.3E-05	ND	1200	ND	6.0E-05	6.0E-05
EU2	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	780	ND	3.9E-05	3.9E-05	ND	780	ND	3.9E-05	3.9E-05
EU2	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU2	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	410	ND	2.0E-05	2.0E-05	ND	410	ND	2.0E-05	2.0E-05
EU2	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	1300	ND	6.5E-05	6.5E-05	ND	1300	ND	6.5E-05	6.5E-05
EU2	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	160	ND	8.0E-06	8.0E-06	ND	160	ND	8.0E-06	8.0E-06
EU2	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	60	ND	3.0E-06	3.0E-06	ND	60	ND	3.0E-06	3.0E-06
EU2	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	3100	ND	1.5E-04	1.5E-04	ND	3100	ND	1.5E-04	1.5E-04
EU2	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU2	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU2	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU2	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU2	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	16	ND	8.0E-07	8.0E-07	ND	16	ND	8.0E-07	8.0E-07
EU2	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU2	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU2	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU2	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU2	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU2	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU2	PFESA-BP2	Byproduct 2	ND	130	ND	6.5E-06	6.5E-06	ND	130	ND	6.5E-06	6.5E-06
				Total CTE Intake at EU2	ND	3.3E-04	3.3E-04		**Total RME Intake at EU2**	ND	3.6E-04	3.6E-04

Table F-4-2
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Resident (Age 0-6) - Soil and Untreated Well Water

			Central Tendency Exposure Assessment					**Upper-Bound Exposure Estimate**				
			Average EPC		**Intake**			**95% UCL EPC**		**Intake**		
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	**Total Intake** mg/kg-day	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	**Total Intake** mg/kg-day
EU3	HFPO-DA	Hexafluoropropylene oxide dimer acid	360	421.1	4.6E-09	2.1E-05	2.1E-05	360	576.6	4.6E-09	2.9E-05	2.9E-05
EU3	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	271.7	ND	1.4E-05	1.4E-05	ND	721.9	ND	3.6E-05	3.6E-05
EU3	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU3	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	113.7	ND	5.7E-06	5.7E-06	ND	318.4	ND	1.6E-05	1.6E-05
EU3	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	313.3	ND	1.6E-05	1.6E-05	ND	810	ND	4.0E-05	4.0E-05
EU3	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	54.67	ND	2.7E-06	2.7E-06	ND	160	ND	8.0E-06	8.0E-06
EU3	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	21.5	ND	1.1E-06	1.1E-06	ND	41	ND	2.0E-06	2.0E-06
EU3	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	1010	ND	5.0E-05	5.0E-05	ND	2273	ND	1.1E-04	1.1E-04
EU3	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU3	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU3	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU3	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU3	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU3	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU3	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU3	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU3	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU3	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU3	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU3	PFESA-BP2	Byproduct 2	ND	19	ND	9.5E-07	9.5E-07	ND	53.87	ND	2.7E-06	2.7E-06
			Total CTE Intake at EU3		4.6E-09	1.1E-04	1.1E-04	**Total RME Intake at EU3**		4.6E-09	2.5E-04	2.5E-04
EU4	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	138.9	ND	6.9E-06	6.9E-06	ND	218.7	ND	1.1E-05	1.1E-05
EU4	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	84.24	ND	4.2E-06	4.2E-06	ND	120.1	ND	6.0E-06	6.0E-06
EU4	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU4	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	50.8	ND	2.5E-06	2.5E-06	ND	74.99	ND	3.7E-06	3.7E-06
EU4	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	130.4	ND	6.5E-06	6.5E-06	ND	200.6	ND	1.0E-05	1.0E-05
EU4	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	12.48	ND	6.2E-07	6.2E-07	ND	19.72	ND	9.8E-07	9.8E-07
EU4	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	3.27	ND	1.6E-07	1.6E-07	ND	4.396	ND	2.2E-07	2.2E-07
EU4	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	274.2	ND	1.4E-05	1.4E-05	ND	412.5	ND	2.1E-05	2.1E-05
EU4	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU4	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU4	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU4	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU4	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU4	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU4	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU4	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU4	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU4	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU4	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU4	PFESA-BP2	Byproduct 2	ND	8.291	ND	4.1E-07	4.1E-07	ND	12.63	ND	6.3E-07	6.3E-07
			Total CTE Intake at EU4		ND	3.5E-05	3.5E-05	**Total RME Intake at EU4**		ND	5.3E-05	5.3E-05

Table F-4-2
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Resident (Age 0-6) - Soil and Untreated Well Water

			Central Tendency Exposure Assessment					**Upper-Bound Exposure Estimate**				
			Average EPC		**Intake**			**95% UCL EPC**		**Intake**		
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	**Total Intake** mg/kg-day	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	**Total Intake** mg/kg-day
EU5	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	311.3	ND	1.6E-05	1.6E-05	ND	413.7	ND	2.1E-05	2.1E-05
EU5	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	155	ND	7.7E-06	7.7E-06	ND	345.6	ND	1.7E-05	1.7E-05
EU5	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU5	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	71.81	ND	3.6E-06	3.6E-06	ND	100.6	ND	5.0E-06	5.0E-06
EU5	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	1400	252.5	1.8E-08	1.3E-05	1.3E-05	1400	388.1	1.8E-08	1.9E-05	1.9E-05
EU5	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	24.14	ND	1.2E-06	1.2E-06	ND	33.31	ND	1.7E-06	1.7E-06
EU5	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	6.117	ND	3.1E-07	3.1E-07	ND	8.461	ND	4.2E-07	4.2E-07
EU5	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	614.8	ND	3.1E-05	3.1E-05	ND	1011	ND	5.0E-05	5.0E-05
EU5	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU5	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU5	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU5	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU5	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	1.5	ND	7.5E-08	7.5E-08	ND	1.84	ND	9.2E-08	9.2E-08
EU5	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU5	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU5	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU5	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU5	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU5	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU5	PFESA-BP2	Byproduct 2	ND	13.95	ND	7.0E-07	7.0E-07	ND	18.36	ND	9.2E-07	9.2E-07
			Total CTE Intake at EU5		1.8E-08	7.2E-05	7.2E-05	**Total RME Intake at EU5**		1.8E-08	1.2E-04	1.2E-04
EU6	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	108.2	ND	5.4E-06	5.4E-06	ND	174	ND	8.7E-06	8.7E-06
EU6	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	70.83	ND	3.5E-06	3.5E-06	ND	128.6	ND	6.4E-06	6.4E-06
EU6	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU6	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	32.58	ND	1.6E-06	1.6E-06	ND	60.63	ND	3.0E-06	3.0E-06
EU6	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	77.59	ND	3.9E-06	3.9E-06	ND	148.2	ND	7.4E-06	7.4E-06
EU6	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	7.927	ND	4.0E-07	4.0E-07	ND	14.6	ND	7.3E-07	7.3E-07
EU6	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	3.387	ND	1.7E-07	1.7E-07	ND	5.067	ND	2.5E-07	2.5E-07
EU6	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	226.6	ND	1.1E-05	1.1E-05	ND	421.2	ND	2.1E-05	2.1E-05
EU6	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU6	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU6	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU6	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU6	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	2.033	ND	1.0E-07	1.0E-07	ND	2.5	ND	1.2E-07	1.2E-07
EU6	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU6	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU6	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU6	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU6	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU6	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU6	PFESA-BP2	Byproduct 2	ND	13.5	ND	6.7E-07	6.7E-07	ND	24.92	ND	1.2E-06	1.2E-06
			Total CTE Intake at EU6		ND	2.7E-05	2.7E-05	**Total RME Intake at EU6**		ND	4.9E-05	4.9E-05

Table F-4-2
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Resident (Age 0-6) - Soil and Untreated Well Water

			Central Tendency Exposure Assessment					**Upper-Bound Exposure Estimate**				
			Average EPC		**Intake**			**95% UCL EPC**		**Intake**		
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	**Total Intake** mg/kg-day	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	**Total Intake** mg/kg-day
EU7	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	195.7	ND	9.8E-06	9.8E-06	ND	304.2	ND	1.5E-05	1.5E-05
EU7	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	106.2	ND	5.3E-06	5.3E-06	ND	158.2	ND	7.9E-06	7.9E-06
EU7	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU7	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	46.81	ND	2.3E-06	2.3E-06	ND	74.17	ND	3.7E-06	3.7E-06
EU7	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	102.5	ND	5.1E-06	5.1E-06	ND	179.5	ND	9.0E-06	9.0E-06
EU7	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	10.4	ND	5.2E-07	5.2E-07	ND	10.82	ND	5.4E-07	5.4E-07
EU7	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	3.821	ND	1.9E-07	1.9E-07	ND	3.457	ND	1.7E-07	1.7E-07
EU7	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	449.6	ND	2.2E-05	2.2E-05	ND	614.1	ND	3.1E-05	3.1E-05
EU7	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU7	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU7	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU7	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU7	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU7	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU7	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU7	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU7	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU7	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU7	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU7	PFESA-BP2	Byproduct 2	ND	15.59	ND	7.8E-07	7.8E-07	ND	21.68	ND	1.1E-06	1.1E-06
				Total CTE Intake at EU7	ND	4.6E-05	4.6E-05		**Total RME Intake at EU7**	ND	6.8E-05	6.8E-05
EU8	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	63.11	ND	3.1E-06	3.1E-06	ND	94.6	ND	4.7E-06	4.7E-06
EU8	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	25.12	ND	1.3E-06	1.3E-06	ND	23.12	ND	1.2E-06	1.2E-06
EU8	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU8	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	22.86	ND	1.1E-06	1.1E-06	ND	35.95	ND	1.8E-06	1.8E-06
EU8	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	43.15	ND	2.2E-06	2.2E-06	ND	84.11	ND	4.2E-06	4.2E-06
EU8	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	3.88	ND	1.9E-07	1.9E-07	ND	6.211	ND	3.1E-07	3.1E-07
EU8	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	1.525	ND	7.6E-08	7.6E-08	ND	1.72	ND	8.6E-08	8.6E-08
EU8	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	124.2	ND	6.2E-06	6.2E-06	ND	189	ND	9.4E-06	9.4E-06
EU8	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU8	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU8	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU8	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU8	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU8	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU8	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU8	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU8	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU8	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU8	PFESA-BP1	Byproduct 1	ND	1.112	ND	5.5E-08	5.5E-08	ND	1.5	ND	7.5E-08	7.5E-08
EU8	PFESA-BP2	Byproduct 2	ND	7.008	ND	3.5E-07	3.5E-07	ND	8.361	ND	4.2E-07	4.2E-07
				Total CTE Intake at EU8	ND	1.5E-05	1.5E-05		**Total RME Intake at EU8**	ND	2.2E-05	2.2E-05

Table F-4-2
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Resident (Age 0-6) - Soil and Untreated Well Water

			Central Tendency Exposure Assessment					**Upper-Bound Exposure Estimate**				
			Average EPC		**Intake**			**95% UCL EPC**		**Intake**		
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	**Total Intake** mg/kg-day	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	**Total Intake** mg/kg-day
EU9	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	53.91	ND	2.7E-06	2.7E-06	ND	110.3	ND	5.5E-06	5.5E-06
EU9	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	38.48	ND	1.9E-06	1.9E-06	ND	39.4	ND	2.0E-06	2.0E-06
EU9	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	1.116	ND	5.6E-08	5.6E-08	ND	1.144	ND	5.7E-08	5.7E-08
EU9	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	22.83	ND	1.1E-06	1.1E-06	ND	42.2	ND	2.1E-06	2.1E-06
EU9	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	41.75	ND	2.1E-06	2.1E-06	ND	52.37	ND	2.6E-06	2.6E-06
EU9	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	4.188	ND	2.1E-07	2.1E-07	ND	4.063	ND	2.0E-07	2.0E-07
EU9	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	1.448	ND	7.2E-08	7.2E-08	ND	1.439	ND	7.2E-08	7.2E-08
EU9	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	169.1	ND	8.4E-06	8.4E-06	ND	331.7	ND	1.7E-05	1.7E-05
EU9	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU9	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU9	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU9	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU9	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	1.222	ND	6.1E-08	6.1E-08	ND	1.366	ND	6.8E-08	6.8E-08
EU9	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU9	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU9	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU9	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU9	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU9	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU9	PFESA-BP2	Byproduct 2	ND	6.159	ND	3.1E-07	3.1E-07	ND	7.583	ND	3.8E-07	3.8E-07
			Total CTE Intake at EU9		ND	1.7E-05	1.7E-05	**Total RME Intake at EU9**		ND	2.9E-05	2.9E-05
EU10	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	13.83	ND	6.9E-07	6.9E-07	ND	21.52	ND	1.1E-06	1.1E-06
EU10	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	17.79	ND	8.9E-07	8.9E-07	ND	22.77	ND	1.1E-06	1.1E-06
EU10	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU10	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	13.57	ND	6.8E-07	6.8E-07	ND	20.15	ND	1.0E-06	1.0E-06
EU10	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	25.39	ND	1.3E-06	1.3E-06	ND	58.83	ND	2.9E-06	2.9E-06
EU10	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	2.605	ND	1.3E-07	1.3E-07	ND	4.15	ND	2.1E-07	2.1E-07
EU10	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	1.254	ND	6.3E-08	6.3E-08	ND	1.517	ND	7.6E-08	7.6E-08
EU10	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	111.9	ND	5.6E-06	5.6E-06	ND	161.2	ND	8.0E-06	8.0E-06
EU10	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU10	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU10	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU10	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU10	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU10	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU10	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU10	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU10	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU10	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU10	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU10	PFESA-BP2	Byproduct 2	ND	8.551	ND	4.3E-07	4.3E-07	ND	12.51	ND	6.2E-07	6.2E-07
			Total CTE Intake at EU10		ND	9.7E-06	9.7E-06	**Total RME Intake at EU10**		ND	1.5E-05	1.5E-05

Table F-4-2
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Resident (Age 0-6) - Soil and Untreated Well Water

			Central Tendency Exposure Assessment					**Upper-Bound Exposure Estimate**				
			Average EPC		**Intake**			**95% UCL EPC**		**Intake**		
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	**Total Intake** mg/kg-day	**Soil** ng/kg	**Untreated Well Water** ng/L	**Soil** mg/kg-day	**Untreated Well Water** mg/kg-day	**Total Intake** mg/kg-day
EU11	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	37.3	ND	1.9E-06	1.9E-06	ND	49.68	ND	2.5E-06	2.5E-06
EU11	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	25.14	ND	1.3E-06	1.3E-06	ND	32.87	ND	1.6E-06	1.6E-06
EU11	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU11	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	25.97	ND	1.3E-06	1.3E-06	ND	26.81	ND	1.3E-06	1.3E-06
EU11	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	32.68	ND	1.6E-06	1.6E-06	ND	61.88	ND	3.1E-06	3.1E-06
EU11	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	3.701	ND	1.8E-07	1.8E-07	ND	2.982	ND	1.5E-07	1.5E-07
EU11	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	1.716	ND	8.6E-08	8.6E-08	ND	3.603	ND	1.8E-07	1.8E-07
EU11	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	127.7	ND	6.4E-06	6.4E-06	ND	264.8	ND	1.3E-05	1.3E-05
EU11	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU11	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU11	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU11	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU11	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU11	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU11	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU11	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU11	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU11	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU11	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU11	PFESA-BP2	Byproduct 2	ND	11.37	ND	5.7E-07	5.7E-07	ND	22.6	ND	1.1E-06	1.1E-06
				Total CTE Intake at EU11	ND	1.3E-05	1.3E-05		**Total RME Intake at EU11**	ND	2.3E-05	2.3E-05
EU12	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	15.54	ND	7.7E-07	7.7E-07	ND	21.05	ND	1.0E-06	1.0E-06
EU12	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	15.69	ND	7.8E-07	7.8E-07	ND	16.92	ND	8.4E-07	8.4E-07
EU12	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	1.11	ND	5.5E-08	5.5E-08	ND	1.122	ND	5.6E-08	5.6E-08
EU12	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	11.26	ND	5.6E-07	5.6E-07	ND	14.35	ND	7.2E-07	7.2E-07
EU12	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	15.11	ND	7.5E-07	7.5E-07	ND	17.8	ND	8.9E-07	8.9E-07
EU12	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	1.977	ND	9.9E-08	9.9E-08	ND	2.987	ND	1.5E-07	1.5E-07
EU12	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	1.211	ND	6.0E-08	6.0E-08	ND	1.211	ND	6.0E-08	6.0E-08
EU12	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	89.19	ND	4.4E-06	4.4E-06	ND	97.78	ND	4.9E-06	4.9E-06
EU12	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU12	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU12	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU12	R-EVE	R-EVE	ND	--	ND	--	--	ND	--	ND	--	--
EU12	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	1.183	ND	5.9E-08	5.9E-08	ND	1.264	ND	6.3E-08	6.3E-08
EU12	Byproduct 4	Byproduct 4	ND	--	ND	--	--	ND	--	ND	--	--
EU12	Byproduct 6	Byproduct 6	ND	--	ND	--	--	ND	--	ND	--	--
EU12	Byproduct 5	Byproduct 5	ND	--	ND	--	--	ND	--	ND	--	--
EU12	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU12	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	--	--	ND	--	ND	--	--
EU12	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU12	PFESA-BP2	Byproduct 2	ND	2.346	ND	1.2E-07	1.2E-07	ND	2.382	ND	1.2E-07	1.2E-07
				Total CTE Intake at EU12	ND	7.7E-06	7.7E-06		**Total RME Intake at EU12**	ND	8.8E-06	8.8E-06

Definitions
CTE - central tendency exposure
EU - Exposure Unit
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ND - constituent not detected
ng/kg - nanogram(s) of constituent per kilogram of soil
ng/L - nanogram(s) of constituent per liter of water
RME - reasonable maximum exposure
UCL - upper confidence limit on the mean
"--" - not available/not calculated

Table F-4-3
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Farmer (Age 0-26) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									Upper-Bound Exposure Estimate								
			Average EPC					Intake				95% UCL EPC					Intake			
				Produce									Produce							
Exposure Unit	Chemical Abbreviation	Chemical Name	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total CTE Intake	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total RME Intake
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU1	HFPO-DA	Hexafluoropropylene oxide dimer acid	2.6E+03	4.9E-05	3.6E+02	2.0E+04	6.6E+02	1.6E-08	4.2E-06	2.3E-05	2.7E-05	2.6E+03	9.9E-04	3.6E+02	2.0E+04	1.4E+03	1.6E-08	4.2E-06	4.9E-05	5.3E-05
EU1	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	3.3E+02	ND	ND	1.2E-05	1.2E-05	ND	--	ND	ND	5.9E+02	ND	ND	2.0E-05	2.0E-05
EU1	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU1	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.6E+02	ND	ND	9.0E-06	9.0E-06	ND	--	ND	ND	5.1E+02	ND	ND	1.8E-05	1.8E-05
EU1	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	2.3E+03	--	--	--	1.1E+03	1.4E-08	ND	3.8E-05	3.8E-05	2.3E+03	--	--	--	4.4E+03	1.4E-08	ND	1.5E-04	1.5E-04
EU1	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.3E+02	ND	ND	4.6E-06	4.6E-06	ND	--	ND	ND	5.8E+02	ND	ND	2.0E-05	2.0E-05
EU1	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.2E+01	ND	ND	1.1E-06	1.1E-06	ND	--	ND	ND	7.1E+01	ND	ND	2.5E-06	2.5E-06
EU1	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.1E+03	ND	ND	3.8E-05	3.8E-05	ND	--	ND	ND	1.9E+03	ND	ND	6.5E-05	6.5E-05
EU1	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	8.2E+00	ND	ND	2.8E-07	2.8E-07	ND	--	ND	ND	1.5E+01	ND	ND	5.1E-07	5.1E-07
EU1	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU1	PFESA-BP2	Byproduct 2	ND	--	ND	ND	2.4E+01	ND	ND	8.4E-07	8.4E-07	ND	--	ND	ND	5.0E+01	ND	ND	1.7E-06	1.7E-06
							Total CTE Intake at EU1	2.9E-08	4.2E-06	1.3E-04	1.3E-04					**Total RME Intake at EU1**	2.9E-08	4.2E-06	3.3E-04	3.3E-04
EU2	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.6E-05	ND	ND	6.6E+02	ND	9.5E-15	2.3E-05	2.3E-05	ND	1.7E-04	ND	ND	1.2E+03	ND	1.0E-13	4.1E-05	4.1E-05
EU2	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	7.8E+02	ND	ND	2.7E-05	2.7E-05	ND	--	ND	ND	7.8E+02	ND	ND	2.7E-05	2.7E-05
EU2	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU2	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	4.1E+02	ND	ND	1.4E-05	1.4E-05	ND	--	ND	ND	4.1E+02	ND	ND	1.4E-05	1.4E-05
EU2	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.3E+03	ND	ND	4.5E-05	4.5E-05	ND	--	ND	ND	1.3E+03	ND	ND	4.5E-05	4.5E-05
EU2	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.6E+02	ND	ND	5.5E-06	5.5E-06	ND	--	ND	ND	1.6E+02	ND	ND	5.5E-06	5.5E-06
EU2	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	6.0E+01	ND	ND	2.1E-06	2.1E-06	ND	--	ND	ND	6.0E+01	ND	ND	2.1E-06	2.1E-06
EU2	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	3.1E+03	ND	ND	1.1E-04	1.1E-04	ND	--	ND	ND	3.1E+03	ND	ND	1.1E-04	1.1E-04
EU2	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.6E+01	ND	ND	5.5E-07	5.5E-07	ND	--	ND	ND	1.6E+01	ND	ND	5.5E-07	5.5E-07
EU2	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU2	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.3E+02	ND	ND	4.5E-06	4.5E-06	ND	--	ND	ND	1.3E+02	ND	ND	4.5E-06	4.5E-06
							Total CTE Intake at EU2	ND	9.5E-15	2.3E-04	2.3E-04					**Total RME Intake at EU2**	ND	1.0E-13	2.5E-04	2.5E-04
EU3	HFPO-DA	Hexafluoropropylene oxide dimer acid	3.6E+02	1.1E-05	4.9E+01	2.7E+03	4.2E+02	2.2E-09	5.8E-07	1.5E-05	1.5E-05	3.6E+02	4.3E-05	4.9E+01	2.7E+03	5.8E+02	2.2E-09	5.8E-07	2.0E-05	2.1E-05
EU3	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	2.7E+02	ND	ND	9.4E-06	9.4E-06	ND	--	ND	ND	7.2E+02	ND	ND	2.5E-05	2.5E-05
EU3	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU3	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	1.1E+02	ND	ND	3.9E-06	3.9E-06	ND	--	ND	ND	3.2E+02	ND	ND	1.1E-05	1.1E-05
EU3	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	3.1E+02	ND	ND	1.1E-05	1.1E-05	ND	--	ND	ND	8.1E+02	ND	ND	2.8E-05	2.8E-05
EU3	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	5.5E+01	ND	ND	1.9E-06	1.9E-06	ND	--	ND	ND	1.6E+02	ND	ND	5.5E-06	5.5E-06
EU3	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	2.2E+01	ND	ND	7.4E-07	7.4E-07	ND	--	ND	ND	4.1E+01	ND	ND	1.4E-06	1.4E-06
EU3	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.0E+03	ND	ND	3.5E-05	3.5E-05	ND	--	ND	ND	2.3E+03	ND	ND	7.9E-05	7.9E-05
EU3	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU3	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU3	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.9E+01	ND	ND	6.6E-07	6.6E-07	ND	--	ND	ND	5.4E+01	ND	ND	1.9E-06	1.9E-06
							Total CTE Intake at EU3	2.2E-09	5.8E-07	7.7E-05	7.7E-05					**Total RME Intake at EU3**	2.2E-09	5.8E-07	1.7E-04	1.7E-04

Table F-4-3
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Farmer (Age 0-26) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									Upper-Bound Exposure Estimate								
			Average EPC					Intake				95% UCL EPC					Intake			
				Produce									Produce							
Exposure Unit	Chemical Abbreviation	Chemical Name	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total CTE Intake	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total RME Intake
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU4	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.3E-05	ND	ND	1.4E+02	ND	7.9E-15	4.8E-06	4.8E-06	ND	1.3E-04	ND	ND	2.2E+02	ND	7.8E-14	7.6E-06	7.6E-06
EU4	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	8.4E+01	ND	ND	2.9E-06	2.9E-06	ND	--	ND	ND	1.2E+02	ND	ND	4.2E-06	4.2E-06
EU4	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU4	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	5.1E+01	ND	ND	1.8E-06	1.8E-06	ND	--	ND	ND	7.5E+01	ND	ND	2.6E-06	2.6E-06
EU4	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.3E+02	ND	ND	4.5E-06	4.5E-06	ND	--	ND	ND	2.0E+02	ND	ND	6.9E-06	6.9E-06
EU4	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.2E+01	ND	ND	4.3E-07	4.3E-07	ND	--	ND	ND	2.0E+01	ND	ND	6.8E-07	6.8E-07
EU4	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.3E+00	ND	ND	1.1E-07	1.1E-07	ND	--	ND	ND	4.4E+00	ND	ND	1.5E-07	1.5E-07
EU4	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	2.7E+02	ND	ND	9.5E-06	9.5E-06	ND	--	ND	ND	4.1E+02	ND	ND	1.4E-05	1.4E-05
EU4	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU4	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU4	PFESA-BP2	Byproduct 2	ND	--	ND	ND	8.3E+00	ND	ND	2.9E-07	2.9E-07	ND	--	ND	ND	1.3E+01	ND	ND	4.4E-07	4.4E-07
							Total CTE Intake at EU4	ND	7.9E-15	2.4E-05	2.4E-05					**Total RME Intake at EU4**	ND	7.8E-14	3.7E-05	3.7E-05
EU5	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	3.2E-06	ND	ND	3.1E+02	ND	1.9E-15	1.1E-05	1.1E-05	ND	8.0E-06	ND	ND	4.1E+02	ND	4.8E-15	1.4E-05	1.4E-05
EU5	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.6E+02	ND	ND	5.4E-06	5.4E-06	ND	--	ND	ND	3.5E+02	ND	ND	1.2E-05	1.2E-05
EU5	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU5	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	7.2E+01	ND	ND	2.5E-06	2.5E-06	ND	--	ND	ND	1.0E+02	ND	ND	3.5E-06	3.5E-06
EU5	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	1.4E+03	--	--	--	2.5E+02	8.4E-09	ND	8.7E-06	8.7E-06	1.4E+03	--	--	--	3.9E+02	8.4E-09	ND	1.3E-05	1.3E-05
EU5	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	2.4E+01	ND	ND	8.3E-07	8.3E-07	ND	--	ND	ND	3.3E+01	ND	ND	1.2E-06	1.2E-06
EU5	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	6.1E+00	ND	ND	2.1E-07	2.1E-07	ND	--	ND	ND	8.5E+00	ND	ND	2.9E-07	2.9E-07
EU5	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	6.1E+02	ND	ND	2.1E-05	2.1E-05	ND	--	ND	ND	1.0E+03	ND	ND	3.5E-05	3.5E-05
EU5	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.5E+00	ND	ND	5.2E-08	5.2E-08	ND	--	ND	ND	1.8E+00	ND	ND	6.4E-08	6.4E-08
EU5	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU5	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.4E+01	ND	ND	4.8E-07	4.8E-07	ND	--	ND	ND	1.8E+01	ND	ND	6.3E-07	6.3E-07
							Total CTE Intake at EU5	8.4E-09	1.9E-15	5.0E-05	5.0E-05					**Total RME Intake at EU5**	8.4E-09	4.8E-15	8.0E-05	8.0E-05
EU6	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.7E-06	ND	ND	1.1E+02	ND	1.0E-15	3.7E-06	3.7E-06	ND	4.5E-06	ND	ND	1.7E+02	ND	2.7E-15	6.0E-06	6.0E-06
EU6	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	7.1E+01	ND	ND	2.4E-06	2.4E-06	ND	--	ND	ND	1.3E+02	ND	ND	4.4E-06	4.4E-06
EU6	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU6	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	3.3E+01	ND	ND	1.1E-06	1.1E-06	ND	--	ND	ND	6.1E+01	ND	ND	2.1E-06	2.1E-06
EU6	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	7.8E+01	ND	ND	2.7E-06	2.7E-06	ND	--	ND	ND	1.5E+02	ND	ND	5.1E-06	5.1E-06
EU6	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	7.9E+00	ND	ND	2.7E-07	2.7E-07	ND	--	ND	ND	1.5E+01	ND	ND	5.0E-07	5.0E-07
EU6	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.4E+00	ND	ND	1.2E-07	1.2E-07	ND	--	ND	ND	5.1E+00	ND	ND	1.8E-07	1.8E-07
EU6	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	2.3E+02	ND	ND	7.8E-06	7.8E-06	ND	--	ND	ND	4.2E+02	ND	ND	1.5E-05	1.5E-05
EU6	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	2.0E+00	ND	ND	7.0E-08	7.0E-08	ND	--	ND	ND	2.5E+00	ND	ND	8.6E-08	8.6E-08
EU6	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU6	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.4E+01	ND	ND	4.7E-07	4.7E-07	ND	--	ND	ND	2.5E+01	ND	ND	8.6E-07	8.6E-07
							Total CTE Intake at EU6	ND	1.0E-15	1.9E-05	1.9E-05					**Total RME Intake at EU6**	ND	2.7E-15	3.4E-05	3.4E-05

Table F-4-3
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Farmer (Age 0-26) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									Upper-Bound Exposure Estimate								
			Average EPC					Intake				95% UCL EPC					Intake			
				Produce									Produce							
Exposure Unit	Chemical Abbreviation	Chemical Name	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total CTE Intake	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total RME Intake
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU7	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	2.3E-06	ND	ND	2.0E+02	ND	1.4E-15	6.8E-06	6.8E-06	ND	5.8E-06	ND	ND	3.0E+02	ND	3.4E-15	1.1E-05	1.1E-05
EU7	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.1E+02	ND	ND	3.7E-06	3.7E-06	ND	--	ND	ND	1.6E+02	ND	ND	5.5E-06	5.5E-06
EU7	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU7	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	4.7E+01	ND	ND	1.6E-06	1.6E-06	ND	--	ND	ND	7.4E+01	ND	ND	2.6E-06	2.6E-06
EU7	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.0E+02	ND	ND	3.5E-06	3.5E-06	ND	--	ND	ND	1.8E+02	ND	ND	6.2E-06	6.2E-06
EU7	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.0E+01	ND	ND	3.6E-07	3.6E-07	ND	--	ND	ND	1.1E+01	ND	ND	3.7E-07	3.7E-07
EU7	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.8E+00	ND	ND	1.3E-07	1.3E-07	ND	--	ND	ND	3.5E+00	ND	ND	1.2E-07	1.2E-07
EU7	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	4.5E+02	ND	ND	1.6E-05	1.6E-05	ND	--	ND	ND	6.1E+02	ND	ND	2.1E-05	2.1E-05
EU7	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU7	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU7	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.6E+01	ND	ND	5.4E-07	5.4E-07	ND	--	ND	ND	2.2E+01	ND	ND	7.5E-07	7.5E-07
							Total CTE Intake at EU7	ND	1.4E-15	3.2E-05	3.2E-05					**Total RME Intake at EU7**	ND	3.4E-15	4.7E-05	4.7E-05
EU8	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.6E-06	ND	ND	6.3E+01	ND	9.5E-16	2.2E-06	2.2E-06	ND	3.6E-06	ND	ND	9.5E+01	ND	2.1E-15	3.3E-06	3.3E-06
EU8	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	2.5E+01	ND	ND	8.7E-07	8.7E-07	ND	--	ND	ND	2.3E+01	ND	ND	8.0E-07	8.0E-07
EU8	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU8	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.3E+01	ND	ND	7.9E-07	7.9E-07	ND	--	ND	ND	3.6E+01	ND	ND	1.2E-06	1.2E-06
EU8	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	4.3E+01	ND	ND	1.5E-06	1.5E-06	ND	--	ND	ND	8.4E+01	ND	ND	2.9E-06	2.9E-06
EU8	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	3.9E+00	ND	ND	1.3E-07	1.3E-07	ND	--	ND	ND	6.2E+00	ND	ND	2.1E-07	2.1E-07
EU8	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.5E+00	ND	ND	5.3E-08	5.3E-08	ND	--	ND	ND	1.7E+00	ND	ND	5.9E-08	5.9E-08
EU8	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.2E+02	ND	ND	4.3E-06	4.3E-06	ND	--	ND	ND	1.9E+02	ND	ND	6.5E-06	6.5E-06
EU8	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU8	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PFESA-BP1	Byproduct 1	ND	--	ND	ND	1.1E+00	ND	ND	3.8E-08	3.8E-08	ND	--	ND	ND	1.5E+00	ND	ND	5.2E-08	5.2E-08
EU8	PFESA-BP2	Byproduct 2	ND	--	ND	ND	7.0E+00	ND	ND	2.4E-07	2.4E-07	ND	--	ND	ND	8.4E+00	ND	ND	2.9E-07	2.9E-07
							Total CTE Intake at EU8	ND	9.5E-16	1.0E-05	1.0E-05					**Total RME Intake at EU8**	ND	2.1E-15	1.5E-05	1.5E-05
EU9	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	9.9E-07	ND	ND	5.4E+01	ND	5.9E-16	1.9E-06	1.9E-06	ND	2.3E-06	ND	ND	1.1E+02	ND	1.4E-15	3.8E-06	3.8E-06
EU9	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	3.8E+01	ND	ND	1.3E-06	1.3E-06	ND	--	ND	ND	3.9E+01	ND	ND	1.4E-06	1.4E-06
EU9	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	1.1E+00	ND	ND	3.9E-08	3.9E-08	ND	--	ND	ND	1.1E+00	ND	ND	4.0E-08	4.0E-08
EU9	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.3E+01	ND	ND	7.9E-07	7.9E-07	ND	--	ND	ND	4.2E+01	ND	ND	1.5E-06	1.5E-06
EU9	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	4.2E+01	ND	ND	1.4E-06	1.4E-06	ND	--	ND	ND	5.2E+01	ND	ND	1.8E-06	1.8E-06
EU9	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	4.2E+00	ND	ND	1.4E-07	1.4E-07	ND	--	ND	ND	4.1E+00	ND	ND	1.4E-07	1.4E-07
EU9	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.4E+00	ND	ND	5.0E-08	5.0E-08	ND	--	ND	ND	1.4E+00	ND	ND	5.0E-08	5.0E-08
EU9	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.7E+02	ND	ND	5.8E-06	5.8E-06	ND	--	ND	ND	3.3E+02	ND	ND	1.1E-05	1.1E-05
EU9	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.2E+00	ND	ND	4.2E-08	4.2E-08	ND	--	ND	ND	1.4E+00	ND	ND	4.7E-08	4.7E-08
EU9	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU9	PFESA-BP2	Byproduct 2	ND	--	ND	ND	6.2E+00	ND	ND	2.1E-07	2.1E-07	ND	--	ND	ND	7.6E+00	ND	ND	2.6E-07	2.6E-07
							Total CTE Intake at EU9	ND	5.9E-16	1.2E-05	1.2E-05					**Total RME Intake at EU9**	ND	1.4E-15	2.0E-05	2.0E-05

Table F-4-3
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Farmer (Age 0-26) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									Upper-Bound Exposure Estimate								
			Average EPC					Intake				95% UCL EPC					Intake			
				Produce									Produce							
Exposure Unit	Chemical Abbreviation	Chemical Name	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total CTE Intake	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total RME Intake
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU10	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	5.7E-07	ND	ND	1.4E+01	ND	3.4E-16	4.8E-07	4.8E-07	ND	1.5E-06	ND	ND	2.2E+01	ND	9.2E-16	7.4E-07	7.4E-07
EU10	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.8E+01	ND	ND	6.1E-07	6.1E-07	ND	--	ND	ND	2.3E+01	ND	ND	7.9E-07	7.9E-07
EU10	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU10	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	1.4E+01	ND	ND	4.7E-07	4.7E-07	ND	--	ND	ND	2.0E+01	ND	ND	7.0E-07	7.0E-07
EU10	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	2.5E+01	ND	ND	8.8E-07	8.8E-07	ND	--	ND	ND	5.9E+01	ND	ND	2.0E-06	2.0E-06
EU10	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	2.6E+00	ND	ND	9.0E-08	9.0E-08	ND	--	ND	ND	4.2E+00	ND	ND	1.4E-07	1.4E-07
EU10	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.3E+00	ND	ND	4.3E-08	4.3E-08	ND	--	ND	ND	1.5E+00	ND	ND	5.2E-08	5.2E-08
EU10	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.1E+02	ND	ND	3.9E-06	3.9E-06	ND	--	ND	ND	1.6E+02	ND	ND	5.6E-06	5.6E-06
EU10	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU10	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU10	PFESA-BP2	Byproduct 2	ND	--	ND	ND	8.6E+00	ND	ND	3.0E-07	3.0E-07	ND	--	ND	ND	1.3E+01	ND	ND	4.3E-07	4.3E-07
							Total CTE Intake at EU10	ND	3.4E-16	6.7E-06	6.7E-06					**Total RME Intake at EU10**	ND	9.2E-16	1.0E-05	1.0E-05
EU11	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	8.2E-07	ND	ND	3.7E+01	ND	4.9E-16	1.3E-06	1.3E-06	ND	2.3E-06	ND	ND	5.0E+01	ND	1.4E-15	1.7E-06	1.7E-06
EU11	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	2.5E+01	ND	ND	8.7E-07	8.7E-07	ND	--	ND	ND	3.3E+01	ND	ND	1.1E-06	1.1E-06
EU11	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU11	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.6E+01	ND	ND	9.0E-07	9.0E-07	ND	--	ND	ND	2.7E+01	ND	ND	9.3E-07	9.3E-07
EU11	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	3.3E+01	ND	ND	1.1E-06	1.1E-06	ND	--	ND	ND	6.2E+01	ND	ND	2.1E-06	2.1E-06
EU11	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	3.7E+00	ND	ND	1.3E-07	1.3E-07	ND	--	ND	ND	3.0E+00	ND	ND	1.0E-07	1.0E-07
EU11	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.7E+00	ND	ND	5.9E-08	5.9E-08	ND	--	ND	ND	3.6E+00	ND	ND	1.2E-07	1.2E-07
EU11	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.3E+02	ND	ND	4.4E-06	4.4E-06	ND	--	ND	ND	2.6E+02	ND	ND	9.2E-06	9.2E-06
EU11	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU11	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU11	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.1E+01	ND	ND	3.9E-07	3.9E-07	ND	--	ND	ND	2.3E+01	ND	ND	7.8E-07	7.8E-07
							Total CTE Intake at EU11	ND	4.9E-16	9.2E-06	9.2E-06					**Total RME Intake at EU11**	ND	1.4E-15	1.6E-05	1.6E-05
EU12	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	5.2E-07	ND	ND	1.6E+01	ND	3.1E-16	5.4E-07	5.4E-07	ND	1.3E-06	ND	ND	2.1E+01	ND	7.7E-16	7.3E-07	7.3E-07
EU12	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.6E+01	ND	ND	5.4E-07	5.4E-07	ND	--	ND	ND	1.7E+01	ND	ND	5.8E-07	5.8E-07
EU12	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	1.1E+00	ND	ND	3.8E-08	3.8E-08	ND	--	ND	ND	1.1E+00	ND	ND	3.9E-08	3.9E-08
EU12	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	1.1E+01	ND	ND	3.9E-07	3.9E-07	ND	--	ND	ND	1.4E+01	ND	ND	5.0E-07	5.0E-07
EU12	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.5E+01	ND	ND	5.2E-07	5.2E-07	ND	--	ND	ND	1.8E+01	ND	ND	6.2E-07	6.2E-07
EU12	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	2.0E+00	ND	ND	6.8E-08	6.8E-08	ND	--	ND	ND	3.0E+00	ND	ND	1.0E-07	1.0E-07
EU12	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.2E+00	ND	ND	4.2E-08	4.2E-08	ND	--	ND	ND	1.2E+00	ND	ND	4.2E-08	4.2E-08
EU12	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	8.9E+01	ND	ND	3.1E-06	3.1E-06	ND	--	ND	ND	9.8E+01	ND	ND	3.4E-06	3.4E-06
EU12	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.2E+00	ND	ND	4.1E-08	4.1E-08	ND	--	ND	ND	1.3E+00	ND	ND	4.4E-08	4.4E-08
EU12	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU12	PFESA-BP2	Byproduct 2	ND	--	ND	ND	2.3E+00	ND	ND	8.1E-08	8.1E-08	ND	--	ND	ND	2.4E+00	ND	ND	8.2E-08	8.2E-08
							Total CTE Intake at EU12	ND	3.1E-16	5.3E-06	5.3E-06					**Total RME Intake at EU12**	ND	7.7E-16	6.1E-06	6.1E-06

Definitions
CTE - central tendency exposure
EU - Exposure Unit
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ND - constituent not detected
ng/kg - nanogram(s) of constituent per kilogram of soil or nanogram(s) of constituent per kilogram of plant tissue
ng/L - nanogram(s) of constituent per liter of water
RME - reasonable maximum exposure
UCL - upper confidence limit on the mean
"--" - not available/not calculated

Table F-4-4
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Farmer (Age 0-6) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									Upper-Bound Exposure Estimate								
			Average EPC					Intake				95% UCL EPC					Intake			
				Produce									Produce							
Exposure Unit	Chemical Abbreviation	Chemical Name	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total CTE Intake	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total RME Intake
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU1	HFPO-DA	Hexafluoropropylene oxide dimer acid	2.6E+03	4.9E-05	3.6E+02	2.0E+04	6.6E+02	3.3E-08	6.2E-06	3.3E-05	3.9E-05	2.6E+03	9.9E-04	3.6E+02	2.0E+04	1.4E+03	3.3E-08	6.2E-06	7.0E-05	7.7E-05
EU1	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	3.3E+02	ND	ND	1.7E-05	1.7E-05	ND	--	ND	ND	5.9E+02	ND	ND	2.9E-05	2.9E-05
EU1	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU1	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.6E+02	ND	ND	1.3E-05	1.3E-05	ND	--	ND	ND	5.1E+02	ND	ND	2.6E-05	2.6E-05
EU1	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	2.3E+03	--	--	--	1.1E+03	2.9E-08	ND	5.5E-05	5.5E-05	2.3E+03	--	--	--	4.4E+03	2.9E-08	ND	2.2E-04	2.2E-04
EU1	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.3E+02	ND	ND	6.6E-06	6.6E-06	ND	--	ND	ND	5.8E+02	ND	ND	2.9E-05	2.9E-05
EU1	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.2E+01	ND	ND	1.6E-06	1.6E-06	ND	--	ND	ND	7.1E+01	ND	ND	3.5E-06	3.5E-06
EU1	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.1E+03	ND	ND	5.5E-05	5.5E-05	ND	--	ND	ND	1.9E+03	ND	ND	9.3E-05	9.3E-05
EU1	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	8.2E+00	ND	ND	4.1E-07	4.1E-07	ND	--	ND	ND	1.5E+01	ND	ND	7.3E-07	7.3E-07
EU1	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU1	PFESA-BP2	Byproduct 2	ND	--	ND	ND	2.4E+01	ND	ND	1.2E-06	1.2E-06	ND	--	ND	ND	5.0E+01	ND	ND	2.5E-06	2.5E-06
							Total CTE Intake at EU1	6.3E-08	6.2E-06	1.8E-04	1.9E-04					**Total RME Intake at EU1**	6.3E-08	6.2E-06	4.7E-04	4.8E-04
EU2	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.6E-05	ND	ND	6.6E+02	ND	1.7E-14	3.3E-05	3.3E-05	ND	1.7E-04	ND	ND	1.2E+03	ND	1.9E-13	6.0E-05	6.0E-05
EU2	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	7.8E+02	ND	ND	3.9E-05	3.9E-05	ND	--	ND	ND	7.8E+02	ND	ND	3.9E-05	3.9E-05
EU2	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU2	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	4.1E+02	ND	ND	2.0E-05	2.0E-05	ND	--	ND	ND	4.1E+02	ND	ND	2.0E-05	2.0E-05
EU2	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.3E+03	ND	ND	6.5E-05	6.5E-05	ND	--	ND	ND	1.3E+03	ND	ND	6.5E-05	6.5E-05
EU2	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.6E+02	ND	ND	8.0E-06	8.0E-06	ND	--	ND	ND	1.6E+02	ND	ND	8.0E-06	8.0E-06
EU2	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	6.0E+01	ND	ND	3.0E-06	3.0E-06	ND	--	ND	ND	6.0E+01	ND	ND	3.0E-06	3.0E-06
EU2	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	3.1E+03	ND	ND	1.5E-04	1.5E-04	ND	--	ND	ND	3.1E+03	ND	ND	1.5E-04	1.5E-04
EU2	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.6E+01	ND	ND	8.0E-07	8.0E-07	ND	--	ND	ND	1.6E+01	ND	ND	8.0E-07	8.0E-07
EU2	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU2	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.3E+02	ND	ND	6.5E-06	6.5E-06	ND	--	ND	ND	1.3E+02	ND	ND	6.5E-06	6.5E-06
							Total CTE Intake at EU2	ND	1.7E-14	3.3E-04	3.3E-04					**Total RME Intake at EU2**	ND	1.9E-13	3.6E-04	3.6E-04
EU3	HFPO-DA	Hexafluoropropylene oxide dimer acid	3.6E+02	1.1E-05	4.9E+01	2.7E+03	4.2E+02	4.6E-09	8.6E-07	2.1E-05	2.2E-05	3.6E+02	4.3E-05	4.9E+01	2.7E+03	5.8E+02	4.6E-09	8.6E-07	2.9E-05	3.0E-05
EU3	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	2.7E+02	ND	ND	1.4E-05	1.4E-05	ND	--	ND	ND	7.2E+02	ND	ND	3.6E-05	3.6E-05
EU3	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU3	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	1.1E+02	ND	ND	5.7E-06	5.7E-06	ND	--	ND	ND	3.2E+02	ND	ND	1.6E-05	1.6E-05
EU3	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	3.1E+02	ND	ND	1.6E-05	1.6E-05	ND	--	ND	ND	8.1E+02	ND	ND	4.0E-05	4.0E-05
EU3	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	5.5E+01	ND	ND	2.7E-06	2.7E-06	ND	--	ND	ND	1.6E+02	ND	ND	8.0E-06	8.0E-06
EU3	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	2.2E+01	ND	ND	1.1E-06	1.1E-06	ND	--	ND	ND	4.1E+01	ND	ND	2.0E-06	2.0E-06
EU3	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.0E+03	ND	ND	5.0E-05	5.0E-05	ND	--	ND	ND	2.3E+03	ND	ND	1.1E-04	1.1E-04
EU3	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU3	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU3	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.9E+01	ND	ND	9.5E-07	9.5E-07	ND	--	ND	ND	5.4E+01	ND	ND	2.7E-06	2.7E-06
							Total CTE Intake at EU3	4.6E-09	8.6E-07	1.1E-04	1.1E-04					**Total RME Intake at EU3**	4.6E-09	8.6E-07	2.5E-04	2.5E-04

Table F-4-4
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Farmer (Age 0-6) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									**Upper-Bound Exposure Estimate**								
			Average EPC					**Intake**				**95% UCL EPC**					**Intake**			
				Produce									**Produce**							
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Soil**	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	**Untreated Well Water**	**Soil**	**Produce**	**Untreated Well Water**	**Total CTE Intake**	**Soil**	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	**Untreated Well Water**	**Soil**	**Produce**	**Untreated Well Water**	**Total RME Intake**
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU4	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.3E-05	ND	ND	1.4E+02	ND	1.4E-14	6.9E-06	6.9E-06	ND	1.3E-04	ND	ND	2.2E+02	ND	1.4E-13	1.1E-05	1.1E-05
EU4	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	8.4E+01	ND	ND	4.2E-06	4.2E-06	ND	--	ND	ND	1.2E+02	ND	ND	6.0E-06	6.0E-06
EU4	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU4	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	5.1E+01	ND	ND	2.5E-06	2.5E-06	ND	--	ND	ND	7.5E+01	ND	ND	3.7E-06	3.7E-06
EU4	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.3E+02	ND	ND	6.5E-06	6.5E-06	ND	--	ND	ND	2.0E+02	ND	ND	1.0E-05	1.0E-05
EU4	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.2E+01	ND	ND	6.2E-07	6.2E-07	ND	--	ND	ND	2.0E+01	ND	ND	9.8E-07	9.8E-07
EU4	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.3E+00	ND	ND	1.6E-07	1.6E-07	ND	--	ND	ND	4.4E+00	ND	ND	2.2E-07	2.2E-07
EU4	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	2.7E+02	ND	ND	1.4E-05	1.4E-05	ND	--	ND	ND	4.1E+02	ND	ND	2.1E-05	2.1E-05
EU4	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU4	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU4	PFESA-BP2	Byproduct 2	ND	--	ND	ND	8.3E+00	ND	ND	4.1E-07	4.1E-07	ND	--	ND	ND	1.3E+01	ND	ND	6.3E-07	6.3E-07
							Total CTE Intake at EU4	ND	1.4E-14	3.5E-05	3.5E-05					**Total RME Intake at EU4**	ND	1.4E-13	5.3E-05	5.3E-05
EU5	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	3.2E-06	ND	ND	3.1E+02	ND	3.4E-15	1.6E-05	1.6E-05	ND	8.0E-06	ND	ND	4.1E+02	ND	8.6E-15	2.1E-05	2.1E-05
EU5	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.6E+02	ND	ND	7.7E-06	7.7E-06	ND	--	ND	ND	3.5E+02	ND	ND	1.7E-05	1.7E-05
EU5	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU5	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	7.2E+01	ND	ND	3.6E-06	3.6E-06	ND	--	ND	ND	1.0E+02	ND	ND	5.0E-06	5.0E-06
EU5	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	1.4E+03	--	--	--	2.5E+02	1.8E-08	ND	1.3E-05	1.3E-05	1.4E+03	--	--	--	3.9E+02	1.8E-08	ND	1.9E-05	1.9E-05
EU5	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	2.4E+01	ND	ND	1.2E-06	1.2E-06	ND	--	ND	ND	3.3E+01	ND	ND	1.7E-06	1.7E-06
EU5	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	6.1E+00	ND	ND	3.1E-07	3.1E-07	ND	--	ND	ND	8.5E+00	ND	ND	4.2E-07	4.2E-07
EU5	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	6.1E+02	ND	ND	3.1E-05	3.1E-05	ND	--	ND	ND	1.0E+03	ND	ND	5.0E-05	5.0E-05
EU5	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.5E+00	ND	ND	7.5E-08	7.5E-08	ND	--	ND	ND	1.8E+00	ND	ND	9.2E-08	9.2E-08
EU5	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU5	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.4E+01	ND	ND	7.0E-07	7.0E-07	ND	--	ND	ND	1.8E+01	ND	ND	9.2E-07	9.2E-07
							Total CTE Intake at EU5	1.8E-08	3.4E-15	7.2E-05	7.2E-05					**Total RME Intake at EU5**	1.8E-08	8.6E-15	1.2E-04	1.2E-04
EU6	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.7E-06	ND	ND	1.1E+02	ND	1.9E-15	5.4E-06	5.4E-06	ND	4.5E-06	ND	ND	1.7E+02	ND	4.8E-15	8.7E-06	8.7E-06
EU6	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	7.1E+01	ND	ND	3.5E-06	3.5E-06	ND	--	ND	ND	1.3E+02	ND	ND	6.4E-06	6.4E-06
EU6	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU6	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	3.3E+01	ND	ND	1.6E-06	1.6E-06	ND	--	ND	ND	6.1E+01	ND	ND	3.0E-06	3.0E-06
EU6	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	7.8E+01	ND	ND	3.9E-06	3.9E-06	ND	--	ND	ND	1.5E+02	ND	ND	7.4E-06	7.4E-06
EU6	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	7.9E+00	ND	ND	4.0E-07	4.0E-07	ND	--	ND	ND	1.5E+01	ND	ND	7.3E-07	7.3E-07
EU6	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.4E+00	ND	ND	1.7E-07	1.7E-07	ND	--	ND	ND	5.1E+00	ND	ND	2.5E-07	2.5E-07
EU6	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	2.3E+02	ND	ND	1.1E-05	1.1E-05	ND	--	ND	ND	4.2E+02	ND	ND	2.1E-05	2.1E-05
EU6	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	2.0E+00	ND	ND	1.0E-07	1.0E-07	ND	--	ND	ND	2.5E+00	ND	ND	1.2E-07	1.2E-07
EU6	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU6	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.4E+01	ND	ND	6.7E-07	6.7E-07	ND	--	ND	ND	2.5E+01	ND	ND	1.2E-06	1.2E-06
							Total CTE Intake at EU6	ND	1.9E-15	2.7E-05	2.7E-05					**Total RME Intake at EU6**	ND	4.8E-15	4.9E-05	4.9E-05

Table F-4-4
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Farmer (Age 0-6) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									Upper-Bound Exposure Estimate								
			Average EPC					Intake				95% UCL EPC					Intake			
				Produce									Produce							
Exposure Unit	Chemical Abbreviation	Chemical Name	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total CTE Intake	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total RME Intake
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU7	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	2.3E-06	ND	ND	2.0E+02	ND	2.5E-15	9.8E-06	9.8E-06	ND	5.8E-06	ND	ND	3.0E+02	ND	6.3E-15	1.5E-05	1.5E-05
EU7	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.1E+02	ND	ND	5.3E-06	5.3E-06	ND	--	ND	ND	1.6E+02	ND	ND	7.9E-06	7.9E-06
EU7	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU7	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	4.7E+01	ND	ND	2.3E-06	2.3E-06	ND	--	ND	ND	7.4E+01	ND	ND	3.7E-06	3.7E-06
EU7	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.0E+02	ND	ND	5.1E-06	5.1E-06	ND	--	ND	ND	1.8E+02	ND	ND	9.0E-06	9.0E-06
EU7	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.0E+01	ND	ND	5.2E-07	5.2E-07	ND	--	ND	ND	1.1E+01	ND	ND	5.4E-07	5.4E-07
EU7	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.8E+00	ND	ND	1.9E-07	1.9E-07	ND	--	ND	ND	3.5E+00	ND	ND	1.7E-07	1.7E-07
EU7	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	4.5E+02	ND	ND	2.2E-05	2.2E-05	ND	--	ND	ND	6.1E+02	ND	ND	3.1E-05	3.1E-05
EU7	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU7	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU7	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.6E+01	ND	ND	7.8E-07	7.8E-07	ND	--	ND	ND	2.2E+01	ND	ND	1.1E-06	1.1E-06
							Total CTE Intake at EU7	ND	2.5E-15	4.6E-05	4.6E-05					**Total RME Intake at EU7**	ND	6.3E-15	6.8E-05	6.8E-05
EU8	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.6E-06	ND	ND	6.3E+01	ND	1.7E-15	3.1E-06	3.1E-06	ND	3.6E-06	ND	ND	9.5E+01	ND	3.9E-15	4.7E-06	4.7E-06
EU8	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	2.5E+01	ND	ND	1.3E-06	1.3E-06	ND	--	ND	ND	2.3E+01	ND	ND	1.2E-06	1.2E-06
EU8	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU8	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.3E+01	ND	ND	1.1E-06	1.1E-06	ND	--	ND	ND	3.6E+01	ND	ND	1.8E-06	1.8E-06
EU8	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	4.3E+01	ND	ND	2.2E-06	2.2E-06	ND	--	ND	ND	8.4E+01	ND	ND	4.2E-06	4.2E-06
EU8	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	3.9E+00	ND	ND	1.9E-07	1.9E-07	ND	--	ND	ND	6.2E+00	ND	ND	3.1E-07	3.1E-07
EU8	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.5E+00	ND	ND	7.6E-08	7.6E-08	ND	--	ND	ND	1.7E+00	ND	ND	8.6E-08	8.6E-08
EU8	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.2E+02	ND	ND	6.2E-06	6.2E-06	ND	--	ND	ND	1.9E+02	ND	ND	9.4E-06	9.4E-06
EU8	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU8	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PFESA-BP1	Byproduct 1	ND	--	ND	ND	1.1E+00	ND	ND	5.5E-08	5.5E-08	ND	--	ND	ND	1.5E+00	ND	ND	7.5E-08	7.5E-08
EU8	PFESA-BP2	Byproduct 2	ND	--	ND	ND	7.0E+00	ND	ND	3.5E-07	3.5E-07	ND	--	ND	ND	8.4E+00	ND	ND	4.2E-07	4.2E-07
							Total CTE Intake at EU8	ND	1.7E-15	1.5E-05	1.5E-05					**Total RME Intake at EU8**	ND	3.9E-15	2.2E-05	2.2E-05
EU9	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	9.9E-07	ND	ND	5.4E+01	ND	1.1E-15	2.7E-06	2.7E-06	ND	2.3E-06	ND	ND	1.1E+02	ND	2.5E-15	5.5E-06	5.5E-06
EU9	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	3.8E+01	ND	ND	1.9E-06	1.9E-06	ND	--	ND	ND	3.9E+01	ND	ND	2.0E-06	2.0E-06
EU9	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	1.1E+00	ND	ND	5.6E-08	5.6E-08	ND	--	ND	ND	1.1E+00	ND	ND	5.7E-08	5.7E-08
EU9	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.3E+01	ND	ND	1.1E-06	1.1E-06	ND	--	ND	ND	4.2E+01	ND	ND	2.1E-06	2.1E-06
EU9	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	4.2E+01	ND	ND	2.1E-06	2.1E-06	ND	--	ND	ND	5.2E+01	ND	ND	2.6E-06	2.6E-06
EU9	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	4.2E+00	ND	ND	2.1E-07	2.1E-07	ND	--	ND	ND	4.1E+00	ND	ND	2.0E-07	2.0E-07
EU9	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.4E+00	ND	ND	7.2E-08	7.2E-08	ND	--	ND	ND	1.4E+00	ND	ND	7.2E-08	7.2E-08
EU9	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.7E+02	ND	ND	8.4E-06	8.4E-06	ND	--	ND	ND	3.3E+02	ND	ND	1.7E-05	1.7E-05
EU9	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.2E+00	ND	ND	6.1E-08	6.1E-08	ND	--	ND	ND	1.4E+00	ND	ND	6.8E-08	6.8E-08
EU9	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU9	PFESA-BP2	Byproduct 2	ND	--	ND	ND	6.2E+00	ND	ND	3.1E-07	3.1E-07	ND	--	ND	ND	7.6E+00	ND	ND	3.8E-07	3.8E-07
							Total CTE Intake at EU9	ND	1.1E-15	1.7E-05	1.7E-05					**Total RME Intake at EU9**	ND	2.5E-15	2.9E-05	2.9E-05

Table F-4-4
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Farmer (Age 0-6) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									Upper-Bound Exposure Estimate								
			Average EPC					Intake				95% UCL EPC					Intake			
				Produce									Produce							
Exposure Unit	Chemical Abbreviation	Chemical Name	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total CTE Intake	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total RME Intake
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU10	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	5.7E-07	ND	ND	1.4E+01	ND	6.2E-16	6.9E-07	6.9E-07	ND	1.5E-06	ND	ND	2.2E+01	ND	1.7E-15	1.1E-06	1.1E-06
EU10	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.8E+01	ND	ND	8.9E-07	8.9E-07	ND	--	ND	ND	2.3E+01	ND	ND	1.1E-06	1.1E-06
EU10	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU10	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	1.4E+01	ND	ND	6.8E-07	6.8E-07	ND	--	ND	ND	2.0E+01	ND	ND	1.0E-06	1.0E-06
EU10	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	2.5E+01	ND	ND	1.3E-06	1.3E-06	ND	--	ND	ND	5.9E+01	ND	ND	2.9E-06	2.9E-06
EU10	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	2.6E+00	ND	ND	1.3E-07	1.3E-07	ND	--	ND	ND	4.2E+00	ND	ND	2.1E-07	2.1E-07
EU10	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.3E+00	ND	ND	6.3E-08	6.3E-08	ND	--	ND	ND	1.5E+00	ND	ND	7.6E-08	7.6E-08
EU10	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.1E+02	ND	ND	5.6E-06	5.6E-06	ND	--	ND	ND	1.6E+02	ND	ND	8.0E-06	8.0E-06
EU10	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU10	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU10	PFESA-BP2	Byproduct 2	ND	--	ND	ND	8.6E+00	ND	ND	4.3E-07	4.3E-07	ND	--	ND	ND	1.3E+01	ND	ND	6.2E-07	6.2E-07
							Total CTE Intake at EU10	ND	6.2E-16	9.7E-06	9.7E-06					**Total RME Intake at EU10**	ND	1.7E-15	1.5E-05	1.5E-05
EU11	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	8.2E-07	ND	ND	3.7E+01	ND	8.9E-16	1.9E-06	1.9E-06	ND	2.3E-06	ND	ND	5.0E+01	ND	2.5E-15	2.5E-06	2.5E-06
EU11	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	2.5E+01	ND	ND	1.3E-06	1.3E-06	ND	--	ND	ND	3.3E+01	ND	ND	1.6E-06	1.6E-06
EU11	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU11	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.6E+01	ND	ND	1.3E-06	1.3E-06	ND	--	ND	ND	2.7E+01	ND	ND	1.3E-06	1.3E-06
EU11	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	3.3E+01	ND	ND	1.6E-06	1.6E-06	ND	--	ND	ND	6.2E+01	ND	ND	3.1E-06	3.1E-06
EU11	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	3.7E+00	ND	ND	1.8E-07	1.8E-07	ND	--	ND	ND	3.0E+00	ND	ND	1.5E-07	1.5E-07
EU11	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.7E+00	ND	ND	8.6E-08	8.6E-08	ND	--	ND	ND	3.6E+00	ND	ND	1.8E-07	1.8E-07
EU11	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.3E+02	ND	ND	6.4E-06	6.4E-06	ND	--	ND	ND	2.6E+02	ND	ND	1.3E-05	1.3E-05
EU11	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU11	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU11	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.1E+01	ND	ND	5.7E-07	5.7E-07	ND	--	ND	ND	2.3E+01	ND	ND	1.1E-06	1.1E-06
							Total CTE Intake at EU11	ND	8.9E-16	1.3E-05	1.3E-05					**Total RME Intake at EU11**	ND	2.5E-15	2.3E-05	2.3E-05
EU12	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	5.2E-07	ND	ND	1.6E+01	ND	5.7E-16	7.7E-07	7.7E-07	ND	1.3E-06	ND	ND	2.1E+01	ND	1.4E-15	1.0E-06	1.0E-06
EU12	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.6E+01	ND	ND	7.8E-07	7.8E-07	ND	--	ND	ND	1.7E+01	ND	ND	8.4E-07	8.4E-07
EU12	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	1.1E+00	ND	ND	5.5E-08	5.5E-08	ND	--	ND	ND	1.1E+00	ND	ND	5.6E-08	5.6E-08
EU12	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	1.1E+01	ND	ND	5.6E-07	5.6E-07	ND	--	ND	ND	1.4E+01	ND	ND	7.2E-07	7.2E-07
EU12	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.5E+01	ND	ND	7.5E-07	7.5E-07	ND	--	ND	ND	1.8E+01	ND	ND	8.9E-07	8.9E-07
EU12	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	2.0E+00	ND	ND	9.9E-08	9.9E-08	ND	--	ND	ND	3.0E+00	ND	ND	1.5E-07	1.5E-07
EU12	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.2E+00	ND	ND	6.0E-08	6.0E-08	ND	--	ND	ND	1.2E+00	ND	ND	6.0E-08	6.0E-08
EU12	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	8.9E+01	ND	ND	4.4E-06	4.4E-06	ND	--	ND	ND	9.8E+01	ND	ND	4.9E-06	4.9E-06
EU12	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.2E+00	ND	ND	5.9E-08	5.9E-08	ND	--	ND	ND	1.3E+00	ND	ND	6.3E-08	6.3E-08
EU12	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU12	PFESA-BP2	Byproduct 2	ND	--	ND	ND	2.3E+00	ND	ND	1.2E-07	1.2E-07	ND	--	ND	ND	2.4E+00	ND	ND	1.2E-07	1.2E-07
							Total CTE Intake at EU12	ND	5.7E-16	7.7E-06	7.7E-06					**Total RME Intake at EU12**	ND	1.4E-15	8.8E-06	8.8E-06

Definitions
CTE - central tendency exposure
EU - Exposure Unit
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ND - constituent not detected
ng/kg - nanogram(s) of constituent per kilogram of soil or nanogram(s) of constituent per kilogram of plant tissue
ng/L - nanogram(s) of constituent per liter of water
RME - reasonable maximum exposure
UCL - upper confidence limit on the mean
"--" - not available/not calculated

Table F-4-5
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Gardener (Age 0-26) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									Upper-Bound Exposure Estimate								
			Average EPC					Intake			Total CTE Intake	95% UCL EPC					Intake			Total RME Intake
Exposure Unit	Chemical Abbreviation	Chemical Name	Soil	Produce			Untreated Well Water	Soil	Produce	Untreated Well Water		Soil	Produce			Untreated Well Water	Soil	Produce	Untreated Well Water	
				Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)							Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)					
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU1	HFPO-DA	Hexafluoropropylene oxide dimer acid	2.6E+03	4.9E-05	3.6E+02	2.0E+04	6.6E+02	1.0E-08	4.2E-06	2.3E-05	2.7E-05	2.6E+03	9.9E-04	3.6E+02	2.0E+04	1.4E+03	1.0E-08	4.2E-06	4.9E-05	5.3E-05
EU1	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	3.3E+02	ND	ND	1.2E-05	1.2E-05	ND	--	ND	ND	5.9E+02	ND	ND	2.0E-05	2.0E-05
EU1	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU1	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.6E+02	ND	ND	9.0E-06	9.0E-06	ND	--	ND	ND	5.1E+02	ND	ND	1.8E-05	1.8E-05
EU1	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	2.3E+03	--	--	--	1.1E+03	8.9E-09	ND	3.8E-05	3.8E-05	2.3E+03	--	--	--	4.4E+03	8.9E-09	ND	1.5E-04	1.5E-04
EU1	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.3E+02	ND	ND	4.6E-06	4.6E-06	ND	--	ND	ND	5.8E+02	ND	ND	2.0E-05	2.0E-05
EU1	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.2E+01	ND	ND	1.1E-06	1.1E-06	ND	--	ND	ND	7.1E+01	ND	ND	2.5E-06	2.5E-06
EU1	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.1E+03	ND	ND	3.8E-05	3.8E-05	ND	--	ND	ND	1.9E+03	ND	ND	6.5E-05	6.5E-05
EU1	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	8.2E+00	ND	ND	2.8E-07	2.8E-07	ND	--	ND	ND	1.5E+01	ND	ND	5.1E-07	5.1E-07
EU1	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU1	PFESA-BP2	Byproduct 2	ND	--	ND	ND	2.4E+01	ND	ND	8.4E-07	8.4E-07	ND	--	ND	ND	5.0E+01	ND	ND	1.7E-06	1.7E-06
							Total CTE Intake at EU1	1.9E-08	4.2E-06	1.3E-04	1.3E-04					**Total RME Intake at EU1**	1.9E-08	4.2E-06	3.3E-04	3.3E-04
EU2	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.6E-05	ND	ND	6.6E+02	ND	9.5E-15	2.3E-05	2.3E-05	ND	1.7E-04	ND	ND	1.2E+03	ND	1.0E-13	4.1E-05	4.1E-05
EU2	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	7.8E+02	ND	ND	2.7E-05	2.7E-05	ND	--	ND	ND	7.8E+02	ND	ND	2.7E-05	2.7E-05
EU2	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU2	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	4.1E+02	ND	ND	1.4E-05	1.4E-05	ND	--	ND	ND	4.1E+02	ND	ND	1.4E-05	1.4E-05
EU2	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.3E+03	ND	ND	4.5E-05	4.5E-05	ND	--	ND	ND	1.3E+03	ND	ND	4.5E-05	4.5E-05
EU2	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.6E+02	ND	ND	5.5E-06	5.5E-06	ND	--	ND	ND	1.6E+02	ND	ND	5.5E-06	5.5E-06
EU2	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	6.0E+01	ND	ND	2.1E-06	2.1E-06	ND	--	ND	ND	6.0E+01	ND	ND	2.1E-06	2.1E-06
EU2	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	3.1E+03	ND	ND	1.1E-04	1.1E-04	ND	--	ND	ND	3.1E+03	ND	ND	1.1E-04	1.1E-04
EU2	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.6E+01	ND	ND	5.5E-07	5.5E-07	ND	--	ND	ND	1.6E+01	ND	ND	5.5E-07	5.5E-07
EU2	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU2	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.3E+02	ND	ND	4.5E-06	4.5E-06	ND	--	ND	ND	1.3E+02	ND	ND	4.5E-06	4.5E-06
							Total CTE Intake at EU2	ND	9.5E-15	2.3E-04	2.3E-04					**Total RME Intake at EU2**	ND	1.0E-13	2.5E-04	2.5E-04
EU3	HFPO-DA	Hexafluoropropylene oxide dimer acid	3.6E+02	1.1E-05	4.9E+01	2.7E+03	4.2E+02	1.4E-09	5.8E-07	1.5E-05	1.5E-05	3.6E+02	4.3E-05	4.9E+01	2.7E+03	5.8E+02	1.4E-09	5.8E-07	2.0E-05	2.1E-05
EU3	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	2.7E+02	ND	ND	9.4E-06	9.4E-06	ND	--	ND	ND	7.2E+02	ND	ND	2.5E-05	2.5E-05
EU3	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU3	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	1.1E+02	ND	ND	3.9E-06	3.9E-06	ND	--	ND	ND	3.2E+02	ND	ND	1.1E-05	1.1E-05
EU3	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	3.1E+02	ND	ND	1.1E-05	1.1E-05	ND	--	ND	ND	8.1E+02	ND	ND	2.8E-05	2.8E-05
EU3	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	5.5E+01	ND	ND	1.9E-06	1.9E-06	ND	--	ND	ND	1.6E+02	ND	ND	5.5E-06	5.5E-06
EU3	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	2.2E+01	ND	ND	7.4E-07	7.4E-07	ND	--	ND	ND	4.1E+01	ND	ND	1.4E-06	1.4E-06
EU3	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.0E+03	ND	ND	3.5E-05	3.5E-05	ND	--	ND	ND	2.3E+03	ND	ND	7.9E-05	7.9E-05
EU3	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU3	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU3	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.9E+01	ND	ND	6.6E-07	6.6E-07	ND	--	ND	ND	5.4E+01	ND	ND	1.9E-06	1.9E-06
							Total CTE Intake at EU3	1.4E-09	5.8E-07	7.7E-05	7.7E-05					**Total RME Intake at EU3**	1.4E-09	5.8E-07	1.7E-04	1.7E-04

Table F-4-5
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Gardener (Age 0-26) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									Upper-Bound Exposure Estimate								
			Average EPC					Intake				95% UCL EPC					Intake			
				Produce									Produce							
Exposure Unit	Chemical Abbreviation	Chemical Name	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total CTE Intake	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total RME Intake
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU4	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.3E-05	ND	ND	1.4E+02	ND	7.9E-15	4.8E-06	4.8E-06	ND	1.3E-04	ND	ND	2.2E+02	ND	7.8E-14	7.6E-06	7.6E-06
EU4	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	8.4E+01	ND	ND	2.9E-06	2.9E-06	ND	--	ND	ND	1.2E+02	ND	ND	4.2E-06	4.2E-06
EU4	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU4	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	5.1E+01	ND	ND	1.8E-06	1.8E-06	ND	--	ND	ND	7.5E+01	ND	ND	2.6E-06	2.6E-06
EU4	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.3E+02	ND	ND	4.5E-06	4.5E-06	ND	--	ND	ND	2.0E+02	ND	ND	6.9E-06	6.9E-06
EU4	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.2E+01	ND	ND	4.3E-07	4.3E-07	ND	--	ND	ND	2.0E+01	ND	ND	6.8E-07	6.8E-07
EU4	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.3E+00	ND	ND	1.1E-07	1.1E-07	ND	--	ND	ND	4.4E+00	ND	ND	1.5E-07	1.5E-07
EU4	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	2.7E+02	ND	ND	9.5E-06	9.5E-06	ND	--	ND	ND	4.1E+02	ND	ND	1.4E-05	1.4E-05
EU4	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU4	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU4	PFESA-BP2	Byproduct 2	ND	--	ND	ND	8.3E+00	ND	ND	2.9E-07	2.9E-07	ND	--	ND	ND	1.3E+01	ND	ND	4.4E-07	4.4E-07
							Total CTE Intake at EU4	ND	7.9E-15	2.4E-05	2.4E-05					**Total RME Intake at EU4**	ND	7.8E-14	3.7E-05	3.7E-05
EU5	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	3.2E-06	ND	ND	3.1E+02	ND	1.9E-15	1.1E-05	1.1E-05	ND	8.0E-06	ND	ND	4.1E+02	ND	4.8E-15	1.4E-05	1.4E-05
EU5	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.6E+02	ND	ND	5.4E-06	5.4E-06	ND	--	ND	ND	3.5E+02	ND	ND	1.2E-05	1.2E-05
EU5	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU5	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	7.2E+01	ND	ND	2.5E-06	2.5E-06	ND	--	ND	ND	1.0E+02	ND	ND	3.5E-06	3.5E-06
EU5	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	1.4E+03	--	--	--	2.5E+02	5.4E-09	ND	8.7E-06	8.7E-06	1.4E+03	--	--	--	3.9E+02	5.4E-09	ND	1.3E-05	1.3E-05
EU5	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	2.4E+01	ND	ND	8.3E-07	8.3E-07	ND	--	ND	ND	3.3E+01	ND	ND	1.2E-06	1.2E-06
EU5	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	6.1E+00	ND	ND	2.1E-07	2.1E-07	ND	--	ND	ND	8.5E+00	ND	ND	2.9E-07	2.9E-07
EU5	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	6.1E+02	ND	ND	2.1E-05	2.1E-05	ND	--	ND	ND	1.0E+03	ND	ND	3.5E-05	3.5E-05
EU5	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.5E+00	ND	ND	5.2E-08	5.2E-08	ND	--	ND	ND	1.8E+00	ND	ND	6.4E-08	6.4E-08
EU5	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU5	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.4E+01	ND	ND	4.8E-07	4.8E-07	ND	--	ND	ND	1.8E+01	ND	ND	6.3E-07	6.3E-07
							Total CTE Intake at EU5	5.4E-09	1.9E-15	5.0E-05	5.0E-05					**Total RME Intake at EU5**	5.4E-09	4.8E-15	8.0E-05	8.0E-05
EU6	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.7E-06	ND	ND	1.1E+02	ND	1.0E-15	3.7E-06	3.7E-06	ND	4.5E-06	ND	ND	1.7E+02	ND	2.7E-15	6.0E-06	6.0E-06
EU6	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	7.1E+01	ND	ND	2.4E-06	2.4E-06	ND	--	ND	ND	1.3E+02	ND	ND	4.4E-06	4.4E-06
EU6	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU6	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	3.3E+01	ND	ND	1.1E-06	1.1E-06	ND	--	ND	ND	6.1E+01	ND	ND	2.1E-06	2.1E-06
EU6	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	7.8E+01	ND	ND	2.7E-06	2.7E-06	ND	--	ND	ND	1.5E+02	ND	ND	5.1E-06	5.1E-06
EU6	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	7.9E+00	ND	ND	2.7E-07	2.7E-07	ND	--	ND	ND	1.5E+01	ND	ND	5.0E-07	5.0E-07
EU6	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.4E+00	ND	ND	1.2E-07	1.2E-07	ND	--	ND	ND	5.1E+00	ND	ND	1.8E-07	1.8E-07
EU6	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	2.3E+02	ND	ND	7.8E-06	7.8E-06	ND	--	ND	ND	4.2E+02	ND	ND	1.5E-05	1.5E-05
EU6	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	2.0E+00	ND	ND	7.0E-08	7.0E-08	ND	--	ND	ND	2.5E+00	ND	ND	8.6E-08	8.6E-08
EU6	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU6	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.4E+01	ND	ND	4.7E-07	4.7E-07	ND	--	ND	ND	2.5E+01	ND	ND	8.6E-07	8.6E-07
							Total CTE Intake at EU6	ND	1.0E-15	1.9E-05	1.9E-05					**Total RME Intake at EU6**	ND	2.7E-15	3.4E-05	3.4E-05

Table F-4-5
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Gardener (Age 0-26) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									Upper-Bound Exposure Estimate								
			Average EPC					Intake				95% UCL EPC					Intake			
				Produce									Produce							
Exposure Unit	Chemical Abbreviation	Chemical Name	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total CTE Intake	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total RME Intake
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU7	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	2.3E-06	ND	ND	2.0E+02	ND	1.4E-15	6.8E-06	6.8E-06	ND	5.8E-06	ND	ND	3.0E+02	ND	3.4E-15	1.1E-05	1.1E-05
EU7	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.1E+02	ND	ND	3.7E-06	3.7E-06	ND	--	ND	ND	1.6E+02	ND	ND	5.5E-06	5.5E-06
EU7	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU7	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	4.7E+01	ND	ND	1.6E-06	1.6E-06	ND	--	ND	ND	7.4E+01	ND	ND	2.6E-06	2.6E-06
EU7	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.0E+02	ND	ND	3.5E-06	3.5E-06	ND	--	ND	ND	1.8E+02	ND	ND	6.2E-06	6.2E-06
EU7	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.0E+01	ND	ND	3.6E-07	3.6E-07	ND	--	ND	ND	1.1E+01	ND	ND	3.7E-07	3.7E-07
EU7	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.8E+00	ND	ND	1.3E-07	1.3E-07	ND	--	ND	ND	3.5E+00	ND	ND	1.2E-07	1.2E-07
EU7	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	4.5E+02	ND	ND	1.6E-05	1.6E-05	ND	--	ND	ND	6.1E+02	ND	ND	2.1E-05	2.1E-05
EU7	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU7	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU7	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.6E+01	ND	ND	5.4E-07	5.4E-07	ND	--	ND	ND	2.2E+01	ND	ND	7.5E-07	7.5E-07
							Total CTE Intake at EU7	ND	1.4E-15	3.2E-05	3.2E-05					**Total RME Intake at EU7**	ND	3.4E-15	4.7E-05	4.7E-05
EU8	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.6E-06	ND	ND	6.3E+01	ND	9.5E-16	2.2E-06	2.2E-06	ND	3.6E-06	ND	ND	9.5E+01	ND	2.1E-15	3.3E-06	3.3E-06
EU8	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	2.5E+01	ND	ND	8.7E-07	8.7E-07	ND	--	ND	ND	2.3E+01	ND	ND	8.0E-07	8.0E-07
EU8	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU8	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.3E+01	ND	ND	7.9E-07	7.9E-07	ND	--	ND	ND	3.6E+01	ND	ND	1.2E-06	1.2E-06
EU8	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	4.3E+01	ND	ND	1.5E-06	1.5E-06	ND	--	ND	ND	8.4E+01	ND	ND	2.9E-06	2.9E-06
EU8	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	3.9E+00	ND	ND	1.3E-07	1.3E-07	ND	--	ND	ND	6.2E+00	ND	ND	2.1E-07	2.1E-07
EU8	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.5E+00	ND	ND	5.3E-08	5.3E-08	ND	--	ND	ND	1.7E+00	ND	ND	5.9E-08	5.9E-08
EU8	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.2E+02	ND	ND	4.3E-06	4.3E-06	ND	--	ND	ND	1.9E+02	ND	ND	6.5E-06	6.5E-06
EU8	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU8	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PFESA-BP1	Byproduct 1	ND	--	ND	ND	1.1E+00	ND	ND	3.8E-08	3.8E-08	ND	--	ND	ND	1.5E+00	ND	ND	5.2E-08	5.2E-08
EU8	PFESA-BP2	Byproduct 2	ND	--	ND	ND	7.0E+00	ND	ND	2.4E-07	2.4E-07	ND	--	ND	ND	8.4E+00	ND	ND	2.9E-07	2.9E-07
							Total CTE Intake at EU8	ND	9.5E-16	1.0E-05	1.0E-05					**Total RME Intake at EU8**	ND	2.1E-15	1.5E-05	1.5E-05
EU9	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	9.9E-07	ND	ND	5.4E+01	ND	5.9E-16	1.9E-06	1.9E-06	ND	2.3E-06	ND	ND	1.1E+02	ND	1.4E-15	3.8E-06	3.8E-06
EU9	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	3.8E+01	ND	ND	1.3E-06	1.3E-06	ND	--	ND	ND	3.9E+01	ND	ND	1.4E-06	1.4E-06
EU9	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	1.1E+00	ND	ND	3.9E-08	3.9E-08	ND	--	ND	ND	1.1E+00	ND	ND	4.0E-08	4.0E-08
EU9	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.3E+01	ND	ND	7.9E-07	7.9E-07	ND	--	ND	ND	4.2E+01	ND	ND	1.5E-06	1.5E-06
EU9	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	4.2E+01	ND	ND	1.4E-06	1.4E-06	ND	--	ND	ND	5.2E+01	ND	ND	1.8E-06	1.8E-06
EU9	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	4.2E+00	ND	ND	1.4E-07	1.4E-07	ND	--	ND	ND	4.1E+00	ND	ND	1.4E-07	1.4E-07
EU9	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.4E+00	ND	ND	5.0E-08	5.0E-08	ND	--	ND	ND	1.4E+00	ND	ND	5.0E-08	5.0E-08
EU9	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.7E+02	ND	ND	5.8E-06	5.8E-06	ND	--	ND	ND	3.3E+02	ND	ND	1.1E-05	1.1E-05
EU9	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.2E+00	ND	ND	4.2E-08	4.2E-08	ND	--	ND	ND	1.4E+00	ND	ND	4.7E-08	4.7E-08
EU9	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU9	PFESA-BP2	Byproduct 2	ND	--	ND	ND	6.2E+00	ND	ND	2.1E-07	2.1E-07	ND	--	ND	ND	7.6E+00	ND	ND	2.6E-07	2.6E-07
							Total CTE Intake at EU9	ND	5.9E-16	1.2E-05	1.2E-05					**Total RME Intake at EU9**	ND	1.4E-15	2.0E-05	2.0E-05

Table F-4-5
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Gardener (Age 0-26) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									**Upper-Bound Exposure Estimate**								
			Average EPC					**Intake**			**Total CTE Intake**	**95% UCL EPC**					**Intake**			**Total RME Intake**
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Soil**	**Produce**			**Untreated Well Water**	**Soil**	**Produce**	**Untreated Well Water**		**Soil**	**Produce**			**Untreated Well Water**	**Soil**	**Produce**	**Untreated Well Water**	
				Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)							Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)					
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU10	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	5.7E-07	ND	ND	1.4E+01	ND	3.4E-16	4.8E-07	4.8E-07	ND	1.5E-06	ND	ND	2.2E+01	ND	9.2E-16	7.4E-07	7.4E-07
EU10	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.8E+01	ND	ND	6.1E-07	6.1E-07	ND	--	ND	ND	2.3E+01	ND	ND	7.9E-07	7.9E-07
EU10	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU10	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	1.4E+01	ND	ND	4.7E-07	4.7E-07	ND	--	ND	ND	2.0E+01	ND	ND	7.0E-07	7.0E-07
EU10	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	2.5E+01	ND	ND	8.8E-07	8.8E-07	ND	--	ND	ND	5.9E+01	ND	ND	2.0E-06	2.0E-06
EU10	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	2.6E+00	ND	ND	9.0E-08	9.0E-08	ND	--	ND	ND	4.2E+00	ND	ND	1.4E-07	1.4E-07
EU10	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.3E+00	ND	ND	4.3E-08	4.3E-08	ND	--	ND	ND	1.5E+00	ND	ND	5.2E-08	5.2E-08
EU10	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.1E+02	ND	ND	3.9E-06	3.9E-06	ND	--	ND	ND	1.6E+02	ND	ND	5.6E-06	5.6E-06
EU10	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU10	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU10	PFESA-BP2	Byproduct 2	ND	--	ND	ND	8.6E+00	ND	ND	3.0E-07	3.0E-07	ND	--	ND	ND	1.3E+01	ND	ND	4.3E-07	4.3E-07
							Total CTE Intake at EU10	ND	3.4E-16	6.7E-06	6.7E-06					**Total RME Intake at EU10**	ND	9.2E-16	1.0E-05	1.0E-05
EU11	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	8.2E-07	ND	ND	3.7E+01	ND	4.9E-16	1.3E-06	1.3E-06	ND	2.3E-06	ND	ND	5.0E+01	ND	1.4E-15	1.7E-06	1.7E-06
EU11	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	2.5E+01	ND	ND	8.7E-07	8.7E-07	ND	--	ND	ND	3.3E+01	ND	ND	1.1E-06	1.1E-06
EU11	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU11	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.6E+01	ND	ND	9.0E-07	9.0E-07	ND	--	ND	ND	2.7E+01	ND	ND	9.3E-07	9.3E-07
EU11	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	3.3E+01	ND	ND	1.1E-06	1.1E-06	ND	--	ND	ND	6.2E+01	ND	ND	2.1E-06	2.1E-06
EU11	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	3.7E+00	ND	ND	1.3E-07	1.3E-07	ND	--	ND	ND	3.0E+00	ND	ND	1.0E-07	1.0E-07
EU11	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.7E+00	ND	ND	5.9E-08	5.9E-08	ND	--	ND	ND	3.6E+00	ND	ND	1.2E-07	1.2E-07
EU11	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.3E+02	ND	ND	4.4E-06	4.4E-06	ND	--	ND	ND	2.6E+02	ND	ND	9.2E-06	9.2E-06
EU11	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU11	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU11	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.1E+01	ND	ND	3.9E-07	3.9E-07	ND	--	ND	ND	2.3E+01	ND	ND	7.8E-07	7.8E-07
							Total CTE Intake at EU11	ND	4.9E-16	9.2E-06	9.2E-06					**Total RME Intake at EU11**	ND	1.4E-15	1.6E-05	1.6E-05
EU12	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	5.2E-07	ND	ND	1.6E+01	ND	3.1E-16	5.4E-07	5.4E-07	ND	1.3E-06	ND	ND	2.1E+01	ND	7.7E-16	7.3E-07	7.3E-07
EU12	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.6E+01	ND	ND	5.4E-07	5.4E-07	ND	--	ND	ND	1.7E+01	ND	ND	5.8E-07	5.8E-07
EU12	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	1.1E+00	ND	ND	3.8E-08	3.8E-08	ND	--	ND	ND	1.1E+00	ND	ND	3.9E-08	3.9E-08
EU12	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	1.1E+01	ND	ND	3.9E-07	3.9E-07	ND	--	ND	ND	1.4E+01	ND	ND	5.0E-07	5.0E-07
EU12	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.5E+01	ND	ND	5.2E-07	5.2E-07	ND	--	ND	ND	1.8E+01	ND	ND	6.2E-07	6.2E-07
EU12	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	2.0E+00	ND	ND	6.8E-08	6.8E-08	ND	--	ND	ND	3.0E+00	ND	ND	1.0E-07	1.0E-07
EU12	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.2E+00	ND	ND	4.2E-08	4.2E-08	ND	--	ND	ND	1.2E+00	ND	ND	4.2E-08	4.2E-08
EU12	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	8.9E+01	ND	ND	3.1E-06	3.1E-06	ND	--	ND	ND	9.8E+01	ND	ND	3.4E-06	3.4E-06
EU12	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.2E+00	ND	ND	4.1E-08	4.1E-08	ND	--	ND	ND	1.3E+00	ND	ND	4.4E-08	4.4E-08
EU12	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU12	PFESA-BP2	Byproduct 2	ND	--	ND	ND	2.3E+00	ND	ND	8.1E-08	8.1E-08	ND	--	ND	ND	2.4E+00	ND	ND	8.2E-08	8.2E-08
							Total CTE Intake at EU12	ND	3.1E-16	5.3E-06	5.3E-06					**Total RME Intake at EU12**	ND	7.7E-16	6.1E-06	6.1E-06

Definitions
CTE - central tendency exposure
EU - Exposure Unit
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ND - constituent not detected
ng/kg - nanogram(s) of constituent per kilogram of soil or nanogram(s) of constituent per kilogram of plant tissue
ng/L - nanogram(s) of constituent per liter of water
RME - reasonable maximum exposure
UCL - upper confidence limit on the mean
"--" - not available/not calculated

Table F-4-6
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Gardener (Age 0-6) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									Upper-Bound Exposure Estimate								
			Average EPC					Intake				95% UCL EPC					Intake			
				Produce									Produce							
Exposure Unit	Chemical Abbreviation	Chemical Name	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total CTE Intake	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total RME Intake
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU1	HFPO-DA	Hexafluoropropylene oxide dimer acid	2.6E+03	4.9E-05	3.6E+02	2.0E+04	6.6E+02	3.3E-08	6.2E-06	3.3E-05	3.9E-05	2.6E+03	9.9E-04	3.6E+02	2.0E+04	1.4E+03	3.3E-08	6.2E-06	7.0E-05	7.7E-05
EU1	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	3.3E+02	ND	ND	1.7E-05	1.7E-05	ND	--	ND	ND	5.9E+02	ND	ND	2.9E-05	2.9E-05
EU1	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU1	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.6E+02	ND	ND	1.3E-05	1.3E-05	ND	--	ND	ND	5.1E+02	ND	ND	2.6E-05	2.6E-05
EU1	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	2.3E+03	--	--	--	1.1E+03	2.9E-08	ND	5.5E-05	5.5E-05	2.3E+03	--	--	--	4.4E+03	2.9E-08	ND	2.2E-04	2.2E-04
EU1	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.3E+02	ND	ND	6.6E-06	6.6E-06	ND	--	ND	ND	5.8E+02	ND	ND	2.9E-05	2.9E-05
EU1	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.2E+01	ND	ND	1.6E-06	1.6E-06	ND	--	ND	ND	7.1E+01	ND	ND	3.5E-06	3.5E-06
EU1	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.1E+03	ND	ND	5.5E-05	5.5E-05	ND	--	ND	ND	1.9E+03	ND	ND	9.3E-05	9.3E-05
EU1	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	8.2E+00	ND	ND	4.1E-07	4.1E-07	ND	--	ND	ND	1.5E+01	ND	ND	7.3E-07	7.3E-07
EU1	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU1	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU1	PFESA-BP2	Byproduct 2	ND	--	ND	ND	2.4E+01	ND	ND	1.2E-06	1.2E-06	ND	--	ND	ND	5.0E+01	ND	ND	2.5E-06	2.5E-06
							Total CTE Intake at EU1	6.3E-08	6.2E-06	1.8E-04	1.9E-04					**Total RME Intake at EU1**	6.3E-08	6.2E-06	4.7E-04	4.8E-04
EU2	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.6E-05	ND	ND	6.6E+02	ND	1.7E-14	3.3E-05	3.3E-05	ND	1.7E-04	ND	ND	1.2E+03	ND	1.9E-13	6.0E-05	6.0E-05
EU2	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	7.8E+02	ND	ND	3.9E-05	3.9E-05	ND	--	ND	ND	7.8E+02	ND	ND	3.9E-05	3.9E-05
EU2	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU2	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	4.1E+02	ND	ND	2.0E-05	2.0E-05	ND	--	ND	ND	4.1E+02	ND	ND	2.0E-05	2.0E-05
EU2	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.3E+03	ND	ND	6.5E-05	6.5E-05	ND	--	ND	ND	1.3E+03	ND	ND	6.5E-05	6.5E-05
EU2	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.6E+02	ND	ND	8.0E-06	8.0E-06	ND	--	ND	ND	1.6E+02	ND	ND	8.0E-06	8.0E-06
EU2	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	6.0E+01	ND	ND	3.0E-06	3.0E-06	ND	--	ND	ND	6.0E+01	ND	ND	3.0E-06	3.0E-06
EU2	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	3.1E+03	ND	ND	1.5E-04	1.5E-04	ND	--	ND	ND	3.1E+03	ND	ND	1.5E-04	1.5E-04
EU2	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.6E+01	ND	ND	8.0E-07	8.0E-07	ND	--	ND	ND	1.6E+01	ND	ND	8.0E-07	8.0E-07
EU2	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU2	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU2	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.3E+02	ND	ND	6.5E-06	6.5E-06	ND	--	ND	ND	1.3E+02	ND	ND	6.5E-06	6.5E-06
							Total CTE Intake at EU2	ND	1.7E-14	3.3E-04	3.3E-04					**Total RME Intake at EU2**	ND	1.9E-13	3.6E-04	3.6E-04
EU3	HFPO-DA	Hexafluoropropylene oxide dimer acid	3.6E+02	1.1E-05	4.9E+01	2.7E+03	4.2E+02	4.6E-09	8.6E-07	2.1E-05	2.2E-05	3.6E+02	4.3E-05	4.9E+01	2.7E+03	5.8E+02	4.6E-09	8.6E-07	2.9E-05	3.0E-05
EU3	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	2.7E+02	ND	ND	1.4E-05	1.4E-05	ND	--	ND	ND	7.2E+02	ND	ND	3.6E-05	3.6E-05
EU3	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU3	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	1.1E+02	ND	ND	5.7E-06	5.7E-06	ND	--	ND	ND	3.2E+02	ND	ND	1.6E-05	1.6E-05
EU3	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	3.1E+02	ND	ND	1.6E-05	1.6E-05	ND	--	ND	ND	8.1E+02	ND	ND	4.0E-05	4.0E-05
EU3	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	5.5E+01	ND	ND	2.7E-06	2.7E-06	ND	--	ND	ND	1.6E+02	ND	ND	8.0E-06	8.0E-06
EU3	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	2.2E+01	ND	ND	1.1E-06	1.1E-06	ND	--	ND	ND	4.1E+01	ND	ND	2.0E-06	2.0E-06
EU3	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.0E+03	ND	ND	5.0E-05	5.0E-05	ND	--	ND	ND	2.3E+03	ND	ND	1.1E-04	1.1E-04
EU3	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU3	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU3	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU3	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.9E+01	ND	ND	9.5E-07	9.5E-07	ND	--	ND	ND	5.4E+01	ND	ND	2.7E-06	2.7E-06
							Total CTE Intake at EU3	4.6E-09	8.6E-07	1.1E-04	1.1E-04					**Total RME Intake at EU3**	4.6E-09	8.6E-07	2.5E-04	2.5E-04

Table F-4-6
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Gardener (Age 0-6) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									Upper-Bound Exposure Estimate								
			Average EPC					Intake				95% UCL EPC					Intake			
				Produce									Produce							
Exposure Unit	Chemical Abbreviation	Chemical Name	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total CTE Intake	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total RME Intake
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU4	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.3E-05	ND	ND	1.4E+02	ND	1.4E-14	6.9E-06	6.9E-06	ND	1.3E-04	ND	ND	2.2E+02	ND	1.4E-13	1.1E-05	1.1E-05
EU4	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	8.4E+01	ND	ND	4.2E-06	4.2E-06	ND	--	ND	ND	1.2E+02	ND	ND	6.0E-06	6.0E-06
EU4	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU4	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	5.1E+01	ND	ND	2.5E-06	2.5E-06	ND	--	ND	ND	7.5E+01	ND	ND	3.7E-06	3.7E-06
EU4	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.3E+02	ND	ND	6.5E-06	6.5E-06	ND	--	ND	ND	2.0E+02	ND	ND	1.0E-05	1.0E-05
EU4	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.2E+01	ND	ND	6.2E-07	6.2E-07	ND	--	ND	ND	2.0E+01	ND	ND	9.8E-07	9.8E-07
EU4	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.3E+00	ND	ND	1.6E-07	1.6E-07	ND	--	ND	ND	4.4E+00	ND	ND	2.2E-07	2.2E-07
EU4	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	2.7E+02	ND	ND	1.4E-05	1.4E-05	ND	--	ND	ND	4.1E+02	ND	ND	2.1E-05	2.1E-05
EU4	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU4	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU4	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU4	PFESA-BP2	Byproduct 2	ND	--	ND	ND	8.3E+00	ND	ND	4.1E-07	4.1E-07	ND	--	ND	ND	1.3E+01	ND	ND	6.3E-07	6.3E-07
							Total CTE Intake at EU4	ND	1.4E-14	3.5E-05	3.5E-05					Total RME Intake at EU4	ND	1.4E-13	5.3E-05	5.3E-05
EU5	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	3.2E-06	ND	ND	3.1E+02	ND	3.4E-15	1.6E-05	1.6E-05	ND	8.0E-06	ND	ND	4.1E+02	ND	8.6E-15	2.1E-05	2.1E-05
EU5	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.6E+02	ND	ND	7.7E-06	7.7E-06	ND	--	ND	ND	3.5E+02	ND	ND	1.7E-05	1.7E-05
EU5	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU5	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	7.2E+01	ND	ND	3.6E-06	3.6E-06	ND	--	ND	ND	1.0E+02	ND	ND	5.0E-06	5.0E-06
EU5	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	1.4E+03	--	--	--	2.5E+02	1.8E-08	ND	1.3E-05	1.3E-05	1.4E+03	--	--	--	3.9E+02	1.8E-08	ND	1.9E-05	1.9E-05
EU5	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	2.4E+01	ND	ND	1.2E-06	1.2E-06	ND	--	ND	ND	3.3E+01	ND	ND	1.7E-06	1.7E-06
EU5	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	6.1E+00	ND	ND	3.1E-07	3.1E-07	ND	--	ND	ND	8.5E+00	ND	ND	4.2E-07	4.2E-07
EU5	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	6.1E+02	ND	ND	3.1E-05	3.1E-05	ND	--	ND	ND	1.0E+03	ND	ND	5.0E-05	5.0E-05
EU5	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.5E+00	ND	ND	7.5E-08	7.5E-08	ND	--	ND	ND	1.8E+00	ND	ND	9.2E-08	9.2E-08
EU5	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU5	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU5	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.4E+01	ND	ND	7.0E-07	7.0E-07	ND	--	ND	ND	1.8E+01	ND	ND	9.2E-07	9.2E-07
							Total CTE Intake at EU5	1.8E-08	3.4E-15	7.2E-05	7.2E-05					Total RME Intake at EU5	1.8E-08	8.6E-15	1.2E-04	1.2E-04
EU6	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.7E-06	ND	ND	1.1E+02	ND	1.9E-15	5.4E-06	5.4E-06	ND	4.5E-06	ND	ND	1.7E+02	ND	4.8E-15	8.7E-06	8.7E-06
EU6	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	7.1E+01	ND	ND	3.5E-06	3.5E-06	ND	--	ND	ND	1.3E+02	ND	ND	6.4E-06	6.4E-06
EU6	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU6	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	3.3E+01	ND	ND	1.6E-06	1.6E-06	ND	--	ND	ND	6.1E+01	ND	ND	3.0E-06	3.0E-06
EU6	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	7.8E+01	ND	ND	3.9E-06	3.9E-06	ND	--	ND	ND	1.5E+02	ND	ND	7.4E-06	7.4E-06
EU6	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	7.9E+00	ND	ND	4.0E-07	4.0E-07	ND	--	ND	ND	1.5E+01	ND	ND	7.3E-07	7.3E-07
EU6	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.4E+00	ND	ND	1.7E-07	1.7E-07	ND	--	ND	ND	5.1E+00	ND	ND	2.5E-07	2.5E-07
EU6	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	2.3E+02	ND	ND	1.1E-05	1.1E-05	ND	--	ND	ND	4.2E+02	ND	ND	2.1E-05	2.1E-05
EU6	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	2.0E+00	ND	ND	1.0E-07	1.0E-07	ND	--	ND	ND	2.5E+00	ND	ND	1.2E-07	1.2E-07
EU6	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU6	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU6	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.4E+01	ND	ND	6.7E-07	6.7E-07	ND	--	ND	ND	2.5E+01	ND	ND	1.2E-06	1.2E-06
							Total CTE Intake at EU6	ND	1.9E-15	2.7E-05	2.7E-05					Total RME Intake at EU6	ND	4.8E-15	4.9E-05	4.9E-05

Table F-4-6
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Gardener (Age 0-6) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									Upper-Bound Exposure Estimate								
			Average EPC					Intake				95% UCL EPC					Intake			
				Produce									Produce							
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Soil**	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	**Untreated Well Water**	**Soil**	**Produce**	**Untreated Well Water**	**Total CTE Intake**	**Soil**	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	**Untreated Well Water**	**Soil**	**Produce**	**Untreated Well Water**	**Total RME Intake**
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU7	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	2.3E-06	ND	ND	2.0E+02	ND	2.5E-15	9.8E-06	9.8E-06	ND	5.8E-06	ND	ND	3.0E+02	ND	6.3E-15	1.5E-05	1.5E-05
EU7	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.1E+02	ND	ND	5.3E-06	5.3E-06	ND	--	ND	ND	1.6E+02	ND	ND	7.9E-06	7.9E-06
EU7	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU7	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	4.7E+01	ND	ND	2.3E-06	2.3E-06	ND	--	ND	ND	7.4E+01	ND	ND	3.7E-06	3.7E-06
EU7	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.0E+02	ND	ND	5.1E-06	5.1E-06	ND	--	ND	ND	1.8E+02	ND	ND	9.0E-06	9.0E-06
EU7	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	1.0E+01	ND	ND	5.2E-07	5.2E-07	ND	--	ND	ND	1.1E+01	ND	ND	5.4E-07	5.4E-07
EU7	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	3.8E+00	ND	ND	1.9E-07	1.9E-07	ND	--	ND	ND	3.5E+00	ND	ND	1.7E-07	1.7E-07
EU7	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	4.5E+02	ND	ND	2.2E-05	2.2E-05	ND	--	ND	ND	6.1E+02	ND	ND	3.1E-05	3.1E-05
EU7	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU7	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU7	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU7	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.6E+01	ND	ND	7.8E-07	7.8E-07	ND	--	ND	ND	2.2E+01	ND	ND	1.1E-06	1.1E-06
							Total CTE Intake at EU7	ND	2.5E-15	4.6E-05	4.6E-05					**Total RME Intake at EU7**	ND	6.3E-15	6.8E-05	6.8E-05
EU8	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	1.6E-06	ND	ND	6.3E+01	ND	1.7E-15	3.1E-06	3.1E-06	ND	3.6E-06	ND	ND	9.5E+01	ND	3.9E-15	4.7E-06	4.7E-06
EU8	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	2.5E+01	ND	ND	1.3E-06	1.3E-06	ND	--	ND	ND	2.3E+01	ND	ND	1.2E-06	1.2E-06
EU8	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU8	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.3E+01	ND	ND	1.1E-06	1.1E-06	ND	--	ND	ND	3.6E+01	ND	ND	1.8E-06	1.8E-06
EU8	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	4.3E+01	ND	ND	2.2E-06	2.2E-06	ND	--	ND	ND	8.4E+01	ND	ND	4.2E-06	4.2E-06
EU8	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	3.9E+00	ND	ND	1.9E-07	1.9E-07	ND	--	ND	ND	6.2E+00	ND	ND	3.1E-07	3.1E-07
EU8	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.5E+00	ND	ND	7.6E-08	7.6E-08	ND	--	ND	ND	1.7E+00	ND	ND	8.6E-08	8.6E-08
EU8	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.2E+02	ND	ND	6.2E-06	6.2E-06	ND	--	ND	ND	1.9E+02	ND	ND	9.4E-06	9.4E-06
EU8	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU8	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU8	PFESA-BP1	Byproduct 1	ND	--	ND	ND	1.1E+00	ND	ND	5.5E-08	5.5E-08	ND	--	ND	ND	1.5E+00	ND	ND	7.5E-08	7.5E-08
EU8	PFESA-BP2	Byproduct 2	ND	--	ND	ND	7.0E+00	ND	ND	3.5E-07	3.5E-07	ND	--	ND	ND	8.4E+00	ND	ND	4.2E-07	4.2E-07
							Total CTE Intake at EU8	ND	1.7E-15	1.5E-05	1.5E-05					**Total RME Intake at EU8**	ND	3.9E-15	2.2E-05	2.2E-05
EU9	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	9.9E-07	ND	ND	5.4E+01	ND	1.1E-15	2.7E-06	2.7E-06	ND	2.3E-06	ND	ND	1.1E+02	ND	2.5E-15	5.5E-06	5.5E-06
EU9	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	3.8E+01	ND	ND	1.9E-06	1.9E-06	ND	--	ND	ND	3.9E+01	ND	ND	2.0E-06	2.0E-06
EU9	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	1.1E+00	ND	ND	5.6E-08	5.6E-08	ND	--	ND	ND	1.1E+00	ND	ND	5.7E-08	5.7E-08
EU9	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.3E+01	ND	ND	1.1E-06	1.1E-06	ND	--	ND	ND	4.2E+01	ND	ND	2.1E-06	2.1E-06
EU9	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	4.2E+01	ND	ND	2.1E-06	2.1E-06	ND	--	ND	ND	5.2E+01	ND	ND	2.6E-06	2.6E-06
EU9	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	4.2E+00	ND	ND	2.1E-07	2.1E-07	ND	--	ND	ND	4.1E+00	ND	ND	2.0E-07	2.0E-07
EU9	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.4E+00	ND	ND	7.2E-08	7.2E-08	ND	--	ND	ND	1.4E+00	ND	ND	7.2E-08	7.2E-08
EU9	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.7E+02	ND	ND	8.4E-06	8.4E-06	ND	--	ND	ND	3.3E+02	ND	ND	1.7E-05	1.7E-05
EU9	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.2E+00	ND	ND	6.1E-08	6.1E-08	ND	--	ND	ND	1.4E+00	ND	ND	6.8E-08	6.8E-08
EU9	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU9	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU9	PFESA-BP2	Byproduct 2	ND	--	ND	ND	6.2E+00	ND	ND	3.1E-07	3.1E-07	ND	--	ND	ND	7.6E+00	ND	ND	3.8E-07	3.8E-07
							Total CTE Intake at EU9	ND	1.1E-15	1.7E-05	1.7E-05					**Total RME Intake at EU9**	ND	2.5E-15	2.9E-05	2.9E-05

Table F-4-6
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Gardener (Age 0-6) - Soil, Produce, and Untreated Well Water

			Central Tendency Exposure Assessment									Upper-Bound Exposure Estimate								
			Average EPC					Intake				95% UCL EPC					Intake			
				Produce									Produce							
Exposure Unit	Chemical Abbreviation	Chemical Name	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total CTE Intake	Soil	Aboveground (Deposition)	Aboveground (Root Uptake)	Belowground (Root Uptake)	Untreated Well Water	Soil	Produce	Untreated Well Water	Total RME Intake
			ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/kg	ng/kg	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day
EU10	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	5.7E-07	ND	ND	1.4E+01	ND	6.2E-16	6.9E-07	6.9E-07	ND	1.5E-06	ND	ND	2.2E+01	ND	1.7E-15	1.1E-06	1.1E-06
EU10	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.8E+01	ND	ND	8.9E-07	8.9E-07	ND	--	ND	ND	2.3E+01	ND	ND	1.1E-06	1.1E-06
EU10	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU10	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	1.4E+01	ND	ND	6.8E-07	6.8E-07	ND	--	ND	ND	2.0E+01	ND	ND	1.0E-06	1.0E-06
EU10	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	2.5E+01	ND	ND	1.3E-06	1.3E-06	ND	--	ND	ND	5.9E+01	ND	ND	2.9E-06	2.9E-06
EU10	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	2.6E+00	ND	ND	1.3E-07	1.3E-07	ND	--	ND	ND	4.2E+00	ND	ND	2.1E-07	2.1E-07
EU10	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.3E+00	ND	ND	6.3E-08	6.3E-08	ND	--	ND	ND	1.5E+00	ND	ND	7.6E-08	7.6E-08
EU10	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.1E+02	ND	ND	5.6E-06	5.6E-06	ND	--	ND	ND	1.6E+02	ND	ND	8.0E-06	8.0E-06
EU10	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU10	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU10	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU10	PFESA-BP2	Byproduct 2	ND	--	ND	ND	8.6E+00	ND	ND	4.3E-07	4.3E-07	ND	--	ND	ND	1.3E+01	ND	ND	6.2E-07	6.2E-07
							Total CTE Intake at EU10	ND	6.2E-16	9.7E-06	9.7E-06					**Total RME Intake at EU10**	ND	1.7E-15	1.5E-05	1.5E-05
EU11	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	8.2E-07	ND	ND	3.7E+01	ND	8.9E-16	1.9E-06	1.9E-06	ND	2.3E-06	ND	ND	5.0E+01	ND	2.5E-15	2.5E-06	2.5E-06
EU11	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	2.5E+01	ND	ND	1.3E-06	1.3E-06	ND	--	ND	ND	3.3E+01	ND	ND	1.6E-06	1.6E-06
EU11	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU11	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	2.6E+01	ND	ND	1.3E-06	1.3E-06	ND	--	ND	ND	2.7E+01	ND	ND	1.3E-06	1.3E-06
EU11	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	3.3E+01	ND	ND	1.6E-06	1.6E-06	ND	--	ND	ND	6.2E+01	ND	ND	3.1E-06	3.1E-06
EU11	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	3.7E+00	ND	ND	1.8E-07	1.8E-07	ND	--	ND	ND	3.0E+00	ND	ND	1.5E-07	1.5E-07
EU11	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.7E+00	ND	ND	8.6E-08	8.6E-08	ND	--	ND	ND	3.6E+00	ND	ND	1.8E-07	1.8E-07
EU11	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	1.3E+02	ND	ND	6.4E-06	6.4E-06	ND	--	ND	ND	2.6E+02	ND	ND	1.3E-05	1.3E-05
EU11	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU11	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU11	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU11	PFESA-BP2	Byproduct 2	ND	--	ND	ND	1.1E+01	ND	ND	5.7E-07	5.7E-07	ND	--	ND	ND	2.3E+01	ND	ND	1.1E-06	1.1E-06
							Total CTE Intake at EU11	ND	8.9E-16	1.3E-05	1.3E-05					**Total RME Intake at EU11**	ND	2.5E-15	2.3E-05	2.3E-05
EU12	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	5.2E-07	ND	ND	1.6E+01	ND	5.7E-16	7.7E-07	7.7E-07	ND	1.3E-06	ND	ND	2.1E+01	ND	1.4E-15	1.0E-06	1.0E-06
EU12	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	--	ND	ND	1.6E+01	ND	ND	7.8E-07	7.8E-07	ND	--	ND	ND	1.7E+01	ND	ND	8.4E-07	8.4E-07
EU12	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	--	ND	ND	1.1E+00	ND	ND	5.5E-08	5.5E-08	ND	--	ND	ND	1.1E+00	ND	ND	5.6E-08	5.6E-08
EU12	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	--	ND	ND	1.1E+01	ND	ND	5.6E-07	5.6E-07	ND	--	ND	ND	1.4E+01	ND	ND	7.2E-07	7.2E-07
EU12	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	--	ND	ND	1.5E+01	ND	ND	7.5E-07	7.5E-07	ND	--	ND	ND	1.8E+01	ND	ND	8.9E-07	8.9E-07
EU12	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	--	ND	ND	2.0E+00	ND	ND	9.9E-08	9.9E-08	ND	--	ND	ND	3.0E+00	ND	ND	1.5E-07	1.5E-07
EU12	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	--	ND	ND	1.2E+00	ND	ND	6.0E-08	6.0E-08	ND	--	ND	ND	1.2E+00	ND	ND	6.0E-08	6.0E-08
EU12	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	--	ND	ND	8.9E+01	ND	ND	4.4E-06	4.4E-06	ND	--	ND	ND	9.8E+01	ND	ND	4.9E-06	4.9E-06
EU12	Hydro-EVE Acid	Perfluoroethoxypropanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	EVE Acid	Perflouroethoxypropionic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	R-EVE	R-EVE	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	--	ND	ND	1.2E+00	ND	ND	5.9E-08	5.9E-08	ND	--	ND	ND	1.3E+00	ND	ND	6.3E-08	6.3E-08
EU12	Byproduct 4	Byproduct 4	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	Byproduct 6	Byproduct 6	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	Byproduct 5	Byproduct 5	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	NVHOS	Perflouroethoxysulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PES	Perfluoroethoxyethanesulfonic acid	ND	--	ND	ND	--	ND	ND	--	--	ND	--	ND	ND	--	ND	ND	--	--
EU12	PFESA-BP1	Byproduct 1	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	--
EU12	PFESA-BP2	Byproduct 2	ND	--	ND	ND	2.3E+00	ND	ND	1.2E-07	1.2E-07	ND	--	ND	ND	2.4E+00	ND	ND	1.2E-07	1.2E-07
							Total CTE Intake at EU12	ND	5.7E-16	7.7E-06	7.7E-06					**Total RME Intake at EU12**	ND	1.4E-15	8.8E-06	8.8E-06

Definitions
CTE - central tendency exposure
EU - Exposure Unit
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ND - constituent not detected
ng/kg - nanogram(s) of constituent per kilogram of soil or nanogram(s) of constituent per kilogram of plant tissue
ng/L - nanogram(s) of constituent per liter of water
RME - reasonable maximum exposure
UCL - upper confidence limit on the mean
"--" - not available/not calculated

Table F-4-7
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Recreationalist (Age 0-26) - Surface Water and Fish Tissue

			Central Tendency Exposure Assessment					Upper-Bound Exposure Estimate				
			Average EPC		Intake		Total CTE Intake	95% UCL EPC		Intake		Total RME Intake
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Fish Tissue**	**Surface Water**	**Fish Tissue**	**Surface Water**		**Fish Tissue**	**Surface Water**	**Fish Tissue**	**Surface Water**	
			ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day
EU13	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	5.0E+00	ND	2.4E-09	2.4E-09	ND	5.0E+00	ND	2.4E-09	2.4E-09
EU13	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	2.8E+00	ND	1.3E-09	1.3E-09	ND	2.8E+00	ND	1.3E-09	1.3E-09
EU13	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	1.7E+01	ND	7.8E-09	7.8E-09	ND	2.1E+01	ND	9.9E-09	9.9E-09
EU13	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	EVE Acid	Perflouroethoxypropionic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	R-EVE	R-EVE	ND	2.3E+01	ND	1.1E-08	1.1E-08	ND	2.3E+01	ND	1.1E-08	1.1E-08
EU13	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	Byproduct 4	Byproduct 4	ND	9.1E+00	ND	4.3E-09	4.3E-09	ND	1.5E+01	ND	7.2E-09	7.2E-09
EU13	Byproduct 6	Byproduct 6	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	Byproduct 5	Byproduct 5	ND	7.1E+01	ND	3.3E-08	3.3E-08	ND	3.2E+02	ND	1.5E-07	1.5E-07
EU13	NVHOS	Perflouroethoxysulfonic acid	ND	6.7E+00	ND	3.2E-09	3.2E-09	ND	8.2E+00	ND	3.9E-09	3.9E-09
EU13	PES	Perfluoroethoxyethanesulfonic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PFESA-BP2	Byproduct 2	ND	ND	ND	ND	--	ND	ND	ND	ND	--
			Total CTE Intake at EU13		ND	6.3E-08	6.3E-08	**Total RME Intake at EU13**		ND	1.9E-07	1.9E-07
EU14	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	2.3E+01	ND	1.1E-08	1.1E-08	ND	3.5E+01	ND	1.7E-08	1.7E-08
EU14	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	2.6E+01	ND	1.3E-08	1.3E-08	ND	4.6E+01	ND	2.2E-08	2.2E-08
EU14	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	6.7E+00	ND	3.2E-09	3.2E-09	ND	1.2E+01	ND	5.8E-09	5.8E-09
EU14	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	3.9E+00	ND	1.8E-09	1.8E-09	ND	6.4E+00	ND	3.0E-09	3.0E-09
EU14	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	1.2E+03	2.3E+00	2.6E-07	1.1E-09	2.6E-07	2.6E+03	2.3E+00	5.5E-07	1.1E-09	5.5E-07
EU14	PMPA	Perfluoromethoxypropyl carboxylic acid	3.1E+02	1.6E+01	6.5E-08	7.3E-09	7.2E-08	3.7E+02	1.9E+01	7.8E-08	9.0E-09	8.7E-08
EU14	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	EVE Acid	Perflouroethoxypropionic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	R-EVE	R-EVE	ND	3.2E+00	ND	1.5E-09	1.5E-09	ND	3.6E+00	ND	1.7E-09	1.7E-09
EU14	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	Byproduct 4	Byproduct 4	ND	6.5E+00	ND	3.1E-09	3.1E-09	ND	7.4E+00	ND	3.5E-09	3.5E-09
EU14	Byproduct 6	Byproduct 6	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	Byproduct 5	Byproduct 5	ND	9.0E+00	ND	4.3E-09	4.3E-09	ND	1.4E+01	ND	6.7E-09	6.7E-09
EU14	NVHOS	Perflouroethoxysulfonic acid	ND	6.4E+00	ND	3.0E-09	3.0E-09	ND	6.9E+00	ND	3.2E-09	3.2E-09
EU14	PES	Perfluoroethoxyethanesulfonic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	PFESA-BP2	Byproduct 2	ND	ND	ND	ND	--	ND	ND	ND	ND	--
			Total CTE Intake at EU14		3.3E-07	4.9E-08	3.7E-07	**Total RME Intake at EU14**		6.3E-07	7.3E-08	7.0E-07

Table F-4-7
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Recreationalist (Age 0-26) - Surface Water and Fish Tissue

			Central Tendency Exposure Assessment					Upper-Bound Exposure Estimate				
			Average EPC		Intake		Total CTE Intake	95% UCL EPC		Intake		Total RME Intake
Exposure Unit	Chemical Abbreviation	Chemical Name	Fish Tissue	Surface Water	Fish Tissue	Surface Water		Fish Tissue	Surface Water	Fish Tissue	Surface Water	
			ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day
EU15	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	2.7E+03	NS	5.7E-07	NS	5.7E-07	5.4E+03	NS	1.1E-06	NS	1.1E-06
EU15	PMPA	Perfluoromethoxypropyl carboxylic acid	3.0E+02	NS	6.4E-08	NS	6.4E-08	3.0E+02	NS	6.4E-08	NS	6.4E-08
EU15	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	EVE Acid	Perflouroethoxypropionic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	R-EVE	R-EVE	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	Byproduct 4	Byproduct 4	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	Byproduct 6	Byproduct 6	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	Byproduct 5	Byproduct 5	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	NVHOS	Perflouroethoxysulfonic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PES	Perfluoroethoxyethanesulfonic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFESA-BP1	Byproduct 1	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFESA-BP2	Byproduct 2	ND	NS	ND	NS	--	ND	NS	ND	NS	--
			Total CTE Intake at EU15		6.4E-07	NS	6.4E-07	**Total RME Intake at EU15**		1.2E-06	NS	1.2E-06
EU16	HFPO-DA	Hexafluoropropylene oxide dimer acid	1.7E+04	1.3E+02	3.6E-06	6.3E-08	3.7E-06	3.6E+04	3.2E+02	7.6E-06	1.5E-07	7.8E-06
EU16	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	5.0E+01	ND	2.4E-08	2.4E-08	ND	5.0E+01	ND	2.4E-08	2.4E-08
EU16	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU16	PFMOAA	Perfluoro-2-methoxyaceticacid	3.4E+03	1.2E+02	7.2E-07	5.8E-08	7.8E-07	5.0E+03	1.8E+02	1.1E-06	8.5E-08	1.2E-06
EU16	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	5.2E+01	ND	2.5E-08	2.5E-08	ND	6.4E+01	ND	3.0E-08	3.0E-08
EU16	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	1.3E+01	ND	6.1E-09	6.1E-09	ND	1.6E+01	ND	7.6E-09	7.6E-09
EU16	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	1.3E+04	5.0E+00	2.7E-06	2.3E-09	2.7E-06	8.3E+04	6.4E+00	1.8E-05	3.0E-09	1.8E-05
EU16	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	4.3E+01	ND	2.0E-08	2.0E-08	ND	5.5E+01	ND	2.6E-08	2.6E-08
EU16	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU16	EVE Acid	Perflouroethoxypropionic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU16	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU16	R-EVE	R-EVE	1.0E+03	5.2E+00	2.1E-07	2.4E-09	2.1E-07	1.0E+03	6.3E+00	2.1E-07	3.0E-09	2.2E-07
EU16	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	4.3E+02	3.4E+00	9.2E-08	1.6E-09	9.3E-08	1.1E+03	3.4E+00	2.4E-07	1.6E-09	2.4E-07
EU16	Byproduct 4	Byproduct 4	ND	1.4E+01	ND	6.8E-09	6.8E-09	ND	1.9E+01	ND	9.0E-09	9.0E-09
EU16	Byproduct 6	Byproduct 6	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU16	Byproduct 5	Byproduct 5	ND	5.0E+01	ND	2.4E-08	2.4E-08	ND	6.9E+01	ND	3.3E-08	3.3E-08
EU16	NVHOS	Perflouroethoxysulfonic acid	ND	7.4E+00	ND	3.5E-09	3.5E-09	ND	8.7E+00	ND	4.1E-09	4.1E-09
EU16	PES	Perfluoroethoxyethanesulfonic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU16	PFESA-BP1	Byproduct 1	ND	2.4E+00	ND	1.1E-09	1.1E-09	ND	2.4E+00	ND	1.1E-09	1.1E-09
EU16	PFESA-BP2	Byproduct 2	ND	4.9E+00	ND	2.3E-09	2.3E-09	ND	4.9E+00	ND	2.3E-09	2.3E-09
			Total CTE Intake at EU16		7.3E-06	2.4E-07	7.6E-06	**Total RME Intake at EU16**		2.7E-05	3.8E-07	2.7E-05

Table F-4-7
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Recreationalist (Age 0-26) - Surface Water and Fish Tissue

			Central Tendency Exposure Assessment					**Upper-Bound Exposure Estimate**				
			Average EPC		**Intake**		**Total CTE Intake**	**95% UCL EPC**		**Intake**		**Total RME Intake**
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Fish Tissue**	**Surface Water**	**Fish Tissue**	**Surface Water**		**Fish Tissue**	**Surface Water**	**Fish Tissue**	**Surface Water**	
			ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day
EU17	HFPO-DA	Hexafluoropropylene oxide dimer acid	NS	1.6E+01	NS	7.8E-09	7.8E-09	NS	1.9E+01	NS	8.8E-09	8.8E-09
EU17	PEPA	Perfluoroethoxypropyl carboxylic acid	NS	1.0E+01	NS	4.8E-09	4.8E-09	NS	1.2E+01	NS	5.9E-09	5.9E-09
EU17	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU17	PFMOAA	Perfluoro-2-methoxyaceticacid	NS	2.0E+01	NS	9.3E-09	9.3E-09	NS	3.3E+01	NS	1.6E-08	1.6E-08
EU17	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	NS	1.5E+01	NS	7.0E-09	7.0E-09	NS	1.7E+01	NS	8.2E-09	8.2E-09
EU17	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	NS	7.2E+00	NS	3.4E-09	3.4E-09	NS	8.3E+00	NS	3.9E-09	3.9E-09
EU17	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	NS	3.0E+00	NS	1.4E-09	1.4E-09	NS	4.5E+00	NS	2.1E-09	2.1E-09
EU17	PMPA	Perfluoromethoxypropyl carboxylic acid	NS	8.9E+00	NS	4.2E-09	4.2E-09	NS	1.0E+01	NS	4.8E-09	4.8E-09
EU17	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU17	EVE Acid	Perflouroethoxypropionic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU17	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU17	R-EVE	R-EVE	NS	9.2E+00	NS	4.3E-09	4.3E-09	NS	1.0E+01	NS	4.7E-09	4.7E-09
EU17	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	NS	3.2E+00	NS	1.5E-09	1.5E-09	NS	3.2E+00	NS	1.5E-09	1.5E-09
EU17	Byproduct 4	Byproduct 4	NS	2.0E+01	NS	9.2E-09	9.2E-09	NS	2.0E+01	NS	9.5E-09	9.5E-09
EU17	Byproduct 6	Byproduct 6	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU17	Byproduct 5	Byproduct 5	NS	3.3E+01	NS	1.5E-08	1.5E-08	NS	8.2E+01	NS	3.9E-08	3.9E-08
EU17	NVHOS	Perflouroethoxysulfonic acid	NS	7.6E+00	NS	3.6E-09	3.6E-09	NS	9.0E+00	NS	4.3E-09	4.3E-09
EU17	PES	Perfluoroethoxyethanesulfonic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU17	PFESA-BP1	Byproduct 1	NS	3.1E+00	NS	1.5E-09	1.5E-09	NS	4.2E+00	NS	2.0E-09	2.0E-09
EU17	PFESA-BP2	Byproduct 2	NS	2.7E+00	NS	1.3E-09	1.3E-09	NS	3.2E+00	NS	1.5E-09	1.5E-09
			Total CTE Intake at EU17		NS	7.5E-08	7.5E-08	**Total RME Intake at EU17**		NS	1.1E-07	1.1E-07
EU18	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	8.0E+02	ND	3.8E-07	3.8E-07	ND	9.1E+02	ND	4.3E-07	4.3E-07
EU18	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	2.9E+02	ND	1.3E-07	1.3E-07	ND	3.0E+02	ND	1.4E-07	1.4E-07
EU18	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU18	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	2.5E+02	ND	1.2E-07	1.2E-07	ND	2.6E+02	ND	1.2E-07	1.2E-07
EU18	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	7.1E+02	ND	3.4E-07	3.4E-07	ND	7.3E+02	ND	3.5E-07	3.5E-07
EU18	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	9.3E+01	ND	4.4E-08	4.4E-08	ND	9.7E+01	ND	4.6E-08	4.6E-08
EU18	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	2.7E+02	3.9E+01	5.7E-08	1.8E-08	7.6E-08	2.7E+02	4.0E+01	5.7E-08	1.9E-08	7.6E-08
EU18	PMPA	Perfluoromethoxypropyl carboxylic acid	2.7E+02	8.4E+02	5.7E-08	4.0E-07	4.5E-07	2.7E+02	8.5E+02	5.7E-08	4.0E-07	4.6E-07
EU18	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	3.5E+00	ND	1.6E-09	1.6E-09	ND	3.6E+00	ND	1.7E-09	1.7E-09
EU18	EVE Acid	Perflouroethoxypropionic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU18	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU18	R-EVE	R-EVE	ND	5.6E+01	ND	2.6E-08	2.6E-08	ND	5.8E+01	ND	2.7E-08	2.7E-08
EU18	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	9.9E+00	ND	4.7E-09	4.7E-09	ND	1.0E+01	ND	4.7E-09	4.7E-09
EU18	Byproduct 4	Byproduct 4	ND	9.5E+01	ND	4.5E-08	4.5E-08	ND	9.9E+01	ND	4.7E-08	4.7E-08
EU18	Byproduct 6	Byproduct 6	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU18	Byproduct 5	Byproduct 5	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU18	NVHOS	Perflouroethoxysulfonic acid	ND	6.1E+00	ND	2.9E-09	2.9E-09	ND	6.3E+00	ND	3.0E-09	3.0E-09
EU18	PES	Perfluoroethoxyethanesulfonic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU18	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU18	PFESA-BP2	Byproduct 2	ND	3.2E+01	ND	1.5E-08	1.5E-08	ND	3.3E+01	ND	1.6E-08	1.6E-08
			Total CTE Intake at EU18		1.1E-07	1.5E-06	1.6E-06	**Total RME Intake at EU18**		1.1E-07	1.6E-06	1.7E-06

Table F-4-7
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Recreationalist (Age 0-26) - Surface Water and Fish Tissue

			Central Tendency Exposure Assessment					Upper-Bound Exposure Estimate				
			Average EPC		Intake		Total CTE Intake	95% UCL EPC		Intake		Total RME Intake
Exposure Unit	Chemical Abbreviation	Chemical Name	Fish Tissue ng/kg	Surface Water ng/L	Fish Tissue mg/kg-day	Surface Water mg/kg-day	mg/kg-day	Fish Tissue ng/kg	Surface Water ng/L	Fish Tissue mg/kg-day	Surface Water mg/kg-day	mg/kg-day
EU19	HFPO-DA	Hexafluoropropylene oxide dimer acid	NS	3.0E+02	NS	1.4E-07	1.4E-07	NS	3.1E+02	NS	1.5E-07	1.5E-07
EU19	PEPA	Perfluoroethoxypropyl carboxylic acid	NS	1.1E+02	NS	5.0E-08	5.0E-08	NS	1.1E+02	NS	5.2E-08	5.2E-08
EU19	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	PFMOAA	Perfluoro-2-methoxyaceticacid	NS	6.8E+01	NS	3.2E-08	3.2E-08	NS	7.1E+01	NS	3.4E-08	3.4E-08
EU19	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	NS	2.2E+02	NS	1.0E-07	1.0E-07	NS	2.2E+02	NS	1.0E-07	1.0E-07
EU19	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	NS	2.6E+01	NS	1.2E-08	1.2E-08	NS	2.7E+01	NS	1.3E-08	1.3E-08
EU19	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	NS	8.7E+00	NS	4.1E-09	4.1E-09	NS	8.9E+00	NS	4.2E-09	4.2E-09
EU19	PMPA	Perfluoromethoxypropyl carboxylic acid	NS	3.5E+02	NS	1.6E-07	1.6E-07	NS	3.5E+02	NS	1.7E-07	1.7E-07
EU19	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	EVE Acid	Perflouroethoxypropionic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	R-EVE	R-EVE	NS	5.3E+01	NS	2.5E-08	2.5E-08	NS	5.3E+01	NS	2.5E-08	2.5E-08
EU19	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	NS	2.1E+00	NS	9.9E-10	9.9E-10	NS	2.1E+00	NS	9.9E-10	9.9E-10
EU19	Byproduct 4	Byproduct 4	NS	1.4E+02	NS	6.6E-08	6.6E-08	NS	1.5E+02	NS	7.1E-08	7.1E-08
EU19	Byproduct 6	Byproduct 6	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	Byproduct 5	Byproduct 5	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	NVHOS	Perflouroethoxysulfonic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	PES	Perfluoroethoxyethanesulfonic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	PFESA-BP1	Byproduct 1	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	PFESA-BP2	Byproduct 2	NS	2.5E+01	NS	1.2E-08	1.2E-08	NS	2.5E+01	NS	1.2E-08	1.2E-08
			Total CTE Intake at EU19		NS	6.1E-07	6.1E-07	**Total RME Intake at EU19**		NS	6.3E-07	6.3E-07

Definitions
"--" - not available/not calculated
CTE - central tendency exposure
EU - Exposure Unit
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ND - constituent not detected
ng/kg - nanogram(s) of constituent per kilogram of fish tissue
ng/L - nanogram(s) of constituent per liter of water
NS - media not sampled
RME - reasonable maximum exposure
UCL - upper confidence limit on the mean

Table F-4-8
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Recreationalist (Age 0-6) - Surface Water and Fish Tissue

			Central Tendency Exposure Assessment					Upper-Bound Exposure Estimate				
			Average EPC		Intake		Total CTE Intake	95% UCL EPC		Intake		Total RME Intake
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Fish Tissue**	**Surface Water**	**Fish Tissue**	**Surface Water**		**Fish Tissue**	**Surface Water**	**Fish Tissue**	**Surface Water**	
			ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day
EU13	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	5.0E+00	ND	4.6E-09	4.6E-09	ND	5.0E+00	ND	4.6E-09	4.6E-09
EU13	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	2.8E+00	ND	2.6E-09	2.6E-09	ND	2.8E+00	ND	2.6E-09	2.6E-09
EU13	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	1.7E+01	ND	1.5E-08	1.5E-08	ND	2.1E+01	ND	1.9E-08	1.9E-08
EU13	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	EVE Acid	Perflouroethoxypropionic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	R-EVE	R-EVE	ND	2.3E+01	ND	2.1E-08	2.1E-08	ND	2.3E+01	ND	2.1E-08	2.1E-08
EU13	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	Byproduct 4	Byproduct 4	ND	9.1E+00	ND	8.4E-09	8.4E-09	ND	1.5E+01	ND	1.4E-08	1.4E-08
EU13	Byproduct 6	Byproduct 6	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	Byproduct 5	Byproduct 5	ND	7.1E+01	ND	6.5E-08	6.5E-08	ND	3.2E+02	ND	2.9E-07	2.9E-07
EU13	NVHOS	Perflouroethoxysulfonic acid	ND	6.7E+00	ND	6.1E-09	6.1E-09	ND	8.2E+00	ND	7.5E-09	7.5E-09
EU13	PES	Perfluoroethoxyethanesulfonic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU13	PFESA-BP2	Byproduct 2	ND	ND	ND	ND	--	ND	ND	ND	ND	--
			Total CTE Intake at EU13		ND	1.2E-07	1.2E-07	**Total RME Intake at EU13**		ND	3.6E-07	3.6E-07
EU14	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	2.3E+01	ND	2.2E-08	2.2E-08	ND	3.5E+01	ND	3.2E-08	3.2E-08
EU14	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	2.6E+01	ND	2.4E-08	2.4E-08	ND	4.6E+01	ND	4.3E-08	4.3E-08
EU14	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	6.7E+00	ND	6.2E-09	6.2E-09	ND	1.2E+01	ND	1.1E-08	1.1E-08
EU14	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	3.9E+00	ND	3.6E-09	3.6E-09	ND	6.4E+00	ND	5.9E-09	5.9E-09
EU14	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	1.2E+03	2.3E+00	4.5E-07	2.1E-09	4.6E-07	2.6E+03	2.3E+00	9.6E-07	2.1E-09	9.6E-07
EU14	PMPA	Perfluoromethoxypropyl carboxylic acid	3.1E+02	1.6E+01	1.1E-07	1.4E-08	1.3E-07	3.7E+02	1.9E+01	1.4E-07	1.7E-08	1.5E-07
EU14	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	EVE Acid	Perflouroethoxypropionic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	R-EVE	R-EVE	ND	3.2E+00	ND	3.0E-09	3.0E-09	ND	3.6E+00	ND	3.3E-09	3.3E-09
EU14	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	Byproduct 4	Byproduct 4	ND	6.5E+00	ND	6.0E-09	6.0E-09	ND	7.4E+00	ND	6.8E-09	6.8E-09
EU14	Byproduct 6	Byproduct 6	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	Byproduct 5	Byproduct 5	ND	9.0E+00	ND	8.3E-09	8.3E-09	ND	1.4E+01	ND	1.3E-08	1.3E-08
EU14	NVHOS	Perflouroethoxysulfonic acid	ND	6.4E+00	ND	5.9E-09	5.9E-09	ND	6.9E+00	ND	6.3E-09	6.3E-09
EU14	PES	Perfluoroethoxyethanesulfonic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU14	PFESA-BP2	Byproduct 2	ND	ND	ND	ND	--	ND	ND	ND	ND	--
			Total CTE Intake at EU14		5.7E-07	9.5E-08	6.6E-07	**Total RME Intake at EU14**		1.1E-06	1.4E-07	1.2E-06

Table F-4-8
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Recreationalist (Age 0-6) - Surface Water and Fish Tissue

Exposure Unit	Chemical Abbreviation	Chemical Name	Central Tendency Exposure Assessment: Average EPC Fish Tissue (ng/kg)	Average EPC Surface Water (ng/L)	Intake Fish Tissue (mg/kg-day)	Intake Surface Water (mg/kg-day)	Total CTE Intake (mg/kg-day)	Upper-Bound Exposure Estimate: 95% UCL EPC Fish Tissue (ng/kg)	95% UCL EPC Surface Water (ng/L)	Intake Fish Tissue (mg/kg-day)	Intake Surface Water (mg/kg-day)	Total RME Intake (mg/kg-day)
EU15	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	2.7E+03	NS	1.0E-06	NS	1.0E-06	5.4E+03	NS	2.0E-06	NS	2.0E-06
EU15	PMPA	Perfluoromethoxypropyl carboxylic acid	3.0E+02	NS	1.1E-07	NS	1.1E-07	3.0E+02	NS	1.1E-07	NS	1.1E-07
EU15	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	EVE Acid	Perflouroethoxypropionic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	R-EVE	R-EVE	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	Byproduct 4	Byproduct 4	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	Byproduct 6	Byproduct 6	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	Byproduct 5	Byproduct 5	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	NVHOS	Perflouroethoxysulfonic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PES	Perfluoroethoxyethanesulfonic acid	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFESA-BP1	Byproduct 1	ND	NS	ND	NS	--	ND	NS	ND	NS	--
EU15	PFESA-BP2	Byproduct 2	ND	NS	ND	NS	--	ND	NS	ND	NS	--
				Total CTE Intake at EU15	1.1E-06	NS	1.1E-06		**Total RME Intake at EU15**	2.1E-06	NS	2.1E-06
EU16	HFPO-DA	Hexafluoropropylene oxide dimer acid	1.7E+04	1.3E+02	6.3E-06	1.2E-07	6.4E-06	3.6E+04	3.2E+02	1.3E-05	2.9E-07	1.4E-05
EU16	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	5.0E+01	ND	4.6E-08	4.6E-08	ND	5.0E+01	ND	4.6E-08	4.6E-08
EU16	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU16	PFMOAA	Perfluoro-2-methoxyaceticacid	3.4E+03	1.2E+02	1.3E-06	1.1E-07	1.4E-06	5.0E+03	1.8E+02	1.9E-06	1.7E-07	2.0E-06
EU16	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	5.2E+01	ND	4.8E-08	4.8E-08	ND	6.4E+01	ND	5.9E-08	5.9E-08
EU16	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	1.3E+01	ND	1.2E-08	1.2E-08	ND	1.6E+01	ND	1.5E-08	1.5E-08
EU16	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	1.3E+04	5.0E+00	4.6E-06	4.6E-09	4.6E-06	8.3E+04	6.4E+00	3.1E-05	5.9E-09	3.1E-05
EU16	PMPA	Perfluoromethoxypropyl carboxylic acid	ND	4.3E+01	ND	4.0E-08	4.0E-08	ND	5.5E+01	ND	5.1E-08	5.1E-08
EU16	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU16	EVE Acid	Perflouroethoxypropionic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU16	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU16	R-EVE	R-EVE	1.0E+03	5.2E+00	3.7E-07	4.7E-09	3.7E-07	1.0E+03	6.3E+00	3.7E-07	5.8E-09	3.7E-07
EU16	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	4.3E+02	3.4E+00	1.6E-07	3.1E-09	1.6E-07	1.1E+03	3.4E+00	4.2E-07	3.1E-09	4.2E-07
EU16	Byproduct 4	Byproduct 4	ND	1.4E+01	ND	1.3E-08	1.3E-08	ND	1.9E+01	ND	1.7E-08	1.7E-08
EU16	Byproduct 6	Byproduct 6	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU16	Byproduct 5	Byproduct 5	ND	5.0E+01	ND	4.6E-08	4.6E-08	ND	6.9E+01	ND	6.4E-08	6.4E-08
EU16	NVHOS	Perflouroethoxysulfonic acid	ND	7.4E+00	ND	6.8E-09	6.8E-09	ND	8.7E+00	ND	8.0E-09	8.0E-09
EU16	PES	Perfluoroethoxyethanesulfonic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU16	PFESA-BP1	Byproduct 1	ND	2.4E+00	ND	2.2E-09	2.2E-09	ND	2.4E+00	ND	2.2E-09	2.2E-09
EU16	PFESA-BP2	Byproduct 2	ND	4.9E+00	ND	4.5E-09	4.5E-09	ND	4.9E+00	ND	4.5E-09	4.5E-09
				Total CTE Intake at EU16	1.3E-05	4.7E-07	1.3E-05		**Total RME Intake at EU16**	4.7E-05	7.4E-07	4.7E-05

Table F-4-8
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Recreationalist (Age 0-6) - Surface Water and Fish Tissue

			Central Tendency Exposure Assessment					**Upper-Bound Exposure Estimate**				
			Average EPC		**Intake**		**Total CTE Intake**	**95% UCL EPC**		**Intake**		**Total RME Intake**
Exposure Unit	**Chemical Abbreviation**	**Chemical Name**	**Fish Tissue**	**Surface Water**	**Fish Tissue**	**Surface Water**		**Fish Tissue**	**Surface Water**	**Fish Tissue**	**Surface Water**	
			ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day
EU17	HFPO-DA	Hexafluoropropylene oxide dimer acid	NS	1.6E+01	NS	1.5E-08	1.5E-08	NS	1.9E+01	NS	1.7E-08	1.7E-08
EU17	PEPA	Perfluoroethoxypropyl carboxylic acid	NS	1.0E+01	NS	9.4E-09	9.4E-09	NS	1.2E+01	NS	1.1E-08	1.1E-08
EU17	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU17	PFMOAA	Perfluoro-2-methoxyaceticacid	NS	2.0E+01	NS	1.8E-08	1.8E-08	NS	3.3E+01	NS	3.1E-08	3.1E-08
EU17	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	NS	1.5E+01	NS	1.4E-08	1.4E-08	NS	1.7E+01	NS	1.6E-08	1.6E-08
EU17	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	NS	7.2E+00	NS	6.6E-09	6.6E-09	NS	8.3E+00	NS	7.7E-09	7.7E-09
EU17	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	NS	3.0E+00	NS	2.8E-09	2.8E-09	NS	4.5E+00	NS	4.1E-09	4.1E-09
EU17	PMPA	Perfluoromethoxypropyl carboxylic acid	NS	8.9E+00	NS	8.2E-09	8.2E-09	NS	1.0E+01	NS	9.4E-09	9.4E-09
EU17	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU17	EVE Acid	Perflouroethoxypropionic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU17	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU17	R-EVE	R-EVE	NS	9.2E+00	NS	8.4E-09	8.4E-09	NS	1.0E+01	NS	9.2E-09	9.2E-09
EU17	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	NS	3.2E+00	NS	2.9E-09	2.9E-09	NS	3.2E+00	NS	2.9E-09	2.9E-09
EU17	Byproduct 4	Byproduct 4	NS	2.0E+01	NS	1.8E-08	1.8E-08	NS	2.0E+01	NS	1.8E-08	1.8E-08
EU17	Byproduct 6	Byproduct 6	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU17	Byproduct 5	Byproduct 5	NS	3.3E+01	NS	3.0E-08	3.0E-08	NS	8.2E+01	NS	7.5E-08	7.5E-08
EU17	NVHOS	Perflouroethoxysulfonic acid	NS	7.6E+00	NS	7.0E-09	7.0E-09	NS	9.0E+00	NS	8.3E-09	8.3E-09
EU17	PES	Perfluoroethoxyethanesulfonic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU17	PFESA-BP1	Byproduct 1	NS	3.1E+00	NS	2.8E-09	2.8E-09	NS	4.2E+00	NS	3.8E-09	3.8E-09
EU17	PFESA-BP2	Byproduct 2	NS	2.7E+00	NS	2.5E-09	2.5E-09	NS	3.2E+00	NS	2.9E-09	2.9E-09
			Total CTE Intake at EU17		NS	1.5E-07	1.5E-07	**Total RME Intake at EU17**		NS	2.2E-07	2.2E-07
EU18	HFPO-DA	Hexafluoropropylene oxide dimer acid	ND	8.0E+02	ND	7.4E-07	7.4E-07	ND	9.1E+02	ND	8.4E-07	8.4E-07
EU18	PEPA	Perfluoroethoxypropyl carboxylic acid	ND	2.9E+02	ND	2.6E-07	2.6E-07	ND	3.0E+02	ND	2.8E-07	2.8E-07
EU18	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU18	PFMOAA	Perfluoro-2-methoxyaceticacid	ND	2.5E+02	ND	2.3E-07	2.3E-07	ND	2.6E+02	ND	2.4E-07	2.4E-07
EU18	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	ND	7.1E+02	ND	6.5E-07	6.5E-07	ND	7.3E+02	ND	6.7E-07	6.7E-07
EU18	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	ND	9.3E+01	ND	8.6E-08	8.6E-08	ND	9.7E+01	ND	8.9E-08	8.9E-08
EU18	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	2.7E+02	3.9E+01	1.0E-07	3.6E-08	1.4E-07	2.7E+02	4.0E+01	1.0E-07	3.7E-08	1.4E-07
EU18	PMPA	Perfluoromethoxypropyl carboxylic acid	2.7E+02	8.4E+02	1.0E-07	7.7E-07	8.7E-07	2.7E+02	8.5E+02	1.0E-07	7.8E-07	8.8E-07
EU18	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	ND	3.5E+00	ND	3.2E-09	3.2E-09	ND	3.6E+00	ND	3.3E-09	3.3E-09
EU18	EVE Acid	Perflouroethoxypropionic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU18	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU18	R-EVE	R-EVE	ND	5.6E+01	ND	5.1E-08	5.1E-08	ND	5.8E+01	ND	5.3E-08	5.3E-08
EU18	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	ND	9.9E+00	ND	9.1E-09	9.1E-09	ND	1.0E+01	ND	9.2E-09	9.2E-09
EU18	Byproduct 4	Byproduct 4	ND	9.5E+01	ND	8.7E-08	8.7E-08	ND	9.9E+01	ND	9.1E-08	9.1E-08
EU18	Byproduct 6	Byproduct 6	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU18	Byproduct 5	Byproduct 5	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU18	NVHOS	Perflouroethoxysulfonic acid	ND	6.1E+00	ND	5.6E-09	5.6E-09	ND	6.3E+00	ND	5.8E-09	5.8E-09
EU18	PES	Perfluoroethoxyethanesulfonic acid	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU18	PFESA-BP1	Byproduct 1	ND	ND	ND	ND	--	ND	ND	ND	ND	--
EU18	PFESA-BP2	Byproduct 2	ND	3.2E+01	ND	2.9E-08	2.9E-08	ND	3.3E+01	ND	3.0E-08	3.0E-08
			Total CTE Intake at EU18		2.0E-07	3.0E-06	3.2E-06	**Total RME Intake at EU18**		2.0E-07	3.1E-06	3.3E-06

Table F-4-8
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Recreationalist (Age 0-6) - Surface Water and Fish Tissue

			Central Tendency Exposure Assessment					Upper-Bound Exposure Estimate				
			Average EPC		Intake		Total CTE Intake	95% UCL EPC		Intake		Total RME Intake
Exposure Unit	Chemical Abbreviation	Chemical Name	Fish Tissue	Surface Water	Fish Tissue	Surface Water		Fish Tissue	Surface Water	Fish Tissue	Surface Water	
			ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day	ng/kg	ng/L	mg/kg-day	mg/kg-day	mg/kg-day
EU19	HFPO-DA	Hexafluoropropylene oxide dimer acid	NS	3.0E+02	NS	2.8E-07	2.8E-07	NS	3.1E+02	NS	2.9E-07	2.9E-07
EU19	PEPA	Perfluoroethoxypropyl carboxylic acid	NS	1.1E+02	NS	9.8E-08	9.8E-08	NS	1.1E+02	NS	1.0E-07	1.0E-07
EU19	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	PFMOAA	Perfluoro-2-methoxyaceticacid	NS	6.8E+01	NS	6.2E-08	6.2E-08	NS	7.1E+01	NS	6.5E-08	6.5E-08
EU19	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	NS	2.2E+02	NS	2.0E-07	2.0E-07	NS	2.2E+02	NS	2.0E-07	2.0E-07
EU19	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	NS	2.6E+01	NS	2.4E-08	2.4E-08	NS	2.7E+01	NS	2.5E-08	2.5E-08
EU19	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	NS	8.7E+00	NS	8.0E-09	8.0E-09	NS	8.9E+00	NS	8.2E-09	8.2E-09
EU19	PMPA	Perfluoromethoxypropyl carboxylic acid	NS	3.5E+02	NS	3.2E-07	3.2E-07	NS	3.5E+02	NS	3.2E-07	3.2E-07
EU19	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	EVE Acid	Perflouroethoxypropionic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	R-EVE	R-EVE	NS	5.3E+01	NS	4.8E-08	4.8E-08	NS	5.3E+01	NS	4.9E-08	4.9E-08
EU19	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	NS	2.1E+00	NS	1.9E-09	1.9E-09	NS	2.1E+00	NS	1.9E-09	1.9E-09
EU19	Byproduct 4	Byproduct 4	NS	1.4E+02	NS	1.3E-07	1.3E-07	NS	1.5E+02	NS	1.4E-07	1.4E-07
EU19	Byproduct 6	Byproduct 6	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	Byproduct 5	Byproduct 5	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	NVHOS	Perflouroethoxysulfonic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	PES	Perfluoroethoxyethanesulfonic acid	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	PFESA-BP1	Byproduct 1	NS	ND	NS	ND	--	NS	ND	NS	ND	--
EU19	PFESA-BP2	Byproduct 2	NS	2.5E+01	NS	2.3E-08	2.3E-08	NS	2.5E+01	NS	2.3E-08	2.3E-08
			Total CTE Intake at EU19		NS	1.2E-06	1.2E-06	**Total RME Intake at EU19**		NS	1.2E-06	1.2E-06

Definitions
"--" - not available/not calculated
CTE - central tendency exposure
EU - Exposure Unit
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ND - constituent not detected
ng/kg - nanogram(s) of constituent per kilogram of fish tissue
ng/L - nanogram(s) of constituent per liter of water
NS - media not sampled
RME - reasonable maximum exposure
UCL - upper confidence limit on the mean

Table F-4-9
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child/Adult Resident (Age 0-26) - Untreated Surface Water as Drinking Water

Exposure Unit	Chemical Abbreviation	Chemical Name	Central Tendency Exposure Assessment			Upper-Bound Exposure Assessment		
			Average EPC	Intake	Total CTE Intake	95% UCL EPC	Intake	Total RME Intake
			Surface Water	Surface Water		Surface Water	Surface Water	
			ng/L	mg/kg-day	mg/kg-day	ng/L	mg/kg-day	mg/kg-day
EU16 (Intake Point)	HFPO-DA	Hexafluoropropylene oxide dimer acid	179	6.2E-06	6.2E-06	358.9	1.2E-05	1.2E-05
EU16 (Intake Point)	PEPA	Perfluoroethoxypropyl carboxylic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFMOAA	Perfluoro-2-methoxyaceticacid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PMPA	Perfluoromethoxypropyl carboxylic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	EVE Acid	Perflouroethoxypropionic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	R-EVE	R-EVE	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	Byproduct 4	Byproduct 4	NS	NS	--	NS	NS	--
EU16 (Intake Point)	Byproduct 6	Byproduct 6	NS	NS	--	NS	NS	--
EU16 (Intake Point)	Byproduct 5	Byproduct 5	NS	NS	--	NS	NS	--
EU16 (Intake Point)	NVHOS	Perflouroethoxysulfonic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PES	Perfluoroethoxyethanesulfonic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFESA-BP1	Byproduct 1	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFESA-BP2	Byproduct 2	NS	NS	--	NS	NS	--
			Total CTE Intake at EU16 (Intake Point)	6.2E-06	6.2E-06	**Total RME Intake at EU16 (Intake Point)**	1.2E-05	1.2E-05
EU17 (Intake Point)	HFPO-DA	Hexafluoropropylene oxide dimer acid	16.12	5.6E-07	5.6E-07	18.4	6.4E-07	6.4E-07
EU17 (Intake Point)	PEPA	Perfluoroethoxypropyl carboxylic acid	10.19	3.5E-07	3.5E-07	12.43	4.3E-07	4.3E-07
EU17 (Intake Point)	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	--	ND	ND	--
EU17 (Intake Point)	PFMOAA	Perfluoro-2-methoxyaceticacid	17.05	5.9E-07	5.9E-07	24.45	8.4E-07	8.4E-07
EU17 (Intake Point)	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	13.77	4.8E-07	4.8E-07	16.07	5.6E-07	5.6E-07
EU17 (Intake Point)	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	7.043	2.4E-07	2.4E-07	8.17	2.8E-07	2.8E-07
EU17 (Intake Point)	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	2.968	1.0E-07	1.0E-07	4.432	1.5E-07	1.5E-07
EU17 (Intake Point)	PMPA	Perfluoromethoxypropyl carboxylic acid	7.792	2.7E-07	2.7E-07	8.8	3.0E-07	3.0E-07
EU17 (Intake Point)	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	NS	NS	--	NS	NS	--
EU17 (Intake Point)	EVE Acid	Perflouroethoxypropionic acid	NS	NS	--	NS	NS	--
EU17 (Intake Point)	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	NS	NS	--	NS	NS	--
EU17 (Intake Point)	R-EVE	R-EVE	NS	NS	--	NS	NS	--
EU17 (Intake Point)	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	NS	NS	--	NS	NS	--
EU17 (Intake Point)	Byproduct 4	Byproduct 4	NS	NS	--	NS	NS	--
EU17 (Intake Point)	Byproduct 6	Byproduct 6	NS	NS	--	NS	NS	--
EU17 (Intake Point)	Byproduct 5	Byproduct 5	NS	NS	--	NS	NS	--
EU17 (Intake Point)	NVHOS	Perflouroethoxysulfonic acid	NS	NS	--	NS	NS	--
EU17 (Intake Point)	PES	Perfluoroethoxyethanesulfonic acid	NS	NS	--	NS	NS	--
EU17 (Intake Point)	PFESA-BP1	Byproduct 1	3.093	1.1E-07	1.1E-07	4.17	1.4E-07	1.4E-07
EU17 (Intake Point)	PFESA-BP2	Byproduct 2	2.565	8.9E-08	8.9E-08	3.032	1.0E-07	1.0E-07
			Total CTE Intake at EU17 (Intake Point)	2.8E-06	2.8E-06	**Total RME Intake at EU17 (Intake Point)**	3.5E-06	3.5E-06

Definitions
"--" - not available/not calculated
CTE - central tendency exposure
EU - Exposure Unit
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ng/L - nanogram(s) of constituent per liter of water
RME - reasonable maximum exposure
UCL - upper confidence limit on the mean

Table F-4-10
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Calculation of Receptor Intake
Offsite Child Resident (Age 0-6) - Untreated Surface Water as Drinking Water

			Central Tendency Exposure Assessment			Upper-Bound Exposure Assessment		
			Average EPC	Intake	Total CTE Intake	95% UCL EPC	Intake	Total RME Intake
Exposure Unit	Chemical Abbreviation	Chemical Name	Surface Water	Surface Water		Surface Water	Surface Water	
			ng/L	mg/kg-day	mg/kg-day	ng/L	mg/kg-day	mg/kg-day
EU16 (Intake Point)	HFPO-DA	Hexafluoropropylene oxide dimer acid	179	8.9E-06	8.9E-06	358.9	1.8E-05	1.8E-05
EU16 (Intake Point)	PEPA	Perfluoroethoxypropyl carboxylic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFMOAA	Perfluoro-2-methoxyaceticacid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PMPA	Perfluoromethoxypropyl carboxylic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	EVE Acid	Perflouroethoxypropionic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	R-EVE	R-EVE	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	Byproduct 4	Byproduct 4	NS	NS	--	NS	NS	--
EU16 (Intake Point)	Byproduct 6	Byproduct 6	NS	NS	--	NS	NS	--
EU16 (Intake Point)	Byproduct 5	Byproduct 5	NS	NS	--	NS	NS	--
EU16 (Intake Point)	NVHOS	Perflouroethoxysulfonic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PES	Perfluoroethoxyethanesulfonic acid	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFESA-BP1	Byproduct 1	NS	NS	--	NS	NS	--
EU16 (Intake Point)	PFESA-BP2	Byproduct 2	NS	NS	--	NS	NS	--
			Total CTE Intake at EU16 (Intake Point)	8.9E-06	8.9E-06	**Total RME Intake at EU16 (Intake Point)**	1.8E-05	1.8E-05
EU17 (Intake Point)	HFPO-DA	Hexafluoropropylene oxide dimer acid	16.12	8.0E-07	8.0E-07	18.4	9.2E-07	9.2E-07
EU17 (Intake Point)	PEPA	Perfluoroethoxypropyl carboxylic acid	10.19	5.1E-07	5.1E-07	12.43	6.2E-07	6.2E-07
EU17 (Intake Point)	PFECA-G	Perfluoro-4-isopropoxybutanoic acid	ND	ND	--	ND	ND	--
EU17 (Intake Point)	PFMOAA	Perfluoro-2-methoxyaceticacid	17.05	8.5E-07	8.5E-07	24.45	1.2E-06	1.2E-06
EU17 (Intake Point)	PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	13.77	6.9E-07	6.9E-07	16.07	8.0E-07	8.0E-07
EU17 (Intake Point)	PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	7.043	3.5E-07	3.5E-07	8.17	4.1E-07	4.1E-07
EU17 (Intake Point)	PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	2.968	1.5E-07	1.5E-07	4.432	2.2E-07	2.2E-07
EU17 (Intake Point)	PMPA	Perfluoromethoxypropyl carboxylic acid	7.792	3.9E-07	3.9E-07	8.8	4.4E-07	4.4E-07
EU17 (Intake Point)	Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	NS	NS	--	NS	NS	--
EU17 (Intake Point)	EVE Acid	Perflouroethoxypropionic acid	NS	NS	--	NS	NS	--
EU17 (Intake Point)	PFECA B	Perfluoro-3,6-dioxaheptanoic acid	NS	NS	--	NS	NS	--
EU17 (Intake Point)	R-EVE	R-EVE	NS	NS	--	NS	NS	--
EU17 (Intake Point)	PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	NS	NS	--	NS	NS	--
EU17 (Intake Point)	Byproduct 4	Byproduct 4	NS	NS	--	NS	NS	--
EU17 (Intake Point)	Byproduct 6	Byproduct 6	NS	NS	--	NS	NS	--
EU17 (Intake Point)	Byproduct 5	Byproduct 5	NS	NS	--	NS	NS	--
EU17 (Intake Point)	NVHOS	Perflouroethoxysulfonic acid	NS	NS	--	NS	NS	--
EU17 (Intake Point)	PES	Perfluoroethoxyethanesulfonic acid	NS	NS	--	NS	NS	--
EU17 (Intake Point)	PFESA-BP1	Byproduct 1	3.093	1.5E-07	1.5E-07	4.17	2.1E-07	2.1E-07
EU17 (Intake Point)	PFESA-BP2	Byproduct 2	2.565	1.3E-07	1.3E-07	3.032	1.5E-07	1.5E-07
			Total CTE Intake at EU17 (Intake Point)	4.0E-06	4.0E-06	**Total RME Intake at EU17 (Intake Point)**	5.0E-06	5.0E-06

Definitions
"--" - not available/not calculated
CTE - central tendency exposure
EU - Exposure Unit
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ng/L - nanogram(s) of constituent per liter of water
RME - reasonable maximum exposure
UCL - upper confidence limit on the mean

Table F-5-1
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Summary of Receptor Intakes
Upland Exposure Units

				Table 3+ PFAS Intake Summary											
				CTE Intake, Untreated Well Water				RME Intake, Untreated Well Water				RME Intake, Current Conditions Well Water			
Exposure Unit (EU)	**EU Description**	**Receptor**	**Units**	**Soil**	**Produce**	**Untreated Well Water**	**Total CTE Intake**	**Soil**	**Produce**	**Untreated Well Water**	**Total RME Intake**	**Soil**	**Produce**	**Well Water**	**Total RME Intake**
EU1	2.5 km, Northeast	Offsite Child/Adult Resident (Age 0-26)	mg/kg-day	1.9E-08	n/a	1.27E-04	1E-04	1.9E-08	n/a	3.28E-04	3E-04	1.9E-08	n/a	2.42E-06	2.4E-06
EU1	2.5 km, Northeast	Offsite Child Resident (Age 0-6)	mg/kg-day	6.3E-08	n/a	1.83E-04	2E-04	6.3E-08	n/a	4.74E-04	5E-04	6.3E-08	n/a	3.49E-06	3.6E-06
EU1	2.5 km, Northeast	Offsite Child/Adult Farmer (Age 0-26)	mg/kg-day	2.9E-08	4.17E-06	1.27E-04	1E-04	2.9E-08	4.17E-06	3.28E-04	3E-04	2.9E-08	4.17E-06	2.42E-06	6.6E-06
EU1	2.5 km, Northeast	Offsite Child Farmer (Age 0-6)	mg/kg-day	6.3E-08	6.18E-06	1.83E-04	2E-04	6.3E-08	6.18E-06	4.74E-04	5E-04	6.3E-08	6.18E-06	3.49E-06	9.7E-06
EU1	2.5 km, Northeast	Offsite Child/Adult Gardener (Age 0-26)	mg/kg-day	1.9E-08	4.17E-06	1.27E-04	1E-04	1.9E-08	4.17E-06	3.28E-04	3E-04	1.9E-08	4.17E-06	2.42E-06	6.6E-06
EU1	2.5 km, Northeast	Offsite Child Gardener (Age 0-6)	mg/kg-day	6.3E-08	6.18E-06	1.83E-04	2E-04	6.3E-08	6.18E-06	4.74E-04	5E-04	6.3E-08	6.18E-06	3.49E-06	9.7E-06
EU2	2.5 km, Southeast	Offsite Child/Adult Resident (Age 0-26)	mg/kg-day	ND	n/a	2.29E-04	2E-04	ND	n/a	2.47E-04	2E-04	ND	n/a	2.42E-06	2.4E-06
EU2	2.5 km, Southeast	Offsite Child Resident (Age 0-6)	mg/kg-day	ND	n/a	3.30E-04	3E-04	ND	n/a	3.57E-04	4E-04	ND	n/a	3.49E-06	3.5E-06
EU2	2.5 km, Southeast	Offsite Child/Adult Farmer (Age 0-26)	mg/kg-day	ND	9.47E-15	2.29E-04	2E-04	ND	1.02E-13	2.47E-04	2E-04	ND	1.02E-13	2.42E-06	2.4E-06
EU2	2.5 km, Southeast	Offsite Child Farmer (Age 0-6)	mg/kg-day	ND	1.72E-14	3.30E-04	3E-04	ND	1.85E-13	3.57E-04	4E-04	ND	1.85E-13	3.49E-06	3.5E-06
EU2	2.5 km, Southeast	Offsite Child/Adult Gardener (Age 0-26)	mg/kg-day	ND	9.47E-15	2.29E-04	2E-04	ND	1.02E-13	2.47E-04	2E-04	ND	1.02E-13	2.42E-06	2.4E-06
EU2	2.5 km, Southeast	Offsite Child Gardener (Age 0-6)	mg/kg-day	ND	1.72E-14	3.30E-04	3E-04	ND	1.85E-13	3.57E-04	4E-04	ND	1.85E-13	3.49E-06	3.5E-06
EU3	2.5 km, Southwest	Offsite Child/Adult Resident (Age 0-26)	mg/kg-day	1.4E-09	n/a	7.69E-05	8E-05	1.4E-09	n/a	1.71E-04	2E-04	1.4E-09	n/a	2.42E-06	2.4E-06
EU3	2.5 km, Southwest	Offsite Child Resident (Age 0-6)	mg/kg-day	4.6E-09	n/a	1.11E-04	1E-04	4.6E-09	n/a	2.47E-04	2E-04	4.6E-09	n/a	3.49E-06	3.5E-06
EU3	2.5 km, Southwest	Offsite Child/Adult Farmer (Age 0-26)	mg/kg-day	2.2E-09	5.78E-07	7.69E-05	8E-05	2.2E-09	5.78E-07	1.71E-04	2E-04	2.2E-09	5.78E-07	2.42E-06	3.0E-06
EU3	2.5 km, Southwest	Offsite Child Farmer (Age 0-6)	mg/kg-day	4.6E-09	8.55E-07	1.11E-04	1E-04	4.6E-09	8.55E-07	2.47E-04	2E-04	4.6E-09	8.55E-07	3.49E-06	4.4E-06
EU3	2.5 km, Southwest	Offsite Child/Adult Gardener (Age 0-26)	mg/kg-day	1.4E-09	5.78E-07	7.69E-05	8E-05	1.4E-09	5.78E-07	1.71E-04	2E-04	1.4E-09	5.78E-07	2.42E-06	3.0E-06
EU3	2.5 km, Southwest	Offsite Child Gardener (Age 0-6)	mg/kg-day	4.6E-09	8.55E-07	1.11E-04	1E-04	4.6E-09	8.55E-07	2.47E-04	2E-04	4.6E-09	8.55E-07	3.49E-06	4.4E-06
EU4	2.5 km, Northwest	Offsite Child/Adult Resident (Age 0-26)	mg/kg-day	ND	n/a	2.43E-05	2E-05	ND	n/a	3.68E-05	4E-05	ND	n/a	2.42E-06	2.4E-06
EU4	2.5 km, Northwest	Offsite Child Resident (Age 0-6)	mg/kg-day	ND	n/a	3.50E-05	4E-05	ND	n/a	5.30E-05	5E-05	ND	n/a	3.49E-06	3.5E-06
EU4	2.5 km, Northwest	Offsite Child/Adult Farmer (Age 0-26)	mg/kg-day	ND	7.92E-15	2.43E-05	2E-05	ND	7.82E-14	3.68E-05	4E-05	ND	7.82E-14	2.42E-06	2.4E-06
EU4	2.5 km, Northwest	Offsite Child Farmer (Age 0-6)	mg/kg-day	ND	1.44E-14	3.50E-05	4E-05	ND	1.42E-13	5.30E-05	5E-05	ND	1.42E-13	3.49E-06	3.5E-06
EU4	2.5 km, Northwest	Offsite Child/Adult Gardener (Age 0-26)	mg/kg-day	ND	7.92E-15	2.43E-05	2E-05	ND	7.82E-14	3.68E-05	4E-05	ND	7.82E-14	2.42E-06	2.4E-06
EU4	2.5 km, Northwest	Offsite Child Gardener (Age 0-6)	mg/kg-day	ND	1.44E-14	3.50E-05	4E-05	ND	1.42E-13	5.30E-05	5E-05	ND	1.42E-13	3.49E-06	3.5E-06
EU5	5 km, Northeast	Offsite Child/Adult Resident (Age 0-26)	mg/kg-day	5.4E-09	n/a	5.01E-05	5E-05	5.4E-09	n/a	8.02E-05	8E-05	5.4E-09	n/a	2.42E-06	2.4E-06
EU5	5 km, Northeast	Offsite Child Resident (Age 0-6)	mg/kg-day	1.8E-08	n/a	7.24E-05	7E-05	1.8E-08	n/a	1.16E-04	1E-04	1.8E-08	n/a	3.49E-06	3.5E-06
EU5	5 km, Northeast	Offsite Child/Adult Farmer (Age 0-26)	mg/kg-day	8.4E-09	1.89E-15	5.01E-05	5E-05	8.4E-09	4.76E-15	8.02E-05	8E-05	8.4E-09	4.76E-15	2.42E-06	2.4E-06
EU5	5 km, Northeast	Offsite Child Farmer (Age 0-6)	mg/kg-day	1.8E-08	3.44E-15	7.24E-05	7E-05	1.8E-08	8.65E-15	1.16E-04	1E-04	1.8E-08	8.65E-15	3.49E-06	3.5E-06
EU5	5 km, Northeast	Offsite Child/Adult Gardener (Age 0-26)	mg/kg-day	5.4E-09	1.89E-15	5.01E-05	5E-05	5.4E-09	4.76E-15	8.02E-05	8E-05	5.4E-09	4.76E-15	2.42E-06	2.4E-06
EU5	5 km, Northeast	Offsite Child Gardener (Age 0-6)	mg/kg-day	1.8E-08	3.44E-15	7.24E-05	7E-05	1.8E-08	8.65E-15	1.16E-04	1E-04	1.8E-08	8.65E-15	3.49E-06	3.5E-06
EU6	5 km, Southeast	Offsite Child/Adult Resident (Age 0-26)	mg/kg-day	ND	n/a	1.88E-05	2E-05	ND	n/a	3.39E-05	3E-05	ND	n/a	2.42E-06	2.4E-06
EU6	5 km, Southeast	Offsite Child Resident (Age 0-6)	mg/kg-day	ND	n/a	2.71E-05	3E-05	ND	n/a	4.89E-05	5E-05	ND	n/a	3.49E-06	3.5E-06
EU6	5 km, Southeast	Offsite Child/Adult Farmer (Age 0-26)	mg/kg-day	ND	1.02E-15	1.88E-05	2E-05	ND	2.66E-15	3.39E-05	3E-05	ND	2.66E-15	2.42E-06	2.4E-06
EU6	5 km, Southeast	Offsite Child Farmer (Age 0-6)	mg/kg-day	ND	1.86E-15	2.71E-05	3E-05	ND	4.83E-15	4.89E-05	5E-05	ND	4.83E-15	3.49E-06	3.5E-06
EU6	5 km, Southeast	Offsite Child/Adult Gardener (Age 0-26)	mg/kg-day	ND	1.02E-15	1.88E-05	2E-05	ND	2.66E-15	3.39E-05	3E-05	ND	2.66E-15	2.42E-06	2.4E-06
EU6	5 km, Southeast	Offsite Child Gardener (Age 0-6)	mg/kg-day	ND	1.86E-15	2.71E-05	3E-05	ND	4.83E-15	4.89E-05	5E-05	ND	4.83E-15	3.49E-06	3.5E-06
EU7	5 km, Southwest	Offsite Child/Adult Resident (Age 0-26)	mg/kg-day	ND	n/a	3.22E-05	3E-05	ND	n/a	4.72E-05	5E-05	ND	n/a	2.42E-06	2.4E-06
EU7	5 km, Southwest	Offsite Child Resident (Age 0-6)	mg/kg-day	ND	n/a	4.64E-05	5E-05	ND	n/a	6.81E-05	7E-05	ND	n/a	3.49E-06	3.5E-06
EU7	5 km, Southwest	Offsite Child/Adult Farmer (Age 0-26)	mg/kg-day	ND	1.40E-15	3.22E-05	3E-05	ND	3.45E-15	4.72E-05	5E-05	ND	3.45E-15	2.42E-06	2.4E-06
EU7	5 km, Southwest	Offsite Child Farmer (Age 0-6)	mg/kg-day	ND	2.54E-15	4.64E-05	5E-05	ND	6.26E-15	6.81E-05	7E-05	ND	6.26E-15	3.49E-06	3.5E-06
EU7	5 km, Southwest	Offsite Child/Adult Gardener (Age 0-26)	mg/kg-day	ND	1.40E-15	3.22E-05	3E-05	ND	3.45E-15	4.72E-05	5E-05	ND	3.45E-15	2.42E-06	2.4E-06
EU7	5 km, Southwest	Offsite Child Gardener (Age 0-6)	mg/kg-day	ND	2.54E-15	4.64E-05	5E-05	ND	6.26E-15	6.81E-05	7E-05	ND	6.26E-15	3.49E-06	3.5E-06
EU8	5 km, Northwest	Offsite Child/Adult Resident (Age 0-26)	mg/kg-day	ND	n/a	1.01E-05	1E-05	ND	n/a	1.54E-05	2E-05	ND	n/a	2.42E-06	2.4E-06
EU8	5 km, Northwest	Offsite Child Resident (Age 0-6)	mg/kg-day	ND	n/a	1.46E-05	1E-05	ND	n/a	2.22E-05	2E-05	ND	n/a	3.49E-06	3.5E-06
EU8	5 km, Northwest	Offsite Child/Adult Farmer (Age 0-26)	mg/kg-day	ND	9.47E-16	1.01E-05	1E-05	ND	2.15E-15	1.54E-05	2E-05	ND	2.15E-15	2.42E-06	2.4E-06
EU8	5 km, Northwest	Offsite Child Farmer (Age 0-6)	mg/kg-day	ND	1.72E-15	1.46E-05	1E-05	ND	3.90E-15	2.22E-05	2E-05	ND	3.90E-15	3.49E-06	3.5E-06
EU8	5 km, Northwest	Offsite Child/Adult Gardener (Age 0-26)	mg/kg-day	ND	9.47E-16	1.01E-05	1E-05	ND	2.15E-15	1.54E-05	2E-05	ND	2.15E-15	2.42E-06	2.4E-06

Table F-5-1
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Summary of Receptor Intakes
Upland Exposure Units

				Table 3+ PFAS Intake Summary											
				CTE Intake, Untreated Well Water				RME Intake, Untreated Well Water				RME Intake, Current Conditions Well Water			
Exposure Unit (EU)	**EU Description**	**Receptor**	**Units**	**Soil**	**Produce**	**Untreated Well Water**	**Total CTE Intake**	**Soil**	**Produce**	**Untreated Well Water**	**Total RME Intake**	**Soil**	**Produce**	**Well Water**	**Total RME Intake**
EU8	5 km, Northwest	Offsite Child Gardener (Age 0-6)	mg/kg-day	ND	1.72E-15	1.46E-05	1E-05	ND	3.90E-15	2.22E-05	2E-05	ND	3.90E-15	3.49E-06	3.5E-06
EU9	10 km, Northeast	Offsite Child/Adult Resident (Age 0-26)	mg/kg-day	ND	n/a	1.18E-05	1E-05	ND	n/a	2.04E-05	2E-05	ND	n/a	2.42E-06	2.4E-06
EU9	10 km, Northeast	Offsite Child Resident (Age 0-6)	mg/kg-day	ND	n/a	1.70E-05	2E-05	ND	n/a	2.95E-05	3E-05	ND	n/a	3.49E-06	3.5E-06
EU9	10 km, Northeast	Offsite Child/Adult Farmer (Age 0-26)	mg/kg-day	ND	5.92E-16	1.18E-05	1E-05	ND	1.39E-15	2.04E-05	2E-05	ND	1.39E-15	2.42E-06	2.4E-06
EU9	10 km, Northeast	Offsite Child Farmer (Age 0-6)	mg/kg-day	ND	1.07E-15	1.70E-05	2E-05	ND	2.52E-15	2.95E-05	3E-05	ND	2.52E-15	3.49E-06	3.5E-06
EU9	10 km, Northeast	Offsite Child/Adult Gardener (Age 0-26)	mg/kg-day	ND	5.92E-16	1.18E-05	1E-05	ND	1.39E-15	2.04E-05	2E-05	ND	1.39E-15	2.42E-06	2.4E-06
EU9	10 km, Northeast	Offsite Child Gardener (Age 0-6)	mg/kg-day	ND	1.07E-15	1.70E-05	2E-05	ND	2.52E-15	2.95E-05	3E-05	ND	2.52E-15	3.49E-06	3.5E-06
EU10	10 km, Southeast	Offsite Child/Adult Resident (Age 0-26)	mg/kg-day	ND	n/a	6.73E-06	7E-06	ND	n/a	1.05E-05	1E-05	ND	n/a	2.42E-06	2.4E-06
EU10	10 km, Southeast	Offsite Child Resident (Age 0-6)	mg/kg-day	ND	n/a	9.72E-06	1E-05	ND	n/a	1.51E-05	2E-05	ND	n/a	3.49E-06	3.5E-06
EU10	10 km, Southeast	Offsite Child/Adult Farmer (Age 0-26)	mg/kg-day	ND	3.42E-16	6.73E-06	7E-06	ND	9.16E-16	1.05E-05	1E-05	ND	9.16E-16	2.42E-06	2.4E-06
EU10	10 km, Southeast	Offsite Child Farmer (Age 0-6)	mg/kg-day	ND	6.21E-16	9.72E-06	1E-05	ND	1.66E-15	1.51E-05	2E-05	ND	1.66E-15	3.49E-06	3.5E-06
EU10	10 km, Southeast	Offsite Child/Adult Gardener (Age 0-26)	mg/kg-day	ND	3.42E-16	6.73E-06	7E-06	ND	9.16E-16	1.05E-05	1E-05	ND	9.16E-16	2.42E-06	2.4E-06
EU10	10 km, Southeast	Offsite Child Gardener (Age 0-6)	mg/kg-day	ND	6.21E-16	9.72E-06	1E-05	ND	1.66E-15	1.51E-05	2E-05	ND	1.66E-15	3.49E-06	3.5E-06
EU11	10 km, Southwest	Offsite Child/Adult Resident (Age 0-26)	mg/kg-day	ND	n/a	9.18E-06	9E-06	ND	n/a	1.61E-05	2E-05	ND	n/a	2.42E-06	2.4E-06
EU11	10 km, Southwest	Offsite Child Resident (Age 0-6)	mg/kg-day	ND	n/a	1.32E-05	1E-05	ND	n/a	2.32E-05	2E-05	ND	n/a	3.49E-06	3.5E-06
EU11	10 km, Southwest	Offsite Child/Adult Farmer (Age 0-26)	mg/kg-day	ND	4.92E-16	9.18E-06	9E-06	ND	1.37E-15	1.61E-05	2E-05	ND	1.37E-15	2.42E-06	2.4E-06
EU11	10 km, Southwest	Offsite Child Farmer (Age 0-6)	mg/kg-day	ND	8.93E-16	1.32E-05	1E-05	ND	2.49E-15	2.32E-05	2E-05	ND	2.49E-15	3.49E-06	3.5E-06
EU11	10 km, Southwest	Offsite Child/Adult Gardener (Age 0-26)	mg/kg-day	ND	4.92E-16	9.18E-06	9E-06	ND	1.37E-15	1.61E-05	2E-05	ND	1.37E-15	2.42E-06	2.4E-06
EU11	10 km, Southwest	Offsite Child Gardener (Age 0-6)	mg/kg-day	ND	8.93E-16	1.32E-05	1E-05	ND	2.49E-15	2.32E-05	2E-05	ND	2.49E-15	3.49E-06	3.5E-06
EU12	10 km, Northwest	Offsite Child/Adult Resident (Age 0-26)	mg/kg-day	ND	n/a	5.34E-06	5E-06	ND	n/a	6.11E-06	6E-06	ND	n/a	2.42E-06	2.4E-06
EU12	10 km, Northwest	Offsite Child Resident (Age 0-6)	mg/kg-day	ND	n/a	7.71E-06	8E-06	ND	n/a	8.82E-06	9E-06	ND	n/a	3.49E-06	3.5E-06
EU12	10 km, Northwest	Offsite Child/Adult Farmer (Age 0-26)	mg/kg-day	ND	3.12E-16	5.34E-06	5E-06	ND	7.71E-16	6.11E-06	6E-06	ND	7.71E-16	2.42E-06	2.4E-06
EU12	10 km, Northwest	Offsite Child Farmer (Age 0-6)	mg/kg-day	ND	5.66E-16	7.71E-06	8E-06	ND	1.40E-15	8.82E-06	9E-06	ND	1.40E-15	3.49E-06	3.5E-06
EU12	10 km, Northwest	Offsite Child/Adult Gardener (Age 0-26)	mg/kg-day	ND	3.12E-16	5.34E-06	5E-06	ND	7.71E-16	6.11E-06	6E-06	ND	7.71E-16	2.42E-06	2.4E-06
EU12	10 km, Northwest	Offsite Child Gardener (Age 0-6)	mg/kg-day	ND	5.66E-16	7.71E-06	8E-06	ND	1.40E-15	8.82E-06	9E-06	ND	1.40E-15	3.49E-06	3.5E-06

Notes
"--" - not available/not calculated
CTE - central tendency exposure
EU - Exposure Unit
km - kilometer
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
n/a - medium not applicable to receptor-exposure scenario
ND - constituent not detected
RME - reasonable maximum exposure

Table F-5-2
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Summary of Receptor Intakes
Cape Fear River and Ponds

			Table 3+ PFAS Intake Summary					
			CTE Intake			RME Intake		
Exposure Unit (EU)	EU Description	Units	Fish Tissue mg/kg-day	Surface Water mg/kg-day	Total CTE Intake mg/kg-day	Fish Tissue mg/kg-day	Surface Water mg/kg-day	Total RME Intake mg/kg-day
EU13	CFR, 10 mi. Upstream	mg/kg-day	ND	6.3E-08	6E-08	ND	1.9E-07	2E-07
EU13	CFR, 10 mi. Upstream	mg/kg-day	ND	1.2E-07	1E-07	ND	3.6E-07	4E-07
EU14	CFR, Site-Adjacent	mg/kg-day	3.3E-07	4.9E-08	4E-07	6.3E-07	7.3E-08	7E-07
EU14	CFR, Site-Adjacent	mg/kg-day	5.7E-07	9.5E-08	7E-07	1.1E-06	1.4E-07	1E-06
EU15	CFR, 4 mi. Downstream	mg/kg-day	6.4E-07	NS	6E-07	1.2E-06	NS	1E-06
EU15	CFR, 4 mi. Downstream	mg/kg-day	1.1E-06	NS	1E-06	2.1E-06	NS	2E-06
EU16	CFR, Bladen Bluffs	mg/kg-day	7.3E-06	2.4E-07	8E-06	2.7E-05	3.8E-07	3E-05
EU16	CFR, Bladen Bluffs	mg/kg-day	1.3E-05	4.7E-07	1E-05	4.7E-05	7.4E-07	5E-05
EU17	CFR, Kings Bluffs	mg/kg-day	NS	7.5E-08	7E-08	NS	1.1E-07	1E-07
EU17	CFR, Kings Bluffs	mg/kg-day	NS	1.5E-07	1E-07	NS	2.2E-07	2E-07
EU18	Onsite Pond 1	mg/kg-day	1.1E-07	1.5E-06	2E-06	1.1E-07	1.6E-06	2E-06
EU18	Onsite Pond 1	mg/kg-day	2.0E-07	3.0E-06	3E-06	2.0E-07	3.1E-06	3E-06
EU19	Offsite Pond B	mg/kg-day	NS	6.1E-07	6E-07	NS	6.3E-07	6E-07
EU19	Offsite Pond B	mg/kg-day	NS	1.2E-06	1E-06	NS	1.2E-06	1E-06

Notes
"--" - not available/not calculated
CFR - Cape Fear River
CTE - central tendency exposure
EU - Exposure Unit
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
mi. - mile
ND - constituent not detected
NS - not sampled
RME - reasonable maximum exposure

Table F-5-3
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Summary of Receptor Intakes
Cape Fear River Surface Water Intake Points

				Table 3+ PFAS Intake Summary		HFPO-DA Intake Summary	
Exposure Unit (EU)	**EU Description**	**Receptor**	**Units**	**Total CTE Intake**	**Total RME Intake**	**Total CTE Intake**	**Total RME Intake**
EU16 (Intake Point)	CFR, Bladen Bluffs	Offsite Child/Adult Resident (Age 0-26)	mg/kg-day	Not Measured*		6.2E-06	1.2E-05
EU16 (Intake Point)	CFR, Bladen Bluffs	Offsite Child Resident (Age 0-6)	mg/kg-day			8.9E-06	1.8E-05
EU17 (Intake Point)	CFR, Kings Bluffs	Offsite Child/Adult Resident (Age 0-26)	mg/kg-day	2.8E-06	3.5E-06	5.6E-07	6.4E-07
EU17 (Intake Point)	CFR, Kings Bluffs	Offsite Child Resident (Age 0-6)	mg/kg-day	4.0E-06	5.0E-06	8.0E-07	9.2E-07

Notes
*At Bladen Bluffs, only HFPO-DA data were available.
"--" - not available/not calculated
CFR - Cape Fear River
CTE - central tendency exposure
EU - Exposure Unit
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ND - constituent not detected
NS - not sampled
RME - reasonable maximum exposure

Table F-6-1
Screening-Level Exposure Assessment
Intake and Hazard Calculations
HFPO-DA Provisional Hazard Characterization
Upland Exposure Units

			HFPO-DA Intake Summary												NC DHHS HFPO-DA RfDo [2]	HFPO-DA Hazard Quotient (HQ) [3]		
			CTE Intake, Untreated Well Water				RME Intake, Untreated Well Water				RME Intake, Current Conditions Well Water [1]							
Exposure Unit	EU Description	Receptor	Soil	Produce	Untreated Well Water	Total CTE	Soil	Produce	Untreated Well Water	Total RME	Soil	Produce	Well Water	Total RME		CTE HQ Untreated Well Water	RME HQ Untreated Well Water	RME HQ Current Conditions
			mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	unitless	unitless	unitless
EU1	2.5 km, Northeast	Offsite Child/Adult Resident (Age 0-26)	1.0E-08	n/a	2.3E-05	2.E-05	1.0E-08	n/a	4.9E-05	5.E-05	1.0E-08	n/a	3.5E-07	4.E-07	1.E-04	0.2	0.5	0.004
EU1	2.5 km, Northeast	Offsite Child Resident (Age 0-6)	3.3E-08	n/a	3.3E-05	3.E-05	3.3E-08	n/a	7.0E-05	7.E-05	3.3E-08	n/a	5.0E-07	5.E-07	1.E-04	0.3	0.7	0.005
EU1	2.5 km, Northeast	Offsite Child/Adult Gardener (Age 0-26)	1.6E-08	4.2E-06	2.3E-05	3.E-05	1.6E-08	4.2E-06	4.9E-05	5.E-05	1.6E-08	4.2E-06	3.5E-07	5.E-06	1.E-04	0.3	0.5	0.05
EU1	2.5 km, Northeast	Offsite Child Gardener (Age 0-6)	3.3E-08	6.2E-06	3.3E-05	4.E-05	3.3E-08	6.2E-06	7.0E-05	8.E-05	3.3E-08	6.2E-06	5.0E-07	7.E-06	1.E-04	0.4	0.8	0.07
EU1	2.5 km, Northeast	Offsite Child/Adult Farmer (Age 0-26)	1.0E-08	4.2E-06	2.3E-05	3.E-05	1.0E-08	4.2E-06	4.9E-05	5.E-05	1.0E-08	4.2E-06	3.5E-07	5.E-06	1.E-04	0.3	0.5	0.05
EU1	2.5 km, Northeast	Offsite Child Farmer (Age 0-6)	3.3E-08	6.2E-06	3.3E-05	4.E-05	3.3E-08	6.2E-06	7.0E-05	8.E-05	3.3E-08	6.2E-06	5.0E-07	7.E-06	1.E-04	0.4	0.8	0.07
EU2	2.5 km, Southeast	Offsite Child/Adult Resident (Age 0-26)	ND	n/a	2.3E-05	2.E-05	ND	n/a	4.1E-05	4.E-05	ND	n/a	3.5E-07	3.E-07	1.E-04	0.2	0.4	0.003
EU2	2.5 km, Southeast	Offsite Child Resident (Age 0-6)	ND	n/a	3.3E-05	3.E-05	ND	n/a	6.0E-05	6.E-05	ND	n/a	5.0E-07	5.E-07	1.E-04	0.3	0.6	0.005
EU2	2.5 km, Southeast	Offsite Child/Adult Gardener (Age 0-26)	ND	9.5E-15	2.3E-05	2.E-05	ND	1.0E-13	4.1E-05	4.E-05	ND	1.0E-13	3.5E-07	3.E-07	1.E-04	0.2	0.4	0.003
EU2	2.5 km, Southeast	Offsite Child Gardener (Age 0-6)	ND	1.7E-14	3.3E-05	3.E-05	ND	1.9E-13	6.0E-05	6.E-05	ND	1.9E-13	5.0E-07	5.E-07	1.E-04	0.3	0.6	0.005
EU2	2.5 km, Southeast	Offsite Child/Adult Farmer (Age 0-26)	ND	9.5E-15	2.3E-05	2.E-05	ND	1.0E-13	4.1E-05	4.E-05	ND	1.0E-13	3.5E-07	3.E-07	1.E-04	0.2	0.4	0.003
EU2	2.5 km, Southeast	Offsite Child Farmer (Age 0-6)	ND	1.7E-14	3.3E-05	3.E-05	ND	1.9E-13	6.0E-05	6.E-05	ND	1.9E-13	5.0E-07	5.E-07	1.E-04	0.3	0.6	0.005
EU3	2.5 km, Southwest	Offsite Child/Adult Resident (Age 0-26)	1.4E-09	n/a	1.5E-05	1.E-05	1.4E-09	n/a	2.0E-05	2.E-05	1.4E-09	n/a	3.5E-07	3.E-07	1.E-04	0.1	0.2	0.003
EU3	2.5 km, Southwest	Offsite Child Resident (Age 0-6)	4.6E-09	n/a	2.1E-05	2.E-05	4.6E-09	n/a	2.9E-05	3.E-05	4.6E-09	n/a	5.0E-07	5.E-07	1.E-04	0.2	0.3	0.005
EU3	2.5 km, Southwest	Offsite Child/Adult Gardener (Age 0-26)	2.2E-09	5.8E-07	1.5E-05	2.E-05	2.2E-09	5.8E-07	2.0E-05	2.E-05	2.2E-09	5.8E-07	3.5E-07	9.E-07	1.E-04	0.2	0.2	0.009
EU3	2.5 km, Southwest	Offsite Child Gardener (Age 0-6)	4.6E-09	8.6E-07	2.1E-05	2.E-05	4.6E-09	8.6E-07	2.9E-05	3.E-05	4.6E-09	8.6E-07	5.0E-07	1.E-06	1.E-04	0.2	0.3	0.01
EU3	2.5 km, Southwest	Offsite Child/Adult Farmer (Age 0-26)	1.4E-09	5.8E-07	1.5E-05	2.E-05	1.4E-09	5.8E-07	2.0E-05	2.E-05	1.4E-09	5.8E-07	3.5E-07	9.E-07	1.E-04	0.2	0.2	0.009
EU3	2.5 km, Southwest	Offsite Child Farmer (Age 0-6)	4.6E-09	8.6E-07	2.1E-05	2.E-05	4.6E-09	8.6E-07	2.9E-05	3.E-05	4.6E-09	8.6E-07	5.0E-07	1.E-06	1.E-04	0.2	0.3	0.01
EU4	2.5 km, Northwest	Offsite Child/Adult Resident (Age 0-26)	ND	n/a	4.8E-06	5.E-06	ND	n/a	7.6E-06	8.E-06	ND	n/a	3.5E-07	3.E-07	1.E-04	0.05	0.08	0.003
EU4	2.5 km, Northwest	Offsite Child Resident (Age 0-6)	ND	n/a	6.9E-06	7.E-06	ND	n/a	1.1E-05	1.E-05	ND	n/a	5.0E-07	5.E-07	1.E-04	0.07	0.1	0.005
EU4	2.5 km, Northwest	Offsite Child/Adult Gardener (Age 0-26)	ND	7.9E-15	4.8E-06	5.E-06	ND	7.8E-14	7.6E-06	8.E-06	ND	7.8E-14	3.5E-07	3.E-07	1.E-04	0.05	0.08	0.003
EU4	2.5 km, Northwest	Offsite Child Gardener (Age 0-6)	ND	1.4E-14	6.9E-06	7.E-06	ND	1.4E-13	1.1E-05	1.E-05	ND	1.4E-13	5.0E-07	5.E-07	1.E-04	0.07	0.1	0.005
EU4	2.5 km, Northwest	Offsite Child/Adult Farmer (Age 0-26)	ND	7.9E-15	4.8E-06	5.E-06	ND	7.8E-14	7.6E-06	8.E-06	ND	7.8E-14	3.5E-07	3.E-07	1.E-04	0.05	0.08	0.003
EU4	2.5 km, Northwest	Offsite Child Farmer (Age 0-6)	ND	1.4E-14	6.9E-06	7.E-06	ND	1.4E-13	1.1E-05	1.E-05	ND	1.4E-13	5.0E-07	5.E-07	1.E-04	0.07	0.1	0.005
EU5	5 km, Northeast	Offsite Child/Adult Resident (Age 0-26)	ND	n/a	1.1E-05	1.E-05	ND	n/a	1.4E-05	1.E-05	ND	n/a	3.5E-07	3.E-07	1.E-04	0.1	0.1	0.003
EU5	5 km, Northeast	Offsite Child Resident (Age 0-6)	ND	n/a	1.6E-05	2.E-05	ND	n/a	2.1E-05	2.E-05	ND	n/a	5.0E-07	5.E-07	1.E-04	0.2	0.2	0.005
EU5	5 km, Northeast	Offsite Child/Adult Gardener (Age 0-26)	ND	1.9E-15	1.1E-05	1.E-05	ND	4.8E-15	1.4E-05	1.E-05	ND	4.8E-15	3.5E-07	3.E-07	1.E-04	0.1	0.1	0.003
EU5	5 km, Northeast	Offsite Child Gardener (Age 0-6)	ND	3.4E-15	1.6E-05	2.E-05	ND	8.6E-15	2.1E-05	2.E-05	ND	8.6E-15	5.0E-07	5.E-07	1.E-04	0.2	0.2	0.005
EU5	5 km, Northeast	Offsite Child/Adult Farmer (Age 0-26)	ND	1.9E-15	1.1E-05	1.E-05	ND	4.8E-15	1.4E-05	1.E-05	ND	4.8E-15	3.5E-07	3.E-07	1.E-04	0.1	0.1	0.003
EU5	5 km, Northeast	Offsite Child Farmer (Age 0-6)	ND	3.4E-15	1.6E-05	2.E-05	ND	8.6E-15	2.1E-05	2.E-05	ND	8.6E-15	5.0E-07	5.E-07	1.E-04	0.2	0.2	0.005
EU6	5 km, Southeast	Offsite Child/Adult Resident (Age 0-26)	ND	n/a	3.7E-06	4.E-06	ND	n/a	6.0E-06	6.E-06	ND	n/a	3.5E-07	3.E-07	1.E-04	0.04	0.06	0.003
EU6	5 km, Southeast	Offsite Child Resident (Age 0-6)	ND	n/a	5.4E-06	5.E-06	ND	n/a	8.7E-06	9.E-06	ND	n/a	5.0E-07	5.E-07	1.E-04	0.05	0.09	0.005
EU6	5 km, Southeast	Offsite Child/Adult Gardener (Age 0-26)	ND	1.0E-15	3.7E-06	4.E-06	ND	2.7E-15	6.0E-06	6.E-06	ND	2.7E-15	3.5E-07	3.E-07	1.E-04	0.04	0.06	0.003
EU6	5 km, Southeast	Offsite Child Gardener (Age 0-6)	ND	1.9E-15	5.4E-06	5.E-06	ND	4.8E-15	8.7E-06	9.E-06	ND	4.8E-15	5.0E-07	5.E-07	1.E-04	0.05	0.09	0.005
EU6	5 km, Southeast	Offsite Child/Adult Farmer (Age 0-26)	ND	1.0E-15	3.7E-06	4.E-06	ND	2.7E-15	6.0E-06	6.E-06	ND	2.7E-15	3.5E-07	3.E-07	1.E-04	0.04	0.06	0.003
EU6	5 km, Southeast	Offsite Child Farmer (Age 0-6)	ND	1.9E-15	5.4E-06	5.E-06	ND	4.8E-15	8.7E-06	9.E-06	ND	4.8E-15	5.0E-07	5.E-07	1.E-04	0.05	0.09	0.005
EU7	5 km, Southwest	Offsite Child/Adult Resident (Age 0-26)	ND	n/a	6.8E-06	7.E-06	ND	n/a	1.1E-05	1.E-05	ND	n/a	3.5E-07	3.E-07	1.E-04	0.07	0.1	0.003
EU7	5 km, Southwest	Offsite Child Resident (Age 0-6)	ND	n/a	9.8E-06	1.E-05	ND	n/a	1.5E-05	2.E-05	ND	n/a	5.0E-07	5.E-07	1.E-04	0.1	0.2	0.005
EU7	5 km, Southwest	Offsite Child/Adult Gardener (Age 0-26)	ND	1.4E-15	6.8E-06	7.E-06	ND	3.4E-15	1.1E-05	1.E-05	ND	3.4E-15	3.5E-07	3.E-07	1.E-04	0.07	0.1	0.003
EU7	5 km, Southwest	Offsite Child Gardener (Age 0-6)	ND	2.5E-15	9.8E-06	1.E-05	ND	6.3E-15	1.5E-05	2.E-05	ND	6.3E-15	5.0E-07	5.E-07	1.E-04	0.1	0.2	0.005
EU7	5 km, Southwest	Offsite Child/Adult Farmer (Age 0-26)	ND	1.4E-15	6.8E-06	7.E-06	ND	3.4E-15	1.1E-05	1.E-05	ND	3.4E-15	3.5E-07	3.E-07	1.E-04	0.07	0.1	0.003
EU7	5 km, Southwest	Offsite Child Farmer (Age 0-6)	ND	2.5E-15	9.8E-06	1.E-05	ND	6.3E-15	1.5E-05	2.E-05	ND	6.3E-15	5.0E-07	5.E-07	1.E-04	0.1	0.2	0.005
EU8	5 km, Northwest	Offsite Child/Adult Resident (Age 0-26)	ND	n/a	2.2E-06	2.E-06	ND	n/a	3.3E-06	3.E-06	ND	n/a	3.5E-07	3.E-07	1.E-04	0.02	0.03	0.003
EU8	5 km, Northwest	Offsite Child Resident (Age 0-6)	ND	n/a	3.1E-06	3.E-06	ND	n/a	4.7E-06	5.E-06	ND	n/a	5.0E-07	5.E-07	1.E-04	0.03	0.05	0.005
EU8	5 km, Northwest	Offsite Child/Adult Gardener (Age 0-26)	ND	9.5E-16	2.2E-06	2.E-06	ND	2.1E-15	3.3E-06	3.E-06	ND	2.1E-15	3.5E-07	3.E-07	1.E-04	0.02	0.03	0.003
EU8	5 km, Northwest	Offsite Child Gardener (Age 0-6)	ND	1.7E-15	3.1E-06	3.E-06	ND	3.9E-15	4.7E-06	5.E-06	ND	3.9E-15	5.0E-07	5.E-07	1.E-04	0.03	0.05	0.005
EU8	5 km, Northwest	Offsite Child/Adult Farmer (Age 0-26)	ND	9.5E-16	2.2E-06	2.E-06	ND	2.1E-15	3.3E-06	3.E-06	ND	2.1E-15	3.5E-07	3.E-07	1.E-04	0.02	0.03	0.003
EU8	5 km, Northwest	Offsite Child Farmer (Age 0-6)	ND	1.7E-15	3.1E-06	3.E-06	ND	3.9E-15	4.7E-06	5.E-06	ND	3.9E-15	5.0E-07	5.E-07	1.E-04	0.03	0.05	0.005
EU9	10 km, Northeast	Offsite Child/Adult Resident (Age 0-26)	ND	n/a	1.9E-06	2.E-06	ND	n/a	3.8E-06	4.E-06	ND	n/a	3.5E-07	3.E-07	1.E-04	0.02	0.04	0.003

Table F-6-1
Screening-Level Exposure Assessment
Intake and Hazard Calculations
HFPO-DA Provisional Hazard Characterization
Upland Exposure Units

			HFPO-DA Intake Summary												NC DHHS HFPO-DA RfDo [2]	HFPO-DA Hazard Quotient (HQ) [3]		
			CTE Intake, Untreated Well Water				RME Intake, Untreated Well Water				RME Intake, Current Conditions Well Water [1]					CTE HQ Untreated Well Water	RME HQ Untreated Well Water	RME HQ Current Conditions
Exposure Unit	EU Description	Receptor	Soil	Produce	Untreated Well Water	Total CTE	Soil	Produce	Untreated Well Water	Total RME	Soil	Produce	Well Water	Total RME				
			mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	unitless	unitless	unitless
EU9	10 km, Northeast	Offsite Child Resident (Age 0-6)	ND	n/a	2.7E-06	3.E-06	ND	n/a	5.5E-06	5.E-06	ND	n/a	5.0E-07	5.E-07	1.E-04	0.03	0.05	0.005
EU9	10 km, Northeast	Offsite Child/Adult Gardener (Age 0-26)	ND	5.9E-16	1.9E-06	2.E-06	ND	1.4E-15	3.8E-06	4.E-06	ND	1.4E-15	3.5E-07	3.E-07	1.E-04	0.02	0.04	0.003
EU9	10 km, Northeast	Offsite Child Gardener (Age 0-6)	ND	1.1E-15	2.7E-06	3.E-06	ND	2.5E-15	5.5E-06	5.E-06	ND	2.5E-15	5.0E-07	5.E-07	1.E-04	0.03	0.05	0.005
EU9	10 km, Northeast	Offsite Child/Adult Farmer (Age 0-26)	ND	5.9E-16	1.9E-06	2.E-06	ND	1.4E-15	3.8E-06	4.E-06	ND	1.4E-15	3.5E-07	3.E-07	1.E-04	0.02	0.04	0.003
EU9	10 km, Northeast	Offsite Child Farmer (Age 0-6)	ND	1.1E-15	2.7E-06	3.E-06	ND	2.5E-15	5.5E-06	5.E-06	ND	2.5E-15	5.0E-07	5.E-07	1.E-04	0.03	0.05	0.005
EU10	10 km, Southeast	Offsite Child/Adult Resident (Age 0-26)	ND	n/a	4.8E-07	5.E-07	ND	n/a	7.4E-07	7.E-07	ND	n/a	3.5E-07	3.E-07	1.E-04	0.005	0.007	0.003
EU10	10 km, Southeast	Offsite Child Resident (Age 0-6)	ND	n/a	6.9E-07	7.E-07	ND	n/a	1.1E-06	1.E-06	ND	n/a	5.0E-07	5.E-07	1.E-04	0.007	0.01	0.005
EU10	10 km, Southeast	Offsite Child/Adult Gardener (Age 0-26)	ND	3.4E-16	4.8E-07	5.E-07	ND	9.2E-16	7.4E-07	7.E-07	ND	9.2E-16	3.5E-07	3.E-07	1.E-04	0.005	0.007	0.003
EU10	10 km, Southeast	Offsite Child Gardener (Age 0-6)	ND	6.2E-16	6.9E-07	7.E-07	ND	1.7E-15	1.1E-06	1.E-06	ND	1.7E-15	5.0E-07	5.E-07	1.E-04	0.007	0.01	0.005
EU10	10 km, Southeast	Offsite Child/Adult Farmer (Age 0-26)	ND	3.4E-16	4.8E-07	5.E-07	ND	9.2E-16	7.4E-07	7.E-07	ND	9.2E-16	3.5E-07	3.E-07	1.E-04	0.005	0.007	0.003
EU10	10 km, Southeast	Offsite Child Farmer (Age 0-6)	ND	6.2E-16	6.9E-07	7.E-07	ND	1.7E-15	1.1E-06	1.E-06	ND	1.7E-15	5.0E-07	5.E-07	1.E-04	0.007	0.01	0.005
EU11	10 km, Southwest	Offsite Child/Adult Resident (Age 0-26)	ND	n/a	1.3E-06	1.E-06	ND	n/a	1.7E-06	2.E-06	ND	n/a	3.5E-07	3.E-07	1.E-04	0.01	0.02	0.003
EU11	10 km, Southwest	Offsite Child Resident (Age 0-6)	ND	n/a	1.9E-06	2.E-06	ND	n/a	2.5E-06	2.E-06	ND	n/a	5.0E-07	5.E-07	1.E-04	0.02	0.02	0.005
EU11	10 km, Southwest	Offsite Child/Adult Gardener (Age 0-26)	ND	4.9E-16	1.3E-06	1.E-06	ND	1.4E-15	1.7E-06	2.E-06	ND	1.4E-15	3.5E-07	3.E-07	1.E-04	0.01	0.02	0.003
EU11	10 km, Southwest	Offsite Child Gardener (Age 0-6)	ND	8.9E-16	1.9E-06	2.E-06	ND	2.5E-15	2.5E-06	2.E-06	ND	2.5E-15	5.0E-07	5.E-07	1.E-04	0.02	0.02	0.005
EU11	10 km, Southwest	Offsite Child/Adult Farmer (Age 0-26)	ND	4.9E-16	1.3E-06	1.E-06	ND	1.4E-15	1.7E-06	2.E-06	ND	1.4E-15	3.5E-07	3.E-07	1.E-04	0.01	0.02	0.003
EU11	10 km, Southwest	Offsite Child Farmer (Age 0-6)	ND	8.9E-16	1.9E-06	2.E-06	ND	2.5E-15	2.5E-06	2.E-06	ND	2.5E-15	5.0E-07	5.E-07	1.E-04	0.02	0.02	0.005
EU12	10 km, Northwest	Offsite Child/Adult Resident (Age 0-26)	ND	n/a	5.4E-07	5.E-07	ND	n/a	7.3E-07	7.E-07	ND	n/a	3.5E-07	3.E-07	1.E-04	0.005	0.007	0.003
EU12	10 km, Northwest	Offsite Child Resident (Age 0-6)	ND	n/a	7.7E-07	8.E-07	ND	n/a	1.0E-06	1.E-06	ND	n/a	5.0E-07	5.E-07	1.E-04	0.008	0.01	0.005
EU12	10 km, Northwest	Offsite Child/Adult Gardener (Age 0-26)	ND	3.1E-16	5.4E-07	5.E-07	ND	7.7E-16	7.3E-07	7.E-07	ND	7.7E-16	3.5E-07	3.E-07	1.E-04	0.005	0.007	0.003
EU12	10 km, Northwest	Offsite Child Gardener (Age 0-6)	ND	5.7E-16	7.7E-07	8.E-07	ND	1.4E-15	1.0E-06	1.E-06	ND	1.4E-15	5.0E-07	5.E-07	1.E-04	0.008	0.01	0.005
EU12	10 km, Northwest	Offsite Child/Adult Farmer (Age 0-26)	ND	3.1E-16	5.4E-07	5.E-07	ND	7.7E-16	7.3E-07	7.E-07	ND	7.7E-16	3.5E-07	3.E-07	1.E-04	0.005	0.007	0.003
EU12	10 km, Northwest	Offsite Child Farmer (Age 0-6)	ND	5.7E-16	7.7E-07	8.E-07	ND	1.4E-15	1.0E-06	1.E-06	ND	1.4E-15	5.0E-07	5.E-07	1.E-04	0.008	0.01	0.005

Notes
[1] The use of untreated well water to calculate domestic use substantially overstates the population's potential exposure, as treatment systems provided by Chemours have reduced PFAS in drinking water to below detection limits. This table also presents HQ estimates based on an assumption of 10 ng/L of HFPO-DA in drinking water, which is the maximum concentration in well water that would not require a treatment system.
[2] Provisional hazard estimates were only calculated for HFPO-DA based on the availability of a draft toxicity value, which was developed by the NC DHHS.
[3] HQ = Intake / RfDo, where an HQ > 1 indicates a potentially unacceptable non-cancer hazard. HQs were rounded to one significant figure.

Definitions
"--" - not available/not calculated
CTE - central tendency exposure
EU - Exposure Unit
HFPO-DA - Hexafluoropropylene oxide dimer acid
HQ - hazard quotient
km - kilometer
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ND - constituent not detected
RfDo - non-cancer oral reference dose
RME - reasonable maximum exposure

Table F-6-2
Screening-Level Exposure Assessment
Intake and Hazard Calculations
HFPO-DA Provisional Hazard Characterization
Cape Fear River and Ponds

Exposure Unit	EU Description	Receptor	HFPO-DA Intake Summary						NC DHHS HFPO-DA RfDo	HFPO-DA Hazard Quotient (HQ)	
			CTE Intake			RME Intake					
			Fish Tissue	Surface Water	Total CTE Intake	Fish Tissue	Surface Water	Total RME Intake		CTE HQ	RME HQ
			mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	mg/kg-day	unitless	unitless
EU13	CFR, 10 mi. Upstream	Offsite Child/Adult Recreationalist (Age 0-26)	ND	2.4E-09	2.4E-09	ND	2.4E-09	2.4E-09	1.0E-04	0.00002	0.00002
EU13	CFR, 10 mi. Upstream	Offsite Child Recreationalist (Age 0-6)	ND	4.6E-09	4.6E-09	ND	4.6E-09	4.6E-09	1.0E-04	0.00005	0.00005
EU14	CFR, Site-Adjacent	Offsite Child/Adult Recreationalist (Age 0-26)	ND	1.1E-08	1.1E-08	ND	1.7E-08	1.7E-08	1.0E-04	0.0001	0.0002
EU14	CFR, Site-Adjacent	Offsite Child Recreationalist (Age 0-6)	ND	2.2E-08	2.2E-08	ND	3.2E-08	3.2E-08	1.0E-04	0.0002	0.0003
EU15	CFR, 4 mi. Downstream	Offsite Child/Adult Recreationalist (Age 0-26)	ND	NS	--	ND	NS	--	1.0E-04	--	--
EU15	CFR, 4 mi. Downstream	Offsite Child Recreationalist (Age 0-6)	ND	NS	--	ND	NS	--	1.0E-04	--	--
EU16	CFR, Bladen Bluffs	Offsite Child/Adult Recreationalist (Age 0-26)	3.6E-06	6.3E-08	3.7E-06	7.6E-06	1.5E-07	7.8E-06	1.0E-04	0.04	0.08
EU16	CFR, Bladen Bluffs	Offsite Child Recreationalist (Age 0-6)	6.3E-06	1.2E-07	6.4E-06	1.3E-05	2.9E-07	1.4E-05	1.0E-04	0.06	0.1
EU17	CFR, Kings Bluffs	Offsite Child/Adult Recreationalist (Age 0-26)	NS	7.8E-09	7.8E-09	NS	8.8E-09	8.8E-09	1.0E-04	0.00008	0.00009
EU17	CFR, Kings Bluffs	Offsite Child Recreationalist (Age 0-6)	NS	1.5E-08	1.5E-08	NS	1.7E-08	1.7E-08	1.0E-04	0.0002	0.0002
EU18	Onsite Pond 1	Offsite Child/Adult Recreationalist (Age 0-26)	ND	3.8E-07	3.8E-07	ND	4.3E-07	4.3E-07	1.0E-04	0.004	0.004
EU18	Onsite Pond 1	Offsite Child Recreationalist (Age 0-6)	ND	7.4E-07	7.4E-07	ND	8.4E-07	8.4E-07	1.0E-04	0.007	0.008
EU19	Offsite Pond B	Offsite Child/Adult Recreationalist (Age 0-26)	NS	1.4E-07	1.4E-07	NS	1.5E-07	1.5E-07	1.0E-04	0.001	0.001
EU19	Offsite Pond B	Offsite Child Recreationalist (Age 0-6)	NS	2.8E-07	2.8E-07	NS	2.9E-07	2.9E-07	1.0E-04	0.003	0.003

Notes
[1] Provisional hazard estimates were only calculated for HFPO-DA based on the availability of a draft toxicity value, which was developed by the NC DHHS.
[2] HQ = Intake / RfDo, where an HQ > 1 indicates a potentially unacceptable non-cancer hazard. HQs were rounded to one significant figure.

Definitions
"--" - not available/not calculated
CFR - Cape Fear River
CTE - central tendency exposure
EU - Exposure Unit
HFPO-DA - Hexafluoropropylene oxide dimer acid
HQ - hazard quotient
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
mi. - mile
ND - constituent not detected
NS - not sampled
RfDo - non-cancer oral reference dose
RME - reasonable maximum exposure

Table F-6-3
Screening-Level Exposure Assessment
Intake and Hazard Calculations
HFPO-DA Provisional Hazard Characterization
Untreated Cape Fear River Surface Water Intake Points

Exposure Unit	EU Description	Receptor	HFPO-DA Intake Summary		NC DHHS HFPO-DA RfDo	HFPO-DA Hazard Quotient (HQ)	
			Total CTE	Total RME		CTE HQ	RME HQ
			mg/kg-day	mg/kg-day	mg/kg-day	unitless	unitless
EU16 (Intake Point)	CFR, Bladen Bluffs	Offsite Child/Adult Resident (Age 0-26)	6.2E-06	1.2E-05	1.0E-04	0.06	0.1
EU16 (Intake Point)	CFR, Bladen Bluffs	Offsite Child Resident (Age 0-6)	8.9E-06	1.8E-05	1.0E-04	0.09	0.2
EU17 (Intake Point)	CFR, Kings Bluffs	Offsite Child/Adult Resident (Age 0-26)	5.6E-07	6.4E-07	1.0E-04	0.006	0.006
EU17 (Intake Point)	CFR, Kings Bluffs	Offsite Child Resident (Age 0-6)	8.0E-07	9.2E-07	1.0E-04	0.008	0.009

Notes
[1] Provisional hazard estimates were only calculated for HFPO-DA based on the availability of a draft toxicity value, which was developed by the NC DHHS.
[2] HQ = Intake / RfDo, where an HQ > 1 indicates a potentially unacceptable non-cancer hazard. HQs were rounded to one significant figure.

Definitions
"--" - not available/not calculated
CFR - Cape Fear River
CTE - central tendency exposure
EU - Exposure Unit
HFPO-DA - Hexafluoropropylene oxide dimer acid
HQ - hazard quotient
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
RfDo - non-cancer oral reference dose
RME - reasonable maximum exposure

Table F-7
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Intake Characterization and Provisional Hazard Characterization Summary

				Relevant Exposure Media with Untreated Drinking Water Data [2]						Relevant Exposure Media with Current Conditions Drinking Water [2]		
				Table 3+ PFAS Intake		HFPO-DA Intake		HFPO-DA Hazard		Table 3+ PFAS Intake	HFPO-DA Intake	HFPO-DA Hazard
Exposure Unit (EU)	EU Description	Receptor [1]	Exposure Media [2]	CTE mg/kg-day	RME mg/kg-day	CTE mg/kg-day	RME mg/kg-day	CTE HQ unitless	RME HQ unitless	RME mg/kg-day	RME mg/kg-day	RME HQ unitless
EU1	2.5 km, Northeast	Offsite Child Gardener (Age 0-6)	• Surface Soil • Homegrown Produce • Well Water as Drinking Water	2E-04	5E-04	4E-05	8E-05	0.4	0.8	1E-05	7E-06	0.07
EU2	2.5 km, Southeast			3E-04	4E-04	3E-05	6E-05	0.3	0.6	3E-06	5E-07	0.005
EU3	2.5 km, Southwest			1E-04	2E-04	2E-05	3E-05	0.2	0.3	4E-06	1E-06	0.01
EU4	2.5 km, Northwest			4E-05	5E-05	7E-06	1E-05	0.07	0.1	3E-06	5E-07	0.005
EU5	5 km, Northeast			7E-05	1E-04	2E-05	2E-05	0.2	0.2	4E-06	5E-07	0.005
EU6	5 km, Southeast			3E-05	5E-05	5E-06	9E-06	0.05	0.09	3E-06	5E-07	0.005
EU7	5 km, Southwest			5E-05	7E-05	1E-05	2E-05	0.1	0.2	3E-06	5E-07	0.005
EU8	5 km, Northwest			1E-05	2E-05	3E-06	5E-06	0.03	0.05	3E-06	5E-07	0.005
EU9	10 km, Northeast			2E-05	3E-05	3E-06	5E-06	0.03	0.05	3E-06	5E-07	0.005
EU10	10 km, Southeast			1E-05	2E-05	7E-07	1E-06	0.007	0.01	3E-06	5E-07	0.005
EU11	10 km, Southwest			1E-05	2E-05	2E-06	2E-06	0.02	0.02	3E-06	5E-07	0.005
EU12	10 km, Northwest			8E-06	9E-06	8E-07	1E-06	0.008	0.01	3E-06	5E-07	0.005
EU13	CFR, 10 mi. Upstream	Offsite Child Recreationalist (Age 0-6)	• Surface Water • Fish Tissue Fillets	1E-07	4E-07	5E-09	5E-09	0.00005	0.00005	n/a	n/a	n/a
EU14	CFR, Site-Adjacent			7E-07	1E-06	2E-08	3E-08	0.0002	0.0003	n/a	n/a	n/a
EU15	CFR, 4 mi. Downstream			1E-06	2E-06	ND	ND	ND	ND	n/a	n/a	n/a
EU16	CFR, Bladen Bluffs			1E-05	5E-05	6E-06	1E-05	0.06	0.1	n/a	n/a	n/a
EU17	CFR, Kings Bluffs			1E-07	2E-07	2E-08	2E-08	0.0002	0.0002	n/a	n/a	n/a
EU18	Onsite Pond 1			3E-06	3E-06	7E-07	8E-07	0.007	0.008	n/a	n/a	n/a
EU19	Offsite Pond B			1E-06	1E-06	3E-07	3E-07	0.003	0.003	n/a	n/a	n/a
EU16 (Intake Point)	CFR, Bladen Bluffs	Offsite Child Resident (Age 0-6)	• Untreated CFR Surface Water as Drinking Water	Not Available [3]		9E-06	2E-05	0.09	0.2	n/a	n/a	n/a
EU17 (Intake Point)	CFR, Kings Bluffs			4E-06	5E-06	8E-07	9E-07	0.008	0.009	n/a	n/a	n/a

Notes
[1] This summary table presents the calculated intakes and HQs for the most sensitive receptor for a given EU scenario.
[2] Intake and hazard estimates for EU1 through EU12 were initially calculated using (1) untreated well water data collected between 2017 and 2019 and (2) based on presumed maximum concentrations under current conditions, which correspond to 70 ng/L for total PFAS and 10 ng/L for HFPO-DA.
[3] Only HFPO-DA data were available for surface water intake exposure points.

Definitions
"--" - not available/not calculated
n/a - not applicable
CFR - Cape Fear River
CTE - central tendency exposure
EU - Exposure Unit
HFPO-DA - Hexafluoropropylene oxide dimer acid
HQ - hazard quotient
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ND - constituent not detected
RfDo - non-cancer oral reference dose
RME - reasonable maximum exposure
SW - surface water
NC DHHS - North Carolina Department of Health and Human Services

Table F-8
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Supplemental Hazard Characterization Based on Alternative RfDo Values

Exposure Unit (EU)	EU Description	Receptor [1]	HFPO-DA Intake (mg/kg-day) [2]		HFPO-DA Hazard					
					Untreated Well Water (RME EPC) [3,5]			Current Conditions (10 ng/L) [4,5]		
			Untreated Well Water (RME EPC)	Current Conditions (10 ng/L)	USEPA Draft RfDo = 8.00E-05	NC DHHS RfDo = 1.00E-04	Thompson et al. RfDo = 1.00E-02	USEPA Draft RfDo = 8.00E-05	NC DHHS RfDo = 1.00E-04	Thompson et al. RfDo = 1.00E-02
EU1	2.5 km, Northeast	Offsite Child Gardener (Age 0-6)	8E-05	7E-06	1	0.8	0.008	0.08	0.07	0.0007
EU2	2.5 km, Southeast		6E-05	5E-07	0.7	0.6	0.006	0.006	0.005	0.00005
EU3	2.5 km, Southwest		3E-05	1E-06	0.4	0.3	0.003	0.02	0.01	0.0001
EU4	2.5 km, Northwest		1E-05	5E-07	0.1	0.1	0.001	0.006	0.005	0.00005
EU5	5 km, Northeast		2E-05	5E-07	0.3	0.2	0.002	0.006	0.005	0.00005
EU6	5 km, Southeast		9E-06	5E-07	0.1	0.09	0.0009	0.006	0.005	0.00005
EU7	5 km, Southwest		2E-05	5E-07	0.2	0.2	0.002	0.006	0.005	0.00005
EU8	5 km, Northwest		5E-06	5E-07	0.06	0.05	0.0005	0.006	0.005	0.00005
EU9	10 km, Northeast		5E-06	5E-07	0.07	0.05	0.0005	0.006	0.005	0.00005
EU10	10 km, Southeast		1E-06	5E-07	0.01	0.01	0.0001	0.006	0.005	0.00005
EU11	10 km, Southwest		2E-06	5E-07	0.03	0.02	0.0002	0.006	0.005	0.00005
EU12	10 km, Northwest		1E-06	5E-07	0.01	0.01	0.0001	0.006	0.005	0.00005
EU13	CFR, 10 mi. Upstream	Offsite Child Recreationalist (Age 0-6)	5E-09	n/a	0.00006	0.00005	0.0000005	n/a	n/a	n/a
EU14	CFR, Site-Adjacent		3E-08	n/a	0.0004	0.0003	0.000003	n/a	n/a	n/a
EU15	CFR, 4 mi. Downstream		ND	n/a	ND	ND	ND	n/a	n/a	n/a
EU16	CFR, Bladen Bluffs		1E-05	n/a	0.2	0.1	0.001	n/a	n/a	n/a
EU17	CFR, Kings Bluffs		2E-08	n/a	0.0002	0.0002	0.000002	n/a	n/a	n/a
EU18	Onsite Pond 1		8E-07	n/a	0.01	0.008	0.00008	n/a	n/a	n/a
EU19	Offsite Pond B		3E-07	n/a	0.004	0.003	0.00003	n/a	n/a	n/a
EU16 (Intake Point)	CFR, Bladen Bluffs	Offsite Child Resident (Age 0-6)	2E-05	n/a	0.2	0.2	0.002	n/a	n/a	n/a
EU17 (Intake Point)	CFR, Kings Bluffs		9E-07	n/a	0.01	0.009	0.00009	n/a	n/a	n/a

Notes
[1] This summary table presents the calculated intakes and HQs for the most sensitive receptor for a given EU scenario.
[2] Intake estimates include HFPO-DA from the following sources: EU1 through EU12 - soil, homegrown produce, and drinking water; EU13 through EU19 - surface water and fish tissue; and EU16 and 17 (Intake Point) - surface water as drinking water.
[3] Intake and hazard estimates based on untreated well water data collected between 2017 and 2019.
[4] Current conditions intake and hazard estimates are based on assumed drinking water concentrations of 10 ng/L for HFPO-DA (see Section 7 of the Human Health SLEA Report).
[5] HQs are calculated for a range of RfDo values, which are discussed as part of the SLEA uncertainty assessment.

Definitions
"--" - not available/not calculated
n/a - not applicable
CFR - Cape Fear River
EU - Exposure Unit
HFPO-DA - Hexafluoropropylene oxide dimer acid
HQ - hazard quotient
mg/kg-day - milligram(s) of constituent intake per kilogram of body weight per day
ND - constituent not detected
RfDo - non-cancer oral reference dose
RME - reasonable maximum exposure
NC DHHS - North Carolina Department of Health and Human Services
USEPA - United States Environmental Protection Agency

APPENDIX G

Ecological Screening Level Exposure Assessment of Table 3+ PFAS

Geosyntec consultants

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

ECOLOGICAL SCREENING LEVEL EXPOSURE ASSESSMENT (SLEA) OF TABLE 3+ PFAS

Chemours Fayetteville Works

Prepared for

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

Prepared by

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

Geosyntec Project Number TR0795

December 2019

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY ... 1

1 INTRODUCTION ... 3

1.1 Ecological Exposure and Risk Assessment ... 3
1.2 Objectives ... 4

2 SITE SETTING ... 6

2.1 Site Description ... 6
2.2 Environmental Setting ... 6
2.2.1 Climate ... 6
2.2.2 Topography ... 6
2.2.3 Land Uses and Habitats ... 7
2.2.4 Cape Fear River and Tributaries ... 7
2.3 Threatened & Endangered Species ... 9
2.4 Conceptual Site Model ... 10
2.4.1 Table 3+ PFAS ... 10
2.4.2 Ecological Exposure Units ... 12
2.4.2.1 Onsite Terrestrial EU ... 12
2.4.2.2 Offsite Terrestrial EU ... 12
2.4.2.3 Cape Fear River EU ... 13
2.4.3 Potentially Complete Ecological Exposure Pathways ... 13

3 ECOLOGICAL SLEA METHODOLOGY ... 15

3.1 Field Investigation ... 15
3.2 Calculation of EPCs ... 20
3.3 Receptor Identification ... 21
3.4 Exposure Assessment ... 24
3.4.1 Direct Exposures ... 24
3.4.2 Calculation of Receptor Intakes ... 24
3.5 Hazard Assessment for HFPO-DA ... 26

4 ECOLOGICAL SLEA RESULTS ... 29

4.1 Data Analysis and QA/QC ... 29
4.2 Empirical Data Trends ... 30
4.2.1 Detection Frequencies of Table 3+ PFAS in Media ... 30
4.2.2 Spatial Patterns of Table 3+ PFAS in Media ... 33
4.2.3 Bioaccumulation Potential of Table 3+ PFAS ... 35

4.2.4 Summary of Observations from Empirical Data: 36
4.3 Quantification of Exposure 37
4.3.1 Exposure Point Concentrations 37
4.3.2 Onsite Terrestrial 38
4.3.3 Offsite Terrestrial 38
4.3.4 Aquatic EU 39
4.3.5 Summary of Observations from Quantification of Exposures 39
4.4 Hazard Assessment of HFPO-DA 40
4.5 Additional Data Evaluations and Lines of Evidence 41
4.5.1 WET Testing to Evaluate Risks to Aquatic Life 41
4.5.2 Additional Regional Environmental Data 42
5 UNCERTAINTIES 44
6 SUMMARY 47
7 REFERENCES 48

LIST OF TABLES

Table 2-1	Regional Listed Species
Table 2-2	Table 3+ PFAS
Table 2-3	Physical and Chemical Properties for relevant Table 3+ PFAS
Table 3-1	Ecological SLEA Dataset - Offsite Soil
Table 3-2	Ecological SLEA Dataset - Offsite Vegetation and Invertebrates
Table 3-3	Ecological SLEA Dataset - Offsite, Onsite and Cape Fear River Surface Water
Table 3-4	Ecological SLEA Dataset - Onsite Soil and Co-located Soil and Earthworm
Table 3-5	Ecological SLEA Dataset - Cape Fear River Sediment
Table 3-6	Ecological SLEA Dataset - Cape Fear River Invertebrates and Vegetation
Table 3-7	Ecological SLEA Dataset - Fish Tissue
Table 3-8	Wildlife Exposure Factors for Terrestrial Receptors
Table 3-9	Wildlife Exposure Factors for Aquatic Receptors
Table 3-10	Toxicity Reference Values for HFPO-DA
Table 4-1	Summary Statistics – Onsite Soil
Table 4-2	Summary Statistics – Offsite Soil
Table 4-3	Summary Statistics – Onsite Surface Water
Table 4-4	Summary Statistics – Offsite Surface Water
Table 4-5	Summary Statistics – Terrestrial Vegetation
Table 4-6	Summary Statistics – Offsite Terrestrial Invertebrates
Table 4-7	Summary Statistics – Onsite Terrestrial Invertebrates
Table 4-8	Summary Statistics – Sediment
Table 4-9	Summary Statistics – Cape Fear River Surface Water
Table 4-10	Summary Statistics – Aquatic Vegetation
Table 4-11	Summary Statistics – Fish
Table 4-12	Biota Soil Accumulation Factors
Table 4-13	Fillet to Whole-body Ratio Calculations
Table 4-14	Exposure Point Concentrations – Onsite Terrestrial
Table 4-15	Direct Contact Exposures – Onsite Terrestrial
Table 4-16a-d	Total Daily Intake by Receptor – Onsite Terrestrial
Table 4-17	Exposure Point Concentrations – Offsite Terrestrial
Table 4-18	Direct Contact Exposures – Offsite Terrestrial
Table 4-19a-d	Total Daily Intake by Receptor – Offsite Terrestrial
Table 4-20	Exposure Point Concentrations – Aquatic

Table 4-21 Direct Contact Exposures – Aquatic
Table 4-22a-f Total Daily Intake by Receptor – Aquatic
Table 4-23 Summary of Hazard Quotients for HFPO-DA
Table 4-24 Summary of WET Testing Results

LIST OF FIGURES

Figure 2-1 Site Location Map
Figure 2-2 Regional Topographic Map
Figure 2-3 Ecological SLEA Exposure Units
Figure 2-4 Ecological Conceptual Site Model
Figure 3-1 Offsite Soil Sampling Locations
Figure 3-2 Offsite Vegetation Sampling Locations
Figure 3-3 Offsite Terrestrial Invertebrate Sampling Locations
Figure 3-4 On and Offsite Pond Sampling Locations
Figure 3-5 Cape Fear River Surface Water, Sediment and Aquatic Vegetation Sampling Locations
Figure 3-6 Onsite Soil and BSAF Sampling Locations
Figure 3-7 Cape Fear River Fish and Invertebrate Sampling Locations
Figure 4-1 Detection Frequency by Media – Onsite Terrestrial Exposure Unit
Figure 4-2 Detection Frequency by Media – Offsite Terrestrial Exposure Unit
Figure 4-3 Detection Frequency by Media – Aquatic Exposure Unit
Figure 4-4 Total Table 3+ PFAS Concentrations in Offsite Media
Figure 4-5 Total Table 3+ PFAS Concentrations in Onsite and Aquatic Media
Figure 4-6 Exposure Point Concentrations by Media for All Exposure Units
Figure 4-7 Total Daily Intake of Table3+ PFAS – Onsite Terrestrial EU
Figure 4-8 Total Daily Intake of Table3+ PFAS – Offsite Terrestrial EU
Figure 4-9 Total Daily Intake of Table3+ PFAS – Aquatic EU

LIST OF APPENDICES

Appendix A: Field Sampling SOPs
Appendix B: Data Summary Tables
Appendix C: Representative Photo Log
Appendix D: ProUCL Output
Appendix E: Lab Reports and Data Validation Reports

LIST OF ABBREVIAIONS

°F	degree Fahrenheit
95UCL	95% Upper Confidence Limit
µg/kg	microgram per kilogram
AUF	Area use factor
BAF	bioaccumulation factors
BCF	bioconcentrations factors
bgs	below ground surface
BSAF	biota-soil accumulation factor
BW	Body weight
CAP	Corrective Action Plan
CFR	Cape Fear River
CO	Consent Order
CSM	Conceptual Site Model
DDT	dichlorodiphenyltrichloroethane
dw	dry weight
Ecological SLEA	Ecological Screening Level Exposure Assessment
EPC	exposure point concentration
EPC_{soil}	Exposure Point Concentration in soil
EPC_{diet}	Exposure Point Concentration in diet items
EPC_{sw}	Exposure Point Concentration in surface water
ERA	Ecological Risk Assessment
EU	Exposure Unit
FIR_{ww}	Daily food ingestion rate
FIR_{dw}	Daily food ingestion rate
FOD	frequency of detection
HFPO-DA	hexafluoropropylene oxide dimer acid
HFPO-TA	hexafluoropropylene oxide trimer acid
HH-SLEA	Human Health Screening Level Exposure Assessment

LIST OF ABBREVIAIONS (CON'T)

HQ	Hazard Quotient
ISM	Incremental Sampling Methodology
kg	kilogram
log K_{OC}	log10-based organic carbon-water partitioning co-efficient
L/kg	liter per kilogram
log K_{OA}	log10-based octanol-air partitioning co-efficient
log K_{OW}	log octanal-water partitioning coefficient
logP	log partitioning coefficient
mg/L	milligram per liter
mg/kg bw-day	milligram per kilogram body weight per day
MSL	mean sea level
NC	North Carolina
NCDEQ	North Carolina Department of Environmental Quality
ng/kg	nanogram per kilogram
NOAEL	No observed adverse effect level
NOEC	no effect concentration
NOEL	no effect level
NPDES	National Pollutant Discharge Elimination System
NVHOS	Sodium 1,1,2,2-Teatrafluoro-2-(1,2,2,2-tetrafluoroethoxy)ethane-1-sulfonate
P	Proportion of diet composed of the individual food source
PCB	polychlorinated biphenyl
PEPA	perfluoroethoxypropyl carboxylic acid
PES	perfluoro(2-ethoxyethane)sulfonic acid
PFAA	perfluoroalkyl acids
PFAS	per- and poly-fluoroalkyl substances
PFCA	perfluorocarboxylic acid
PFECA B	perfluoro-3,6-dioxaheptanoic acid
PFESA-BP1	perfluoro-3,6-dioxa-4-methyl-7-octene-1-sulfonic acid

LIST OF ABBREVIAIONS (CON'T)

PFESA-BP2	perfluoro-2-{[perfluoro-3-(perfluoroethoxy)-2 propanyl]oxy}ethanesulfonic acid
PFMOAA	perfluoro-2-methoxyacetic acid
PFOA	perfluorooctanoic acid
PFO2HxA	perfluoro(3,5-dioxahexanoic) acid
PFO3OA	perfluoro(3,5,7-trioxaoctanoic) acid
PFO4DA	perfluoro(3,5,7,9-tetraoxadecanoic) acid
PFO5DA	perfluoro-3,5,7,9,11-pentaoxadodecanoic acid
PFOS	perfluorooctane sulfonate
PMPA	perfluoro-2-(perfluoromethoxy)propanoic acid
PNEC	Probable No Effects Concentrations
RL	reporting limit
SLERA	Screening-level ecological risk assessments
SMDP	Scientific Management Decision Point
SOP	Standard Operating Procedure
T&E	Threatened and endangered
TDI	totally daily intake
TDI_{diet}	Total daily dietary intake
TDI_{soil}	Total daily soil intake
TRV	Toxicity Reference Value
USGS	United States Geological Survey
WB:F	whole-body to fillet ratios
WET	Whole Effluent Toxicity
ww	wet weight

EXECUTIVE SUMMARY

Geosyntec prepared this Ecological Screening Level Exposure Assessment (Ecological SLEA) on behalf of The Chemours Company FC, LLC (Chemours) in support of developing a Corrective Action Plan (CAP) for the Chemours Fayetteville Works Site (the Site). The overall goal of the Ecological SLEA was to refine the ecological Conceptual Site Model in support of CAP development, quantify and assess exposures to ecological receptors onsite, offsite and in the Cape Fear River, and to evaluate the potential for hazards related to exposure to hexafluoropropylene oxide dimer acid (HFPO-DA). Field investigations included collection of onsite and offsite soils, invertebrates and offsite vegetation, and sediment, vegetation, fish and clams from the Cape Fear River for analysis of Table 3+ per- and poly-fluoroalkyl substances (PFAS). These data were used to evaluate the presence of Table 3+ PFAS in environmental media, identify spatial patterns, quantify mammalian and avian exposures to Table 3+ PFAS, and to evaluate the potential for adverse effects to wildlife from current exposures to HFPO-DA.

Overall, 17 out of 20 Table 3+ PFAS were detected in one or more samples from the field investigation. Environmental media with the highest number of positively detected Table 3+ PFAS included site invertebrates (15 out of 20), onsite soils (13 out of 20), terrestrial vegetation (13 out of 20), aquatic vegetation (11 out of 20), and fish (7 out of 20). However, some environmental media had very few or no detections of Table 3+ PFAS, including sediment (in which only HFPO-DA was detected), offsite soil (2 out of 20 Table 3+ PFAS were detected) and benthic invertebrates from the Cape Fear River (in which no Table 3+ PFAS were detected). Because the sediment in the Cape Fear River and soil in the offsite areas do not appear to have accumulated widely detectable concentrations of Table 3+ PFAS, they are not likely to act as long-term exposure sources for ecological receptors, although uncertainties regarding partitioning to porewater and analytical sensitivities remain.

Estimated total daily intake (TDI) indicated that the highest Table 3+PFAS exposures are for vertebrates that consume terrestrial and aquatic plants in both onsite, aquatic and offsite areas. In general, herbivores demonstrated a higher estimated TDI for Table 3+ PFAS, followed by piscivores and invertivores. Estimated total exposures (i.e., cumulative exposure to all Table 3+ PFAS) were generally highest in the onsite area, exceeding those in the Cape Fear River and offsite terrestrial areas by up to 3 times. The predominant Table 3+ PFAS contributing to herbivore exposures included perfluoro-2-methoxyacetic acid (PFMOAA), sodium 1,1,2,2-tetrafluoro-2-(1,2,2,2-tetrafluoroethoxy)ethane-1-sulfonate (NVHOS), perfluoro-2-(perfluoromethoxy)-propanoic acid (PMPA) and perfluoro-3,5-dioxahexanoic acid (PFO2HxA). Piscivores in the Cape Fear River were exposed to a high proportion of PFMOAA and perfluoro(3,5,7,9-tetraoxadecanoic) acid (PFO4DA). Exposure to invertivores included PFMOAA, PMPA, Byproduct4, Byproduct5, and HFPO-DA.

Hazard quotients (HQs) for HFPO-DA ranged from 0.00000008 to 0.24, indicating that current exposures in these Exposure Units (EUs) are not expected to pose a hazard to ecological receptors.

Although there are several inherent sources of uncertainty in ecological evaluations, the primary source of uncertainty in the Ecological SLEA is attributed to the lack of toxicity reference values (TRVs) for many Table 3+ PFAS, as TRVs are a key element of quantitative hazard evaluations. Chemours is presently undertaking a process to provide additional toxicity data for five additional compounds (PMPA, PEPA, PFMOAA, PFO2HxA, and PFESA-BP2), which will be useful in the development of TRVs in the future. Tests are presently anticipated to be completed in late 2022. Overall, this Ecological SLEA presents a screening-level evaluation of Table 3+ PFAS detected in environmental media. Results indicate that current exposures to ecological receptors from HFPO-DA are not expected to pose a hazard to ecological receptors in the study area.

1 INTRODUCTION

Geosyntec prepared this Ecological Screening Level Exposure Assessment (Ecological SLEA) on behalf of The Chemours Company FC, LLC (Chemours) in support of developing a Corrective Action Plan (CAP; Geosyntec, 2019a) for the Chemours Fayetteville Works Site (the Site) pursuant to the February 25, 2019 Consent Order (CO) among the Chemours Company FC, LLC (Chemours), the North Carolina Department of Environmental Quality (NCDEQ) and the Cape Fear River Watch. While inclusion of this Ecological SLEA is not a requirement of the CO, Chemours has performed this evaluation of exposure to ecological receptors for Table 3+ per- and polyfluoroalkyl substances (PFAS) to support the CAP.

This Ecological SLEA evaluated exposures of Table 3+ PFAS to ecological receptors and the hazard potential for hexafluoropropylene dimer acid (HFPO-DA), as toxicological data are only available for HFPO-DA. The remainder of this section focuses on a brief overview of the Ecological Risk Assessment (ERA) process, as well as specific goals and objectives for this assessment.

1.1 Ecological Exposure and Risk Assessment

This subsection contextualizes the data and analyses described herein within the ERA process. The purpose of performing an ERA is to identify and characterize the current potential risks to ecological receptors from potentially hazardous substances. Additionally, ecological risk assessments can be used to establish cleanup levels protective of ecological receptors and evaluate various remedial approaches (USEPA, 1994; NCDEQ, 2003). USEPA guidance on performing ERAs includes an 8-Step process concluding with a Scientific Management Decision Point (SMDP). Screening-level ecological risk assessments (SLERA) consistent with standard ecological risk assessment practice and guidance (USEPA, 1993; NCDEQ 2003), are reflective of the first two steps of this 8-Step ERA framework. A SLERA applies conservative assumptions, often using more limited data sets, to evaluate the potential hazards to ecological receptors. SLERAs include the following key steps:

- Problem Formulation and Toxicity Evaluation: In this first step of the SLERA process, information regarding the Site is compiled. Information evaluated in this step can include on and offsite habitats, identifying potentially exposed receptors including state or Federally listed species, and identifying potentially complete exposure pathways. Additionally, toxicity benchmarks are selected, typically in the form of conservative screening levels developed by State or Federal agencies. These screening levels are typically based on highly conservative assumptions and are reflective of concentrations in the environment below which no adverse impacts to receptors are expected.

- Screening-level Exposure Assessment and Risk Calculations: In this second step of the SLERA, the exposure to receptors is estimated using conservative assumptions. For example, maximum concentrations of constituents may be selected over measures of central tendency to reflect exposure point concentrations. The estimated exposure is compared to the toxicity benchmark selected in Step 1 to evaluate the potential for risk. If exposure is below the toxicity benchmark, it can be confidently concluded that adverse impacts are not likely to occur. If exposure is greater than the toxicity benchmark, then additional refinement of assumptions and quantification of risk levels should be considered.

Due to the emerging nature of Table 3+ PFAS and the wider class of PFAS there are limited toxicity benchmarks to be applied to evaluate risks. For this reason, this report reflects a Screening Level *Exposure* Assessment rather than a SLERA. This Ecological SLEA includes the Problem Formulation and Exposure Assessment steps of a typical SLERA and evaluated hazard where sufficient toxicity data are available to do so. For Table 3+ PFAS, toxicity data are available for HFPO-DA. Under Paragraph 14 of the CO, Chemours is working to address many of the toxicity data gaps related to other Table 3+ PFAS (Chemours, 2019). The results of this Ecological SLEA may be refined as additional information on toxicity of these compounds becomes available.

1.2 Objectives

The objective of this Ecological SLEA was to refine the ecological Conceptual Site Model (CSM) in support of developing the Corrective Action Plan (CAP). Prior to this Ecological SLEA, minimal data on the presence of Table 3+ PFAS in biotic media in the vicinity of the Site were available, resulting in limited understanding of the magnitude of exposure for ecological receptors to Table 3+ PFAS. While the current understanding of the toxicity of Table 3+ PFAS limits the ability to evaluate hazards, this Ecological SLEA followed standard SLERA methodologies with respect to Problem Formulation and Exposure Assessment and applied appropriately conservative assumptions at this stage. Specifically, the objectives of this Ecological SLEA are:

- Evaluate the presence/absence of Table 3+ PFAS in abiotic and biotic media;
- Quantify exposure to Table 3+ PFAS for terrestrial plants, invertebrates and wildlife, and aquatic life (pelagic fish, invertebrates, vegetation), benthic invertebrates and aquatic-dependent wildlife;

- Refine the CSM and understanding of fate of Table 3+ PFAS in the foodweb;
- Evaluate hazards related to exposure to HFPO-DA where sufficient understanding of toxicity is available; and
- Evaluate additional lines of evidence to refine understanding of the CSM.

2 SITE SETTING

2.1 Site Description

The Site is located within a 2,177-acre property at 22828 NC Highway 87, approximately 15 miles southeast of the city of Fayetteville, NC along the Bladen-Cumberland county line. Figure 2-1 presents an overview of the Site. The Site is bounded by NC Highway 87 to the west, the Cape Fear River to the east, and by undeveloped areas and farmland to the north and south. Willis and Georgia Branch Creeks, which are tributaries of the Cape Fear River, are located near the northern and southern property boundaries respectively, with the Georgia Branch Creek being offsite for its entire course (Geosyntec, 2019b). Of the 2,177-acre property, approximately 400 acres is developed land for manufacturing activities, with the remainder generally undeveloped. The Site is zoned for industrial use but includes land specifically designated for conservation and provides habitat for deer, turkey, and other wildlife. A more robust Site history and other operations on Site are described in the Site Assessment Report (Geosyntec, 2019b).

2.2 Environmental Setting

2.2.1 Climate

The climate in Bladen County is characterized by relatively mild winters, hot summers, and abundant rainfall. According to the National Weather Service, average monthly temperatures range from a high of 91 degrees Fahrenheit (°F) in July to a low of 33°F in January. Average monthly rainfall ranges from a high of 5.92 inches in July to a low of 2.65 inches in December (Parsons, 2014).

2.2.2 Topography

The developed portion (manufacturing area) of the Site is located on a relatively flat topographic plateau at an approximate elevation of 145 feet above mean sea level (MSL) and approximately 70 feet above the Cape Fear River floodplain (Figure 2-2). Surface topography generally remains flat to the west with a gentle increase of about 5 feet to a topographic divide near NC Highway 87. However, ground surface elevations decrease from the topographic plateau at the manufacturing area towards the Cape Fear River to the east as well as its tributaries, Willis Creek to the north and Georgia Branch Creek to the south. Topographic relief from the main manufacturing area decreases by approximately 100 feet in elevation towards the Cape Fear River bank to the east. Inclined topographic relief combined with overland flow and groundwater seeps have created natural drainage networks into the Cape Fear River (Geosyntec, 2019b).

2.2.3 Land Uses and Habitats

The Site is situated along the Bladen and Cumberland county line and is within the Coastal Plain eco-region in North Carolina (NC) (NCWC, 2019). This region is classified by the prevalence of large rivers, reservoirs and impoundments, natural lakes, and stream swamp systems.

The Cumberland County Land Use Plan Map indicates that the county is predominantly comprised of undeveloped lands with clusters of residential or manufactured homes. Based on the 2016 land use plan (CCJPB, 2016), Cumberland County is largely zoned for agricultural production due to the large proportion of land designated as either prime farmland (rich soil requiring little input of resources like chemicals or energy) or soil of state and local importance (capable of crop production with modern farming technology). These areas largely produce crops for food, fiber, feed, forage, and oilseed crops. Approximately 24,000 acres of land in Cumberland County were considered to be a part of working farms, either large commercial farms producing one crop (i.e. tobacco, grain crops, peanuts, cotton) or small, multiuse farms with both crops and livestock. There are also a number of working farms that identify as woodlands, or tree farms for future harvesting. This county also features wildlife species that are considered endangered, threatened, significantly rare, or of special concern as discussed below.

Bladen County features many of the same attributes of Cumberland County. Bladen largely includes undeveloped land, land with agricultural use, and clusters of residential use. There are three rivers in the county, and it is bisected by the Cape Fear River which is the largest. Fishing, as well as deer and squirrel hunting are prominent recreational activities in the county. Bladen County includes the habitat for many of the same species as Cumberland County.

2.2.4 Cape Fear River and Tributaries

The Cape Fear River and its entire watershed are located in the state of NC. The Cape Fear River drains about 9,164 square miles and empties into the Atlantic Ocean near the city of Wilmington, NC, and hosts a diverse ecosystem. Including tributaries, the Cape Fear River watershed extends over 200 miles in length, beginning in the Piedmont and ending in the Atlantic Ocean off the coast of Wilmington (NC Office of Environmental Education and Public Affairs, 2019). Habitats present over the course of the Cape Fear River include forests, wetlands, riparian areas, and estuaries. Endemic to the Cape Fear River is an endangered species known as the Cape Fear shiner, a minnow that lives in shallow, rocky areas. Historically, the Cape Fear River also has hosted healthy populations of sturgeon, bass, and American shad.

However, the three lock-and-dam structures, historically used along the lower Cape Fear River to allow the larger vessels to navigate through shallow waters, may block passage of anadromous fish species. Along with overfishing and declining water and habitat quality, some species have recently been in decline (Cape Fear River Partnership, 2019). Other biota inhabiting the Cape Fear River include cypress trees, alligators, and otters, and many estuarine organisms are found along the 35 miles of the river between Wilmington and the Atlantic Ocean which also serves as a nursery for shrimp, crabs, and fish.

The Site is situated on the western bank of the Cape Fear River and it draws water from the Cape Fear River for use primarily as non-contact cooling water. Three lock and dam systems with United States Geological Survey (USGS) stream gauges are located downstream of the Site: (1) W.O. Huske Lock and Dam, located 0.5 river miles from the Site; (2) Cape Fear River Lock #2 near Elizabethtown and (2) Cape Fear Lock and Dam #1, located 55 river miles downstream. There are three perennial surface water features that are tributaries to the Cape Fear River at or adjacent to the Site. To the north of the Site is Willis Creek, in close proximity to the water intake for the Site. To the south of the Site is Georgia Branch Creek which discharges to the Cape Fear River approximately 7,500 feet south of the W.O. Huske Dam. Old Outfall 002 discharges a mixture of surface water and groundwater into the Cape Fear River approximately 1,350 feet south of the W.O. Huske Dam (Geosyntec, 2019b). Additionally, in 2019 four groundwater seep features were identified on the hillside leading from the Site to the Cape Fear River between Willis Creek and Old Outfall 002. These seeps represent groundwater exiting the aquifer and forming channelized flows of water to the Cape Fear River.

In the vicinity of the Site, livestock operations have the greatest effects on the natural resources and habitat quality along the river (Cahoon et al., 1999). The majority of swine are found in the Cape Fear River basin; large numbers of the total population of turkeys, chickens, and cattle are also found in the Cape Fear River basin. The result of livestock production is the introduction of large amounts of nutrients which has led to algal blooms, increased biological oxygen demand, and the threat of eutrophication.

In addition to livestock, large industries lining the lower part of the Cape Fear River have impacted water quality via industrial discharges and stormwater runoff in this area. Particular to potential impacts from PFAS, both Fort Bragg in Fayetteville and Seymour Johnson Air Force Base in Goldsboro, NC have been identified as potential PFAS related impacted sites (EWG, 2019). Multiple studies (Nakayama et al. 2007; Sun et al. 2016; Lindstrom et al., 2015) have reported elevated concentrations of perfluorooctane sulfonate (PFOS) and other ‘legacy’ PFAS in the Cape Fear River watershed well upstream of the Cape Fear River and the Site, including the Haw River and Cane Creek Reservoir, resulting from a series of inputs regionally. While the majority Table 3+ PFAS enter the Cape Fear River adjacent to the Site, concentrations of 'legacy' PFAS, including perfluorocarboxylic acids (PFCAs) and perfluorosulfonic acids (PFSAs), are generally consistent upstream and downstream of the Site (Geosyntec, 2018).

2.3 Threatened & Endangered Species

Threatened and endangered (T&E) species are receptors that receive special consideration in ecological risk and exposure assessments (USEPA, 1997). Populations of T&E species may be more vulnerable than other species to site-specific constituents, if present at a site, as smaller populations are less resilient to additional stressors. A comprehensive search for Federal- and state-listed species of special concern was conducted and included the following sites:

- U.S. Fish & Wildlife Service. Raleigh Ecological Services Field Office. Endangered Species, Threatened Species, Federal Species of Concern, and Candidate Species, Cumberland County and Bladen County, NC. (https://www.fws.gov/raleigh/species/cntylist/cumberland.html and https://www.fws.gov/raleigh/species/cntylist/bladen.html)
- Center for Biological Diversity, Map: U.S. Threaten and Endangered Species by County; Bladen County and Cumberland County considered (https://www.biologicaldiversity.org/programs/population_and_sustainability/T_and_E_map/)
- U.S. Fish & Wildlife Service. Information for Planning and Consultation tool (https://ecos.fws.gov/ipac/location/index)

Table 2-1 presents a list of threatened, endangered, or otherwise at-risk species identified in Bladen and Cumberland Counties. This includes 10 vertebrates, 3 invertebrates and 9 vascular plant species. Table 2-1 also includes an evaluation of the preferred habitat for each species and an indication of whether these species are likely to be found within the Site, based on their habitat preferences. Many of the species identified as T&E species in Cumberland County are found only in the Northwestern portion of the county, distant from the Site, in an area called the Sandhills, which is near the Fall line. Based on this assessment, 4 vertebrates (i.e., Bald eagle, red cockaded woodpecker, Southern hognose snake, and wood stork), 2 invertebrates (Atlantic pigtoe [mussel], and variegated clubtail [sanddragon]), and 7 plant species (bog spicebush, Boykin's lobelia, Carolina bogmint, Michaux's sumac, pondberry, rough-leaved loosestrife, Venus' fly-trap) are considered T&E or at risk and may potentially be found within the Site boundaries; a biological survey would need to be conducted to confirm the presence or absence of these species and/or their preferred habitat. As described in the following section, with the exception of the Southern hognose snake, Table 3+ PFAS exposure to each of these species is represented by a sensitive receptor from the same group of organisms (i.e., plant, terrestrial invertebrate, aquatic invertebrate, invertivorous terrestrial bird, piscivorous bird).

2.4 Conceptual Site Model

2.4.1 Table 3+ PFAS

The primary PFAS of concern is HFPO-DA and the other Table 3+ PFAS that are formed in the manufacturing process at the Site. The list of Table 3+ PFAS is provided in Table 2-2 and Table 2-3 presents physical and chemical properties for each Table 3+ PFAS. This section primarily focuses on HFPO-DA as more is currently known on the physical and chemical properties, but inferences from the available data on the other Table 3+ PFAS are discussed below.

HFPO-DA is a human-made chemical produced at the Site. HFPO-DA is a six carbon, branched PFAS containing an ether bond (i.e., an oxygen atom linking two carbon atoms). HFPO-DA is a clear, colorless liquid that exhibits a low octanol-water partitioning capacity (reported log K_{ow} values range from 3.6 [Hopkins et al., 2018] to 4.26 [Geosyntec, 2019a])[1] and is completely miscible with water (i.e., high solubility in surface water, groundwater, rainwater, leachate). Under normal environmental conditions, HFPO-DA exists as an anionic acid (2.8 acid dissociation constant [pKa])[2] (Hoke et al., 2016).

Similar to other environmentally persistent compounds, HFPO-DA has a relatively long half-life in environmental matrices (> 6-months) and does not readily undergo photolysis, hydrolysis, or biotransformation/degradation (USEPA, 2018; DuPont, 2008b; DuPont, 2009a). Due to a combination of high solubility in water and low affinity for sediment/soil, HFPO-DA is expected to rapidly partition to, and remain in aqueous environmental compartments (e.g., groundwater and surface water) (USEPA, 2018, DuPont, 2008a, Hoke et al., 2016, Beekman et al., 2016, Pan et al., 2018). However, the vapor pressure of HFPO-DA does not exclude some volatilization to air; dissolution in aerosolized water droplets or binding to suspended particulate matter has also been reported (USEPA, 2018). HFPO-DA present in air is deposited via wet and dry deposition (USEPA, 2018; Hoke et al., 2016; Beekman et al., 2016; Xiao et al., 2017). Once present

---

[1] K_{ow} is the octanol-water partitioning coefficient, the ratio of the equilibrium concentration of a dissolved chemical in a two-phase system of n-octanol and water. n-Octanol serves as a surrogate to biota lipids and K_{ow} values are used as an indicator of a chemical's tendency to bioaccumulate, or to be taken-up by organisms from the environment.
[2] The pKa predicts that HFPO-DA will be in acid form (as a negative ion, or an anion) at pH levels at or above a pH of 2.8.

in terrestrial systems, HFPO-DA is expected to rapidly partition to aqueous matrices via leaching and/or runoff (USEPA, 2018; Beekman et al., 2016; DuPont, 2008c).

Structural analyses indicate a low bioaccumulative potential for both HFPO-DA anion and its ammonium salt relative to longer chain PFAS (e.g., PFOS and PFOA) (USEPA, 2018). These findings are supported by a limited number of bioaccumulation and bioconcentration studies in which aquatic biota are exposed to HFPO-DA (USEPA, 2018; DuPont, 2009b; DuPont, 2007; Hoke et al., 2016; Beekman et al., 2016, Xiao, 2017). Multiple fish studies have confirmed bioconcentration factors (BCFs) of less than 30 liters per kilogram (L/kg) wet weight (ww) (DuPont, 2009b; Hoke et al., 2016; Goodband, 2019). Bioaccumulation factors (BAFs), calculated for carp, were 7.2 L/kg ww for blood, 3.2 L/kg ww for liver and 4.0 L/kg ww for muscle (Pan et al., 2017). BCFs and BAFs greater than 5,000 L/kg ww are considered indicative of high bioaccumulation potential in aquatic food webs; BAFs and BCFs for HFPO-DA are well below this benchmark. Recent research has also shown rapid elimination (< 24 hours) and a lack of bioaccumulation of HFPO-DA in the benthic fish Blue spot gobies (*Pseudogobius sp.*) as no HFPO-DA was detected in fish tissue in either the uptake or elimination phases of this study (Hassell et al. 2019).

While there are limited studies on the fate and transport of other Table 3+ PFAS, some general inferences can be drawn from the available understanding of PFAS as a class of compounds and the physical and chemical properties for each specific Table 3+ PFAS (Table 2-3):

- Due to the strong nature of the C-F bond, while some compounds may degrade to daughter products, many compounds will be persistent in the environment or transform into persistent compounds.
- Log10-based organic carbon-water partitioning co-efficient (log K_{OC}) values range from 0.89 to 2.56 L/kg (Table 2-3; Geosyntec, 2019a), with HFPO-DA exhibiting a mid-range log K_{OC} value of 1.69 L/kg (Table 2-3). The range of log K_{OC} values observed for Table 3+ PFAS indicate that some compounds (e.g., Hydro-EVE Acid, EVE Acid) are more likely to partition to soils than others (e.g., Difluoro(perfluoromethoxy)acetic acid [PFMOAA]). Relative to compounds that strongly partition to organic matter in soils and sediments (e.g. PCBs with log K_{OC} values in the 4 to 7 L/kg range), the log K_{OC} values of Table 3+ are low, exhibiting values that are similar to less sorbtive compounds (e.g., benzene [log K_{OC} = 1.77] or trichloroethylene [log K_{OC} = 2.22]).
- Predicted log10-based octanol-air partitioning co-efficient (log K_{OA}) values range from 2.59 to 7.17. Log K_{OA} values in the 5 to 7 range may be indicative

of chemicals that exhibit potentially significant bioaccumulation potential in terrestrial (air-breathing) food-webs (Kelly et al. 2007). HFPO-DA has mid-range log K_{OA} value of 3.74.

- Bioconcentration factors (L/kg, ww) ranged from 1.4 to 617 L/kg ww, all well below the generally accepted benchmark of 5000 L/kg, ww indicative of high bioaccumulation potential in aquatic food-webs (Gobas et al., 2009).
- Log partitioning coefficient (log P) is a commonly used measure of lipophilicity and is the partition coefficient of a molecule between aqueous and lipophilic phases. Log P is analogous to log octanol-water partitioning coefficient (log K_{OW}), but it is used for ionic rather than neutral compounds. Log P values (at a pH of 8) ranged from 1 to 5.7 (Geosyntec, 2019a). For traditional persistent organic pollutants [polychlorinated byphenyls (PCBs), dichlorodiphenyltrichloroethane (DDTs)] where the primary mechanism for bioaccumulation is the preferential partitioning of compounds in lipids and a lack of metabolism, K_{OW} can be a valuable metric to understand bioaccumulation potential; PFAS do not bioaccumulate by this mechanism. The current understanding of PFAS accumulation mechanisms relates to preferential partitioning in proteins rather than lipids, therefore logP or log K_{OW} may not be a representative metric for bioaccumulation potential for PFAS (Conder et al., 2008).

2.4.2 Ecological Exposure Units

For purposes of this Ecological SLEA, the Site and surrounding area where ecological receptors may be exposed to Table 3+ PFAS was divided into three ecological exposure units (EUs; Figure 2-3).

2.4.2.1 Onsite Terrestrial EU

The terrestrial onsite area includes the non-industrial portions of the Site which are characterized by heavily forested habitats. The onsite terrestrial EU is generally bound by Willis Creek to the north and Georgia Branch Creek to the south, the Cape Fear River to the east and Highway 89 to the west. Terrestrial ecological receptors are expected to use this area for foraging and habitat.

2.4.2.2 Offsite Terrestrial EU

The terrestrial offsite area includes the 12 EUs identified in the Human Health SLEA workplan (Geosyntec, 2019c). Receptors in these EUs may be exposed to Table 3+ PFAS that has been aerially deposited and accumulated in or on soil, plants or invertebrates. While the Human Health SLEA has evaluated exposures at each EU, this Ecological SLEA has combined these EUs based on similar habitat qualities and expected receptors. The offsite terrestrial EU extends approximately 6 miles outward from the Site and is characterized by mixed residential and farming land uses, patches of undeveloped forested habitat and creeks, streams and other tributaries of the Cape Fear River.

2.4.2.3 Cape Fear River EU

The Cape Fear River or aquatic EU includes the Cape Fear River between Willis Creek to the north and Georgia Branch Creek to the south. This EU includes the in-water portion of the Cape Fear River and banks that would be used by aquatic-dependent birds and mammals while foraging at the river. While the Human Health SLEA included samples downstream of the Site, based on the current understanding of where ecological exposures are expected to be greatest, this Ecological SLEA focused on the Site-adjacent area of the Cape Fear River.

2.4.3 Potentially Complete Ecological Exposure Pathways

The ecological CSM (Figure 2-4) reflects the potential exposure of receptors to Table 3+ PFAS, including aquatic life in the Cape Fear River and tributaries, aquatic dependent wildlife foraging in the Cape Fear River and banks, terrestrial plant and invertebrate communities, and herbivorous and invertivore wildlife and carnivorous wildlife. Exposures may potentially occur to Table 3+ PFAS via surface soil, surface water and sediment, along with potential exposures via diet items if Table 3+ PFAS have accumulated in plants, invertebrates and fish. The following receptors and exposure pathways were assumed to be complete for purposes of the Ecological SLEA:

- Aquatic life includes benthic and pelagic invertebrates and fish in the Cape Fear River. Pelagic fish, invertebrates and aquatic plants may potentially be directly exposed to Table 3+ PFAS in the water column. Benthic invertebrates may potentially be directly exposed to Table 3+ PFAS in sediments. Exposures to aquatic life were estimated from the surface water and sediment datasets.
- Aquatic-life dependent birds and mammals may potentially be exposed to Table 3+ PFAS indirectly via consumption of plants, fish or benthic invertebrates that have accumulated Table 3+ PFAS from water or sediment. Exposures to these receptors will be estimated from concentrations in diet items for each representative receptor. Birds and mammals may also be exposed via the incidental consumption of sediment while foraging for food and surface water as drinking water.

- Terrestrial plant and invertebrate communities may potentially be directly exposed to Table 3+ PFAS present in surface soils or via air deposition in the surrounding areas of the Site. Exposures to plant and soil communities were evaluated using the surface soil dataset.
- Terrestrial avian and mammalian receptors may potentially be indirectly exposed to Table 3+ PFAS from consumption of terrestrial plants or invertebrates that may have accumulated Table 3+ PFAS. Exposures to these receptors were estimated from concentrations in diet items for each representative receptor. Birds and mammals may also be exposed via the incidental consumption of soil while foraging for food or surface water as drinking water.
- Terrestrial avian and mammalian carnivores may potentially be indirectly exposed to Table 3+ PFAS from consumption of small mammals and birds that may have accumulated Table 3+ PFAS from the food web. A tissue sampling dataset sufficient to quantitatively evaluate this pathway was determined to be infeasible for the time available to complete this Ecological SLEA, however considerations such as bioaccumulation potential of Table 3+ PFAS and identification of the Table 3+ PFAS that are responsible for the majority of exposure to herbivores and invertivores may be informative to understand potential exposures to avian and mammalian carnivores. Exposure to these receptors is discussed in the Uncertainties Section (Section 5).

3 ECOLOGICAL SLEA METHODOLOGY

The Ecological SLEA included multiple field efforts to characterize the magnitude and extent of Table 3+ PFAS in various abiotic and biotic components of the foodweb, the selection of representative receptors for each potentially complete exposure pathway, estimating exposure point concentrations (EPCs), and performing foodweb exposure modeling to calculate exposure to wildlife receptors. The methods used for each component of this Ecological SLEA are described below and detailed further in Appendix A. All analytical results for the Ecological SLEA field investigations are provided in Appendix B.

3.1 Field Investigation

Offsite Terrestrial Soil, Vegetation and Insects

In July 2019, surface soils from each of the 12 Human Health SLEA EUs were sampled using an Incremental Sampling Methodology (ISM). Thirty (30) aliquots of surface soil were collected from the top 0 to 1 foot of soil from publicly accessible sampling locations within each EU (Figure 3-1). All aliquots were composited for each EU, resulting in 12 discrete samples analyzed for Table 3+ Compounds and Method 537 PFAS[3] (Table 3-1). The Offsite terrestrial surface soil dataset was used to quantify exposures to terrestrial plant and soil invertebrate communities and incidental soil ingestion of terrestrial birds and mammals.

In addition to the collection of surface soil from each EU, terrestrial plant samples were collected as co-located aliquots of vegetation when present at a soil sampling ISM aliquot location (Figure 3-2). Broadleaf plants with non-waxy leaves, berries or fruit within 1 to 2 feet of the ground surface seeded grasses (fescues, ryegrass, wheatgrass) were targeted for sampling. A representative photo log is provided in Appendix C. Twelve (12) samples of sufficient plant tissue mass were collected and analyzed for Table 3+ Compounds and Method 537 PFAS (Table 3-2). Where sufficient mass was collected, samples were also

---

[3] Samples collected under this effort were also analyzed for Method 537 PFAS and these data are presented along with the Table 3+ PFAS results in Appendix B. Table 3+ PFAS, including HFPO-DA, originate from air emissions and historical process water releases at the Site. Table 3+ PFAS were identified in non-targeted analytical studies conducted by Chemours and the method was developed to quantitate the presence of these PFAS. In most exposure media (terrestrial invertebrates, terrestrial and aquatic vegetation, and surface water) the Table 3+ PFAS were more frequently detected and at concentrations often an order of magnitude higher than Method 537 PFAS. The exception was the sediment and fish samples from the Cape Fear River, where Method 537 PFAS were frequently detected at elevated concentrations compared to the Table 3+ PFAS. Of the PFAS data available, the Ecological SLEA evaluated exposures to Table 3+ PFAS originating from releases at the Site to support developing Corrective Actions for these PFAS.

analyzed for percent moisture. The terrestrial plant dataset was used to quantity exposures to terrestrial herbivores both onsite and offsite.

In addition to the collection of surface soil from each EU, terrestrial invertebrate samples were collected as co-located aliquots of invertebrates when present at a soil sampling ISM aliquot location (Figure 3-3). Earthworms were selected as the preferred invertebrates for analysis due to high lipid and protein content compared to hard shelled invertebrates and high degree of soil association. Since earthworms were not present in soil during soil sampling activities the field team identified and sampled terrestrial insects when present at a soil sampling aliquot location. Terrestrial invertebrates collected included primarily grasshoppers, crickets, and dragonflies. Invertebrates were composited from all aliquots in an EU; not all EUs resulted in the collection of an invertebrate sample of sufficient sampling mass for analysis (Table 3-2). The collected terrestrial invertebrates along with estimated concentrations in earthworms as discussed below were used to quantity exposures to terrestrial invertivores offsite.

Surface Water

In July and September 2019, surface water samples were collected from the Pond 1/DERC Pond located on Site, Pond B located in the offsite EU-2 (Figure 3-4), and the Cape Fear River (Figure 3-5). The Pond 1 samples were used to quantify exposure to onsite terrestrial birds and mammals from drinking water intake. The Pond B samples were used to quantify exposure to offsite terrestrial birds and mammals from drinking water intake. There were additional Cape Fear River surface water samples that have been collected from previous scopes of work, however only the most recent data from July 2019 were included in the Cape Fear River surface water datasets to reflect current conditions following the interim measures taken at the Site. Additional details on surface water sampling are included in the Human Health SLEA workplan and in Table 3-3. The Cape Fear River dataset was used to quantify exposures to aquatic-life dependent birds and mammals from drinking water and to quantify direct exposures to aquatic life communities (plants, invertebrates and fish).

Onsite Soil and Biota-Soil Accumulation Factor Sampling

The invertebrate samples collected from the 12 EUs under the Human Health SLEA program did not represent the targeted species of earthworms (*Lumbricus terrestris*), which were targeted due to high protein and lipid contents and high association with soil over their lifetime compared to other invertebrates. As an approach to estimate the concentrations in earthworms in the offsite EUs, co-located surface soil and targeted earthworm samples were collected from the forested area and seeps near the Site and used to calculate soil-to-earthworm biota-soil accumulation factor (BSAFs) which are the ratio of the concentration of Table 3+ PFAS in earthworm [microgram per kilogram (µg/kg) wet weight (ww)] to the concentration of the same Table 3+ PFAS in soil [µg/kg dry weight (dw)].

In September 2019, Parsons of NC (Parsons) staff collected soil and earthworm samples from locations in the forested areas adjacent to each of Seeps A through D and near the mouth of Willis Creek (Figure 3-6). Soil sub-samples were collected using a stainless-steel shovel from 0 to 1-foot below ground surface (bgs) and sieved to isolate any earthworms within the soil sample while collecting the soil beneath the sieve. For each subsample where no earthworms were collected, the soil was discarded. If one or more earthworms were collected in a sub-sample, that soil was retained for analysis. This process was repeated at a sample location until sufficient earthworm tissue mass was collected for analysis, in some locations requiring multiple composites. Additional details are provided in Appendix A and Table 3-4. Soil and earthworm samples were analyzed for all Table 3+ SOP compounds, Method 537 PFAS and percent moisture where sufficient sample mass was available. Earthworms were allowed to depurate the ingested soils from their digestive tracts for 24 hours prior to submitting to the laboratory so that the samples represented primary earthworm tissue only rather than ingested soil and tissue.

BSAFs were calculated with reporting limits (RLs) used to represent results below detection limits; so if a Table 3+ PFAS was detected in earthworm tissue but not soils, the soil RL was used to represent the concentration in soil, and similarly if a result was detected in soil but not in earthworm tissues. If a Table 3+ PFAS was not detected in either soil or earthworms, no BSAF was calculated. The BSAF were then applied to measured concentrations of Table 3+ PFAS in offsite soil samples to estimate wet weight concentrations in earthworm for the offsite EU. For the onsite terrestrial invertebrate dataset, the empirically measured earthworm data were included in the calculation of EPCs.

In addition to collecting co-located soil and earthworm samples, Parson staff also collected 5-point composite soil samples from each of the Seeps A through D areas and near the mouth of Willis Creek (Figure 3-6). Composite samples were selected to provide better spatial coverage from the areas adjacent to seeps (i.e. not within the seep channel) and along the Cape Fear River banks. Bank soil samples analyzed for all Table 3+ SOP compounds and Method 537 PFAS. Additional details are provided in Appendix A and Table 3-4. The bank soil data set was used as the onsite terrestrial surface soil dataset to quantify exposures to terrestrial plant and soil invertebrate communities and incidental soil ingestion of terrestrial birds and mammals foraging onsite.

Surface Sediment and Aquatic Vegetation

Characterization of Cape Fear River sediments near the Site will be completed under a sampling program under CO paragraph 11.2. However, data were not expected to be collected in time for inclusion in this report. Since sediment may be an important exposure media for aquatic life and aquatic-dependent wildlife, a smaller focused sampling program was undertaken for this Ecological SLEA. In October 2019, Parsons and Geosyntec staff collected 6 sediment samples from just upstream of Willis Creek to the Old Outfall (Figure 3-5). Three-point composite sediment samples were collected using a petite ponar sampler to collect surface sediment (0 to 4 inches) and homogenized prior to delivery to the laboratory. At the same time, field staff collected aquatic emergent and floating vegetation in the vicinity of the sediment samples. Samples included duckweed (floating macrophyte) and rooted emergent vegetation along the banks. All sediment and vegetations samples were analyzed for all Table 3+ SOP compounds and Method 537 PFAS. Additional details are provided in Appendix A, Table 3-5 and Table 3-6. The sediment dataset was used to characterize direct exposure to benthic invertebrates and to characterize incidental sediment ingestion by aquatic-dependent wildlife. The aquatic vegetation dataset was used to characterize exposure to aquatic-dependent herbivores.

Benthic Invertebrates

Benthic invertebrate sampling was undertaken to characterize exposure to invertivore receptors. Initially in July 2019, crayfish/crawfish samples were targeted by placing baited crawfish traps along the Cape Fear River adjacent to the Site, however sampling was not successful; no crawfish were collected after multiple attempts. During fish sampling in September 2019, a few sediment samples were collected with a petite ponar sampler and sieved to evaluate the effectiveness of collecting benthic invertebrates using this approach but was not highly successful as few invertebrates were typically returned in the grab sample. Based on observations of field staff, it was determined that a targeted collection of a highly common species would best allow the collection of sufficient sample mass in the timeframe required for inclusion in this report. Asian clams (*Corbicula fluminea*), a common invasive species in the region, were identified as being highly abundant in sandy areas along the banks of the Cape Fear River adjacent to the Site. Additionally, it is likely that wildlife invertivores are consuming the commonly occurring invertebrates; therefore, targeted Asian clams were determined as an appropriate exposure metric and deemed likely to be a successful sampling strategy. In October 2019, Parsons and Geosyntec staff collected three discrete samples of Asian clams from the Cape Fear River (Figure 3-7). Samples were collected by loosening the clams from the sediment bed and collecting using a net; clams were sampled from relatively shallow water near banks. Clam samples were submitted as whole body (in shell) for processing at the laboratory. At the lab, soft body tissues were removed from shells, homogenized and analyzed for Table 3+ SOP and Method 537 PFAS. Additional details are provided in Appendix A and Table 3-6.

In addition to the targeted Asian clam sample, mixed benthic invertebrates were collected for a composite sample as they were encountered in the field. Invertebrates other than clams that were collected in nets during Asian clam collections, and invertebrates collected in ponar samples near sediment sampling locations were compiled. One sample of mixed invertebrates, consisting primarily of a leech, dragonfly larvae and other insect larvae was collected and composited. These invertebrates were primarily collected from shallow areas near banks during clam sampling. During the ponar sampling, the primary invertebrate collected were additional Asian clam samples. These samples reflect much deeper surface water depths and were a wider spatial composite than the target clam samples, and so were submitted to the laboratory to better understand spatial and vertical variability in the data.

The Asian clam and mixed benthic invertebrate samples comprise the benthic invertebrate dataset and were used to characterize exposure to aquatic-dependent avian and mammal invertivores.

Fish Tissue

From July through September 2019, two fish sampling events were undertaken by Parsons and Geosyntec staff. The majority of fish sampling was to support the Human Health SLEA and therefore all fish samples were processed at the laboratory for analysis of skin-off fillet tissues only. Catfish (both channel and black) and largemouth bass were targeted for sampling using rod-and-reel fishing under this scope of work from locations in the Cape Fear River both upstream, adjacent and downstream of the Site and nearby fish-bearing ponds (Figure 3-7 and Figure 3-4, respectively). Samples were collected from the Cape Fear River adjacent to the Site and downstream to Bladen Bluffs. The downstream samples are outside of the Ecological Aquatic EU and were not included in EPC calculations. Additional details can be found in the Human Health SLEA work plan (Geosyntec, 2019c).

As wildlife piscivores typically consume whole body fish, the use of fillet data may not accurately estimate exposure to this group of receptors since internal organs may accumulate PFAS differently than muscle (fillet) tissue (Conder et al., 2008). To better utilize the Site-adjacent data collected under the Human Health SLEA, the laboratory also weighed and analyzed the non-fillet carcass material (bones, organs, skin, blood) from select samples. From the paired fillet and carcass samples, the whole-body concentrations were estimated as the weighted average of fillet and carcass results. From the estimated whole-body concentrations and measured fillet results, whole-body to fillet ratios were calculated for all detected concentrations of Table 3+ PFAS. The whole-body to fillet ratios were calculated for catfish and largemouth bass separately and applied on a species-specific basis to the remaining measured fillet results to estimate whole-body concentrations for those fish samples.

As the use of the whole-body to fillet ratios and the larger size of the fish sampled for the Human Health SLEA adds uncertainty to the exposure estimates, a small whole-body targeted fish sampling effort was also undertaken. Smaller whole-body fish were selected as this is more representative of wildlife fish consumption. In September 2019, nine samples of either single fish or single-species composites were collected from the Cape Fear River adjacent to the Site (Figure 3-7). Fish were collected using electrofishing, targeting fish of less than approximately 6 inches to represent a fish size class than can be consumed whole-body by avian and mammal piscivores. Samples of redbreast sunfish (*Lepomis auritus*), young-of-year largemouth bass (*Micropterus salmoides*), American eel (*Anguilla rostrate*), dusky shiner (*Notropis cummingsae*) and comely shiner (*Notropis amoenus*) were collected. Where needed, single species composite samples were collected for sufficient sampling mass. Additional details on fish tissue samples are provided in Table 3-7. Most samples were collected from the Cape Fear River adjacent to the Site, with one whole body sample collected downstream to provide a measure of spatial variability.

All fish samples from within the Cape Fear River aquatic EU comprise the fish tissue dataset and were used to characterize exposure to avian and mammal piscivores. As noted above, some fish tissue samples were collected downstream of the Cape Fear River EU for the Human Health SLEA. These samples were not included in the calculation of EPCs but are discussed here qualitatively to evaluate spatial variability.

3.2 Calculation of EPCs

An EPC is an estimate of a constituent in a medium within some specified exposure point and are applied to quantify exposures to specific receptors under specific conditions or assumptions. EPCs for each detected Table 3+ PFAS in a given media were calculated for use in the Ecological SLEA. Consistent with SLERA guidance, EPCs were selected to be conservative estimates of exposure.

EPCs were calculated for each EU on a media specific basis including: onsite and offsite terrestrial surface soil, Cape Fear River sediment, onsite and offsite surface water, terrestrial [4] and aquatic vegetation, offsite terrestrial invertebrates, onsite and offsite earthworms both as measured and estimated using BSAFs and surface soil EPCs, Asian clams and benthic invertebrates, and for each fish species with Comely and Dusky shiners combined. All primary and field duplicate samples were averaged prior to calculation of EPCs.

Where a media specific dataset included greater than eight samples with at least four detected results, EPCs were calculated by selecting the lower of the 95% Upper Confidence Limit (95UCL) on the mean or the maximum detected concentration. In cases where the number of samples was less than eight, the maximum detected concentration was used. 95UCLs were calculated using USEPA's ProUCL statistical software package (version 5.1; USEPA, 2015). ProUCL outputs are provided in Appendix D. For the estimation of intakes for invertivores and piscivores where multiple species-specific EPC were available (i.e. terrestrial empirical results for insects vs estimated in earthworms; different fish species EPCs) the highest species-specific EPC was selected to represent exposure. Additionally, if a Table 3+ PFAS was detected in some media within an EU but was non-detected above RLs in other media in the same EU, the RLs were used to represent the EPC. These approaches are highly conservative and likely to result in estimates of the highest potential exposures, but a high level of conservatism at this stage is consistent with SLERA approaches.

3.3 Receptor Identification

Representative terrestrial and aquatic-life dependent avian and mammalian receptors for the quantitative evaluation of ecological risks at the Site were selected in consideration of the CSM, as presented below. All relevant exposure factors for wildlife receptors are provided in Table 3-8 for all terrestrial wildlife and in Table 3-9 for all aquatic-dependent wildlife. Selected representative terrestrial receptors are described below:

Bobwhite Quail

The bobwhite quail (*Colinus virginianus*) is a small quail with striped and speckled black, brown, and white plumage. Bobwhite quails can be found in fields, rangelands and open forests in southeastern North American but have experienced a sharp population decline in the past half-century. They eat mainly seeds and leaves as well as insects during breeding season. For the purposes of this SLEA, the Bobwhite quail was assumed to consume 100% plants.

[4] As onsite vegetation was not specifically sampled, the maximum of terrestrial or aquatic vegetation was used to represent the onsite vegetation as a conservative approach.

Woodcock

The woodcock (*Scolopax minor*) is a small, plump bird with a brown-mottled plumage, short legs and a long, straight bill. Woodcocks are found in forests and shrubby old fields across eastern North America. Their long bill is used for probing earthworms and other invertebrates (snails, millipedes, spiders, beetles etc.) in the soil. For the purposes of this SLEA, the Woodcock was assumed to consume 100% terrestrial invertebrates.

Eastern Cottontail Rabbit

The eastern cottontail rabbit (*Sylvilagus floridanus*) is the most common cottontail that is prolific from Canada to South America and throughout the United States. Cottontails are small mammals with a distinct "cotton ball" tail and have a reddish brown to gray coloring. They can commonly be found in fields, meadows and farms but are adaptable to other habitats. The eastern cottontail consumes grasses and herbs and are known to browse on garden vegetables (peas, lettuce etc.). For the purposes of this SLEA, the Cottontail rabbit was assumed to consume 100% plants.

Southern Short-tailed Shrew

The southern Short-tailed shrew (*Blarina carolinensis*) is a small, dark gray to sooty black shrew with short legs and a long, pointed snout. It is found in the southeastern United States in pine forests, meadows and even in wet, swampy areas. The shrews are social animals that live in burrow systems beneath the soil. Their diet consists of a variety of invertebrates including insects, annelids, snails, centipedes and spiders. For the purposes of this SLEA, the Short-tailed shrew was assumed to consume 100% terrestrial invertebrates.

Selected representative aquatic-life dependent receptors are described below:

Wood Duck

The wood duck (*Aix sponsa*) is an ornate patterned waterfowl with iridescent brown and green patterns on each feather. They have an oblong shaped head, a bright belly and dark underwings and chest. They are a common duck in North America and can be found in wooded swamps, on the edges of streams, in overgrown beaver ponds or freshwater marshes. Wood ducks eat seeds, fruits, and insects, and while their diet can vary greatly, studies indicate plant materials comprise at least 80% of their diet (Cornell Lab of Ornithology, 2019). For the purposes of this SLEA, the wood duck was assumed to consume 100% plants, however as noted below may reflect a mixed diet similar to a Mallard.

Mallard Duck

The mallard duck (*Anas platyrhynchos*) is a large duck with a flat bill and a rounded head. They are one of the most common ducks found in wetland habitats in North America. Mallards feed primarily on aquatic insects, earthworms, snails, and vegetation. While they do not dive for their food, they are known to dabble for their food by tipping their beak forward in the water. The mallard duck is expected to be a common bird in the Cape Fear River watershed. Both the mallard duck and Wood duck have similar dietary habits reflecting a mixed diet of plants and invertebrates. For the purposes of this SLEA, the Wood duck was assumed to consume 100% plants and the Mallard duck was assumed to consume 100% invertebrates.

Great Blue Heron

The great blue heron (*Ardea herodias*) is the largest North American heron with characteristically long legs, a long, narrow neck, and a large pointed beak. Great blue herons have blue-gray plumage with a black stripe over the eye. They live in freshwater habitats and forage for their food including fish, amphibians, reptiles, small mammals, and insects. For the purposes of this SLEA, the Great Blue heron was assumed to consume 100% fish. Although it does consume some invertebrates, avian invertivores were represented by the Mallard duck.

Muskrat

The muskrat (*Ondatra zibethicus*) is a large dark brown aquatic mammal with a flat, scaly tail and large feet that are slightly webbed. They are found in ponds, swamps, marshes, wetlands and other wet environments throughout North America. Muskrats mainly eat green vegetation (~95% of diet) but can also eat small aquatic mammals (frogs, fish, crayfish, etc.). For the purposes of this SLEA, the Muskrat was assumed to consume 100% plants.

Mink

The mink (*Neovison vison*) is a long and slender, dark-colored mammal. They prefer forested areas that are close to water and are common in all states except for Arizona. Mink have a varied diet and are opportunistic feeders. They are known to eat fish and other terrestrial vertebrates (small mammals) when available. For the purposes of this SLEA, the Mink was assumed to consume 100% benthic invertebrates.

River Otter

The river otter (*Lontra canadensis*) is a semi-aquatic mammal with short legs, long bodies and a thick tail. They are dark brown to black and have a wide, round head and webbed feet. River otters build dens in aquatic habitats including freshwater and coastal areas, rivers, lakes, marshes, swamps and estuaries. The limiting factor for river otters is a permanent food supply of aquatic organisms (amphibians, fish, turtles, crayfish etc.) and occasionally small terrestrial mammals. They can be found throughout Canada and most parts of the United States and are adaptable to various climates (cold, warm, high elevations) but are sensitive to pollution. For the purposes of this SLEA, the river otter was assumed to consume 100% fish.

3.4 Exposure Assessment

Exposure assessment is the process of measuring or estimating the intensity, frequency, and duration of ecological exposure to a chemical in the environment. This section describes the mechanisms by which these receptors might potentially come in contact with PFAS in environmental media, and the methods for quantifying the degree of contact between potential representative receptors and Table 3+ PFAS.

3.4.1 Direct Exposures

Directly exposed communities include terrestrial plants and invertebrates exposed to Table 3+ PFAS in soil; benthic invertebrates directly exposed to Table 3+ PFAS in sediment; and aquatic life (pelagic plants, invertebrates and fish) directly exposed to Table 3+ PFAS in surface water. The media-specific EPCs for terrestrial onsite and offsite soils, Cape Fear River sediment and Cape Fear River surface water were used to evaluate relative exposures for these receptors. EPCs for each detected PFAS in a given media were calculated for use in the Ecological SLEA as discussed in Section 3.2. For HFPO-DA, the media-specific EPCs were compared to the media-specific TRV discussed in Section 3.5.

3.4.2 Calculation of Receptor Intakes

For this Ecological SLEA, Site-specific doses for all Table 3+ PFAS were calculated for all terrestrial and aquatic-dependent wildlife receptors (birds and mammals). Ingested doses are presented in daily dose rates per unit of body weight [milligram per kilogram per day (mg/kg-day)] and referred to as total daily intake (TDI). Terrestrial wildlife was assumed to be exposed to Table 3+ PFAS via incidental ingestion of soil during foraging, consumption of surface water and consumption of food/prey items that have accumulated Table 3+ PFAS. Aquatic wildlife receptors were assumed to be exposed to Table 3+ PFAS via incidental ingestion of sediment, consumption of surface water and consumption of food/prey items that have accumulated Table 3+ PFAS. The estimated TDI for each receptor was calculated using generic dose formulas from the Wildlife Exposure Factors Handbook (EPA, 1993), as well as receptor-specific exposure factors as provided in Table 3-8 and Table 3-9, and represents the sum of intake from diet, soil and surface water:

$$\text{Total Daily Intake } \left(\text{TDI}; \frac{\text{mg}}{\text{kg} - \text{day}}\right) = \text{TDI}_{diet} + \text{TDI}_{soil} + \text{TDI}_{surface\ water}$$

TDI from diet items, soil and surface water are calculated from the concentrations of Table 3+ PFAS in diet items, soil, and surface water, the proportion of each diet item in the overall diet, the daily ingestion rates of these media, receptor body weights and the area use factor which characterize the frequency that a receptors is expected to forage from potentially impacted areas of the Site. For each, TDI is estimated as:

$$\text{TDI}_{diet} = \frac{(\sum(FIR_{ww}\ x\ EPC_{diet}\ x\ P)\ x\ AUF}{BW}$$

$$\text{TDI}_{soil} = \frac{(\sum(FIR_{dw}\ x\ EPC_{soil}\ x\ P)\ x\ AUF}{BW}$$

$$\text{TDI}_{sw} = \frac{(\sum(DWI\ x\ EPC_{sw})\ x\ AUF}{BW}$$

TDI_{diet} = Total daily dietary intake (mg/kg-day)
TDI_{soil} = Total daily soil intake (mg/kg-day)
FIR_{ww} = Daily food ingestion rate (kg wet weight/day)
FIR_{dw} = Daily food ingestion rate (kg dry weight/day)
DWI = Daily water ingestion rate (L/day)
EPC_{soil} = Exposure Point Concentration in soil (mg/kg dry weight)
EPC_{diet} = Exposure Point Concentration in diet items (mg/kg ww)
EPC_{sw} = Exposure Point Concentration in surface water (mg/L)
P = Proportion of diet composed of the individual food source
AUF = Area use factor (fraction of time spent foraging at the Site)
BW = Body weight (kg)

Bioavailability of all Table 3+ PFAS were assumed to be 100%. As concentrations of Table 3+ PFAS in soil and sediments were reported by the laboratory in dry weight, the dry matter ingestion rates based on allometric equations in Nagy et al. (2001) were applied for estimating TDI_{soil}. Tissue data (fish, plant and invertebrates) were reported by the lab on a ww basis and so the wet or fresh matter ingestion rates based on allometric equations in Nagy et al. (2001) were applied for estimating TDI_{diet}. Ingestion rates, assumed diet items, body weights and home ranges are provided in Table 3-8 for all terrestrial wildlife receptors and in Table 3-9 for all aquatic-dependent wildlife receptors.

3.5 Hazard Assessment for HFPO-DA

Typically for a SLERA, a conservative Toxicity Reference Value (TRV) for each receptor would be selected for calculating receptor specific hazard quotients following the estimation of exposures. Outside of HFPO-DA there are no TRVs for Table 3+ PFAS. These compounds are byproducts of the manufacturing process rather than products which are registered substances and consequently there are no available toxicity (hazard) information for these PFAS. Though a limited number of toxicity tests have been completed, the toxicity testing that has been performed on HFPO-DA is sufficient to evaluate the potential hazard to the environment.

For the HFPO-DA assessment, the estimated exposures (as direct exposure or estimated TDI from the exposure models) were compared to TRVs to calculate a Hazard Quotient (HQ) as:

$$\mathrm{HQ} = \frac{\mathrm{Exposure}\ (\frac{mg}{kg}, \frac{mg}{L}\ or \frac{mg}{kg-day})}{\mathrm{TRV}\ (\frac{mg}{kg}, \frac{mg}{L} or \frac{mg}{kg-day})}$$

A critical component of HQ calculation is the selection of a TRV that represents appropriate receptors and endpoints (growth, reproduction or development). The ecotoxicity of HFPO-DA and TRVs selected for HFPO-DA are described briefly below and provided in Table 3-10.

Toxicity to Soil Plant and Invertebrate Communities

The TRV selected for the evaluation of hazards to soil plant and invertebrate communities is the Probable No Effects Concentration (PNEC) of 0.066 mg/kg dw as reported in ECHA (2019). This PNEC was calculated using an equilibrium partitioning approach where a toxicity value based on exposure in water is converted to a soil or sediment basis. For the soil PNEC reported by ECHA (2019), the PNEC aqua-freshwater was converted using a K_{OC} of 12 L/kg (log K_{OC} of 1.08), and the appropriate equations from the REACH Guidance on Information Requirements and Chemical Safety Assessment: Part B, Hazard Assessment, and a correction factor of 1.13 for conversion to dry weight. As the value was based on aquatic species, there is higher uncertainty related to the applicability of this value to terrestrial invertebrate and plant communities.

Toxicity to Sediment Benthic Invertebrate Communities

The TRV selected for evaluation of hazards to benthic invertebrate communities is the PNEC of 0.518 mg/kg dw as reported in ECHA (2019). Similar to above, the PNEC value was calculated using the equilibrium partitioning approach with a K_{OC} of 12 L/kg (log K_{OC} of 1.08), the PNEC aqua-freshwater, the appropriate equations from the REACH

Guidance on Information Requirements and Chemical Safety Assessment: Part B, Hazard Assessment, p. 45, and a correction factor of 4.6 for conversion to dry weight. As this value was based on aquatic species but not specifically sediment associated benthic invertebrates, there is some uncertainty regarding the application of this value to evaluate hazards to benthic invertebrates.

Toxicity to Aquatic Plants

The TRV selected for evaluation of hazards to aquatic plants is the no effect concentration (NOEC) for algae reported in ECHA (2019) of 106 milligrams per liter (mg/L). The basis for this NOEC is an acute 72-hour freshwater toxicity test with algae. Both growth rate and cell count were measured over 72 hours of exposure with no adverse effects at 106 mg/L.

Toxicity to Aquatic Life (Pelagic Invertebrates and Fish)

The aquatic toxicity of HFPO-DA has been the most well studied exposure route. Both acute and chronic toxicity tests on aquatic invertebrates and fish have been performed under the ECHA Chemical Registration process, as summarized in Hoke et al. (2016), and ECHA (2019).

Acute to toxicity to aquatic life was evaluated using acute toxicity tests for rainbow trout (*Oncorhynchus mykiss*), Japanese medaka (*Oryzias latipes*), rare gudgeon (*Gobiocypris rarus*), a freshwater invertebrate (*Daphnia magna*), and a freshwater green alga, (*Pseudokirchneriella subcapitata*). Chronic toxicity tests include a 21-day reproductive test with Daphnia magna, and a 90-day early life stage test with Rainbow trout. All tests were performed according to Good Laboratory Practices and in conformance with appropriate OECD test guidelines (Hoke et al. 2016). Acute LC50 or EC50 values were all greater than 96 mg/L. The 90-day early life stage test resulted in NOEC of 1.08 mg/L based on statistically decreased hatching time. However, as noted in Hoke et al. (2016), the empirical data indicated that the change in last hatching day in the highest tested exposure group was only a single day less than controls, which is not considered an ecologically significant endpoint. As no other effects were observed in the highest test group, the unbounded NOEC was 8.89 mg/L. ECHA (2019) applied a 10X uncertainty factor to the statistical NOEC of 1.08 mg/L to derive the reported PNEC of 0.108 mg/L (ECHA, 2019). This Ecological SLEA applied the same 10X UF to the ecologically relevant NOEC of 8.89 mg/L to develop a TRV of 0.889 mg/L for the calculation of hazard quotients . In addition, surface water EPC were compared to the more conservative PNEC of 0.108 mg/L as an additional line of evidence.

Toxicity to Birds

The TRV for avians is 84.5 mg/kg-day and is based on a chronic reproduction test on Northern bobwhite quail (*Colinus virginianus*) as reported in ECHA (2019). Adult Bobwhite quail were fed HFPO-DA via spiked food in both a range finding and definitive test. In the range finding test, Bobwhite quail were exposed to HFPO-DA via the diet at nominal concentrations of 0, 100, and 1000 mg/kg for 6-weeks. No treatment related effects on reproduction were observed at the 0 and 100 mg/kg exposure doses. Slight but statistically significant reductions in viability of embryos and in numbers of hatchlings and 14-day old survivors were observed in the 1,000 mg/kg exposure group. The ranging finding test NOEC was 100 mg/kg and the test LOEC was 1,000 mg/kg.

In the definitive test, Bobwhite quail were exposed to nominal concentrations of 0, 100, 500, and 1,000 mg/kg in feed over 20 weeks. In this test, no adverse effects on growth or reproductive endpoints were observed in any exposure group. Evaluated endpoints included body weight, food consumption, eggs laid, viable embryos, hatching success, 14-day old survivorship and offspring weight; see ECHA (2019) for a complete list of evaluated parameters. No differences in endpoints were observed among the dose levels. The test resulted in an unbounded NOEC of 1,000 mg/kg, equivalent to a no observed adverse effect level (NOAEL) of 84.5 mg/kg-day (ECHA, 2019). The definitive test NOAEL was selected as the TRV over the range finding test NOEC due to the longer exposure duration.

Toxicity to Mammals

For mammals, the chronic toxicity studies summarized in EPA (2019) and other literature were evaluated to identify studies with appropriate endpoints for evaluation ecological hazards focusing on growth, development and reproductive endpoints. These endpoints are typically included in TRVs as these can be more directly associated with ecologically meaningful adverse effects at the population level. Therefore, many of the reported results in EPA (2019) were not appropriate for use as wildlife TRVs due to sub-organism or subcellular endpoints.

Two chronic reproductive and development studies were performed in 2010 by DuPont and are summarized in EPA (2019). From the first study, a NOAEL of 0.5 mg/kg/day was reported based on decreased F1 generation pup weights in mice at the next highest dose (LOAEL, 5 mg/kg/day). In the second study, a NOAEL of 10 mg/kg/day was reported based on early delivery and decreased fetal weights in rats at the next highest dose (LOAEL, 100 mg/kg/day). Consistent with EPA recommendations on wildlife TRVs (USEPA, 2005), the highest NOAEL below the lowest reported LOAEL was selected as the TRV – 0.5 mg/kg/day.

4 ECOLOGICAL SLEA RESULTS

4.1 Data Analysis and QA/QC

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

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

All results of the Ecological SLEA sampling are provided in Appendix B. Results are presented with all validator flags. Some results were rejected following data validation due to very poor matrix spike recoveries. All rejected results were reported as non-detected results and included results for Byproduct 4, Byproduct 5, PFECA-G, FPMOAA, PFO4DA and R-EVE in in various on and offsite media. Laboratory reports and data validation summaries are provided in Appendix E.

Under the scope of the Ecological SLEA, samples of soil, surface water sediment, insects, earthworms, and fish tissue were collected. As is typically the case with tissue sampling, some samples consisted of lower tissue mass resulting in some cases where only a single analysis of Table 3+ SOP compounds was performed (i.e. MS/DUP samples that are run per the SOP could not be run). RPDs for SLEA samples for which duplicate analysis were performed were all within 50%, with the exception of one RPD of 57%, indicating that the reproducibility of the sample analysis is very good. Matrix spike recoveries for SLEA samples for which matrix spikes were performed showed 33% of the spike recoveries were outside laboratory control limits, indicating that there may be some effect of the SLEA matrices on the analytical results.

4.2 Empirical Data Trends

4.2.1 Detection Frequencies of Table 3+ PFAS in Media

Terrestrial Exposure Units

In soil samples collected onsite near seep areas the following Table 3+ PFAS were detected, including:

- HFPO-DA,
- PFMOAA,
- Perfluoro-3,5-dioxahexanoic acid (PFO2HxA),
- Perfluoro-3,5,7-trioxaoctanoic acid (PFO3OA),
- Perfluoro-3,5,7,9-butaoxadecanoic acid (PFO4DA),
- Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid (PFO5DA),
- Perfluoro-2-(perfluoromethoxy)propanoic acid (PMPA),
- 2,3,3,3-Tetrafluoro-2-(pentafluoroethoxy)propanoic acid (PEPA),
- Perfluoro-3,6-dioxa-4-methyl-7-octene-1-sulfonic acid (PFESA-BP1),
- Perfluoro-2-{[perfluoro-3-(perfluoroethoxy)-2-propanyl]oxy}ethanesulfonic acid (PFESA-BP2),
- Byproduct 4,
- Sodium 1,1,2,2-Teatrafluoro-2-(1,2,2,2-tetrafluoroethoxy)ethane-1-sulfonate (NVHOS), and,
- Hydro-EVE Acid.

Meanwhile, Byproduct 5, Byproduct 6, EVE Acid, R-EVE, Perfluoro(2-ethoxyethane)sulfonic acid (PES), Perfluoro-3,6-dioxaheptanoic acid (PFECA B) and (Perfluoro-4-isoproproxybutanoic acid) PFECA-G were not detected in onsite soil samples. Detection frequencies ranged from 9% to 100% and are provided along with summary statistics in Table 4-1. HFPO-DA, PFMOAA and PFO2HxA were the most frequently detected. As discussed in Geosyntec (2019b), Table 3+ PFAS profiles of combined process water and other process waters sources tend to reflect PFMOAA and a mix of other Table 3+ PFAS, where air emissions tend to reflect PMPA, HFPO-DA and PFO2HxA primarily. Onsite soil samples from the seep areas appear to reflect process water sources consistent with the current CSM. The detection frequencies of each Table 3+ PFAS in the evaluated onsite media are provided in Figure 4-1. Data from the onsite seeps were included in this figure to provide information regarding detection profiles but was not considered an exposure media for wildlife.

A higher frequency of detections was observed for onsite soil samples compared to offsite soil samples (Figure 4-2). In soil samples collected via ISM from each Human Health SLEA EU, only HFPO-DA and PFO2HxA were detected (Table 4-2). The detection of only HFPO-DA and PFO2HxA in surface soils supports air emissions as the primary source of Table 3+ PFAS to this EU, however this is complicated by the varying sensitivities of Table 3+ SOP methods between Table 3+ PFAS and between solid and liquid media; it is possible additional Table 3+ PFAS are present in soil below RLs for soil but may be detectable in other media (groundwater, plants) within the same EU.

Surface water samples collected from both onsite (Pond 1 or DERC pond) and offsite (Pond B) resulted in a very similar set of detected Table 3+ PFAS (Figure 4-1 and Figure 4-2). HFPO-DA, PFMOAA, PFO2HxA, PFO3OA, PFO4DA, PFO5DA, PMPA, PEPA, PFESA-BP2, Byproduct 4, NVHOS, Hydro-EVE Acid, and R-EVE were detected in onsite pond surface water samples at detection frequencies of 100% (Table 4-3). These same PFAS, with the exceptions of NVHOS and Hydro-EVE Acid were detected in offsite Pond B with detection frequencies ranging from 66% to 100% (Table 4-4).

In vegetation samples collected from the offsite areas using an ISM approach, more Table 3+ PFAS were detected than were detected in the soil samples also collected from the EUs (Figure 4-2). HFPO-DA, PFMOAA, PFO2HxA, PFO3OA, PFO4DA, PMPA, PEPA, Byproduct 4, Byproduct 5, NVHOS, R-EVE, PES, PFECA B were detected at detection frequencies ranging from 8% to 100% (Table 4-5). PMPA was the most frequently detected compound, followed by HFPO-DA and PFO2HxA, which is consistent with the expected profile of Table 3+ PFAS with air emissions as the primary source (Geosyntec, 2019b).

Insect samples (primarily grasshoppers and crickets) collected from the offsite EUs resulted in a detection profile more similar to the terrestrial vegetation samples compared to offsite soil samples (Figure 4-2). HFPO-DA, PFMOAA, PMPA, PEPA, PFESA-BP1, Byproduct 4, and R-EVE were detected in offsite insect samples with detection frequencies ranging from 9% to 27% (Table 4-6). PMPA was the most frequently detected compound, followed by HFPO-DA, which is consistent with the expected profile of Table 3+ PFAS with air emissions as the primary source (Geosyntec, 2019b).

Onsite earthworm samples collected from near the seep areas of the Site resulted higher detection frequencies for more Table 3+ PFAS than in the offsite insect samples (Table 4-7). These results are consistent with the expectation that offsite invertebrates were primarily exposed via air deposition, whereas the onsite earthworm samples near the onsite groundwater seeps were more likely exposed higher concentrations of PFAS originating from historic process water releases. The detection profile in earthworms showed a high degree of similarity to the detection profile to seep groundwater samples, more so than to surface soil samples, indicating the seep groundwater is potentially the primary exposure media for invertebrates in this area (Figure 4-1). Based on detection frequencies in earthworm samples, the predominant Table 3+ PFAS include HFPO-DA, PFO3OA, PFO5DA. PEPA, PFESA-BP2, Byproduct 4, and R-EVE indicating a process water source (Geosyntec, 2019b).

Byproduct 6, EVE Acid, Hydro EVE Acid and PFECA-G were not detected in any offsite media and therefore were not included in the quantification of exposures. Similarly, Byproduct 6, EVE Acid and PFECA-G were not detected in onsite media and were therefore not included in the quantification of exposures for onsite receptors.

Aquatic Exposure Unit

The detection frequencies of each Table 3+ PFAS in the evaluated aquatic media are provided in Figure 4-3. Only HFPO-DA was detected in one surface sediment sample from the Cape Fear River in the Site-adjacent area evaluated (Table 4-8). No other Table 3+ PFAS were detected. The sampling program included in the Ecological SLEA was a focused sampling event to provide input data to evaluate exposures. A surface sediment sampling program for a larger extent of the Cape Fear River has been developed as per the *Sediment Characterization Plan* (Geosyntec, 2019d). DEQ provided comments on the plan on November 20, 2019 and at the time of writing Chemours was in the process of responding to DEQ's comments. This sampling scope of work is expected to provide a more extensive dataset.

The results from sediment samples collected immediately upstream, adjacent and downstream of the Site indicate that Table 3+ PFAS are not accumulating in sediment above detectable concentrations. Considering the low log K_{oc} values for the Table 3+ PFAS and the sensitivities of analytical methods for soils/sediment compared to water, there is some uncertainty if Table 3+ PFAS may be present in the sediment porewater at detectable concentrations while concentrations are below RLs in bulk sediment. The detection frequencies of each Table 3+ PFAS in the evaluated aquatic media are provided in Figure 4-3.

In the Cape Fear River surface water samples, HFPO-DA, PFMOAA, PFO2HxA, PFO3OA, PFO4DA, PMPA, Byproduct 4, Byproduct 5, NVHOS, and R-EVE were detected with detection frequencies ranging from 11% to 100% (Table 4-9). A similar detection profile was observed in aquatic plants (Figure 4-3). HFPO-DA, PFMOAA, PFO2HxA, PFO3OA, PFO4DA, PFO5DA, PMPA, PEPA, Byproduct 4, NVHOS, and R-EVE detected in aquatic vegetation at detection frequencies ranging from 16% to 66% (Table 4-10).

Notably, no Table 3+ PFAS were detected in Asian clams or the mixed benthic invertebrate sample. Asian clams do not appear to accumulate Table 3+ PFAS to an appreciable extent. Asian clams were sampled as their high abundance resulted in a likely to be consumed invertebrate and efficient sampling program. Benthic invertebrates more closely associated with sediment porewater than Asian clams were not sampled due to the relative limited availability of these species in the sampling area. Species with a closer porewater association are in general associated with greater bioaccumulation of sediment associated chemicals.

In largemouth bass and catfish fillet samples from within the Aquatic EU, PFO4DA and PMPA were detected at detection frequencies ranging from 33% to 50% (Figure 4-3). However, additional Table 3+ PFAS were detected in largemouth bass, bluegill sunfish, catfish and red-breasted sunfish fillet samples from further downstream (CFR-09, MM-68 and Bladen bluffs) including HFPO-DA, PFMOAA, PFO5DA and R-EVE. Most Table 3+ PFAS detected in fillet samples (PFMOAA, PFO4DA, PFO5DA, PMPA, Byproduct 4 and R-EVE) along with PFESA-BP2 and NVHOS were detected in whole-body fish and fish carcass samples as well (Figure 4-3; Table 4-11).

Table 3+ compounds PFESA-BP1, PFESA-BP2, Byproduct 6, EVE Acid, Hydro EVE Acid, PES, PFECA-B and PFECA-G were not detected in any aquatic media and therefore were not included in the quantification of exposures for this EU.

4.2.2 Spatial Patterns of Table 3+ PFAS in Media

Terrestrial EUs

In offsite surface soil samples, the limited detections of HFPO-DA and PFO2HxA occurred in EU-1, EU-3, and EU-5, which are the EUs closest to the Site and in the predominant wind direction. As discussed above, the detections of HFPO-DA and PFO2HxA support air emissions as the primary source, though typically PMPA is expected to be detected in air emission sourced PFAS; PMPA was not detected here, is more mobile in the subsurface than HFPO-DA and PFO2HxA and so the lack of detection may reflect this higher mobility.

Offsite vegetation samples showed a similar pattern, with the most detected Table 3+ PFAS in EU-1. Detections in plants were much more frequent than in soil. Generally higher concentrations of the sum of all Table 3+ PFAS were observed in EU-2 and EU-11 (Figure 4-4). This was generally expected for EU-2 given proximity to the Site. Notably elevated concentrations of NVHOS and PMPA were observed at EU-11 and of HFPO-DA at EU-12. Given that the available soil and groundwater data in these EUs do not indicate relatively elevated concentrations of HFPO-DA, no clear mechanism for this pattern is evident.

In addition to a higher detection frequency for Table 3+ PFAS, the concentrations detected in onsite soils were typically at least an order of magnitude higher. The maximum concentration of HFPO-DA in offsite soils was 2,600 nanogram per kilogram (ng/kg) but was detected up to 29,500 ng/kg in onsite surface soil samples. PFO2HxA was detected as high as 2,300 ng/kg in offsite soils, but as high as 47,000 ng/kg in onsite soils. While other Table 3+ PFAS were not detected above RLs in offsite soil samples, Table 3+ PFAS in onsite soils ranged as high as 150,000 ng/kg for PFMOAA. The onsite surface soil samples were the only surface soil data with the full Table 3+ PFAS data set available and the limited scope did not enable and assessment of spatial trends. However, based on the results of onsite subsurface soil samples (Geosyntec, 2019b), the combined data suggest that concentrations of HFPO-DA may be elevated near historical process water release locations and along the eastern edge of the Site where observed groundwater seeps containing PFAS from historical process water releases. Concentrations in subsurface are typically lower on the southwestern edge of the Site, though surface data are lacking for this area.

Aquatic EUs

The focus of the aquatic EU area is the Cape Fear River from north of the Site at Willis Creek south to approximately Georgia Branch Creek. The concentrations of total Table3+ PFAS were generally highest in soils and aquatic vegetation from near the onsite seep areas, with lower concentrations in media sampled below the dam (Figure 4-5). In sediment samples collected from this area, limited detections did not enable an assessment of spatial patterns. In aquatic vegetation samples, Total Table 3+ PFAS were highest in the Site adjacent area and decreased in samples below the dam. Concentrations of Table 3+ PFAS in aquatic vegetation were in the same order of magnitude as terrestrial plant samples, with the exceptions of PFMOAA, PFO2HxA, and PEPA which were typically an order of magnitude higher in aquatic samples.

In whole-body fish samples collected from the Aquatic EU, no clear spatial patterns were observed which is consistent with the expectation that many fish will forage throughout the Aquatic EU rather than spatially distinct areas. When evaluated along with downstream fillet samples collected at Bladen Bluffs and CFR-09 and upstream at River Mile 68, concentrations of Table 3+ PFAS were generally on the same order of magnitude as samples collected from areas adjacent to the Site, with no clear decrease in concentrations. HFPO-DA was detected in 3 of 6 largemouth bass samples from these downstream locations but was not detected in samples from closer to the Site. Samples of other species from Bladen Bluffs did not result in detectable HFPO-DA. PFO4DA was also detected at an order of magnitude higher in a Bluegill sunfish sample from Bladen Bluffs compared to Site-adjacent samples.

4.2.3 Bioaccumulation Potential of Table 3+ PFAS

The bioaccumulation potential of a compound is of particular interest when considering ecological exposures. Compounds that are non-metabolizable and have high accumulation potential result in elevated exposures to upper trophic level organisms, many of which are important species for ecological function. Metabolizable compounds are typically removed by organisms at a rate that prevents this accumulation in the absence of on-going exposures. HFPO-DA is expected to be metabolized and have a low bioaccumulation potential based on results of bioconcentrations tests with fish (DuPont,2009b; Hoke et al., 2016; Goodband, 2019, Pan et al., 2017), and is expected to be metabolizable in mammals based on the lack of detections in human blood serum of exposed populations (Kotlarz et al, 2019; NC State University, 2018).

As part of the estimation of TDI in each EU, Site-specific Soil to Terrestrial Invertebrate Bioaccumulation Factors (BSAF) and fillet to whole body ratios for fish were calculated to expand the utility of these datasets, and can provide some indication of bioaccumulation of Table 3+ PFAS in these media.

Soil to Terrestrial Invertebrate Bioaccumulation

The paired soil and earthworm samples are a useful indicator of terrestrial bioaccumulation potential for Table 3+ compounds. Six samples of paired soil and earthworms were collected from areas of the Site where a high concentration of Table 3+ compounds in soil was anticipated, specifically areas near groundwater seeps along the Cape Fear River. These areas were targeted with the expectation that a higher frequency of detected compounds and higher concentrations would occur, allowing for a better dataset to understand bioaccumulation and evaluation of exposures under reasonable worst-case conditions.

The ratio of each detected Table 3+ PFAS in earthworm (ng/kg ww) to soil (ng/kg dw) was calculated for each paired sampled and averaged for a Site-specific BSAF (Table 4-12). The results indicated the following:

- BSAFs for Byproduct 4, Byproduct 5, NVHOS, and R-EVE ranged from 2 kg ww/kg dw to 12 kg ww/kg dw and were all greater than 1, indicating accumulation of these PFAS from soil to earthworm tissues.
- BSAFs for HFPO-DA, PFMOAA, PFO2HxA, PFO3OA, PFO4DA, PFO5DA, PMPA, PEPA, PFESA-BP1, PFESA-BP2, and Hydro-EVE Acid were all below 1, indicating negligible bioaccumulation from soil to earthworms.
- BSAFs for Byproduct 6, EVE Acid, PES, PFECA B, PFECA-G could not be calculated due to a lack of detections in either media.

Whole-body to Fillet Ratios for Fish

Flathead, channel and blue catfish along with angler sized largemouth bass were collected in support of the HH-SLEA. These samples were analyzed for fillet only, however six samples were analyzed as both fillet and carcass samples to estimate whole-body to fillet ratios (Table 4-13). The whole-body to fillet ratios (WB:F) were then applied to the fillet EPCs for use in estimating exposure. This step also provided information on the tissue specific partitioning of Table 3+ PFAS. Based on data availability, WB:F ratios were calculated for either largemouth bass or catfish for PFO4DA, PFO5DA, PMPA, PFESA-BP2, Byproduct 4, and R-EVE. Generally, concentrations were higher in carcass samples, resulting in WB:F ratios greater than 1 (1.2 to 4.6). PFO4DA in catfish and PFESA-BP2 in largemouth bass resulted in WB:F ratios less than one, suggesting higher partitioning in fillet muscles. However, ratios were variable between samples of the same species and given the small size of the data set are uncertain.

4.2.4 Summary of Observations from Empirical Data:

Based on empirical data collected the following observation were made:

- Neither offsite soil nor Cape Fear River sediment resulted in high detection frequencies of any Table 3+ PFAS though given the difference in sensitivities between soil and sediment analytical methods compared to aqueous media analytical methods some uncertainties remain regarding the magnitude of potential exposure to porewater, but this exposure is bounded by the soil and sediment reporting limits.

- Accumulation of Table 3+ PFAS in both terrestrial and aquatic plants was observed, but accumulation in invertebrates was limited to terrestrial invertebrates; Table 3+ PFAS were not detected in the sampled aquatic invertebrates though some uncertainties remain regarding the presence of and bioaccumulation in species with different feeding mechanisms.
- PFMOAA, PMPA, NVHOS, PFO4DA, PFO5DA, Byproduct 4, and R-EVE were the primary Table 3+ PFAS detected in whole-body fish in the Aquatic EU. Accumulation of these Table 3+ PFAS in fish was observed, but data generally suggest that the other Table 3+ PFAS do not have bioaccumulative potential in fish based on a lack of detections in fish tissue samples.
- The higher detection frequencies of Table 3+ PFAS in soil samples near onsite seeps are consistent with the current CSM. The detection profile of Table 3+ PFAS in groundwater and seeps from the onsite area are reflective of process water. The detection profile in soils in the offsite area appear to reflect aerial emissions and aerial deposition processes.

4.3 Quantification of Exposure

The data for soil, sediment, surface water, plant, invertebrates and fish tissue were used to estimate TDIs for the potentially exposed receptors described in Section 3.3. EPCs and TDIs were calculated on an EU specific basis as described in Section 3.4. Results are discussed for each EU below.

4.3.1 Exposure Point Concentrations

EPCs were calculated for all EU specific exposure media as described in Section 3.2 Summary statistics for each EU and media specific exposure datasets are provided in Tables 4-1 through 4-11. For each Table 3+ PFAS the EPC is selected for that media in its respective Summary Statistics table.

EPCs for all media are compared for the primarily detected Table 3+ PFAS in the Figure 4-6 series. As indicated in this figure set, the highest EPCs were variable for different compounds. For many Table 3+ PFAS (HFPO-DA, PFMOAA, PFO2HxA, PMPA, PEPA, and NVHOS) the highest EPCs were observed in plants; for other compounds (PFO3DA, PFO5DA, PEFSA-BP1, PEFSA-BP2, Byproduct4, Hydro-EVE and R-EVE) the EPCs were highest for invertebrates; only one compound resulted in the highest EPCs in fish tissue (PFO4DA).

4.3.2 Onsite Terrestrial

The onsite terrestrial dataset includes surface soil and earthworm samples collected from the areas of known seeps on Site, and surface water from the onsite Pond 1. No onsite vegetation samples were collected, however the maximum concentration of either the aquatic or offsite terrestrial vegetation samples were applied as the plant EPC. EPCs are summarized for the onsite EU in Table 4-14.

The onsite soil EPC was used to evaluate exposures for directly exposed plants and invertebrate communities (Table 4-15). For wildlife receptors in the onsite EU, TDI was calculated for each Table 3+ PFAS for each receptor and are presented in Tables 4-16a through 4-16d. As shown in Figure 4-7, TDI for the ΣTable 3+ PFAS were similar for all receptors, ranging from 0.003 mg/kg-bw day to 0.21 mg/kg-bw day. TDI was largely dependent on overall food ingestion rates rather than by feeding guild.

The profile of Table 3+ PFAS did vary considerably between herbivores and invertivores in the onsite area. Herbivores were primarily exposed to NVHOS, PFMOAA, PMPA and PFO2HxA. HFPO-DA represented < 5% of TDI of Table 3+ PFAS for herbivores. However the exposure estimates for NVHOS is primarily driven by vegetation, which is based on measurement of offsite concentrations in plants (as discussed above, as onsite vegetation was not sampled the maximum of offsite and aquatic vegetation was used) and so may not reflect true onsite exposures. The profile of Table 3+ PFAS of TDI for invertivores were dominated by PFMOAA, followed by Byproduct4, Byproduct5 and HFPO-DA. HFPO-DA represented ~10% of TDI of Table 3+ PFAS for invertivores.

4.3.3 Offsite Terrestrial

The offsite terrestrial dataset includes surface soil samples, vegetation samples and insect samples collected from the offsite EU area using ISM, and surface water from the offsite Pond B. As the offsite insects collected did not represent the targeted soil-associated invertebrates, the maximum of the offsite insect and an estimated offsite earthworm concentration (calculated using Site-specific BSAFs) were applied as the EPCs. EPCs are summarized for the offsite EU in Table 4-17.

The offsite soil EPC was used to evaluate exposures for directly exposed plants and invertebrate communities (Table 4-18). For wildlife receptors in the offsite EU, TDI was calculated for each Table 3+ PFAS for each receptor and are presented in Tables 4-19a through 4-19d. As shown in Figure 4-8, TDI for the ΣTable 3+ PFAS was highest for the Eastern Cottontail rabbit (0.12 mg/kg-bw day), but similar for all other receptors, ranging from 0.03 mg/kg-bw day to 0.06 mg/kg-bw day. In the onsite areas, similar concentrations in most diet items resulted in TDIs that were largely dependent on overall food ingestion rates rather than by feeding guild. Here the combined elevated ingestion rate for

Cottontail rabbits and higher concentrations in plants than soils and invertebrates resulted in a higher TDI for this receptor.

The profile of Table 3+ PFAS between herbivores and invertivores was similar to the onsite area. Herbivores were exposed to much higher levels of NVHOS in this EU accounting for approximately 70% of TDI. PFMOAA was the next highest exposure in herbivores. In invertivores, PMPA, Byproduct 4, Byproduct 5 and HFPO-DA were the most significant contributors to TDI accounting for approximately 60% of TDI.

4.3.4 Aquatic EU

The Aquatic EU dataset includes sediment, surface water, aquatic vegetation, Asian clam/benthic invertebrate and fish tissue samples collected from Cape Fear River. EPCs are summarized for the Aquatic EU in Table 4-20.

The aquatic sediment EPC was used to evaluate exposures for directly exposed benthic invertebrate communities and the surface water EPC was used to evaluate exposures for directly exposed aquatic life and plants (Table 4-21). For wildlife receptors in the Aquatic EU, TDI was calculated for each Table 3+ PFAS for each receptor and are presented in Tables 4-22a through 4-22f. As shown in Figure 4-9, TDI for the ΣTable 3+ PFAS were highly variable. Herbivores were estimated to have TDI two orders of magnitude higher than other receptors (0.2 mg/kg-bw day and 0.1 mg/kg-bw day for Muskrat and Wood duck, respectively). The fish consuming receptor – Great Blue heron – had the next highest TDI of 0.01 mg/kg-bw day. The mammalian fish-eating receptor – the River otter - resulted in a lower TDI compared to the Great Blue heron due to its larger home range. As Table 3+ PFAS were not detected above method detection limits in benthic invertebrates, invertivore receptors (Mink and Mallard duck) had very low TDI and a highly uniform profile of Table 3+ PFAS primarily reflecting RLs as EPCs for non-detect results.

While the profile of the Table 3+ PFAS in invertivores was uninformative due to low detection frequencies, the profile of Table 3+ PFAS between herbivores and piscivores were different. Herbivores consuming aquatic vegetation were exposed to a much higher level of PFMOAA accounting for approximately 66% of TDI. PMPA and PFO2HxA were the next two most predominant of the Table 3+ PFAS. In piscivores, PFO4DA followed by PFMOAA and Byproduct4 were the most significant contributors to TDI. HFPO-DA contributed < 10% of TDI for all aquatic receptors.

4.3.5 Summary of Observations from Quantification of Exposures

Based on the evaluation of the Ecological SLEA dataset and quantifications of TDI for various receptors both on and offsite, the following observations are indicated:

- The TDI of ΣTable3+ compounds ranged from 0.002 mg/kg-bw day to 0.2 mg/kg-bw day across all EUs and receptors. Exposures occurring onsite are higher than those occurring offsite or in the Aquatic EU.
- Terrestrial herbivores are primarily exposed to NVHOS in the offsite EU, and a combination of NVHOS and PFMOAA in the onsite EU, however the EPC for NVHOS for the onsite EU was represented by offsite data adding uncertainty.
- Offsite invertivores are primarily exposed to PMPA, Byproduct4, Byproduct5, and R-EVE. Onsite invertivores are primarily exposed to PFMOAA and Byproduct4.
- Aquatic herbivores in the Cape Fear River are primarily exposed PFMOAA followed by Byproduct4, Byproduct5 and PMPA. Invertivores are not highly exposed based on the currently available dataset. Piscivores are primarily exposed to PFO4DA, PFMOAA and Byproduct4.
- Key Table 3+ PFAS of interest for ecological exposures based on this evaluation include NVHOS, PFMOAA, PMPA, Byproduct4, and PFO2HxA, which represented the Table 3+ PFAS with the highest exposures in the most-exposed ecological feeding guilds (herbivores) in both terrestrial and aquatic habitats. PFO4DA may be of ecological concern for fish-consuming receptors.

4.4 <u>Hazard Assessment of HFPO-DA</u>

The TDI for each Table 3+ PFAS for each receptor was calculated as described above. As toxicological benchmarks are available for only HFPO-DA, a hazard assessment specific to HFPO-DA was included in this Ecological SLEA. As discussed in Section 3.5, to evaluate potential hazards via complete exposure pathways to receptors, TRVs were selected as NOAEL or PNEC values from the literature (Table 3-10). To evaluate hazards to directly exposed receptors (aquatic life, terrestrial plants and invertebrates), the EPC for that EU-specific media was compared to the selected TRV to calculate the HQ. For receptors exposed via dietary consumption, the TDI for HFPO-DA was compared to the TRV to calculate the HQ.

Overall, the current exposures of HFPO-DA to wildlife are unlikely to result in adverse effects to wildlife communities either onsite, offsite or in the Cape Fear River based on the results of this evaluation. As shown in Table 4-23, HQs ranged from 0.00000008 to 0.24 indicating that current exposures in these EUs do not pose a hazard to ecological receptors. The highest HQ was observed for onsite terrestrial plants and invertebrates based on the PNEC for soil communities. As noted in Section 3.5, the uncertainty regarding the PNEC is high as it was based on aquatic invertebrate toxicity rather than terrestrial. Although there is high uncertainty on the PNEC for soil, based on observations at the Site, plant and terrestrial invertebrate communities are abundant with no observed signs of potential stress.

HQs for wildlife receptors were all below 0.02 indicating that current exposures to HFPO-DA not pose a hazard to wildlife. As discussed in Section 3.5, the range finding study for HFPO-DA in birds (ECHA, 2019) indicated some slight reductions in reproduction at a 100 mg/kg dosing level (dose representing the concentration of HFPO-DA in food), but the definitive study NOEC was at the 1,000 mg/kg dose HQs for birds were all < 0.0002 and so if the range finding study NOEC was applied (i.e. a 10X lower TRV), exposures would not result in HQs > 1.

4.5 Additional Data Evaluations and Lines of Evidence

Toxicity reference values for many Table 3+ PFAS are still being developed, particularly with respect to ecological receptors. Therefore, it was necessary to investigate additional lines of evidence to inform development of the CSM and to qualitatively evaluate potential risk to biota to support the exposure quantifications and HFPO-DA hazard assessment. The following additional lines of evidence were included:

- Results of Whole Effluent Toxicity (WET) testing conducted by Chemours Fayetteville, and
- Additional environmental data regarding Table 3+ PFAS in the Fayetteville region and Cape Fear River Estuary.

4.5.1 WET Testing to Evaluate Risks to Aquatic Life

Whole Effluent Toxicity (WET) testing at the Site has shown that effluent does not pose a hazard to aquatic life. WET testing is a tool used to evaluate effluent toxicity utilizing an aquatic toxicity test that employs standardized methods (USEPA, 2000). WET tests are used by regulatory agencies to assess water quality, develop permit limits, and assess permit compliance. This type of testing is particularly useful in determining the combined toxicity of effluent to aquatic biota, without identifying the specific chemicals within the effluent that are likely to be responsible for effects. The overarching goal of WET testing is to ensure that water quality criteria are designed with consideration to protecting aquatic ecosystem health (USEPA, 2000).

The USEPA has approved the following testing methods to evaluate the acute and/or chronic toxicity of whole effluents to freshwater, marine, and/or estuarine biota:

- Acute toxicity to Freshwater and Marine organisms
- Chronic toxicity to Freshwater organisms
- Chronic toxicity to Marine/Estuarine organisms

Per the USEPA (2000), the study design for WET testing must include a control group and a minimum of five effluent concentrations that are ≥ 0.5 dilution factor of the whole effluent. Acute exposures are evaluated for 24, 48, and 96 hours. Chronic toxicity to freshwater organisms is evaluated for four to eight days, while chronic toxicity to marine and estuarine organisms is evaluated for one hour to nine days. Although there are inherent differences in species sensitivities, reproductive toxicity is widely accepted as a sensitive endpoint in toxicity testing, as well as an important indicator of potential population level effects.

The Chemours Fayetteville manufacturing facility conducts WET testing in accordance with their National Pollutant Discharge Elimination System (NPDES) permit requirements. Thirteen chronic studies were conducted between February 2016 and February 2019, in which *Ceriodaphnia dubia* were exposed to 3.3% effluent from the Fayetteville manufacturing facility. Mortality and reproduction of *C. dubia* were recorded daily for the duration of the test. As seen in Table 4-24, no statistically significant adverse effects on either of the aforementioned endpoints were observed during any of the tests. For context, a 3.3% dilution of effluent containing approximately 40,000-80,000 ng/L of HFPO-DA (which is representative of concentrations in effluent over the time frame of WET tests [Geosyntec, 2019e]) corresponds to an exposure concentration of 1,320 to 2,640 ng/L. Concentrations of HFPO-DA were below this exposure concentration in all SLEA surface water samples from the CFR supporting the conclusion of this Ecological SLEA that there are no potential hazards to aquatic life from current concentrations of HFPO-DA in the CFR.

4.5.2 Additional Regional Environmental Data

Certain Table 3+ PFAS were detected in abiotic and biota media in the Cape Fear River and the terrestrial area surrounding the facility. Other efforts by research facilities, including state and Federal agencies, have developed additional datasets regarding the presence of Table 3+ PFAS in the environment. Major findings from publicly available studies are briefly summarized below; many of the studies discussed below are currently in progress and have only reported preliminary findings thus far.

Robuck et al. (2019) measured the concentrations of 17 PFAS, including four Table 3+ PFAS, in Atlantic seabirds, as a proxy for homeothermic vertebrates. Chick and juvenile seabirds were sourced from coastal habitats including the CFR Estuary, Massachusetts Bay, and Narragansett Bay. Tissues analyzed included brain, heart, kidney, liver, lungs, muscles, and spleen. Other biological samples analyzed included blood, fat, preen, and feces. The studied analyzed samples for four Table 3+ PFAS (HFPO-DA, PFO4DA, PFO5DA and PFESA-BP2) and non-Table 3+ PFAS (PFOS and other PFSAs, PFCAs, perfluorooctane sulfonaminde). While raw data has been made available for review, based on the presentation of data in Robuck et al. (2019) HFPO-DA was not detected in significant quantities; PFESA-BP2, PFO5DA, and PFO4DA were detected in all CFR Estuary seabirds tissue samples. The relative contributions of these Table 3+ PFAS to total PFAS was highly variable between samples, particularly for PFESA-BP2; however, the study concluded that PFOS is the predominantly accumulated PFAS in all habitats.

The data from this Ecological SLEA indicate that fish are not experiencing high rates of HFPO-DA bioaccumulation, though detectable concentrations were observed in some samples. One composite sample of seven Red-ear sunfish caught the Cape Fear River near the Site also had detectable levels of HFPO-DA, though none of the other fish samples collected during that sampling event had measurable levels of HFPO-DA (NCDEQ, 2018). Guillette et al. (2019) also reported detectable concentrations of HFPO-DA and PFESA-BP2 in the serum of Striped bass (*Morone saxatilis*) and American alligators (*Alligator mississippiensis*) in the Cape Fear River. However, PFOS was overwhelmingly the largest contributor of the total PFAS body burden in both species (Guillette et al., 2019).

Lastly, a human biomonitoring study conducted near the Fayetteville production facility did not find HFPO-DA in blood serum, despite documented community-wide exposure to HFPO-DA via impacted drinking water (Kotlarz et al., 2019). However, other Table 3+ PFAS were detected at a high frequency, including PFESA-BP2, PFO4DA, PFO5DA, and Hydro-Eve. This supports the conclusion that HFPO-DA does not appear to be strongly bioaccumulative or have a long half-life in humans, and that other Table 3+ PFAS may be more frequently detected in upper trophic levels.

5 UNCERTAINTIES

There are a number of uncertainties related to all SLEAs/SLERAs, based on the use of assumed parameters for ecological modeling, spatial variation of chemicals in media, and organism habitat use patterns, among other uncertainties. While these uncertainties are relevant, the assumptions used in the Ecological SLEA aimed to provide additional conservatism where there was significant uncertainty. For example, exposure parameters were selected to provide reasonable maximum exposure estimates by selecting maximum reported consumption rates, minimum body weight estimates, small home range estimates, and by selecting EPCs based on maximum EPCs in varying diet items (i.e. the highest fish species EPC was selected to represent all fish). The remainder of this section focuses more on project specific uncertainties, such as analytical or field sampling related uncertainties, uncertainties in the analyses and uncertainties in the CSM.

Analytical Uncertainties:

For Table 3+ analyses the laboratory runs both a primary and laboratory replicate sample and reports the average of the two runs. In some fish tissue and invertebrate samples too small a mass of tissue was available to run both. As noted above in Section 4.1, this does not add additional uncertainty to the analytical results, and the results from the primary are considered usable.

Many Table 3+ PFAS were not detected in all media however EPCs are needed for all Table 3+ PFAS to estimate TDI. If a Table 3+ PFAS was not detected in any exposure media in an EU, it was not included in the calculation of exposures. However, if a Table 3+ PFAS was detected in some media of an EU, it was carried forward in the quantification of exposures using the RL as the EPC for media where that compound was not detected. The use of the RL as EPCs will lead to overestimates of exposures. In some instances with a high frequency of non-detect results (e.g. benthic invertebrates, offsite vegetation) substituting zeros for the RLs for non-detect results reduces TDI estimates for these receptors by up to 90%.

Uncertainties in the Ecological SLEA Analysis:

This analysis did not assess hazards to exposed receptors for Table 3+ PFAS outside of HFPO-DA due to the lack of Table 3+ PFAS specific TRVs. Under Paragraph 14 of the CO, Chemours is evaluating toxicity of PFMOAA, PMPA, PFO2HxA, PEPA, and PFESA-BP2 to mammalian and aquatic life receptors. These tests include mammalian repeated dose and immunotoxicity studies and aquatic toxicity testing. These results will enable an evaluation hazard for these Table 3+ PFAS. The potential for toxicity of individual Table 3+ PFAS to be influenced by the composition of Table 3+ PFAS mixtures is considered an uncertainty, but this is an uncertainty that occurs with the majority of multichemical hazard assessments and in particular hazard assessments related to any PFAS.

The southern hognose snake is a listed species at risk that may potentially be found in the Site. This species is primarily a carnivore and likely has similar exposure to a carnivorous or invertivorous mammal or bird so it is unlikely that an evaluation would indicate potential hazard given the low HQs for HFPO-DA noted herein, but this is considered an uncertainty as no reptiles were evaluated in the Ecological SLEA. Toxicity data on reptiles for any PFAS is scarce (McCarthy et al., 2019; Conder et al., 2019).

Larger ranging carnivores that consume small birds and mammals were not included in this evaluation as the collection of small bird and mammal tissue samples to understand exposure to these receptors is a significant undertaking and was not feasible in the SLEA development timeframe. Typically, large ranging carnivores have low exposures due to their large home ranges relative to impacted areas of sites. However, given the large area of detectable Table 3+ PFAS in offsite groundwater and vegetation samples, exposure to these receptors could be significant for Table 3+ PFAS that are not metabolized by small birds and mammals. Based on the available supporting lines of evidence, Table 3+ PFAS to which carnivores may be exposed are primarily PFESA-BP2, PFO4DA, PFO5DA.

Vegetation samples were collected from the offsite area to represent terrestrial exposures and from the Cape Fear River to represent aquatic exposures. However, this SLEA did not include the collection of plant samples from the onsite area. Considering elevated concentrations in soil and earthworms near the onsite seeps, this is considered an uncertainty that may underestimate exposure to onsite herbivores.

Asian clam samples were collected as they were highly abundant in the aquatic EU and sediment grab samples did not indicate sufficient mass of invertebrate tissues of other species could be collected for analysis in the available time frame. Since Asian clams are abundant, it is likely they are being consumed by wildlife, however they may not represent the highest exposure for benthic invertivores as clams derive their exposure from the overlying water in addition to sediment and porewater. Benthic invertebrates with burrowing or tube-forming feeding habits may have higher exposures due to a closer association with sediment porewater.

Uncertainties in the CSM:

The higher detection frequency of Table 3+ PFAS in vegetation and insects from the offsite EU and the high detection frequencies of PMPA and HFPO-DA, which are markers for air emission (Geosyntec, 2019b, c) supports that aerial emissions were the migration pathway to the offsite area. It is unclear if the presence of Table 3+ PFAS in plants and insects resulted from both aerial deposition on to the organism directly or from the aerial deposition to soil and subsequent uptake from soil pore water into plants, and consumption of those plants by insects. Understanding the relative contribution of each pathway is complicated by the low frequency of detection in offsite soils. The detection limits in soil are not as sensitive as water (by 2-3 orders of magnitude), and potentially less sensitive than wet weight tissue analysis, therefore the higher detection frequencies in these media may be an artifact of RLs. Alternatively, due to the low log K_{oc} of most Table 3+ PFAS, compounds in soil may rapidly partition to groundwater resulting in non-detects for soil samples but may remain on the tissues of plants and insects resulting in higher detection frequencies.

Studies from a PFAS manufacturing facility in the Netherlands with similar release mechanisms provides some indication that these two pathways are both important contributors. Concentrations of HFPO-DA in plant samples from offsite areas were reduced by about half after washing (Mengelers et al., 2018). These results may also suggest that exposure to Table 3+ PFAS may be reduced by washing vegetation; based on this, natural weathering/raining may reduce exposure to ecological herbivores as well, though this has not been studied The similar profiles between plants and insects indicates that air emissions is the primary source regardless of specific uptake pathways into organisms, though no information regarding the timing of deposition either onto organism tissues or in soil porewater for subsequent uptake into organisms is available and may have occurred prior to emission reduction controls put in place by Chemours.

The sediment samples collected from the Cape Fear River were widely non-detect for Table 3+ PFAS indicating bulk sediment is not a sink or potential long-term source of Table 3+ PFAS. However, given the noted analytical sensitivities between soil and aqueous matrices and the lower organic carbon partitioning of Table 3+ PFAS there is uncertainty in the potential for Table 3+ PFAS to be present in sediment porewater at detectable concentrations while at concentrations lower than the reporting limit for Table 3+ PFAS in sediment. This could result in exposures to benthic invertebrates that may not be accounted for by the bulk sediment analyses.

PFESA-BP2 has been detected by other studies in human blood serum and alligator blood serum (Kotlarz et al, 2019; Guillette et al. 2019; Robuck et al. 2019). However, in this evaluation PFESA-BP2 was not detected in plants from offsite and aquatic areas or in Cape Fear River surface water (but was detected in onsite and offsite Pond water) and was not detected in fish tissue samples. BSAF for earthworm were moderate but complicated by non-detect results in soil and therefore possibly underestimated. The high frequency of detection (FOD) in blood with present information appears to be inconsistent with the low FOD in environment.

6 SUMMARY

This Ecological SLEA evaluated the presence of Table 3+ PFAS in multiple abiotic and biotic media in the terrestrial areas on and surrounding the Site and in the adjacent Cape Fear River. Ecological hazard and exposure assessments for all PFAS, especially for more recently studied PFAS such as the Table 3+ PFAS, are in their infancy, and a number of uncertainties remain. Overall this Ecological SLEA aimed to evaluate the extent and magnitude of exposures with a reasonable degree of confidence, but conclusions resulting from the data, analyses and interpretation described herein are presented in the context of the uncertainties described above.

Up to 17 individual Table 3+ PFAS were detected in samples of onsite soils, invertebrates, terrestrial and aquatic vegetation and fish. Very few (less than two) Table 3+ PFAS were detected in sediment, benthic invertebrates and offsite soils. Concentrations were generally highest in the onsite area relative to the Cape Fear River and offsite terrestrial areas, and predominant exposures are related to consumption of terrestrial and aquatic plants by herbivorous wildlife like rabbits and muskrats. NVHOS, PFMOAA, PMPA, Byproduct4, and PFO2HxA represent the highest exposures to these receptors, and mammalian toxicity evaluation of PFMOAA, PMPA, and PFO2HxA will be very helpful in evaluating the potential hazards of these exposures. Sediment sampled in Cape Fear River and soil sampled in offsite area were primarily non-detect for Table 3+ PFAS, though due to difference between soil and sediment analytical method sensitivities compared to aqueous samples Table 3+ PFAS may be present in these samples where aqueous phases are present (groundwater, porewater).

No adverse hazards were identified to ecological receptors from current exposures to HFPO-DA onsite or offsite. The primary exposures are related to the onsite seep areas and consumption of plants in the offsite area. Under the CO, Chemours is implementing significant source control of air emissions and discharges to the Cape Fear River which will significantly reduce exposures to ecological receptors.

7 REFERENCES

Beekman, M., P. Zweers, A. Muller, W. de Vries, P. Janssen, and M. Zeilmaker. 2016. Evaluation of Substances Used in the Gen-X Technology by Chemours, Dordrecht. RIVM Letter Report 2016-0174. The Netherlands, National Institute for Public Health and the Environment, Ministry of Health, Welfare and Sport. Accessed October 2019.

Cahoon, L.B., MIkucki, J.A., Mallin, M.A. 1999. Nitrogen and Phosphorus Imports to the Cape Fear and Neuse River Basins To Support Intensive Livestock Production. Environ. Sci. Technol., 33:410-415.

Cape Fear River Partnership, 2019. The Cape Fear River And Migratory Fish. Accessed at: https://capefearriverpartnership.com/river/

Chemours, 2019. Chemours' Proposed Toxicity Study Work Plan Pursuant to Paragraph 14 of the Consent Order. Chemours Fayetteville Works. March 27, 2019.

Conder, J., Arblaster, J., Larson, E., Brown, J., Higgins, C. 2019. Guidance for Assessing the Ecological Risks of PFAS to Threatened and Endangered Species at Aqueous Film Forming Foam-Impacted Sites. SERDP Project ER18-1614. July. https://www.serdp-estcp.org/Program-Areas/Environmental-Restoration/ER18-1614

Conder, J. M., R. A. Hoke, W. d. Wolf, M. H. Russell & R. C. Buck (2008) Are PFCAs Bioaccumulative? A Critical Review and Comparison with Regulatory Criteria and Persistent Lipophilic Compounds. Environmental Science & Technology, 42, 995-1003.

Cornell Lab of Ornithology. 2019. All About Birds. https://www.allaboutbirds.org/guide/Wood_Duck/lifehistory

Cumberland County Joint Planning Board (CCJPB), 2016. Southeast Cumberland County Land Use Plan. https://www.co.cumberland.nc.us/vd-planning/Downloads/land_use/Southeast_Cumberland/Southeast_Cumberland_FINAL_SIGNED.pdf

DuPont-17568-1675: E.I. du Pont de Nemours and Company. 2008a. Estimation of the Adsorption Coefficient (Koc) of the HFPO Dimer Acid Ammonium Salt on Soil and Sludge. OECD Test Guideline 121. Study conducted by DuPont Haskell Global Centers for Health and Environmental Sciences (Study Completion Date: September 11, 2008), Newark, DE

DuPont-25938 RV1: E.I. du Pont de Nemours and Company. 2008b. H-28397: Activated Sludge Respiration Inhibition Test. OECD Test Guideline 209. Study conducted by DuPont Haskell Global Centers for Health and Environmental Sciences (Study Completion Date: September 5, 2008; Revision Date: October 21, 2008), Newark, DE

DuPont-26349: E.I. du Pont de Nemours and Company, 2008c. Determination of the Dissociation Constant and UV-VIS Absorption Spectra of H-28307. U.S. EPA OPPTS 830.7370; OECD Test Guidelines 101 and 112. Study conducted by Wildlife International, Ltd. (Study Completion Date: September 17, 2008), Easton, MD

DuPont-A080558: Du Pont-Mitsui Fluorochemicals Company, Ltd., 2009a. Ready Biodegradability Test of FRD903. Test guideline not identified. Study conducted by Mitsubishi Chemical Medience Corporation, Yokohama Laboratory (Study Completion Date: May 25, 2009), Yokohama, Japan

DuPont-23459, 2007. *In vitro Trout Hepatocyte Bioaccumulation Screen.* Study conducted by Haskell Laboratory Discovery Toxicology Group (Study Completion Date: June 15, 2007).

DuPont-A080560: Du Pont-Mitsui Fluorochemicals Company, Ltd. 2009b. Bioconcentration Study of FRD903 with Carp. Test guideline not identified. Study conducted by Mitsubishi Chemical Medience Corporation, Yokohama Laboratory (Study Completion Date: June 26, 2009), Yokohama, Japan

European Chemical Agency. 2019. Registration Dossier for HFPO_DA EC number: 700-242-3. Ecotoxicology Summary. https://echa.europa.eu/registration-dossier/-/registered-dossier/2679/6/1

Environmental Working Group (EWG), 2019. PFAS Contamination Map. Accessed at: https://www.ewg.org/interactive-maps/2019_pfas_contamination/map/

Geosyntec Consultants, 2018. Assessment of the Chemical and Spatial Distribution of PFAS in the Cape Fear River. September 17, 2018.

Geosyntec Consultants, 2019a. Draft Corrective Action Plan - Chemours Fayetteville Works. December.

Geosyntec Consultants, 2019b. Site Assessment Report Chemours Fayetteville Works. October.

Geosyntec Consultants, 2019c. Offsite Screening Level Exposure Assessment Of Site Associated PFAS - Workplan Chemours Fayetteville Works. July.

Geosyntec Consultants, 2019d. Sediment Characterization Plan- The Chemours Company. August 2019.Geosyntec Consultants, 2019e. Cape Fear River PFAS Loading Reduction Plan- Chemours Fayetteville Works. August.

Gobas, FAPC, Watze de Wolf, Lawrence P Burkhard, Eric Verbruggen, Kathleen Plotzke. 2009. Revisiting Bioaccumulation Criteria for POPs and PBT Assessments Integrated Environmental Assessment and Management — Volume 5, Number 4—pp. 624–637

Goodband, T, 2019. Final Report: 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid: Bioaccumulation in Common Carp (Cyprinus carpio): Aqueous Exposure. Chemours Belgium BVBA. March 2019

Guillette, T., Polera, M., Belcher, S., 2019. Ecological impacts of novel and legacy per- and polyfluoroalkyl substances (PFAS) in Coastal North Carolina. Society of Environmental Toxicology and Chemistry North America 40th Annual Meeting Presentation.

Hassell, K.L., Coggan, T.L., Cresswell, T., Kolobaric, A., Berry, K., Crosbie, N.D., Blackbeard, J., Pettigrove,V.J., Clark, B.O. 2019. Dietary Uptake and Depuration Kinetics of PFOS, PFOA and GenX in a Benthic Fish. Environmental Toxicology and Chemistry. November. 10.1002/etc.4640.

Hoke, R.A., B.D. Ferrell, T.L. Sloman, R.C. Buck, and L.W. Buxton. 2016. Aquatic hazard, bioaccumulation and screening risk assessment for ammonium 2,3,3,3-tetrafluoro-2- (heptafluoropropoxy)-propanoate. Chemosphere 149:336–342

Hopkins, Z. R., Sun, M., DeWitt, J. C. and Knappe, D. R. (2018), Recently Detected Drinking Water Contaminants: HFPO-DA and Other Per- and Polyfluoroalkyl Ether Acids. J Am Water Works Assoc, 110: 13-28. doi:10.1002/awwa.1073

Kelly, BC. MG, Ikonomou, JD, Blair, AE. Morin, FAPC Gobas. 2007. Food Web–Specific Biomagnification of Persistent Organic Pollutants. Science. 317: 236-238.

Kotlarz; D, Collier; S, Lea; D, Knappe; J, Hoppin. Population Exposure to Emerging Per- and Polyfluoroalkyl Substances (PFAS) through Drinking Water in North Carolina Environmental Epidemiology: 2019

Lindstrom, A., M. Strynar, L. McMillan, D. Knappe. 2015. Municipal Wastewater Treatment Plant Biosludge Applications and Perfluoroalkyl Acid Surface Water

Contamination in North Carolina. North Carolina Community- Based Environmental Justice Summit, Whitakers, NC.

McCarthy, C., Kappleman, W., & DiGuiseppi, W. (2017). Ecological Considerations of Per- and Polyfluoroalkyl Substances (PFAS). Current Pollution Reports, 3(4), 289–301. https://doi.org/10.1007/s40726-017-0070-8

Mengelers, M; Biesebeek, JD; Schipper, M; Slob, W; Boon, PE. 2018. Risk assessment of GenX and PFOA in vegetable garden crops in Dordrecht. RIVM Letter report 2018-0017. http://rivm.openrepository.com/rivm/handle/10029/621785

Nagy KA (2001) Food requirements of wild animals: predictive equations for free-living mammals, reptiles, and birds.Nutrition Abstracts and Reviews, Series B 71, 21R-31R

Nakayama Shoji, Mark J. Strynar, Laurence Helfant, Peter Egeghy, Xibiao Ye, Andrew B. Lindstrom. 2007. Perfluorinated Compounds in the Cape Fear Drainage Basin in North Carolina. Environ. Sci. Technol. 2007, 41, 5271-5276

NC Office of Environmental Education and Public Affairs, 2019. The Cape Fear River Basin. Accessed at: https://files.nc.gov/deqee/documents/files/cape-fear-river-basin.pdf

NC State University, 2018. GenX Exposure Study. https://genxstudy.ncsu.edu/results-communication/

NCDEQ (North Carolina Department of Environmental Quality. 2018. Surface Water, Sediment, and Fish Sample Testing Results, NCDEQ. Accessed October, 2019. https://deq.nc.gov/news/key-issues/genx-investigation/genx-surface-water-sampling-sites

NCDEQ, 2003 Guidelines for Performing Screening Level Ecological Risk Assessments Within The North Carolina Division of Waste Management. October.

NCWC, 2019. North Carolina Wildlife Resources Commission, Wildlife Species Profiles. https://www.ncwildlife.org/Learning/Learning-About-North-Carolinas-Wildlife-Resources

Pan, Y., H. Zhang, Q. Cui, N. Sheng, L.W.Y. Yeung, Y. Guo, Y. Sun, and J. Dai. 2017. First report of occurrence and bioaccumulation of hexafluoropropylene oxide trimer acid: An emerging concern. Environmental Science and Technology 51(17):9553–9560

Pan, Y., H. Zhang, Q. Cui, N. Sheng, L.W.Y. Yeung, Y. Sun, Y. Guo, and J. Dai. 2018. Worldwide distribution of novel perfluoroether carboxylic and sulfonic acids in surface water. Environmental Science and Technology 52:7621–7629

Parsons, 2014. Final RCRA Facility Investigation Report (Rev. 1). February 2014; Revised August 2014.

Robuck, AR. 2019. Tissue-specific distribution of legacy and emerging per- and polyfluoroalkyl substances in seabirds from Atlantic offshore and coastal environments. Society of Environmental Toxicology and Chemistry Focused Topic Meeting on PFAS. Durham NC August. Poster.

Sun, M., Arevalo, E., Strynar, M., Lindstrom, A., Richardson, M., Kearns, B., Pickett, A., Smith, C. and Knappe, D.R., 2016. Legacy and emerging perfluoroalkyl substances are important drinking water contaminants in the Cape Fear River Watershed of North Carolina. Environmental science & technology letters, 3(12), pp.415-419

USEPA. 1993. Wildlife Exposure Factors Handbook. Office of Research and Development, Washington, D.C. EPA/600/R 93/187a.

USEPA. 1994. Role of the Ecological Risk Assessment in the Baseline Risk Assessment. Final, August.

USEPA. 1997. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. Interim final. Office of Solid Waste and Emergency Response, Edison, NJ. EPA 540-R-97-OCS.EPA.

USEPA. 2000. Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136). Office of Water.

USEPA. 2005. Guidance for Developing Ecological Soil Screening Levels. Office of Solid Waste and Emergency Response. November 2003; Revised February 2005. OSWER Directive 9285.7-55.

USEPA. 2009. Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use. National Service Center for Environmental Publications. EPA-540-R-08-005. January 2009.

USEPA. 2015. ProUCL Software and Technical Guidance. https://www.epa.gov/land-research/proucl-software

USEPA. 2018. Public Comment Draft: Human Health Toxicity Values for HFPO-DA chemicals. EPA-823-P-18-001. USEPA, Office of Water, Health and Ecological Criteria Division, Washington, DC. Accessed October 2019

Xiao, F. 2017. Emerging poly- and perfluoroalkyl substances in the aquatic environment: A review of current literature. Water Research, 124, 482-495

TABLES

TABLE 2-1
REGIONAL LISTED SPECIES
Chemours Fayetteville Works, North Carolina

Common Name	Scientific Name	Status	Habitat/Presence	Potential for Critical Habitat/Presence On-Site	Source of Habitat Info
VERTEBRATES					
Atlantic sturgeon	*Acipenser oxyrinchus oxyrinchus*	Endangered	Spend majority of life in saltwater; spawn in freshwater.	Unlikely to occur by project Site; reported distribution does not include Bladen/Cumberland counties.	Fishbase.org http://explorer.natureserve.org/
American Alligator	*Alligator mississippiensis*	Threatened [1]	Inhabit fresh and brackish marshes, ponds, lakes, rivers,etc. They often bask on partially submerged logs or on land next to the water. They make dens on river or lake margins or in marshes; they spend cold winter and drought periods in the dens. Reproduce in shallow water; less active from November to March.	Distribution reported to include Bladen/Cumberland counties but unlikely to be commonly found in the section of CFR adjacent to Site due to steep banks, deep water depths (up to 30 ft), and lack of habitat for dens.	http://explorer.natureserve.org/
Bald Eagle	*Haliaeetus leucocephalus*	BPGA [2]	Typically inhabit forested areas often near water, avoiding areas of significant human activity; migrate to warmer areas in winter	May be found in forested areas within the Site. Distribution reported to include Bladen County.	http://explorer.natureserve.org/
Cape Fear Shiner	*Notropis mekistocholas*	Endangered	Small rivers to medium-sized creeks near the Fall Line; areas of moderate gradient and riffles alternating with long deep pools, and substrate a mixture of sand-gravel, rubble, and boulders. Occurs in slow pools, riffles, slow runs. Juveniles occupy slackwater, areas near rock outcrops, and flooded areas.	Unlikely to be found in CFR near Site; documented in counties with critical habitat, near Fall line northwest of Fayetteville.	http://explorer.natureserve.org/ https://ecos.fws.gov/ecp0/profile/speciesProfile?sId=6063
Carolina gopher frog	*Rana capito capito*	At Risk Species	Found in mixed forest habitats (pines, oaks), often where there are gopher tortoises. Breeds in ephemeral wetlands, ditches, borrow pits (in early spring).	Distribution reported to include Bladen and Cumberland counties. Unlikely to be commonly found due to lack of gopher tortoises in NC.	http://explorer.natureserve.org/
Northern long-eared bat	*Myotis septentrionalis*	Threatened	This species hibernates in caves in winter and roosts in trees in summer and forages in upland forests and wooded areas.	Distribution reported to include Bladen county. No critical habitat has been identified in Bladen and Cumberland counties. May be found in summer in this area.	http://explorer.natureserve.org/
Red-cockaded woodpecker	*Picoides borealis*	Endangered	Preferred habitat is open, pine woodlands with sparse midstory vegetation. Nest in pines and cypress trees and reproduce in Spring.	Distribution reported to include Bladen and Cumberland counties. May be found in vicinity of project Site.	http://explorer.natureserve.org/

TABLE 2-1
REGIONAL LISTED SPECIES
Chemours Fayetteville Works, North Carolina

Common Name	Scientific Name	Status	Habitat/Presence	Potential for Critical Habitat/Presence On-Site	Source of Habitat Info
Shortnose sturgeon	*Acipenser brevirostrum*	Endangered	Adults inhabit rivers, estuaries, and the sea but they move upstream as much as 200 km to spawn.	Unlikely to be commonly found in CFR as they are estuarine/marine species except during spawning season (Spring). Distribution reported to include Bladen county.	http://explorer.natureserve.org/
Southern hognose snake	*Heterodon simus*	At Risk Species	Inhabit mixed woodlands and grasslands and riparian habitats.	Distribution reported to include Bladen and Cumberland counties. May be found in vicinity of project Site.	http://explorer.natureserve.org/
Wood stork	*Mycteria americana*	Threatened	Preferred habitat is forested wetlands, ponds, lagoons (mostly freshwater)	Distribution reported to include Bladen and Cumberland county. May be found in the vicinity of the project Site.	http://explorer.natureserve.org/ https://www.fws.gov/raleigh/species/es_wood_stork.html
INVERTEBRATES					
Atlantic pigtoe	*Fusconaia masoni*	At Risk Species	Preferred habitat includes high/moderate gradient rivers, riffles with relatively fast flowing watersand coarse sand/gravel.	May occur in CFR near Site although flow is variable; distribution reported to occur in the northern half of Cumberland county and beyond; other sources indicate its potential presence in Bladen county.	https://ecos.fws.gov/ipac/location/T7OPL7SFMVFTXO4WZVI2WGLLWM/resources https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=F03K http://explorer.natureserve.org/
Saint Francis' satyr butterfly	*Neonympha mitchellii francisci*	Endangered	Habitat includes wet meadows dominated by a high diversity of sedges and other wetland grasses; a single metapopulation was noted to occur in the sandhills of North Carolina, which falls in both Cumberland and Hoke Counties. See map to right. This is more than 10 km north of the Site.	Unlikely to occur near Site based on NatureServe Explorer database information.	https://www.fws.gov/raleigh/species/es_st_francis_satyr.html https://www.researchgate.net/publication/260105848_Pine_barrens_and_possum%27s_rations_Early_Archaic_settlement_in_the_North_Carolina_Sandhills/figures?lo=1
Variegated clubtail (Belle's Sanddragon)	*Progomphus bellei*	At Risk Species	Preferred habitat is shallow water of sand-bottomed lakes and trickles.	Distribution reported to include Bladen county. May occur in vicinity of Site.	http://explorer.natureserve.org/ https://ecos.fws.gov/ecp0/profile/speciesProfile?sId=2344
VASCULAR PLANT					
American chaffseed	*Schwalbea americana*	Endangered	Frequently grows in the transitional area between peaty wetlands and dry sandy soils; may grow in acidic, sandy or peaty soils within lowland pine forests, bogs, or areas where grassy communities are dominant. Known to be prevalent in the NC Sandhills.	Unlikely to occur near the Site based on information provided in NatureServe Explorer database which indicates that these plants occur at the Western edge of the coastal plain which is West of Fayetteville and the project Site.	http://explorer.natureserve.org/
Bog spicebush	*Lindera subcoriacea*	At Risk Species	Inhabits permanently moist to wet, shrub-dominated seepage wetlands; In the NC Sandhills, it occurs in streamhead pocosins (wetland bogs with sandy peat soil and woody shrubs throughout) that border headwater streams.	Distribution reported to occur in Cumberland county. Possible it occurs near Site; known to occur in NC sandhills (Cumberland county).	http://explorer.natureserve.org/ https://ecos.fws.gov/ecp0/profile/speciesProfile?sId=879

TABLE 2-1
REGIONAL LISTED SPECIES
Chemours Fayetteville Works, North Carolina

Common Name	Scientific Name	Status	Habitat/Presence	Potential for Critical Habitat/Presence On-Site	Source of Habitat Info
Boykin's lobelia	*Lobelia boykinii*	At Risk Species	Habitat includes cypress-gum depressions or ponds, wet pine savannahs and flatwoods. Preferred habitat may have continuous, shallow standing water or may only be seasonally very moist or inundated.	Distribution reported to include Bladen and Cumberland counties. Maybe be present in the vicinity of the Site.	http://explorer.natureserve.org/
Georgia lead-plant	*Amorpha georgiana* var. *georgiana*	At Risk Species	Habitat is pine/shrub/wiregrass terraces along rivers and large streams.	Unlikely to occur near project Site. NatureServe Explorer database indicates that distribution reported to include Cumberland county but nearly all North Carolina occurrences are scattered along the Little River (found in SW N. Carolina); other occurrences are in the Fall-line Sandhills of N. and S. Carolina (northwest of project Site).	http://explorer.natureserve.org/ https://www.ncwildlife.org/Conserving/Habitats
Carolina bogmint	*Macbridea caroliniana*	At Risk Species	Habitat incldues longleaf or pond pine savannas, acidic forests/bogs/wetlands.	May be found within the Site. Distribution reported to include Bladen County.	http://explorer.natureserve.org/
Michaux's sumac	*Rhus michauxii*	Endangered	Habitat includes sandy or rocky open woods; mixed woodlands.	May be found within the Site. Distribution reported to include Cumberland county.	http://explorer.natureserve.org/
Pondberry	*Lindera melissifolia*	Endangered	Habitats include seasonally flooded wetlands/ forests, shallow seasonal ponds/pools.	May be found within the Site. Distribution reported to include Bladen and Cumberland counties.	http://explorer.natureserve.org/
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	Endangered	Preferred habitat is in the transition zone between longleaf pine uplands and pond pine wetalnds with sandy/peat soils. Sufficient sun required.	May be found within the Site. Distribution reported to include Bladen and Cumberland counties.	http://explorer.natureserve.org/
Venus' fly-trap	*Dionaea muscipula*	At Risk Species	Habitat include the transition zone between the pine savannas and the bogs, areas with moist soils for much of the year; also found in acidic loamy sands in the Sandhill region.	May be found within the Site. Distribution reported to include Bladen and Cumberland counties.	http://explorer.natureserve.org/

Sources:
US Fish and Wildlife Service. North Carolina Natural Heritgage Program, County List. https://www.fws.gov/raleigh/species/cntylist/bladen.html.
https://www.fws.gov/raleigh/species/cntylist/cumberland.html.
Center for Biological Diversity. Map of US Threatened and Endangered Species by County.
https://www.biologicaldiversity.org/programs/population_and_sustainability/T_and_E_map/.

US Fish and Wildlife Service. IPaCInformation for Planning and Consultation
Powered by ECOS - the Environmental Conservation Online System

https://ecos.fws.gov/ipac/
http://explorer.natureserve.org/

Notes:
[1] This species is threatened due to its similarity in appearance to another listed species and is therefore included on the federal list of threatened and endangered species for the other species' protection.

[2] The bald eagle was declared recoved and removed from the federal list of threatened and endangered species but is protected under the Bald and Golden Eagle Protection Act.

BPGA = Bald and Golden Eagle Protection Act
CFR = Cape Fear River
NC = North Carolina

TABLE 2-2
TABLE 3+ PFAS
Chemours Fayetteville Works, North Carolina

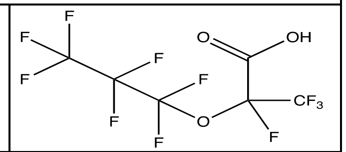
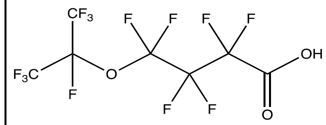
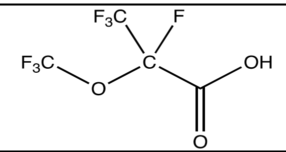
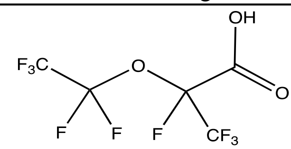
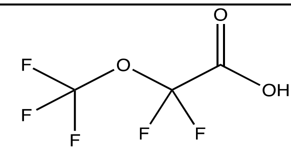
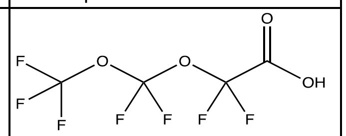
Common Name	Chemical Name	CAS #	Formula	Degree of Fluorination	Ether Bonds	Isomer type	Functional Groups			Diprotic[d]	Structure
							R-C=C[a]	R-CO_2H[b]	R-SO_3H[c]		
Per- and polyfluoroalkyl ether carboxylic acids (PFECAs)											
HFPO-DA	Hexafluoropropylene oxide dimer acid	13252-13-6	$C_6HF_{11}O_3$	Per	1	Branched	--	✓	--	--	
PFECA-G	Perfluoro-4-isopropoxybutanoic acid	801212-59-9	$C_7H_1F_{13}O_1$	Per	1	Branched	--	✓	--	--	
PMPA	Perfluoromethoxypropyl carboxylic acid	13140-29-9	$C_4HF_7O_3$	Per	1	Branched	--	✓	--	--	
PEPA	Perfluoroethoxypropyl carboxylic acid	267239-61-2	$C_5HF_9O_3$	Per	1	Branched	--	✓	--	--	
PFMOAA	Perfluoro-2-methoxyacetic acid	674-13-5	$C_3HF_5O_3$	Per	1	Linear	--	✓	--	--	
PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	39492-88-1	$C_4HF_7O_4$	Per	2	Linear	--	✓	--	--	

TABLE 2-2
TABLE 3+ PFAS
Chemours Fayetteville Works, North Carolina

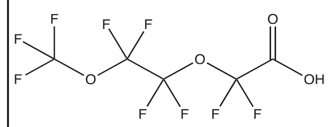
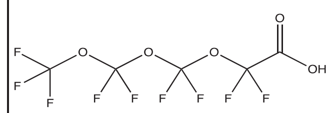
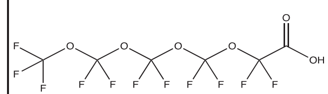
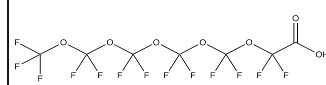
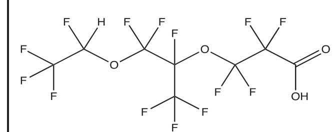
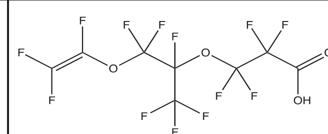
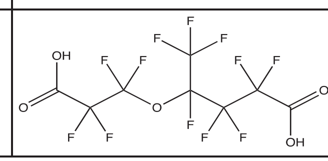
Common Name	Chemical Name	CAS #	Formula	Degree of Fluorination	Ether Bonds	Isomer type	Functional Groups			Diprotic[d]	Structure
							R-C=C[a]	R-CO_2H[b]	R-SO_3H[c]		
PFECA B	Perfluoro-3,6-dioxaheptanoic acid	151772-58-6	$C_5HF_9O_4$	Per	2	Linear	--	✓	--	--	
PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	39492-89-2	$C_5HF_9O_5$	Per	3	Linear	--	✓	--	--	
PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	39492-90-5	$C_6HF_{11}O_6$	Per	4	Linear	--	✓	--	--	
PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	39492-91-6	$C_7HF_{13}O_7$	Per	5	Linear	--	✓	--	--	
Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	773804-62-9	$C_8H_2F_{14}O_4$	Poly	2	Branched	--	✓	--	--	
EVE Acid	Perfluoroethoxypropionic acid	69087-46-3	$C_8HF_{13}O_4$	Per	2	Branched	✓	✓	--	--	
R-EVE	R-EVE	N/A	$C_8H_2F_{12}O_5$	Per	1	Branched	--	✓	--	✓	

TABLE 2-2
TABLE 3+ PFAS
Chemours Fayetteville Works, North Carolina

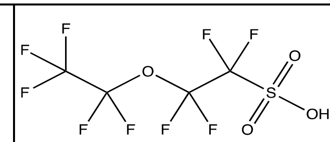
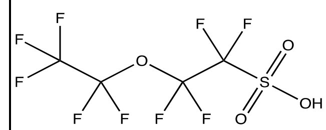
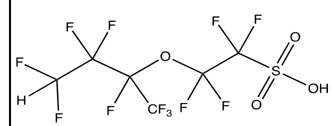
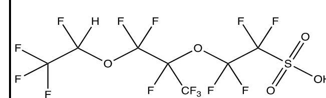
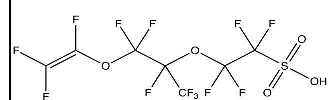
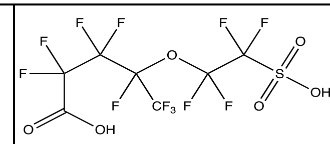
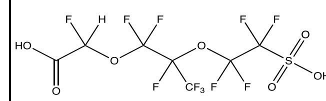
Common Name	Chemical Name	CAS #	Formula	Degree of Fluorination	Ether Bonds	Isomer type	Functional Groups			Diprotic[d]	Structure
							R-C=C[a]	R-CO$_2$H[b]	R-SO$_3$H[c]		
Per- and polyfluoroalkyl ether sulfonic acids (PFESAs)											
PES	Perfluoroethoxyethanesulfonic acid	113507-82-7	$C_4HF_9O_4S$	Per	1	Linear	--	--	✓	--	
NVHOS	Perfluoroethoxysulfonic acid	1132933-86-8	$C_4H_2F_8O_4S$	Poly	1	Linear	--	--	✓	--	
Byproduct 6	Byproduct 6	N/A	$C_6H_2F_{12}O_4S$	Poly	1	Branched	--	--	✓	--	
PFESA-BP2	Byproduct 2	749836-20-2	$C_7H_2F_{14}O_5S$	Poly	2	Branched	--	--	✓	--	
PFESA-BP1	Byproduct 1	29311-67-9	$C_7HF_{13}O_5S$	Per	2	Branched	✓	--	✓	--	

TABLE 2-2
TABLE 3+ PFAS
Chemours Fayetteville Works, North Carolina

Common Name	Chemical Name	CAS #	Formula	Degree of Fluorination	Ether Bonds	Isomer type	Functional Groups			Diprotic[d]	Structure
							R-C=C[a]	$R\text{-}CO_2H$[b]	$R\text{-}SO_3H$[c]		
Per- and polyfluoroalkyl ether sulfonic and carboxylic acids (PFES-CAs)											
Byproduct 4	Byproduct 4	N/A	$C_7H_2F_{12}O_6S$	Per	1	Branched	--	✓	✓	✓	
Byproduct 5	Byproduct 5	N/A	$C_7H_3F_{11}O_7S$	Poly	2	Branched	--	✓	✓	✓	

Notes:
[a] Carbon double bond functional group
[b] Carboxylic acid functional group
[c] Sulfonic acid functional group
[d] Compound with two acid functional groups

Abbreviations:
N/A- Not available
-- - Not applicable

TABLE 2-3
PHYSICAL AND CHEMICAL PROPERTIES FOR RELEVENT TABLE 3+ PFAS
Chemours Fayetteville Works, North Carolina

Common Name	Chemical Name	CAS #	Formula	Predicted Log P [a] (L/kg)	Predicted Log K_{OC} [a] (L/kg)	Predicted Log K_{OA} [a]	Henry's Law [a] (atm-m^3/mole)	BCF [a] (L/kg)	Experimental Log P [b] (pH 5)	Calculated Log P [b] (pH 8)	Calculated Log K_{OC} [b]
PFMOAA	Perfluoro-2-methoxyacetic acid	674-13-5	$C_3HF_5O_3$	1.75	0.68	3	3.56E-06	2.71	< 2.82 (2.45)	< 2.83 (2.43)	0.89
R-EVE	R-EVE	NA	$C_8H_2F_{12}O_5$	--	--	--	--	--	3.04	3.14	1.01
Byproduct 4	Byproduct 4	NA	$C_7H_2F_{12}O_6S$	--	--	--	--	--	3.09	3.19	1.04
Byproduct 5	Byproduct 5	NA	$C_7H_3F_{11}O_7S$	--	--	--	--	--	3.14	3.23	1.07
PMPA	Perfluoromethoxypropyl carboxylic acid	13140-29-9	$C_4HF_7O_3$	1.86	1.53	2.97	5.15E-05	5.47	3.05	3.05	1.02
PFO2HxA	Perfluoro(3,5-dioxahexanoic) acid	39492-88-1	$C_4HF_7O_4$	2.12	1.69	3.68	5.39E-05	4.96	3.32	3.3	1.17
NVHOS	Perfluoroethoxysulfonic acid	1132933-86-8	$C_4H_2F_8O_4S$	--	--	--	--	--	2.92	2.93	0.95
PEPA	Perfluoroethoxypropyl carboxylic acid	267239-61-2	$C_5HF_9O_3$	2.87	1.51	3.4	3.12E-10	6.27	3.63	3.6	1.35
PFECA B	Perfluoro-3,6-dioxaheptanoic acid	151772-58-6	$C_5HF_9O_4$	4.17	1.71	3.8	1.14E-10	25.8	3.98	3.95	1.54
PFO3OA	Perfluoro(3,5,7-trioxaoctanoic) acid	39492-89-2	$C_5HF_9O_5$	3.2	1.54	3.95	4.91E-04	2.87	4.17	4.13	1.65
PES	Perfluoroethoxyethanesulfonic acid	113507-82-7	$C_4HF_9O_4S$	2.75	2.55	4.2	2.23E-10	34.2	3.8	3.78	1.44
HFPO-DA	Hexafluoropropylene oxide dimer acid	13252-13-6	$C_6HF_{11}O_3$	1.98	2.61	3.74	2.37E-10	6.27	4.24	4.23	1.69
PFECA G	Perfluoro-4-isoproproxybutanoic acid	801212-59-9	$C_7HF_{13}O_3$	4.86	3.06	4.08	6.29E-04	617	4.79	4.77	2.00
PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	39492-90-5	$C_6HF_{11}O_6$	6.99	2.94	4.1	5.47E-05	21.1	4.98	4.95	2.11
Hydro-EVE Acid	Perfluoroethoxsypropanoic acid	773804-62-9	$C_8H_2F_{14}O_4$	2.93	3.40	4.24	2.70E-07	5.41	4.68	4.66	1.94
EVE Acid	Perfluoroethoxypropionic acid	69087-46-3	$C_8HF_{13}O_4$	2.88	3.24	4.77	2.94E-09	5.42	5.10	5.06	2.17
Byproduct 6	Byproduct 6	NA	$C_6H_2F_{12}O_4S$	--	--	--	--	--	4.61	4.57	1.9
PFESA-BP1	Byproduct 1	29311-67-9	$C_7HF_{13}O_5S$	4.4	2.92	5.87	1.45E-08	5.39	5.09	5.06	2.17
PFESA-BP2	Byproduct 2	749836-20-2	$C_7H_2F_{14}O_5S$	3.86	2.90	4.78	2.35E-08	4.32	4.72	4.68	1.96
PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic acid	39492-91-6	$C_7HF_{13}O_7$	8.46	2.75	4.29	3.87E-08	15.9	5.78	5.72	2.56

Notes:

[a] Values retrieved from the US EPA Chemistry Dashboard. (comptox.epa.gov/dashboard)

[b] Values are from the Geosyntec Consultants Draft Corrective Action Plan- Chemours Fayetteville Works. December, 2019.

Abbreviations:

US EPA- United States Environmental Protection Agency
CAS # - Unique identifier assigned by the Chemical Abstracts Service (CAS)
Log P - Logarithm of the octanol- water partition coefficient (i.e., the ratio of the concentration of a compound between aqueous and lipophilic phases)
Log Koc - Logarithm of the organic carbon-water partitioning coefficient
Log Koa - Logarithm of the octanol-air partitioning coefficient
BCF - Bioconcentration Factor
atm - Atmosphere
L/kg - liter per kilogram
-- - no data available

TABLE 3-1
ECOLOGICAL SLEA DATASET - OFFSITE SOIL
Chemours Fayetteville Works, North Carolina

Date	Sample ID	Location ID	Eco-SLEA EU	Sample Description	Data Use
8/14/2019	EU-1-DISCRETESOIL-0-.5-081419	EU-01	Offsite Terrestrial	ISM Surface soil composite	Offsite Soil EPC
9/12/2019	EU-1-SOIL-0-.5-091219	EU-01	Offsite Terrestrial	ISM Surface soil composite	Offsite Soil EPC
8/21/2019	EU-10-SOIL-0-.5-082119	EU-10	Offsite Terrestrial	ISM Surface soil composite	Offsite Soil EPC
7/31/2019	EU-11-SOIL-0-0.5	EU-11	Offsite Terrestrial	ISM Surface soil composite	Offsite Soil EPC
8/20/2019	EU-12-SOIL-0-.5-082019	EU-12	Offsite Terrestrial	ISM Surface soil composite	Offsite Soil EPC
8/20/2019	EU-12-SOIL-0-.5-082019-D	EU-12	Offsite Terrestrial	Field duplicate	Offsite Soil EPC
7/25/2019	EU2-SOIL-0-0.5	EU-2	Offsite Terrestrial	ISM Surface soil composite	Offsite Soil EPC
7/31/2019	EU-3-SOIL-0-0.5	EU-3	Offsite Terrestrial	ISM Surface soil composite	Offsite Soil EPC
8/19/2019	EU-4-SOIL-0-.5-081919	EU-4	Offsite Terrestrial	ISM Surface soil composite	Offsite Soil EPC
8/23/2019	EU-5-SOIL-0-.5-082319	EU-5	Offsite Terrestrial	ISM Surface soil composite	Offsite Soil EPC
7/25/2019	EU6-SOIL-0-0.5	EU-6	Offsite Terrestrial	ISM Surface soil composite	Offsite Soil EPC
8/19/2019	EU-7-SOIL-0-.5-081919	EU-7	Offsite Terrestrial	ISM Surface soil composite	Offsite Soil EPC
8/16/2019	EU-8-SOIL-0-.5-081619	EU-8	Offsite Terrestrial	ISM Surface soil composite	Offsite Soil EPC
8/21/2019	EU-9-SOIL-0-.5-082119	EU-9	Offsite Terrestrial	ISM Surface soil composite	Offsite Soil EPC

Notes:

1: All surface soil represented the top 0 to 6 inches of soil

Abbreviations:

EU - Exposure Unit

ISM - Incremental Sampling Methodology

EPC - Exposure Point Concentration

SLEA - Screening Level Exposure Assessment

TABLE 3-2
ECOLOGICAL SLEA DATASET - OFFSITE VEGETATION AND INVERTEBRATES
Chemours Fayetteville Works, North Carolina

Date	Sample ID	EU	Sample Description [a]	Data Use
9/12/2019	EU-1-VEG-091219	Offsite Terrestrial	Plant Tissue	Offsite plant EPC
7/25/2019	EU2-VEG	Offsite Terrestrial	Plant Tissue	Offsite plant EPC
7/31/2019	EU-3-VEG	Offsite Terrestrial	Plant Tissue	Offsite plant EPC
8/19/2019	EU-4-VEG-081919	Offsite Terrestrial	Plant Tissue	Offsite plant EPC
8/23/2019	EU-5-VEG-082319	Offsite Terrestrial	Plant Tissue	Offsite plant EPC
7/25/2019	EU6-VEG	Offsite Terrestrial	Plant Tissue	Offsite plant EPC
8/19/2019	EU-7-VEG-081919	Offsite Terrestrial	Plant Tissue	Offsite plant EPC
8/16/2019	EU-8-VEG-081619	Offsite Terrestrial	Plant Tissue	Offsite plant EPC
8/21/2019	EU-9-VEG-082119	Offsite Terrestrial	Plant Tissue	Offsite plant EPC
8/21/2019	EU-10-VEG-082119	Offsite Terrestrial	Plant Tissue	Offsite plant EPC
7/31/2019	EU-11-VEG	Offsite Terrestrial	Plant Tissue	Offsite plant EPC
8/20/2019	EU-12-VEG-082019	Offsite Terrestrial	Plant Tissue	Offsite plant EPC
9/12/2019	EU-1-INV-091219	Offsite Terrestrial	Invertebrate	Offsite invertebrate EPC
7/25/2019	EU2-INV	Offsite Terrestrial	Invertebrate	Offsite invertebrate EPC
8/19/2019	EU-4-INV-081919	Offsite Terrestrial	Invertebrate	Offsite invertebrate EPC
8/23/2019	EU-5-INV-082319	Offsite Terrestrial	Invertebrate	Offsite invertebrate EPC [b]
7/25/2019	EU6-INV	Offsite Terrestrial	Invertebrate	Offsite invertebrate EPC [b]
8/19/2019	EU-7-INV-081919	Offsite Terrestrial	Invertebrate	Offsite invertebrate EPC
8/16/2019	EU-8-INV-081619	Offsite Terrestrial	Invertebrate	Offsite invertebrate EPC
8/21/2019	EU-9-INV-082119	Offsite Terrestrial	Invertebrate	Offsite invertebrate EPC [b]
8/21/2019	EU-10-INV-082119	Offsite Terrestrial	Invertebrate	Offsite invertebrate EPC [b]
7/31/2019	EU-11-INV	Offsite Terrestrial	Invertebrate	Offsite invertebrate EPC [b]
8/20/2019	EU-12-INV-082019	Offsite Terrestrial	Invertebrate	Offsite invertebrate EPC

Notes:

a: Plant tissue represents broadleaf plants with non-waxy leaves, seeded grasses (fescues, ryegrass, wheatgrass) and berries or fruit within 1 to 2 feet of the ground surface. Terrestrial invertebrate samples were primarily composed of grasshoppers, crickets, and dragonflies.

b: Insufficient mass to run all analyses; only a single run of Table 3+ SOPs were analyzed.

Abbreviations:

EU - Exposure Unit

EPC - Exposure Point Concentration

TABLE 3-3
ECOLOGICAL SLEA DATASET - OFFSITE, ONSITE AND CFR SURFACE WATER
Chemours Fayetteville Works, North Carolina

Date	Sample ID	Location ID	Eco-SLEA EU	Sample Description	Data Use
9/12/2019	POND-B-EAST-091219	Pond B (EU2)	Offsite Terrestrial	Discrete SW sample	Offsite SW EPC
9/12/2019	POND-B-SOUTH-091219	Pond B (EU2)	Offsite Terrestrial	Discrete SW sample	Offsite SW EPC
9/12/2019	POND-B-WEST-091219	Pond B (EU2)	Offsite Terrestrial	Discrete SW sample	Offsite SW EPC
7/24/2019	POND-1-NE-072419	Pond 1	Onsite Terrestrial	Surface Water	Onsite SW EPC
7/24/2019	POND-1-NW-072419	Pond 1	Onsite Terrestrial	Surface Water	Onsite SW EPC
7/24/2019	POND-1-SE-072419	Pond 1	Onsite Terrestrial	Surface Water	Onsite SW EPC
7/24/2019	POND-1-SE-072419-2	Pond 1	Onsite Terrestrial	Surface Water	Field Duplicate/EPC
7/25/2019	CFR-04-CM-072519	CFR-04	CFR	Surface Water	CFR SW EPC
7/25/2019	CFR-04-CT-072519	CFR-04	CFR	Surface Water	CFR SW EPC
7/25/2019	CFR-04-E-072519	CFR-04	CFR	Surface Water	CFR SW EPC
7/25/2019	CFR-04-W-072519	CFR-04	CFR	Surface Water	CFR SW EPC
7/25/2019	CFR-07-CM-072519	CFR-07	CFR	Surface Water	CFR SW EPC
7/25/2019	CFR-07-CT-072519	CFR-07	CFR	Surface Water	CFR SW EPC
7/25/2019	CFR-07-E-072519	CFR-07	CFR	Surface Water	CFR SW EPC
7/25/2019	CFR-07-W-072519	CFR-07	CFR	Surface Water	CFR SW EPC

Abbreviations:
CFR - Cape Fear River
EPC - Exposure Point Concentration
SLEA EU - Screening Level Exposure Assessment Exposure Unit
SW - Surface water

TABLE 3-4
ECOLOGICAL SLEA DATASET - ONSITE SOIL AND CO-LOCATED SOIL AND EARTHWORM
Chemours Fayetteville Works, North Carolina

Date	Sample ID	Location ID	EU	Matrix	Data Use
9/25/2019	SEEP-B-SOIL-092519	SEEP-B	Onsite Terrestrial	Composite soil sample	EPC
9/25/2019	SEEP-B-WORMSOIL-092519	SEEP-B	Onsite Terrestrial	Composite soil sample with corresponding tissue composite	EPC/BSAF
9/26/2019	SEEP-C-SOIL-092619	SEEP-C	Onsite Terrestrial	Composite soil sample	EPC
9/26/2019	SEEP-C-WORMSOIL-092619	SEEP-C	Onsite Terrestrial	Composite soil sample with corresponding tissue composite	EPC/BSAF
9/26/2019	SEEP-D-WORMSOIL-092619	SEEP-D	Onsite Terrestrial	Composite soil sample with corresponding tissue composite	EPC/BSAF
9/24/2019	WC-SOIL-092419	Willis Creek	Onsite Terrestrial	Composite soil sample	EPC
9/24/2019	WC-WORMSOIL-092419	Willis Creek	Onsite Terrestrial	Composite soil sample with corresponding tissue composite	EPC/BSAF
9/13/2019	SEEP-A-RIVERSOIL-091319	SEEP-A	Onsite Terrestrial	Composite soil sample	EPC
9/13/2019	SEEP-A-WORMSOIL-091319	SEEP-A	Onsite Terrestrial	Composite soil sample with corresponding tissue composite	EPC/BSAF
9/11/2019	SEEP-D-RIVERSOIL-091119	SEEP-D	Onsite Terrestrial	Composite soil sample	EPC
9/24/2019	INTAKE-WORM-SOIL-092419	INTAKE	Onsite Terrestrial	Composite soil sample with corresponding tissue composite	EPC/BSAF
9/24/2019	INTAKE-WORMSOIL-092419-D	INTAKE	Onsite Terrestrial	Composite soil sample with corresponding tissue composite	Field Duplicate/EPC
9/13/2019	SEEP-A-WORMS-091319	SEEP-A	Onsite Terrestrial	Composite earthworm tissue sample	BSAF/Invertebrate EPC
9/25/2019	SEEP-B-WORMS-092519	SEEP-B	Onsite Terrestrial	Composite earthworm tissue sample	BSAF/Invertebrate EPC
9/26/2019	SEEP-C-WORM-092619	SEEP-C	Onsite Terrestrial	Composite earthworm tissue sample	BSAF/Invertebrate EPC
9/26/2019	SEEP-D-WORM-092619	SEEP-D	Onsite Terrestrial	Composite earthworm tissue sample	BSAF/Invertebrate EPC
9/24/2019	WC-WORM-092419	Willis Creek	Onsite Terrestrial	Composite earthworm tissue sample	BSAF/Invertebrate EPC
9/24/2019	INTAKE-WORM-092419	INTAKE	Onsite Terrestrial	Composite earthworm tissue sample	BSAF/Invertebrate EPC
9/24/2019	INTAKE-WORM-092419-D	INTAKE	Onsite Terrestrial	Composite earthworm tissue sample	BSAF/Field Duplicate/EPC

Abbreviations:
BSAF - biota-soil accumulation factors
EU - Exposure Unit
EPC - Exposure Point Concentration

TABLE 3-5
ECOLOGICAL SLEA DATASET - CAPE FEAR RIVER SEDIMENT
Chemours Fayetteville Works, North Carolina

Date	Sample ID	Location ID	EU	Sample Description	Data Use
10/21/2019	SED1-20191021	SED-1	CFR	Composite sediment sample	EPC
10/21/2019	SED2-20191021	SED-2	CFR	Composite sediment sample	EPC
10/21/2019	SED3-20191021	SED-3	CFR	Composite sediment sample	EPC
10/21/2019	SED4-20191021	SED-4	CFR	Composite sediment sample	EPC
10/21/2019	SED5-20191021	SED-5	CFR	Composite sediment sample	EPC
10/21/2019	SED6-20191021	SED-6	CFR	Composite sediment sample	EPC
10/21/2019	SED3-20191021-DUP	SED-3	CFR	Composite sediment sample	Field duplicate/EPC

Notes:

1: CFR EU includes all sample locations within the CFR collected between Willis Creek and Georgia Branch Creek

Abbreviations:

CFR - Cape Fear River

EU - Exposure Unit

EPC - Exposure Point Concentration

TABLE 3-6
ECOLOGICAL SLEA DATASET - CAPE FEAR RIVER INVERTEBRATES AND VEGETATION
Chemours Fayetteville Works, North Carolina

Date	Sample ID	Location ID	Sample Description	Data Use
10/21/2019	CFR-AC-INV-01-20191021	CFR	Asian clam[a]	EPC
10/21/2019	CFR-AC-INV-02-20191021	CFR	Asian clam[a]	EPC
10/21/2019	CFR-AC-INV-03-20191021	CFR	Asian clam[a]	EPC
10/21/2019	CFR-INV-01-20191021	CFR	Benthic invertebrates[b]	EPC[d]
10/21/2019	CFR-INV-02-20191021	CFR	Benthic invertebrates[b]	EPC
10/21/2019	CFR-INV-03-20191021	CFR	Benthic invertebrates[b]	EPC
10/21/2019	CFR-INV-04-20191021	CFR	Benthic invertebrates[c]	EPC[d]
10/21/2019	SED1-VEG-20191021	CFR	Aquatic vegetation[d]	EPC
10/21/2019	SED2-VEG-20191021	CFR	Aquatic vegetation	EPC
10/21/2019	SED3-VEG-20191021	CFR	Aquatic vegetation	EPC
10/21/2019	SED4-VEG-20191021	CFR	Aquatic vegetation	EPC
10/21/2019	SED5-VEG-20191021	CFR	Aquatic vegetation	EPC
10/21/2019	SED6-VEG-20191021	CFR	Aquatic vegetation	EPC

Notes:

a: Discrete Asian clam shallow water sample from single location

b: Primarily Asian clams; represents deeper water and spatial composite samples that were combined into a single composite at the lab.

c: Primarily aquatic larvae and a leech.

d: Insufficient mass to run all analyses, only a single run of Table 3+ SOPs were analyzed.

Abbreviations:

CFR - Cape Fear River

EPC - Exposure Point Concentration

TABLE 3-7
ECOLOGICAL SLEA DATASET - FISH TISSUE
Chemours Fayetteville Works, North Carolina

Date Caught	Sample ID	Location	Common Name	Scientific Name	Sample Description	Analyzed Portion	Weight (grams)	Length (mm)[a]	Data Use
7/30/2019	DERC-1 LMB	Pond 1	Largemouth bass	*Micropterus salmoides*	individual, whole fish	Fillet only	816	343	EPC
7/30/2019	DERC-2 LMB	Pond 1	Largemouth bass	*Micropterus salmoides*	individual, whole fish	Fillet only	1270	406	EPC
7/30/2019	DERC-3 LMB	Pond 1	Largemouth bass	*Micropterus salmoides*	individual, whole fish	Fillet only	998	394	EPC/Whole-body to fillet ratio
7/30/2019	DERC-3 LMB-Carcass	Pond 1	Largemouth bass	*Micropterus salmoides*	individual, whole fish	Carcass (fillet removed)	998	394	Whole-body to fillet ratio
7/31/2019	CFR-06-1 BC	CFR-07[d]	Blue catfish	*Ictalurus furcatus*	individual, whole fish	Fillet only	4899	660	EPC
7/31/2019	CFR-06-2 BC	CFR-07[d]	Blue catfish	*Ictalurus furcatus*	individual, whole fish	Fillet only	2812	597	EPC/Whole-body to fillet ratio
7/31/2019	CFR-06-2 BC-Carcass	CFR-07[d]	Blue catfish	*Ictalurus furcatus*	individual, whole fish	Carcass (fillet removed)	2812	597	Whole-body to fillet ratio
7/31/2019	CFR-06-3 BC	CFR-07[d]	Blue catfish	*Ictalurus furcatus*	individual, whole fish	Fillet only	4354	622	EPC
7/31/2019	CFR-09-2 BC	CFR-09	Blue catfish	*Ictalurus furcatus*	individual, whole fish	Fillet only	2903	663	Whole-body to fillet ratio
7/31/2019	CFR-09-2 BC-Carcass	CFR-09	Blue catfish	*Ictalurus furcatus*	individual, whole fish	Carcass (fillet removed)	2903	663	Whole-body to fillet ratio
8/1/2019	CFR-05-1 LMB	CFR-06[c]	Largemouth bass	*Micropterus salmoides*	individual, whole fish	Fillet only	631	358	EPC/Whole-body to fillet ratio
8/1/2019	CFR-05-1 LMB-Carcass	CFR-06[c]	Largemouth bass	*Micropterus salmoides*	individual, whole fish	Carcass (fillet removed)	631	358	Whole-body to fillet ratio
8/1/2019	CFR-05-2 FH	CFR-06[c]	Flathead catfish	*Pylodictis olivaris*	individual, whole fish	Fillet only	5262	747	EPC
8/1/2019	CFR-05-3 BC	CFR-06[c]	Blue catfish	*Ictalurus furcatus*	individual, whole fish	Fillet only	5262	767	EPC
8/1/2019	CFR-05-4 CC	CFR-06[c]	Channel catfish	*Ictalurus punctatus*	individual, whole fish	Fillet only	607	445	EPC/Whole-body to fillet ratio
8/1/2019	CFR-05-4 CC-Carcass	CFR-06[c]	Channel catfish	*Ictalurus punctatus*	individual, whole fish	Carcass (fillet removed)	607	445	Whole-body to fillet ratio
8/2/2019	MM-68-4 LMB	MM-68	Largemouth bass	*Micropterus salmoides*	individual, whole fish	Fillet only	380	318	Whole-body to fillet ratio
8/2/2019	MM-68-4 LMB-Carcass	MM-68	Largemouth bass	*Micropterus salmoides*	individual, whole fish	Carcass (fillet removed)	380	318	Whole-body to fillet ratio
9/24/2019	SeepA-01-Redbreast Sunfish	SEEP A	Redbreast sunfish	*Lepomis auritus*	comp, whole fish	Whole-body	11	[38]	EPC
9/24/2019	SeepB-01-Spotted Bass	SEEP B	Largemouth bass	*Micropterus salmoides*	individual, whole fish	Whole-body	5	58	EPC
9/24/2019	SeepC-01-Largemouth Bass	SEEP C	Largemouth bass	*Micropterus salmoides*	individual, fillet	None - discarded due to sampling error	102	305	None
9/25/2019	CFR07-01Comely Shiner	CFR07	Comely shiner	*Notropis amoenus*	comp, whole fish	Whole-body	4	[45]	EPC[b]
9/25/2019	CFR07-01-Lamprey	CFR07	American eel	*Anguilla rostrata*	individual, whole fish	Whole-body	3	107	EPC[b]
9/26/2019	SeepA-02-Redbreast Sunfish	SEEP A	Redbreast sunfish	*Lepomis auritus*	comp, whole fish	Whole-body	17	[48]	EPC
9/26/2019	SeepB-02-Redbreast Sunfish	SEEP B	Redbreast sunfish	*Lepomis auritus*	individual, whole fish	Whole-body	15	42	EPC
9/26/2019	SeepC-02-Redbreast Sunfish	SEEP C	Redbreast sunfish	*Lepomis auritus*	individual, whole fish	Whole-body	16	44	EPC
9/26/2019	WC-01-LMB	Willis Creek	Largemouth bass	*Micropterus salmoides*	individual, whole fish	Whole-body	2	53	EPC[b]
9/26/2019	WC-02-Dusky Shiner	Willis Creek	Dusky shiner	*Notropis cummingsae*	individual, whole fish	Whole-body	2	61	EPC[b]
9/27/2019	CFRBladen-01-LMB	Bladen Bluffs	Largemouth bass	*Micropterus salmoides*	individual, whole fish	Whole-body	78	191	Downstream Whole-body Sample

Notes:

1: While upstream or downstream samples were collected at Bladen Bluffs, MM-68 and CFR-09 for the Human Health SLEA, only samples within the Aquatic EU as defined in the Ecological SLEA were included in EPC calculations.

a: Values in square brackets [X] represent average length of fish for composite sample; non-bracketed values indicate whole fish specimen length.

b: Insufficient mass to run all analyses; only a single run of Table 3+ SOPs were analyzed.

c: Field staff mistakenly labeled samples as location 05. Coordinates confirmed Location 06 was correct.

d: Field staff mistakenly labeled samples as location 06. Coordinates confirmed Location 07 was correct.

Abbreviations:

EPC - Exposure Point Concentration
mm - millimeter
CFR-Cape Fear River
comp - composite sample

TABLE 3-8
WILDLIFE EXPOSURE FACTORS FOR TERRESTRIAL RECEPTORS
Chemours Fayetteville Works, North Carolina

Parameter	Parameter Definition		Units	Birds		Mammals	
				Bobwhite Quail	**Woodcock**	**Eastern Cottontail Rabbit**	**Southern Short-tailed Shrew**
				Colinus virginianus	*Scolopax minor*	*Sylvilagus floridanus*	*Blarina carolinensis*
				Avian Consumer (Herbivore)	Avian Consumer (Invertivore)	Mammalian Consumer (Herbivore)	Mammalian Consumer (Invertivore)
BW	Body Weight	[1]	kg	0.1	0.1	0.9	0.02
FIR	Daily Food Ingestion Rate (dry matter)	[2a]	kg, dw/day	0.01	0.02	0.06	0.002
FIR	Daily Food Ingestion Rate (wet matter)	[2b]	kg, ww/day	0.01	0.11	0.19	0.006
P_{veg}	Proportion of Diet - Vegetation	[3]	kg diet item, ww/kg diet, ww	1	0	1	0
P_{inv}	Proportion of Diet - Invertebrates	[3]	kg diet item, ww/kg diet, ww	0	1	0	1
P_{so}	Proportion of Diet - Soil	[4]	kg diet item, dw/kg diet, dw	0.034	0.10	0.02	0.02
DWI	Daily Water Ingestion	[5]	L/kg-day	0.02	0.01	0.09	0.003
HR	Home Range	[6]	acres	9	8	2.0	1.0
Site	Total Site Area	[7]	acres	700	700	700	700
AUF	Area Use Factor	[8]	proportion	1	1	1	1

TABLE 3-8
WILDLIFE EXPOSURE FACTORS FOR TERRESTRIAL RECEPTORS
Chemours Fayetteville Works, North Carolina

Notes:

[1] As reported in North Carolina Wildlife Resources Commission Wildlife Profiles https://www.ncwildlife.org/Learning/Species; and in USEPA (1993) for Short-tailed shrew.

[2a] Calculated using allometric equations from Nagy (2001) for dry weight diet as follows:

Bobwhite Quail - equation for Galliform birds: FIR (dw) = 0.088 x BW $^{0.891}$

Woodcock - equation for insectivore birds: FIR (dw) = 0.540 x BW $^{0.705}$

Cottontail Rabbit - equation for herbivorous mammals: FIR (dw) =0.859 x BW $^{0.628}$

Short-tailed Shrew - equation for invertivore mammals: FIR (dw) = 0.373 x BW $^{0.622}$

[2b] Maximum rate reported in EPA (1993) for Woodcock and Bobwhite quail.

Cottontail Rabbit - calculated using allometric equations from Nagy (2001) for fresh weight diet for herbivorous mammals: FIR (ww) = 2.606 x BW $^{0.628}$

Short-tailed shrew - calculated using allometric equations from Nagy (2001) for fresh weight diet for invertivore mammals: FIR (ww) = 1.33 x BW $^{0.622}$

[3] Diet = Assumed based on feeding guilds

[4] Soil ingestion proportion:
Bobwhite Quail and Woodcock - as reported in USEPA (1993). Woodcock value from Table 4-4. Quail value from pg. 2-122.
Cottontail Rabbit and Short-tailed shrew assumed similar to white-footed mouse and meadow voles as reported in USEPA (1993) Table 4.4.

[5] As reported by USEPA (1993).

[6] Home range all value represent the smallest home ranges reported by USEPA (1993).

[7] The on-Site forest area is approximately 700 acres.

[8] AUF = Calculated via EU ÷ HR. Maximum AUF assumed to be 1.0.

Abbreviations:

AUF - area use factor
BW - body weight
dw/day - dry weight per day
dw/kg - dry weight per kilogram
DWI - drinking water intake
EPA - Environmental Protection Agency
EU - Exposure Unit
FIR - food ingestion rate
HR - home range
kg - kilogram
L/kg - liter per kilogram
USEPA - United States Environmental Protection Agency
ww/day - wet weight per day

TABLE 3-9
WILDLIFE EXPOSURE FACTORS FOR AQUATIC RECEPTORS
Chemours Fayetteville Works, North Carolina

Parameter	Parameter Definition		Units	Birds			Mammals		
				Wood Duck	**Mallard Duck**	**Great Blue Heron**	**Muskrat**	**Mink**	**River Otter**
				Aix sponsa	*Anas platyrhynchos*	*Egretta thula*	*Ondatra zibethicus*	*Mustela vison*	*Lontra canadensis*
				Avian Consumer (Herbivore)	Avian Consumer (Invertivore)	Avian Consumer (Piscivore)	Mammalian Consumer (Herbivore)	Mammalian Consumer (Invertivore)	Mammalian Consumer (Piscivore)
BW	Body Weight	[1]	kg	0.7	1.1	2.5	0.9	0.5	5.0
FIR	Daily Food Ingestion Rate (dry matter)	[2a]	kg, dw/day	0.04	0.05	0.15	0.06	0.02	0.19
FIR	Daily Food Ingestion Rate (wet matter)	[2b]	kg, ww/day	0.13	0.17	0.45	0.31	0.11	0.64
P_{veg}	Proportion of Diet - Vegetation	[3]	kg diet item, ww/kg diet, ww	1	0	0	1	0	0
P_{inv}	Proportion of Diet - Benthic Invertebrates	[3]	kg diet item, ww/kg diet, ww	0	1	0	0	1	0
P_{mam}	Proportion of Diet - Fish	[3]	kg diet item, ww/kg diet, ww	0	0	1	0	0	1
P_{so}	Proportion of Diet - Sediment	[4]	kg diet item, dw/kg diet, dw	0.11	0.02	0	0.02	0.03	0.02
DWI	Daily Water Ingestion	[5]	L/kg-day	0.04	0.06	0.11	0.87	0.055	0.40
HR	Home Range	[6]	acres	275	275	1.5	0.1	61	1384
Site	Total Site Area	[7]	acres	297	297	297	297	297	297
AUF	Area Use Factor	[8]	proportion	1	1	1	1	1	0.21

TABLE 3-9
WILDLIFE EXPOSURE FACTORS FOR AQUATIC RECEPTORS
Chemours Fayetteville Works, North Carolina

Notes:

[1] Lowest body weights reported in North Carolina Wildlife Resources Commission Wildlife Profiles https://www.ncwildlife.org/Learning/Species

[2a] Calculated using allometric equations from Nagy (2001) for dry weight diet as follows:
Wood duck and Mallard duck - equation for omnivorous birds: FIR (dw) = 0.67 x $BW^{0.627}$
Great Blue Heron - equation for carnivorous birds: FIR (dw) = 0.849 x $BW^{0.663}$
Mink - equation for invertivore mammals: FIR (dw) = 0.373 x $BW^{0.622}$
Muskrat - equation for herbivorous mammals: FIR (dw) =0.859 x $BW^{0.628}$
River Otter - equation for carnivorous mammals: FIR (dw) = 0.153 x $BW^{0.834}$

[2b] Maximum rate reported in EPA (1993) for Mink, Muskrat and Great Blue Heron.
Calculated using allometric equations from Nagy (2001) for fresh weight diet as follows:
Wood duck and Mallard duck - equation for omnivorous birds: FIR (ww) = 2.094 x $BW^{0.627}$
River Otter - equation for carnivorous mammals: FIR (ww) = 0.469 x $BW^{0.848}$

[3] Diet = Assumed based on feeding guilds

[4] Soil ingestion proportion:
Mallard and Wood ducks - as reported in Table 4.4 of USEPA (1993).
Great Blue Heron - assumed to be insignificant based on feeding methods.
Muskrat - assumed similar to Meadow vole, as reported in USEPA (1993)
Mink - assumed similar to Weasel, reported as 2.8% in Sample et al. (1997) based on red fox.
River Otter - limited data, assumed low (< 2%) based on feeding habits.

[5] Highest daily water ingestion rates are from EPA (1993). The DWI value for Mallards was used for Wood Ducks.

[6] Home range all value represent the smallest home ranges reported by USEPA (1993).
For Wood duck, the HR for Mallard duck is assumed.
For Mink and River otter, linear river-based home ranges were converted to areas assuming receptors stay within 200m of river banks (as reported by USEPA, 1993 for Mink).

[7] The stretch of the Cape Fear River encompassing the preliminary area evaluated includes 6 km of river, which was converted to a bank habitat assuming receptors primarily forage in the 200 meters adjacent to the bank (based on Mink as reported in USEPA, 1993).

[8] AUF = Calculated via EU ÷ HR. Maximum AUF assumed to be 1.0.

Abbreviations:

AUF - area use factor
BW - body weight
dw/day - dry weight per day
dw/kg - dry weight per kilogram
DWI - drinking water intake
EPA - Environmental Protection Agency
EU - Exposure Unit
FIR - food ingestion rate
HR - home range
kg - kilogram
L/kg - liter per kilogram
USEPA - United States Environmental Protection Agency
ww/day - wet weight per day

TABLE 3-10
TOXICITY REFERENCE VALUES FOR HFPO-DA
Chemours Fayetteville Works, North Carolina

Receptor	TRV Values	TRV Units	Description and Reference
Invertebrates	0.518	mg/kg dw	Freshwater benthic invertebrate PNEC from ECHA (2019)
Aquatic Plants	10.6	mg/L	NOEC for freshwater algae of 106 mg/L from ECHA (2019) with UF=10 applied.
Aquatic Life	0.89	mg/L	Freshwater chronic NOEC for Rainbow trout of 8.89 mg/L (Hoke et al. 2016) with UF=10 applied.
Bird	84.5	mg/kg bw-day	Unbounded NOAEL from chronic bobwhite quail reproduction study (as reported in ECHA 2019). As this was the highest measured dose, no LOAELs were reported.
Mammals	0.5	mg/kg bw-day	NOAEL for decreased F1 generation pup weights in chronic reproductive study (EPA, 2019). The bounded LOAEL was 5 mg/kg/day and resulted in decreased weight in male and female F1 pups.

Abbreviations:

dw - dry weight
NOAEL - no observed adverse effect level
NOEC - no effect concentration
UF - uncertainty factor
mg/kg - milligram per kilogram
mg/kg/day - milligram per kilogram per day
PNEC - probable no effects concentrations
TRV - Toxicity Reference Value

TABLE 4-1
SUMMARY STATISTICS - ONSITE SOIL
Chemours Fayetteville Works, North Carolina

Analyte	No. Samples	No. Missing	No. Detects	% Detects	No. NDs	% NDs	Minimum RL (ng/kg dw)	Maximum RL (ng/kg dw)	KM Mean[a]	KM Variance[a]	KM Standard Deviation[a]	KM CV[a]
HFPO-DA	11	0	11	100%	0	0%	N/A	N/A	1.1E+04	9.2E+07	9.6E+03	0.91
PFMOAA	11	0	11	100%	0	0%	N/A	N/A	2.6E+04	2.1E+09	4.5E+04	1.74
PFO2HxA	11	0	11	100%	0	0%	N/A	N/A	1.4E+04	1.6E+08	1.3E+04	0.91
PFO3OA	11	0	9	82%	2	18%	1,000	2,800	3.9E+03	1.0E+07	3.2E+03	0.84
PFO4DA	11	0	8	73%	3	27%	1,000	2,800	2.2E+03	2.4E+06	1.5E+03	0.70
PFO5DA	11	0	10	91%	1	9%	1,000	1,000	3.0E+03	6.4E+06	2.5E+03	0.83
PMPA	11	0	8	73%	3	27%	1,000	2,800	4.7E+03	2.6E+07	5.1E+03	1.07
PEPA	11	0	6	55%	5	45%	1,000	2,800	1.9E+03	2.2E+06	1.5E+03	0.77
PFESA-BP1	11	0	1	9%	10	91%	1,000	2,800	1.2E+03	3.3E+05	5.8E+02	0.49
PFESA-BP2	11	0	4	36%	7	64%	1,000	2,800	1.3E+03	1.8E+05	4.2E+02	0.33
Byproduct 4	11	0	2	18%	9	82%	1,000	2,800	1.2E+03	1.7E+05	4.2E+02	0.36
Byproduct 5	11	0	0	0%	11	100%	1,000	2,800	N/A	N/A	N/A	N/A
Byproduct 6	11	0	0	0%	11	100%	1,000	2,800	N/A	N/A	N/A	N/A
NVHOS	11	0	1	9%	10	91%	1,000	2,800	1.0E+03	8.1E+03	9.0E+01	0.09
EVE Acid	11	0	0	0%	11	100%	1,000	2,800	N/A	N/A	N/A	N/A
Hydro-EVE Acid	11	0	2	18%	9	82%	1,000	2,800	1.0E+03	6.4E+03	8.0E+01	0.08
R-EVE	11	0	0	0%	11	100%	1,000	2,800	N/A	N/A	N/A	N/A
PES	11	0	0	0%	11	100%	1,000	2,800	N/A	N/A	N/A	N/A
PFECA B	11	0	0	0%	11	100%	1,000	2,800	N/A	N/A	N/A	N/A
PFECA-G	11	0	0	0%	11	100%	1,000	2,800	N/A	N/A	N/A	N/A

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
dw - dry weight
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/kg - nanogram per kilogram
ND - non detects
No. - number
mg/kg - milligram per kilogram
RL - reporting limit

TABLE 4-1
SUMMARY STATISTICS - ONSITE SOIL
Chemours Fayetteville Works, North Carolina

Analyte	Minimum Detect (ng/kg dw)	Maximum Detect (ng/kg dw)	Mean Detect (ng/kg dw)	Median Detect (ng/kg dw)	90th percentile[a] (ng/kg dw)	95UCL[b] (ng/kg dw)	95UCL Basis	EPC (ng/kg dw)	EPC Basis	EPC (mg/kg, dw)
HFPO-DA	1,300	29,500	10,564	7,900	25,000	15,816	95% Student's-t UCL	15,816	95UCL	0.016
PFMOAA	1,100	150,000	26,036	7,500	68,000	76,001	95% Adjusted Gamma UCL	76,001	95UCL	0.076
PFO2HxA	2,200	47,000	13,936	9,300	24,000	20,838	95% Student's-t UCL	20,838	95UCL	0.021
PFO3OA	1,500	12,000	4,422	2,200	7,700	7,346	95% KM Adjusted Gamma UCL	7,346	95UCL	0.007
PFO4DA	1,200	5,400	2,625	1,800	5,100	3,117	95% KM (t) UCL	3,117	95UCL	0.003
PFO5DA	1,000	10,000	3,240	2,200	4,700	4,496	95% KM (t) UCL	4,496	95UCL	0.004
PMPA	1,000	19,000	6,050	4,850	7,800	7,679	95% KM (t) UCL	7,679	95UCL	0.008
PEPA	1,300	6,150	2,592	2,050	2,800	2,803	95% KM (t) UCL	2,803	95UCL	0.003
PFESA-BP1	3,000	3,000	3,000	3,000	2,800	N/A	N/A	3,000	Maximum Detected	0.003
PFESA-BP2	1,100	2,100	1,700	1,800	2,100	1,560	95% KM (t) UCL	1,560	95UCL	0.002
Byproduct 4	1,200	2,400	1,800	1,800	2,400	1,498	95% KM (t) UCL	2,400	Maximum Detected	0.002
Byproduct 5	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 6	N/A	N/A	N/A	N/A	1,000	N/A	N/A	Not detected in any EU media		
NVHOS	1,300	1,300	1,300	1,300	1,300	N/A	N/A	1,300	Maximum Detected	0.001
EVE Acid	N/A	N/A	N/A	N/A	1,000	N/A	N/A	Not detected in any EU media		
Hydro-EVE Acid	1,200	1,200	1,200	1,200	1,200	N/A	N/A	1,200	Maximum Detected	0.001
R-EVE	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PES	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFECA B	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFECA-G	N/A	N/A	N/A	N/A	1,000	N/A	N/A	Not detected in any EU media		

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
dw - dry weight
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/kg - nanogram per kilogram
ND - non detects
No. - number
mg/kg - milligram per kilogram
RL - reporting limit

TABLE 4-2
SUMMARY STATISTICS - OFFSITE SOIL
Chemours Fayetteville Works, North Carolina

Analyte	No. Samples	No. Missing	No. Detects	% Detects	No. NDs	% NDs	Minimum RL (ng/kg dw)	Maximum RL (ng/kg dw)	KM Mean[a]	KM Variance[a]	KM Standard Deviation[a]	KM CV[a]
HFPO-DA	12	0	2	17%	10	83%	250	250	4.6E+02	4.2E+05	6.5E+02	1.42
PFMOAA	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
PFO2HxA	12	0	2	17%	10	83%	1,000	1,000	1.1E+03	1.3E+05	3.7E+02	0.32
PFO3OA	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
PFO4DA	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
PFO5DA	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
PMPA	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
PEPA	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
PFESA-BP1	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
PFESA-BP2	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
Byproduct 4	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
Byproduct 5	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
Byproduct 6	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
NVHOS	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
EVE Acid	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
Hydro-EVE Acid	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
R-EVE	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
PES	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
PFECA B	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A
PFECA-G	12	0	0	0%	12	100%	1,000	1,000	N/A	N/A	N/A	N/A

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
dw - dry weight
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/kg - nanogram per kilogram
ND - non detects
No. - number
mg/kg - milligram per kilogram
RL - reporting limit

TABLE 4-2
SUMMARY STATISTICS - OFFSITE SOIL
Chemours Fayetteville Works, North Carolina

Analyte	Minimum Detect (ng/kg dw)	Maximum Detect (ng/kg dw)	Mean Detect (ng/kg dw)	Median Detect (ng/kg dw)	90th percentile[a] (ng/kg dw)	95UCL[b] (ng/kg dw)	95UCL Basis	EPC (ng/kg dw)	EPC Basis	EPC (mg/kg dw)
HFPO-DA	360	2,600	1,480	1,480	349	1,607	95% KM (Chebyshev) UCL	2,600	Max Detect	0.0026
PFMOAA	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFO2HxA	1,400	2,300	1,850	1,850	1,360	1,410	95% KM (t) UCL	2,300	Max Detect	0.0023
PFO3OA	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFO4DA	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFO5DA	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PMPA	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PEPA	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFESA-BP1	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFESA-BP2	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 4	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 5	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 6	N/A	N/A	N/A	N/A	1,000	N/A	N/A	Not detected in any EU media		
NVHOS	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
EVE Acid	N/A	N/A	N/A	N/A	1,000	N/A	N/A	Not detected in any EU media		
Hydro-EVE Acid	N/A	N/A	N/A	N/A	1,000	N/A	N/A	Not detected in any EU media		
R-EVE	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PES	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFECA B	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFECA-G	N/A	N/A	N/A	N/A	1,000	N/A	N/A	Not detected in any EU media		

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic

Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
dw - dry weight
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/kg - nanogram per kilogram
ND - non detects
No. - number
mg/kg - milligram per kilogram
RL - reporting limit

TABLE 4-3
SUMMARY STATISTICS - ONSITE SURFACE WATER
Chemours Fayetteville Works, North Carolina

Analyte	No. Samples	No. Missing	No. Detects	% Detects	No. NDs	% NDs	Minimum RL (ng/L)	Maximum RL (ng/L)	KM Mean[a]	KM Variance[a]	KM Standard Deviation[a]	KM CV[a]
HFPO-DA	3	0	3	100%	0	0%	N/A	N/A	8.1E+02	1.3E+04	1.1E+02	0.14
PFMOAA	3	0	3	100%	0	0%	N/A	N/A	2.5E+02	5.8E+01	7.6E+00	0.03
PFO2HxA	3	0	3	100%	0	0%	N/A	N/A	7.1E+02	3.3E+02	1.8E+01	0.03
PFO3OA	3	0	3	100%	0	0%	N/A	N/A	9.2E+01	1.0E+01	3.2E+00	0.03
PFO4DA	3	0	3	100%	0	0%	N/A	N/A	3.8E+01	2.3E+00	1.5E+00	0.04
PFO5DA	3	0	3	100%	0	0%	N/A	N/A	9.9E+00	2.3E-02	1.5E-01	0.02
PMPA	3	0	3	100%	0	0%	N/A	N/A	8.3E+02	3.0E+02	1.7E+01	0.02
PEPA	3	0	3	100%	0	0%	N/A	N/A	2.8E+02	1.6E+02	1.3E+01	0.04
PFESA-BP1	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A
PFESA-BP2	3	0	3	100%	0	0%	N/A	N/A	3.2E+01	7.5E-01	8.7E-01	0.03
Byproduct 4	3	0	3	100%	0	0%	N/A	N/A	9.4E+01	1.3E+01	3.6E+00	0.04
Byproduct 5	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A
Byproduct 6	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A
NVHOS	3	0	3	100%	0	0%	N/A	N/A	6.0E+00	1.2E-01	3.4E-01	0.06
EVE Acid	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A
Hydro-EVE Acid	3	0	3	100%	0	0%	N/A	N/A	3.5E+00	7.5E-03	8.7E-02	0.03
R-EVE	3	0	3	100%	0	0%	N/A	N/A	5.5E+01	7.6E+00	2.8E+00	0.05
PES	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A
PFECA B	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A
PFECA-G	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/L - nanogram per litre
ND - non detects
No. - number
mg/L - milligram per litre
RL - reporting limit

TABLE 4-3
SUMMARY STATISTICS - ONSITE SURFACE WATER
Chemours Fayetteville Works, North Carolina

Analyte	Minimum Detect (ng/L)	Maximum Detect (ng/L)	Mean Detect (ng/L)	Median Detect (ng/L)	90th percentile[a] (ng/L)	95UCL[b] (ng/L)	95UCL Basis	EPC (ng/L)	EPC Basis	EPC (mg/L)
HFPO-DA	730	940	812	765	905	1,001	95% Student's-t UCL	940	Maximum Detected	0.00094
PFMOAA	240	255	248	250	254	261	95% Student's-t UCL	255	Maximum Detected	0.00026
PFO2HxA	690	725	705	700	720	735	95% Student's-t UCL	725	Maximum Detected	0.00073
PFO3OA	90	96	92	91	95	98	95% Student's-t UCL	96	Maximum Detected	0.00010
PFO4DA	37	40	38	38	40	41	95% Student's-t UCL	40	Maximum Detected	0.00004
PFO5DA	10	10	10	10	10	10	95% Student's-t UCL	10	Maximum Detected	0.00001
PMPA	820	850	830	820	844	859	95% Student's-t UCL	850	Maximum Detected	0.00085
PEPA	270	295	282	280	292	303	95% Student's-t UCL	295	Maximum Detected	0.00030
PFESA-BP1	N/A	N/A	N/A	N/A	2	N/A	N/A	2	Minimum RL	0.000002
PFESA-BP2	31	33	32	31	32	33	95% Student's-t UCL	33	Maximum Detected	0.00003
Byproduct 4	90	97	94	96	96	100	95% Student's-t UCL	97	Maximum Detected	0.00010
Byproduct 5	N/A	N/A	N/A	N/A	2	N/A	N/A	2	Minimum RL	0.000002
Byproduct 6	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
NVHOS	6	6	6	6	6	7	95% Student's-t UCL	6	Maximum Detected	0.00001
EVE Acid	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
Hydro-EVE Acid	3	4	3	3	4	4	95% Student's-t UCL	4	Maximum Detected	0.000004
R-EVE	52	58	55	55	57	59	95% Student's-t UCL	58	Maximum Detected	0.00006
PES	N/A	N/A	N/A	N/A	2	N/A	N/A	2	Minimum RL	0.000002
PFECA B	N/A	N/A	N/A	N/A	2	N/A	N/A	2	Minimum RL	0.000002
PFECA-G	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/L - nanogram per litre
ND - non detects
No. - number
mg/L - milligram per litre
RL - reporting limit

TABLE 4-4
SUMMARY STATISTICS - OFFSITE SURFACE WATER
Chemours Fayetteville Works, North Carolina

Analyte	No. Samples	No. Missing	No. Detects	% Detects	No. NDs	% NDs	Minimum RL (ng/L)	Maximum RL (ng/L)	KM Mean[a]	KM Variance[a]	KM Standard Deviation[a]	KM CV[a]
HFPO-DA	3	0	3	100%	0	0%	N/A	N/A	3.0E+02	1.3E+02	1.2E+01	0.04
PFMOAA	3	0	3	100%	0	0%	N/A	N/A	6.8E+01	9.3E+00	3.1E+00	0.05
PFO2HxA	3	0	3	100%	0	0%	N/A	N/A	2.2E+02	3.3E+01	5.8E+00	0.03
PFO3OA	3	0	3	100%	0	0%	N/A	N/A	2.6E+01	3.3E-01	5.8E-01	0.02
PFO4DA	3	0	3	100%	0	0%	N/A	N/A	8.7E+00	6.3E-02	2.5E-01	0.03
PFO5DA	3	0	2	67%	1	33%	2	2	2.1E+00	2.2E-03	4.7E-02	0.02
PMPA	3	0	3	100%	0	0%	N/A	N/A	3.5E+02	3.3E+01	5.8E+00	0.02
PEPA	3	0	3	100%	0	0%	N/A	N/A	1.1E+02	3.3E+01	5.8E+00	0.05
PFESA-BP1	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A
PFESA-BP2	3	0	3	100%	0	0%	N/A	N/A	2.5E+01	0.0E+00	0.0E+00	N/A
Byproduct 4	3	0	3	100%	0	0%	N/A	N/A	1.4E+02	1.0E+02	1.0E+01	0.07
Byproduct 5	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A
Byproduct 6	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A
NVHOS	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A
EVE Acid	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A
Hydro-EVE Acid	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A
R-EVE	3	0	3	100%	0	0%	N/A	N/A	5.3E+01	3.3E-01	5.8E-01	0.01
PES	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A
PFECA B	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A
PFECA-G	3	0	0	0%	3	100%	2	2	N/A	N/A	N/A	N/A

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/L - nanogram per litre
ND - non detects
No. - number
mg/L - milligram per litre
RL - reporting limit

TABLE 4-4
SUMMARY STATISTICS - OFFSITE SURFACE WATER
Chemours Fayetteville Works, North Carolina

Analyte	Minimum Detect (ng/L)	Maximum Detect (ng/L)	Mean Detect (ng/L)	Median Detect (ng/L)	90th percentile[a] (ng/L)	95UCL[b] (ng/L)	95UCL Basis	EPC (ng/L)	EPC Basis	EPC (mg/L)
HFPO-DA	290	310	303	310	133	323	95% Student's-t UCL	310	Maximum Detected	0.00031
PFMOAA	65	71	68	67	9	73	95% Student's-t UCL	71	Maximum Detected	0.00007
PFO2HxA	210	220	217	220	33	226	95% Student's-t UCL	220	Maximum Detected	0.00022
PFO3OA	26	27	26	26	0	27	95% Student's-t UCL	27	Maximum Detected	0.00003
PFO4DA	8	9	9	9	0	9	95% Student's-t UCL	9	Maximum Detected	0.00001
PFO5DA	2	2	2	2	N/A	N/A	N/A	2	Maximum Detected	0.000002
PMPA	340	350	347	350	33	356	95% Student's-t UCL	350	Maximum Detected	0.00035
PEPA	100	110	107	110	33	116	95% Student's-t UCL	110	Maximum Detected	0.00011
PFESA-BP1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	Minimum RL	0.000002
PFESA-BP2	25	25	25	25	N/A	N/A	N/A	25	Maximum Detected	0.00003
Byproduct 4	130	150	140	140	100	157	95% Student's-t UCL	150	Maximum Detected	0.00015
Byproduct 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	Minimum RL	0.000002
Byproduct 6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not detected in any EU media		
NVHOS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	Minimum RL	0.000002
EVE Acid	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not detected in any EU media		
Hydro-EVE Acid	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not detected in any EU media		
R-EVE	52	53	53	53	0	54	95% Student's-t UCL	53	Maximum Detected	0.00005
PES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	Minimum RL	0.000002
PFECA B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	Minimum RL	0.000002
PFECA-G	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not detected in any EU media		

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/L - nanogram per litre
ND - non detects
No. - number
mg/L - milligram per litre
RL - reporting limit

TABLE 4-5
SUMMARY STATISTICS - TERRESTRIAL VEGETATION
Chemours Fayetteville Works, North Carolina

Analyte	No. Samples	No. Missing	No. Detects	% Detects	No. NDs	% NDs	Minimum RL (ng/kg ww)	Maximum RL (ng/kg ww)	KM Mean[a]	KM Variance[a]	KM Standard Deviation[a]	KM CV[a]
HFPO-DA	12	0	12	100%	0	0%	N/A	N/A	9.4E+03	2.9E+08	1.7E+04	1.84
PFMOAA	12	0	3	25%	9	75%	1,000	5,700	7.4E+03	2.7E+08	1.6E+04	2.22
PFO2HxA	12	0	9	75%	3	25%	1,000	1,000	2.4E+03	4.4E+06	2.1E+03	0.88
PFO3OA	12	0	1	8%	11	92%	1,000	5,700	2.2E+02	N/A	N/A	N/A
PFO4DA	12	0	2	17%	10	83%	1,000	5,700	4.0E+02	1.8E+04	1.4E+02	0.34
PFO5DA	12	0	0	0%	12	100%	1,000	5,700	N/A	N/A	N/A	N/A
PMPA	12	0	12	100%	0	0%	N/A	N/A	1.0E+04	2.6E+08	1.6E+04	1.56
PEPA	12	0	5	42%	7	58%	1,000	5,700	8.5E+02	3.9E+05	6.2E+02	0.74
PFESA-BP1	12	0	0	0%	12	100%	1,000	5,700	N/A	N/A	N/A	N/A
PFESA-BP2	12	0	0	0%	12	100%	1,000	5,700	N/A	N/A	N/A	N/A
Byproduct 4	12	0	8	67%	4	33%	1,000	1,000	4.4E+03	5.3E+07	7.3E+03	1.65
Byproduct 5	12	0	2	17%	10	83%	1,000	5,700	4.7E+02	1.0E+04	1.0E+02	0.21
Byproduct 6	12	0	0	0%	12	100%	1,000	5,700	N/A	N/A	N/A	N/A
NVHOS	12	0	10	83%	2	17%	1,000	5,000	6.8E+04	4.0E+10	2.0E+05	2.92
EVE Acid	12	0	0	0%	12	100%	1,000	5,700	N/A	N/A	N/A	N/A
Hydro-EVE Acid	12	0	0	0%	12	100%	1,000	5,700	N/A	N/A	N/A	N/A
R-EVE	12	0	9	75%	3	25%	1,000	1,000	2.5E+03	5.5E+06	2.3E+03	0.95
PES	12	0	4	33%	8	67%	1,000	5,000	6.8E+02	5.9E+05	7.6E+02	1.12
PFECA B	12	0	2	17%	10	83%	1,000	5,700	6.0E+02	7.0E+05	8.3E+02	1.40
PFECA-G	12	0	0	0%	12	100%	1,000	5,700	N/A	N/A	N/A	N/A

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/kg - nanogram per kilogram
ND - non detects
No. - number
mg/kg - milligram per kilogram
RL - reporting limit
ww - wet weight

TABLE 4-5
SUMMARY STATISTICS - TERRESTRIAL VEGETATION
Chemours Fayetteville Works, North Carolina

Analyte	Minimum Detect (ng/kg ww)	Maximum Detect (ng/kg ww)	Mean Detect (ng/kg ww)	Median Detect (ng/kg ww)	90th percentile[a] (ng/kg ww)	95UCL[b] (ng/kg ww)	95UCL Basis	EPC (ng/kg ww)	EPC Basis	EPC (mg/kg ww)
HFPO-DA	540	55,000	9,351	1,850	31,490	30,951	95% Chebyshev (Mean, Sd) UCL	30,951	95UCL	0.031
PFMOAA	970	59,000	26,657	20,000	18,570	17,816	95% KM (t) UCL	59,000	Maximum Detected	0.059
PFO2HxA	790	6,600	2,910	1,500	5,970	4,477	95% KM Adjusted Gamma UCL	4,477	95UCL	0.004
PFO3OA	220	220	220	220	4,600	N/A	N/A	220	Maximum Detected	0.0002
PFO4DA	260	530	395	395	4,600	984	95% KM (Chebyshev) UCL	530	Maximum Detected	0.001
PFO5DA	N/A	N/A	N/A	N/A	4,600	N/A	N/A	1,000	Minimum RL	0.001
PMPA	390	52,000	10,335	3,300	31,800	26,235	95% Adjusted Gamma UCL	26,235	95UCL	0.026
PEPA	410	2,300	1,134	850	4,730	1,268	95% KM (t) UCL	1,268	95UCL	0.001
PFESA-BP1	N/A	N/A	N/A	N/A	4,600	N/A	N/A	1,000	Minimum RL	0.001
PFESA-BP2	N/A	N/A	N/A	N/A	4,600	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 4	600	22,000	6,239	1,650	17,440	33,483	95% KM Bootstrap t UCL	33,483	95UCL	0.033
Byproduct 5	370	570	470	470	4,600	650	95% KM (t) UCL	570	Maximum Detected	0.001
Byproduct 6	N/A	N/A	N/A	N/A	4,600	N/A	N/A	Not detected in any EU media		
NVHOS	650	730,000	81,845	5,850	25,800	447,843	97.5% KM (Chebyshev) UCL	447,843	95UCL	0.448
EVE Acid	N/A	N/A	N/A	N/A	4,600	N/A	N/A	Not detected in any EU media		
Hydro-EVE Acid	N/A	N/A	N/A	N/A	4,600	N/A	N/A	Not detected in any EU media		
R-EVE	240	8,500	3,204	3,100	4,370	3,750	95% KM (t) UCL	3,750	95UCL	0.004
PES	300	2,900	1,350	1,100	2,720	1,160	95% KM (t) UCL	1,160	95UCL	0.001
PFECA B	320	3,100	1,710	1,710	4,810	2,927	95% KM (Chebyshev) UCL	3,100	Maximum Detected	0.003
PFECA-G	N/A	N/A	N/A	N/A	4,600	N/A	N/A	Not detected in any EU media		

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/kg - nanogram per kilogram
ND - non detects
No. - number
mg/kg - milligram per kilogram
RL - reporting limit
ww - wet weight

TABLE 4-6
SUMMARY STATISTICS - OFFSITE TERRESTRIAL INVERTEBRATES
Chemours Fayetteville Works, North Carolina

Analyte	No. Samples	No. Missing	No. Detects	% Detects	No. NDs	% NDs	Minimum RL (ng/kg ww)	Maximum RL (ng/kg ww)	KM Mean[a]	KM Variance[a]	KM Standard Deviation[a]	KM CV[a]
HFPO-DA	11	0	2	18%	9	82%	1,000	12,000	1.4E+03	1.3E+06	1.1E+03	0.80
PFMOAA	11	0	1	9%	10	91%	1,000	12,000	1.4E+03	1.2E+06	1.1E+03	0.79
PFO2HxA	11	0	0	0%	11	100%	1,000	12,000	N/A	N/A	N/A	N/A
PFO3OA	11	0	0	0%	11	100%	1,000	12,000	N/A	N/A	N/A	N/A
PFO4DA	11	0	0	0%	11	100%	1,000	12,000	N/A	N/A	N/A	N/A
PFO5DA	11	0	0	0%	11	100%	1,000	12,000	N/A	N/A	N/A	N/A
PMPA	11	0	3	27%	8	73%	1,000	12,000	2.7E+03	2.7E+07	5.2E+03	1.90
PEPA	11	0	1	9%	10	91%	1,000	12,000	1.1E+03	3.6E+04	1.9E+02	0.18
PFESA-BP1	11	0	1	9%	10	91%	1,000	1,700	1.2E+03	5.2E+05	7.2E+02	0.59
PFESA-BP2	11	0	0	0%	11	100%	1,000	12,000	N/A	N/A	N/A	N/A
Byproduct 4	11	0	1	9%	10	91%	1,000	12,000	1.5E+03	1.9E+06	1.4E+03	0.95
Byproduct 5	11	0	0	0%	11	100%	1,000	12,000	N/A	N/A	N/A	N/A
Byproduct 6	11	0	0	0%	11	100%	1,000	12,000	N/A	N/A	N/A	N/A
NVHOS	11	0	0	0%	11	100%	1,000	12,000	N/A	N/A	N/A	N/A
EVE Acid	11	0	0	0%	11	100%	1,000	12,000	N/A	N/A	N/A	N/A
Hydro-EVE Acid	11	0	0	0%	11	100%	1,000	12,000	N/A	N/A	N/A	N/A
R-EVE	11	0	2	18%	9	82%	1,000	12,000	5.4E+02	6.8E+04	2.6E+02	0.48
PES	11	0	0	0%	11	100%	1,000	12,000	N/A	N/A	N/A	N/A
PFECA B	11	0	0	0%	11	100%	1,000	12,000	N/A	N/A	N/A	N/A
PFECA-G	11	0	0	0%	11	100%	1,000	12,000	N/A	N/A	N/A	N/A

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/kg - nanogram per kilogram
ND - non detects
No. - number
mg/kg - milligram per kilogram
RL - reporting limit
ww - wet weight

TABLE 4-6
SUMMARY STATISTICS - OFFSITE TERRESTRIAL INVERTEBRATES
Chemours Fayetteville Works, North Carolina

Analyte	Minimum Detect (ng/kg ww)	Maximum Detect (ng/kg ww)	Mean Detect (ng/kg ww)	Median Detect (ng/kg ww)	90th percentile[a] (ng/kg ww)	95UCL[b] (ng/kg ww)	95UCL Basis	EPC (ng/kg ww)	EPC Basis	EPC (mg/kg ww)
HFPO-DA	1,200	4,800	3,000	3,000	4,800	3,619	95% KM (Chebyshev) UCL	4,800	Maximum Detected	0.005
PFMOAA	4,600	4,600	4,600	4,600	4,600	N/A	N/A	4,600	Maximum Detected	0.005
PFO2HxA	N/A	N/A	N/A	N/A	1,700	N/A	N/A	1,000	Minimum RL	0.001
PFO3OA	N/A	N/A	N/A	N/A	1,700	N/A	N/A	1,000	Minimum RL	0.001
PFO4DA	N/A	N/A	N/A	N/A	1,700	N/A	N/A	1,000	Minimum RL	0.001
PFO5DA	N/A	N/A	N/A	N/A	1,700	N/A	N/A	1,000	Minimum RL	0.001
PMPA	1,300	19,000	7,233	1,400	12,000	6,157	95% KM (t) UCL	19,000	Maximum Detected	0.019
PEPA	1,600	1,600	1,600	1,600	1,700	N/A	N/A	1,600	Maximum Detected	0.002
PFESA-BP1	3,500	3,500	3,500	3,500	1,700	N/A	N/A	3,500	Maximum Detected	0.004
PFESA-BP2	N/A	N/A	N/A	N/A	1,700	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 4	5,600	5,600	5,600	5,600	5,600	N/A	N/A	5,600	Maximum Detected	0.006
Byproduct 5	N/A	N/A	N/A	N/A	1,700	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 6	N/A	N/A	N/A	N/A	1,700	N/A	N/A	Not detected in any EU media		
NVHOS	N/A	N/A	N/A	N/A	1,700	N/A	N/A	1,000	Minimum RL	0.001
EVE Acid	N/A	N/A	N/A	N/A	1,700	N/A	N/A	Not detected in any EU media		
Hydro-EVE Acid	N/A	N/A	N/A	N/A	1,700	N/A	N/A	Not detected in any EU media		
R-EVE	280	800	540	540	1,700	1,673	95% KM (Chebyshev) UCL	800	Maximum Detected	0.001
PES	N/A	N/A	N/A	N/A	1,700	N/A	N/A	1,000	Minimum RL	0.001
PFECA B	N/A	N/A	N/A	N/A	1,700	N/A	N/A	1,000	Minimum RL	0.001
PFECA-G	N/A	N/A	N/A	N/A	1,700	N/A	N/A	Not detected in any EU media		

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/kg - nanogram per kilogram
ND - non detects
No. - number
mg/kg - milligram per kilogram
RL - reporting limit
ww - wet weight

TABLE 4-7
SUMMARY STATISTICS - ONSITE TERRESTRIAL INVERTEBRATES
Chemours Fayetteville Works, North Carolina

Analyte	No. Samples	No. Missing	No. Detects	% Detects	No. NDs	% NDs	Minimum RL (ng/kg ww)	Maximum RL (ng/kg ww)	KM Mean[a]	KM Variance[a]	KM Standard Deviation[a]	KM CV[a]
HFPO-DA	6	0	6	100%	0	0%	N/A	N/A	7.1E+03	3.7E+07	6.1E+03	0.86
PFMOAA	6	0	2	33%	4	67%	1,000	1,200	1.3E+04	4.2E+08	2.1E+04	1.56
PFO2HxA	6	0	4	67%	2	33%	1,000	1,200	3.9E+03	2.2E+07	4.7E+03	1.22
PFO3OA	6	0	6	100%	0	0%	N/A	N/A	2.4E+03	6.2E+06	2.5E+03	1.06
PFO4DA	6	0	3	50%	3	50%	1,000	1,200	3.4E+02	2.9E+03	5.4E+01	0.16
PFO5DA	6	0	6	100%	0	0%	N/A	N/A	4.3E+03	2.6E+07	5.1E+03	1.20
PMPA	6	0	3	50%	3	50%	1,000	1,200	1.3E+03	2.1E+05	4.6E+02	0.34
PEPA	6	0	6	100%	0	0%	N/A	N/A	1.1E+03	1.5E+05	3.9E+02	0.35
PFESA-BP1	6	0	2	33%	4	67%	1,000	1,200	4.3E+02	4.2E+04	2.1E+02	0.48
PFESA-BP2	6	0	6	100%	0	0%	N/A	N/A	1.5E+03	2.4E+06	1.5E+03	1.05
Byproduct 4	6	0	6	100%	0	0%	N/A	N/A	1.6E+04	2.0E+08	1.4E+04	0.87
Byproduct 5	6	0	5	83%	1	17%	1,100	1,100	4.9E+03	5.0E+07	7.0E+03	1.43
Byproduct 6	6	0	0	0%	6	100%	1,000	2,200	N/A	N/A	N/A	N/A
NVHOS	6	0	4	67%	2	33%	1,000	1,200	1.9E+03	6.4E+06	2.5E+03	1.36
EVE Acid	6	0	0	0%	6	100%	1,000	2,200	N/A	N/A	N/A	N/A
Hydro-EVE Acid	6	0	3	50%	3	50%	1,000	1,200	5.7E+02	6.5E+04	2.5E+02	0.45
R-EVE	6	0	6	100%	0	0%	N/A	N/A	4.9E+03	8.0E+06	2.8E+03	0.58
PES	6	0	0	0%	6	100%	1,000	2,200	N/A	N/A	N/A	N/A
PFECA B	6	0	0	0%	6	100%	1,000	2,200	N/A	N/A	N/A	N/A
PFECA-G	6	0	0	0%	6	100%	1,000	2,200	N/A	N/A	N/A	N/A

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/kg - nanogram per kilogram
ND - non detects
No. - number
mg/kg - milligram per kilogram
RL - reporting limit
ww - wet weight

TABLE 4-7
SUMMARY STATISTICS - ONSITE TERRESTRIAL INVERTEBRATES
Chemours Fayetteville Works, North Carolina

Analyte	Minimum Detect (ng/kg ww)	Maximum Detect (ng/kg ww)	Mean Detect (ng/kg ww)	Median Detect (ng/kg ww)	90th percentile[a] (ng/kg ww)	95UCL[b] (ng/kg ww)	95UCL Basis	EPC (ng/kg ww)	EPC Basis	EPC (mg/kg ww)
HFPO-DA	1,400	19,000	7,093	5,450	12,600	21,269	95% Adjusted Gamma UCL	19,000	Maximum Detected	0.019
PFMOAA	18,000	57,000	37,500	37,500	37,500	64,914	95% KM (Chebyshev) UCL	57,000	Maximum Detected	0.057
PFO2HxA	870	14,000	5,343	3,250	9,100	8,310	95% KM (t) UCL	14,000	Maximum Detected	0.014
PFO3OA	232	6,700	2,360	1,605	5,100	4,414	95% Student's-t UCL	6,700	Maximum Detected	0.007
PFO4DA	280	410	340	330	1,200	416	95% KM (t) UCL	410	Maximum Detected	0.0004
PFO5DA	383	14,000	4,272	2,450	9,750	8,474	95% Student's-t UCL	14,000	Maximum Detected	0.014
PMPA	1,100	2,156	1,685	1,800	1,978	1,811	95% KM (t) UCL	2,156	Maximum Detected	0.002
PEPA	520	1,444	1,116	1,300	1,422	1,436	95% Student's-t UCL	1,444	Maximum Detected	0.001
PFESA-BP1	220	630	425	425	1,200	1,319	95% KM (Chebyshev) UCL	630	Maximum Detected	0.0006
PFESA-BP2	209	4,200	1,465	960	3,150	2,727	95% Student's-t UCL	4,200	Maximum Detected	0.004
Byproduct 4	3,800	44,000	16,458	11,500	30,973	28,163	95% Student's-t UCL	44,000	Maximum Detected	0.044
Byproduct 5	450	20,000	5,823	1,984	13,100	11,403	95% KM (t) UCL	20,000	Maximum Detected	0.020
Byproduct 6	N/A	N/A	N/A	N/A	1,700	N/A	N/A	Not detected in any EU media		
NVHOS	420	7,500	2,450	940	4,350	17,081	Gamma Adjusted KM-UCL	7,500	Maximum Detected	0.008
EVE Acid	N/A	N/A	N/A	N/A	1,700	N/A	N/A	Not detected in any EU media		
Hydro-EVE Acid	380	930	570	400	1,200	933	95% KM (t) UCL	930	Maximum Detected	0.001
R-EVE	1,100	9,500	4,865	4,695	7,750	7,188	95% Student's-t UCL	9,500	Maximum Detected	0.010
PES	N/A	N/A	N/A	N/A	1,700	N/A	N/A	1,000	Minimum RL	0.001
PFECA B	N/A	N/A	N/A	N/A	1,700	N/A	N/A	1,000	Minimum RL	0.001
PFECA-G	N/A	N/A	N/A	N/A	1,700	N/A	N/A	Not detected in any EU media		

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic

Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/kg - nanogram per kilogram
ND - non detects
No. - number
mg/kg - milligram per kilogram
RL - reporting limit
ww - wet weight

TABLE 4-8
SUMMARY STATISTICS - SEDIMENT
Chemours Fayetteville Works, North Carolina

Analyte	No. Samples	No. Missing	No. Detects	% Detects	No. NDs	% NDs	Minimum RL (µg/kg dw)	Maximum RL (µg/kg dw)	KM Mean[a]	KM Variance[a]	KM Standard Deviation[a]	KM CV[a]
HFPO-DA	6	0	1	17%	5	83%	0.25	0.25	2.5E-01	1.4E-05	3.7E-03	0.01
PFMOAA	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
PFO2HxA	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
PFO3OA	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
PFO4DA	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
PFO5DA	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
PMPA	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
PEPA	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
PFESA-BP1	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
PFESA-BP2	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
Byproduct 4	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
Byproduct 5	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
Byproduct 6	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
NVHOS	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
EVE Acid	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
Hydro-EVE Acid	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
R-EVE	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
PES	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
PFECA B	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A
PFECA-G	6	0	0	0%	6	100%	1.00	1.00	N/A	N/A	N/A	N/A

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
dw - dry weight
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
µg/kg - microgram per kilogram
ND - non detects
No. - number
mg/kg - milligram per kilogram
RL - reporting limit

TABLE 4-8
SUMMARY STATISTICS - SEDIMENT
Chemours Fayetteville Works, North Carolina

Analyte	Minimum Detect (µg/kg dw)	Maximum Detect (µg/kg dw)	Mean Detect (µg/kg dw)	Median Detect (µg/kg dw)	90th percentile[a] (µg/kg dw)	95UCL[b] (µg/kg dw)	95UCL Basis	EPC (µg/kg dw)	EPC Basis	EPC (mg/kg dw)
HFPO-DA	0.26	0.26	0.26	0.26	0.26	N/A	N/A	0.26	Maximum Detected	0.0003
PFMOAA	N/A	N/A	N/A	N/A	1.00	N/A	N/A	1.00	Minimum RL	0.001
PFO2HxA	N/A	N/A	N/A	N/A	1.00	N/A	N/A	1.00	Minimum RL	0.001
PFO3OA	N/A	N/A	N/A	N/A	1.00	N/A	N/A	1.00	Minimum RL	0.001
PFO4DA	N/A	N/A	N/A	N/A	1.00	N/A	N/A	1.00	Minimum RL	0.001
PFO5DA	N/A	N/A	N/A	N/A	1.00	N/A	N/A	1.00	Minimum RL	0.001
PMPA	N/A	N/A	N/A	N/A	1.00	N/A	N/A	1.00	Minimum RL	0.001
PEPA	N/A	N/A	N/A	N/A	1.00	N/A	N/A	1.00	Minimum RL	0.001
PFESA-BP1	N/A	N/A	N/A	N/A	1.00	N/A	N/A	Not detected in any EU media		
PFESA-BP2	N/A	N/A	N/A	N/A	1.00	N/A	N/A	Not detected in any EU media		
Byproduct 4	N/A	N/A	N/A	N/A	1.00	N/A	N/A	1.00	Minimum RL	0.001
Byproduct 5	N/A	N/A	N/A	N/A	1.00	N/A	N/A	Not detected in any EU media		
Byproduct 6	N/A	N/A	N/A	N/A	1.00	N/A	N/A	Not detected in any EU media		
NVHOS	N/A	N/A	N/A	N/A	1.00	N/A	N/A	1.00	Minimum RL	0.001
EVE Acid	N/A	N/A	N/A	N/A	1.00	N/A	N/A	Not detected in any EU media		
Hydro-EVE Acid	N/A	N/A	N/A	N/A	1.00	N/A	N/A	Not detected in any EU media		
R-EVE	N/A	N/A	N/A	N/A	1.00	N/A	N/A	1.00	Minimum RL	0.001
PES	N/A	N/A	N/A	N/A	1.00	N/A	N/A	Not detected in any EU media		
PFECA B	N/A	N/A	N/A	N/A	1.00	N/A	N/A	Not detected in any EU media		
PFECA-G	N/A	N/A	N/A	N/A	1.00	N/A	N/A	Not detected in any EU media		

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
dw - dry weight
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
µg/kg - microgram per kilogram
ND - non detects
No. - number
mg/kg - milligram per kilogram
RL - reporting limit

TABLE 4-9
SUMMARY STATISTICS - CAPE FEAR RIVER SURFACE WATER
Chemours Fayetteville Works, North Carolina

Analyte	No. Samples	No. Missing	No. Detects	% Detects	No. NDs	% NDs	Minimum RL (ng/L)	Maximum RL (ng/L)	KM Mean[a]	KM Variance[a]	KM Standard Deviation[a]	KM CV[a]
HFPO-DA	9	0	7	78%	2	22%	2	2	5.3E+00	1.7E+01	4.2E+00	0.78
PFMOAA	9	0	6	67%	3	33%	5	5	1.9E+01	4.2E+02	2.1E+01	1.07
PFO2HxA	9	0	9	100%	0	0%	N/A	N/A	7.4E+00	5.6E+01	7.5E+00	1.02
PFO3OA	9	0	3	33%	6	67%	2	2	2.6E+00	1.9E+00	1.4E+00	0.53
PFO4DA	9	0	1	11%	8	89%	2	2	2.0E+00	8.9E-03	9.4E-02	0.05
PFO5DA	9	0	0	0%	9	100%	2	2	N/A	N/A	N/A	N/A
PMPA	9	0	3	33%	6	67%	10	10	1.2E+01	8.0E+00	2.8E+00	0.25
PEPA	9	0	0	0%	9	100%	20	20	N/A	N/A	N/A	N/A
PFESA-BP1	9	0	0	0%	9	100%	2	2	N/A	N/A	N/A	N/A
PFESA-BP2	9	0	0	0%	9	100%	2	2	N/A	N/A	N/A	N/A
Byproduct 4	9	0	8	89%	1	11%	2	2	6.1E+00	3.6E+00	1.9E+00	0.31
Byproduct 5	9	0	6	67%	3	33%	2	2	5.5E+00	2.9E+01	5.3E+00	0.97
Byproduct 6	9	0	0	0%	9	100%	2	2	N/A	N/A	N/A	N/A
NVHOS	9	0	9	100%	0	0%	N/A	N/A	6.5E+00	1.4E-01	3.8E-01	0.06
EVE Acid	9	0	0	0%	9	100%	2	2	N/A	N/A	N/A	N/A
Hydro-EVE Acid	9	0	0	0%	9	100%	2	2	N/A	N/A	N/A	N/A
R-EVE	9	0	7	78%	2	22%	2	2	2.9E+00	3.5E-01	5.9E-01	0.21
PES	9	0	0	0%	9	100%	2	2	N/A	N/A	N/A	N/A
PFECA B	9	0	0	0%	9	100%	2	2	N/A	N/A	N/A	N/A
PFECA-G	9	0	0	0%	9	100%	2	2	N/A	N/A	N/A	N/A

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/L - nanogram per litre
ND - non detects
No. - number
mg/L - milligram per litre
RL - reporting limit

TABLE 4-9
SUMMARY STATISTICS - CAPE FEAR RIVER SURFACE WATER
Chemours Fayetteville Works, North Carolina

Analyte	Minimum Detect (ng/L)	Maximum Detect (ng/L)	Mean Detect (ng/L)	Median Detect (ng/L)	90th percentile[a] (ng/L)	95UCL[b] (ng/L)	95UCL Basis	EPC (ng/L)	EPC Basis	EPC (mg/L)
HFPO-DA	2	15	6	4	11	8	95% KM (t) UCL	8	95UCL	0.000008
PFMOAA	9	71	26	17	43	33	95% KM (t) UCL	33	95UCL	0.000033
PFO2HxA	2	25	7	5	15	16	95% Adjusted Gamma UCL	16	95UCL	0.000016
PFO3OA	2	6	4	3	4	4	95% KM (t) UCL	6	Maximum Detected	0.000006
PFO4DA	2	2	2	2	2	N/A	N/A	2	Maximum Detected	0.000002
PFO5DA	N/A	N/A	N/A	N/A	2	N/A	N/A	2	Minimum RL	0.000002
PMPA	12	19	15	13	14	14	95% KM (t) UCL	19	Maximum Detected	0.000019
PEPA	N/A	N/A	N/A	N/A	20	N/A	N/A	20	Minimum RL	0.000020
PFESA-BP1	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
PFESA-BP2	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
Byproduct 4	5	9	7	7	8	7	95% KM (t) UCL	7	95UCL	0.000007
Byproduct 5	3	19	7	5	11	9	95% KM (t) UCL	9	95UCL	0.000009
Byproduct 6	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
NVHOS	6	7	7	7	7	7	95% Student's-t UCL	7	95UCL	0.000007
EVE Acid	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
Hydro-EVE Acid	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
R-EVE	3	4	3	3	4	3	95% KM (t) UCL	3	95UCL	0.000003
PES	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
PFECA B	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
PFECA-G	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/L - nanogram per litre
ND - non detects
No. - number
mg/L - milligram per litre
RL - reporting limit

TABLE 4-10
SUMMARY STATISTICS - AQUATIC VEGETATION
Chemours Fayetteville Works, North Carolina

Analyte	No. Samples	No. Missing	No. Detects	% Detects	No. NDs	% NDs	Minimum RL (µg/kg ww)	Maximum RL (µg/kg ww)	KM Mean[a]	KM Variance[a]	KM Standard Deviation[a]	KM CV[a]
HFPO-DA	6	0	4	67%	2	33%	1.3	1.3	7.8E+00	8.3E+01	9.1E+00	1.16
PFMOAA	6	0	2	33%	4	67%	1.0	1.0	8.4E+01	1.9E+04	1.4E+02	1.62
PFO2HxA	6	0	2	33%	4	67%	1.0	1.0	1.2E+01	2.4E+02	1.6E+01	1.31
PFO3OA	6	0	1	17%	5	83%	1.0	2.4	1.0E+00	1.9E-03	4.3E-02	0.04
PFO4DA	6	0	2	33%	4	67%	1.0	2.4	1.1E+00	7.8E-02	2.8E-01	0.25
PFO5DA	6	0	2	33%	4	67%	1.0	2.4	1.2E+00	5.0E-02	2.2E-01	0.19
PMPA	6	0	2	33%	4	67%	1.0	1.0	2.2E+01	8.6E+02	2.9E+01	1.35
PEPA	6	0	1	17%	5	83%	1.0	2.4	2.8E+00	1.7E+01	4.1E+00	1.45
PFESA-BP1	6	0	0	0%	6	100%	1.0	2.4	N/A	N/A	N/A	N/A
PFESA-BP2	6	0	0	0%	6	100%	1.0	2.4	N/A	N/A	N/A	N/A
Byproduct 4	6	0	3	50%	3	50%	1.0	1.0	1.6E+00	6.7E-01	8.2E-01	0.52
Byproduct 5	6	0	0	0%	6	100%	1.0	2.4	N/A	N/A	N/A	N/A
Byproduct 6	6	0	0	0%	6	100%	1.0	2.4	N/A	N/A	N/A	N/A
NVHOS	6	0	1	17%	5	83%	1.0	2.4	6.5E+00	1.5E+02	1.2E+01	1.89
EVE Acid	6	0	0	0%	6	100%	1.0	2.4	N/A	N/A	N/A	N/A
Hydro-EVE Acid	6	0	0	0%	6	100%	1.0	2.4	N/A	N/A	N/A	N/A
R-EVE	6	0	2	33%	4	67%	1.0	1.0	1.4E+00	4.5E-01	6.7E-01	0.47
PES	6	0	0	0%	6	100%	1.0	2.4	N/A	N/A	N/A	N/A
PFECA B	6	0	0	0%	6	100%	1.0	2.4	N/A	N/A	N/A	N/A
PFECA-G	6	0	0	0%	6	100%	1.0	2.4	N/A	N/A	N/A	N/A

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
µg/kg - microgram per kilogram
ND - non detects
No. - number
mg/kg - milligram per kilogram
RL - reporting limit
ww - wet weight

TABLE 4-10
SUMMARY STATISTICS - AQUATIC VEGETATION
Chemours Fayetteville Works, North Carolina

Analyte	Minimum Detect (µg/kg ww)	Maximum Detect (µg/kg ww)	Mean Detect (µg/kg ww)	Median Detect (µg/kg ww)	90th percentile[a] (µg/kg ww)	95UCL[b] (µg/kg ww)	95UCL Basis	EPC (µg/kg ww)	EPC Basis	EPC (mg/kg ww)
HFPO-DA	2	26	11	8	20	16	95% KM (t) UCL	26	Maximum Detected	0.026
PFMOAA	130	370	250	250	250	427	95% KM (Chebyshev) UCL	370	Maximum Detected	0.370
PFO2HxA	29	38	34	34	34	30	95% KM (t) UCL	38	Maximum Detected	0.038
PFO3OA	1	1	1	1	2	N/A	N/A	1	Maximum Detected	0.001
PFO4DA	1	2	1	1	2	1	95% KM (t) UCL	2	Maximum Detected	0.002
PFO5DA	1	2	1	1	2	1	95% KM (t) UCL	2	Maximum Detected	0.002
PMPA	60	66	63	63	63	56	95% KM (t) UCL	66	Maximum Detected	0.066
PEPA	12	12	12	12	7	N/A	N/A	12	Maximum Detected	0.012
PFESA-BP1	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
PFESA-BP2	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
Byproduct 4	1	3	2	2	3	2	95% KM (t) UCL	3	Maximum Detected	0.003
Byproduct 5	N/A	N/A	N/A	N/A	2	N/A	N/A	1	Minimum RL	0.001
Byproduct 6	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
NVHOS	34	34	34	34	18	N/A	N/A	34	Maximum Detected	0.034
EVE Acid	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
Hydro-EVE Acid	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
R-EVE	2	3	2	2	2	2	95% KM (t) UCL	3	Maximum Detected	0.003
PES	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
PFECA B	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		
PFECA-G	N/A	N/A	N/A	N/A	2	N/A	N/A	Not detected in any EU media		

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
µg/kg - microgram per kilogram
ND - non detects
No. - number
mg/kg - milligram per kilogram
RL - reporting limit
ww - wet weight

TABLE 4-11
SUMMARY STATISTICS - FISH
Chemours Fayetteville Works, North Carolina

Analyte	No. Samples	No. Missing	No. Detects	% Detects	No. NDs	% NDs	Minimum RL (ng/kg ww)	Maximum RL (ng/kg ww)	KM Mean[a]	KM Variance[a]	KM Standard Deviation[a]	KM CV[a]	Minimum Detect (ng/kg ww)	Maximum Detect (ng/kg ww)	Mean Detect (ng/kg ww)	Median Detect (ng/kg ww)	90th percentile[a] (ng/kg ww)	95UCL[b] (ng/kg ww)	95UCL Basis	EPC (ng/kg ww)	EPC Basis	EPC (mg/kg ww)
Species:	*Largemouth bass (fillet only)*																					
HFPO-DA	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	1,000	Minimum RL	0.001
PFMOAA	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	1,000	Minimum RL	0.001
PFO2HxA	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	1,000	Minimum RL	0.001
PFO3OA	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	1,000	Minimum RL	0.001
PFO4DA	4	0	2	50%	2	50%	1,000	1,000	8.5E+02	1.0E+06	1.0E+03	1.18	270	2,600	1,435	1,435	2,120	5,308	975% KM (Chebyshev) UCL	2,600	Maximum Detected	0.0026
PFO5DA	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	1,000	Minimum RL	0.001
PMPA	4	0	2	50%	2	50%	1,000	1,000	3.2E+02	2.5E+03	5.0E+01	0.16	270	370	320	320	1,000	438	95% KM (t) UCL	370	Maximum Detected	0.00037
PEPA	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	1,000	Minimum RL	0.001
PFESA-BP1	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	Not detected in any EU media		
PFESA-BP2	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	Not detected in any EU media		
Byproduct 4	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 5	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 6	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	Not detected in any EU media		
NVHOS	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	1,000	Minimum RL	0.001
EVE Acid	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	Not detected in any EU media		
Hydro-EVE Acid	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	Not detected in any EU media		
R-EVE	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	1,000	Minimum RL	0.001
PES	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	Not detected in any EU media		
PFECA B	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	Not detected in any EU media		
PFECA-G	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	Not detected in any EU media		
Species:	*Catfish spp. (fillet only)*																					
HFPO-DA	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	1,000	Minimum RL	0.001
PFMOAA	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	1,000	Minimum RL	0.001
PFO2HxA	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	1,000	Minimum RL	0.001
PFO3OA	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	1,000	Minimum RL	0.001
PFO4DA	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	1,000	Minimum RL	0.001
PFO5DA	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	1,000	Minimum RL	0.001
PMPA	6	0	2	33%	4	67%	1,000	1,000	2.8E+02	2.5E+01	5.0E+00	0.02	270	280	275	275	1,000	285	95% KM (t) UCL	280	Maximum Detected	0.00028
PEPA	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	1,000	Minimum RL	0.001
PFESA-BP1	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	Not detected in any EU media		
PFESA-BP2	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	Not detected in any EU media		
Byproduct 4	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 5	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 6	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	Not detected in any EU media		
NVHOS	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	1,000	Minimum RL	0.001
EVE Acid	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	Not detected in any EU media		
Hydro-EVE Acid	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	Not detected in any EU media		
R-EVE	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	1,000	Minimum RL	0.001
PES	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	Not detected in any EU media		
PFECA B	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	Not detected in any EU media		
PFECA-G	6	0	0	0%	6	100%	1,000	1,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	N/A	N/A	Not detected in any EU media		

TABLE 4-11
SUMMARY STATISTICS - FISH
Chemours Fayetteville Works, North Carolina

Analyte	No. Samples	No. Missing	No. Detects	% Detects	No. NDs	% NDs	Minimum RL (ng/kg ww)	Maximum RL (ng/kg ww)	KM Mean[a]	KM Variance[a]	KM Standard Deviation[a]	KM CV[a]	Minimum Detect (ng/kg ww)	Maximum Detect (ng/kg ww)	Mean Detect (ng/kg ww)	Median Detect (ng/kg ww)	90th percentile[a] (ng/kg ww)	95UCL[b] (ng/kg ww)	95UCL Basis	EPC (ng/kg ww)	EPC Basis	EPC (mg/kg ww)
Species:	*Redbreasted Sunfish (whole body)*																					
HFPO-DA	4	0	0	0%	4	100%	2,200	10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8,560	N/A	N/A	2,200	Minimum RL	0.0022
PFMOAA	4	0	4	100%	0	0%	N/A	N/A	4.1E+03	5.9E+05	7.7E+02	0.19	3,000	4,700	4,125	4,400	4,640	5,028	95% Student's-t UCL	4,700	Maximum Detected	0.0047
PFO2HxA	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	1,000	Minimum RL	0.001
PFO3OA	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	1,000	Minimum RL	0.001
PFO4DA	4	0	4	100%	0	0%	N/A	N/A	1.8E+04	4.3E+08	2.1E+04	1.12	580	41,000	18,420	16,050	38,000	42,786	95% Student's-t UCL	41,000	Maximum Detected	0.041
PFO5DA	4	0	4	100%	0	0%	N/A	N/A	8.8E+02	3.1E+05	5.5E+02	0.63	470	1,700	883	680	1,403	1,535	95% Student's-t UCL	1,700	Maximum Detected	0.0017
PMPA	4	0	3	75%	1	25%	1,000	1,000	6.7E+02	5.0E+05	7.1E+02	1.06	240	1,900	807	280	1,630	1,694	95% KM (t) UCL	1,900	Maximum Detected	0.0019
PEPA	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	1,000	Minimum RL	0.001
PFESA-BP1	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A		Not detected in any EU media	
PFESA-BP2	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A		Not detected in any EU media	
Byproduct 4	4	0	3	75%	1	25%	1,000	1,000	5.3E+02	2.1E+04	1.5E+02	0.28	400	730	527	450	919	768	95% KM (t) UCL	730	Maximum Detected	0.00073
Byproduct 5	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 6	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A		Not detected in any EU media	
NVHOS	4	0	1	25%	3	75%	1,000	1,000	7.1E+02	0.0E+00	0.0E+00	N/A	710	710	710	710	1,000	N/A	N/A	710	Maximum Detected	0.00071
EVE Acid	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A		Not detected in any EU media	
Hydro-EVE Acid	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A		Not detected in any EU media	
R-EVE	4	0	3	75%	1	25%	1,000	1,000	1.1E+03	8.4E+05	9.1E+02	0.80	450	2,700	1,310	780	2,190	2,462	95% KM (t) UCL	2,700	Maximum Detected	0.0027
PES	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A		Not detected in any EU media	
PFECA B	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A		Not detected in any EU media	
PFECA-G	4	0	0	0%	4	100%	1,000	1,100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,070	N/A	N/A		Not detected in any EU media	
Species:	*Largemouth Bass Young of Year (whole body)*																					
HFPO-DA	2	0	0	0%	2	100%	1,000	1,300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,300	N/A	N/A	1,000	Minimum RL	0.001
PFMOAA	2	0	1	50%	1	50%	1,000	1,000	3.1E+03	4.2E+06	2.1E+03	0.67	5,100	5,100	5,100	5,100	4,690	N/A	N/A	5,100	Maximum Detected	0.0051
PFO2HxA	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFO3OA	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFO4DA	2	0	2	100%	0	0%	N/A	N/A	1.7E+03	8.0E+04	2.8E+02	0.17	1,500	1,900	1,700	1,700	1,860	N/A	N/A	1,900	Maximum Detected	0.0019
PFO5DA	2	0	1	50%	1	50%	1,000	1,000	1.1E+03	2.5E+03	5.0E+01	0.05	1,100	1,100	1,100	1,100	1,090	N/A	N/A	1,100	Maximum Detected	0.0011
PMPA	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PEPA	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFESA-BP1	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	
PFESA-BP2	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	
Byproduct 4	2	0	1	50%	1	50%	1,000	1,000	3.7E+03	7.3E+06	2.7E+03	0.73	6,400	6,400	6,400	6,400	5,860	N/A	N/A	6,400	Maximum Detected	0.0064
Byproduct 5	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 6	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	
NVHOS	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
EVE Acid	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	
Hydro-EVE Acid	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	
R-EVE	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PES	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	
PFECA B	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	
PFECA-G	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	

TABLE 4-11
SUMMARY STATISTICS - FISH
Chemours Fayetteville Works, North Carolina

Analyte	No. Samples	No. Missing	No. Detects	% Detects	No. NDs	% NDs	Minimum RL (ng/kg ww)	Maximum RL (ng/kg ww)	KM Mean[a]	KM Variance[a]	KM Standard Deviation[a]	KM CV[a]	Minimum Detect (ng/kg ww)	Maximum Detect (ng/kg ww)	Mean Detect (ng/kg ww)	Median Detect (ng/kg ww)	90th percentile[a] (ng/kg ww)	95UCL[b] (ng/kg ww)	95UCL Basis	EPC (ng/kg ww)	EPC Basis	EPC (mg/kg ww)
Species:	***Shiners (whole body)***																					
HFPO-DA	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFMOAA	2	0	1	50%	1	50%	1,000	1,000	2.1E+03	1.2E+06	1.1E+03	0.52	3,200	3,200	3,200	3,200	2,980	N/A	N/A	3,200	Maximum Detected	0.0032
PFO2HxA	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFO3OA	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFO4DA	2	0	2	100%	0	0%	N/A	N/A	5.6E+03	1.1E+06	1.1E+03	0.19	4,800	6,300	5,550	5,550	6,150	N/A	N/A	6,300	Maximum Detected	0.0063
PFO5DA	2	0	2	100%	0	0%	N/A	N/A	2.4E+03	9.8E+05	9.9E+02	0.41	1,700	3,100	2,400	2,400	2,960	N/A	N/A	3,100	Maximum Detected	0.0031
PMPA	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PEPA	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
PFESA-BP1	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	
PFESA-BP2	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	
Byproduct 4	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 5	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 6	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	
NVHOS	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A	1,000	Minimum RL	0.001
EVE Acid	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	
Hydro-EVE Acid	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	
R-EVE	2	0	1	50%	1	50%	1,000	1,000	2.6E+03	2.6E+06	1.6E+03	0.62	4,200	4,200	4,200	4,200	3,880	N/A	N/A	4,200	Maximum Detected	0.0042
PES	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	
PFECA B	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	
PFECA-G	2	0	0	0%	2	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	N/A	N/A		Not detected in any EU media	
Species:	***American Eel***																					
HFPO-DA	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	Minimum RL	0.001
PFMOAA	1	0	1	100%	0	0%	1,000	1,000	N/A	N/A	N/A	N/A	13,000	13,000	13,000	13,000	N/A	N/A	N/A	13,000	Maximum Detected	0.013
PFO2HxA	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	Minimum RL	0.001
PFO3OA	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	Minimum RL	0.001
PFO4DA	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	Minimum RL	0.001
PFO5DA	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	Minimum RL	0.001
PMPA	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	Minimum RL	0.001
PEPA	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	Minimum RL	0.001
PFESA-BP1	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Not detected in any EU media	
PFESA-BP2	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Not detected in any EU media	
Byproduct 4	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 5	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	Minimum RL	0.001
Byproduct 6	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Not detected in any EU media	
NVHOS	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	Minimum RL	0.001
EVE Acid	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Not detected in any EU media	
Hydro-EVE Acid	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Not detected in any EU media	
R-EVE	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,000	Minimum RL	0.001
PES	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Not detected in any EU media	
PFECA B	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Not detected in any EU media	
PFECA-G	1	0	0	0%	1	100%	1,000	1,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Not detected in any EU media	

Notes:
a: values include both detected and non-detected results
b: where analytes have < 3 distinct and detected results, ProUCL does not consider this a meaningful statistic
Abbreviations:
95UCL - 95% Upper Confidence Limit
CV - Coefficient of Variation
EPC - Exposure Point Concentration
KM - Kaplan-Meier
N/A - not applicable
ng/kg - nanogram per kilogram
ND - non detects
No. - number
mg/kg - milligram per kilogram
RL - reporting limit
ww - wet weight

TABLE 4-12
BIOTA SOIL ACCUMULATION FACTORS
Chemours Fayetteville Works, North Carolina

Analyte	SEEP-A			SEEP-B			SEEP-C			SEEP-D			WILLIS CREEK			INTAKE AREA			
	[PFAS] in Worm Tissue	[PFAS] in Soil	BSAF	[PFAS] in Worm Tissue	[PFAS] in Soil	BSAF	[PFAS] in Worm Tissue	[PFAS] in Soil	BSAF	[PFAS] in Worm Tissue	[PFAS] in Soil	BSAF	[PFAS] in Worm Tissue	[PFAS] in Soil	BSAF	[PFAS] in Worm Tissue	[PFAS] in Soil	BSAF	
Units	µg/kg ww	µg/kg dw	kg dw/ kg ww	µg/kg ww	µg/kg dw	kg dw/ kg ww	µg/kg ww	µg/kg dw	kg dw/ kg ww	µg/kg ww	µg/kg dw	kg dw/ kg ww	µg/kg ww	µg/kg dw	kg dw/ kg ww	µg/kg ww	µg/kg dw	kg dw/ kg ww	**Mean BSAF**
Table 3+ Lab SOP																			
HFPO-DA	6.2	13	0.47	19	25	0.78	1.4	6.3	0.23	5.2	7.9	0.66	5.7	8.1	0.70	5.1	30	0.17	0.5
PFMOAA	18	21	0.88	57	150	0.38	-- [a]	67	--	-- [a]	17	--	-- [a]	1.6	0.14	-- [a]	3.4	--	0.5
PFO2HxA	4.2	12	0.35	14	47	0.29	0.87	24	0.04	2.3	15	0.15	< 1	8.6	0.12	< 1.2	18	0.07	0.2
PFO3OA	2.6	5.1	0.52	6.7	12	0.56	0.52	5.2	0.10	3.5	7.7	0.45	0.61	2.1	0.29	0.23	2.2	0.11	0.3
PFO4DA	0.41	5.1	0.08	0.28	3.0	0.09	< 1.2	2.2	0.55	0.33	5.4	0.06	< 1	1.4	0.71	-- [a]	1.3	--	0.3
PFO5DA	14	10	1.4	5.5	3.7	1.5	0.85	1.5	0.57	3.1	4.2	0.73	1.82	2.2	0.83	0.38	1.4	0.27	0.9
PMPA	1.8	6.0	0.31	1.1	7.8	0.14	< 1.2	6.0	0.20	< 1	2.1	0.48	< 1	3.7	0.27	2.2	19	0.11	0.3
PEPA	1.3	2.6	0.49	1.4	2.7	0.52	0.52	1.5	0.35	0.73	< 1	0.73	1.3	1.3	0.98	1.4	6.2	0.23	0.6
PFESA-BP1	0.22	< 1	0.22	0.63	< 1	0.63	< 1.2	3.0	0.40	< 1	< 1	--	< 1	< 1	--	< 1.2	< 1	--	0.4
PFESA-BP2	1.5	2.0	0.76	4.2	2.1	2.0	0.42	1.1	0.38	2.1	1.6	1.3	0.36	< 1	0.36	0.21	< 1	0.21	0.8
Byproduct 4	3.8	< 1	3.8	44	2.4	18.52	10	< 1	10	12.3	< 1	12	11	< 1	11	18	1.2	15	**12**
Byproduct 5	6.2	< 1	6.2	20	< 1	19.59	0.45	< 1	0.45	0.48	< 1	0.48	< 1.1	< 1	--	2.0	< 1	2.0	**5.8**
Byproduct 6	< 2.2	< 1	--	< 1	< 1	--	< 1.2	< 1	--	< 1	< 1	--	< 1	< 1	--	< 1.2	< 1	--	--
NVHOS	1.0	< 1	1.0	7.5	1.3	5.7	0.42	< 1	0.42	0.88	< 1	0.88	< 1	< 1	--	< 1.2	< 1	--	**2.0**
EVE Acid	< 2.2	< 1	--	< 1	< 1	--	< 1.2	< 1	--	< 1	< 1	--	< 1	< 1	--	< 1.2	< 1	--	**--**
Hydro-EVE Acid	0.38	1.2	0.32	0.93	1.2	0.77	< 1.2	< 1	--	0.40	< 1	0.40	< 1	< 1	--	< 1.2	< 1	--	0.50
R-EVE	1.1	< 1	1.1	9.5	< 1	9.5	4.9	< 1	4.9	6.0	< 1	6.0	3.2	< 1	3.2	4.5	< 1	4.5	**4.9**
PES	< 2.2	< 1	--	< 1	< 1	--	< 1.2	< 1	--	< 1	< 1	--	< 1	< 1	--	< 1.2	< 1	--	--
PFECA B	< 2.2	< 1	--	< 1	< 1	--	< 1.2	< 1	--	< 1	< 1	--	< 1	< 1	--	< 1.2	< 1	--	--
PFECA-G	< 2.2	< 1	--	-- [a]	< 1	--	< 1.2	< 1	--	< 1	< 1	--	-- [a]	< 1	--	-- [a]	< 1	--	--

Notes:
a: rejected result
1. Results not detected about reporting limits (RLs) are shown as < RL.
2. If a Site-associated PFAS was detected in one media but not the other, the RL was used to calculate the BSAF.

Abbreviations:
µg/kg - microgram per kilogram
dw - dry weight
kg - kilogram
ww- wet weight
BSAF - Biota-Sediment Accumulation Factor
PFAS - per- and polyfluoroalkyl substances

TABLE 4-13
FILLET TO WHOLE-BODY RATIO CALCULATIONS
Chemours Fayetteville Works, North Carolina

Analyte	CFR-05-1-LMB				CFR-05-4 CC				CFR-06-2 BC				CFR-09-2 BC				DERC-3 LMB				MM-68-4 LMB				LMB Mean WB:Fillet Ratio	Catfish Mean WB:Fillet Ratio	All Species Mean WB:Fillet Ratio
	Carcass [PFAS] (µg/kg)	Fillet [PFAS] (µg/kg)	Estimated WB [PFAS] (µg/kg)	WB:Fillet Ratio	Carcass [PFAS] (µg/kg)	Fillet [PFAS] (µg/kg)	Estimated WB [PFAS] (µg/kg)	WB:Fillet Ratio	Carcass [PFAS] (µg/kg)	Fillet [PFAS] (µg/kg)	Estimated WB [PFAS] (µg/kg)	WB:Fillet Ratio	Carcass [PFAS] (µg/kg)	Fillet [PFAS] (µg/kg)	Estimated WB [PFAS] (µg/kg)	WB:Fillet Ratio	Carcass [PFAS] (µg/kg)	Fillet [PFAS] (µg/kg)	Estimated WB [PFAS] (µg/kg)	WB:Fillet Ratio	Carcass [PFAS] (µg/kg)	Fillet [PFAS] (µg/kg)	Estimated WB [PFAS] (µg/kg)	WB:Fillet Ratio			
Sample Mass (g)	**444**	**215**	**659**	**-**	**503**	**85**	**588**	**-**	**378**	**2021**	**2400**	**-**	**2319**	**347**	**2666**	**-**	**400**	**191**	**591**	**-**	**248**	**98**	**346**	**-**			
Table 3+ Lab SOP																											
HFPO-DA	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1.1	--	--	--	--	--
PFMOAA	(a)	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1.1	--	--	--	--	--
PFO2HxA	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1.1	--	--	--	--	--
PFO3OA	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1.1	--	--	--	--	--
PFO4DA	1.0	2.6	1.5	0.6	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	1.7	1.1	0.6	1.0	0.3	0.7	2.7	0.9	< 1.1	0.9	0.9	**1.4**	**0.6**	**1.2**
PFO5DA	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	0.8	< 1	0.9	4.6	< 1	< 1.1	--	--	**4.6**	--	**4.6**
PMPA	0.9	0.4	0.7	2.0	< 1	0.27	0.9	3.3	0.3	0.3	0.3	1.0	< 1	0.3	0.9	3.0	0.6	0.3	0.5	1.9	1.1	< 1.1	1.1	1.0	**1.6**	**2.4**	**2.0**
PEPA	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1.1	--	--	--	--	--
PFESA-BP1	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1.1	--	--	--	--	--
PFESA-BP2	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	0.3	< 1	0.5	0.5	< 1	< 1.1	--	--	**0.5**	--	**0.5**
Byproduct 4	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	0.5	< 1	0.6	3.6	< 1	< 1	--	--	< 1	< 1.1	--	--	--	**3.6**	**3.6**
Byproduct 5	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1.1	--	--	--	--	--
Byproduct 6	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1.1	--	--	--	--	--
NVHOS	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1.1	--	--	--	--	--
EVE Acid	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1.1	--	--	--	--	--
Hydro-EVE Acid	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1.1	--	--	--	--	--
R-EVE	3.3	< 1.1	2.6	2.4	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	2.5	< 1	2.0	2.0	4.6	< 1.1	3.6	3.3	**2.5**	--	**2.5**
PES	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1.1	--	--	--	--	--
PFECA B	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1.1	--	--	--	--	--
PFECA-G	< 1	< 1.1	--	--	< 1	< 1.2	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1	--	--	< 1	< 1.1	--	--	--	--	--

Notes:
(a) Data was rejected during data validation process and is not suitable for use.
Results not detected above RLs are presented as < RL.
If a compound was only detected in one media, the RLwas used to represent concentrations for the result not-detected above RLs.
Abbreviations:
µg/kg - nanogram per kilogram
PFAS - per- and polyfluoroalkyl substances
RL - Reporting limit
WB - whole body
CFR - Cape Fear River
LMB - large mouth bass
BC - Black catfish
CC - channel catfish
g - grams

TABLE 4-14
EXPOSURE POINT CONCENTRATIONS - ONSITE TERRESTRIAL
Chemours Fayetteville Works, North Carolina

Analyte	Soil EPC (mg/kg dw)	Surface Water (mg/L)	Offsite Terrestrial Plant EPC (mg/kg, ww)	Aquatic Plant EPC (mg/kg, ww)	Onsite Terrestrial Plant EPC [1] (mg/kg, ww)	Onsite Terrestrial Invertebrate EPC (mg/kg, ww)
Table 3+ Lab SOP						
HFPO-DA	0.016	0.000940	0.031	0.026	0.031	0.019
PFMOAA	0.076	0.000255	0.059	0.37	0.370	0.057
PFO2HxA	0.021	0.000725	0.004	0.038	0.038	0.014
PFO3OA	0.007	0.000096	0.000	0.0011	0.001	0.007
PFO4DA	0.003	0.000040	0.001	0.0017	0.002	0.000
PFO5DA	0.004	0.000010	0.001	0.0015	0.002	0.014
PMPA	0.008	0.000850	0.026	0.066	0.066	0.002
PEPA	0.003	0.000295	0.001	0.012	0.012	0.001
PFESA-BP1	0.003	0.000002	0.001	NC	0.001	0.001
PFESA-BP2	0.002	0.000033	0.001	NC	0.001	0.004
Byproduct 4	0.002	0.000097	0.033	0.0033	0.033	0.044
Byproduct 5	0.001	0.000002	0.001	0.001	0.001	0.020
NVHOS	0.001	0.000006	0.448	0.034	0.448	0.008
Hydro-EVE Acid	0.001	0.000004	0.001	NC	0.001	0.001
R-EVE	0.001	0.000058	0.004	0.0028	0.004	0.010
PES	0.001	0.000002	0.001	NC	0.001	0.001
PFECA B	0.001	0.000002	0.003	NC	0.003	0.001

Notes:
1: Onsite Plant EPC is max of the aquatic or offsite plant EPCs
Abbreviations:
EPC - Exposure Point Concentration
dw - dry weight
NC - not calculated for the Aquatic EU due to lack of detctions in aquatic media
mg/kg - milligram per kilogram
mg/L - milligram per liter
ww - wet weight
SOP - Standard Operating Procedure

TABLE 4-15
DIRECT CONTACT EXPOSURES - ONSITE TERRESTRIAL
Chemours Fayetteville Works, North Carolina

Analyte	Soil EPC (mg/kg dw)	Terrestrial Invertebrates TRV (mg/kg dw)	Terrestrial Plants TRV (mg/kg dw)	Hazard Quotient for Invertebrates	Hazard Quotient for Plants
Table 3+ Lab SOP					
HFPO-DA	0.016	0.066	0.066	0.24	0.24
PFMOAA	0.076	--	--	--	--
PFO2HxA	0.021	--	--	--	--
PFO3OA	0.007	--	--	--	--
PFO4DA	0.003	--	--	--	--
PFO5DA	0.004	--	--	--	--
PMPA	0.008	--	--	--	--
PEPA	0.003	--	--	--	--
PFESA-BP1	0.003	--	--	--	--
PFESA-BP2	0.002	--	--	--	--
Byproduct 4	0.002	--	--	--	--
Byproduct 5	0.001	--	--	--	--
NVHOS	0.001	--	--	--	--
Hydro-EVE Acid	0.001	--	--	--	--
R-EVE	0.001	--	--	--	--
PES	0.001	--	--	--	--
PFECA B	0.001	--	--	--	--

Abbreviations:
-- - No TRV available
dw - dry weight
EPC - Exposure Point Concentration
mg/kg - milligrams per kilogram
TRV - Toxicity Reference Value
SOP - Standard Operating Procedure

TABLE 4-16a
TOTAL DAILY INTAKE FOR BOBWHITE QUAIL - ONSITE TERRESTRIAL
Chemours Fayetteville Works, North Carolina

Receptor: **Bobwhite Quail** **AUF:** **1**

Analyte	Soil		Surface Water		Vegetation		Terrestrial Invertebrate		TDI_{total} [2]	TRV	HQ [3]
	EPC_s [1]	TDI_s	EPC_s [1]	TDI_{sw}	EPC_{veg} [1]	TDI_{veg}	EPC_{inv} [1]	TDI_{inv}			
	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg-day	mg/kg-day	unitless
Table 3+ Lab SOP											
HFPO-DA	1.6E-02	2.8E-05	9.4E-04	1.2E-04	3.1E-02	2.9E-03	1.9E-02	NA	3.0E-03	8.5E+01	3.6E-05
PFMOAA	7.6E-02	1.3E-04	2.6E-04	3.3E-05	3.7E-01	3.4E-02	5.7E-02	NA	3.5E-02	--	--
PFO2HxA	2.1E-02	3.6E-05	7.3E-04	9.4E-05	3.8E-02	3.5E-03	1.4E-02	NA	3.7E-03	--	--
PFO3OA	7.3E-03	1.3E-05	9.6E-05	1.2E-05	1.1E-03	1.0E-04	6.7E-03	NA	1.3E-04	--	--
PFO4DA	3.1E-03	5.4E-06	4.0E-05	5.2E-06	1.7E-03	1.6E-04	4.1E-04	NA	1.7E-04	--	--
PFO5DA	4.5E-03	7.8E-06	1.0E-05	1.3E-06	1.5E-03	1.4E-04	1.4E-02	NA	1.5E-04	--	--
PMPA	7.7E-03	1.3E-05	8.5E-04	1.1E-04	6.6E-02	6.1E-03	2.2E-03	NA	6.3E-03	--	--
PEPA	2.8E-03	4.9E-06	3.0E-04	3.8E-05	1.2E-02	1.1E-03	1.4E-03	NA	1.2E-03	--	--
PFESA-BP1	3.0E-03	5.2E-06	2.0E-06	2.6E-07	1.0E-03	9.3E-05	6.3E-04	NA	9.8E-05	--	--
PFESA-BP2	1.6E-03	2.7E-06	3.3E-05	4.2E-06	1.0E-03	9.3E-05	4.2E-03	NA	1.0E-04	--	--
Byproduct 4	2.4E-03	4.2E-06	9.7E-05	1.3E-05	3.3E-02	3.1E-03	4.4E-02	NA	3.1E-03	--	--
Byproduct 5	1.0E-03	1.7E-06	2.0E-06	2.6E-07	1.0E-03	9.3E-05	2.0E-02	NA	9.5E-05	--	--
NVHOS	1.3E-03	2.3E-06	6.3E-06	8.1E-07	4.5E-01	4.2E-02	7.5E-03	NA	4.2E-02	--	--
Hydro-EVE Acid	1.2E-03	2.1E-06	3.6E-06	4.6E-07	1.0E-03	9.3E-05	9.3E-04	NA	9.6E-05	--	--
R-EVE	1.0E-03	1.7E-06	5.8E-05	7.5E-06	3.8E-03	3.5E-04	9.5E-03	NA	3.6E-04	--	--
PES	1.0E-03	1.7E-06	2.0E-06	2.6E-07	1.2E-03	1.1E-04	1.0E-03	NA	1.1E-04	--	--
PFECA B	1.0E-03	1.7E-06	2.0E-06	2.6E-07	3.1E-03	2.9E-04	1.0E-03	NA	2.9E-04	--	--

Notes:

[1] Soil and diet item exposure point concentration (EPC) are presented in Table 4.14.

[2] Media-specific Total Daily Intake is calculated using the following general equation and receptor specific parameters in Table 3.8.

$TDI_{i,copc}$ = (EPC_{copc} x RB x FIR x P_i) x (1/BW) + (DWI x EPC) x AUF x (1/BW), *where:*

Variable Name	*Units*	*Variable Description*
TDI_i	mg/kg-day	$TDI_{i,x}$ = Total Daily Intake for Dietary Item "*i*" for COPC
EPC_{copc}	mg/kg dw or mg/L	Exposure Point Concentration for each media
RB	unitless	Relative Bioavailability (assumed to be 1 for all chemicals)
P_{veg}	proportion	Proportion of Diet -- Vegetation
P_{inv}	proportion	Proportion of Diet -- Invertebrates
P_{so}	proportion	Proportion of Diet -- Soil
FIR	kg/day	Daily Food Ingestion
DWI	L/day	Daily Drinking Water Ingestion Rate
AUF	proportion	Area Use Factor
BW	kg	Body Weight

[3] HQ = TDI/TRV; HQ greater than 1 are shown in **Bold**

HQ = Hazard Quotient (unitless)

ADD = Average Daily Dose (mg/kg-day)

Abbreviations:

dw - dry weight
kg - kilogram
kg/day - kilogram per day
L/day - litre per day
mg/kg - milligram per kilogram
mg/L - milligram per litre
TRV - Toxicity Reference Value
SOP - Standard Operating Procedure

TABLE 4-16b
TOTAL DAILY INTAKE FOR WOODCOCK - ONSITE TERRESTRIAL
Chemours Fayetteville Works, North Carolina

Receptor: **Woodcock** **AUF:** **1**

Analyte	Soil		Surface Water		Vegetation		Terrestrial Invertebrate		TDI_{total} [2]	TRV	HQ [3]
	EPC_s [1]	TDI_s	EPC_s [1]	TDI_{sw}	EPC_{veg} [1]	TDI_{veg}	EPC_{inv} [1]	TDI_{inv}			
	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg-day	mg/kg-day	unitless
Table 3+ Lab SOP											
HFPO-DA	1.6E-02	2.1E-04	9.4E-04	9.4E-05	3.1E-02	NA	1.9E-02	1.5E-02	1.5E-02	8.5E+01	1.8E-04
PFMOAA	7.6E-02	9.9E-04	2.6E-04	2.6E-05	3.7E-01	NA	5.7E-02	4.4E-02	4.5E-02	--	--
PFO2HxA	2.1E-02	2.7E-04	7.3E-04	7.3E-05	3.8E-02	NA	1.4E-02	1.1E-02	1.1E-02	--	--
PFO3OA	7.3E-03	9.6E-05	9.6E-05	9.6E-06	1.1E-03	NA	6.7E-03	5.2E-03	5.3E-03	--	--
PFO4DA	3.1E-03	4.1E-05	4.0E-05	4.0E-06	1.7E-03	NA	4.1E-04	3.2E-04	3.6E-04	--	--
PFO5DA	4.5E-03	5.9E-05	1.0E-05	1.0E-06	1.5E-03	NA	1.4E-02	1.1E-02	1.1E-02	--	--
PMPA	7.7E-03	1.0E-04	8.5E-04	8.5E-05	6.6E-02	NA	2.2E-03	1.7E-03	1.8E-03	--	--
PEPA	2.8E-03	3.7E-05	3.0E-04	3.0E-05	1.2E-02	NA	1.4E-03	1.1E-03	1.2E-03	--	--
PFESA-BP1	3.0E-03	3.9E-05	2.0E-06	2.0E-07	1.0E-03	NA	6.3E-04	4.9E-04	5.2E-04	--	--
PFESA-BP2	1.6E-03	2.0E-05	3.3E-05	3.3E-06	1.0E-03	NA	4.2E-03	3.2E-03	3.3E-03	--	--
Byproduct 4	2.4E-03	3.1E-05	9.7E-05	9.7E-06	3.3E-02	NA	4.4E-02	3.4E-02	3.4E-02	--	--
Byproduct 5	1.0E-03	1.3E-05	2.0E-06	2.0E-07	1.0E-03	NA	2.0E-02	1.5E-02	1.5E-02	--	--
NVHOS	1.3E-03	1.7E-05	6.3E-06	6.3E-07	4.5E-01	NA	7.5E-03	5.8E-03	5.8E-03	--	--
Hydro-EVE Acid	1.2E-03	1.6E-05	3.6E-06	3.6E-07	1.0E-03	NA	9.3E-04	7.2E-04	7.3E-04	--	--
R-EVE	1.0E-03	1.3E-05	5.8E-05	5.8E-06	3.8E-03	NA	9.5E-03	7.3E-03	7.3E-03	--	--
PES	1.0E-03	1.3E-05	2.0E-06	2.0E-07	1.2E-03	NA	1.0E-03	7.7E-04	7.8E-04	--	--
PFECA B	1.0E-03	1.3E-05	2.0E-06	2.0E-07	3.1E-03	NA	1.0E-03	7.7E-04	7.8E-04	--	--

Notes:

[1] Soil and diet item exposure point concentration (EPC) are presented in Table 4.14.

[2] Media-specific Total Daily Intake is calculated using the following general equation and receptor specific parameters in Table 3.8.

$TDI_{i,copc}$ = (EPC_{copc} x RB x FIR x P_i) x (1/BW) + (DWI x EPC) x AUF x (1/BW), *where:*

Variable Name	*Units*	*Variable Description*
TDI_i	mg/kg-day	$TDI_{i,x}$ = Total Daily Intake for Dietary Item "*i*" for COPC
EPC_{copc}	mg/kg dw or mg/L	Exposure Point Concentration for each media
RB	unitless	Relative Bioavailability (assumed to be 1 for all chemicals)
P_{veg}	proportion	Proportion of Diet -- Vegetation
P_{inv}	proportion	Proportion of Diet -- Invertebrates
P_{so}	proportion	Proportion of Diet -- Soil
FIR	kg/day	Daily Food Ingestion
DWI	L/day	Daily Drinking Water Ingestion Rate
AUF	proportion	Area Use Factor
BW	kg	Body Weight

[3] HQ = TDI/TRV; HQ greater than 1 are shown in **Bold**

HQ = Hazard Quotient (unitless)

ADD = Average Daily Dose (mg/kg-day)

Abbreviations:

dw - dry weight
kg - kilogram
kg/day - kilogram per day
L/day - litre per day
mg/kg - milligram per kilogram
mg/L - milligram per litre
TRV - Toxicity Reference Value
SOP - Standard Operating Procedure

TABLE 4-16c
TOTAL DAILY INTAKE FOR EASTERN COTTONTAIL RABBIT - ONSITE TERRESTRIAL
Chemours Fayetteville Works, North Carolina

Receptor: **Eastern Cottontail Rabbit** **AUF: 1**

Analyte	Soil		Surface Water		Vegetation		Terrestrial Invertebrate		TDI_{total} [2]	TRV	HQ [3]
	EPC_s [1]	TDI_s	EPC_s [1]	TDI_{sw}	EPC_{veg} [1]	TDI_{veg}	EPC_{inv} [1]	TDI_{inv}			
	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg-day	mg/kg-day	unitless
Table 3+ Lab SOP											
HFPO-DA	1.6E-02	2.2E-05	9.4E-04	9.1E-05	3.1E-02	6.4E-03	1.9E-02	NA	6.5E-03	5.0E-01	1.3E-02
PFMOAA	7.6E-02	1.0E-04	2.6E-04	2.5E-05	3.7E-01	7.7E-02	5.7E-02	NA	7.7E-02	--	--
PFO2HxA	2.1E-02	2.9E-05	7.3E-04	7.0E-05	3.8E-02	7.9E-03	1.4E-02	NA	8.0E-03	--	--
PFO3OA	7.3E-03	1.0E-05	9.6E-05	9.3E-06	1.1E-03	2.3E-04	6.7E-03	NA	2.5E-04	--	--
PFO4DA	3.1E-03	4.3E-06	4.0E-05	3.9E-06	1.7E-03	3.5E-04	4.1E-04	NA	3.6E-04	--	--
PFO5DA	4.5E-03	6.1E-06	1.0E-05	9.7E-07	1.5E-03	3.1E-04	1.4E-02	NA	3.2E-04	--	--
PMPA	7.7E-03	1.1E-05	8.5E-04	8.2E-05	6.6E-02	1.4E-02	2.2E-03	NA	1.4E-02	--	--
PEPA	2.8E-03	3.8E-06	3.0E-04	2.9E-05	1.2E-02	2.5E-03	1.4E-03	NA	2.5E-03	--	--
PFESA-BP1	3.0E-03	4.1E-06	2.0E-06	1.9E-07	1.0E-03	2.1E-04	6.3E-04	NA	2.1E-04	--	--
PFESA-BP2	1.6E-03	2.1E-06	3.3E-05	3.2E-06	1.0E-03	2.1E-04	4.2E-03	NA	2.1E-04	--	--
Byproduct 4	2.4E-03	3.3E-06	9.7E-05	9.4E-06	3.3E-02	6.9E-03	4.4E-02	NA	7.0E-03	--	--
Byproduct 5	1.0E-03	1.4E-06	2.0E-06	1.9E-07	1.0E-03	2.1E-04	2.0E-02	NA	2.1E-04	--	--
NVHOS	1.3E-03	1.8E-06	6.3E-06	6.1E-07	4.5E-01	9.3E-02	7.5E-03	NA	9.3E-02	--	--
Hydro-EVE Acid	1.2E-03	1.6E-06	3.6E-06	3.4E-07	1.0E-03	2.1E-04	9.3E-04	NA	2.1E-04	--	--
R-EVE	1.0E-03	1.4E-06	5.8E-05	5.6E-06	3.8E-03	7.8E-04	9.5E-03	NA	7.9E-04	--	--
PES	1.0E-03	1.4E-06	2.0E-06	1.9E-07	1.2E-03	2.4E-04	1.0E-03	NA	2.4E-04	--	--
PFECA B	1.0E-03	1.4E-06	2.0E-06	1.9E-07	3.1E-03	6.4E-04	1.0E-03	NA	6.4E-04	--	--

Notes:

[1] Soil and diet item exposure point concentration (EPC) are presented in Table 4.14.

[2] Media-specific Total Daily Intake is calculated using the following general equation and receptor specific parameters in Table 3.8.

$TDI_{i,copc}$ = (EPC_{copc} x RB x FIR x P_i) x (1/BW) + (DWI x EPC) x AUF x (1/BW), *where:*

Variable Name	*Units*	*Variable Description*
TDI_i	mg/kg-day	$TDI_{i,x}$ = Total Daily Intake for Dietary Item "*i*" for COPC
EPC_{copc}	mg/kg dw or mg/L	Exposure Point Concentration for each media
RB	unitless	Relative Bioavailability (assumed to be 1 for all chemicals)
P_{veg}	proportion	Proportion of Diet -- Vegetation
P_{inv}	proportion	Proportion of Diet -- Invertebrates
P_{so}	proportion	Proportion of Diet -- Soil
FIR	kg/day	Daily Food Ingestion
DWI	L/day	Daily Drinking Water Ingestion Rate
AUF	proportion	Area Use Factor
BW	kg	Body Weight

[3] HQ = TDI/TRV; HQ greater than 1 are shown in **Bold**

HQ = Hazard Quotient (unitless)

ADD = Average Daily Dose (mg/kg-day)

Abbreviations:

dw - dry weight
kg - kilogram
kg/day - kilogram per day
L/day - litre per day
mg/kg - milligram per kilogram
mg/L - milligram per litre
TRV - Toxicity Reference Value
SOP - Standard Operating Procedure

TABLE 4-16d
TOTAL DAILY INTAKE FOR SOUTHERN SHORT-TAILED SHREW - ONSITE TERRESTRIAL
Chemours Fayetteville Works, North Carolina

Receptor: **Southern Short-tailed Shrew** **AUF:** **1**

Analyte	**Soil**		**Surface Water**		**Vegetation**		**Terrestrial Invertebrate**		**TDI_{total} [2]**	**TRV**	**HQ [3]**
	EPC_s [1]	TDI_s	EPC_s [1]	TDI_{sw}	EPC_{veg} [1]	TDI_{veg}	EPC_{inv} [1]	TDI_{inv}			
	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg-day	mg/kg-day	unitless
Table 3+ Lab SOP											
HFPO-DA	1.6E-02	5.1E-05	9.4E-04	2.1E-04	3.1E-02	NA	1.9E-02	7.7E-03	8.0E-03	5.0E-01	1.6E-02
PFMOAA	7.6E-02	2.4E-04	2.6E-04	5.7E-05	3.7E-01	NA	5.7E-02	2.3E-02	2.3E-02	--	--
PFO2HxA	2.1E-02	6.7E-05	7.3E-04	1.6E-04	3.8E-02	NA	1.4E-02	5.7E-03	5.9E-03	--	--
PFO3OA	7.3E-03	2.4E-05	9.6E-05	2.1E-05	1.1E-03	NA	6.7E-03	2.7E-03	2.8E-03	--	--
PFO4DA	3.1E-03	1.0E-05	4.0E-05	8.9E-06	1.7E-03	NA	4.1E-04	1.7E-04	1.9E-04	--	--
PFO5DA	4.5E-03	1.4E-05	1.0E-05	2.2E-06	1.5E-03	NA	1.4E-02	5.7E-03	5.7E-03	--	--
PMPA	7.7E-03	2.5E-05	8.5E-04	1.9E-04	6.6E-02	NA	2.2E-03	8.8E-04	1.1E-03	--	--
PEPA	2.8E-03	9.0E-06	3.0E-04	6.6E-05	1.2E-02	NA	1.4E-03	5.9E-04	6.6E-04	--	--
PFESA-BP1	3.0E-03	9.6E-06	2.0E-06	4.5E-07	1.0E-03	NA	6.3E-04	2.6E-04	2.7E-04	--	--
PFESA-BP2	1.6E-03	5.0E-06	3.3E-05	7.2E-06	1.0E-03	NA	4.2E-03	1.7E-03	1.7E-03	--	--
Byproduct 4	2.4E-03	7.7E-06	9.7E-05	2.2E-05	3.3E-02	NA	4.4E-02	1.8E-02	1.8E-02	--	--
Byproduct 5	1.0E-03	3.2E-06	2.0E-06	4.5E-07	1.0E-03	NA	2.0E-02	8.1E-03	8.1E-03	--	--
NVHOS	1.3E-03	4.2E-06	6.3E-06	1.4E-06	4.5E-01	NA	7.5E-03	3.0E-03	3.1E-03	--	--
Hydro-EVE Acid	1.2E-03	3.9E-06	3.6E-06	7.9E-07	1.0E-03	NA	9.3E-04	3.8E-04	3.8E-04	--	--
R-EVE	1.0E-03	3.2E-06	5.8E-05	1.3E-05	3.8E-03	NA	9.5E-03	3.9E-03	3.9E-03	--	--
PES	1.0E-03	3.2E-06	2.0E-06	4.5E-07	1.2E-03	NA	1.0E-03	4.1E-04	4.1E-04	--	--
PFECA B	1.0E-03	3.2E-06	2.0E-06	4.5E-07	3.1E-03	NA	1.0E-03	4.1E-04	4.1E-04	--	--

Notes:

[1] Soil and diet item exposure point concentration (EPC) are presented in Table 4.14.

[2] Media-specific Total Daily Intake is calculated using the following general equation and receptor specific parameters in Table 3.8.

$TDI_{i,copc}$ = (EPC_{copc} x RB x FIR x P_i) x (1/BW) + (DWI x EPC) x AUF x (1/BW), *where:*

Variable Name	*Units*	*Variable Description*
TDI_i	mg/kg-day	$TDI_{i,x}$ = Total Daily Intake for Dietary Item "*i*" for COPC
EPC_{copc}	mg/kg dw or mg/L	Exposure Point Concentration for each media
RB	unitless	Relative Bioavailability (assumed to be 1 for all chemicals)
P_{veg}	proportion	Proportion of Diet -- Vegetation
P_{inv}	proportion	Proportion of Diet -- Invertebrates
P_{so}	proportion	Proportion of Diet -- Soil
FIR	kg/day	Daily Food Ingestion
DWI	L/day	Daily Drinking Water Ingestion Rate
AUF	proportion	Area Use Factor
BW	kg	Body Weight

[3] HQ = TDI/TRV; HQ greater than 1 are shown in **Bold**

HQ = Hazard Quotient (unitless)

ADD = Average Daily Dose (mg/kg-day)

Abbreviations:

dw - dry weight
kg - kilogram
kg/day - kilogram per day
L/day - litre per day
mg/kg - milligram per kilogram
mg/L - milligram per litre
TRV - Toxicity Reference Value
SOP - Standard Operating Procedure

TABLE 4-17
EXPOSURE POINT CONCENTRATIONS - OFFSITE TERRESTRIAL
Chemours Fayetteville Works, North Carolina

Analyte	Soil EPC (mg/kg dw)	Surface Water (mg/L)	Terrestrial Plant EPC (mg/kg, ww)	Terrestrial Emergent Insect EPC (mg/kg, ww)	Earthworm BSAF (kg ww/kg dw)	Off-Site Earthworm EPC [1] (mg/kg, ww)	Terrestrial Invertebrate EPC [2] (mg/kg, ww)
Table 3+ Lab SOP							
HFPO-DA	0.003	0.00031	0.031	0.005	0.50	0.001	0.005
PFMOAA	0.001	0.00007	0.059	0.005	0.47	0.0005	0.005
PFO2HxA	0.002	0.0002	0.004	0.001	0.17	0.0004	0.001
PFO3OA	0.001	0.00003	0.000	0.001	0.34	0.0003	0.001
PFO4DA	0.001	0.00001	0.001	0.001	0.30	0.0003	0.001
PFO5DA	0.001	0.000002	0.001	0.001	0.87	0.001	0.001
PMPA	0.001	0.00035	0.026	0.019	0.25	0.0003	0.019
PEPA	0.001	0.00011	0.001	0.002	0.55	0.001	0.002
PFESA-BP1	0.001	0.000002	0.001	0.004	0.42	0.0004	0.004
PFESA-BP2	0.001	0.00003	0.001	0.001	0.84	0.001	0.001
Byproduct 4	0.001	0.00015	0.033	0.006	11.8	0.012	0.012
Byproduct 5	0.001	0.000002	0.001	0.001	5.8	0.006	0.006
NVHOS	0.001	0.000002	0.448	0.001	2.0	0.002	0.002
R-EVE	0.001	0.00005	0.004	0.001	4.9	0.005	0.005
PES	0.001	0.000002	0.001	0.001	--	--	0.001
PFECA B	0.001	0.000002	0.003	0.001	--	--	0.001

Notes:
1. The Offsite worm EPC is the Soil EPC x BSAF for each Table 3+ PFAS
2. The Terrestrial Invertebrate EPC was selected as the higher of the Emergent Insect and Earthworm EPCs.

Abbreviations:
BSAF - Soil-to-Earthworm Bioaccumulation Factor
dw - dry weight
EPC - Exposure Point Concentration
mg/kg - milligram per kilogram
mg/L - milligram per litre
SOP - Standard Operating Procedure
ww- wet weight
ww/kg - wet weight per kilogram

TABLE 4-18
DIRECT CONTACT EXPOSURES - OFFSITE TERRESTRIAL
Chemours Fayetteville Works, North Carolina

Analyte	Soil EPC (mg/kg dw)	Terrestrial Invertebrates TRV (mg/kg dw)	Terrestrial Plants TRV (mg/kg dw)	Hazard Quotient for Invertebrates	Hazard Quotient for Plants
Table 3+ Lab SOP					
HFPO-DA	0.003	0.066	0.066	0.04	0.04
PFMOAA	0.001	--	--	--	--
PFO2HxA	0.002	--	--	--	--
PFO3OA	0.001	--	--	--	--
PFO4DA	0.001	--	--	--	--
PFO5DA	0.001	--	--	--	--
PMPA	0.001	--	--	--	--
PEPA	0.001	--	--	--	--
PFESA-BP1	0.001	--	--	--	--
PFESA-BP2	0.001	--	--	--	--
Byproduct 4	0.001	--	--	--	--
Byproduct 5	0.001	--	--	--	--
NVHOS	0.001	--	--	--	--
R-EVE	0.001	--	--	--	--
PES	0.001	--	--	--	--
PFECA B	0.001	--	--	--	--

Abbreviations:
dw - dry weight
EPC - Exposure Point Concentration
mg/kg - milligram per kilogram
SOP - Standard Operating Procedure
TRV - Toxicity Reference Value

TABLE 4-19a
TOTAL DAILY INTAKE FOR BOBWHITE QUAIL - OFFSITE TERRESTRIAL
Chemours Fayetteville Works, North Carolina

Receptor: **Bobwhite Quail** **AUF:** **1**

Analyte	Soil		Surface Water		Vegetation		Terrestrial Invertebrate		TDI_{total} [2]	TRV	HQ [3]
	EPC_s [1]	TDI_s	EPC_s [1]	TDI_{sw}	EPC_{veg} [1]	TDI_{veg}	EPC_{inv} [1]	TDI_{inv}			
	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg-day	mg/kg-day	unitless
Table 3+ Lab SOP											
HFPO-DA	2.6E-03	4.5E-06	3.1E-04	4.0E-05	3.1E-02	2.9E-03	4.8E-03	NA	2.9E-03	8.5E+01	3.5E-05
PFMOAA	1.0E-03	1.7E-06	7.1E-05	9.2E-06	5.9E-02	5.5E-03	4.6E-03	NA	5.5E-03	--	--
PFO2HxA	2.3E-03	4.0E-06	2.2E-04	2.9E-05	4.5E-03	4.2E-04	1.0E-03	NA	4.5E-04	--	--
PFO3OA	1.0E-03	1.7E-06	2.7E-05	3.5E-06	2.2E-04	2.0E-05	1.0E-03	NA	2.6E-05	--	--
PFO4DA	1.0E-03	1.7E-06	8.9E-06	1.2E-06	5.3E-04	4.9E-05	1.0E-03	NA	5.2E-05	--	--
PFO5DA	1.0E-03	1.7E-06	2.1E-06	2.7E-07	1.0E-03	9.3E-05	1.0E-03	NA	9.5E-05	--	--
PMPA	1.0E-03	1.7E-06	3.5E-04	4.6E-05	2.6E-02	2.4E-03	1.9E-02	NA	2.5E-03	--	--
PEPA	1.0E-03	1.7E-06	1.1E-04	1.4E-05	1.3E-03	1.2E-04	1.6E-03	NA	1.3E-04	--	--
PFESA-BP1	1.0E-03	1.7E-06	2.0E-06	2.6E-07	1.0E-03	9.3E-05	3.5E-03	NA	9.5E-05	--	--
PFESA-BP2	1.0E-03	1.7E-06	2.5E-05	3.3E-06	1.0E-03	9.3E-05	1.0E-03	NA	9.8E-05	--	--
Byproduct 4	1.0E-03	1.7E-06	1.5E-04	2.0E-05	3.3E-02	3.1E-03	1.2E-02	NA	3.1E-03	--	--
Byproduct 5	1.0E-03	1.7E-06	2.0E-06	2.6E-07	5.7E-04	5.3E-05	5.8E-03	NA	5.5E-05	--	--
NVHOS	1.0E-03	1.7E-06	2.0E-06	2.6E-07	4.5E-01	4.2E-02	2.0E-03	NA	4.2E-02	--	--
R-EVE	1.0E-03	1.7E-06	5.3E-05	6.9E-06	3.8E-03	3.5E-04	4.9E-03	NA	3.6E-04	--	--
PES	1.0E-03	1.7E-06	2.0E-06	2.6E-07	1.2E-03	1.1E-04	1.0E-03	NA	1.1E-04	--	--
PFECA B	1.0E-03	1.7E-06	2.0E-06	2.6E-07	3.1E-03	2.9E-04	1.0E-03	NA	2.9E-04	--	--

Notes:

[1] Soil and diet item exposure point concentration (EPC) are presented in Table 4.17.

[2] Media-specific Total Daily Intake is calculated using the following general equation and receptor specific parameters in Table 3.8.

$TDI_{i,copc}$ = (EPC_{copc} x RB x FIR x P_i) + (DWI x EPC) x AUF x (1/BW), *where:*

Variable Name	*Units*	*Variable Description*
TDI_i	mg/kg-day	$TDI_{i,x}$ = Total Daily Intake for Dietary Item "*i*" for COPC
EPC_{copc}	mg/kg dw or mg/L	Exposure Point Concentration for each media
RB	unitless	Relative Bioavailability (assumed to be 1 for all chemicals)
P_{veg}	proportion	Proportion of Diet -- Vegetation
P_{inv}	proportion	Proportion of Diet -- Invertebrates
P_{so}	proportion	Proportion of Diet -- Soil
FIR	kg/day	Daily Food Ingestion
DWI	L/day	Daily Drinking Water Ingestion Rate
AUF	proportion	Area Use Factor
BW	kg	Body Weight

[3] HQ = TDI/TRV; HQ greater than 1 are shown in **Bold**

HQ = Hazard Quotient (unitless)

ADD = Average Daily Dose (mg/kg-day)

Abbreviations:

dw - dry weight
kg - kilogram
kg/day - kilogram per day
L/day - litre per day
mg/kg - milligram per kilogram
mg/L - milligram per litre
SOP - Standard Operating Procedure
TRV - Toxicity Reference Value

TABLE 4-19b
TOTAL DAILY INTAKE FOR WOODCOCK - OFFSITE TERRESTRIAL
Chemours Fayetteville Works, North Carolina

Receptor: **Woodcock** **AUF:** **1**

Analyte	Soil		Surface Water		Vegetation		Terrestrial Invertebrate		TDI_{total} [2]	TRV	HQ [3]
	EPC_s [1]	TDI_s	EPC_s [1]	TDI_{sw}	EPC_{veg} [1]	TDI_{veg}	EPC_{inv} [1]	TDI_{inv}			
	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg-day	mg/kg-day	unitless
Table 3+ Lab SOP											
HFPO-DA	2.6E-03	3.4E-05	3.1E-04	3.1E-05	3.1E-02	NA	4.8E-03	3.7E-03	3.8E-03	8.5E+01	4.5E-05
PFMOAA	1.0E-03	1.3E-05	7.1E-05	7.1E-06	5.9E-02	NA	4.6E-03	3.5E-03	3.6E-03	--	--
PFO2HxA	2.3E-03	3.0E-05	2.2E-04	2.2E-05	4.5E-03	NA	1.0E-03	7.7E-04	8.2E-04	--	--
PFO3OA	1.0E-03	1.3E-05	2.7E-05	2.7E-06	2.2E-04	NA	1.0E-03	7.7E-04	7.9E-04	--	--
PFO4DA	1.0E-03	1.3E-05	8.9E-06	8.9E-07	5.3E-04	NA	1.0E-03	7.7E-04	7.8E-04	--	--
PFO5DA	1.0E-03	1.3E-05	2.1E-06	2.1E-07	1.0E-03	NA	1.0E-03	7.7E-04	7.8E-04	--	--
PMPA	1.0E-03	1.3E-05	3.5E-04	3.5E-05	2.6E-02	NA	1.9E-02	1.5E-02	1.5E-02	--	--
PEPA	1.0E-03	1.3E-05	1.1E-04	1.1E-05	1.3E-03	NA	1.6E-03	1.2E-03	1.3E-03	--	--
PFESA-BP1	1.0E-03	1.3E-05	2.0E-06	2.0E-07	1.0E-03	NA	3.5E-03	2.7E-03	2.7E-03	--	--
PFESA-BP2	1.0E-03	1.3E-05	2.5E-05	2.5E-06	1.0E-03	NA	1.0E-03	7.7E-04	7.9E-04	--	--
Byproduct 4	1.0E-03	1.3E-05	1.5E-04	1.5E-05	3.3E-02	NA	1.2E-02	9.1E-03	9.1E-03	--	--
Byproduct 5	1.0E-03	1.3E-05	2.0E-06	2.0E-07	5.7E-04	NA	5.8E-03	4.4E-03	4.4E-03	--	--
NVHOS	1.0E-03	1.3E-05	2.0E-06	2.0E-07	4.5E-01	NA	2.0E-03	1.6E-03	1.6E-03	--	--
R-EVE	1.0E-03	1.3E-05	5.3E-05	5.3E-06	3.8E-03	NA	4.9E-03	3.7E-03	3.8E-03	--	--
PES	1.0E-03	1.3E-05	2.0E-06	2.0E-07	1.2E-03	NA	1.0E-03	7.7E-04	7.8E-04	--	--
PFECA B	1.0E-03	1.3E-05	2.0E-06	2.0E-07	3.1E-03	NA	1.0E-03	7.7E-04	7.8E-04	--	--

Notes:

[1] Soil and diet item exposure point concentration (EPC) are presented in Table 4.17.

[2] Media-specific Total Daily Intake is calculated using the following general equation and receptor specific parameters in Table 3.8.

$TDI_{i,copc}$ = (EPC_{copc} x RB x FIR x P_i) + (DWI x EPC) x AUF x (1/BW), *where:*

Variable Name	*Units*	*Variable Description*
TDI_i	mg/kg-day	$TDI_{i,x}$ = Total Daily Intake for Dietary Item "*i*" for COPC
EPC_{copc}	mg/kg dw or mg/L	Exposure Point Concentration for each media
RB	unitless	Relative Bioavailability (assumed to be 1 for all chemicals)
P_{veg}	proportion	Proportion of Diet -- Vegetation
P_{inv}	proportion	Proportion of Diet -- Invertebrates
P_{so}	proportion	Proportion of Diet -- Soil
FIR	kg/day	Daily Food Ingestion
DWI	L/day	Daily Drinking Water Ingestion Rate
AUF	proportion	Area Use Factor
BW	kg	Body Weight

[3] HQ = TDI/TRV; HQ greater than 1 are shown in **Bold**

HQ = Hazard Quotient (unitless)

ADD = Average Daily Dose (mg/kg-day)

Abbreviations:

dw - dry weight
kg - kilogram
kg/day - kilogram per day
L/day - litre per day
mg/kg - milligram per kilogram
mg/L - milligram per litre
SOP - Standard Operating Procedure
TRV - Toxicity Reference Value

TABLE 4-19c
TOTAL DAILY INTAKE FOR EASTERN COTTONTAIL RABBIT - OFFSITE TERRESTRIAL
Chemours Fayetteville Works, North Carolina

Receptor: **Eastern Cottontail Rabbit** **AUF: 1**

Analyte	Soil		Surface Water		Vegetation		Terrestrial Invertebrate		TDI_{total} [2]	TRV	HQ [3]
	EPC_s [1]	TDI_s	EPC_s [1]	TDI_{sw}	EPC_{veg} [1]	TDI_{veg}	EPC_{inv} [1]	TDI_{inv}			
	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg-day	mg/kg-day	unitless
Table 3+ Lab SOP											
HFPO-DA	2.6E-03	3.6E-06	3.1E-04	3.0E-05	3.1E-02	6.4E-03	4.8E-03	NA	6.5E-03	5.0E-01	1.3E-02
PFMOAA	1.0E-03	1.4E-06	7.1E-05	6.9E-06	5.9E-02	1.2E-02	4.6E-03	NA	1.2E-02	--	--
PFO2HxA	2.3E-03	3.1E-06	2.2E-04	2.1E-05	4.5E-03	9.3E-04	1.0E-03	NA	9.5E-04	--	--
PFO3OA	1.0E-03	1.4E-06	2.7E-05	2.6E-06	2.2E-04	4.6E-05	1.0E-03	NA	5.0E-05	--	--
PFO4DA	1.0E-03	1.4E-06	8.9E-06	8.6E-07	5.3E-04	1.1E-04	1.0E-03	NA	1.1E-04	--	--
PFO5DA	1.0E-03	1.4E-06	2.1E-06	2.0E-07	1.0E-03	2.1E-04	1.0E-03	NA	2.1E-04	--	--
PMPA	1.0E-03	1.4E-06	3.5E-04	3.4E-05	2.6E-02	5.4E-03	1.9E-02	NA	5.5E-03	--	--
PEPA	1.0E-03	1.4E-06	1.1E-04	1.1E-05	1.3E-03	2.6E-04	1.6E-03	NA	2.8E-04	--	--
PFESA-BP1	1.0E-03	1.4E-06	2.0E-06	1.9E-07	1.0E-03	2.1E-04	3.5E-03	NA	2.1E-04	--	--
PFESA-BP2	1.0E-03	1.4E-06	2.5E-05	2.4E-06	1.0E-03	2.1E-04	1.0E-03	NA	2.1E-04	--	--
Byproduct 4	1.0E-03	1.4E-06	1.5E-04	1.5E-05	3.3E-02	6.9E-03	1.2E-02	NA	7.0E-03	--	--
Byproduct 5	1.0E-03	1.4E-06	2.0E-06	1.9E-07	5.7E-04	1.2E-04	5.8E-03	NA	1.2E-04	--	--
NVHOS	1.0E-03	1.4E-06	2.0E-06	1.9E-07	4.5E-01	9.3E-02	2.0E-03	NA	9.3E-02	--	--
R-EVE	1.0E-03	1.4E-06	5.3E-05	5.1E-06	3.8E-03	7.8E-04	4.9E-03	NA	7.8E-04	--	--
PES	1.0E-03	1.4E-06	2.0E-06	1.9E-07	1.2E-03	2.4E-04	1.0E-03	NA	2.4E-04	--	--
PFECA B	1.0E-03	1.4E-06	2.0E-06	1.9E-07	3.1E-03	6.4E-04	1.0E-03	NA	6.4E-04	--	--

Notes:

[1] Soil and diet item exposure point concentration (EPC) are presented in Table 4.17.

[2] Media-specific Total Daily Intake is calculated using the following general equation and receptor specific parameters in Table 3.8.

$TDI_{i,copc}$ = (EPC_{copc} x RB x FIR x P_i) + (DWI x EPC) x AUF x (1/BW), *where:*

Variable Name	*Units*	*Variable Description*
TDI_i	mg/kg-day	$TDI_{i,x}$ = Total Daily Intake for Dietary Item "*i*" for COPC
EPC_{copc}	mg/kg dw or mg/L	Exposure Point Concentration for each media
RB	unitless	Relative Bioavailability (assumed to be 1 for all chemicals)
P_{veg}	proportion	Proportion of Diet -- Vegetation
P_{inv}	proportion	Proportion of Diet -- Invertebrates
P_{so}	proportion	Proportion of Diet -- Soil
FIR	kg/day	Daily Food Ingestion
DWI	L/day	Daily Drinking Water Ingestion Rate
AUF	proportion	Area Use Factor
BW	kg	Body Weight

[3] HQ = TDI/TRV; HQ greater than 1 are shown in **Bold**

HQ = Hazard Quotient (unitless)

ADD = Average Daily Dose (mg/kg-day)

Abbreviations:

dw - dry weight
kg - kilogram
kg/day - kilogram per day
L/day - litre per day
mg/kg - milligram per kilogram
mg/L - milligram per litre
SOP - Standard Operating Procedure
TRV - Toxicity Reference Value

TABLE 4-19d
TOTAL DAILY INTAKE FOR SOUTHERN SHORT-TAILED SHREW - OFFSITE TERRESTRIAL
Chemours Fayetteville Works, North Carolina

Receptor: **Southern Short-tailed Shrew** **AUF:** **1**

Analyte	Soil		Surface Water		Vegetation		Terrestrial Invertebrate		TDI$_{total}$ [2]	TRV	HQ [3]
	EPC$_s$ [1]	TDI$_s$	EPC$_s$ [1]	TDI$_{sw}$	EPC$_{veg}$ [1]	TDI$_{veg}$	EPC$_{inv}$ [1]	TDI$_{inv}$			
	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg-day	mg/kg-day	unitless
Table 3+ Lab SOP											
HFPO-DA	2.6E-03	8.4E-06	3.1E-04	6.9E-05	3.1E-02	NA	4.8E-03	1.9E-03	2.0E-03	5.0E-01	4.1E-03
PFMOAA	1.0E-03	3.2E-06	7.1E-05	1.6E-05	5.9E-02	NA	4.6E-03	1.9E-03	1.9E-03	--	--
PFO2HxA	2.3E-03	7.4E-06	2.2E-04	4.9E-05	4.5E-03	NA	1.0E-03	4.1E-04	4.6E-04	--	--
PFO3OA	1.0E-03	3.2E-06	2.7E-05	6.0E-06	2.2E-04	NA	1.0E-03	4.1E-04	4.2E-04	--	--
PFO4DA	1.0E-03	3.2E-06	8.9E-06	2.0E-06	5.3E-04	NA	1.0E-03	4.1E-04	4.1E-04	--	--
PFO5DA	1.0E-03	3.2E-06	2.1E-06	4.7E-07	1.0E-03	NA	1.0E-03	4.1E-04	4.1E-04	--	--
PMPA	1.0E-03	3.2E-06	3.5E-04	7.8E-05	2.6E-02	NA	1.9E-02	7.7E-03	7.8E-03	--	--
PEPA	1.0E-03	3.2E-06	1.1E-04	2.5E-05	1.3E-03	NA	1.6E-03	6.5E-04	6.8E-04	--	--
PFESA-BP1	1.0E-03	3.2E-06	2.0E-06	4.5E-07	1.0E-03	NA	3.5E-03	1.4E-03	1.4E-03	--	--
PFESA-BP2	1.0E-03	3.2E-06	2.5E-05	5.6E-06	1.0E-03	NA	1.0E-03	4.1E-04	4.1E-04	--	--
Byproduct 4	1.0E-03	3.2E-06	1.5E-04	3.3E-05	3.3E-02	NA	1.2E-02	4.8E-03	4.8E-03	--	--
Byproduct 5	1.0E-03	3.2E-06	2.0E-06	4.5E-07	5.7E-04	NA	5.8E-03	2.3E-03	2.3E-03	--	--
NVHOS	1.0E-03	3.2E-06	2.0E-06	4.5E-07	4.5E-01	NA	2.0E-03	8.2E-04	8.2E-04	--	--
R-EVE	1.0E-03	3.2E-06	5.3E-05	1.2E-05	3.8E-03	NA	4.9E-03	2.0E-03	2.0E-03	--	--
PES	1.0E-03	3.2E-06	2.0E-06	4.5E-07	1.2E-03	NA	1.0E-03	4.1E-04	4.1E-04	--	--
PFECA B	1.0E-03	3.2E-06	2.0E-06	4.5E-07	3.1E-03	NA	1.0E-03	4.1E-04	4.1E-04	--	--

Notes:

[1] Soil and diet item exposure point concentration (EPC) are presented in Table 4.17.

[2] Media-specific Total Daily Intake is calculated using the following general equation and receptor specific parameters in Table 3.8.

$TDI_{i,copc}$ = (EPC_{copc} x RB x FIR x P_i) + (DWI x EPC) x AUF x (1/BW), *where:*

Variable Name	*Units*	*Variable Description*
TDI_i	mg/kg-day	$TDI_{i,x}$ = Total Daily Intake for Dietary Item "*i*" for COPC
EPC_{copc}	mg/kg dw or mg/L	Exposure Point Concentration for each media
RB	unitless	Relative Bioavailability (assumed to be 1 for all chemicals)
P_{veg}	proportion	Proportion of Diet -- Vegetation
P_{inv}	proportion	Proportion of Diet -- Invertebrates
P_{so}	proportion	Proportion of Diet -- Soil
FIR	kg/day	Daily Food Ingestion
DWI	L/day	Daily Drinking Water Ingestion Rate
AUF	proportion	Area Use Factor
BW	kg	Body Weight

[3] HQ = TDI/TRV; HQ greater than 1 are shown in **Bold**

HQ = Hazard Quotient (unitless)

ADD = Average Daily Dose (mg/kg-day)

Abbreviations:

dw - dry weight
kg - kilogram
kg/day - kilogram per day
L/day - litre per day
mg/kg - milligram per kilogram
mg/L - milligram per litre
SOP - Standard Operating Procedure
TRV - Toxicity Reference Value

TABLE 4-20
EXPOSURE POINT CONCENTRATIONS - AQUATIC
Chemours Fayetteville Works, North Carolina

Analyte	Sediment EPC (mg/kg)	Surface Water (mg/L)	Aquatic Plant EPC (mg/kg, dw)	Asian clam EPC (mg/kg, dw)	Mixed Benthic Invertebrate EPC (mg/kg, dw)	Highest Benthic Invertebrate EPC	Catfish Fillet EPC	Catfish WB:F Ratio	Catfish EPC_{WB}	LMB Fillet [PFAS]	LMB WB:F Ratio	Largemouth Bass EPC_{WB}	YOY Largemouth Bass EPC_{WB}	Sunfish EPC_{WB}	American Eel EPC_{WB}	Shiner EPC_{WB}	Highest Fish EPC
Table 3+ Lab SOP																	
HFPO-DA	0.00026	0.0000081	0.026	0.001	0.001	0.001	0.001	--	0.001	0.001	--	0.001	0.001	0.002	0.001	0.001	0.002
PFMOAA	0.001	0.0000333	0.37	0.001	0.001	0.001	0.001	--	0.001	0.001	--	0.001	0.005	0.005	0.013	0.003	0.013
PFO2HxA	0.001	0.0000156	0.038	0.001	0.001	0.001	0.001	--	0.001	0.001	--	0.001	0.001	0.001	0.001	0.001	0.001
PFO3OA	0.001	0.0000064	0.0011	0.001	0.001	0.001	0.001	--	0.001	0.001	--	0.001	0.001	0.001	0.001	0.001	0.001
PFO4DA	0.001	0.0000023	0.0017	0.001	0.001	0.001	0.001	0.63	0.001	0.003	2.50	0.0065	0.002	0.041	0.001	0.006	0.041
PFO5DA	0.001	0.000002	0.0015	0.001	0.001	0.001	0.001	--	0.001	0.001	4.57	0.001	0.001	0.002	0.001	0.003	0.003
PMPA	0.001	0.000019	0.066	0.001	0.001	0.001	0.0003	2.45	0.001	0.0004	2.93	0.0011	0.001	0.002	0.001	0.001	0.002
PEPA	0.001	0.00002	0.012	0.001	0.001	0.001	0.001	--	0.001	0.001	--	0.001	0.001	0.001	0.001	0.001	0.001
Byproduct 4	0.001	0.0000074	0.0033	0.001	0.001	0.001	0.001	3.63	0.001	0.001	--	0.001	0.006	0.001	0.001	0.001	0.006
Byproduct 5	0.001	0.0000092	0.001	0.001	0.001	0.001	0.001	--	0.001	0.001	--	0.001	0.001	0.001	0.001	0.001	0.001
NVHOS	0.001	0.0000068	0.034	0.001	0.001	0.001	0.001	--	0.001	0.001	--	0.001	0.001	0.001	0.001	0.001	0.001
R-EVE	0.001	0.0000033	0.0028	0.001	0.001	0.001	0.001	--	0.001	0.001	9.63	0.001	0.001	0.003	0.001	0.001	0.003

Notes:
Catfish and LMB Wholebody EPCs were estimated from concentrations measured in fillets and whole-body to fillet ratios. Only detected results were adjusted to wholebody estimates, RLs were left as reported.
The highest fish EPC for any species was used to represent this diet item.
Abbreviations:
dw - dry weight
EPC - exposure point concentration
LMB - largemouth bass
mg/kg - milligram per kilogram
mg/L - milligram per litre
PFAS - per - and polyfluoroalkyl substances
WB:F - wholebody to fillet
ww - wet weight
YOY - young of the year

TABLE 4-21
DIRECT CONTECT EXPOSURES - AQUATIC
Chemours Fayetteville Works, North Carolina

Analyte	Sediment EPC (mg/kg dw)	Benthic Invertebrates TRV (mg/kg dw)	Hazard Quotient for Invertebrates	Surface Water EPC (mg/L)	Aquatic Life TRV [1] (mg/L)	Aquatic Plants TRV (mg/L)	Hazard Quotient for Aquatic Life	Hazard Quotient for Aquatic Plants
Table 3+ Lab SOP								
HFPO-DA	0.0003	0.518	0.001	0.0000081	0.89	106	9E-06	8E-08
PFMOAA	0.001	--	--	0.0000333	--	--		--
PFO2HxA	0.001	--	--	0.0000156	--	--		--
PFO3OA	0.001	--	--	0.0000064	--	--		--
PFO4DA	0.001	--	--	0.0000023	--	--		--
PFO5DA	0.001	--	--	0.000002	--	--		--
PMPA	0.001	--	--	0.000019	--	--		--
PEPA	0.001	--	--	0.00002	--	--		--
Byproduct 4	0.001	--	--	0.0000074	--	--		--
NVHOS	0.001	--	--	0.0000068	--	--		--
R-EVE	0.001	--	--	0.0000033	--	--		--

Notes:
1. As noted in Section 4.4, a more conservative aquatic life TRV of 0.108 mg/L is available and would also result in an HQ < 1.

Abbreviations:
dw - dry weight
EPC - Exposure Point Concentration
mg/kg - milligram per kilogram
mg/L - milligram per liter
SOP - Standard Operating Procedure
TRV - Toxicity Reference Value

TABLE 4-22a
TOTAL DAILY INTAKE FOR WOOD DUCK - AQUATIC
Chemours Fayetteville Works, North Carolina

Receptor: **Wood Duck** **AUF:** **1**

Analyte	**Sediment**		**Surface Water**		**Vegetation**		**Benthic Invertebrate**		**Fish**		**TDI_{total} [2]**	**TRV**	**HQ [3]**
	EPC_s [1]	TDI_s	EPC_s [1]	TDI_{sw}	EPC_{veg} [1]	TDI_{veg}	EPC_{inv} [1]	TDI_{inv}	EPC_{fish} [1]	TDI_{fish}			
	mg/kg dw	mg/kg-day	mg/L	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg-day	mg/kg-day	unitless
Table 3+ Lab SOP													
HFPO-DA	2.6E-04	1.7E-06	8.1E-06	4.5E-07	2.6E-02	4.7E-03	1.0E-03	NA	2.2E-03	NA	4.7E-03	8.5E+01	5.6E-05
PFMOAA	1.0E-03	6.4E-06	3.3E-05	1.8E-06	3.7E-01	6.7E-02	1.0E-03	NA	1.3E-02	NA	6.7E-02	--	--
PFO2HxA	1.0E-03	6.4E-06	1.6E-05	8.6E-07	3.8E-02	6.9E-03	1.0E-03	NA	1.0E-03	NA	6.9E-03	--	--
PFO3OA	1.0E-03	6.4E-06	6.4E-06	3.5E-07	1.1E-03	2.0E-04	1.0E-03	NA	1.0E-03	NA	2.1E-04	--	--
PFO4DA	1.0E-03	6.4E-06	2.3E-06	1.3E-07	1.7E-03	3.1E-04	1.0E-03	NA	4.1E-02	NA	3.2E-04	--	--
PFO5DA	1.0E-03	6.4E-06	2.0E-06	1.1E-07	1.5E-03	2.7E-04	1.0E-03	NA	3.1E-03	NA	2.8E-04	--	--
PMPA	1.0E-03	6.4E-06	1.9E-05	1.0E-06	6.6E-02	1.2E-02	1.0E-03	NA	1.9E-03	NA	1.2E-02	--	--
PEPA	1.0E-03	6.4E-06	2.0E-05	1.1E-06	1.2E-02	2.2E-03	1.0E-03	NA	1.0E-03	NA	2.2E-03	--	--
Byproduct 4	1.0E-03	6.4E-06	7.4E-06	4.1E-07	3.3E-03	6.0E-04	1.0E-03	NA	6.4E-03	NA	6.1E-04	--	--
Byproduct 5	1.0E-03	6.4E-06	9.2E-06	5.1E-07	1.0E-03	1.8E-04	1.0E-03	NA	1.0E-03	NA	1.9E-04	--	--
NVHOS	1.0E-03	6.4E-06	6.8E-06	3.7E-07	3.4E-02	6.2E-03	1.0E-03	NA	1.0E-03	NA	6.2E-03	--	--
R-EVE	1.0E-03	6.4E-06	3.3E-06	1.8E-07	2.8E-03	5.1E-04	1.0E-03	NA	2.7E-03	NA	5.2E-04	--	--

Notes:

[1] Soil and diet item exposure point concentration (EPC) are presented in Table 4.20

[2] Media-specific Total Daily Dose (TDI) is calculated using the following general equation and receptor specific parameters in Table 3.9:

$TDI_{i,copc}$ = (EPC_{copc} x RB x FIR x P_i) + (DWI x EPC) x AUF x (1/BW), *where:*

Variable Name	*Units*	*Variable Description*
TDI_i	mg/kg-day	Total Daily Intake for Dietary Item "*i*" for COPC
EPC_{copc}	mg/kg dw or mg/L	Exposure Point Concentration for each media
RB	unitless	Relative Bioavailability (only for soil portion of diet; assumed to be 1 for all chemicals)
P_{veg}	proportion	Proportion of Diet -- Vegetation
P_{inv}	proportion	Proportion of Diet -- Invertebrates
P_{fish}	proportion	Proportion of Diet -- Fish
P_{so}	proportion	Proportion of Diet -- Soil
FIR	kg/day	Daily Food Ingestion
DWI	L/day	Daily Drinking Water Ingestion Rate
AUF	proportion	Area Use Factor
BW	kg	Body Weight

[3] HQ = TDI/TRV; HQ greater than 1 are shown in **Bold**

HQ = Hazard Quotient (unitless)

TDI = Total Daily Intake (mg/kg-day)

Abbreviations:

dw - dry weight
kg - kilogram
kg/day - kilogram per day
L/day - litre per day
mg/kg - milligram per kilogram
mg/L - milligram per litre
SOP - Standard Operating Procedure
TRV - Toxicity Reference Value

TABLE 4-22b
TOTAL DAILY INTAKE FOR MALLARD DUCK - AQUATIC
Chemours Fayetteville Works, North Carolina

Receptor: **Mallard Duck** **AUF:** **1**

Analyte	Sediment		Surface Water		Vegetation		Benthic Invertebrate		Fish		TDI$_{total}$ [2]	TRV	HQ [3]
	EPC$_s$ [1]	TDI$_s$	EPC$_s$ [1]	TDI$_{sw}$	EPC$_{veg}$ [1]	TDI$_{veg}$	EPC$_{inv}$ [1]	TDI$_{inv}$	EPC$_{fish}$ [1]	TDI$_{fish}$			
	mg/kg dw	mg/kg-day	mg/L	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg-day	mg/kg-day	unitless
Table 3+ Lab SOP													
HFPO-DA	2.6E-04	2.6E-07	8.1E-06	4.5E-07	2.6E-02	NA	1.0E-03	1.5E-04	2.2E-03	NA	1.5E-04	8.5E+01	1.8E-06
PFMOAA	1.0E-03	9.8E-07	3.3E-05	1.8E-06	3.7E-01	NA	1.0E-03	1.5E-04	1.3E-02	NA	1.6E-04	--	--
PFO2HxA	1.0E-03	9.8E-07	1.6E-05	8.6E-07	3.8E-02	NA	1.0E-03	1.5E-04	1.0E-03	NA	1.6E-04	--	--
PFO3OA	1.0E-03	9.8E-07	6.4E-06	3.5E-07	1.1E-03	NA	1.0E-03	1.5E-04	1.0E-03	NA	1.5E-04	--	--
PFO4DA	1.0E-03	9.8E-07	2.3E-06	1.3E-07	1.7E-03	NA	1.0E-03	1.5E-04	4.1E-02	NA	1.5E-04	--	--
PFO5DA	1.0E-03	9.8E-07	2.0E-06	1.1E-07	1.5E-03	NA	1.0E-03	1.5E-04	3.1E-03	NA	1.5E-04	--	--
PMPA	1.0E-03	9.8E-07	1.9E-05	1.0E-06	6.6E-02	NA	1.0E-03	1.5E-04	1.9E-03	NA	1.6E-04	--	--
PEPA	1.0E-03	9.8E-07	2.0E-05	1.1E-06	1.2E-02	NA	1.0E-03	1.5E-04	1.0E-03	NA	1.6E-04	--	--
Byproduct 4	1.0E-03	9.8E-07	7.4E-06	4.1E-07	3.3E-03	NA	1.0E-03	1.5E-04	6.4E-03	NA	1.6E-04	--	--
NVHOS	1.0E-03	9.8E-07	6.8E-06	3.7E-07	3.4E-02	NA	1.0E-03	1.5E-04	1.0E-03	NA	1.6E-04	--	--
R-EVE	1.0E-03	9.8E-07	3.3E-06	1.8E-07	2.8E-03	NA	1.0E-03	1.5E-04	2.7E-03	NA	1.5E-04	--	--

Notes:

[1] Soil and diet item exposure point concentration (EPC) are presented in Table 4.20

[2] Media-specific Total Daily Dose (TDI) is calculated using the following general equation and receptor specific parameters in Table 3.9:

$TDI_{i,copc}$ = (EPC_{copc} x RB x FIR x P_i) + (DWI x EPC) x AUF x (1/BW), *where:*

Variable Name	*Units*	*Variable Description*
TDI_i	mg/kg-day	Total Daily Intake for Dietary Item "*i*" for COPC
EPC_{copc}	mg/kg dw or mg/L	Exposure Point Concentration for each media
RB	unitless	Relative Bioavailability (only for soil portion of diet; assumed to be 1 for all chemicals)
P_{veg}	proportion	Proportion of Diet -- Vegetation
P_{inv}	proportion	Proportion of Diet -- Invertebrates
P_{fish}	proportion	Proportion of Diet -- Fish
P_{so}	proportion	Proportion of Diet -- Soil
FIR	kg/day	Daily Food Ingestion
DWI	L/day	Daily Drinking Water Ingestion Rate
AUF	proportion	Area Use Factor
BW	kg	Body Weight

[3] HQ = TDI/TRV; HQ greater than 1 are shown in **Bold**

HQ = Hazard Quotient (unitless)

TDI = Total Daily Intake (mg/kg-day)

Abbreviations:

dw - dry weight
kg - kilogram
kg/day - kilogram per day
L/day - litre per day
mg/kg - milligram per kilogram
mg/L - milligram per litre
SOP - Standard Operating Procedure
TRV - Toxicity Reference Value

TABLE 4-22c
TOTAL DAILY INTAKE FOR GREAT BLUE HERON - AQUATIC
Chemours Fayetteville Works, North Carolina

Receptor:	**Great Blue Heron**									**AUF:**	**1**		
Analyte	**Sediment**		**Surface Water**		**Vegetation**		**Benthic Invertebrate**		**Fish**		**TDI_{total} [2]**	**TRV**	**HQ [3]**
	EPC_s [1]	TDI_s	EPC_s [1]	TDI_{sw}	EPC_{veg} [1]	TDI_{veg}	EPC_{inv} [1]	TDI_{inv}	EPC_{fish} [1]	TDI_{fish}			
	mg/kg dw	mg/kg-day	mg/L	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg-day	mg/kg-day	unitless
Table 3+ Lab SOP													
HFPO-DA	2.6E-04	NA	8.1E-06	3.6E-07	2.6E-02	NA	1.0E-03	NA	2.2E-03	4.0E-04	4.0E-04	8.5E+01	4.7E-06
PFMOAA	1.0E-03	NA	3.3E-05	1.5E-06	3.7E-01	NA	1.0E-03	NA	1.3E-02	2.3E-03	2.3E-03	--	--
PFO2HxA	1.0E-03	NA	1.6E-05	7.0E-07	3.8E-02	NA	1.0E-03	NA	1.0E-03	1.8E-04	1.8E-04	--	--
PFO3OA	1.0E-03	NA	6.4E-06	2.9E-07	1.1E-03	NA	1.0E-03	NA	1.0E-03	1.8E-04	1.8E-04	--	--
PFO4DA	1.0E-03	NA	2.3E-06	1.0E-07	1.7E-03	NA	1.0E-03	NA	4.1E-02	7.4E-03	7.4E-03	--	--
PFO5DA	1.0E-03	NA	2.0E-06	9.0E-08	1.5E-03	NA	1.0E-03	NA	3.1E-03	5.6E-04	5.6E-04	--	--
PMPA	1.0E-03	NA	1.9E-05	8.6E-07	6.6E-02	NA	1.0E-03	NA	1.9E-03	3.4E-04	3.4E-04	--	--
PEPA	1.0E-03	NA	2.0E-05	9.0E-07	1.2E-02	NA	1.0E-03	NA	1.0E-03	1.8E-04	1.8E-04	--	--
Byproduct 4	1.0E-03	NA	7.4E-06	3.3E-07	3.3E-03	NA	1.0E-03	NA	6.4E-03	1.2E-03	1.2E-03	--	--
Byproduct 5	1.0E-03	NA	9.2E-06	4.1E-07	1.0E-03	NA	1.0E-03	NA	1.0E-03	1.8E-04	1.8E-04	--	--
NVHOS	1.0E-03	NA	6.8E-06	3.1E-07	3.4E-02	NA	1.0E-03	NA	1.0E-03	1.8E-04	1.8E-04	--	--
R-EVE	1.0E-03	NA	3.3E-06	1.5E-07	2.8E-03	NA	1.0E-03	NA	2.7E-03	4.9E-04	4.9E-04	--	--

Notes:

[1] Soil and diet item exposure point concentration (EPC) are presented in Table 4.20

[2] Media-specific Total Daily Dose (TDI) is calculated using the following general equation and receptor specific parameters in Table 3.9:

$TDI_{i,copc} = (EPC_{copc} \times RB \times FIR \times P_i) + (DWI \times EPC) \times AUF \times (1/BW)$, *where:*

Variable Name	*Units*	*Variable Description*
TDI_i	mg/kg-day	Total Daily Intake for Dietary Item "*i*" for COPC
EPC_{copc}	mg/kg dw or mg/L	Exposure Point Concentration for each media
RB	unitless	Relative Bioavailability (only for soil portion of diet; assumed to be 1 for all chemicals)
P_{veg}	proportion	Proportion of Diet -- Vegetation
P_{inv}	proportion	Proportion of Diet -- Invertebrates
P_{fish}	proportion	Proportion of Diet -- Fish
P_{so}	proportion	Proportion of Diet -- Soil
FIR	kg/day	Daily Food Ingestion
DWI	L/day	Daily Drinking Water Ingestion Rate
AUF	proportion	Area Use Factor
BW	kg	Body Weight

[3] HQ = TDI/TRV; HQ greater than 1 are shown in **Bold**

HQ = Hazard Quotient (unitless)
TDI = Total Daily Intake (mg/kg-day)

Abbreviations:

dw - dry weight
kg - kilogram
kg/day - kilogram per day
L/day - litre per day
mg/kg - milligram per kilogram
mg/L - milligram per litre
SOP - Standard Operating Procedure
TRV - Toxicity Reference Value

TABLE 4-22d
TOTAL DAILY INTAKE FOR MUSKRAT - AQUATIC
Chemours Fayetteville Works, North Carolina

Receptor: **Muskrat** **AUF:** **1**

Analyte	Sediment		Surface Water		Vegetation		Benthic Invertebrate		Fish		TDI_{total} [2]	TRV	HQ [3]
	EPC_s [1]	TDI_s	EPC_s [1]	TDI_{sw}	EPC_{veg} [1]	TDI_{veg}	EPC_{inv} [1]	TDI_{inv}	EPC_{fish} [1]	TDI_{fish}			
	mg/kg dw	mg/kg-day	mg/L	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg-day	mg/kg-day	unitless
Table 3+ Lab SOP													
HFPO-DA	2.6E-04	4.3E-07	8.1E-06	7.9E-06	2.6E-02	8.8E-03	1.0E-03	NA	2.2E-03	NA	8.8E-03	0.5	1.8E-02
PFMOAA	1.0E-03	1.6E-06	3.3E-05	3.2E-05	3.7E-01	1.3E-01	1.0E-03	NA	1.3E-02	NA	1.3E-01	--	--
PFO2HxA	1.0E-03	1.6E-06	1.6E-05	1.5E-05	3.8E-02	1.3E-02	1.0E-03	NA	1.0E-03	NA	1.3E-02	--	--
PFO3OA	1.0E-03	1.6E-06	6.4E-06	6.2E-06	1.1E-03	3.7E-04	1.0E-03	NA	1.0E-03	NA	3.8E-04	--	--
PFO4DA	1.0E-03	1.6E-06	2.3E-06	2.2E-06	1.7E-03	5.8E-04	1.0E-03	NA	4.1E-02	NA	5.8E-04	--	--
PFO5DA	1.0E-03	1.6E-06	2.0E-06	1.9E-06	1.5E-03	5.1E-04	1.0E-03	NA	3.1E-03	NA	5.1E-04	--	--
PMPA	1.0E-03	1.6E-06	1.9E-05	1.8E-05	6.6E-02	2.2E-02	1.0E-03	NA	1.9E-03	NA	2.2E-02	--	--
PEPA	1.0E-03	1.6E-06	2.0E-05	1.9E-05	1.2E-02	4.1E-03	1.0E-03	NA	1.0E-03	NA	4.1E-03	--	--
Byproduct 4	1.0E-03	1.6E-06	7.4E-06	7.2E-06	3.3E-03	1.1E-03	1.0E-03	NA	6.4E-03	NA	1.1E-03	--	--
Byproduct 5	1.0E-03	1.6E-06	9.2E-06	8.9E-06	1.0E-03	3.4E-04	1.0E-03	NA	1.0E-03	NA	3.5E-04	--	--
NVHOS	1.0E-03	1.6E-06	6.8E-06	6.6E-06	3.4E-02	1.2E-02	1.0E-03	NA	1.0E-03	NA	1.2E-02	--	--
R-EVE	1.0E-03	1.6E-06	3.3E-06	3.2E-06	2.8E-03	9.5E-04	1.0E-03	NA	2.7E-03	NA	9.6E-04	--	--

[1] Soil and diet item exposure point concentration (EPC) are presented in Table 4.20

[2] Media-specific Total Daily Dose (TDI) is calculated using the following general equation and receptor specific parameters in Table 3.9:

$TDI_{i,copc}$ = (EPC_{copc} x RB x FIR x P_i) + (DWI x EPC) x AUF x (1/BW), *where:*

Variable Name	*Units*	*Variable Description*
TDI_i	mg/kg-day	Total Daily Intake for Dietary Item "*i*" for COPC
EPC_{copc}	mg/kg dw or mg/L	Exposure Point Concentration for each media
RB	unitless	Relative Bioavailability (only for soil portion of diet; assumed to be 1 for all chemicals)
P_{veg}	proportion	Proportion of Diet -- Vegetation
P_{inv}	proportion	Proportion of Diet -- Invertebrates
P_{fish}	proportion	Proportion of Diet -- Fish
P_{so}	proportion	Proportion of Diet -- Soil
FIR	kg/day	Daily Food Ingestion
DWI	L/day	Daily Drinking Water Ingestion Rate
AUF	proportion	Area Use Factor
BW	kg	Body Weight

[3] HQ = TDI/TRV; HQ greater than 1 are shown in **Bold**

HQ = Hazard Quotient (unitless)

TDI = Total Daily Intake (mg/kg-day)

Abbreviations:

dw - dry weight
kg - kilogram
kg/day - kilogram per day
L/day - litre per day
mg/kg - milligram per kilogram
mg/L - milligram per litre
SOP - Standard Operating Procedure
TRV - Toxicity Reference Value

TABLE 4-22e
TOTAL DAILY INTAKE FOR MINK - AQUATIC
Chemours Fayetteville Works, North Carolina

Receptor: **Mink** **AUF:** **1**

Analyte	Sediment		Surface Water		Vegetation		Benthic Invertebrate		Fish		TDI_{total} [2]	TRV	HQ [3]
	EPC_s [1]	TDI_s	EPC_s [1]	TDI_{sw}	EPC_{veg} [1]	TDI_{veg}	EPC_{inv} [1]	TDI_{inv}	EPC_{fish} [1]	TDI_{fish}			
	mg/kg dw	mg/kg-day	mg/L	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg-day	mg/kg-day	unitless
Table 3+ Lab SOP													
HFPO-DA	2.6E-04	2.6E-07	8.1E-06	8.9E-07	2.6E-02	NA	1.0E-03	2.2E-04	2.2E-03	NA	2.2E-04	0.5	4.4E-04
PFMOAA	1.0E-03	1.0E-06	3.3E-05	3.7E-06	3.7E-01	NA	1.0E-03	2.2E-04	1.3E-02	NA	2.2E-04	--	--
PFO2HxA	1.0E-03	1.0E-06	1.6E-05	1.7E-06	3.8E-02	NA	1.0E-03	2.2E-04	1.0E-03	NA	2.2E-04	--	--
PFO3OA	1.0E-03	1.0E-06	6.4E-06	7.0E-07	1.1E-03	NA	1.0E-03	2.2E-04	1.0E-03	NA	2.2E-04	--	--
PFO4DA	1.0E-03	1.0E-06	2.3E-06	2.5E-07	1.7E-03	NA	1.0E-03	2.2E-04	4.1E-02	NA	2.2E-04	--	--
PFO5DA	1.0E-03	1.0E-06	2.0E-06	2.2E-07	1.5E-03	NA	1.0E-03	2.2E-04	3.1E-03	NA	2.2E-04	--	--
PMPA	1.0E-03	1.0E-06	1.9E-05	2.1E-06	6.6E-02	NA	1.0E-03	2.2E-04	1.9E-03	NA	2.2E-04	--	--
PEPA	1.0E-03	1.0E-06	2.0E-05	2.2E-06	1.2E-02	NA	1.0E-03	2.2E-04	1.0E-03	NA	2.2E-04	--	--
Byproduct 4	1.0E-03	1.0E-06	7.4E-06	8.1E-07	3.3E-03	NA	1.0E-03	2.2E-04	6.4E-03	NA	2.2E-04	--	--
Byproduct 5	1.0E-03	1.0E-06	9.2E-06	1.0E-06	1.0E-03	NA	1.0E-03	2.2E-04	1.0E-03	NA	2.2E-04	--	--
NVHOS	1.0E-03	1.0E-06	6.8E-06	7.5E-07	3.4E-02	NA	1.0E-03	2.2E-04	1.0E-03	NA	2.2E-04	--	--
R-EVE	1.0E-03	1.0E-06	3.3E-06	3.6E-07	2.8E-03	NA	1.0E-03	2.2E-04	2.7E-03	NA	2.2E-04	--	--

[1] Soil and diet item exposure point concentration (EPC) are presented in Table 4.20

[2] Media-specific Total Daily Dose (TDI) is calculated using the following general equation and receptor specific parameters in Table 3.9:

$TDI_{i,copc}$ = (EPC_{copc} x RB x FIR x P_i) + (DWI x EPC) x AUF x (1/BW), *where:*

Variable Name	*Units*	*Variable Description*
TDI_i	mg/kg-day	Total Daily Intake for Dietary Item "*i*" for COPC
EPC_{copc}	mg/kg dw or mg/L	Exposure Point Concentration for each media
RB	unitless	Relative Bioavailability (only for soil portion of diet; assumed to be 1 for all chemicals)
P_{veg}	proportion	Proportion of Diet -- Vegetation
P_{inv}	proportion	Proportion of Diet -- Invertebrates
P_{fish}	proportion	Proportion of Diet -- Fish
P_{so}	proportion	Proportion of Diet -- Soil
FIR	kg/day	Daily Food Ingestion
DWI	L/day	Daily Drinking Water Ingestion Rate
AUF	proportion	Area Use Factor
BW	kg	Body Weight

[3] HQ = TDI/TRV; HQ greater than 1 are shown in **Bold**

HQ = Hazard Quotient (unitless)

TDI = Total Daily Intake (mg/kg-day)

Abbreviations:

dw - dry weight

kg - kilogram

kg/day - kilogram per day

L/day - litre per day

mg/kg - milligram per kilogram

mg/L - milligram per litre

SOP - Standard Operating Procedure

TRV - Toxicity Reference Value

TABLE 4-22f
TOTAL DAILY INTAKE FOR RIVER OTTER - AQUATIC
Chemours Fayetteville Works, North Carolina

Receptor: **River Otter** **AUF:** **0.21**

Analyte	Sediment		Surface Water		Vegetation		Benthic Invertebrate		Fish		TDI$_{total}$ [2]	TRV	HQ [3]
	EPC$_s$ [1]	TDI$_s$	EPC$_s$ [1]	TDI$_{sw}$	EPC$_{veg}$ [1]	TDI$_{veg}$	EPC$_{inv}$ [1]	TDI$_{inv}$	EPC$_{fish}$ [1]	TDI$_{fish}$			
	mg/kg dw	mg/kg-day	mg/L	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg dw	mg/kg-day	mg/kg-day	mg/kg-day	unitless
Table 3+ Lab SOP													
HFPO-DA	2.6E-04	4.1E-08	8.1E-06	1.4E-07	2.6E-02	NA	1.0E-03	NA	2.2E-03	6.1E-05	6.1E-05	0.5	1.2E-04
PFMOAA	1.0E-03	1.6E-07	3.3E-05	5.7E-07	3.7E-01	NA	1.0E-03	NA	1.3E-02	3.6E-04	3.6E-04	--	--
PFO2HxA	1.0E-03	1.6E-07	1.6E-05	2.7E-07	3.8E-02	NA	1.0E-03	NA	1.0E-03	2.8E-05	2.8E-05	--	--
PFO3OA	1.0E-03	1.6E-07	6.4E-06	1.1E-07	1.1E-03	NA	1.0E-03	NA	1.0E-03	2.8E-05	2.8E-05	--	--
PFO4DA	1.0E-03	1.6E-07	2.3E-06	3.9E-08	1.7E-03	NA	1.0E-03	NA	4.1E-02	1.1E-03	1.1E-03	--	--
PFO5DA	1.0E-03	1.6E-07	2.0E-06	3.4E-08	1.5E-03	NA	1.0E-03	NA	3.1E-03	8.5E-05	8.6E-05	--	--
PMPA	1.0E-03	1.6E-07	1.9E-05	3.3E-07	6.6E-02	NA	1.0E-03	NA	1.9E-03	5.2E-05	5.3E-05	--	--
PEPA	1.0E-03	1.6E-07	2.0E-05	3.4E-07	1.2E-02	NA	1.0E-03	NA	1.0E-03	2.8E-05	2.8E-05	--	--
Byproduct 4	1.0E-03	1.6E-07	7.4E-06	1.3E-07	3.3E-03	NA	1.0E-03	NA	6.4E-03	1.8E-04	1.8E-04	--	--
Byproduct 5	1.0E-03	1.6E-07	9.2E-06	1.6E-07	1.0E-03	NA	1.0E-03	NA	1.0E-03	2.8E-05	2.8E-05	--	--
NVHOS	1.0E-03	1.6E-07	6.8E-06	1.2E-07	3.4E-02	NA	1.0E-03	NA	1.0E-03	2.8E-05	2.8E-05	--	--
R-EVE	1.0E-03	1.6E-07	3.3E-06	5.7E-08	2.8E-03	NA	1.0E-03	NA	2.7E-03	7.4E-05	7.5E-05	--	--

[1] Soil and diet item exposure point concentration (EPC) are presented in Table 4.20

[2] Media-specific Total Daily Dose (TDI) is calculated using the following general equation and receptor specific parameters in Table 3.9:

$TDI_{i,copc}$ = (EPC_{copc} x RB x FIR x P_i) + (DWI x EPC) x AUF x (1/BW), *where:*

Variable Name	*Units*	*Variable Description*
TDI_i	mg/kg-day	Total Daily Intake for Dietary Item "*i*" for COPC
EPC_{copc}	mg/kg dw or mg/L	Exposure Point Concentration for each media
RB	unitless	Relative Bioavailability (only for soil portion of diet; assumed to be 1 for all chemicals)
P_{veg}	proportion	Proportion of Diet -- Vegetation
P_{inv}	proportion	Proportion of Diet -- Invertebrates
P_{fish}	proportion	Proportion of Diet -- Fish
P_{so}	proportion	Proportion of Diet -- Soil
FIR	kg/day	Daily Food Ingestion
DWI	L/day	Daily Drinking Water Ingestion Rate
AUF	proportion	Area Use Factor
BW	kg	Body Weight

[3] HQ = TDI/TRV; HQ greater than 1 are shown in **Bold**

HQ = Hazard Quotient (unitless)

TDI = Total Daily Intake (mg/kg-day)

Abbreviations:

dw - dry weight
kg - kilogram
kg/day - kilogram per day
L/day - litre per day
mg/kg - milligram per kilogram
mg/L - milligram per litre
SOP - Standard Operating Procedure
TRV - Toxicity Reference Value

TABLE 4-23
SUMMARY OF HAZARD QUOTIENTS FOR HFPO-DA
Chemours Fayetteville Works, North Carolina

Exposure Unit	Receptor	HQ
Onsite Terrestrial EU	Terrestrial Invertebrates	2E-01
	Terrestrial Plants	2E-01
	Bobwhite Quail	4E-05
	Woodcock	2E-04
	Eastern Cottontail Rabbit	1E-02
	Southern Short-tailed Shrew	2E-02
Offsite Terrestrial EU	Terrestrial Invertebrates	4E-02
	Terrestrial Plants	4E-02
	Bobwhite Quail	3E-05
	Woodcock	4E-05
	Eastern Cottontail Rabbit	1E-02
	Southern Short-tailed Shrew	4E-03
Aquatic EU	Benthic Invertebrates	5E-04
	Aquatic Life	9E-06
	Aquatic Plant	8E-08
	Wood Duck	6E-05
	Mallard Duck	2E-06
	Great Blue Heron	5E-06
	Muskrat	2E-02
	Mink	4E-04
	River Otter	1E-04

Abbreviations:
EU - Exposure Unit
HQ - Hazard Quotient

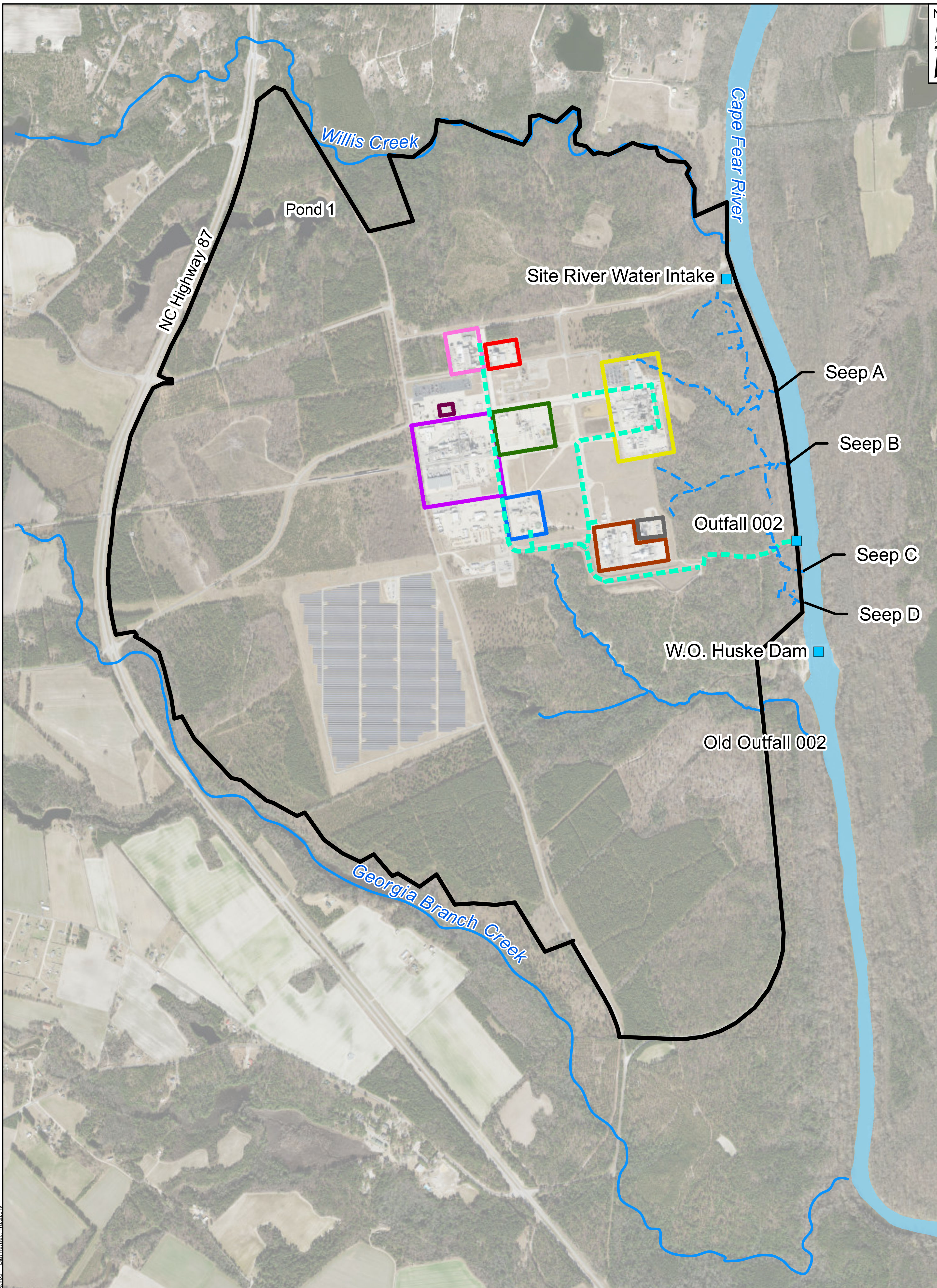
TABLE 4-24
SUMMARY OF WET TESTING RESULTS
Chemours Fayetteville Works, North Carolina

Test	Date	% Mortality	Average Reproduction	Pass/Fail	Organism Tested	24hr composite sample	LC50?
Chronic	2/18/2016	0	25.67	Pass	*Ceriodaphnia dubia*	yes	NT
Chronic	5/19/2016	0	24.92	Pass	*Ceriodaphnia dubia*	yes	NT
Chronic	8/17/2016	0	22.33	Pass	*Ceriodaphnia dubia*	yes	NT
Chronic	12/22/2016	0	19.5	Pass	*Ceriodaphnia dubia*	yes	NT
Chronic	2/23/2017	0	24.42	Pass	*Ceriodaphnia dubia*	yes	NT
Chronic	5/18/2017	0	23.08	Pass	*Ceriodaphnia dubia*	yes	NT
Chronic	8/23/2017	0	23.67	Pass	*Ceriodaphnia dubia*	yes	NT
Chronic	11/22/2017	0	21.58	Pass	*Ceriodaphnia dubia*	yes	NT
Chronic	2/22/2018	8.33	21.5	Pass	*Ceriodaphnia dubia*	yes	NT
Chronic	5/24/2018	8.33	22.33	Pass	*Ceriodaphnia dubia*	yes	NT
Chronic	8/29/2018	0	25	Pass	*Ceriodaphnia dubia*	yes	NT
Chronic	11/20/2018	0	22.58	Pass	*Ceriodaphnia dubia*	yes	NT
Chronic	2/21/2019	0	25.67	Pass	*Ceriodaphnia dubia*	yes	NT

Notes:
All values obtained from effluent toxicity reports (Feb 2016-Nov 2018).
Organisms were exposed to 3.3% effluent.
Values from treatments, not controls, are reported in this table.
Abbreviations:
LC50 - Lethal concentration to 50% of population.
NT - Not tested; LC50 was not calculated in these tests due to lack of concern from chronic exposures.
hr - Hour.
% - Percent.
WET - Whole Effluent Toxicity

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

FIGURES



Legend

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

Areas at Site

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

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

2,000 1,000 0 2,000 Feet

Site Location Map

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

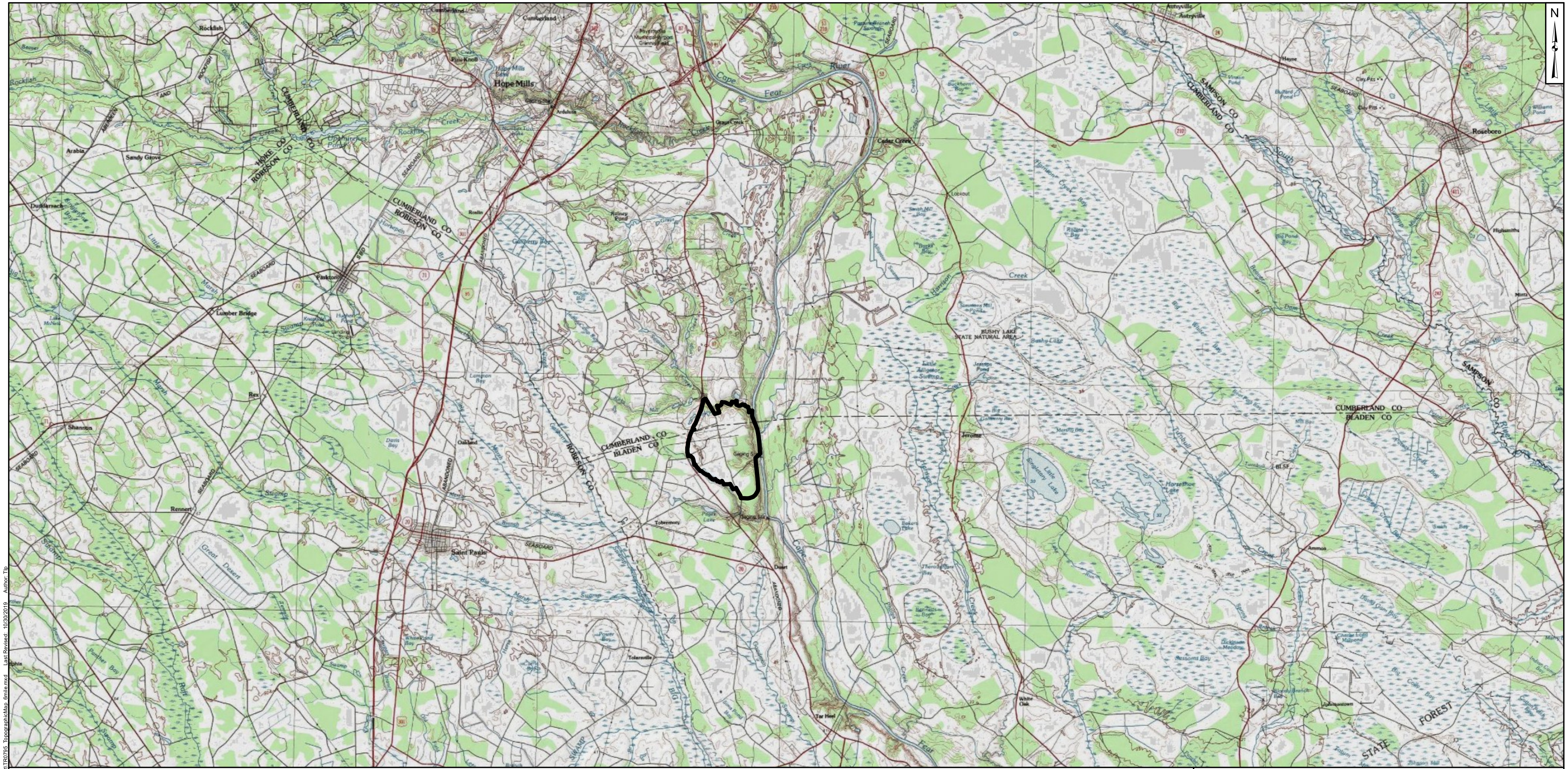
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Raleigh | December 2019

Figure 2-1

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\SLEA\TR0795_ECO_Site_Location_Figure.mxd Last Revised: 11/28/2019

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



Legend

Site Boundary

Notes:
1. For topographic map symbols, please refer to this document: https://pubs.usgs.gov/gip/TopographicMapSymbols/topomapsymbols.pdf
2. Basemap source: © 2013 National Geographic Society, i-cubed

2 1 0 2 Miles

Regional Topographic Map

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure

2-2

Raleigh

November 2019

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_TopographicMap_6mile.mxd Last Revised: 10/30/2019 Author: Tlp

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

Legend

- Offsite Terrestrial EU Boundary
- Onsite Terrestrial EU Boundary
- Aquatic EU Area

Notes:
EU = Exposure Unit
SLEA = Screening Level Exposure Assessment
1. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
2. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

Ecological SLEA Exposure Units

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

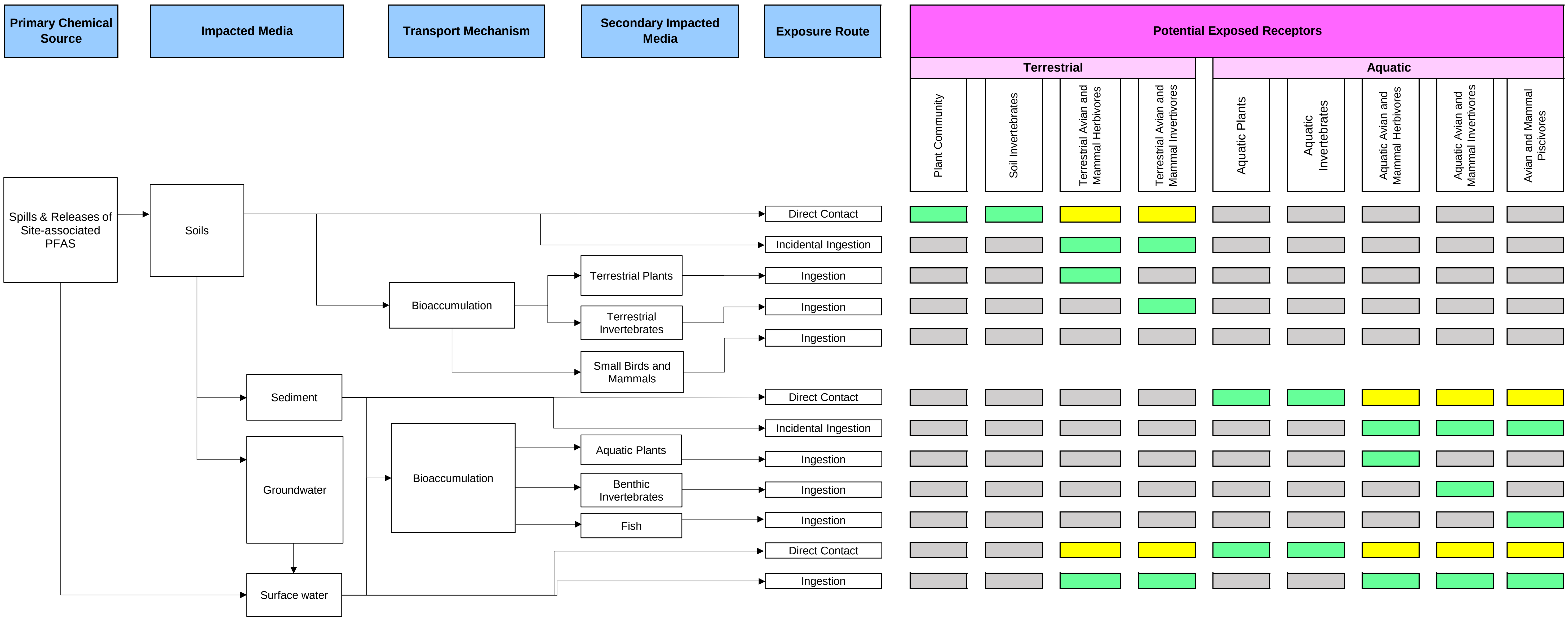
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Raleigh | December 2019

Figure **2-3**

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\SLEA\TR0795_ECO_Ecological_SLEA_Exposure_Units_Figure.mxd Last Revised: 11/28/2019

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



Notes:

- (green) Complete exposure pathway proposed for quantitative evaluation of intake.
- (yellow) Potentially complete, but insignificant pathway.
- (grey) Incomplete exposure pathway; no evaluation or management action is necessary.

Ecological Conceptual Site Model

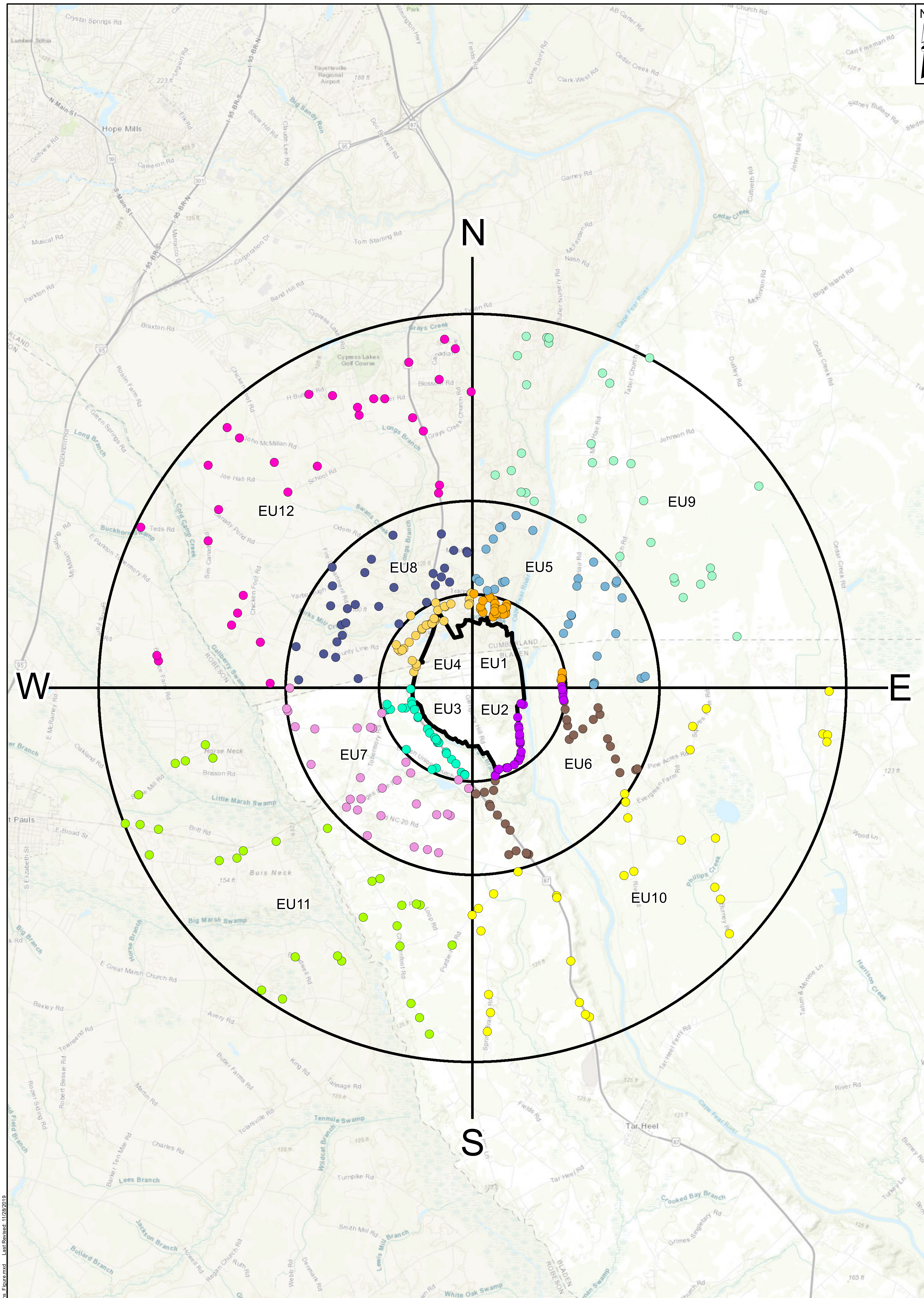
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | November 2019

Figure 2-4



Legend

EU Surface ISM Soil Location and Increment Counts

EU1 (31)	EU5 (30)	EU9 (31)	Site Boundary
EU2 (31)	EU6 (31)	EU10 (31)	
EU3 (31)	EU7 (30)	EU11 (31)	
EU4 (31)	EU8 (30)	EU12 (31)	

Notes:

EU = Exposure Unit

ISM = Incremental Sampling Methodology

1. Each point represents a single ISM subsample which was composited into a single sample for each EU.
2. Black lines represent cardinal directions (N, E, S, W).
3. Basemap Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community.

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

2 1 0 2 Miles

Offsite Soil Sampling Locations

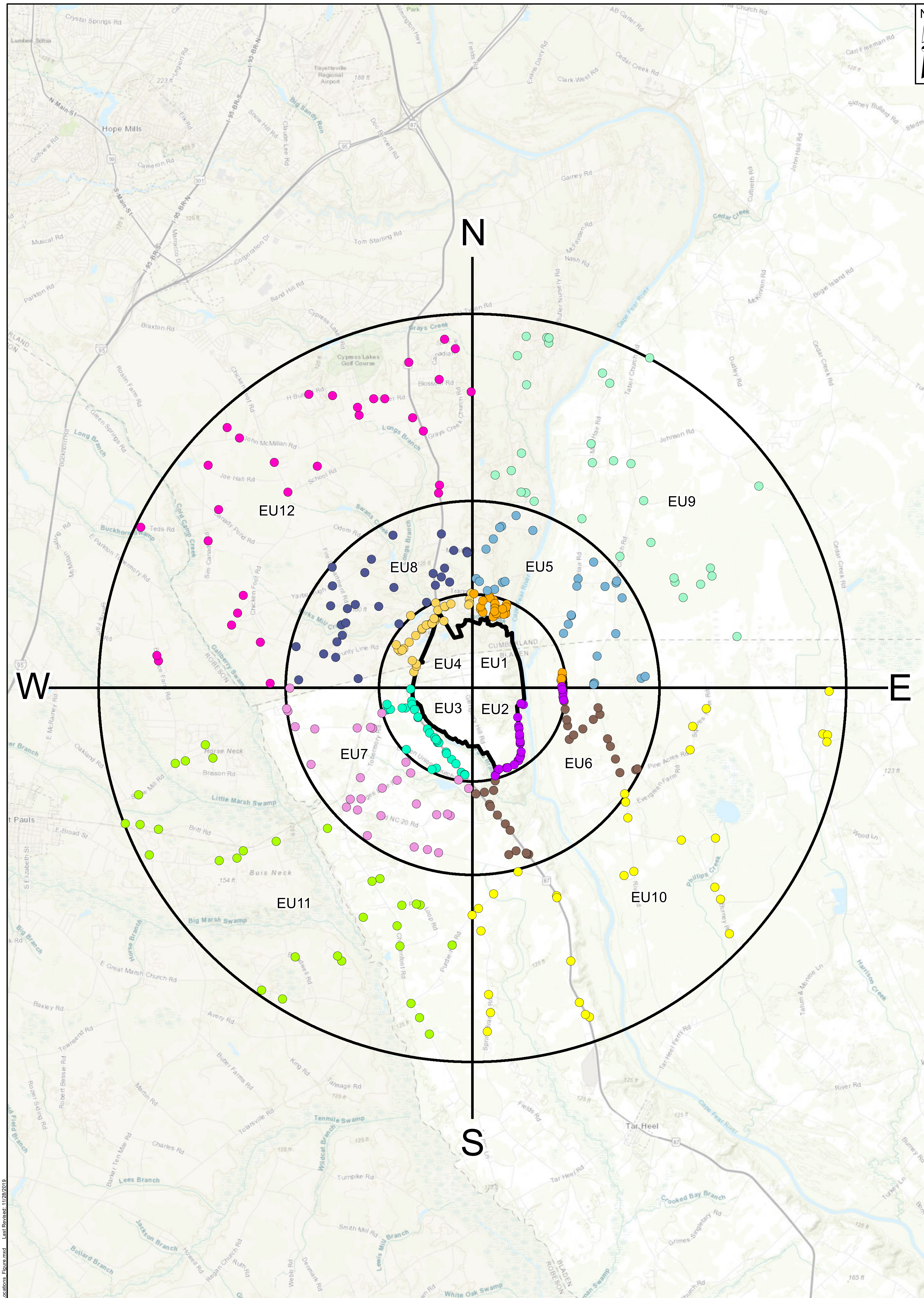
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | December 2019

Figure 3-1



Legend

EU Vegetation Sample Location and Increment Counts

- EU1 (31)
- EU2 (31)
- EU3 (31)
- EU4 (31)
- EU5 (30)
- EU6 (31)
- EU7 (30)
- EU8 (30)
- EU9 (31)
- EU10 (31)
- EU11 (31)
- EU12 (31)
- Site Boundary

Notes:

EU = Exposure Unit

SM = Incremental Sampling Methodology

1. Each point represents a single ISM subsample which was composited into a single sample for each EU.
2. Black lines represent cardinal directions (N, E, S, W).
3. Basemap Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community.

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

2 1 0 2 Miles

Offsite Vegetation Sampling Locations

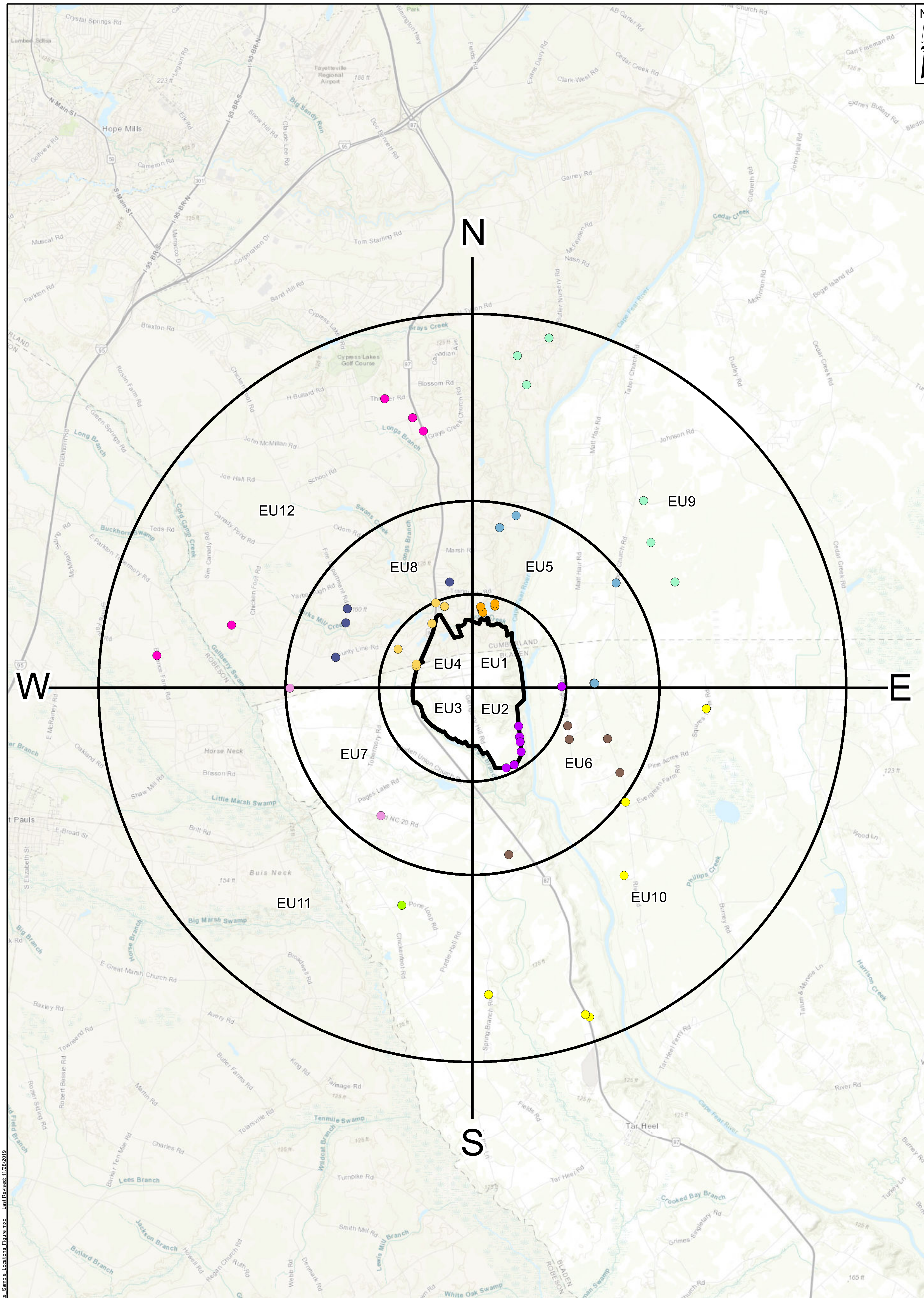
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | December 2019

Figure 3-2



2 1 0 2 Miles

Legend

EU Terrestrial Invertebrate Sample Location and Increment Counts

- EU1 (5)
- EU2 (7)
- EU3 (0)
- EU4 (6)
- EU5 (5)
- EU6 (5)
- EU7 (2)
- EU8 (4)
- EU9 (6)
- EU10 (6)
- EU11 (1)
- EU12 (5)
- Site Boundary

Notes:
EU = Exposure Unit
ISM = Incremental Sampling Methodology
1. Each point represents a single ISM subsample which was composited into a single sample for each EU.
2. Black lines represent cardinal directions (N, E, S, W).
3. Basemap Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community.

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

Offsite Terrestrial Invertebrate Sampling Locations

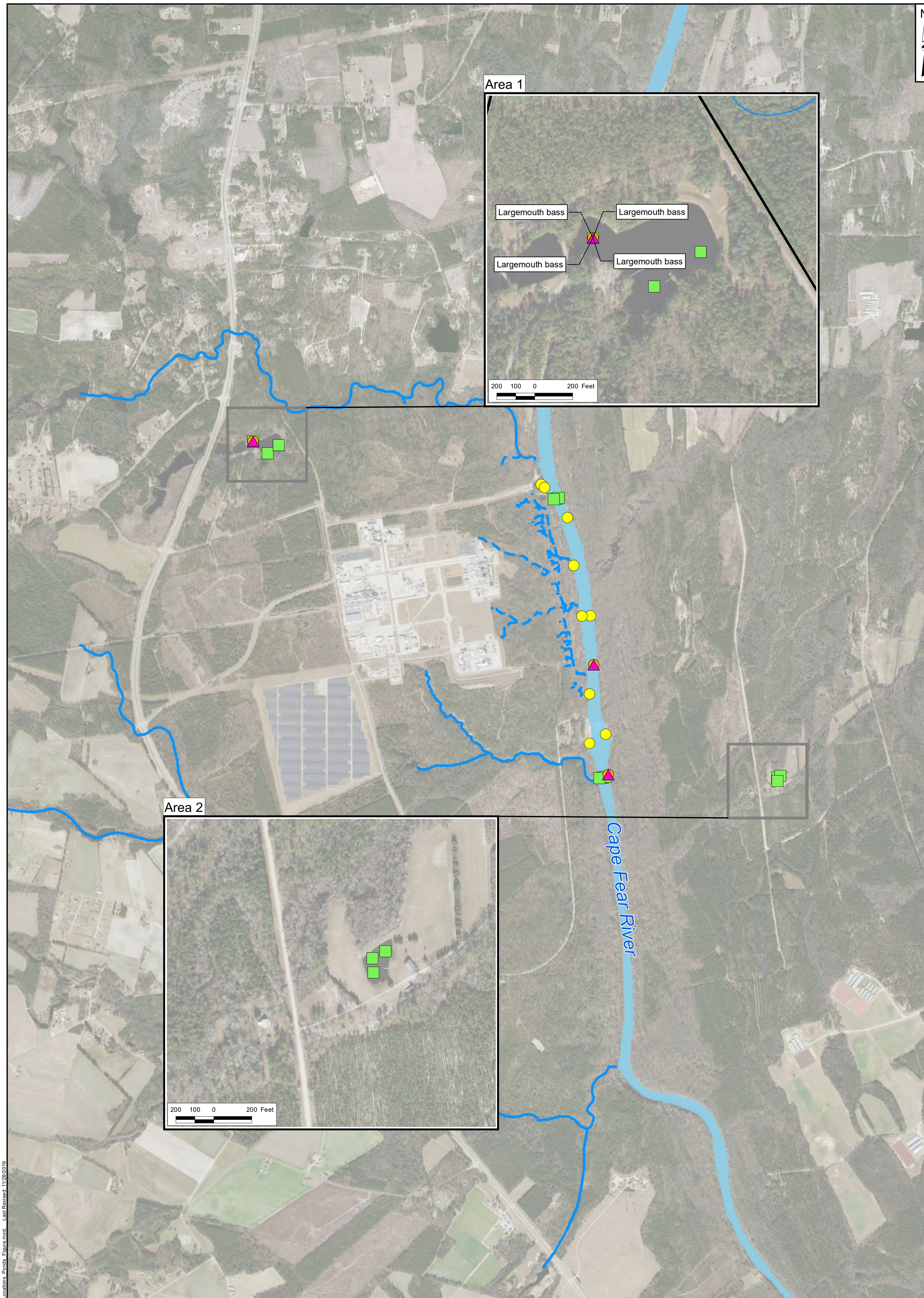
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | December 2019

Figure 3-3



Legend

- Fillet
- Fillet and Carcass
- Surface Water
- Whole Body
- Site Boundary
- Observed Seep
- Nearby Tributary

Notes:
1. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
2. Aerial Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

2,000 1,000 0 2,000 Feet

Onsite and Offsite Pond Sampling Locations

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

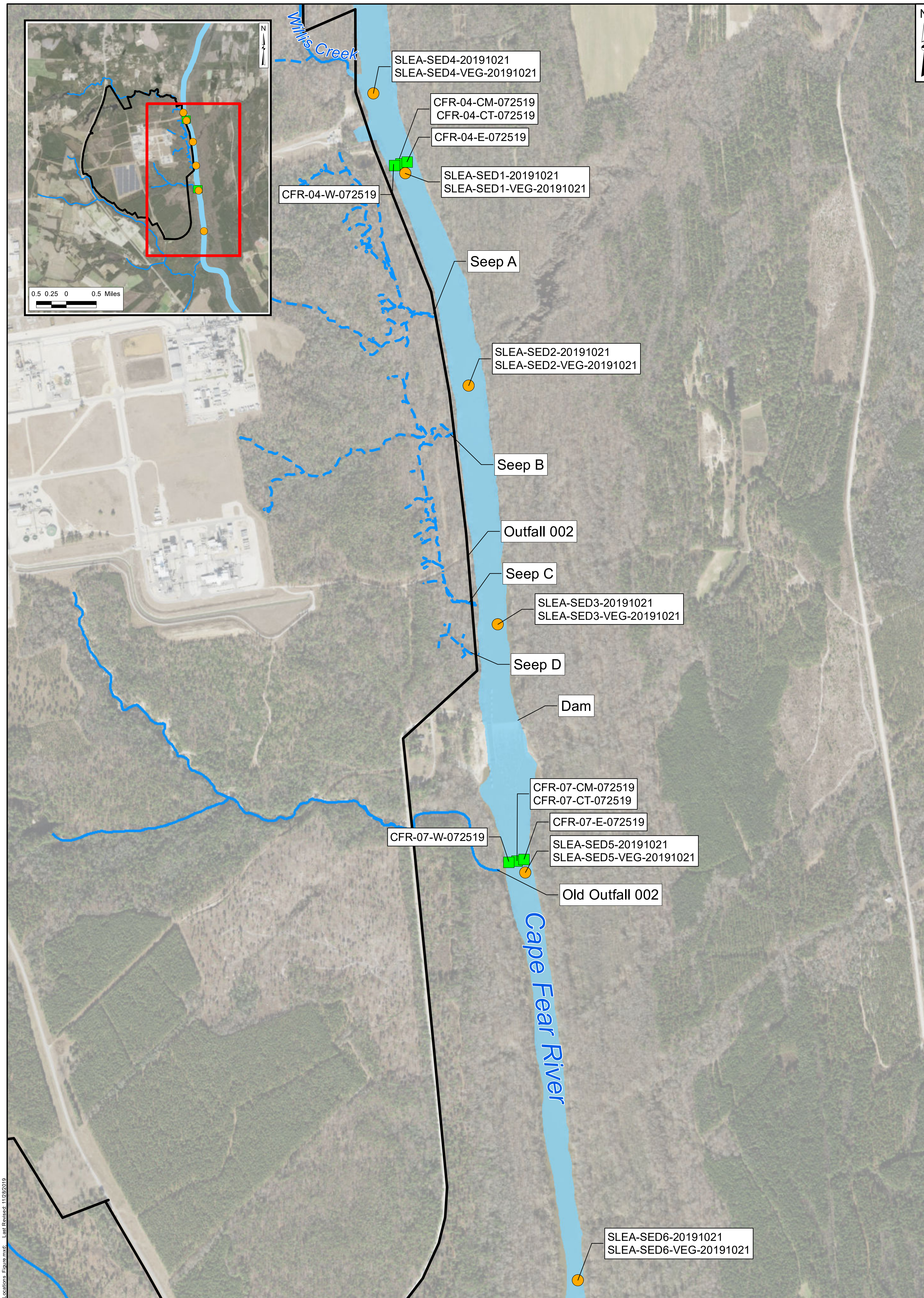
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Raleigh | December 2019

Figure 3-4

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\SLEA\TR0795_ECO_Fish_SW_Sample_Locations_Ponds_Figure.mxd; Last Revised: 11/28/2019

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



Legend

- Sediment and Aquatic Vegetation Sample Locations
- Surface Water Sample Locations
- Site Boundary
- Observed Seep
- Nearby Tributary

Notes:
CFR = Cape Fear River
SED = Sediment
SLEA = Screening Level Exposure Assessment
VEG = Vegetation
1. Sediment samples were collected as a three point composite around the sampling location.
2. Aquatic vegetation samples were collected from surface water and near shore areas around each sampling location.
3. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
4. Aerial 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

Cape Fear River Surface Water, Sediment and Aquatic Vegetation Sampling Locations

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

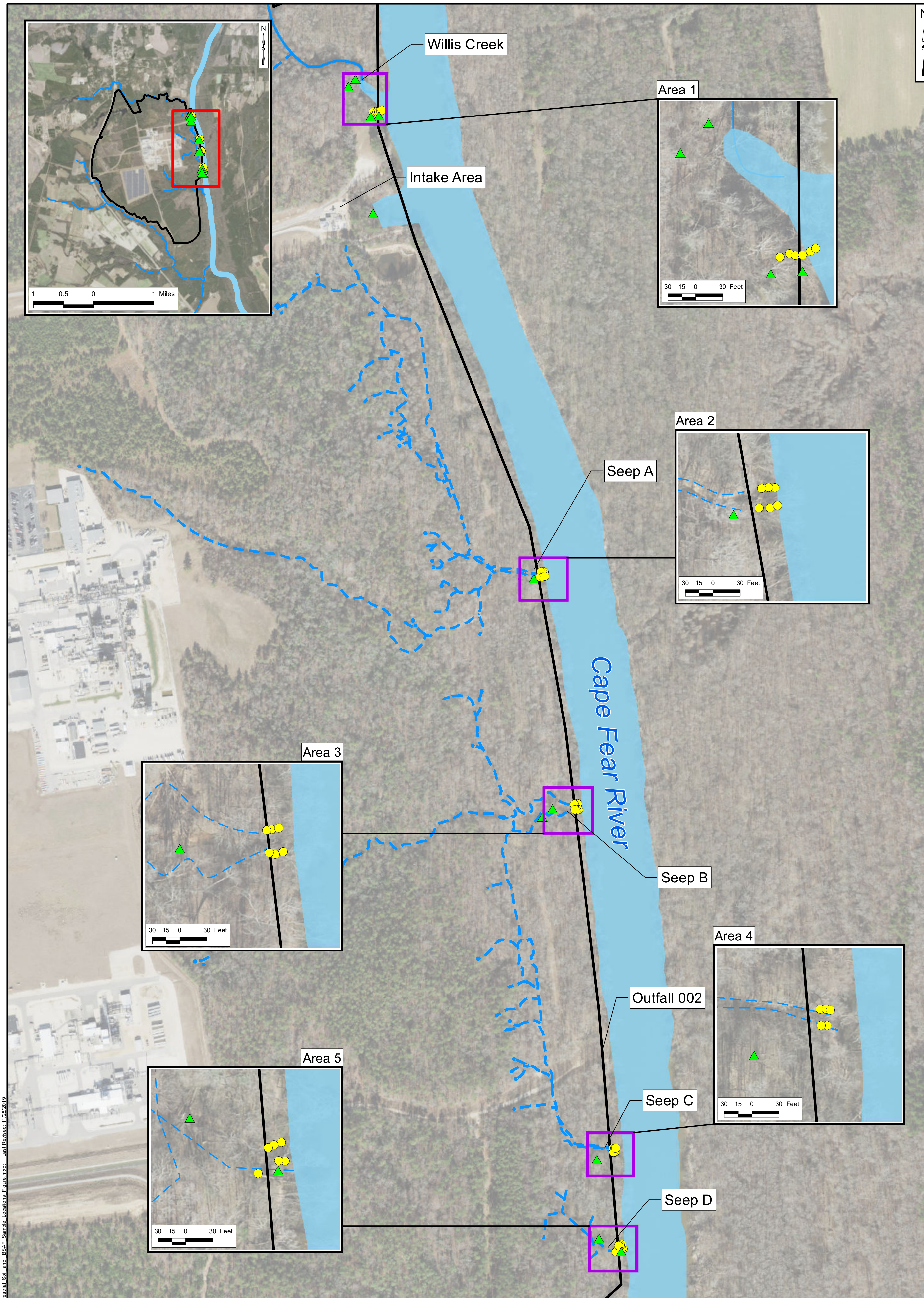
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Raleigh | December 2019

Figure 3-5

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\SLEA\TR0795 ECO Sediment Sample Locations Figure.mxd; Last Revised: 11/28/2019

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



Legend

- ▲ Soil and Worm Co-located Sample for BSAF Calculation
- ● Soil Subsample for Spatial Composite
- Site Boundary
- Observed Seep
- Nearby Tributary

500 250 0 500 Feet

Onsite Soil and BSAF Sample locations

Chemours Fayetteville Works, North Carolina

Notes:
BSAF = Biota-Soil Accumulation Factor
1. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
2. Aerial Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

Geosyntec consultants

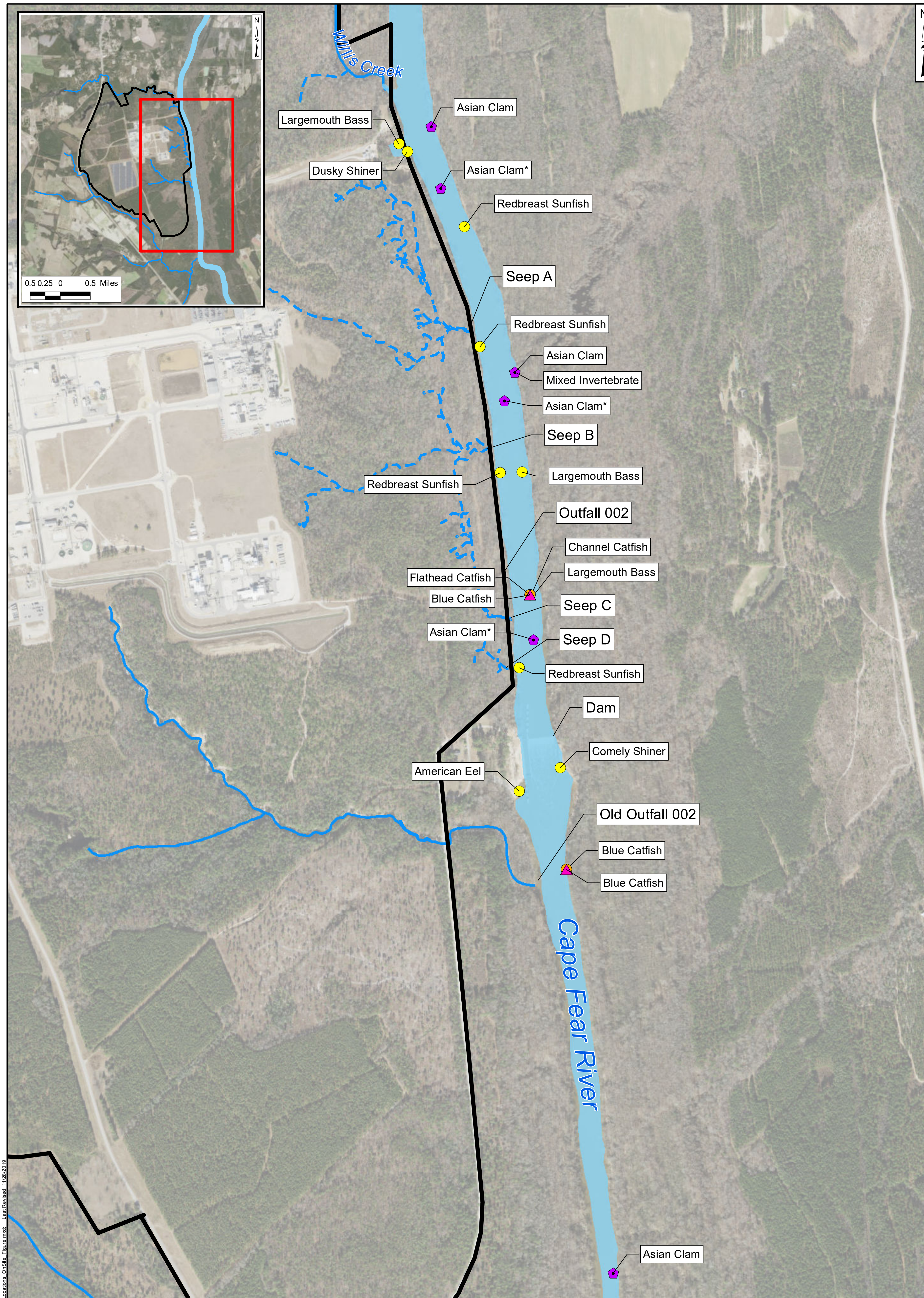
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Raleigh | December 2019

Figure 3-6

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\SLEA\TR0795 ECO OnSite OnSite Terrestrial Soil and BSAF Sample Locations Figure.mxd; Last Revised: 11/28/2019

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



Legend

- Fillet
- Fillet and Carcass
- Whole Body
- Benthic Inverts AC Sample Locations
- Site Boundary
- Observed Seep
- Nearby Tributary

Notes:
* = Asian clam samples denoted with an asterisk were combined into a single composite sample to meet tissue mass requirements
1. In addition to the samples shown on this figure, one upstream (MM-68) and one downstream (CFR-09) samples were used to estimate fillet to whole body ratios.
2. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
3. Aerial Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

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

1,000 500 0 1,000 Feet

Cape Fear River Fish and Invertebrate Sampling Locations

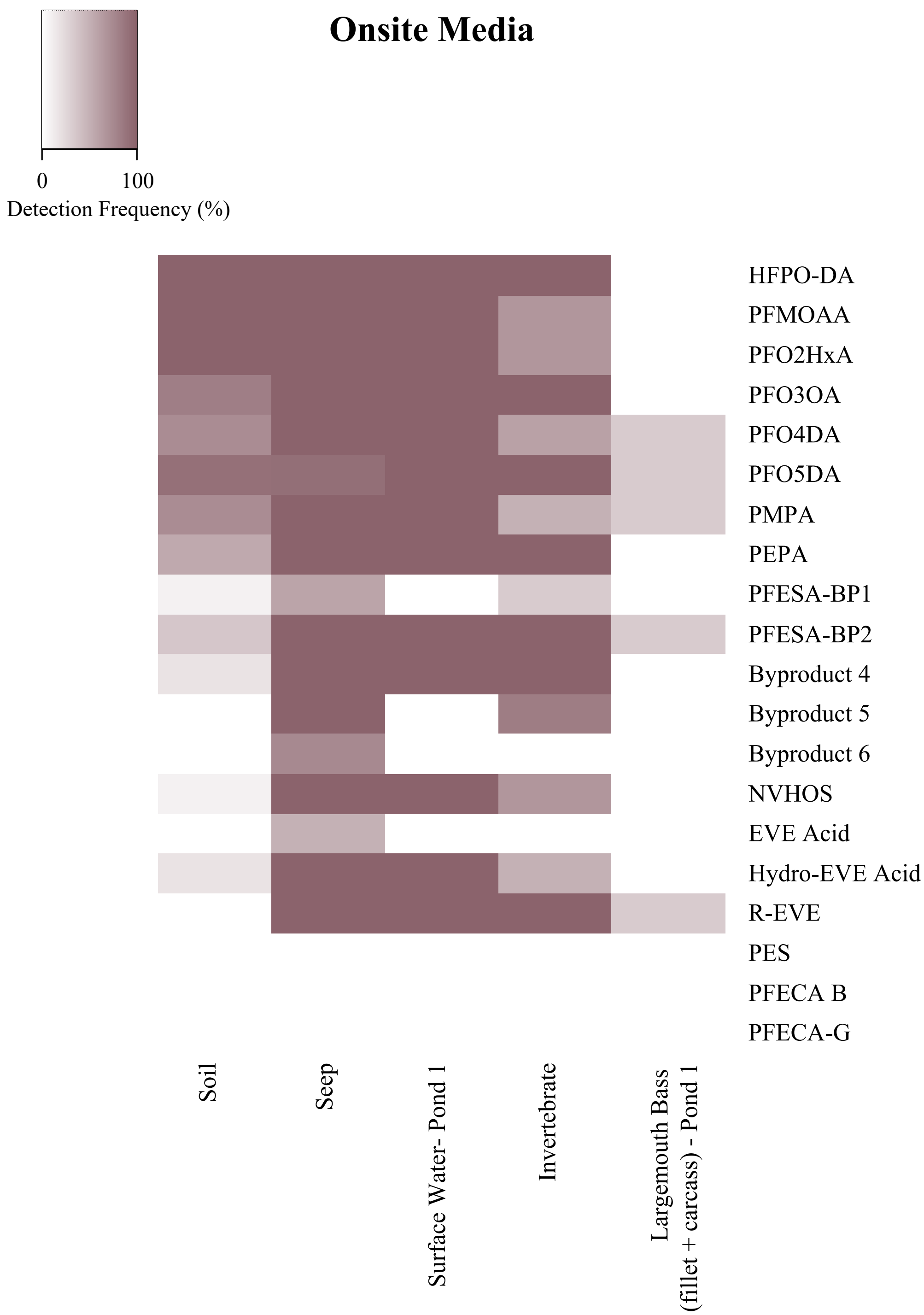
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | December 2019

Figure 3-7



Detection Frequency by Media - Onsite Terrestrial Exposure Unit

Chemours Fayetteville Works, North Carolina

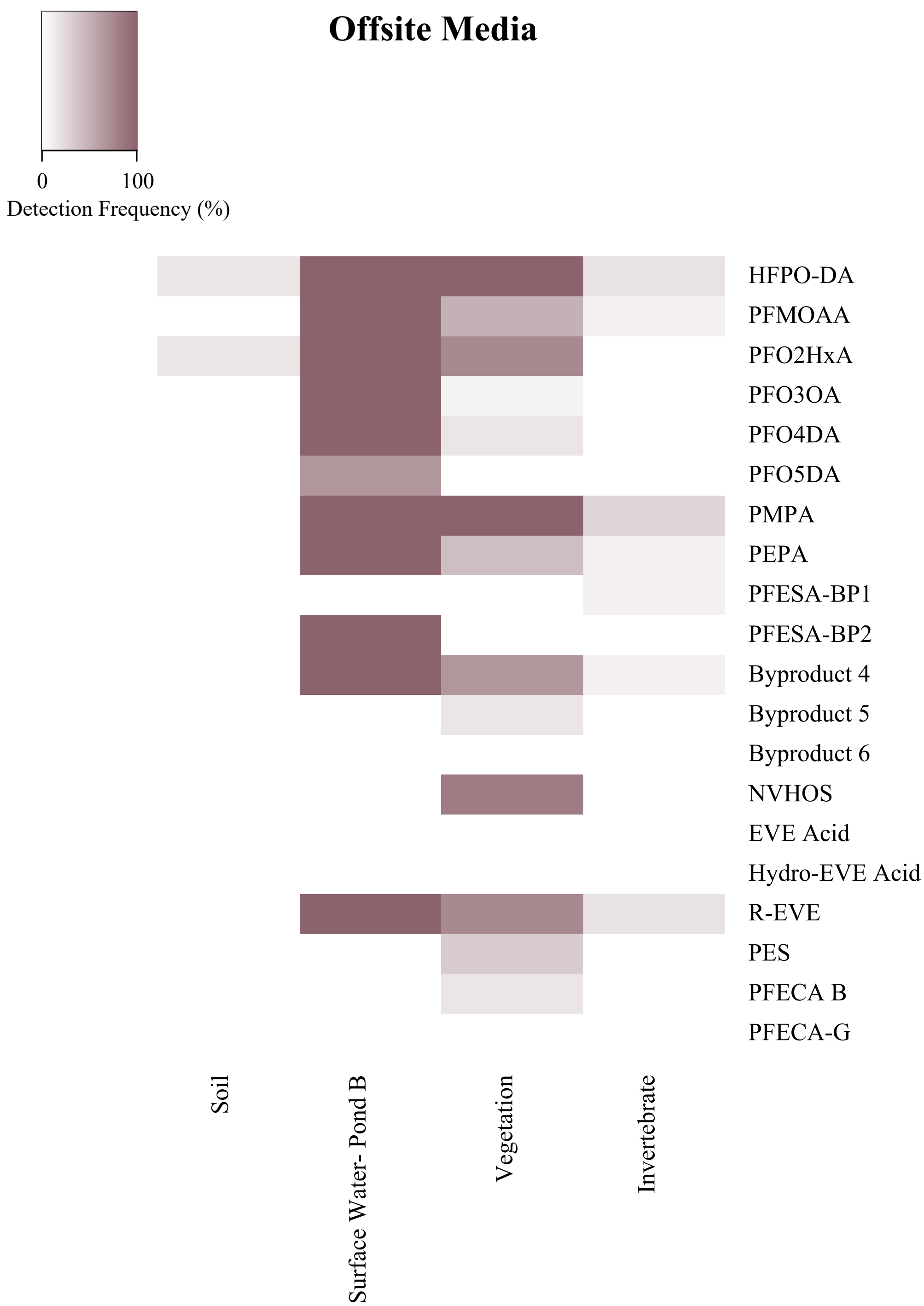
Geosyntec consultants

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

Raleigh | December 2019

Figure 4-1

"P:\PRJ\Projects\TR0795\Database and GIS\Illustrator\SLEA\Detection Frequency ECO SLEA\Figure 4-1 Detection Frequency Onsite Terr EU.ai"



"P:\PRJ\Projects\TR0795\Database and GIS\Illustrator\SLEA\Detection Frequency ECO SLEA\Figure 4-1 Detection Frequency Onsite Terr EU.ai"

Detection Frequency by Media -
Offsite Terrestrial Exposure Unit

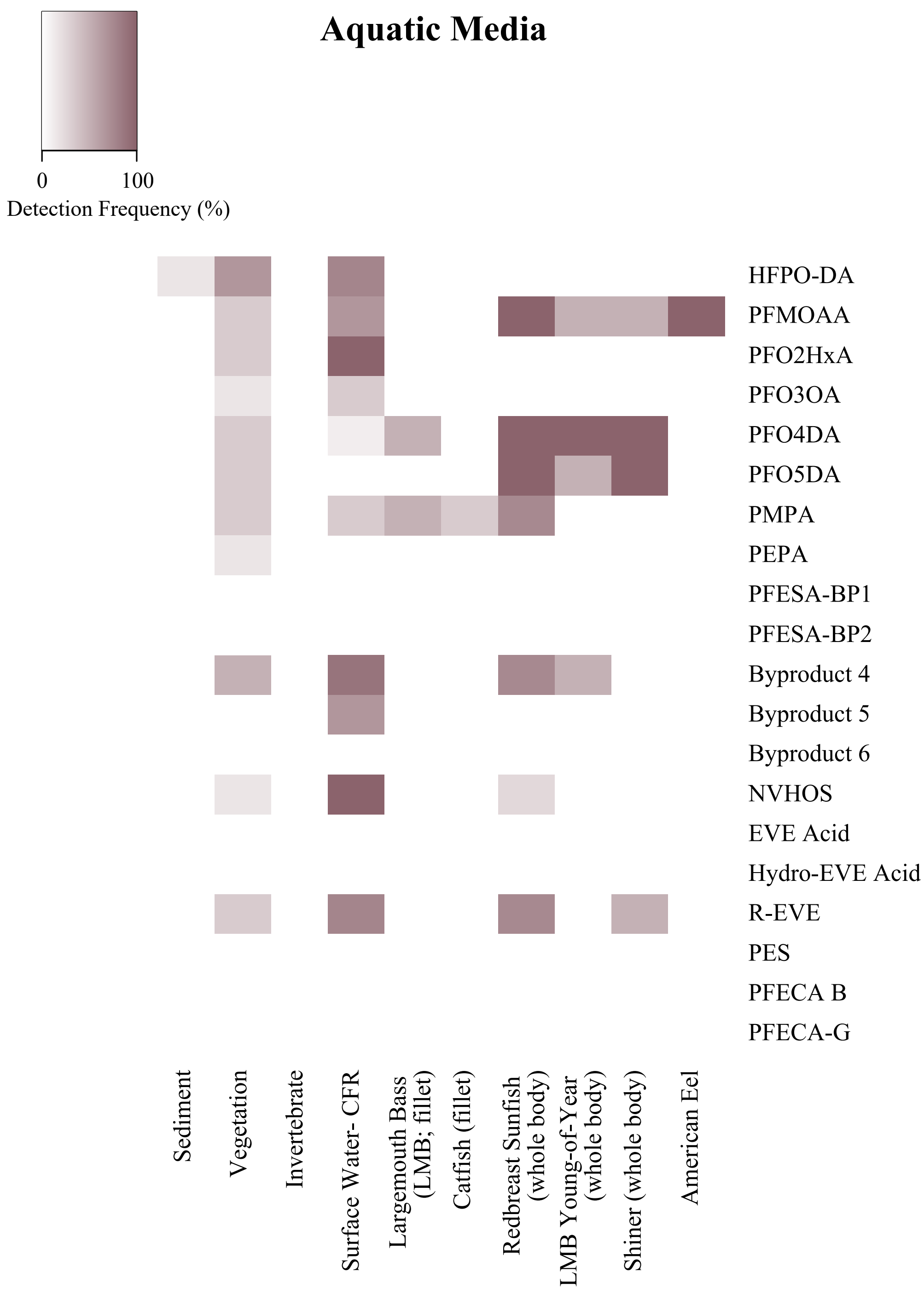
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure **4-2**

Raleigh | December 2019



Detection Frequency by Media - Aquatic Exposure Unit

Chemours Fayetteville Works, North Carolina

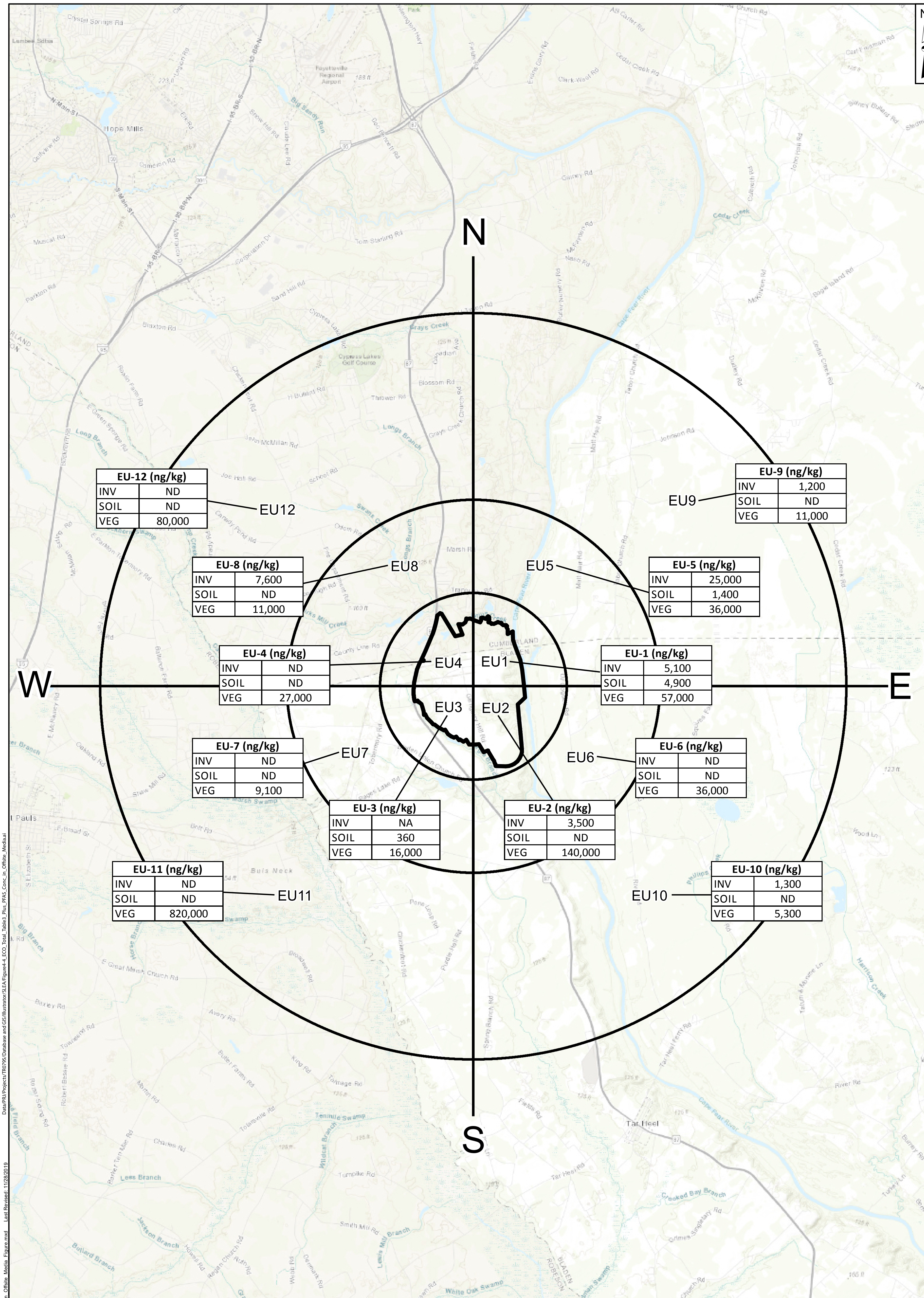
Geosyntec consultants

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

Figure **4-3**

Raleigh | December 2019

"P:\PRJ\Projects\TR0795\Database and GIS\Illustrator\SLEA\Detection Frequency ECO SLEA\Figure4-3 Detection Frequency Aquatic EU.ai"



Legend

Site Boundary

Exposure Unit → EU-1 (ng/kg)

Composite Sample Media →

INV	5,100	← Results
SOIL	4,900	
VEG	57,000	

2 1 0 2 Miles

Notes:
ng/kg = nanograms per kilogram
EU = Exposure Unit
INV = Invertebrate
ISM = Incremental Sampling Methodology
NA = Not applicable
ND = Non-detect
VEG = Vegetation
1. Each point represents a single ISM subsample which was composited into a single sample for each EU.
2. All results in nanograms per kilogram (ng/kg).
3. Total Table 3+ PFAS result does not include non-detect values.
4. Black lines represent cardinal directions (N, E, S, W).
5. Basemap Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community.

Total Table 3+ PFAS Concentrations in Offsite Media

Chemours Fayetteville Works, North Carolina

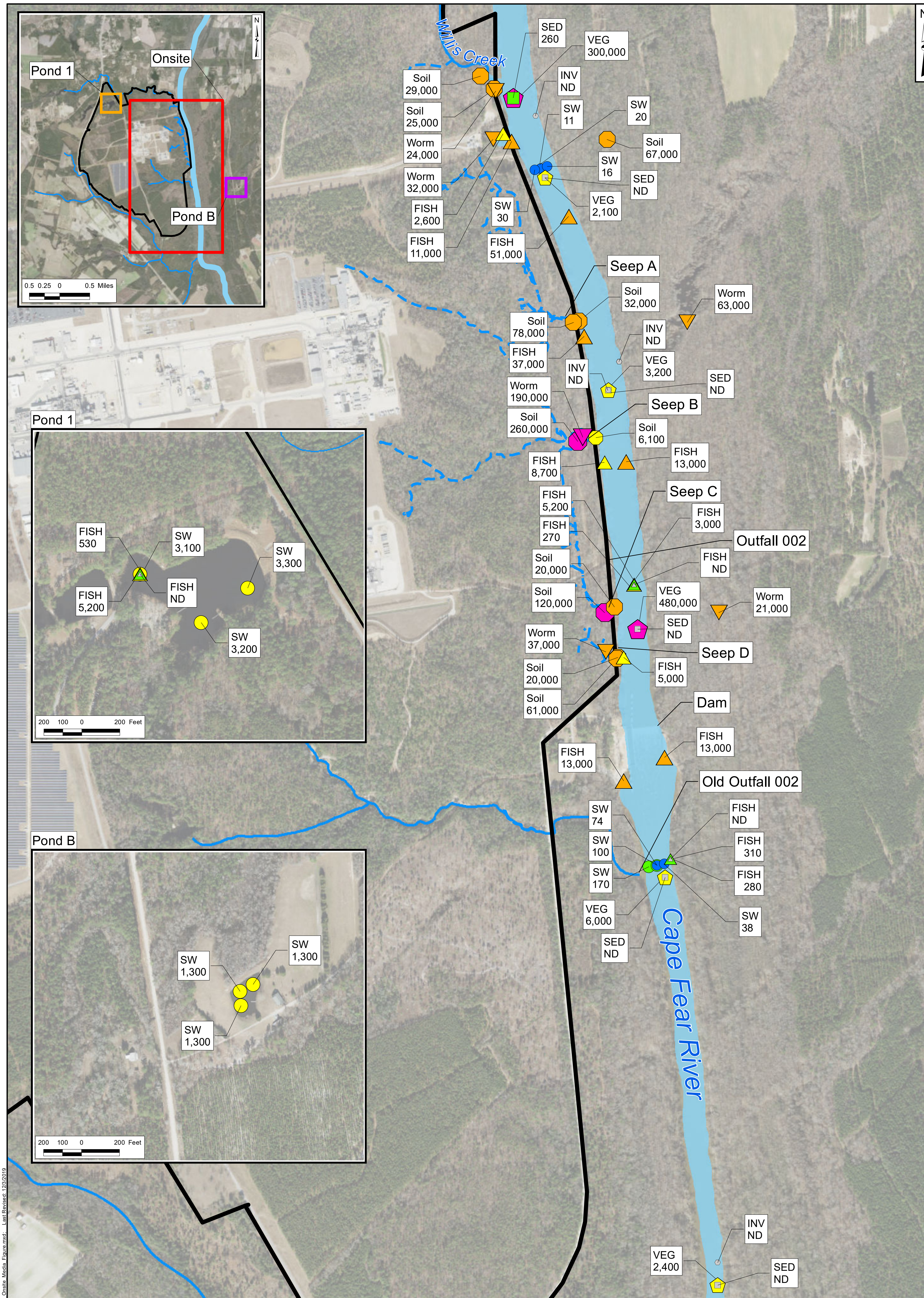
Geosyntec consultants

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

Raleigh | December 2019

Figure 4-4

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



Legend

Well Media

- △ Fish (ng/kg, ww)
- ⬡ Terrestrial Invertebrate (ng/kg, ww)
- □ Sediment (ng/kg, dw)
- ○ Surface Water (ng\L)
- ⬡ Soil (ng/kg, dw)
- △ Vegetation (ng/kg, ww)
- ▽ Worm (ng/kg, ww)

Concentration (ng/kg) and (ng/L)

- ND
- < 10
- 10 - 100
- 100 - 1,000
- 1,000 - 10,000
- 10,000 - 100,000
- 100,000 - 1,000,000
- > 1,000,000

- Site Boundary
- Observed Seep
- Nearby Tributary

Notes:
ng/kg = nanograms per kilogram
ng/L = nanograms per liter
INV = Invertebrate
ND = Non-detect
SED = Sediment
SW = Surface Water
VEG = Vegetation
dw= dry weight
ww = wet weight

1. All results in nanograms per kilogram (ng/kg) or nanograms per liter (ng/L).
2. Total Table 3+ PFAS result does not include non-detect values.
3. The outline of the River shown on this figure is approximate (River outline based on compilation of open data sources from ArcGIS online service and North Carolina Department of Environmental Quality Online GIS - Major Hydro shapefile).
4. Aerial 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

Total Table 3+ PFAS Concentrations in Onsite and Aquatic Media

Chemours Fayetteville Works, North Carolina

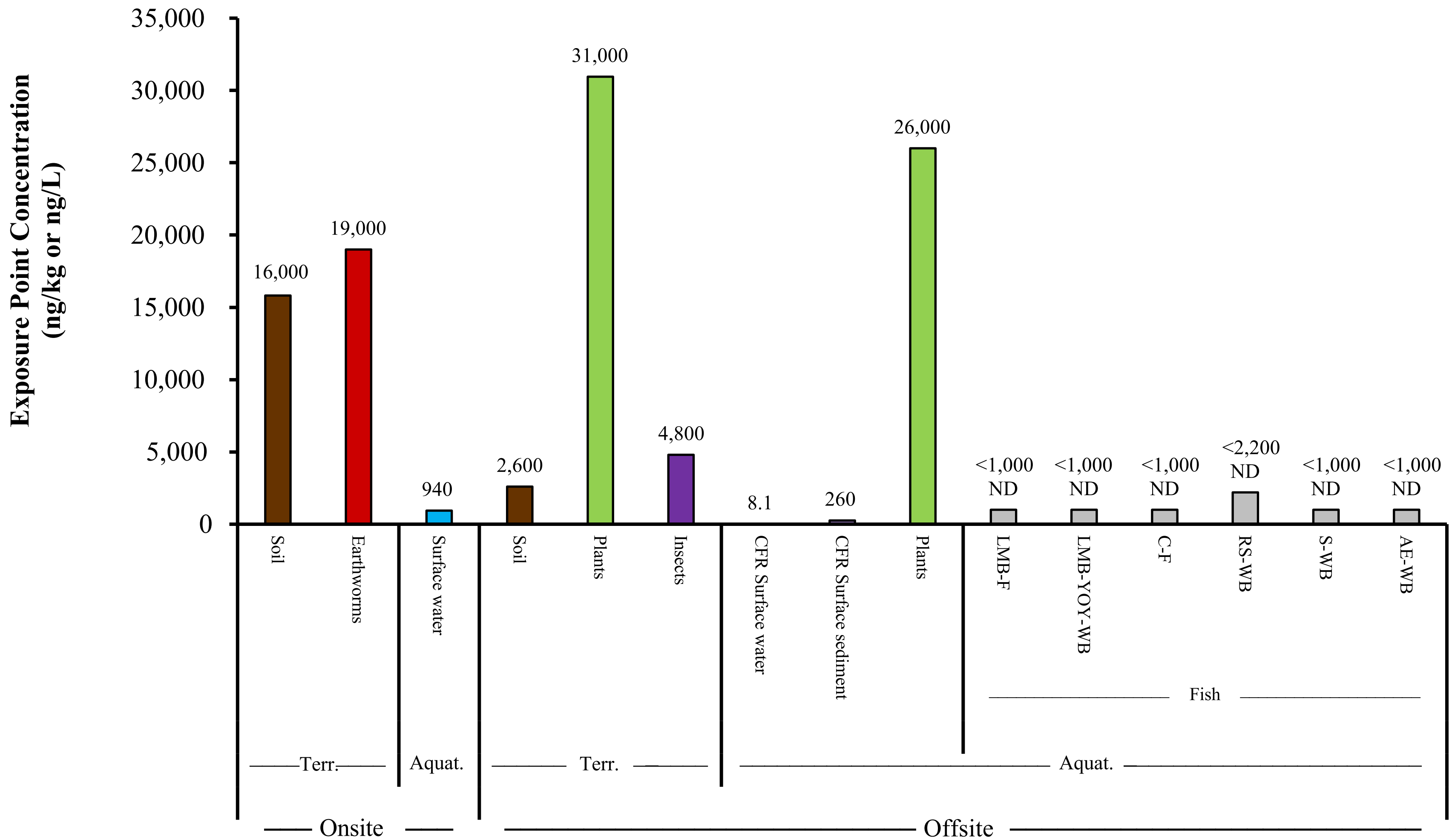
Geosyntec consultants

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

Raleigh | December 2019

Figure 4-5

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



Definitions:

EPC = Exposure Point Concentration
Terr. = Terrestrial EPC
Aquat. = Aquatic EPC
LMB-F = Largemouth bass fillet EPC
LMB-YOY-WB = Largemouth bass young-of-year whole body EPC
C-F = Catfish fillet EPC
RS-WB = Redbreast sunfish whole body EPC
S-WB = Shiner whole body EPC
AE-WB = American eel whole body EPC
ng/kg = nanogram per kilogram
ng/L - nanogram per liter
Surface water = ng/L
Soil, sediment, tissue = ng/kg

Exposure Point Concentrations by Media for All Exposure Units - HFPO-DA

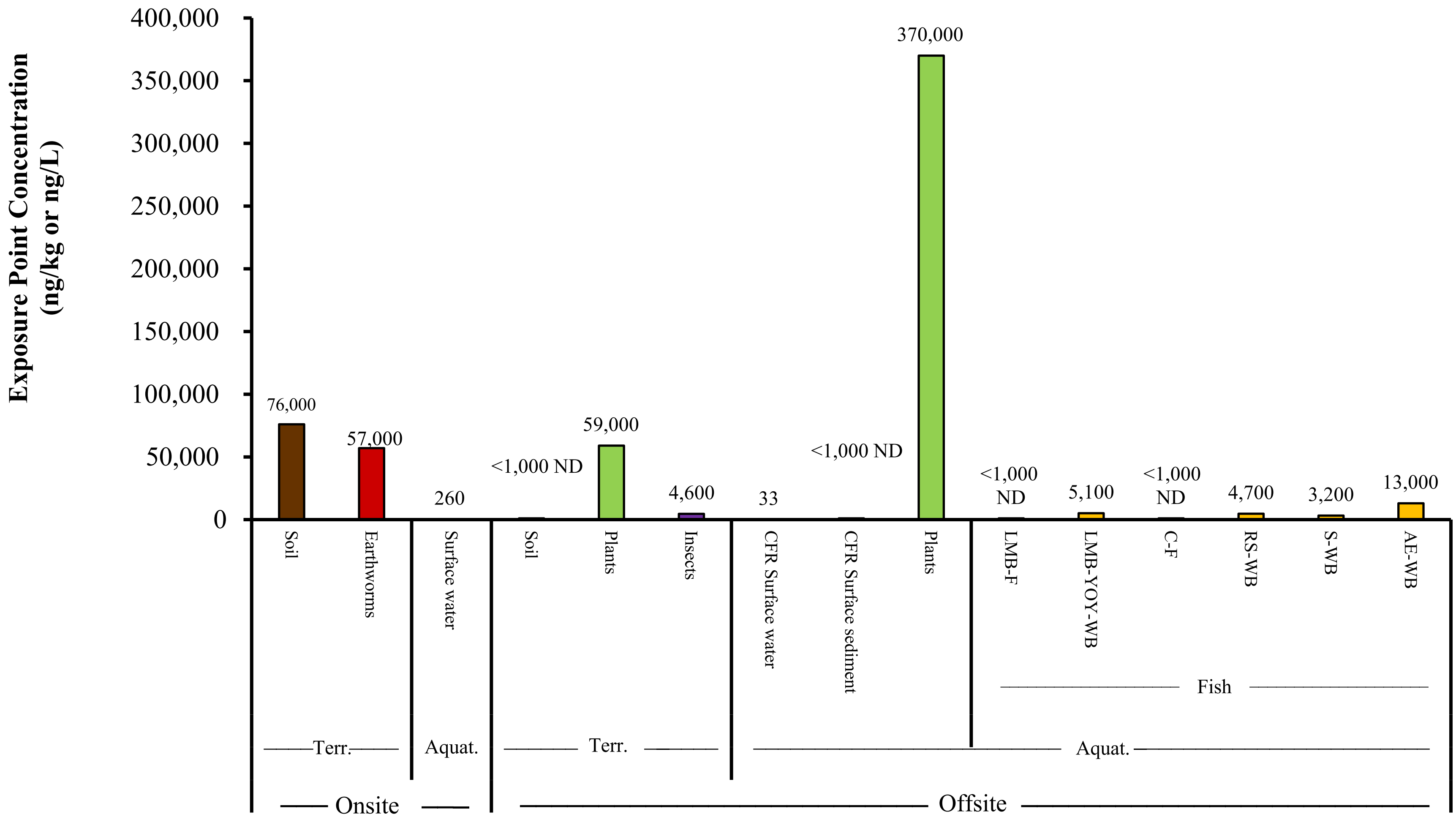
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | December 2019

Figure 4-6a



Definitions:

EPC = Exposure Point Concentration
Terr. = Terrestrial EPC
Aquat. = Aquatic EPC
LMB-F = Largemouth bass fillet EPC
LMB-YOY-WB = Largemouth bass young-of-year whole body EPC
C-F = Catfish fillet EPC
RS-WB = Redbreast sunfish whole body EPC
S-WB = Shiner whole body EPC
AE-WB = American eel whole body EPC
ng/kg = nanogram per kilogram
ng/L - nanogram per liter
Surface water = ng/L
Soil, sediment, tissue = ng/kg

Exposure Point Concentrations by Media for All Exposure Units - PFMOAA

Chemours Fayetteville Works, North Carolina

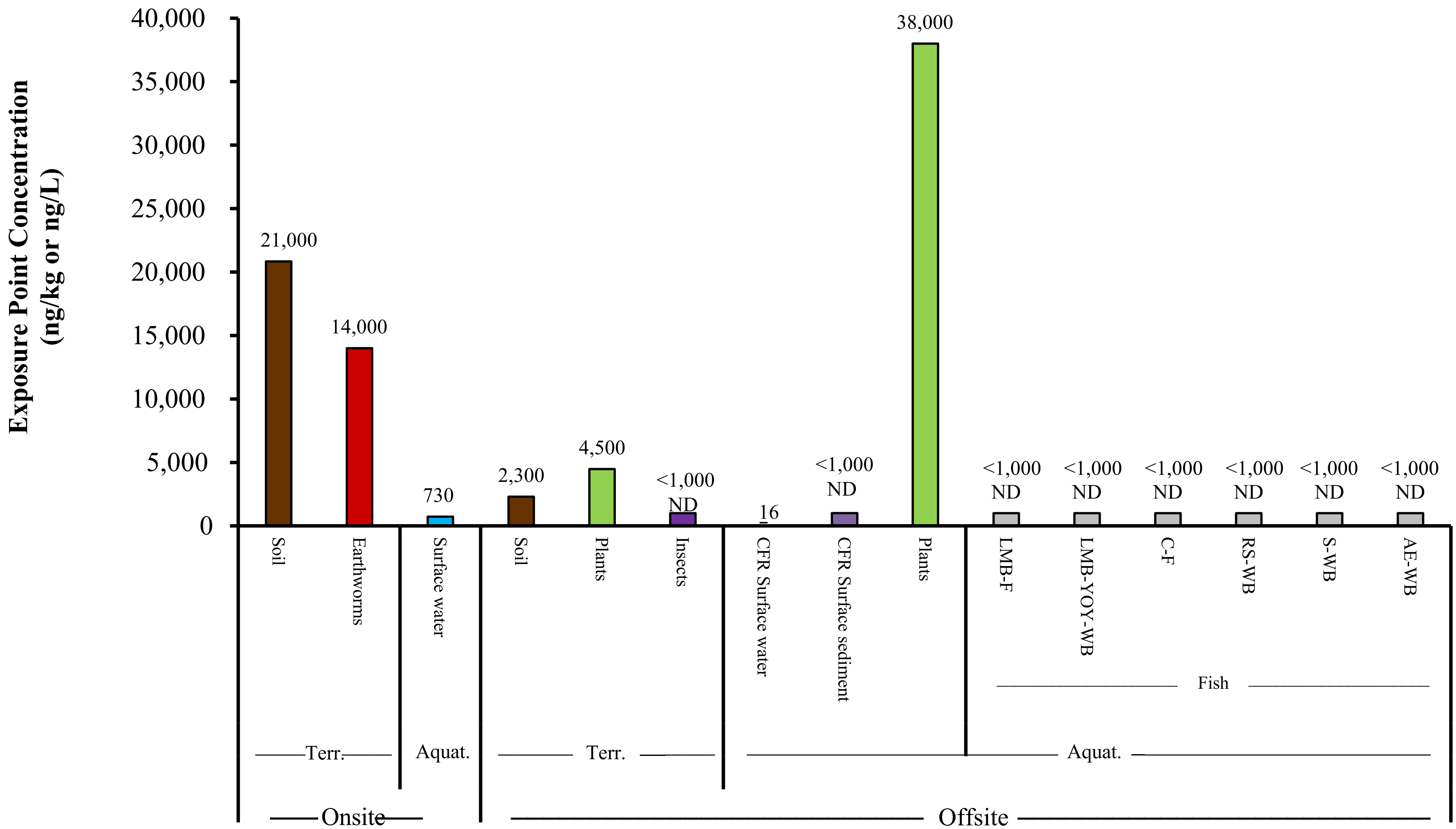
Geosyntec consultants

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

Raleigh | December 2019

Figure 4-6b

Data/PRJ/Projects/TR0795/Database and GIS/Illustrator/SLEA/Figures4-6series_ExposurePointConcMedia.ai



Definitions:

EPC = Exposure Point Concentration
Terr. = Terrestrial EPC
Aquat. = Aquatic EPC
LMB-F = Largemouth bass fillet EPC
LMB-YOY-WB = Largemouth bass young-of-year whole body EPC
C-F = Catfish fillet EPC
RS-WB = Redbreast sunfish whole body EPC
S-WB = Shiner whole body EPC
AE-WB = American eel whole body EPC
ng/kg = nanogram per kilogram
ng/L - nanogram per liter
Surface water = ng/L
Soil, sediment, tissue = ng/kg

Exposure Point Concentrations by Media for All Exposure Units - PFO2HxA

Chemours Fayetteville Works, North Carolina

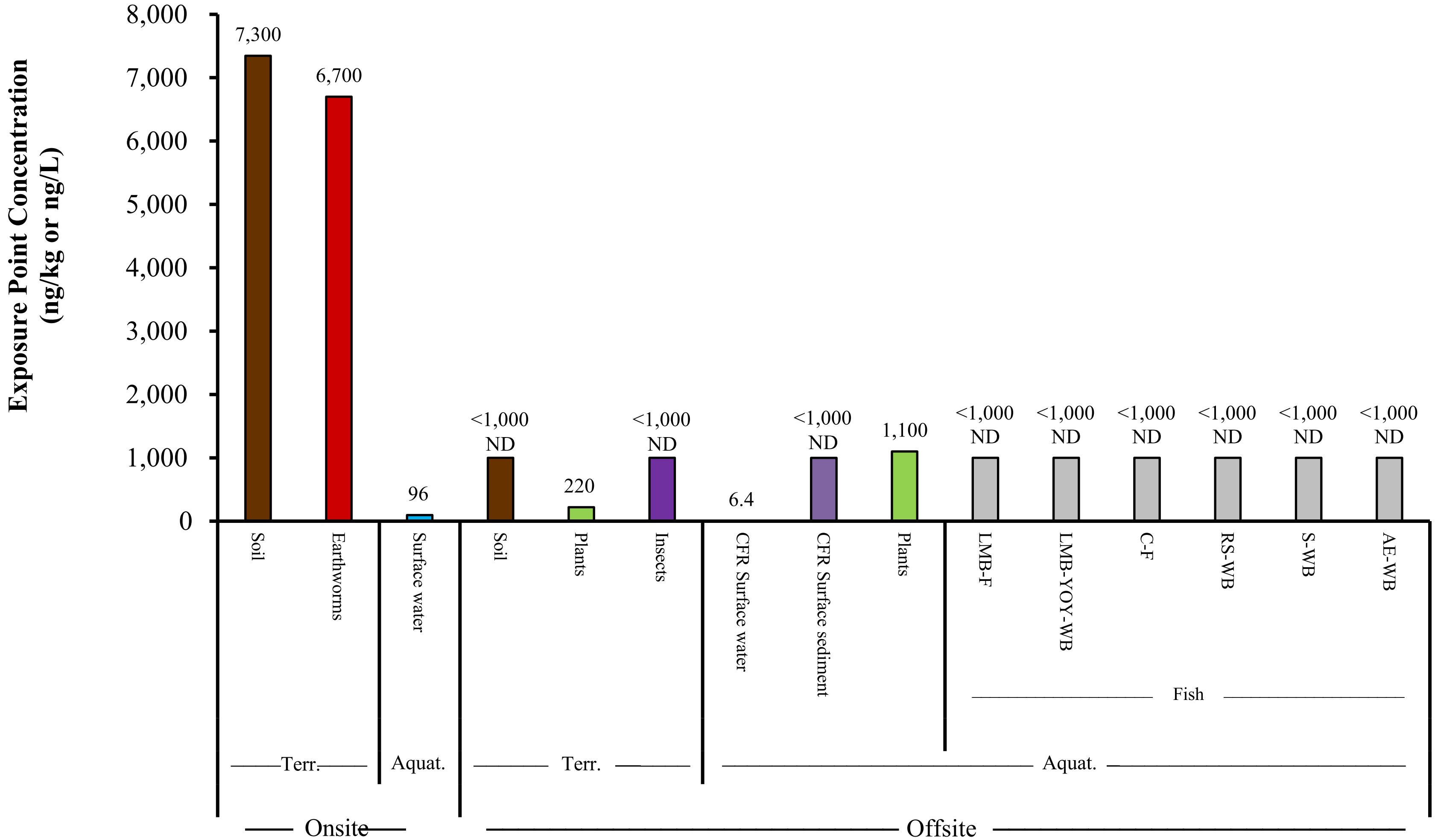
Geosyntec consultants

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

Raleigh | December 2019

Figure 4-6c

Data/PRJ/Projects/TR0795/Database and GIS/Illustrator/SLEA/Figures4-6series_ExposurePointConcMedia.ai



Definitions:

EPC = Exposure Point Concentration
Terr. = Terrestrial EPC
Aquat. = Aquatic EPC
LMB-F = Largemouth bass fillet EPC
LMB-YOY-WB = Largemouth bass young-of-year whole body EPC
C-F = Catfish fillet EPC
RS-WB = Redbreast sunfish whole body EPC
S-WB = Shiner whole body EPC
AE-WB = American eel whole body EPC
ng/kg = nanogram per kilogram
ng/L - nanogram per liter
Surface water = ng/L
Soil, sediment, tissue = ng/kg

Exposure Point Concentrations by Media for All Exposure Units - PFO3OA

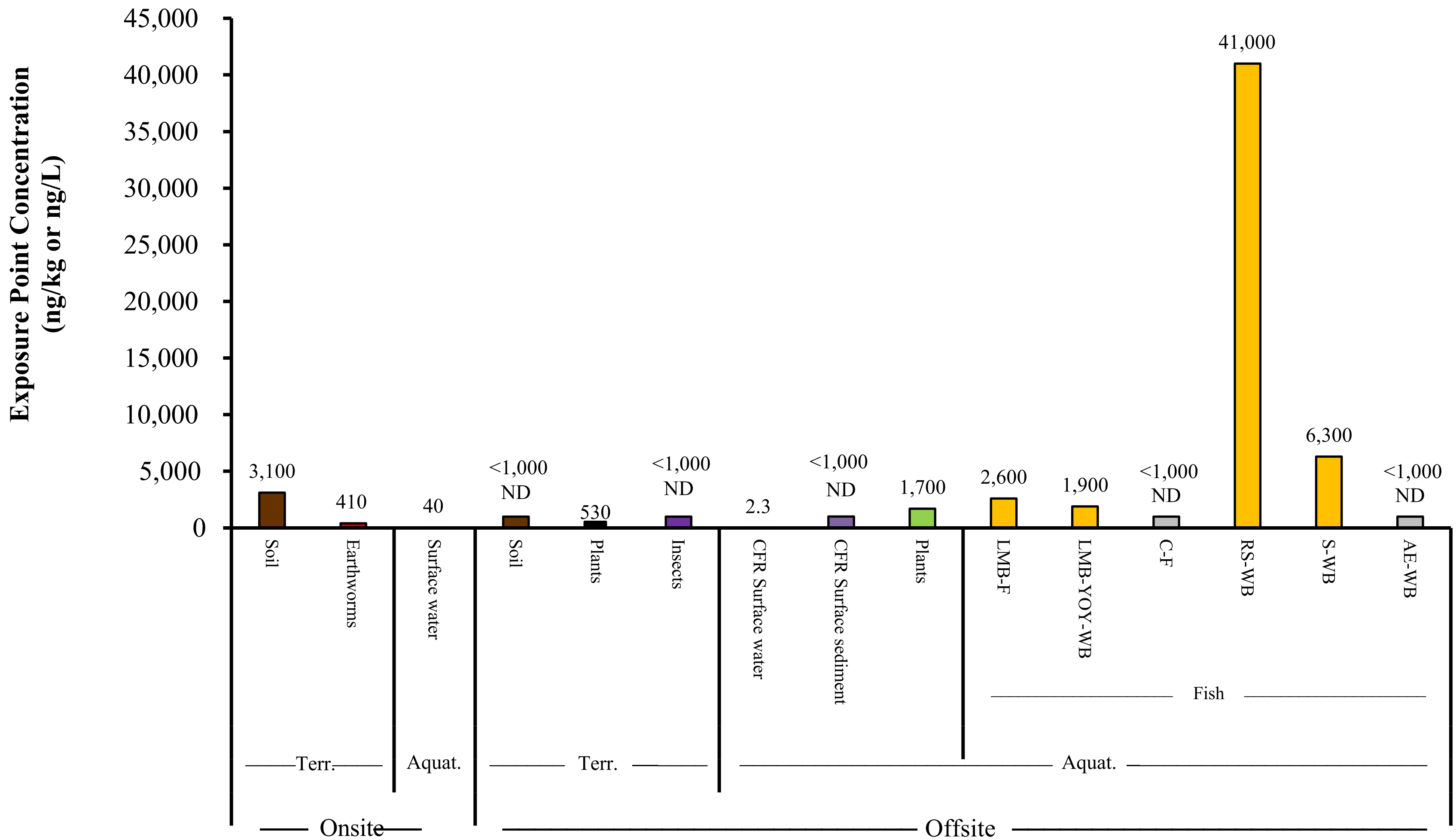
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure 4-6d

Raleigh | December 2019



Definitions:

EPC = Exposure Point Concentration
Terr. = Terrestrial EPC
Aquat. = Aquatic EPC
LMB-F = Largemouth bass fillet EPC
LMB-YOY-WB = Largemouth bass young-of-year whole body EPC
C-F = Catfish fillet EPC
RS-WB = Redbreast sunfish whole body EPC
S-WB = Shiner whole body EPC
AE-WB = American eel whole body EPC
ng/kg = nanogram per kilogram
ng/L - nanogram per liter
Surface water = ng/L
Soil, sediment, tissue = ng/kg

Exposure Point Concentrations by Media for All Exposure Units - PFO4OA

Chemours Fayetteville Works, North Carolina

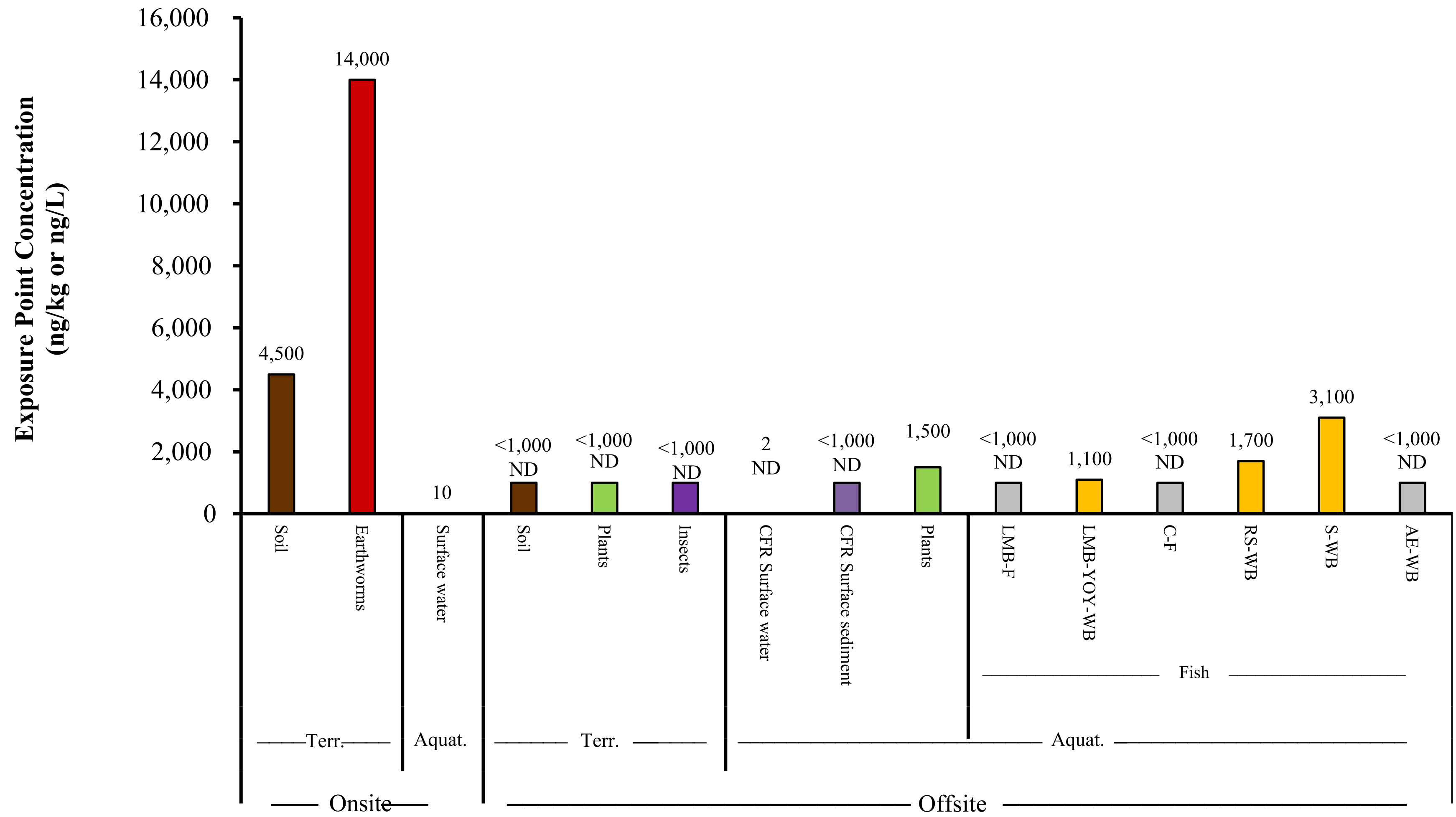
Geosyntec consultants

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

Raleigh | December 2019

Figure 4-6e

Data/PRJ/Projects/TR0795/Database and GIS/Illustrator/SLEA/Figures4-6series_ExposurePointConcMedia.ai



Definitions:
EPC = Exposure Point Concentration
Terr. = Terrestrial EPC
Aquat. = Aquatic EPC
LMB-F = Largemouth bass fillet EPC
LMB-YOY-WB = Largemouth bass young-of-year whole body EPC
C-F = Catfish fillet EPC
RS-WB = Redbreast sunfish whole body EPC
S-WB = Shiner whole body EPC
AE-WB = American eel whole body EPC
ng/kg = nanogram per kilogram
ng/L - nanogram per liter
Surface water = ng/L
Soil, sediment, tissue = ng/kg

Exposure Point Concentrations by Media for All Exposure Units - PFO5OA

Chemours Fayetteville Works, North Carolina

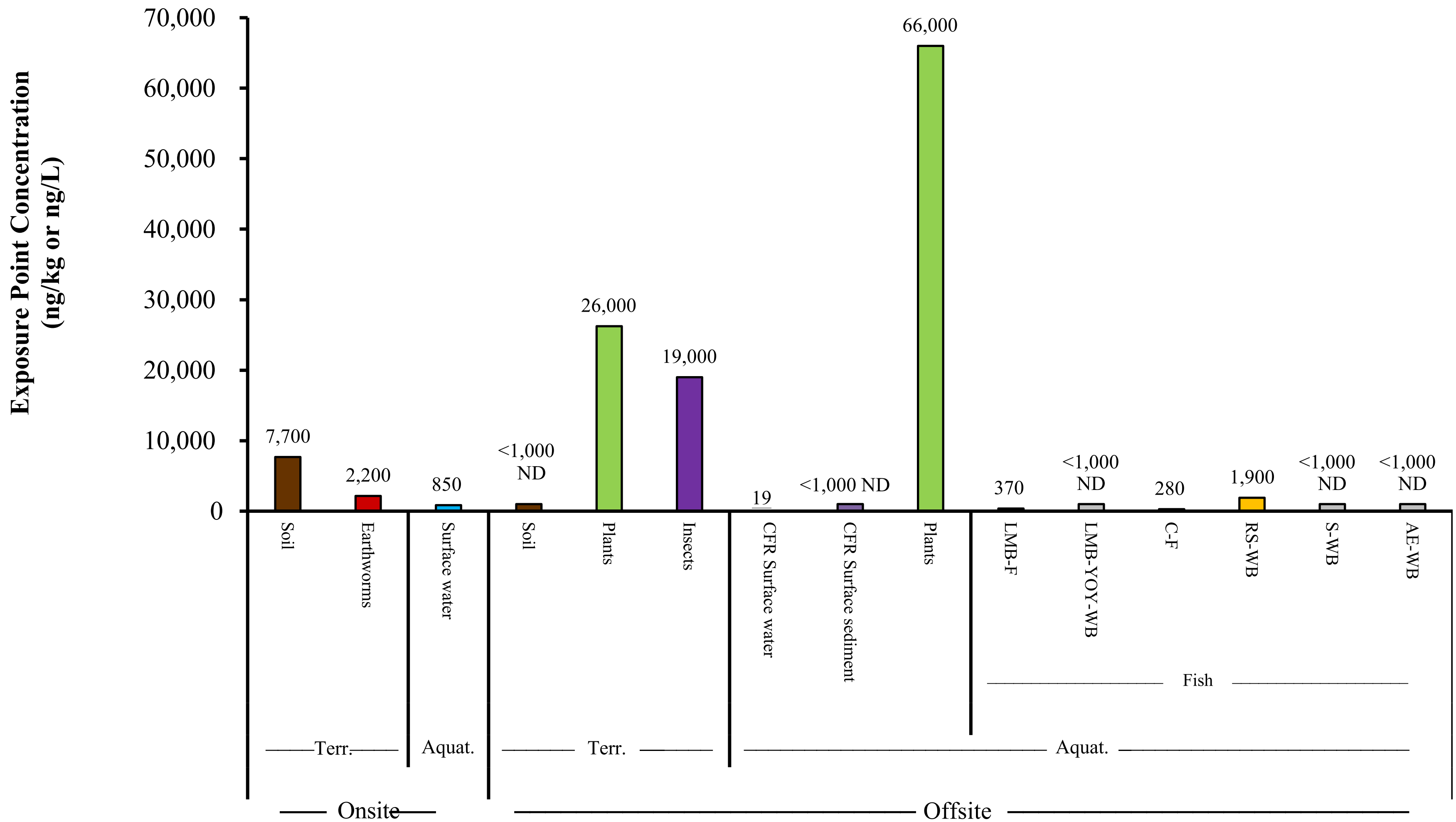
Geosyntec consultants

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

Raleigh | December 2019

Figure 4-6f

Data/PRJ/Projects/TR0795/Database and GIS/Illustrator/SLEA/Figures4-6series_ExposurePointConcMedia.ai



Definitions:

EPC = Exposure Point Concentration
Terr. = Terrestrial EPC
Aquat. = Aquatic EPC
LMB-F = Largemouth bass fillet EPC
LMB-YOY-WB = Largemouth bass young-of-year whole body EPC
C-F = Catfish fillet EPC
RS-WB = Redbreast sunfish whole body EPC
S-WB = Shiner whole body EPC
AE-WB = American eel whole body EPC
ng/kg = nanogram per kilogram
ng/L - nanogram per liter
Surface water = ng/L
Soil, sediment, tissue = ng/kg

Exposure Point Concentrations by Media for All Exposure Units - PMPA

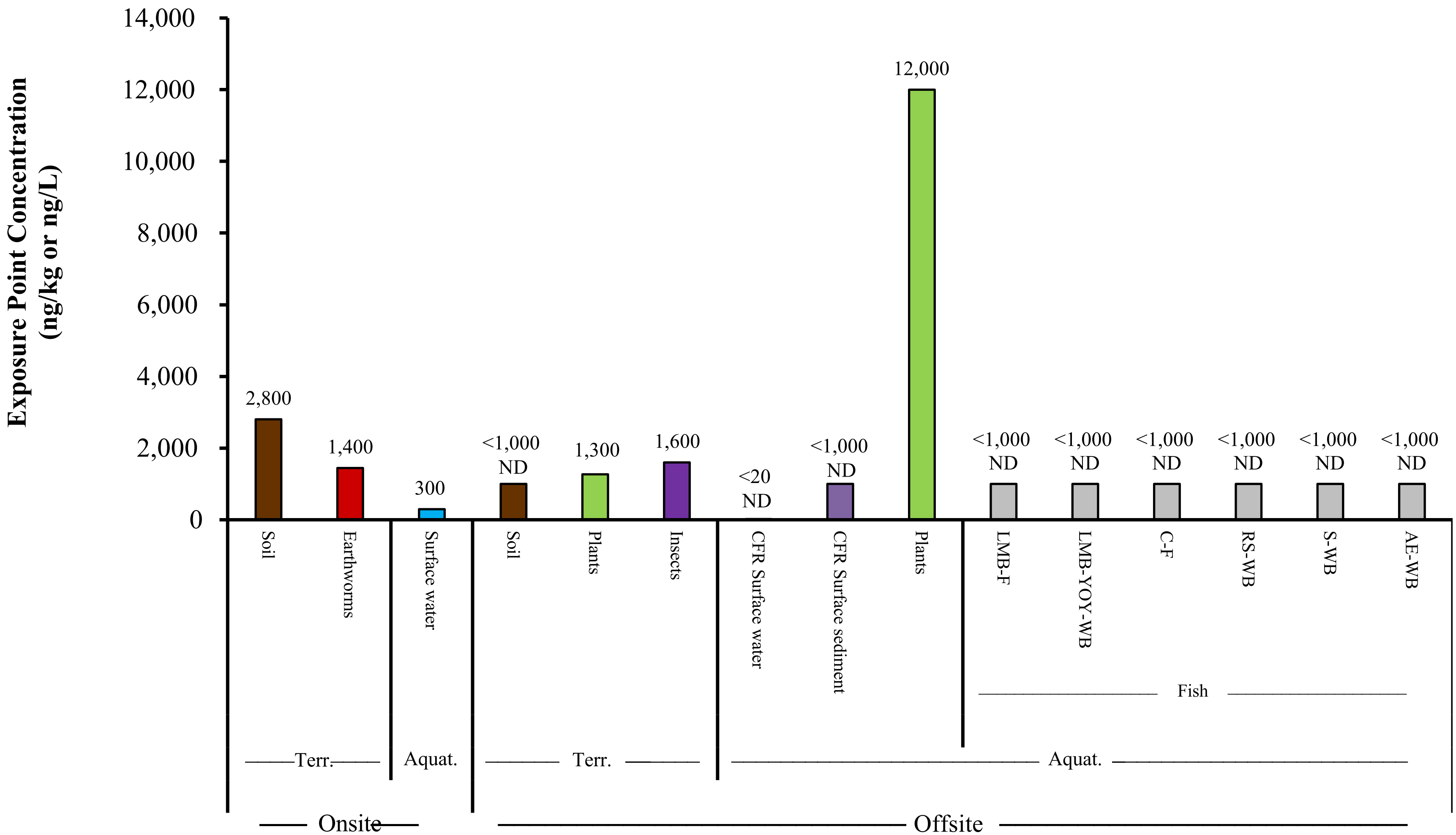
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure 4-6g

Raleigh | December 2019



Definitions:

EPC = Exposure Point Concentration
Terr. = Terrestrial EPC
Aquat. = Aquatic EPC
LMB-F = Largemouth bass fillet EPC
LMB-YOY-WB = Largemouth bass young-of-year whole body EPC
C-F = Catfish fillet EPC
RS-WB = Redbreast sunfish whole body EPC
S-WB = Shiner whole body EPC
AE-WB = American eel whole body EPC
ng/kg = nanogram per kilogram
ng/L - nanogram per liter
Surface water = ng/L
Soil, sediment, tissue = ng/kg

Exposure Point Concentrations by Media for All Exposure Units - PEPA

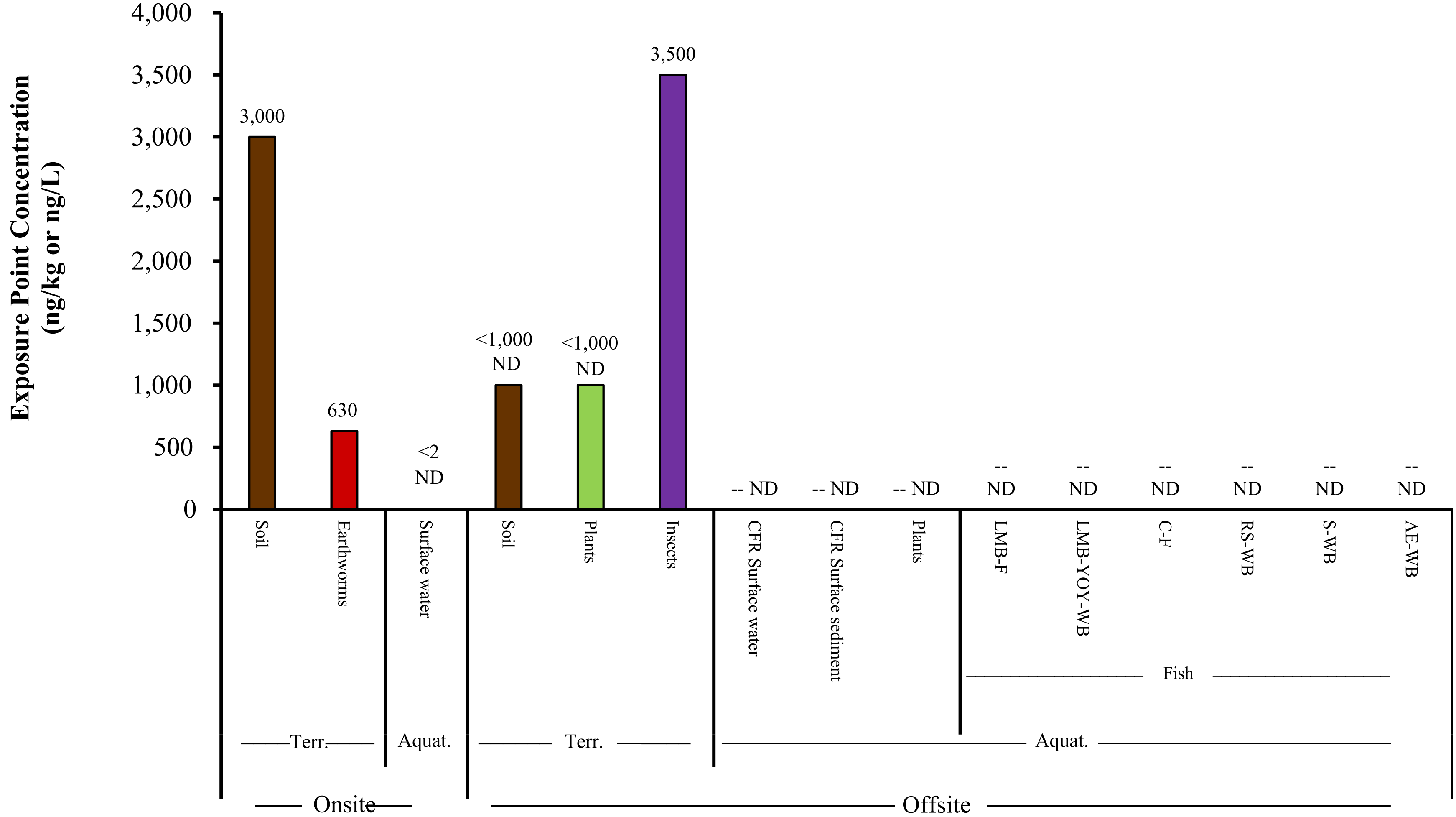
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | December 2019

Figure 4-6h



Definitions:

EPC = Exposure Point Concentration
Terr. = Terrestrial EPC
Aquat. = Aquatic EPC
LMB-F = Largemouth bass fillet EPC
LMB-YOY-WB = Largemouth bass young-of-year whole body EPC
C-F = Catfish fillet EPC
RS-WB = Redbreast sunfish whole body EPC
S-WB = Shiner whole body EPC
AE-WB = American eel whole body EPC
ng/kg = nanogram per kilogram
ng/L - nanogram per liter
Surface water = ng/L
Soil, sediment, tissue = ng/kg
-- = not detected in any aquatic media and EPCs were not calculated

Exposure Point Concentrations by Media for All Exposure Units - PFESA-BP1

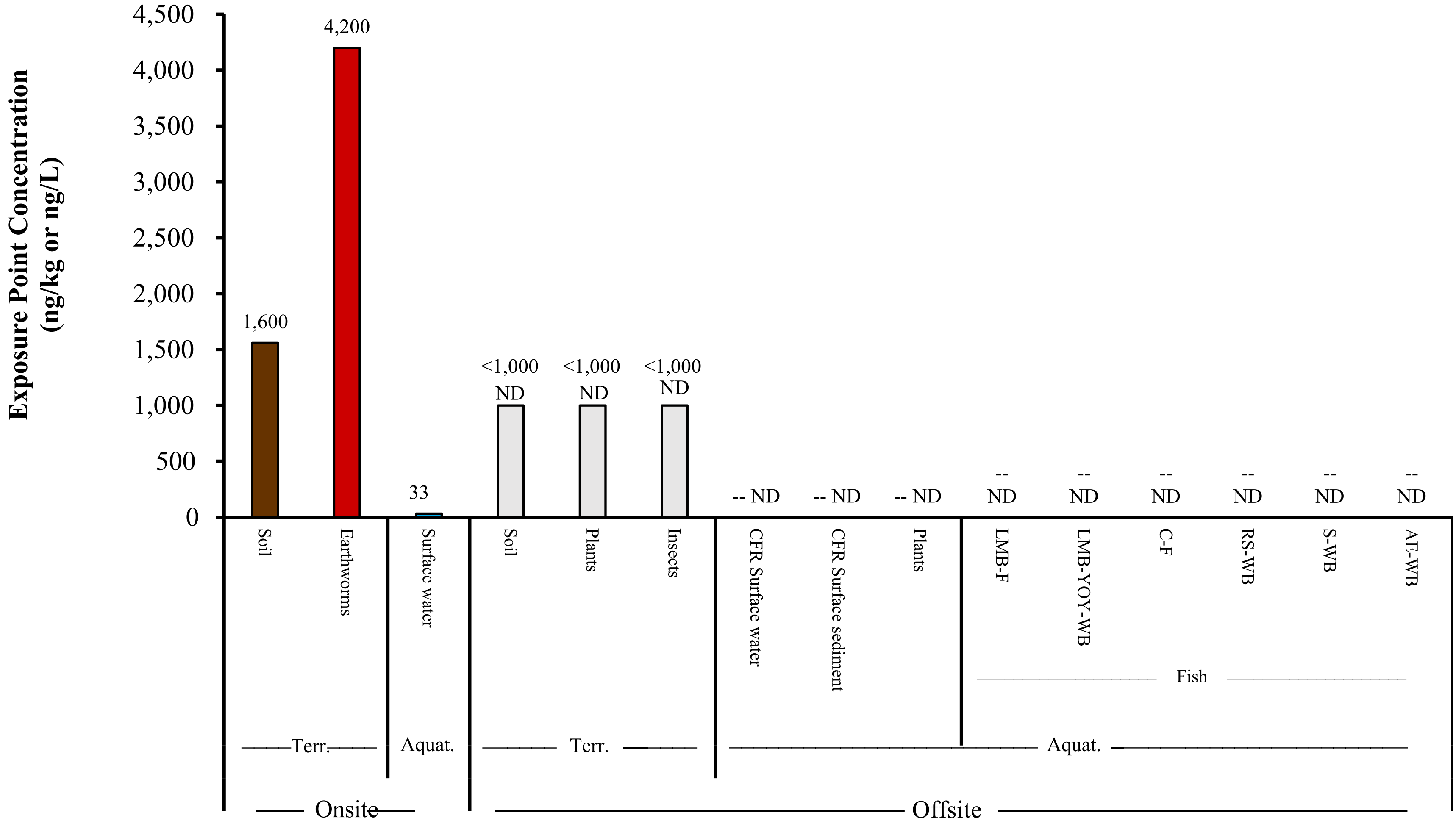
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | December 2019

Figure 4-6i



Definitions:

EPC = Exposure Point Concentration
Terr. = Terrestrial EPC
Aquat. = Aquatic EPC
LMB-F = Largemouth bass fillet EPC
LMB-YOY-WB = Largemouth bass young-of-year whole body EPC
C-F = Catfish fillet EPC
RS-WB = Redbreast sunfish whole body EPC
S-WB = Shiner whole body EPC
AE-WB = American eel whole body EPC
ng/kg = nanogram per kilogram
ng/L - nanogram per liter
Surface water = ng/L
Soil, sediment, tissue = ng/kg
-- = not detected in any aquatic media and EPCs were not calculated

Exposure Point Concentrations by Media for All Exposure Units - PFESA-BP2

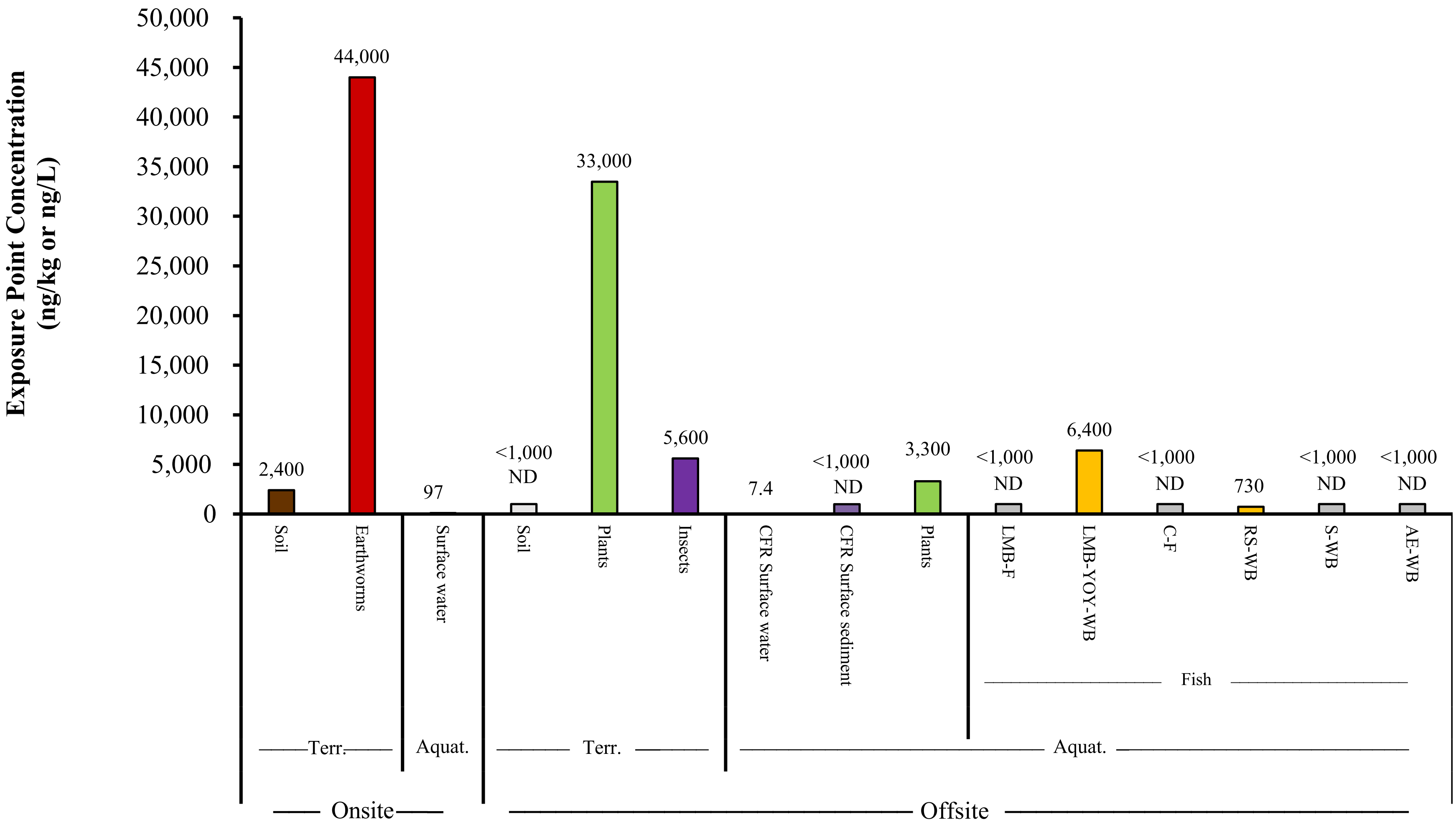
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | December 2019

Figure 4-6j



Definitions:

EPC = Exposure Point Concentration
Terr. = Terrestrial EPC
Aquat. = Aquatic EPC
LMB-F = Largemouth bass fillet EPC
LMB-YOY-WB = Largemouth bass young-of-year whole body EPC
C-F = Catfish fillet EPC
RS-WB = Redbreast sunfish whole body EPC
S-WB = Shiner whole body EPC
AE-WB = American eel whole body EPC
ng/kg = nanogram per kilogram
ng/L - nanogram per liter
Surface water = ng/L
Soil, sediment, tissue = ng/kg

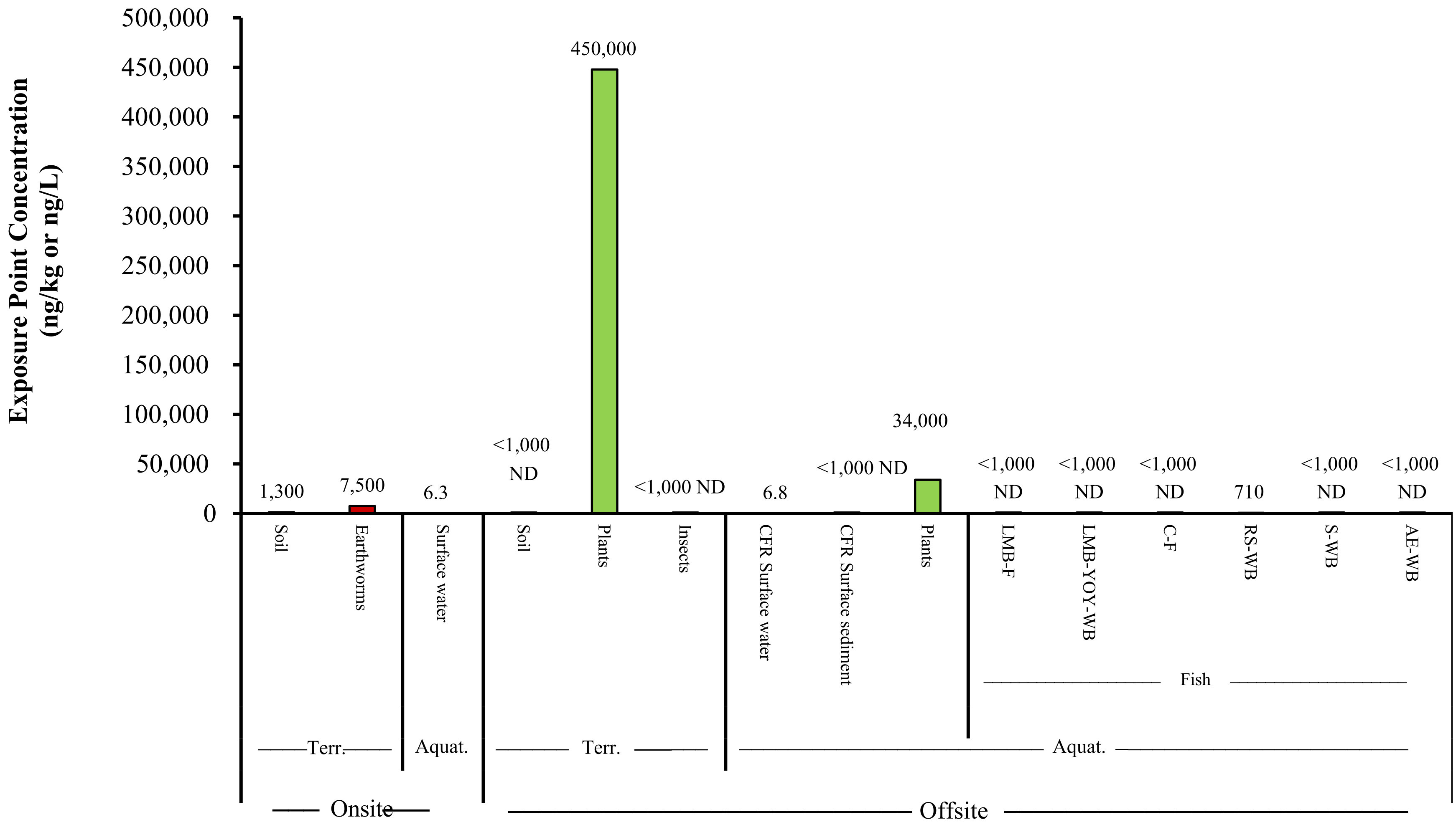
Exposure Point Concentrations by Media for All Exposure Units - Byproduct 4

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh	December 2019	Figure 4-6k



Definitions:

EPC = Exposure Point Concentration
Terr. = Terrestrial EPC
Aquat. = Aquatic EPC
LMB-F = Largemouth bass fillet EPC
LMB-YOY-WB = Largemouth bass young-of-year whole body EPC
C-F = Catfish fillet EPC
RS-WB = Redbreast sunfish whole body EPC
S-WB = Shiner whole body EPC
AE-WB = American eel whole body EPC
ng/kg = nanogram per kilogram
ng/L - nanogram per liter
Surface water = ng/L
Soil, sediment, tissue = ng/kg

Exposure Point Concentrations by Media for All Exposure Units – NVHOS

Chemours Fayetteville Works, North Carolina

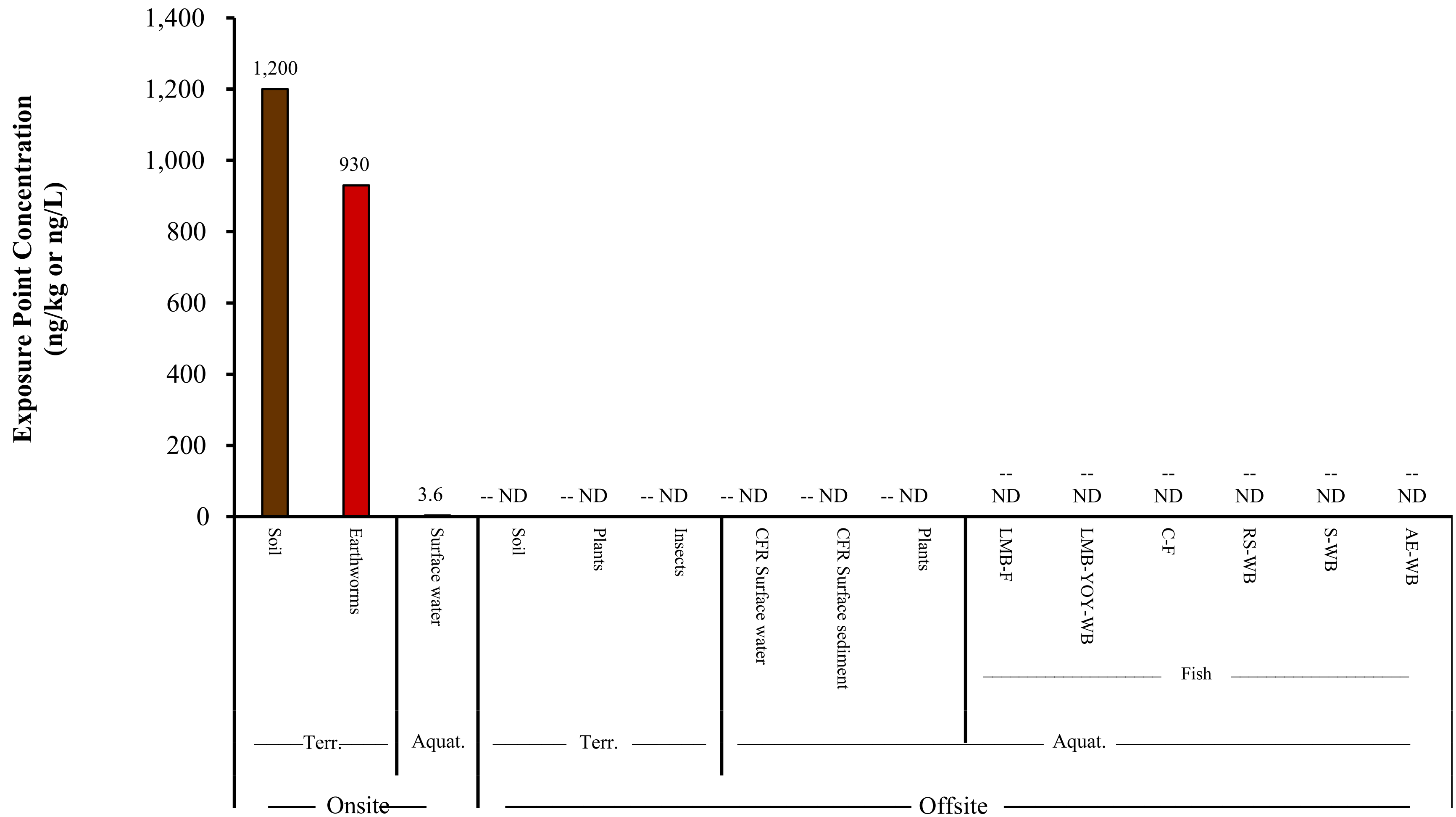
Geosyntec consultants

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

Raleigh | December 2019

Figure 4-6I

Data/PRJ/Projects/TR0795/Database and GIS/Illustrator/SLEA/Figures4-6series_ExposurePointConcMedia.ai



Definitions:

EPC = Exposure Point Concentration
Terr. = Terrestrial EPC
Aquat. = Aquatic EPC
LMB-F = Largemouth bass fillet EPC
LMB-YOY-WB = Largemouth bass young-of-year whole body EPC
C-F = Catfish fillet EPC
RS-WB = Redbreast sunfish whole body EPC
S-WB = Shiner whole body EPC
AE-WB = American eel whole body EPC
ng/kg = nanogram per kilogram
ng/L - nanogram per liter
Surface water = ng/L
Soil, sediment, tissue = ng/kg
-- = not detected in any aquatic media and EPCs were not calculated

Exposure Point Concentrations by Media for All Exposure Units – Hydro-EVE Acid

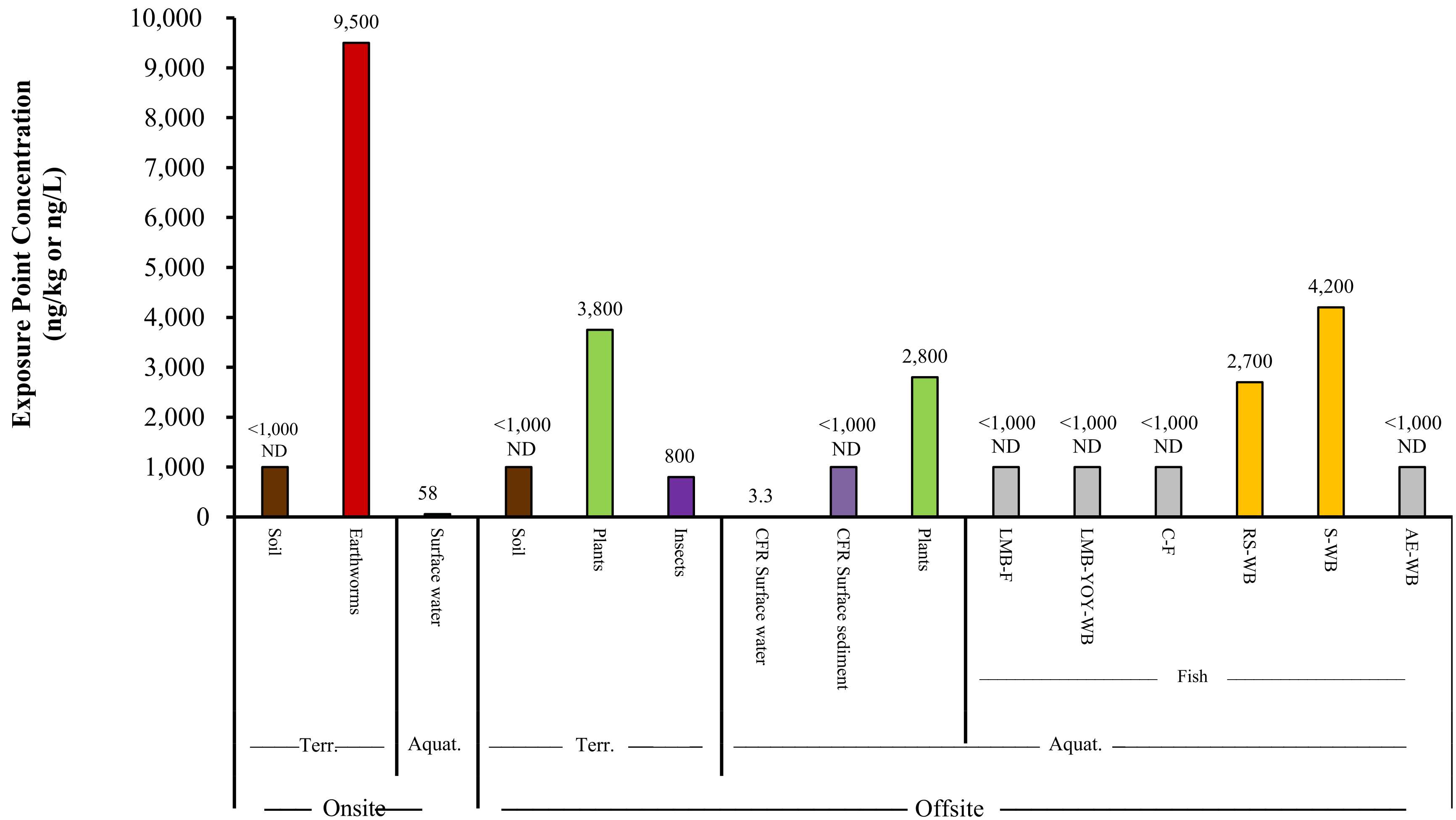
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure 4-6m

Raleigh | December 2019



Definitions:

EPC = Exposure Point Concentration
Terr. = Terrestrial EPC
Aquat. = Aquatic EPC
LMB-F = Largemouth bass fillet EPC
LMB-YOY-WB = Largemouth bass young-of-year whole body EPC
C-F = Catfish fillet EPC
RS-WB = Redbreast sunfish whole body EPC
S-WB = Shiner whole body EPC
AE-WB = American eel whole body EPC
ng/kg = nanogram per kilogram
ng/L - nanogram per liter
Surface water = ng/L
Soil, sediment, tissue = ng/kg

Exposure Point Concentrations by Media for All Exposure Units – R-EVE

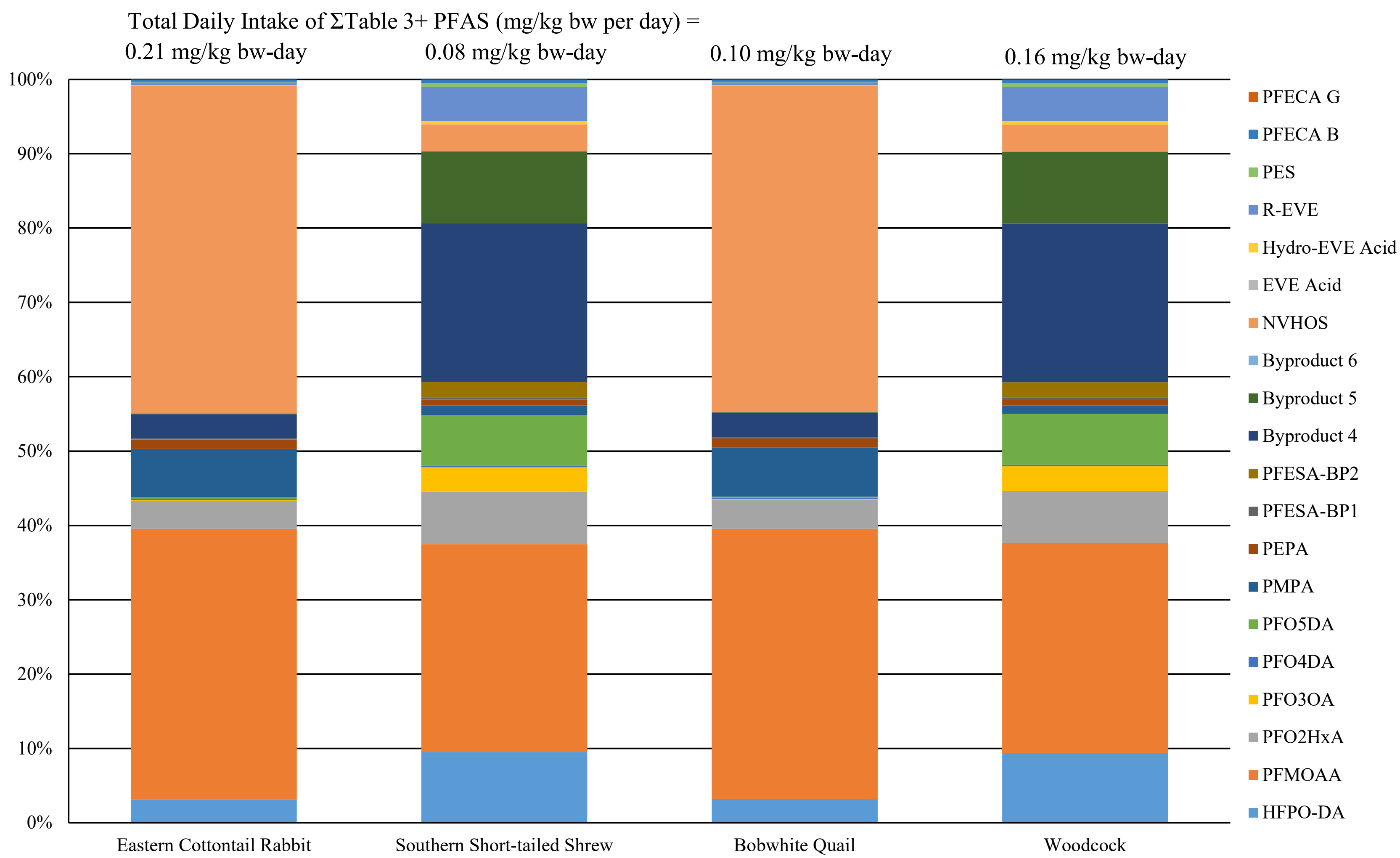
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | December 2019

Figure 4-6n



Notes:
mg/kg bw-day = miligram per kilogram body weight per day

Total Daily Intake of Table 3+ PFAS - Onsite Terrestrial EU

Chemours Fayetteville Works, North Carolina

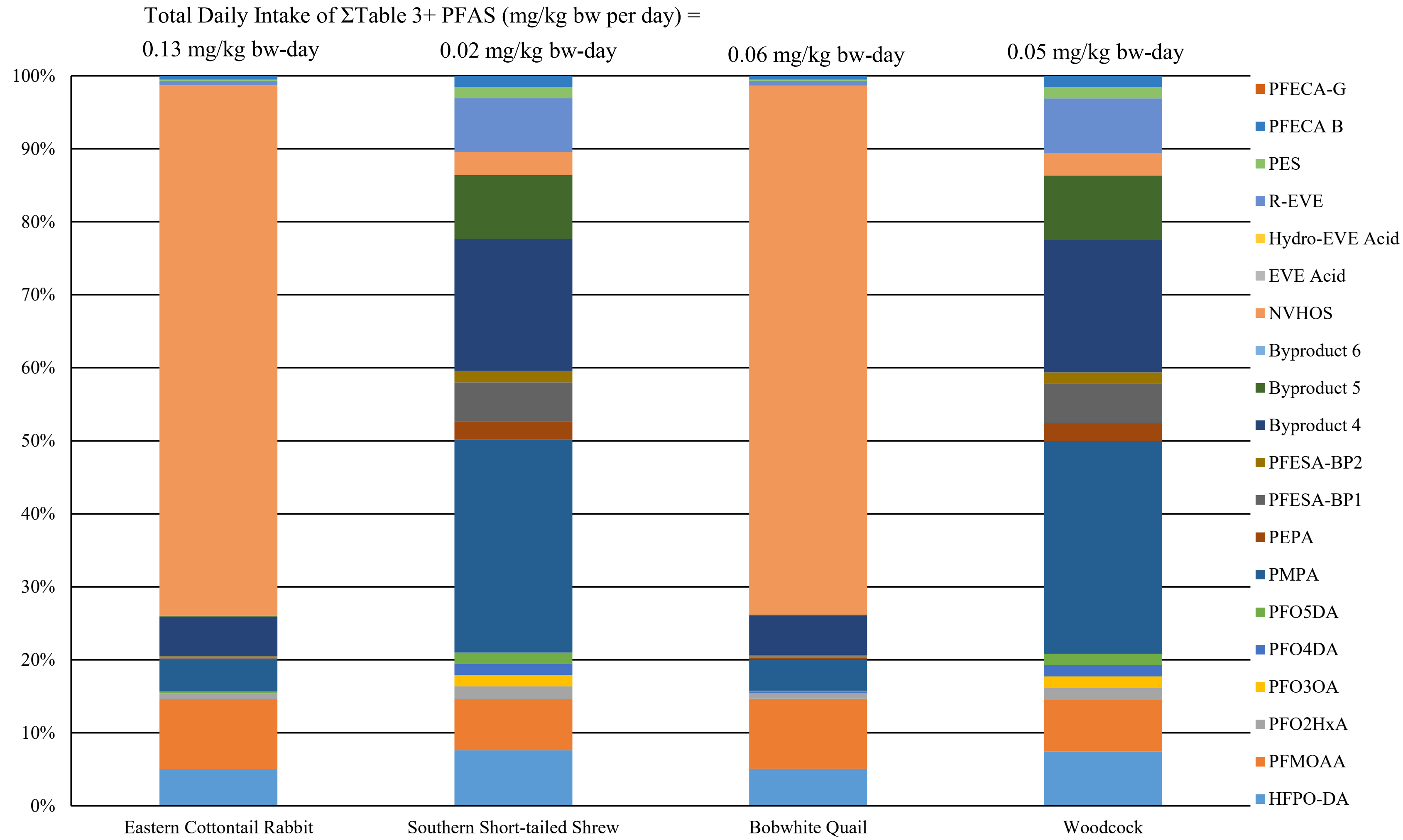
Geosyntec consultants

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

Raleigh | December 2019

Figure 4-7

"P:\PRJ\Projects\TR0795\Database and GIS\Illustrator\SLEA\ECO SLEA bar charts\Figure4-7_FAY_Terrestrial_OnSite.ai"



Notes:
mg/kg bw-day = miligram per kilogram body weight per day

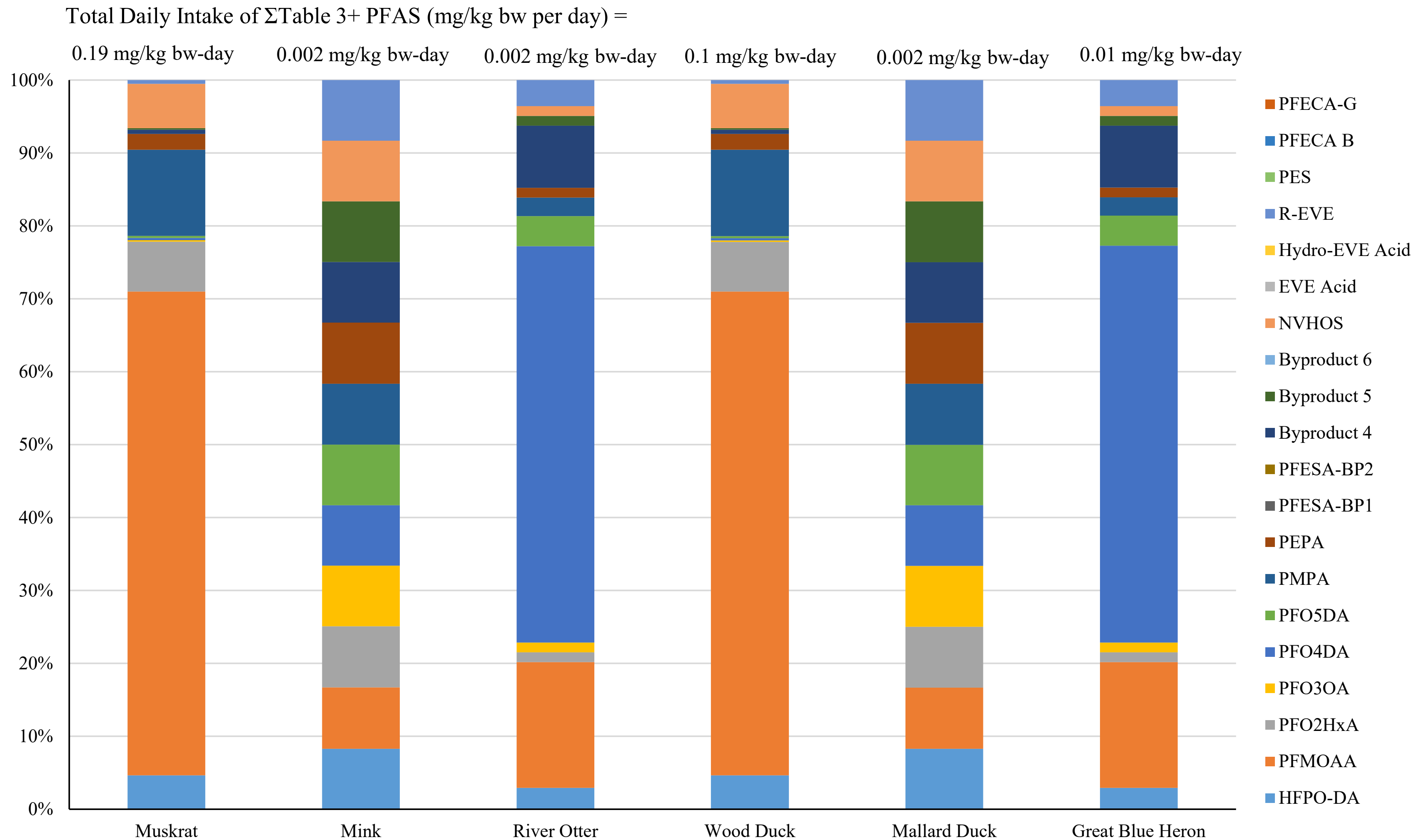
Total Daily Intake of Table 3+ PFAS - Offsite Terrestrial EU

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh	December 2019	Figure 4-8



Notes:
mg/kg bw-day = miligram per kilogram body weight per day

Total Daily Intake of Table 3+ PFAS - Aquatic EU

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | December 2019

Figure 4-9

"P:\PRJ\Projects\TR0795\Database and GIS\Illustrator\SLEA\ECO SLEA bar charts\Figure4-9_FAY_Aquatic.ai"

APPENDIX A
Field Sampling SOPs

1 INTRODUCTION

This appendix provides descriptions of methodologies employed during field events associated with the Ecological SLEA report, including collection of vegetation, sediment, invertebrates, and clams.

1.1 General Field Procedures

All equipment was used in accordance with manufacturer's recommendations. All sampling methods, locations, and relevant safety hazards were reviewed and discussed with team members and Chemours representatives.

1.1.1 Decontamination Methods

Sample containers were provided by TestAmerica (Sacramento, California). Containers were new and were used only once for each sample. Disposable equipment (i.e. gloves) was not reused and therefore, did not require decontamination. All non-disposable sampling equipment was decontaminated immediately before sample collection using a de-ionized water rinse, scrub with de-ionized water containing non-phosphate detergent (i.e. Alconox®), and a final rinse with de-ionized water.

1.1.2 Sample Shipping, Chain of Custody, and Holding Times

Samples were collected, labeled, containerized, and placed into a heavy plastic bag inside an insulated sample cooler with ice. Prior to shipment of the samples to the laboratory, a chain of custody (COC) form was completed by the field sampling team. Sample locations, identifications numbers, descriptions, number of samples collected, and specific laboratory analyses to be performed were recorded on the COC. The COC was signed by the field personnel relinquishing the samples to the courier and was signed by the laboratory upon receiving the cooler.

2 TERRESTRIAL PLANT SAMPLE COLLECTION:

Objective: to collect 60 grams (wet) of forage plant material that represents plant material consumed by herbivores. One composite sample per EU.

2.1 Methodology:

- At each ISM increment location, look for the following for sampling:
    - Preferred: Broadleaf plants, within 1 to 2 ft of the ground. Target collecting leaves (berries/fruit if present) and seeded grasses (fescues, ryegrass, wheatgrass)
    - Secondary: any grasses, weeds with non-waxy leaves
- Photograph selected plant(s).
- Collect ~ 2 grams of plant material targeting leaves, seeds or berries, not woody stems.
- Wipe any loose dirt off the plant with a dry paper towel, but do not wash.
- Place in a HDPE sampling container; continue adding to sample at next soil aliquot location.

2.2 Laboratory Analysis Notes:

- Minimum mass: 60 grams (estimated pending info from lab; may be revised)
- Sampling jar: HDPE
- Analyte list: Same PFAS analyte list as soil samples; % moisture

2.3 Examples of appropriate plants:

Ferns

Wildflowers (Trumpetweed, wood anemone, green and gold)

Seeded grasses:

2.4 Avoid waxy cuticles on plants:

3 TERRESTRIAL SOIL INVERTEBRATE SAMPLE COLLECTION

3.1 Objective:

- Collect 30 grams (wet) of invertebrate tissue that represents organisms consumed by invertivores. One composite sample per EU.

3.2 Methodology:

- At each ISM aliquot, collect additional 0 to 6-inch soil samples and sieve (use the largest sieve size that allows soil to pass through easily)
- Collect invertebrates found any of the grabs and place in a HDPE jar:
  - Sieve enough additional soil to capture 1-2 earthworm (preferred)
  - Sieve enough additional soil to collect 2-3 grams of non-earth worm invertebrates (if earthworms are not collected)
  - Collect any invertebrates easily caught above soil (grasshoppers, crickets/katydids, caterpillars)
  - Feel free to use best professional judgement - if after a couple sieves the area seems very low in invertebrates, move on. If you hit a spot with an abundance of earthworms, collect additional mass from that location. In an ideal world we would have earthworms from all 30 aliquots in an EU but collecting enough sample mass is the critical item.
- Continue adding invertebrates to the sampling jar during each aliquot in an EU
- At the completion of the EU, evaluate tissue mass for earthworms alone:
  - If > 30 grams, then composite only earthworm tissues in HDPE jar for analysis
  - If < 30 grams, add in additional invertebrates to reach mass with preferences for larger invertebrates
- Photograph and document final composite sample species make up
- Allow sample organisms to depurate (i.e. poop) any consumed soil (primarily by earthworms) by leaving in jar on filter paper for 24 hours.
- Remove invertebrates to a clean HDPE jar prior to placing on ice for shipment to the laboratory.

3.3 Laboratory Analysis Notes:

- Minimum mass: 30 grams
- Sampling jar: HDPE
- Analyte list: Same PFAS analyte list as soil samples; % moisture

3.4 Carcass sampling for whole body estimates:

3.4.1 Background:

Whole body concentrations of chemicals are preferred for ecological exposures. To best leverage the SLEA fillet sampling, we will be calculating fillet to whole body ratios based on weighted average whole- body concentrations for up to 3 samples of catfish and 3 samples of bass. Every attempt should be made to composite based on specific species or families (i.e., catfish should not be composited with bass).

3.4.2 Methods:

- 3 samples will be analyzed for PFAS in carcass along with the fillet sample (preference for different locations)
  - Preferable on single fish samples over composites
  - Prefer 3 individual or composite samples made up of the same species (or family) for each of bass and catfish
- For each sample:
  - Measure whole body fish weight and standard length of all fish samples
  - Place all fish for a single composite sample in the same HDPE bag
  - Samples that will be analyzed for skin-off fillet only, will be labeled on the outside of the HDPE bag with the sample ID (see Work Plan Table 2).
  - For the samples that will also be analyzed for carcass tissues, label with both the sample ID, and the sample-ID with "-Carcass".
  - The laboratory has been provided instructions on sample processing for skin-off fillet and carcass.
  - In a clean space, away from potential sources (i.e, mechanical equipment/exhaust/etc.) and using clean equipment/materials, remove fillets and weight all fillet meat (free to subsample fillet for lab following weighing); record weight in field notes or summary table (see last page here).
  - Weight all remaining fish tissue (carcass – bones, organs, any remaining fluids) and place in sampling container for lab (same type of containers for fillet samples are fine).
  - Clean equipment/materials used for filleting between each fish processed to ensure that there is no cross contamination between samples.
  - Place individual or composite samples in appropriate (PFAS-free) containers (HDPE bags)
  - Send samples (fillet and carcass) to the lab for analysis
  - Carcass sample IDs: please use the same Fillet ID with a "-Carcass" and run for the same list of analytes
- If compositing multiple fish, weight each fish using these steps individually prior to composting the fillets and carcasses together. .

3.4.3 Laboratory notes:

- Minimum tissue mass: 40 g (30 g for PFAS, 10g for % moisture; ok if short on mass for % moisture)
- Sampling container: HDPE bags
- Analysis: Method 537/Table 3+ PFAS, % moisture (if sufficient mass)

3.5 <u>Collection and analysis of up to 5 small, benthic fish:</u>

3.5.1 Background:

The SLEA captures angler focused species rather than wildlife focused species. To better understand exposures to wildlife, we would like to collect up to 5 samples of smaller benthic fish that are more commonly consumed by wildlife. The goal is to capture exposure to fish-eating birds and mammals which are primarily opportunistic feeders, therefore is a highly abundant species is observed during sampling these are likely highly consumed by wildlife.

3.5.2 Methods:

- Field team preference on sampling methods
- Preference is to retain fish without major injuries (so as not to lose fluids)
- Prior to measurement, euthanize fish quickly without loss of fluid from body cavity
- Measure and weigh all individual fish samples prior to processing
- Whole body fish should be collected and provided to the lab without further processing
- Composite same species, genus, or family of fish (assuming the same feeding strategy) as needed for tissue mass; it would be best to target an abundant species/genus/family with the same feeding strategy (i.e., either primarily benthic feeding or primarily water column feeding and fish of the same size, generally).

3.5.3 Target species:

- Sucker species: white sucker, spotted sucker, lake or creek chubsuckers
- Shad species: gizzard shad, American shad and threadfin shad
- Sunfish species: Bluegill sunfish, spotted sunfish
- Minnow species: fathead minnows, shiners

Note: List is provided as examples; Field staff have our support in selecting other appropriate smaller (< 12 inches) benthic fish based on species observed during sampling.

3.5.4 Laboratory notes:

- Minimum tissue mass: 40 g (30 g for PFAS, 10g for % moisture; ok if short on mass for % moisture)
- Sampling container: HDPE bags
- Analysis: Method 537/Table 3+ PFAS, % moisture (if sufficient mass)
- Please indicate on COC that these are to be processed as WHOLE BODY samples and not skin-off fillet samples.
- Recommend Sample IDs CFR-06 (or 07 depending on location)-FISH-WHOLE-1 to CFR-07-FISH- WHOLE-05

3.5.5 Contingency Plan:

If low success in capturing additional small whole-body fish for analysis, the need for remobilization and additional sampling in later August will be evaluated based on the completed fish sampling to date.

3.6 <u>Crawfish Trapping and Analysis:</u>

3.6.1 Background:

Consumption of benthic invertebrates by wildlife is a complete exposure pathway, and crawfish have been identified as a relatively easy benthic invertebrate that is consumed by wildlife (river otters, minks).

3.6.2 Methods:

- Crawfish traps will be deployed at the 4 Cape Fear River EUs
- 3 baited crawfish traps will be deployed at each EU at different locations for three discrete samples
- Check traps at the end of sampling day and collect crawfish.
  - If insufficient mass (< 40 g) collect crawfish and freeze, leave traps in place to collect additional mass
  - If sufficient mass, collect and submit to laboratory as whole-body organism for analysis
- Measure individual crawfish weights and lengths prior to submitting to the lab.

3.6.3 Laboratory notes:

- Minimum tissue mass: 40 g (30 g for PFAS, 10g for % moisture; ok if short on mass for % moisture)
- Sampling container: HDPE jars or bags
- Analysis: Method 537/Table 3+ PFAS, % moisture (if sufficient mass)

3.6.4 Contingency Plan:

If low sampling success, benthic grab sampling for invertebrates may be added to the Sediment Characterization efforts. Site personal have indicated areas near Site are generally softer sediment with relatively high invertebrate density. If crawfish trapping is unsuccessful prior to sediment characterization mobilization, additional sampling notes for benthic grab sampling will be provided. Please contact either Wendy or Jennifer with any questions or concerns during fish, crawfish, plant or soil invertebrate sampling.

4 COLLECTION OF CO-LOCATED SOIL AND EARTHWORMS

4.1 Standard Operating Procedure

The Fayetteville soil and earthworm collection effort will target areas of seeps along the Cape Fear River on the Site. These areas are expected to have a high abundance of earthworms based on anecdotal site observations and are expected to represent areas of highest exposure for ecological receptors.

The following procedure will be employed to collect collocated soil and earthworm samples at each Seep sampling location (Figure 1). There are five total sampling locations planned for co-located soil and earthworms, however these locations are also being sampled separately for bank soils (see Bank Soil SOP), therefore two soil samples (one for co-located soil/earthworms, one for spatial composites of surface soil) are collected at each seep.

- Identify an area approximately 2' x 2' that is relatively clear of heavy brush and debris. Sample locations should target the areas near the seep channel and riverbank edge; an example area is shown in Figure 2.
- Clear away vegetation and leaf debris as needed to expose surface soil; photograph sample plot and surrounding areas, mark with GPS/record coordinates
- Set up a ¼ inch sieve with new or decontaminated HDPE or stainless-steel bin/catcher underneath sieve.
- Take a single shovel of surface soil and visually inspect for earthworms.
    - If earthworms are present, place soil in the sieve and catcher. Sieve soil to expose earthworm.
    - If no earthworms are visually identified, discard shovel of soil.
- Continue collecting, visually evaluating and ,compositing soil samples, targeting 30g of earthworms (5 to 6 big worms); a minimum of 10 grams of tissue is needed for a viable sample but the lab requests 30g where possible.
- Once a sufficient mass of worms has been collected in the sieve:
    - Photograph and then remove the sieve from the catcher/bin
    - Homogenize soil in bin by mixing with a decontaminated stainless-steel spoon and collect 2x 16-oz jars of homogenized soil for analysis
    - After soil is collected into sample jars, prepare earthworms. Using lab provided PFAS free water, rinse the earthworms on screen until they are free of soil. Using stainless steel tweezers (or similar), place worms in a glass sampling jar lined with filter paper and a small volume (2-3 drops) of DI water for moisture. Photograph contents of jar. Store jar at ambient temperatures away from sunlight overnight to allow earthworms to depurate.
    - The next morning, remove earthworms from original container into a clean glass sampling container and place in freezer (if possible) or in a cooler with ice until delivery to the laboratory.
- 5 soil and 5 earthworm tissue samples will be submitted to the laboratory for analysis of Table 3+ SOP, Method 537-mod. Soil samples will also be analyzed for total organic carbon and tissue samples will also be analyzed for percent moisture.
- Sample ID: LOCATION# - MEDIA – DATE as MMDDYY

Example: SEEP1-SOIL-091219 or SEEP1-WORM-091319

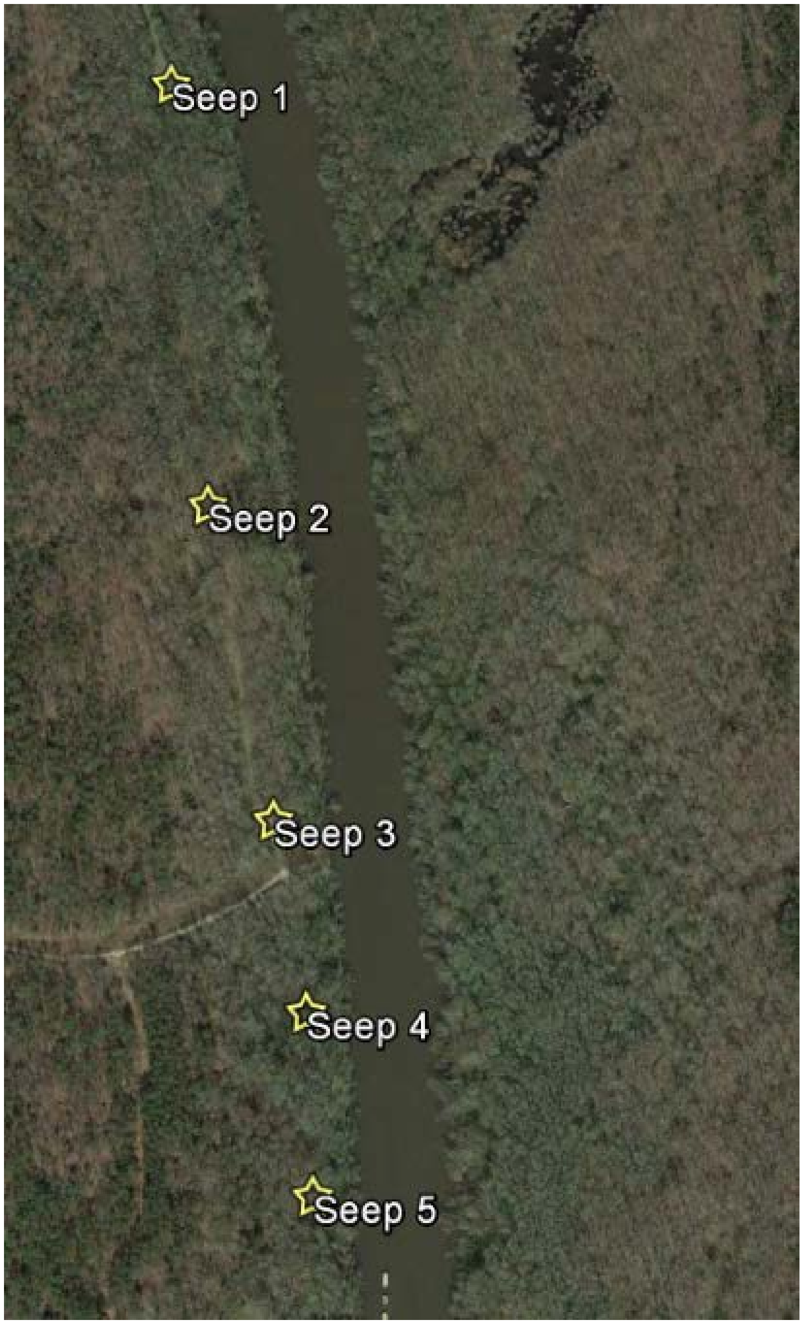


Figure 1: Seep sample locations for composite soil and co-located soil and earthworm sampling. Note, locations of seeps are approximate.

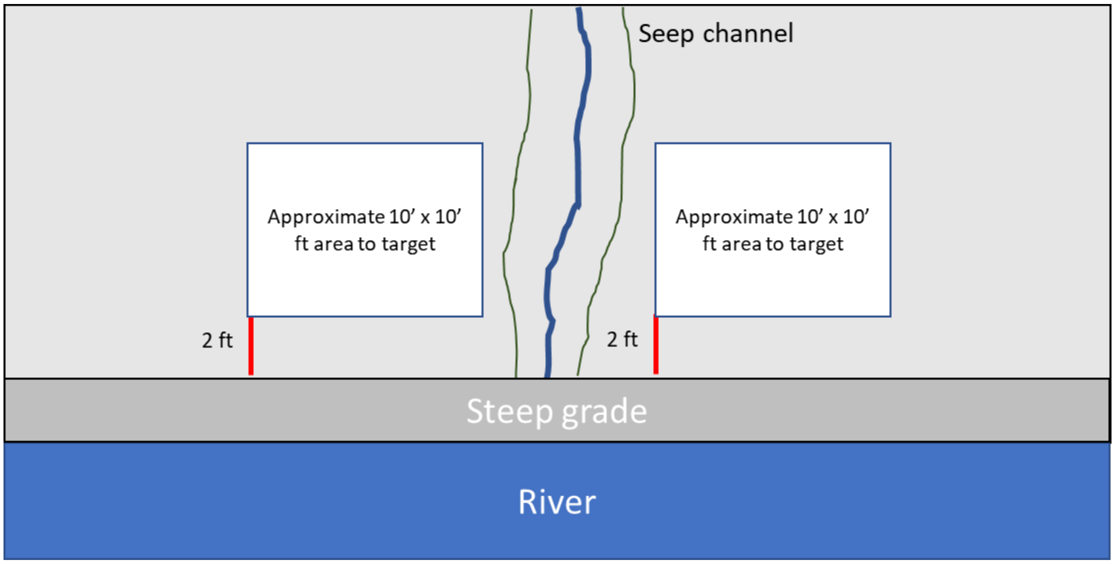


Figure 2: Example areas near seeps to target for co-located earthworm and soil sampling.

5 COMPOSITE SOIL SAMPLING ALONG RIVERBANK

5.1 Standard Operating Procedure

The Fayetteville bank soil collection effort will target areas of seeps along the Cape Fear River on the Site. The following procedure will be employed to collect composite soil samples at eight locations (Figures 1 and 2).

- At each sampling location, a single composite sample of 6 sub-samples will be collected. While the specific locations of subsamples will vary, similar spatial coverage will be targeted.
    - For samples collected at each seep location (Figure 1), the 6 sub-samples will be distributed as follows: 3 subsamples will be collected from each side of the seep (Figure 3). Subsamples will be collected outside of the seep channel, targeting 2 ft from the seep channel edge, and spaced 2 ft apart along the seep channel. Samples will be collected as close to the River as safely feasible.
    - For samples collected at near the Lock and Dam (Figure 2), the 6 sub-samples will be distributed as follows: 6 subsamples oriented parallel to the riverbank (Figure 4). Subsamples will be collected approximately 2 feet from the river and will be spaced approximately 2 feet apart.
- Identify an area along the outlet of each sampling location that allows the collection of composite samples according to Figures 3 and 4. Mark out the 6 subsample locations with flags or other markers and photograph from multiple angles, record GPS of each subsample.
- For each sample:
    - At each subsample location, collect a soil sample from 0 to 1 ft using a decontaminated stainless-steel shovel.
    - Approximately the same sample volume should be collected from each subsample location.
    - Place subsampled soil in a large decontaminated stainless steel or HDPE bin for compositing.
    - Composite and homogenize the six subsamples.
    - Photograph the sample after mixing.
    - From the soil composite, fill two 16 oz jars for laboratory analysis.

- 8 composite bank soil samples will be collected for analysis of Table 3+, Method 537 and Total organic carbon.
- Sample ID: LOCATION# - MEDIA – DATE as MMDDYY-COMP
  Example: SEEP1-SOIL-091219-COMP or CFR07a-SOIL-091419-COMP

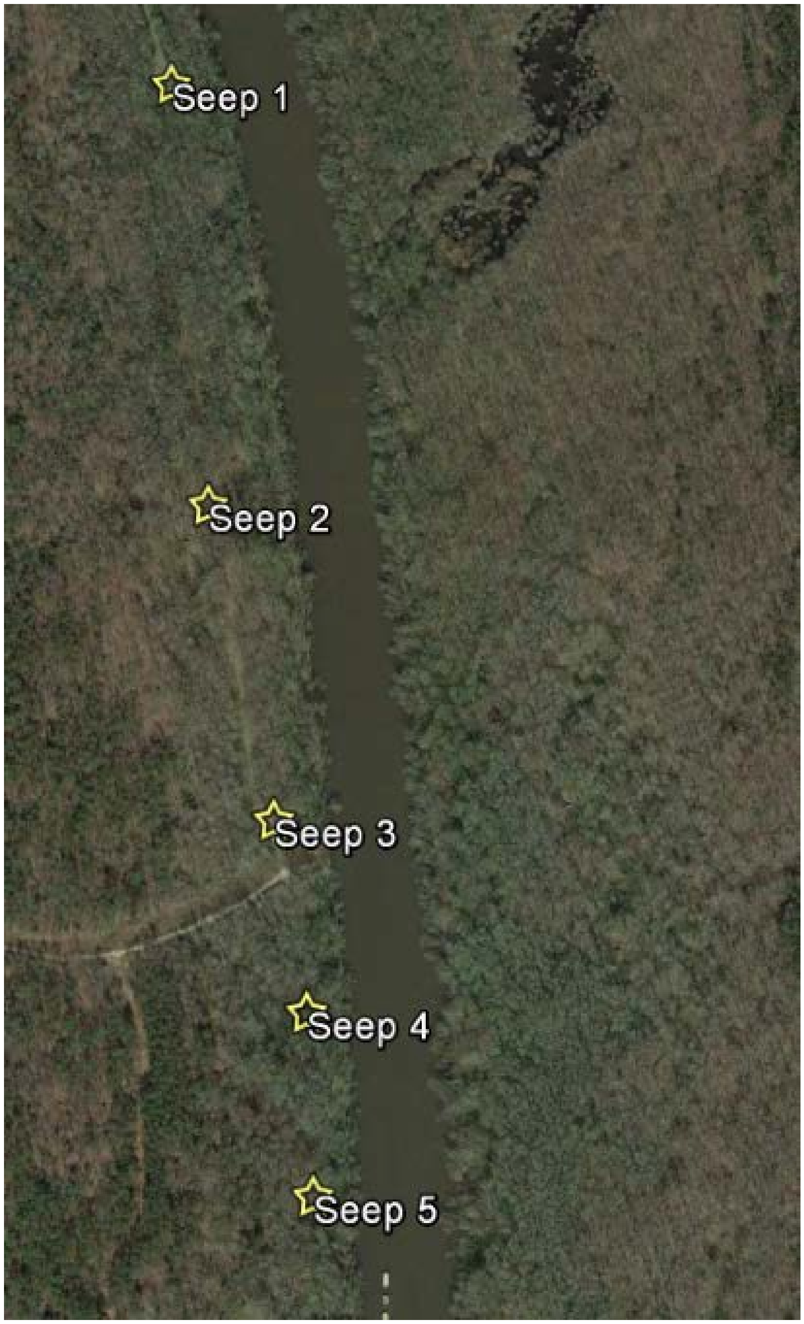


Figure 1: Composite Soil Sample Locations at Seeps. Note, locations of seeps are approximate.

Figure 2: Composite Soil Sample Locations Near the Lock and Dam

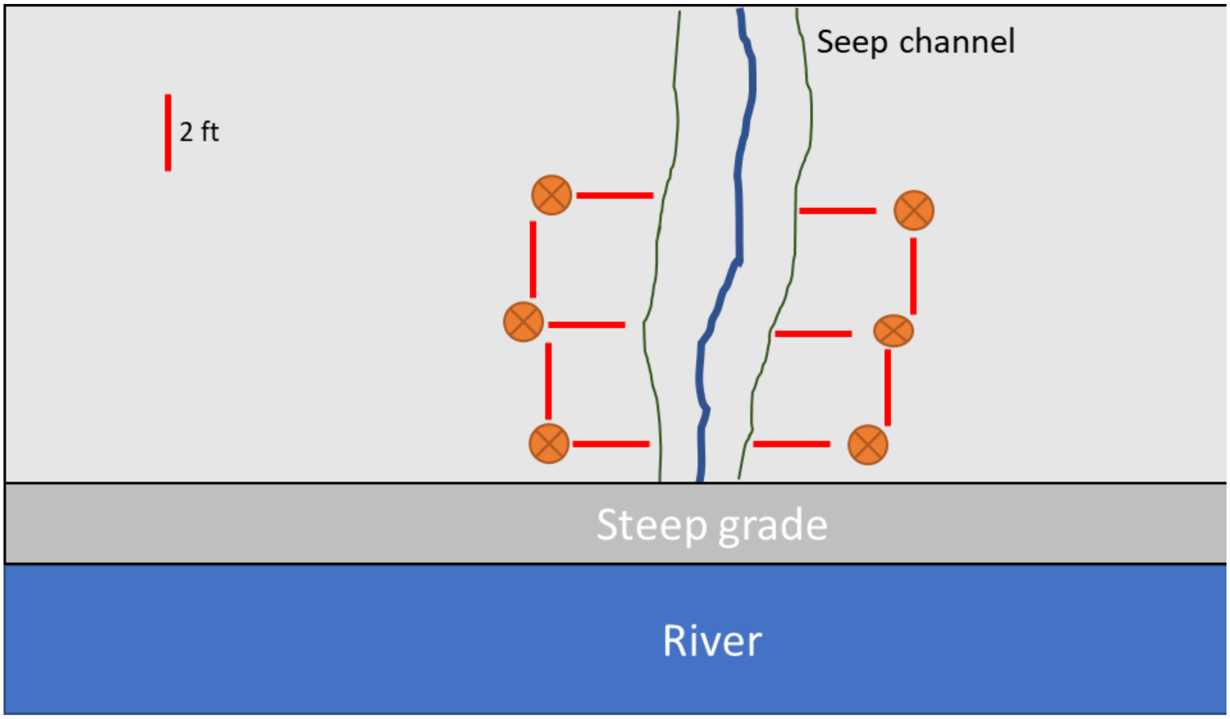


Figure 3 – Conceptual Distribution of Subsamples at Composite Soil Sampling Location at Seep

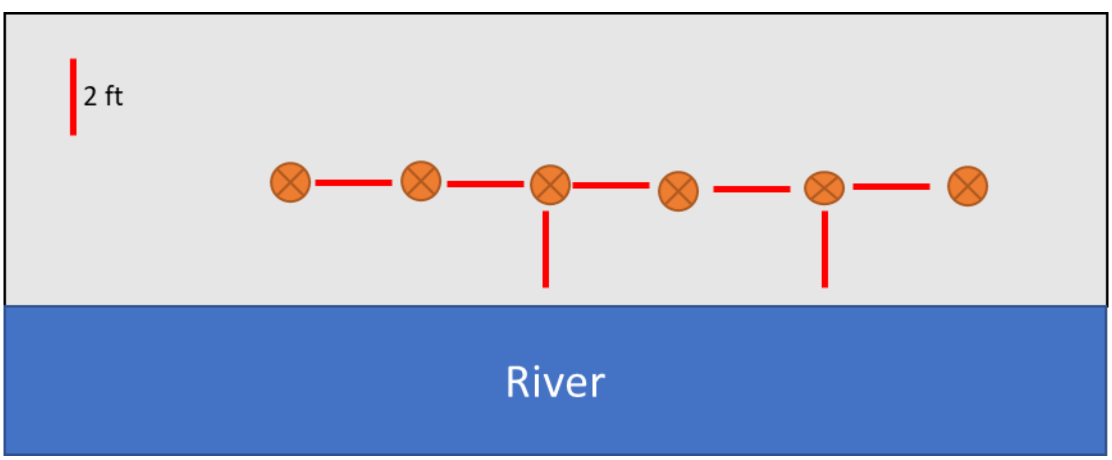


Figure 4 – Riverbank Sampling Conceptual Schematic

6 BENTHIC INVERTEBRATE AND SEDIMENT SAMPLING IN SUPPORT OF THE ECOLOGICAL SLEA

6.1 Background:

To support the evaluation of exposure to aquatic-life dependent birds and mammals:

1. Collection and analysis of 2-3 samples of Asian clams.
2. Collection and analysis of up to 3 samples of other benthic invertebrates
3. Collection and analysis of 4-5 samples of aquatic vegetation.
4. Collection and analysis of 4-5 samples of surface sediment.

6.2 Collection and analysis of 2-3 samples of Asian clams.

Rationale: Asian clams have been identified as highly abundant in areas of sandy/gravel banks along this stretch of the Cape Fear River (CFR). Highly abundant organisms provide food sources for wildlife and efficient sample collection when high tissue mass is needed.

Sample Locations: pre-determined sampling locations are not included in the

SOP. Sampling Methods:

https://www.epa.gov/sites/production/files/2014-03/documents/3M6.PDF

- Based on previous site surveys and recognizance, the approximate area of sandy/gravel banks have been approximated. Staff will mobilize to the general areas, and using a GoPro observe the bottom to identify the presence of clam beds.
- Whole body homogenize (rationale: small, thin shelled, likely consumed whole by organisms; conserve internal juices/water from clams; uncertainty – some organisms do open shellfish and eat only soft tissues, and this may underestimate exposure for that scenario)

7 COLLECTION AND ANALYSIS OF 5 SAMPLES OF AQUATIC VEGETATION.

7.1 Sample Locations:

Aquatic vegetation samples will be collected from within and along the banks of the CFR. Samples will be collected from along the western bank of the CFR, in the area of each Sediment sample location (SED1 through SED5; Figure 1. Note SED6 not included for veg.

7.2 Sampling Methods:

- Any live aquatic vegetation is considered acceptable for sampling – including floating vegetations (e.g. duckweed), submerged vegetation and emergent vegetation (i.e. roots/stems below water but leaves above). Leaf litter, debris and other dead vegetation should not be collected.
- Collection methods may vary by type of vegetation:
  - Floating vegetation can be collected from the surface of the water using a net and placed in sampling containers by gloved hand.
  - Submerged vegetation that is easily loosened from sediment can be disturbed to loosen and removed either using a gloved hand or net.
  - Emergent aquatic vegetation that can be safely reached from the vessel, can be pulled directly from sediment using a gloved hand and placed in sampling containers.
- In the vicinity of the Sampling location, collect any observed floating vegetation first.
- Move to the western bank to collect emergent and submerged vegetation as observed.
- If limited aquatic vegetation is observed, subsamples from multiple locations can be composited as needed to collect 20-30 grams of tissue, but please discuss with EcoSLEA task lead (Jenn Arblaster) prior to composting.
- Once collected, samples should be weight to confirm sample mass, photographed, described in field notes (i.e. % submerged, % floating, % emergent in sample), placed in sampling jars, sealed jars placed into Ziplock bags and placed on ice for transport to lab.

8 COLLECTION AND ANALYSIS OF 6 SAMPLES OF SURFACE SEDIMENT.

8.1 Sample Locations:

SED1 through SED6 (Figure 1

SED1	34.850394°	-78.826705°
SED2	34.848660°	-78.825936°
SED3	34.843501°	-78.823967°
SED4	34.837534°	-78.823236°
SED5	34.831484°	-78.822477°
SED6	34.822039°	-78.820892°

8.2 Sampling Methods:

- At each sampling location, a petite ponar will be used to collect a three-point composite of surface sediment. The ponar is approximately 3-4 inches deep and the full depth can be considered 'surface sediment'.
- It may be worthwhile to use a GoPro to observe the sediment bottom for any large debris prior to attempting. Sampling locations can be adjusted as needed to avoid refusal due to debris. If refusal is encountered, sample locations can be moved up to 50 ft as needed in any direction. Record coordinates of all sample locations.
- While on station, lower the ponar to collect a grab sample of surface sediment. On vessel, observe the sample for acceptance and photograph (note sample ID in photo). Acceptable samples will have greater than 2 inches of sediment recovery.
- In field notes, characterize sediment texture, color (using Munsell chart) and note any odors or sheen.
- Using a stainless-steel spoon/scoop, collect sediment avoiding sediment in contact with the sides of the sampler, and place in a stainless-steel bowl for composting.
- From within an approximate 25 ft radius of the first grab sample, repeat to collect two more subsamples.
- Homogenize sediment until consistent color and texture is achieved removing any large debris (rocks, sticks, shell hash, etc.), and place sample in 2x 16 oz jars and place sealed jars into Ziplock bags. Samples should be sealed and placed on bagged, wet ice for delivery to the laboratory.
- All non-dedicated or non-disposable sampling equipment (e.g., stainless steel reusable equipment used in sediment sampling) will be decontaminated between samples (not subsamples in the same composite) in the following manner:
    - Water rinse;
    - Scrub with de-ionized water containing non-phosphate detergent (e.g.,Alconox®);
    - Tap water rinse; and
    - De-ionized water rinse.

9 COLLECTION AND ANALYSIS OF UP TO 3 SAMPLES OF OTHER BENTHIC INVERTEBRATES

9.1 Sampling locations:

Sampling locations are flexible and can be determined in the field based on invertebrate abundance. SED locations can be used as starting point for field teams.

9.2 Sampling Methods:

- In the general area of each SED sampling location field staff should observe sediment surface for features that would result in refusal, and features like piled/disturbed sediment, burrow holes, or bubbles which may indicate the presence of invertebrates.
- When ready to collect a grab sample, lower the ponar to sediment surface and collect a sample.
- Place sediment from sampler into a sieve using stainless steel scoop/spoon. Gently sieve out sediments using river water to expose invertebrates, photograph and collect using forceps. Place invertebrates in a sampling container and keep on ice.
- If invertebrates are collected at a location, note coordinates with GPS.
- Field staff may need to use judgement regarding the success of collecting invertebrates at a specific location and can collect additional grabs or move to a new location as deemed appropriate.
- Invertebrates collected from the surrounding area of the same SED location can be directly collected in the same sampling jar (however if a single location results in 15g+ of tissue it should be kept separate as a discrete sample).
- As samples are collected from different SED locations, these should be collected in separate jars labeled with the location ID.
- At the end of the field day, individual samples will be weighed, and a compositing approach will be determined in coordination with the EcoSLEA task lead (Jenn Arblaster) as needed. Samples will be composited and stored on bagged wet ice until transport to the laboratory.
- If insufficient mass for 2-3 samples and pending time in the field, the task leads may request an additional Asian clam sample. Please plan on connecting with Task leads prior to demobilizing.

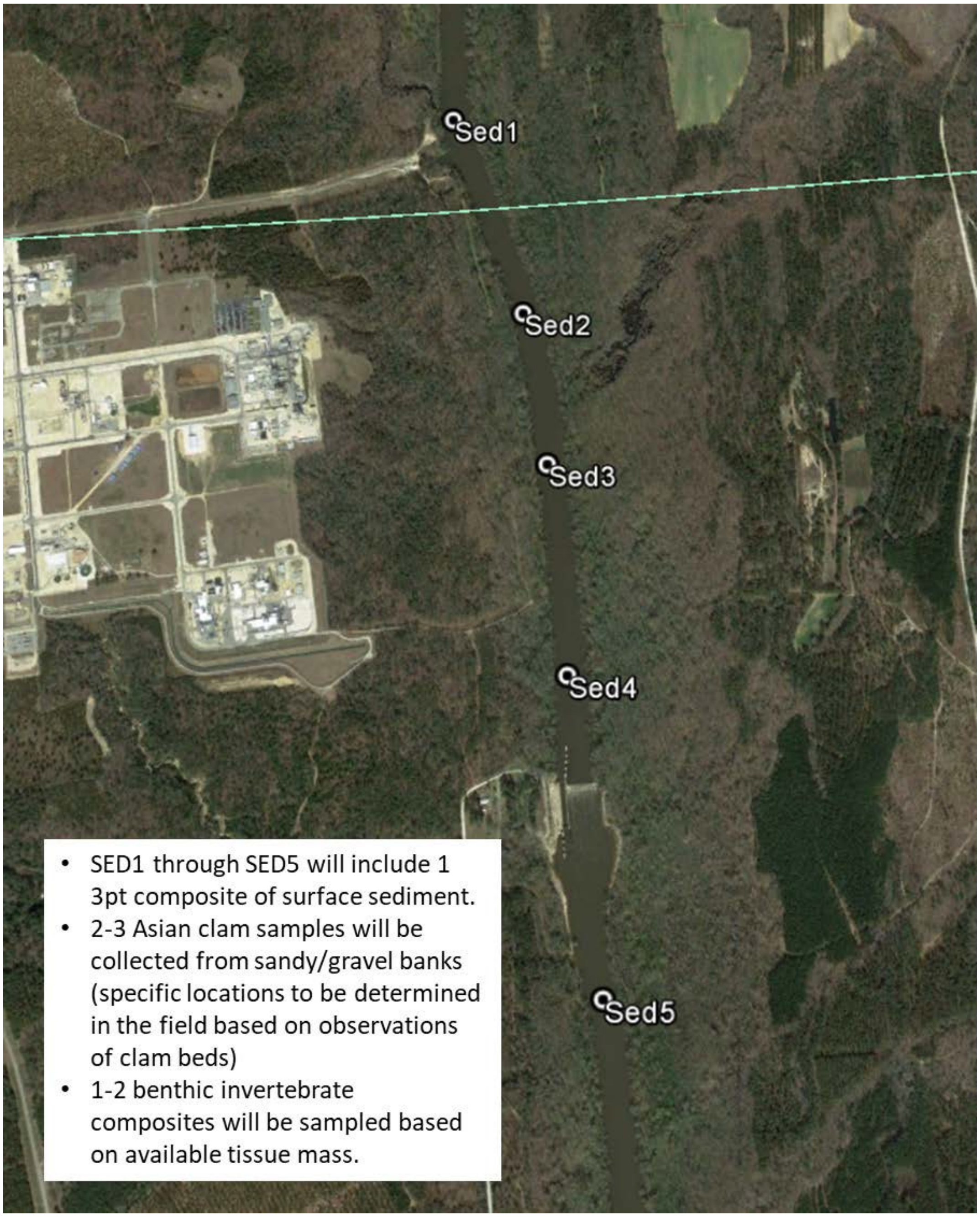


Figure 1: Proposed Sampling Locations for Benthic Invertebrates and Sediment Samples for Ecological SLEA.

APPENDIX B
Data Summary Tables

Media	**FISH**	**FISH**	**FISH**	**FISH**	**FISH**	**FISH**	**FISH**	**FISH**	**FISH**	**FISH**	**FISH**	**FISH**
Location ID	**CFR Bladen-01**	**CFR-05**	**CFR-05**	**CFR-05**	**CFR-05**	**CFR-05**	**CFR-05**	**CFR-06**	**CFR-06**	**CFR-06**	**CFR-06**	**CFR07-01**
Field Sample ID	**CFRBladen-01-LMB**	**CFR-05-1-LMB**	**CFR-05-1-LMB**	**CFR-05-2-FH**	**CFR-05-3-BC**	**CFR-05-4-CC**	**CFR-05-4-CC-Carcass**	**CFR-06-1-BC**	**CFR-06-2-BC**	**CFR-06-2-BC-Carcass**	**CFR-06-3-BC**	**CFR07-01-Comely Shiner**
Sample Date	**27-Sep-19**	**01-Aug-19**	**01-Aug-19**	**01-Aug-19**	**01-Aug-19**	**01-Aug-19**	**01-Aug-19**	**31-Jul-19**	**31-Jul-19**	**31-Jul-19**	**31-Jul-19**	**25-Sep-19**
Sample Matrix	**Fish - Whole-body**	**Fish- Carcass (fillet removed)**	**Fish Tissue- Fillet**	**Fish Tissue- Fillet**	**Fish Tissue- Fillet**	**Fish Tissue- Fillet**	**Fish- Carcass (fillet removed)**	**Fish Tissue- Fillet**	**Fish Tissue- Fillet**	**Fish- Carcass (fillet removed)**	**Fish Tissue- Fillet**	**Fish - Whole-body**
Eco SLEA Data Use	**Downstream Sample**	**EPCs/Whole-body to fillet ratio**	**EPCs/Whole-body to fillet ratio**	**EPCs**	**EPCs**	**EPCs/Whole-body to fillet ratio**	**Whole-body to fillet ratio**	**EPCs**	**EPCs/Whole-body to fillet ratio**	**Whole-body to fillet ratio**	**EPCs**	**EPCs**
Sample Delivery Group (SDG)	**320-54836-1**	**320-52951-1**	**320-52951-1**	**320-52951-1**	**320-52951-1**	**320-52951-1**	**320-52951-1**	**320-52951-1**	**320-52951-1**	**320-52951-1**	**320-52951-1**	**320-54836-1**
Lab Sample ID	**320-54836-16**	**320-52951-22**	**320-52951-13**	**320-52951-14**	**320-52951-15**	**320-52951-16**	**320-52951-23**	**320-52951-5**	**320-52951-6**	**320-52951-20**	**320-52951-9**	**320-54836-5**
Table 3+ Lab SOP (ppt)												
HFPO-DA	<4,300	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
PFMOAA	**4,900 J**	<1,000 R	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**3,200**
PFO2HxA	<1,000	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
PFO3OA	<1,000	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
PFO4DA	**400**	**960 J**	**2,600 J**	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**6,300**
PFO5DA	**310**	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**3,100**
PMPA	<1,000	**900 J**	**370 J**	<1,000 UJ	<1,000 UJ	**270 J**	<1,000 UJ	<1,000 UJ	**280 J**	310 UJ	<1,000 UJ	<1,000
PEPA	<1,000	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
PFESA-BP1	<1,000	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
PFESA-BP2	<1,000	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
Byproduct 4	<1,000	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
Byproduct 5	<1,000	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
Byproduct 6	<1,000	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
NVHOS	<1,000	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
EVE Acid	<1,000	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
Hydro-EVE Acid	<1,000	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
R-EVE	<1,000	**3,300 J**	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
PES	<1,000	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
PFECA B	<1,000	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
PFECA-G	<1,000	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000
Other PFAS (ppt)												
10:2 Fluorotelomer sulfonate	<1,000 UJ	<1,500 UJ	<4,200 UJ	<1,000 UJ	<1,000 UJ	<7,300 UJ	<1,500 UJ	<1,300 UJ	<4,100 UJ	<3,000 UJ	<1,000 UJ	--
11Cl-PF3OUdS	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<10,000	<14,000 UJ	<40,000 UJ	<10,000 UJ	<10,000 UJ	<70,000 UJ	<15,000 UJ	<12,000 UJ	<40,000 UJ	<29,000 UJ	<10,000 UJ	--
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<14,000	<10,000 UJ	<59,000 UJ	<15,000 UJ	<13,000 UJ	<100,000 UJ	<10,000 UJ	<18,000 UJ	<59,000 UJ	<10,000 UJ	<14,000 UJ	--
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<1,400	--	--	<1,400 UJ	<1,000 UJ	--	--	<1,000 UJ	--	--	<1,000 UJ	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<2,700	--	--	<1,000 UJ	<1,000 UJ	--	--	<1,000 UJ	--	--	<1,000 UJ	--
6:2 Fluorotelomer sulfonate	<10,000	<10,000 UJ	<24,000 UJ	<10,000 UJ	<10,000 UJ	<42,000 UJ	<10,000 UJ	<10,000 UJ	<24,000 UJ	<17,000 UJ	<10,000 UJ	--
9Cl-PF3ONS	<2,800	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<2,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	--
ADONA	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	--
NaDONA	<1,100	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	--
N-ethyl perfluorooctane sulfonamidoacetic acid	<14,000	<10,000 UJ	<59,000 UJ	<15,000 UJ	<13,000 UJ	<10,000 UJ	<10,000 UJ	<18,000 UJ	<59,000 UJ	<10,000 UJ	<14,000 UJ	--
N-ethylperfluoro-1-octanesulfonamide	<7,500	--	--	<1,000 UJ	<1,000 UJ	--	--	<1,000 UJ	--	--	<1,000 UJ	--
N-methyl perfluoro-1-octanesulfonamide	<1,200	--	--	<1,000 UJ	<1,000 UJ	--	--	<1,000 UJ	--	--	<1,000 UJ	--
N-methyl perfluorooctane sulfonamidoacetic acid	<15,000	<10,000 UJ	<62,000 UJ	<15,000 UJ	<14,000 UJ	<11,000 UJ	<10,000 UJ	<10,000 UJ	<62,000 UJ	<10,000 UJ	<10,000 UJ	--
Perfluorobutane Sulfonic Acid	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**390 J**	**270 J**	<1,000 UJ	**4,100 J**	<1,000 UJ	**6,000 J**	--
Perfluorobutanoic Acid	<1,100	<1,600 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**770 J**	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	--
Perfluorodecane Sulfonic Acid	**3,100**	**2,900 J**	**1,300 J**	**2,200 J**	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	--
Perfluorodecanoic Acid	**4,500**	**12,000 J**	**2,800 J**	**14,000 J**	<1,000 UJ	**150 J**	**630 J**	<1,000 UJ	**280 J**	**750 J**	<1,000 UJ	--
Perfluorododecane sulfonic acid (PFDoS)	<2,300	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,700 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	--
Perfluorododecanoic Acid	**7,300**	**11,000 J**	**2,200 J**	**9,700 J**	**1,600 J**	**470 J**	**2,300 J**	**1,100 J**	**1,300 J**	**3,100 J**	<1,000 UJ	--
Perfluoroheptane sulfonic acid (PFHpS)	<1,400	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	--
Perfluoroheptanoic Acid	<1,100	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	--
Perfluorohexadecanoic acid (PFHxDA)	<1,700 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	--
Perfluorohexane Sulfonic Acid	<1,200	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	--
Perfluorohexanoic Acid	<1,600	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	--
Perfluorononanesulfonic acid	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	--
Perfluorononanoic Acid	<1,400	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	--
Perfluorooctadecanoic acid	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	--
Perfluorooctane Sulfonamide	**870**	**330 J**	<1,300 UJ	<1,000 UJ	<1,000 UJ	<2,300 UJ	**440 J**	<1,000 UJ	**450 J**	**1,200 J**	<1,000 UJ	--
Perfluoropentane sulfonic acid (PFPeS)	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	--
Perfluoropentanoic Acid	<3,000	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<2,200 UJ	<1,000 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	--
Perfluorotetradecanoic Acid	**2,800 J**	**5,100 J**	**1,300 J**	**2,100 J**	**1,100 J**	**490 J**	**1,400 J**	<1,000 UJ	**1,200 J**	**3,100 J**	<1,000 UJ	--
Perfluorotridecanoic Acid	**2,300**	**3,900 J**	**1,200 J**	**1,900 J**	<1,000 UJ	**320 J**	**900 J**	<1,000 UJ	**830 J**	**1,600 J**	<1,000 UJ	--
Perfluoroundecanoic Acid	**6,800**	**17,000 J**	**3,700 J**	**17,000 J**	**1,400 J**	**350 J**	**1,600 J**	<1,000 UJ	<5,700 UJ	**1,900 J**	<1,000 UJ	--
PFOA	<3,400	<1,000 UJ	<1,400 UJ	<1,000 UJ	<1,000 UJ	<2,400 UJ	<1,000 UJ	<1,000 UJ	<1,400 UJ	<1,000 UJ	<1,000 UJ	--
PFOS	**120,000**	**120,000 J**	**37,000 J**	**52,000 J**	**3,500 J**	<5,600 UJ	**87,000 J**	<2,500 UJ	<3,200 UJ	**530,000 J**	<2,500 UJ	--
Other Parameters												
Percent Moisture	**76.5 J**	**69.9**	**79.7**	--	--	**86.5**	**75.8**	--	**79.7**	**68.9**	--	--
Total Organic Carbon (mg/kg)	--	--	--	--	--	--	--	--	--	--	--	--

Media	FISH	FISH	FISH	FISH	FISH	FISH	FISH	FISH	FISH	FISH	FISH	FISH
Location ID	**CFR07-01**	**CFR-09**	**CFR-09**	**DERC**	**DERC**	**DERC**	**DERC**	**MM-68**	**MM-68**	**SEEP-A-1**	**SEEP-A-2**	**SEEP-B-1**
Field Sample ID	**CFR07-01-Lamprey**	**CFR-09-2-BC**	**CFR-09-2-BC-Carcass**	**DERC-1-LMB**	**DERC-2-LMB**	**DERC-3-LMB**	**DERC-3-LMB-Carcass**	**MM-68-4-LMB**	**MM-68-4-LMB-Carcass**	**SeepA-01-Redbreast Sunfish**	**SeepA-02-Redbreast Sunfish**	**SeepB-01-Spotted bass**
Sample Date	**25-Sep-19**	**31-Jul-19**	**31-Jul-19**	**30-Jul-19**	**30-Jul-19**	**30-Jul-19**	**30-Jul-19**	**02-Aug-19**	**02-Aug-19**	**24-Sep-19**	**26-Sep-19**	**24-Sep-19**
Sample Matrix	**Fish - Whole-body**	**Fish Tissue- Fillet**	**Fish- Carcass (fillet removed)**	**Fish Tissue- Fillet**	**Fish Tissue- Fillet**	**Fish Tissue- Fillet**	**Fish- Carcass (fillet removed)**	**Fish Tissue- Fillet**	**Fish- Carcass (fillet removed)**	**Fish - Whole-body**	**Fish - Whole-body**	**Fish - Whole-body**
Eco SLEA Data Use	**EPCs**	**Whole-body to fillet ratio**	**Whole-body to fillet ratio**	**EPCs**	**EPCs**	**EPCs/Whole-body to fillet ratio**	**Whole-body to fillet ratio**	**Whole-body to fillet ratio**	**Whole-body to fillet ratio**	**EPCs**	**EPCs**	**EPCs**
Sample Delivery Group (SDG)	**320-54836-1**	**320-52951-1**	**320-52951-1**	**320-52951-1**	**320-52951-1**	**320-52951-1**	**320-52951-1**	**320-52951-1**	**320-52951-1**	**320-54836-1**	**320-54836-1**	**320-54836-1**
Lab Sample ID	**320-54836-4**	**320-52951-8**	**320-52951-21**	**320-52951-1**	**320-52951-2**	**320-52951-3**	**320-52951-19**	**320-52951-17**	**320-52951-24**	**320-54836-1**	**320-54836-7**	**320-54836-2**
Table 3+ Lab SOP (ppt)												
HFPO-DA	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<5,200	<2,200	<1,300
PFMOAA	**13,000**	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	**4,500 J**	**4,300 J**	**5,100**
PFO2HxA	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000
PFO3OA	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000
PFO4DA	<1,000	**1,700 J**	<1,000 UJ	<1,000 UJ	<1,000 UJ	**270 J**	**950 J**	<1,100 UJ	**890 J**	**41,000**	**31,000 J**	**1,900**
PFO5DA	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**810 J**	<1,100 UJ	<1,000 UJ	**1,700**	**710 J**	<1,000
PMPA	<1,000	**300 J**	<1,000 UJ	<1,000 UJ	<1,000 UJ	**270 J**	**630 J**	<1,100 UJ	**1,100 J**	**240 J**	<1,000	<1,000
PEPA	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,100	<1,000	<1,000
PFESA-BP1	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,100	<1,000	<1,000
PFESA-BP2	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**290 J**	<1,100 UJ	<1,000 UJ	<1,100	<1,000	<1,000
Byproduct 4	<1,000	<1,000 UJ	**510 J**	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	**730 J**	**400 J**	**6,400**
Byproduct 5	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,100	<1,000	<1,000
Byproduct 6	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,100	<1,000	<1,000
NVHOS	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	**710**	<1,000	<1,000
EVE Acid	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,100	<1,000	<1,000
Hydro-EVE Acid	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,100	<1,000	<1,000
R-EVE	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**2,500 J**	<1,100 UJ	**4,600 J**	**2,700**	**780**	<1,000
PES	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,100	<1,000	<1,000
PFECA B	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,100	<1,000 UJ	<1,000
PFECA-G	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,100 UJ	<1,000 UJ	<1,000
Other PFAS (ppt)												
10:2 Fluorotelomer sulfonate	--	<4,800 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<4,500 UJ	<8,200 UJ	<5,900 UJ	<6,100 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ
11Cl-PF3OUdS	--	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	--	<46,000 UJ	<10,000 UJ	<11,000 UJ	<10,000 UJ	<44,000 UJ	<79,000 UJ	<57,000 UJ	<58,000 UJ	<12,000	<10,000 UJ	<10,000
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	--	<68,000 UJ	<10,000 UJ	<17,000 UJ	<11,000 UJ	<10,000 UJ	<10,000 UJ	<84,000 UJ	<86,000 UJ	<18,000	<10,000	<10,000
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	<1,000 UJ	<1,000 UJ	--	--	--	--	<1,700	<1,000	<1,000
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	--	--	<1,000 UJ	<1,000 UJ	--	--	--	--	**6,700**	<1,400	<1,000
6:2 Fluorotelomer sulfonate	--	<28,000 UJ	<10,000 UJ	<10,000 UJ	<10,000 UJ	<10,000 UJ	<10,000 UJ	<34,000 UJ	<35,000 UJ	<10,000	<10,000	<10,000
9Cl-PF3ONS	--	<1,300 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ	<1,300 UJ	<1,100 UJ	<1,600 UJ	<1,000 UJ	<3,400	<1,400	<1,000
ADONA	--	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000
NaDONA	--	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100 UJ	<1,100	<1,100	<1,100
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<10,000 UJ	<10,000 UJ	<17,000 UJ	<10,000 UJ	<10,000 UJ	<10,000 UJ	<84,000 UJ	<10,000 UJ	<18,000	<10,000	<10,000
N-ethylperfluoro-1-octanesulfonamide	--	--	--	<1,000 UJ	<1,000 UJ	--	--	--	--	<9,100	<3,800	<1,000
N-methyl perfluoro-1-octanesulfonamide	--	--	--	<1,000 UJ	<1,000 UJ	--	--	--	--	<1,500	<1,000	<1,000
N-methyl perfluorooctane sulfonamidoacetic acid	--	<10,000 UJ	<10,000 UJ	<10,000 UJ	<10,000 UJ	<10,000 UJ	<10,000 UJ	<88,000 UJ	<10,000 UJ	<19,000	<10,000	<10,000
Perfluorobutane Sulfonic Acid	--	**1,900 J**	<1,000 UJ	<1,000 UJ	<1,000 UJ	**320 J**	**1,300 J**	**270 J**	<1,000 UJ	<1,200	<1,000	<1,000
Perfluorobutanoic Acid	--	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<4,900 UJ	<1,000 UJ	<1,000 UJ	<6,500 UJ	**370**	<1,000	<1,000
Perfluorodecane Sulfonic Acid	--	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**190 J**	**550 J**	**2,000 J**	**6,400 J**	**1,400**	**1,800**	**2,000**
Perfluorodecanoic Acid	--	<1,000 UJ	**360 J**	<1,000 UJ	<1,000 UJ	**800 J**	**3,200 J**	**4,100 J**	**21,000 J**	**2,200**	**3,100**	**3,100**
Perfluorododecane sulfonic acid (PFDoS)	--	<1,100 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,400 UJ	<1,000 UJ	<2,900	<1,200	<1,000
Perfluorododecanoic Acid	--	**430 J**	**1,300 J**	<1,000 UJ	<1,000 UJ	**930 J**	**3,200 J**	**3,700 J**	**18,000 J**	**3,500**	**5,900**	**4,600**
Perfluoroheptane sulfonic acid (PFHpS)	--	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**580 J**	**1,000**	**260**	<1,000
Perfluoroheptanoic Acid	--	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,400	<1,000	<1,000
Perfluorohexadecanoic acid (PFHxDA)	--	<8,100 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**310 J**	<2,100 UJ	<1,000 UJ	<1,000 UJ
Perfluorohexane Sulfonic Acid	--	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**370 J**	**390**	**660**	**2,500**
Perfluorohexanoic Acid	--	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<2,000	<1,000	<1,000
Perfluorononanesulfonic acid	--	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**520 J**	<1,000	<1,000	<1,000
Perfluorononanoic Acid	--	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,700	<1,000	<1,000
Perfluorooctadecanoic acid	--	<5,100 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,300 UJ	<1,000 UJ	<1,000 UJ
Perfluorooctane Sulfonamide	--	**290 J**	**1,900 J**	<1,000 UJ	<1,000 UJ	<1,400 UJ	<1,300 UJ	<1,900 UJ	<1,000 UJ	**1,400**	**1,100**	<1,000
Perfluoropentane sulfonic acid (PFPeS)	--	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**290**	<1,000	<1,000
Perfluoropentanoic Acid	--	<1,400 UJ	<1,300 UJ	<1,000 UJ	<1,000 UJ	<1,300 UJ	<1,200 UJ	<1,700 UJ	<1,000 UJ	<3,700	<1,500	<1,000
Perfluorotetradecanoic Acid	--	**450 J**	<1,000 UJ	<1,000 UJ	<1,000 UJ	**400 J**	**1,400 J**	**1,300 J**	**4,900 J**	**2,700 J**	**2,300 J**	**3,200 J**
Perfluorotridecanoic Acid	--	**330 J**	**460 J**	<1,000 UJ	<1,000 UJ	**760 J**	**1,900 J**	**1,500 J**	**4,600 J**	**1,400**	**1,700**	**1,300**
Perfluoroundecanoic Acid	--	**290 J**	**1,100 J**	<1,000 UJ	**1,400 J**	**1,800 J**	**6,900 J**	**4,300 J**	**22,000 J**	**4,100**	**5,200**	**4,500**
PFOA	--	<1,600 UJ	<1,400 UJ	<1,000 UJ	<1,000 UJ	<1,500 UJ	<1,400 UJ	<1,900 UJ	<1,000 UJ	<4,100	<1,700	<1,000
PFOS	--	**1,300 J**	**16,000 J**	**14,000 J**	**12,000 J**	**18,000 J**	**1,400,000 J**	**56,000 J**	**670,000 J**	**140,000**	**78,000**	**81,000**
Other Parameters												
Percent Moisture	--	**84.1**	**74.3**	--	--	**81**	**71.2**	**79.4**	**69.4**	**79.6 J**	**76.3 J**	--
Total Organic Carbon (mg/kg)	--	--	--	--	--	--	--	--	--	--	--	--

Media	FISH	FISH	FISH	FISH	INV	INV	INV	INV	INV	INV	INV	INV
Location ID	SEEP-B-2	SEEP-C-2	WC-01	WC-02	EU-01	EU-10	EU-11	EU-12	EU-2	EU-4	EU-5	EU-6
Field Sample ID	SeepB-02-Redbreast Sunfish	SeepC-02-Redbreast Sunfish	WC-01-LMB	WC-02-Dusky Shiner	EU-1-INV-091219	EU-10-INV-082119	EU-11-inv	EU-12-INV-082019	EU2-inv	EU-4-INV-081919	EU-5-INV-082319	EU6-inv
Sample Date	26-Sep-19	26-Sep-19	26-Sep-19	26-Sep-19	12-Sep-19	21-Aug-19	31-Jul-19	20-Aug-19	25-Jul-19	19-Aug-19	23-Aug-19	25-Jul-19
Sample Matrix	Fish - Whole-body	Fish - Whole-body	Fish - Whole-body	Fish - Whole-body	Offsite- Invert	Offsite- Invert	Offsite- Invert	Offsite- Invert	Offsite- Invert	Offsite- Invert	Offsite- Invert	Offsite- Invert
Eco SLEA Data Use	EPCs	EPCs	EPCs	EPCs	EPCs	EPCs	EPCs	EPCs	EPCs	EPCs	EPCs	EPCs
Sample Delivery Group (SDG)	320-54836-1	320-54836-1	320-54836-1	320-54836-1	320-54302-1	320-53607-1	320-52871-1	320-53490-1	320-52868-1	320-53490-1	320-53637-1	320-52868-1
Lab Sample ID	320-54836-8	320-54836-9	320-54836-10	320-54836-11	320-54302-5	320-53607-6	320-52871-17	320-53490-14	320-52868-8	320-53490-3	320-53637-3	320-52868-12
Table 3+ Lab SOP (ppt)												
HFPO-DA	<4,300	<10,000	<1,000	<1,000	**4,800 J**	<1,700 UJ	<1,000 UJ	<1,000	<12,000 UJ	<1,300	<2,300	<1,000 UJ
PFMOAA	**4,700 J**	**3,000 J**	<1,000	<1,000	<1,000	<1,700	<1,000 UJ	<1,000	<12,000 UJ	<1,000 UJ	<1,300 UJ	<1,000 UJ
PFO2HxA	<1,000	<1,000	<1,000	<1,000	<1,000 UJ	<1,700 UJ	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,300 UJ	<1,000 UJ
PFO3OA	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,700 UJ	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,300 UJ	<1,000 UJ
PFO4DA	**1,100**	**580**	**1,500**	**4,800**	<1,000	<1,700 UJ	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,300 UJ	<1,000 UJ
PFO5DA	**470**	**650**	**1,100**	**1,700**	<1,000	<1,700	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,300 UJ	<1,000 UJ
PMPA	**1,900**	**280**	<1,000	<1,000	<1,000 UJ	**1,300 J**	<1,000 UJ	<1,000	<12,000 UJ	<1,000 UJ	**19,000 J**	<1,000 UJ
PEPA	<1,000	<1,000	<1,000	<1,000	<1,000 UJ	<1,700 UJ	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,300 UJ	<1,000 UJ
PFESA-BP1	<1,000	<1,000	<1,000	<1,000	<1,000	<1,700 UJ	<1,000 UJ	<1,000	**3,500 J**	<1,000	<1,300 UJ	<1,000 UJ
PFESA-BP2	<1,000	<1,000	<1,000	<1,000	<1,000	<1,700 UJ	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,300 UJ	<1,000 UJ
Byproduct 4	<1,000	**450 J**	<1,000	<1,000	<1,000	<1,700 UJ	<1,000 UJ	<1,000	<12,000 UJ	<1,000	**5,600 J**	<1,000 UJ
Byproduct 5	<1,000	<1,000	<1,000	<1,000	<1,000	<1,700 UJ	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,300 UJ	<1,000 UJ
Byproduct 6	<1,000	<1,000	<1,000	<1,000	<1,000	<1,700	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,300 UJ	<1,000 UJ
NVHOS	<1,000	<1,000	<1,000	<1,000	<1,000 UJ	<1,700	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,300 UJ	<1,000 UJ
EVE Acid	<1,000	<1,000	<1,000	<1,000	<1,000	<1,700	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,300 UJ	<1,000 UJ
Hydro-EVE Acid	<1,000	<1,000	<1,000	<1,000	<1,000	<1,700	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,300 UJ	<1,000 UJ
R-EVE	**450 J**	<1,000	<1,000	**4,200**	**280 J**	<1,700	<1,000 UJ	<1,000	<12,000 UJ	<1,000	**800 J**	<1,000 UJ
PES	<1,000	<1,000	<1,000	<1,000	<1,000 UJ	<1,700	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,300 UJ	<1,000 UJ
PFECA B	<1,000	<1,000	<1,000	<1,000	<1,000 UJ	<1,700 UJ	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,300 UJ	<1,000 UJ
PFECA-G	<1,000	<1,000 UJ	<1,000	<1,000	<1,000	<1,700 UJ	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,300 UJ	<1,000 UJ
Other PFAS (ppt)												
10:2 Fluorotelomer sulfonate	<1,000 UJ	<1,600 UJ	--	--	<1,000	--	<1,000 UJ	<1,000	<85,000 UJ	<1,000	<1,000	<1,300 UJ
11Cl-PF3OUdS	<1,000	<2,000	--	--	<1,000	--	<4,100 UJ	<1,000	<7,200 UJ	<1,000	<1,000	<1,000 UJ
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<10,000	<23,000	--	--	<10,000	--	<47,000 UJ	<11,000	<820,000 UJ	<10,000	<10,000	<13,000 UJ
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<14,000	<34,000	--	--	<10,000	--	<10,000 UJ	<10,000	<120,000 UJ	<10,000	<10,000	<10,000 UJ
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<1,400	<3,300	--	--	**330**	--	<1,000 UJ	<1,000	--	<1,000	<1,000	<1,000 UJ
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<2,700	<6,500	--	--	<1,500	--	<1,300 UJ	<1,000	--	<1,000	<1,500	<1,000 UJ
6:2 Fluorotelomer sulfonate	<10,000	<14,000	--	--	<10,000	--	<28,000 UJ	<10,000	<490,000 UJ	<10,000	<10,000	<10,000 UJ
9Cl-PF3ONS	<2,800	<6,600	--	--	<1,500	--	<1,300 UJ	<1,000	<23,000 UJ	<1,000	<1,500	<1,000 UJ
ADONA	<1,000	<1,700	--	--	<1,000	--	<1,000 UJ	<1,000	<6,100 UJ	<1,000	<1,000	<1,000 UJ
NaDONA	<1,100	<1,800	--	--	<1,100	--	<1,100 UJ	<1,100	<6,200 UJ	<1,100	<1,100	<1,100 UJ
N-ethyl perfluorooctane sulfonamidoacetic acid	<14,000	<34,000	--	--	<10,000	--	<10,000 UJ	<10,000	<120,000 UJ	<10,000	<10,000	<10,000 UJ
N-ethylperfluoro-1-octanesulfonamide	<7,400	<18,000	--	--	<4,000	--	<3,600 UJ	<1,000	--	<1,000	<4,000	<1,000 UJ
N-methyl perfluoro-1-octanesulfonamide	<1,200	<3,000	--	--	<1,000	--	<1,000 UJ	<1,000	--	<1,000	<1,000	<1,000 UJ
N-methyl perfluorooctane sulfonamidoacetic acid	<15,000	<36,000	--	--	<10,000	--	<10,000 UJ	<10,000	<130,000 UJ	<10,000	<10,000	<10,000 UJ
Perfluorobutane Sulfonic Acid	<1,000	<2,300	--	--	<1,000	--	<1,000 UJ	<1,000	<5,100 UJ	<1,000	<1,000	<1,000 UJ
Perfluorobutanoic Acid	<1,100	<2,600	--	--	<1,000	--	<5,200 UJ	<1,000	<9,100 UJ	<1,000	<1,000 UJ	<1,400 UJ
Perfluorodecane Sulfonic Acid	**2,600**	**1,900**	--	--	<1,000	--	<1,000 UJ	<1,000	<13,000 UJ	<1,000	<1,000	<1,000 UJ
Perfluorodecanoic Acid	**2,200**	**2,100**	--	--	<1,000	--	<1,000 UJ	<1,000	<7,200 UJ	<1,000	<1,000	<1,000 UJ
Perfluorododecane sulfonic acid (PFDoS)	<2,300	<5,500	--	--	<1,300	--	<1,100 UJ	<1,000	<20,000 UJ	<1,000	<1,300	<1,000 UJ
Perfluorododecanoic Acid	**5,500**	**4,500**	--	--	<1,400	--	<1,200 UJ	<1,000	<22,000 UJ	<1,000	<1,400	<1,000 UJ
Perfluoroheptane sulfonic acid (PFHpS)	<1,400	<3,200	--	--	<1,000	--	<1,000 UJ	<1,000	<11,000 UJ	<1,000	<1,000	<1,000 UJ
Perfluoroheptanoic Acid	<1,100	<2,700	--	--	<1,000	--	<1,000 UJ	<1,000	<9,500 UJ	<1,000	<1,000	<1,000 UJ
Perfluorohexadecanoic acid (PFHxDA)	<1,700 UJ	<4,100	--	--	<1,000	--	<1,000 UJ	<1,000	<14,000 UJ	<1,000	<1,000	<1,000 UJ
Perfluorohexane Sulfonic Acid	<1,200	<2,900	--	--	<1,000	--	<1,000 UJ	<1,000	<10,000 UJ	<1,000	<1,000	<1,000 UJ
Perfluorohexanoic Acid	<1,600	<3,900	--	--	<1,000	--	**540 J**	<1,000	<14,000 UJ	<1,000	<1,000	<1,000 UJ
Perfluorononanesulfonic acid	<1,000	<1,800	--	--	<1,000	--	<1,000 UJ	<1,000	<6,500 UJ	<1,000	<1,000	<1,000 UJ
Perfluorononanoic Acid	<1,400	<3,300	--	--	<1,000	--	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,000	<1,000 UJ
Perfluorooctadecanoic acid	<1,100 UJ	<2,600	--	--	<1,000	--	<1,000 UJ	<1,000	<9,100 UJ	<1,000	<1,000	<1,000 UJ
Perfluorooctane Sulfonamide	<3,200	<7,600	--	--	<1,700	--	<1,500 UJ	<1,000	<27,000 UJ	<1,000	<1,700	<1,000 UJ
Perfluoropentane sulfonic acid (PFPeS)	<1,000	<1,800	--	--	<1,000	--	<1,000 UJ	<1,000	<6,500 UJ	<1,000	<1,000	<1,000 UJ
Perfluoropentanoic Acid	<3,000	<7,100	--	--	<1,600	--	<1,400 UJ	<1,000	<25,000 UJ	<1,000	<1,600	<3,900 UJ
Perfluorotetradecanoic Acid	**2,600**	<5,000	--	--	<1,100	--	<1,000 UJ	<1,000	<18,000 UJ	<1,000	<1,100	<1,000 UJ
Perfluorotridecanoic Acid	**2,400**	**1,800**	--	--	<1,100	--	<1,000 UJ	<1,000	<17,000 UJ	<1,000	<1,100	<1,000 UJ
Perfluoroundecanoic Acid	**5,000**	**3,300**	--	--	<1,000	--	<1,000 UJ	<1,000	<12,000 UJ	<1,000	<1,000	<1,000 UJ
PFOA	<3,300	<7,900	--	--	<1,800	--	<1,600 UJ	<1,000	<28,000 UJ	<1,000	<1,800	<1,000 UJ
PFOS	**130,000**	**250,000**	--	--	<4,200	--	<3,700 UJ	<2,500	<65,000 UJ	<2,500	<4,200	<2,500 UJ
Other Parameters												
Percent Moisture	**76.3 J**	**74.9 J**	--	--	**74.8**	**68.6 J**	**73.1**	--	**98.4**	--	**76.6**	--
Total Organic Carbon (mg/kg)	--	--	--	--	--	--	--	--	--	--	--	--

Media	INV	INV	INV	INV	INV	INV	INV	INV	SED	SED	SED	SED
Location ID	**EU-7**	**EU-8**	**EU-9**	**SLEA-CFR-ACINV-01**	**SLEA-CFR-ACINV-02**	**SLEA-CFR-ACINV-03**	**SLEA-CFR-INV-01-02-03**	**SLEA-CFR-INV-04**	**SLEA-SED1**	**SLEA-SED2**	**SLEA-SED3**	**SLEA-SED3**
Field Sample ID	**EU-7-INV-081919**	**EU-8-INV-081619**	**EU-9-INV-082119**	**SLEA-CFR-ACINV-01-20191021**	**SLEA-CFR-ACINV-02-20191021**	**SLEA-CFR-ACINV-03-20191021**	**SLEA-CFR-INV-01-02-03 COMP**	**SLEA-CFR-INV-04-20191021**	**SLEA-SED1-20191021**	**SLEA-SED2-20191021**	**SLEA-SED3-20191021**	**SLEA-SED3-20191021-DUP**
Sample Date	**19-Aug-19**	**16-Aug-19**	**21-Aug-19**	**21-Oct-19**	**21-Oct-19**	**21-Oct-19**	**21-Oct-19**	**21-Oct-19**	**21-Oct-19**	**21-Oct-19**	**21-Oct-19**	**21-Oct-19**
Sample Matrix	**Offsite- Invert**	**Offsite- Invert**	**Offsite- Invert**	**CFR- Invert**	**CFR- Invert**	**CFR- Invert**	**CFR- Invert**	**CFR- Invert**	**CFR- Sediment**	**CFR- Sediment**	**CFR- Sediment**	**CFR- Sediment**
Eco SLEA Data Use	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**ECPs/Field Duplicate**
Sample Delivery Group (SDG)	**320-53490-1**	**320-53490-1**	**320-53607-1**	**320-55583-1**	**320-55583-1**	**320-55583-1**	**320-55583-1**	**320-55583-1**	**320-55583-1**	**320-55583-1**	**320-55583-1**	**320-55583-1**
Lab Sample ID	**320-53490-6**	**320-53490-9**	**320-53607-3**	**320-55583-18**	**320-55583-19**	**320-55583-20**	**320-55583-21**	**320-55583-17**	**320-55583-7**	**320-55583-8**	**320-55583-9**	**320-55583-13**
Table 3+ Lab SOP (ppt)												
HFPO-DA	<1,000	<1,000	**1,200 J**	<1,300	<1,300	<1,300	<1,300	--	<250	<250	<250	<250
PFMOAA	<1,000	**4,600**	<1,000	<1,000 R	<1,000 R	<1,000 R	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
PFO2HxA	<1,000	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
PFO3OA	<1,000	<1,000	<1,000 UJ	<1,000	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000
PFO4DA	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
PFO5DA	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
PMPA	<1,000	**1,400 J**	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
PEPA	<1,000	**1,600 J**	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
PFESA-BP1	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
PFESA-BP2	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
Byproduct 4	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
Byproduct 5	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
Byproduct 6	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
NVHOS	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
EVE Acid	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
Hydro-EVE Acid	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
R-EVE	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
PES	<1,000	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
PFECA B	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
PFECA-G	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
Other PFAS (ppt)												
10:2 Fluorotelomer sulfonate	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
11Cl-PF3OUdS	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<10,000	<10,000	--	<10,000	<10,000	<10,000	<10,000	--	<2,000	<2,000	<2,000	<2,000
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<10,000	<10,000	--	<10,000	<10,000	<10,000	<10,000	--	<2,000	<2,000	<2,000	<2,000
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<1,000 UJ	<1,000	--	<1,000	<2,000 UJ	<15,000	<2,000 UJ	--	**680**	**280 J**	**460**	**510**
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<1,000 UJ	<1,000	--	<1,000	<1,000	<2,000 UJ	<1,000	--	**260**	**300 J**	**220**	**320**
6:2 Fluorotelomer sulfonate	<10,000	<10,000	--	<10,000	<10,000	<10,000	<10,000	--	<2,000	<2,000	<2,000	<2,000
9Cl-PF3ONS	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
ADONA	<1,000	<1,000	--	<1,100	<1,100	<1,100	<1,100	--	<210	<210	<210	<210
NaDONA	<1,100	<1,100	--	<1,100	<1,100	<1,100	<1,100	--	<210	<210	<210	<210
N-ethyl perfluorooctane sulfonamidoacetic acid	<10,000	<10,000	--	<10,000	<10,000	<10,000	<10,000	--	<2,000	<2,000	<2,000	<2,000
N-ethylperfluoro-1-octanesulfonamide	<1,000	<1,000	--	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	--	<200	<200	<200	<200
N-methyl perfluoro-1-octanesulfonamide	<1,000	<1,000	--	<1,000	<1,000 UJ	<1,000 UJ	<1,000	--	<200	<200	<200	<200
N-methyl perfluorooctane sulfonamidoacetic acid	<10,000	<10,000	--	<10,000	<10,000	<10,000	<10,000	--	<2,000	<2,000	<2,000	<2,000
Perfluorobutane Sulfonic Acid	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
Perfluorobutanoic Acid	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
Perfluorodecane Sulfonic Acid	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
Perfluorodecanoic Acid	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
Perfluorododecane sulfonic acid (PFDoS)	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
Perfluorododecanoic Acid	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
Perfluoroheptane sulfonic acid (PFHpS)	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
Perfluoroheptanoic Acid	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
Perfluorohexadecanoic acid (PFHxDA)	<1,000	<1,000	--	<19,000	<1,500	<18,000	<20,000	--	<200	<200	<200	<200
Perfluorohexane Sulfonic Acid	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
Perfluorohexanoic Acid	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
Perfluorononanesulfonic acid	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
Perfluorononanoic Acid	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
Perfluorooctadecanoic acid	<1,000	<1,000	--	<12,000	<1,000	<11,000	<13,000	--	<200	<200	<200	<200
Perfluorooctane Sulfonamide	<1,000	<1,000	--	**3,600**	**1,700**	**1,900**	**2,200**	--	<200	<200	<200	<200
Perfluoropentane sulfonic acid (PFPeS)	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
Perfluoropentanoic Acid	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
Perfluorotetradecanoic Acid	<1,000	<1,000	--	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	--	<200	<200	<200	<200
Perfluorotridecanoic Acid	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
Perfluoroundecanoic Acid	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
PFOA	<1,000	<1,000	--	<1,000	<1,000	<1,000	<1,000	--	<200	<200	<200	<200
PFOS	<2,500	<2,500	--	<2,500	<2,500	**5,200**	<2,500	--	**570**	<500	**520**	<500
Other Parameters												
Percent Moisture	--	--	**64.4 J**	--	--	--	--	--	**23**	**19.6**	**29.5**	**29.2**
Total Organic Carbon (mg/kg)	--	--	--	--	--	--	--	--	--	--	--	--

Media	SED	SED	SED	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Location ID	SLEA-SED4	SLEA-SED5	SLEA-SED6	EU-01	EU-01	EU-10	EU-11	EU-12	EU-12	EU-2	EU-3	EU-4
Field Sample ID	SLEA-SED4-20191021	SLEA-SED5-20191021	SLEA-SED6-20191021	EU-1-DiscreteSoil-0-.5-081419	EU-1-SOIL-0-.5-091219	EU-10-SOIL-0-.5-082119	EU-11-soil-0-0.5	EU-12-SOIL-0-.5-082019	EU-12-SOIL-0-.5-082019-D	EU2-soil-0-0.5	EU-3-soil-0-0.5	EU-4-SOIL-0-.5-081919
Sample Date	21-Oct-19	21-Oct-19	21-Oct-19	14-Aug-19	12-Sep-19	21-Aug-19	31-Jul-19	20-Aug-19	20-Aug-19	25-Jul-19	31-Jul-19	19-Aug-19
Sample Matrix	CFR- Sediment	CFR- Sediment	CFR- Sediment	Offsite-Soil	Offsite-Soil	Offsite-Soil	Offsite-Soil	Offsite-Soil	Offsite-Soil	Offsite-Soil	Offsite-Soil	Offsite-Soil
Eco SLEA Data Use	EPCs	EPCs	EPCs	EPCs	EPCs	EPCs	EPCs	EPCs	ECPs/Field Duplicate	EPCs	EPCs	EPCs
Sample Delivery Group (SDG)	320-55583-1	320-55583-1	320-55583-1	320-53747-1	320-54302-1	320-53607-1	320-52871-1	320-53490-1	320-53490-1	320-52868-1	320-52871-1	320-53490-1
Lab Sample ID	320-55583-10	320-55583-11	320-55583-12	320-53747-4	320-54302-3	320-53607-4	320-52871-15	320-53490-12	320-53490-15	320-52868-1	320-52871-1	320-53490-1
Table 3+ Lab SOP (ppt)												
HFPO-DA	**260**	<250	<250	**530 J**	**2,600**	<250	<250 UJ	<250 UJ	<250 UJ	<250 UJ	**360 J**	<250 UJ
PFMOAA	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
PFO2HxA	<1,000	<1,000	<1,000	<1,000 UJ	**2,300**	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
PFO3OA	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
PFO4DA	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
PFO5DA	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
PMPA	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
PEPA	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
PFESA-BP1	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
PFESA-BP2	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
Byproduct 4	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
Byproduct 5	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
Byproduct 6	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
NVHOS	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
EVE Acid	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
Hydro-EVE Acid	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
R-EVE	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
PES	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
PFECA B	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
PFECA-G	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<1,000
Other PFAS (ppt)												
10:2 Fluorotelomer sulfonate	<200	<200	<200	<200 UJ	<200	<200	<500 UJ	<200 UJ	<200 UJ	<500 UJ	<500 UJ	<200 UJ
11Cl-PF3OUdS	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2,000	<2,000	<2,000	<2,400 UJ	<2,000	<2,000	<2,500 UJ	<2,000 UJ	<2,000 UJ	<2,500 UJ	<2,500 UJ	<2,000 UJ
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<2,000	<2,000	<2,000	<3,600 UJ	<2,000	<2,000	<3,700 UJ	<2,000 UJ	<2,000 UJ	<3,700 UJ	<3,700 UJ	<2,000 UJ
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	**740 J**	**210**	**200**	<200 UJ	**330**	<200	<200 UJ	**300 J**	**290 J**	**340 J**	**200 J**	**400 J**
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	**210**	<200	<200	<200 UJ	<200	<200	**3,100 J**	<200 UJ	<200 UJ	<200 UJ	**690 J**	<200 UJ
6:2 Fluorotelomer sulfonate	<2,000	<2,000	<2,000	<2,000 UJ	<2,000	<2,000	<2,000 UJ	<2,000 UJ	<2,000 UJ	<2,000 UJ	<2,000 UJ	<2,000 UJ
9Cl-PF3ONS	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
ADONA	<210	<210	<210	<210 UJ	<210	<210	<210 UJ	<210 UJ	<210 UJ	<210 UJ	<210 UJ	<210 UJ
NaDONA	<210	<210	<210	<210 UJ	<210	<210	<210 UJ	<210 UJ	<210 UJ	<210 UJ	<210 UJ	<210 UJ
N-ethyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000	<2,000 UJ	<2,000	<2,000	<2,000 UJ	<2,000 UJ	<2,000 UJ	<2,000 UJ	<2,000 UJ	<2,000 UJ
N-ethylperfluoro-1-octanesulfonamide	<200 UJ	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
N-methyl perfluoro-1-octanesulfonamide	<200 UJ	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
N-methyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	<2,000	<2,000 UJ	<2,000	<2,000	<2,000 UJ	<2,000 UJ	<2,000 UJ	<2,000 UJ	<2,000 UJ	<2,000 UJ
Perfluorobutane Sulfonic Acid	<200	<200	<200	<200 UJ	<200	**230**	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluorobutanoic Acid	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluorodecane Sulfonic Acid	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluorodecanoic Acid	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	**460 J**
Perfluorododecane sulfonic acid (PFDoS)	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluorododecanoic Acid	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	**230 J**
Perfluoroheptane sulfonic acid (PFHpS)	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluoroheptanoic Acid	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluorohexadecanoic acid (PFHxDA)	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluorohexane Sulfonic Acid	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluorohexanoic Acid	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluorononanesulfonic acid	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluorononanoic Acid	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluorooctadecanoic acid	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluorooctane Sulfonamide	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluoropentane sulfonic acid (PFPeS)	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluoropentanoic Acid	<200	<200	<200	<200 UJ	<200	**210**	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluorotetradecanoic Acid	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluorotridecanoic Acid	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
Perfluoroundecanoic Acid	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
PFOA	<200	<200	<200	<200 UJ	<200	<200	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ	<200 UJ
PFOS	**530**	<500	<500	<500 UJ	<500	**540**	**1,500 J**	**1,300 J**	**600 J**	**550 J**	**1,100 J**	**940 J**
Other Parameters												
Percent Moisture	**32.2**	**20.1**	**21.6**	**0.1 J**	**29.4**	**10.4**	**1.7 J**	**7**	**11**	**4 J**	**3.4 J**	**6.4**
Total Organic Carbon (mg/kg)	--	--	--	--	--	--	--	--	--	--	--	--

Media	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Location ID	**EU-5**	**EU-6**	**EU-7**	**EU-8**	**EU-9**	**INTAKE-WORMSOIL**	**INTAKE-WORMSOIL**	**SEEP-A-RIVERSOIL**	**SEEP-A-WORMSOIL**	**SEEP-B-SOIL**	**SEEP-B-WORMSOIL**	**SEEP-C-SOIL**
Field Sample ID	**EU-5-SOIL-0-.5-082319**	**EU6-soil-0-0.5**	**EU-7-SOIL-0-.5-081919**	**EU-8-SOIL-0-.5-081619**	**EU-9-SOIL-0-.5-082119**	**INTAKE-WORMSOIL-092419-D**	**INTAK-WORM-SOIL-092419**	**SEEP-A-RIVERSOIL-091319**	**SEEP-A-WORMSOIL-091319**	**SEEP-B-SOIL-092519**	**SEEP-B-WORMSOIL-092519**	**SEEP-C-SOIL-092619**
Sample Date	**23-Aug-19**	**25-Jul-19**	**19-Aug-19**	**16-Aug-19**	**21-Aug-19**	**24-Sep-19**	**24-Sep-19**	**13-Sep-19**	**13-Sep-19**	**25-Sep-19**	**25-Sep-19**	**26-Sep-19**
Sample Matrix	**Offsite-Soil**	**Offsite-Soil**	**Offsite-Soil**	**Offsite-Soil**	**Offsite-Soil**	**Onsite-Soil**	**Onsite-Soil**	**Onsite-Soil**	**Onsite-Soil**	**Onsite-Soil**	**Onsite-Soil**	**Onsite-Soil**
Eco SLEA Data Use	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**ECPs/Field Duplicate**	**EPCs/BSAF**	**EPCs**	**EPCs/BSAF**	**EPCs**	**EPCs/BSAF**	**EPCs**
Sample Delivery Group (SDG)	**320-53637-1**	**320-52868-1**	**320-53490-1**	**320-53490-1**	**320-53607-1**	**320-54699-1 / 320-54699-2**	**320-54699-1 / 320-54699-2**	**320-54392-1 / 320-54392-2**	**320-54394-1**	**320-54770-1 / 320-54770-2**	**320-54770-1 / 320-54770-2**	**320-54770-1 / 320-54770-2**
Lab Sample ID	**320-53637-1**	**320-52868-3**	**320-53490-4**	**320-53490-7**	**320-53607-1**	**320-54699-3**	**320-54699-2**	**320-54392-2**	**320-54394-1**	**320-54770-9**	**320-54770-8**	**320-54770-7**
Table 3+ Lab SOP (ppt)												
HFPO-DA	<250	<250 UJ	<250 UJ	<250 UJ	<250	**35,000 J**	**24,000 J**	**17,000 J**	**13,000 J**	**1,400**	**25,000**	**1,300**
PFMOAA	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	**4,200 J**	**2,600 J**	**5,200**	**21,000 J**	**2,500**	**150,000**	**9,100**
PFO2HxA	**1,400 J**	<1,000 UJ	<1,000	<1,000	<1,000	**19,000 J**	**16,000 J**	**5,000**	**12,000 J**	**2,200**	**47,000 J**	**6,000**
PFO3OA	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	**2,100**	**2,300**	<2,800	**5,100**	<1,000	**12,000**	**1,500**
PFO4DA	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	**1,100**	**1,500**	<2,800	**5,100**	<1,000	**3,000**	<1,000
PFO5DA	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	**1,400**	**1,400**	**4,700**	**10,000 J**	<1,000	**3,800**	**1,400**
PMPA	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	**24,000 J**	**14,000 J**	<2,800	**6,000 J**	<1,000	**7,800**	**1,000**
PEPA	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	**7,500 J**	**4,800 J**	<2,800	**2,600**	<1,000	**2,700**	<1,000
PFESA-BP1	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<2,800	<1,000	<1,000	<1,000	<1,000
PFESA-BP2	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<2,800	**2,000**	<1,000	**2,100**	<1,000
Byproduct 4	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	**1,200**	<1,000	<2,800	<1,000 UJ	<1,000	**2,400**	<1,000 UJ
Byproduct 5	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<2,800	<1,000 UJ	<1,000 UJ	<1,000	<1,000 UJ
Byproduct 6	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<2,800	<1,000	<1,000	<1,000	<1,000
NVHOS	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<2,800	<1,000	<1,000	**1,300**	<1,000
EVE Acid	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<2,800	<1,000	<1,000	<1,000	<1,000
Hydro-EVE Acid	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<2,800	**1,200**	<1,000	**1,200**	<1,000
R-EVE	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<2,800	<1,000 R	<1,000 UJ	<1,000	<1,000 UJ
PES	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<2,800	<1,000	<1,000	<1,000	<1,000
PFECA B	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000	<1,000	<2,800	<1,000	<1,000	<1,000	<1,000
PFECA-G	<1,000 UJ	<1,000 UJ	<1,000	<1,000	<1,000	<1,000 UJ	<1,000 UJ	<2,800	<1,000	<1,000	<1,000	<1,000
Other PFAS (ppt)												
10:2 Fluorotelomer sulfonate	<200	<510 UJ	<200 UJ	<200 UJ	<200	<200	<200	<200	<1,000	<200	<200	<200
11Cl-PF3OUdS	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	<200	<200	<1,000	--	--	--
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2,000	<2,500 UJ	<2,000 UJ	<2,000 UJ	<2,000	<2,000	<2,000	<2,000	<10,000	<2,000	<2,000	<2,000
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<2,000	<3,800 UJ	<2,000 UJ	<2,000 UJ	<2,000	<2,000	<2,000	<2,000	<10,000	<2,000	<2,000	<2,000
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<200	**200 J**	**350 J**	**280 J**	<200	**4,400 J**	**1,900 J**	**1,400 J**	**2,600 J**	--	--	--
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	<200	**640 J**	**1,400 J**	--	--	--
6:2 Fluorotelomer sulfonate	<2,000	<2,000 UJ	<2,000 UJ	<2,000 UJ	<2,000	<2,000	<2,000	<2,000	<10,000	<2,000	<2,000	<2,000
9Cl-PF3ONS	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	<200	<200	<1,000	--	--	--
ADONA	<210	<210 UJ	<210 UJ	<210 UJ	<210	<210	<210	<210	<1,000	<210	<210	<210
NaDONA	<210	<210 UJ	<210 UJ	<210 UJ	<210	<210	<210	<210	<1,100	<210	<210	<210
N-ethyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000 UJ	<2,000 UJ	<2,000 UJ	<2,000	<2,000	<2,000	<2,000	<10,000	--	--	--
N-ethylperfluoro-1-octanesulfonamide	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	<200	<200 UJ	<1,300 UJ	<200	<200	<200
N-methyl perfluoro-1-octanesulfonamide	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	<200	<200 UJ	<1,000 UJ	--	--	--
N-methyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000 UJ	<2,000 UJ	<2,000 UJ	<2,000	<2,000	<2,000	<2,000	<10,000	<2,000	<2,000	<2,000
Perfluorobutane Sulfonic Acid	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	<200	<200	<1,000	<200	<200	<200
Perfluorobutanoic Acid	<200	<200 UJ	<200 UJ	<200 UJ	<200	**2,300 J**	<200	**230**	<1,000	<200	<200	<200
Perfluorodecane Sulfonic Acid	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	<200	<200	<1,000	<200	<200	<200
Perfluorodecanoic Acid	<200	<200 UJ	<200 UJ	<200 UJ	<200	**420**	**550**	**240**	<1,000	<200	**430**	**330**
Perfluorododecane sulfonic acid (PFDoS)	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	<200	<200	<1,000	<200	<200	<200
Perfluorododecanoic Acid	<200	<200 UJ	<200 UJ	<200 UJ	<200	**360**	**550**	**310**	<1,000	**230**	**410**	**340**
Perfluoroheptane sulfonic acid (PFHpS)	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	<200	<200	<1,000	<200	<200	<200
Perfluoroheptanoic Acid	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	**330**	<200	<1,000	<200	<200	<200
Perfluorohexadecanoic acid (PFHxDA)	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	<200	<200	<1,000	<200	<200	<200
Perfluorohexane Sulfonic Acid	<200	<200 UJ	<200 UJ	<200 UJ	<200	**230**	**330**	<200	<1,000	<200	**200**	<200
Perfluorohexanoic Acid	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	<200	<200	<1,000	<200	<200	<200
Perfluorononanesulfonic acid	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	<200	<200	<1,000	<200	<200	<200
Perfluorononanoic Acid	<200	<200 UJ	<200 UJ	<200 UJ	<200	**290**	**360**	<200	<1,000	<200	**250**	<200
Perfluorooctadecanoic acid	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	<200	<200	<1,000	<200	<200	<200
Perfluorooctane Sulfonamide	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	<200	<200	<1,000 UJ	<200	<200	<200
Perfluoropentane sulfonic acid (PFPeS)	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	<200	<620	<1,000	<200	<200	<200
Perfluoropentanoic Acid	<200	<200 UJ	<200 UJ	<200 UJ	<200	**640**	**500**	**230**	<1,000	<200	**1,300**	**270**
Perfluorotetradecanoic Acid	<200	<200 UJ	<200 UJ	<200 UJ	<200	<200	**210**	<200	<1,000	<200	<200	<200
Perfluorotridecanoic Acid	<200	<200 UJ	<200 UJ	<200 UJ	<200	**350**	**450**	<200	<1,000	<200	**350**	**230**
Perfluoroundecanoic Acid	<200	<200 UJ	<200 UJ	<200 UJ	<200	**630**	**620**	**400**	<1,000	**240**	**610**	**420**
PFOA	<200	<200 UJ	<200 UJ	<200 UJ	<200	**1,200 J**	**1,800 J**	**210**	<1,000	**240**	**350**	**280**
PFOS	<500	**730 J**	**610 J**	**920 J**	<500	**7,300**	**6,500**	**1,700**	<2,500	**1,400**	**4,300**	**2,500**
Other Parameters												
Percent Moisture	**12.7 J**	**5.1 J**	**9.3**	**12.1**	**7.8**	**59.2 J**	**48.7 J**	**34.5 J**	**38.3 J**	**8.4**	**43.9**	**10.6**
Total Organic Carbon (mg/kg)	--	--	--	--	--	**200,000**	**180,000**	**14,000**	--	**13,000**	**25,000**	**16,000**

Appendix B
Data Summary Tables
Chemours Fayetteville Works, North Carolina

Media	Soil	Soil	Soil	Soil	Soil	SW	SW	SW	SW	SW	SW	SW
Location ID	SEEP-C-WORMSOIL	SEEP-D-RIVERSOIL	SEEP-D-WORMSOIL	WC-SOIL	WC-WORMSOIL	CFR-04	CFR-04	CFR-04	CFR-04	CFR-07	CFR-07	CFR-07
Field Sample ID	SEEP-C-WORMSOIL-092619	SEEP-D-RIVERSOIL-091119	SEEP-D-WORMSOIL-092619	WC-SOIL-092419	WC-WORMSOIL-092419	CFR-04-CM-072519	CFR-04-CT-072519	CFR-04-E-072519	CFR-04-W-072519	CFR-07-CM-072519	CFR-07-CT-072519	CFR-07-E-072519
Sample Date	26-Sep-19	11-Sep-19	26-Sep-19	24-Sep-19	24-Sep-19	25-Jul-19	25-Jul-19	25-Jul-19	25-Jul-19	25-Jul-19	25-Jul-19	25-Jul-19
Sample Matrix	Onsite-Soil	Onsite-Soil	Onsite-Soil	Onsite-Soil	Onsite-Soil	CFR-Surface Water	CFR-Surface Water	CFR-Surface Water	CFR-Surface Water	CFR-Surface Water	CFR-Surface Water	CFR-Surface Water
Eco SLEA Data Use	EPCs/BSAF	EPCs	EPCs/BSAF	EPCs	EPCs/BSAF	EPCs	EPCs	EPCs	EPCs	EPCs	EPCs	EPCs
Sample Delivery Group (SDG)	320-54770-1 / 320-54770-2	320-54392-1 / 320-54392-2	320-54770-1 / 320-54770-2	320-54699-1 / 320-54699-2	320-54699-1 / 320-54699-2	320-52969-1	320-52969-1	320-52969-1	320-52969-1	320-52969-1	320-52969-1	320-52969-1
Lab Sample ID	320-54770-6	320-54392-1	320-54770-3	320-54699-6	320-54699-8	320-52969-2	320-52969-1	320-52969-3	320-52969-9	320-52969-6	320-52969-5	320-52969-7
Table 3+ Lab SOP (ppt)												
HFPO-DA	6,300	1,900 J	7,900	4,800	8,100	<2	2.1	<2	3.4	10	5.5	3.7
PFMOAA	68,000	7,500 J	17,000	1,100	1,600	<5	<5	<5	8.8	36	21	9.9
PFO2HxA	24,000 J	6,700 J	15,000 J	9,300	8,600	2.2	2.3	2.2	4	13	8.1	4.5
PFO3OA	5,200	2,000	7,700 J	2,000	2,100	<2	<2	<2	<2	3.2	2	<2
PFO4DA	2,200	1,200	5,400 J	1,400	1,400	<2	<2	<2	<2	<2	<2	<2
PFO5DA	1,500	1,000	4,200	2,200	2,200	<2	<2	<2	<2	<2	<2	<2
PMPA	6,100	<1,000	2,100	2,700	3,700	<10	<10	<10	<10	13	12	<10
PEPA	1,500	<1,000	<1,000	1,300	1,300	<20	<20	<20	<20	<20	<20	<20
PFESA-BP1	3,000	<1,000	<1,000	<1,000	<1,000	<2	<2	<2	<2	<2	<2	<2
PFESA-BP2	1,100	<1,000	1,600	<1,000	<1,000	<2	<2	<2	<2	<2	<2	<2
Byproduct 4	<1,000	<1,000	<1,000 R	<1,000 UJ	<1,000 UJ	<2	5.5 J	7.6 J	4.8 J	5.4 J	8.9 J	7.5 J
Byproduct 5	<1,000	<1,000	<1,000 R	<1,000 UJ	<1,000 UJ	<2	<2	<2	2.5 J	9.6 J	6.6 J	3.1 J
Byproduct 6	<1,000	<1,000	<1,000	<1,000	<1,000	<2	<2	<2	<2	<2	<2	<2
NVHOS	<1,000	<1,000	<1,000	<1,000	<1,000	6.2	6.6	6.1	6.6	6.6	6.7	6.8
EVE Acid	<1,000	<1,000	<1,000	<1,000	<1,000	<2	<2	<2	<2	<2	<2	<2
Hydro-EVE Acid	<1,000	<1,000	<1,000	<1,000	<1,000	<2	<2	<2	<2	<2	<2	<2
R-EVE	<1,000	<1,000	<1,000 R	<1,000 R	<1,000 UJ	2.7 J	3.8 J	<2	<2	3.6 J	2.7 J	2.9 J
PES	<1,000	<1,000	<1,000	<1,000	<1,000	<2	<2	<2	<2	<2	<2	<2
PFECA B	<1,000	<1,000	<1,000	<1,000	<1,000	<2	<2	<2	<2	<2	<2	<2
PFECA-G	<1,000	<1,000	<1,000	<1,000	<1,000	<2	<2	<2	<2	<2	<2	<2
Other PFAS (ppt)												
10:2 Fluorotelomer sulfonate	<200	<200	<200	<200	<200	<2	<2	<2	<2	<2	<2	<2
11Cl-PF3OUdS	--	<200	--	<200	<200	<2	<2	<2	<2	<2	<2	<2
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<2,000	<2,000	<2,000	<2,000	<2,000	<20	<20	<20	<20	<20	<20	<20
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<2,000	<2,000	<2,000	<2,000	<2,000	<20	<20	<20	<20	<20	<20	<20
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	--	1,100 J	--	1,100	1,300	<2	<2	<2	<2	<2	<2	<2
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	--	640 J	--	940	590	<4	<4	<4	<4	<4	<4	<4
6:2 Fluorotelomer sulfonate	<2,000	<2,000	<2,000	<2,000	<2,000	<20	<20	<20	<20	<20	<20	<20
9Cl-PF3ONS	--	<200	--	<200	<200	<2	<2	<2	<2	<2	<2	<2
ADONA	<210	<210	<210	<210	<210	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
NaDONA	<210	<210	<210	<210	<210	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
N-ethyl perfluorooctane sulfonamidoacetic acid	--	<2,000	--	<2,000	<2,000	<20	<20	<20	<20	<20	<20	<20
N-ethylperfluoro-1-octanesulfonamide	<200 UJ	<200 UJ	<200	<200	<200	<2	<2	<2	<2	<2	<2	<2
N-methyl perfluoro-1-octanesulfonamide	--	<200 UJ	--	<200	<200	<2	<2	<2	<2	<2	<2	<2
N-methyl perfluorooctane sulfonamidoacetic acid	<2,000	<2,000	2,200	<2,000	<2,000	<20	<20	<20	<20	<20	<20	<20
Perfluorobutane Sulfonic Acid	<200	<200	<200	<200	<200	4.5	4.3	4.3	4.3	4	4.2	4.3
Perfluorobutanoic Acid	<200	280	<200	<200	<200	7.5	7.1	7.3	7.1	6.7	6.9	7
Perfluorodecane Sulfonic Acid	<200	<200	260	270	<200	<2	<2	<2	<2	<2	<2	<2
Perfluorodecanoic Acid	360	510	1,000	850	790	<2	<2	<2	<2	<2	<2	<2
Perfluorododecane sulfonic acid (PFDoS)	<200	<200	<200	<200	<200	<2	<2	<2	<2	<2	<2	<2
Perfluorododecanoic Acid	360	530	620	750	610	<2	<2	<2	<2	<2	<2	<2
Perfluoroheptane sulfonic acid (PFHpS)	<200	<200	<200	<200	<200	<2	<2	<2	<2	<2	<2	<2
Perfluoroheptanoic Acid	<200	<200	250	330	220	13	13	13	13	13	12	13
Perfluorohexadecanoic acid (PFHxDA)	<200	<200	<200	<200	<200	<2	<2	<2	<2	<2	<2	<2
Perfluorohexane Sulfonic Acid	<200	<200	200	200	200	6.5	6.4	7.2	6.9	6.5	7	6.4
Perfluorohexanoic Acid	<200	<200	<200	230	<200	18	18	18	18	19	19	19
Perfluorononanesulfonic acid	<200	<200	<200	<200	<200	<2	<2	<2	<2	<2	<2	<2
Perfluorononanoic Acid	210	<200	410	530	290	<2	<2	<2	<2	<2	<2	<2
Perfluorooctadecanoic acid	<200	<200	<200	<200	<200	<2	<2	<2	<2	<2	<2	<2
Perfluorooctane Sulfonamide	<200	<200	<200	<200	<200	<2	<2	<2	<2	<2	<2	<2
Perfluoropentane sulfonic acid (PFPeS)	<200	<200	<200	<200	<200	<2	<2	<2	<2	<2	<2	<2
Perfluoropentanoic Acid	540	300	500	290	410	19	20	20	19	20	19	19
Perfluorotetradecanoic Acid	<200	<200	260	260	250	<2	<2	<2	<2	<2	<2	<2
Perfluorotridecanoic Acid	<200	270	510	530	500	<2	<2	<2	<2	<2	<2	<2
Perfluoroundecanoic Acid	460	610	930	1,100	890	<2	<2	<2	<2	<2	<2	<2
PFOA	430	400	790	830	650	8	7.9	7.9	7.9	8	7.7	7.6
PFOS	4,100	3,600	9,700	6,600	5,200	16	15	15	16	16	16	16
Other Parameters												
Percent Moisture	42.6	20.1 J	34.2	15.5	25.2 J	--	--	--	--	--	--	--
Total Organic Carbon (mg/kg)	130,000	19,000	41,000	15,000	35,000	--	--	--	--	--	--	--

Media	SW	SW	SW	SW	SW	SW	SW	SW	SW	VEG	VEG	VEG
Location ID	CFR-07	CFR-07	Pond-1	Pond-1	Pond-1	Pond-1	POND-B-EAST	POND-B-SOUTH	POND-B-WEST	EU-01	EU-10	EU-11
Field Sample ID	CFR-07-E-072519-2	CFR-07-W-072519	Pond-1-NE-072419	Pond-1-NW-072419	Pond-1-SE-072419	Pond-1-SE-072419-2	POND-B-EAST-091219	POND-B-SOUTH-091219	POND-B-WEST-091219	EU-1-VEG-091219	EU-10-VEG-082119	EU-11-veg
Sample Date	25-Jul-19	25-Jul-19	24-Jul-19	24-Jul-19	24-Jul-19	24-Jul-19	12-Sep-19	12-Sep-19	12-Sep-19	12-Sep-19	21-Aug-19	31-Jul-19
Sample Matrix	CFR-Surface Water	CFR-Surface Water	Pond-1-Surface Water	Pond-1-Surface Water	Pond-1-Surface Water	Pond-1-Surface Water	Pond-B-Discrete Surface Water	Pond-B-Discrete Surface Water	Pond-B-Discrete Surface Water	Offsite-Veg	Offsite-Veg	Offsite-Veg
Eco SLEA Data Use	ECPs/Field Duplicate	EPCs	EPCs	EPCs	EPCs	ECPs/Field Duplicate	EPCs	EPCs	EPCs	EPCs	EPCs	EPCs
Sample Delivery Group (SDG)	320-52969-1	320-52969-1	280-126823-1	280-126823-1	280-126823-1	280-126823-1	320-54303-1	320-54303-1	320-54303-1	320-54302-1	320-53607-1	320-52871-1
Lab Sample ID	320-52969-8	320-52969-4	280-126823-2	280-126823-3	280-126823-4	280-126823-1	320-54303-3	320-54303-4	320-54303-2	320-54302-4	320-53607-5	320-52871-16
Table 3+ Lab SOP (ppt)												
HFPO-DA	**4.3**	**15**	**940**	**730**	**760**	**770**	**310**	**290**	**310**	**8,900**	**1,700**	**3,700 J**
PFMOAA	**12**	**71**	**240**	**250**	**260**	**250**	**67**	**71**	**65**	**20,000**	<1,000	<5,700 UJ
PFO2HxA	**4.9**	**25**	**690**	**700**	**720**	**730**	**220**	**220**	**210**	**6,100 J**	<1,000 UJ	2,900 UJ
PFO3OA	<2	**6.4**	**91**	**90**	**97**	**95**	**27**	**26**	**26**	**220 J**	<1,000 UJ	<5,700 UJ
PFO4DA	<2	**2.3**	**37**	**38**	**40**	**40**	**8.9**	**8.4**	**8.7**	**260 J**	<1,000 UJ	<5,700 UJ
PFO5DA	<2	<2	**9.7 J**	**9.9 J**	**10 J**	**10 J**	**2.1**	**2.1**	<2	<1,000	<1,000	<5,700 UJ
PMPA	<10	**19**	**820**	**820**	**850**	**850**	**350 J**	**350**	**340**	**12,000 J**	**530 J**	**52,000 J**
PEPA	<20	<20	**270**	**280**	**300**	**290**	**110**	**110**	**100**	**1,700 J**	<1,000 UJ	<5,700 UJ
PFESA-BP1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	<1,000	<5,700 UJ
PFESA-BP2	<2	<2	**31**	**31**	**32**	**33**	**25**	**25**	**25**	<1,000	<1,000	<5,700 UJ
Byproduct 4	**6.9 J**	**6.5 J**	**90 J**	**96 J**	**94 J**	**99 J**	**140 J**	**150 J**	**130 J**	**1,200 J**	<1,000	**22,000 J**
Byproduct 5	**3.1 J**	**19 J**	<2	<2	<2	<2	<2	<2	<2	<1,000	**570 J**	<5,700 UJ
Byproduct 6	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	<1,000	<5,700 UJ
NVHOS	**6**	**7.2**	**5.6**	**6.1**	**6.2**	**6.3**	<2	<2	<2	**5,000**	<1,000	**730,000 J**
EVE Acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	<1,000 UJ	<5,700 UJ
Hydro-EVE Acid	<2	<2	**3.4**	**3.4**	**3.5**	**3.6**	<2	<2	<2	<1,000	<1,000 UJ	<5,700 UJ
R-EVE	**2.8 J**	**3.3 J**	**52 J**	**55 J**	**58 J**	**57 J**	**53 J**	**53 J**	**52 J**	**1,400 J**	**1,400 J**	**8,500 J**
PES	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	**1,100 J**	2,900 UJ
PFECA B	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000 UJ	<1,000 UJ	<5,700 UJ
PFECA-G	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	<1,000 UJ	<5,700 UJ
Other PFAS (ppt)												
10:2 Fluorotelomer sulfonate	<2	<2	<2	<2	<2	<2	<2	<2	<2	<52,000	--	<1,000 UJ
11Cl-PF3OUdS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	--	<1,000 UJ
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<20	<20	<20	<20	<20	<20	<20	<20	<20	<500,000	--	<30,000 UJ
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<20	<20	<20	<20	<20	<20	<20	<20	<20	<740,000	--	<45,000 UJ
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	--	<1,000 UJ
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<4	<4	<4	<4	<4	<4	<4	<4	<4	<1,400	--	<1,000 UJ
6:2 Fluorotelomer sulfonate	<20	<20	<20	<20	<20	<20	<20	<20	<20	<300,000	--	<18,000 UJ
9Cl-PF3ONS	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,400	--	<1,000 UJ
ADONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<1,000	--	<1,000 UJ
NaDONA	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<1,100	--	<1,100 UJ
N-ethyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20	<20	<20	<20	<10,000	--	<10,000 UJ
N-ethylperfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2	<2	<2	<2	<2	<3,900	--	<23,000 UJ
N-methyl perfluoro-1-octanesulfonamide	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	--	<1,000 UJ
N-methyl perfluorooctane sulfonamidoacetic acid	<20	<20	<20	<20	<20	<20	<20	<20	<20	<10,000	--	<10,000 UJ
Perfluorobutane Sulfonic Acid	**4.3**	**4**	**2.6**	**2.6**	**2.6**	**2.6**	**4.2**	**4.2**	**4.3**	<1,000	--	<1,000 UJ
Perfluorobutanoic Acid	**6.9**	**7.4**	**11**	**11**	**12**	**11**	**6.2**	**6**	**6**	<1,000	--	**850 J**
Perfluorodecane Sulfonic Acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	--	<1,000 UJ
Perfluorodecanoic Acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	--	<1,000 UJ
Perfluorododecane sulfonic acid (PFDoS)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,200	--	<1,000 UJ
Perfluorododecanoic Acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,300	--	**930 J**
Perfluoroheptane sulfonic acid (PFHpS)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	--	<1,000 UJ
Perfluoroheptanoic Acid	**14**	**13**	**4**	**4.2**	**4.2**	**4.2**	<2	**2.1**	<2	<1,000	--	<1,000 UJ
Perfluorohexadecanoic acid (PFHxDA)	<2	<2	<4	<2	<2	<2	<2	<2	<2	<1,000	--	<1,000 UJ
Perfluorohexane Sulfonic Acid	**6.4**	**6.8**	**2.6**	**2.5**	**2.6**	**2.6**	<2	<2	<2	<1,000	--	<1,000 UJ
Perfluorohexanoic Acid	**19**	**19**	**5.1**	**4.7**	**5.2**	**5.1**	**2.5**	**2.3**	**2.2**	<1,000	--	<1,000 UJ
Perfluorononanesulfonic acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	--	<1,000 UJ
Perfluorononanoic Acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	--	<1,000 UJ
Perfluorooctadecanoic acid	<2	<2	<2 UJ	<2 UJ	<2 UJ	<2 UJ	<2	<2	<2	<1,000	--	<1,000 UJ
Perfluorooctane Sulfonamide	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,600	--	<1,000 UJ
Perfluoropentane sulfonic acid (PFPeS)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	--	<1,000 UJ
Perfluoropentanoic Acid	**20**	**20**	**16**	**15**	**15**	**15**	<2	**7.5**	<2	<1,500	--	<1,000 UJ
Perfluorotetradecanoic Acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,100	--	<1,000 UJ
Perfluorotridecanoic Acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	--	<1,000 UJ
Perfluoroundecanoic Acid	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1,000	--	<1,000 UJ
PFOA	**7.9**	**7.5**	**9.1**	**9.6**	**8.7**	**9**	**4**	**4.1**	**3.8**	<1,700	--	<1,000 UJ
PFOS	**16**	**16**	**3.3**	**2.8**	**2.3**	**2.5**	**6.1**	**6.2**	**5.7**	<4,000	--	<2,500 UJ
Other Parameters												
Percent Moisture	--	--	--	--	--	--	--	--	--	**81.5**	**62.2 J**	**59.7**
Total Organic Carbon (mg/kg)	--	--	--	--	--	--	--	--	--	--	--	--

Media	**VEG**	**VEG**	**VEG**	**VEG**	**VEG**	**VEG**	**VEG**	**VEG**	**VEG**	**VEG**	**VEG**	**VEG**
Location ID	**EU-12**	**EU-2**	**EU-3**	**EU-4**	**EU-5**	**EU-6**	**EU-7**	**EU-8**	**EU-9**	**SLEA-SED1-VEG**	**SLEA-SED2-VEG**	**SLEA-SED3-VEG**
Field Sample ID	**EU-12-VEG-082019**	**EU2-veg**	**EU-3-veg**	**EU-4-VEG-081919**	**EU-5-VEG-082319**	**EU6-veg**	**EU-7-VEG-081919**	**EU-8-VEG-081619**	**EU-9-VEG-082119**	**SLEA-SED1-VEG-20191021**	**SLEA-SED2-VEG-20191021**	**SLEA-SED3-VEG-20191021**
Sample Date	**20-Aug-19**	**25-Jul-19**	**31-Jul-19**	**19-Aug-19**	**23-Aug-19**	**25-Jul-19**	**19-Aug-19**	**16-Aug-19**	**21-Aug-19**	**21-Oct-19**	**21-Oct-19**	**21-Oct-19**
Sample Matrix	**Offsite-Veg**	**Offsite-Veg**	**Offsite-Veg**	**Offsite-Veg**	**Offsite-Veg**	**Offsite-Veg**	**Offsite-Veg**	**Offsite-Veg**	**Offsite-Veg**	**CFR-Veg**	**CFR-Veg**	**CFR-Veg**
Eco SLEA Data Use	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**	**EPCs**
Sample Delivery Group (SDG)	**320-53490-1**	**320-52868-1**	**320-52871-1**	**320-53490-1**	**320-53637-1**	**320-52868-1**	**320-53490-1**	**320-53490-1**	**320-53607-1**	**320-55583-1**	**320-55583-1**	**320-55583-1**
Lab Sample ID	**320-53490-13**	**320-52868-7**	**320-52871-2**	**320-53490-2**	**320-53637-2**	**320-52868-11**	**320-53490-5**	**320-53490-8**	**320-53607-2**	**320-55583-1**	**320-55583-2**	**320-55583-3**
Table 3+ Lab SOP (ppt)												
HFPO-DA	**55,000**	**34,000 J**	**2,200 J**	**540**	**1,500**	**2,000 J**	**1,200**	**580**	**890**	**2,100**	**3,200**	**13,000**
PFMOAA	<1,000 R	**59,000 J**	<1,000 R	<1,000 R	<1,000 R	<1,000 R	<1,000 R	<5,000 UJ	**970 J**	<1,000	<1,000	**370,000 J**
PFO2HxA	<1,000 UJ	**6,600 J**	**4,800 J**	**1,200 J**	**790 J**	**1,200 J**	**1,100 J**	**1,500 J**	<1,000 UJ	<1,000	<1,000	**29,000 J**
PFO3OA	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<5,000	<1,000 UJ	<1,000	<1,000	<2,400
PFO4DA	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**530 J**	<1,000 UJ	<1,000 UJ	<5,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<2,400
PFO5DA	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000	<5,000	<1,000	<1,000	<1,000	<2,400
PMPA	**390 J**	**34,000 J**	**3,700 J**	**2,200 J**	**1,900 J**	**8,200 J**	**2,900 J**	**4,200 J**	**2,000 J**	<1,000	<1,000	**66,000**
PEPA	<1,000 UJ	**2,300 J**	**410 J**	<1,000 UJ	**410 J**	**850 J**	<1,000 UJ	<5,000	<1,000 UJ	<1,000	<1,000	<2,400
PFESA-BP1	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<5,000	<1,000	<1,000	<1,000	<2,400
PFESA-BP2	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000	<5,000	<1,000	<1,000	<1,000	<2,400
Byproduct 4	**960 J**	**3,400 J**	<1,000 UJ	**19,000 J**	**600 J**	<1,000 UJ	<1,000	**2,100 J**	**650 J**	<1,000	<1,000	**3,300**
Byproduct 5	<1,000	<1,000 UJ	<1,000 UJ	**370 J**	<1,000 UJ	<1,000 UJ	<1,000	<5,000	<1,000	<1,000	<1,000	<2,400
Byproduct 6	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000	<1,000 UJ	<1,000 UJ	<1,000	<5,000	<1,000	<1,000	<1,000	<2,400
NVHOS	**24,000 J**	**1,700 J**	**650 J**	**2,700 J**	**26,000 J**	**18,000 J**	**3,700 J**	<5,000	**6,700 J**	<1,000	<1,000	<2,400
EVE Acid	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<5,000	<1,000 UJ	<1,000	<1,000	<2,400
Hydro-EVE Acid	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<5,000	<1,000	<1,000	<1,000	<2,400
R-EVE	<1,000	**3,100 J**	**4,400 J**	<1,000	**4,100 J**	**3,100 J**	**240 J**	**2,600 J**	<1,000	<1,000	<1,000	**2,800**
PES	<1,000 UJ	<1,000 UJ	<1,000 UJ	**1,100 J**	<1,000 UJ	<1,000 UJ	<1,000 UJ	<5,000	**300 J**	<1,000	<1,000	<2,400
PFECA B	**320 J**	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	**3,100 J**	<1,000 UJ	<5,000	<1,000 UJ	<1,000	<1,000	<2,400
PFECA-G	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ	<5,000	<1,000 UJ	<1,000 UJ	<1,000 UJ	<2,400
Other PFAS (ppt)												
10:2 Fluorotelomer sulfonate	<7,800	<4,000 UJ	<3,600 UJ	<19,000	<3,000	<3,500 UJ	<5,700	<1,000	--	<1,000	<1,000	<1,000
11Cl-PF3OUdS	<6,600	<1,000 UJ	<1,000 UJ	<6,400	<1,000	<1,000 UJ	<1,000	<1,000	--	<1,000	<1,000	<1,000
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<75,000	<39,000 UJ	<35,000 UJ	<180,000	<29,000	<34,000 UJ	<55,000	<10,000	--	<10,000	<10,000	<10,000
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<110,000	<10,000 UJ	<10,000 UJ	<110,000	<10,000	<10,000 UJ	<81,000	<10,000	--	<10,000	<10,000	<10,000
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<1,000	--	<1,000 UJ	<10,000	<1,000	--	**240**	<1,000	--	<1,000	<1,000	<1,000
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<1,000	--	<1,000 UJ	<20,000	<1,000	--	<1,500	<1,400	--	<2,000 UJ	<1,000	<1,000
6:2 Fluorotelomer sulfonate	<45,000	<23,000 UJ	<21,000 UJ	<110,000	<10,000	<20,000 UJ	<33,000	<10,000	--	<10,000	<10,000	<10,000
9Cl-PF3ONS	<22,000	<1,100 UJ	<1,000 UJ	<21,000	<1,000	<1,000 UJ	<1,600	<1,400	--	<1,000	<1,000	<1,000
ADONA	<5,600	<1,000 UJ	<1,000 UJ	<5,500	<1,000	<1,000 UJ	<1,000	<1,000	--	<1,100	<1,100	<1,100
NaDONA	<5,700	<1,100 UJ	<1,100 UJ	<5,500	<1,100	<1,100 UJ	<1,100	<1,100	--	<1,100	<1,100	<1,100
N-ethyl perfluorooctane sulfonamidoacetic acid	<10,000	<10,000 UJ	<10,000 UJ	<110,000	<10,000	<10,000 UJ	<10,000	<10,000	--	<10,000	<10,000	<10,000
N-ethylperfluoro-1-octanesulfonamide	<2,900	--	<2,700 UJ	<56,000	<22,000	--	<4,200	<3,800	--	<1,000 UJ	<1,000	<1,000 UJ
N-methyl perfluoro-1-octanesulfonamide	<1,000	--	<1,000 UJ	<9,300	<1,000	--	<1,000	<1,000	--	<1,000 UJ	<1,000	<1,000 UJ
N-methyl perfluorooctane sulfonamidoacetic acid	<10,000	<10,000 UJ	<10,000 UJ	<110,000	<10,000	<10,000 UJ	<10,000	<10,000	--	<10,000	<10,000	<10,000
Perfluorobutane Sulfonic Acid	<7,500	**470 B**	<1,000 UJ	<7,300	<1,000	<1,000 UJ	**310 J**	**370**	--	<1,000	<1,000	<1,000
Perfluorobutanoic Acid	<1,000	**4,100 J**	**820 J**	<8,100	**680**	**820 J**	**510**	<1,000	--	<1,000	**1,400**	**2,400 J**
Perfluorodecane Sulfonic Acid	<12,000	<1,000 UJ	<1,000 UJ	<11,000	<1,000	<1,000 UJ	<1,000	<1,000	--	<1,000	<1,000	<1,000
Perfluorodecanoic Acid	<6,600	<1,000 UJ	<1,000 UJ	<6,400	<1,000	<1,000 UJ	<1,000	<1,000	--	<1,000	<1,000	<1,000
Perfluorododecane sulfonic acid (PFDoS)	<18,000	<1,000 UJ	<1,000 UJ	<17,000	<1,000	<1,000 UJ	<1,300	<1,200	--	<1,000	<1,000	<1,000
Perfluorododecanoic Acid	<1,000	**1,200 J**	**580 J**	<20,000	<1,000	**1,400 J**	<1,500	<1,300	--	<1,000	<1,000	<1,000
Perfluoroheptane sulfonic acid (PFHpS)	<10,000	<1,000 UJ	<1,000 UJ	<10,000	<1,000	<1,000 UJ	<1,000	<1,000	--	<1,000	<1,000	<1,000
Perfluoroheptanoic Acid	<1,000	<1,000 UJ	<1,000 UJ	<8,400	<1,000	<1,000 UJ	<1,000	<1,000	--	<1,000	<1,000	<1,000
Perfluorohexadecanoic acid (PFHxDA)	<1,000	<6,800 UJ	<6,100 UJ	<13,000	<1,000	<1,000 UJ	<1,000	<1,000	--	<1,000	<1,000	<1,000 UJ
Perfluorohexane Sulfonic Acid	<9,300	<1,000 UJ	<1,000 UJ	<9,000	<1,000	<1,000 UJ	<1,000	<1,000	--	<1,000	<1,000	<1,000
Perfluorohexanoic Acid	<1,000	<1,000 UJ	<1,000 UJ	<12,000	<1,000	<1,000 UJ	<1,000	<1,000	--	<1,000	<1,000	<1,000
Perfluorononanesulfonic acid	<6,000	<1,000 UJ	<1,000 UJ	<5,800	<1,000	<1,000 UJ	<1,000	<1,000	--	<1,000	<1,000	<1,000
Perfluorononanoic Acid	<1,000	<1,000 UJ	<1,000 UJ	<10,000	<1,000	<1,000 UJ	<1,000	<1,000	--	<1,000	<1,000	<1,000
Perfluorooctadecanoic acid	<1,000	<4,400 UJ	<1,000 UJ	<8,100	<1,000	<1,000 UJ	<1,000	<1,000	--	<1,000	<1,000	<1,000 UJ
Perfluorooctane Sulfonamide	<1,200	<1,300 UJ	<1,100 UJ	<24,000	<1,000	<1,100 UJ	<1,800	<1,600	--	<1,000	<1,000	<1,000
Perfluoropentane sulfonic acid (PFPeS)	<6,000	<1,000 UJ	<1,000 UJ	<5,800	<1,000	<1,000 UJ	<1,000	<1,000	--	<1,000	<1,000	<1,000
Perfluoropentanoic Acid	<1,200	<1,200 UJ	**1,000 J**	<22,000	<1,000	<1,000 UJ	**480**	<1,500	--	<1,000	**1,300**	**10,000**
Perfluorotetradecanoic Acid	<1,000	<1,000 UJ	<1,000 UJ	<16,000	<1,000	<1,000 UJ	<1,200	<1,100	--	<1,000	<1,000	<1,000 UJ
Perfluorotridecanoic Acid	<1,000	<1,000 UJ	<1,000 UJ	<15,000	<1,000	<1,000 UJ	<1,100	<1,000	--	<1,000	<1,000	<1,000
Perfluoroundecanoic Acid	<1,000	<1,000 UJ	<1,000 UJ	<10,000	<1,000	<1,000 UJ	<1,000	<1,000	--	<1,000	<1,000	<1,000
PFOA	<1,300	<1,300 UJ	<1,200 UJ	<25,000	<1,000	<1,200 UJ	<1,900	<1,700	--	<1,000	<1,000	<1,000
PFOS	<60,000	<3,100 UJ	<2,800 UJ	<58,000	<2,500	<2,700 UJ	<4,400	**870**	--	**4,700**	**3,000**	<2,500
Other Parameters												
Percent Moisture	**67.9**	**68.8**	**66**	**66.3**	**62.4**	**64.4**	**78**	**83.8**	**80.3 J**	--	--	--
Total Organic Carbon (mg/kg)	--	--	--	--	--	--	--	--	--	--	--	--

Media	VEG	VEG	VEG	Worm	Worm	Worm	Worm	Worm	Worm	Worm
Location ID	SLEA-SED4-VEG	SLEA-SED5-VEG	SLEA-SED6-VEG	INTAKE-WORM	INTAKE-WORM	SEEP-A-WORMS	SEEP-B-WORM	SEEP-C-WORM	SEEP-D-WORM	WC-WORM
Field Sample ID	SLEA-SED4-VEG-20191021	SLEA-SED5-VEG-20191021	SLEA-SED6-VEG-20191021	INTAKE-WORM-092419	INTAKE-WORM-092419-D	SEEP-A-WORMS-091319	SEEP-B-WORMS-092519	SEEP-C-WORM-092619	SEEP-D-WORM-092619	WC-WORM-092419
Sample Date	21-Oct-19	21-Oct-19	21-Oct-19	24-Sep-19	24-Sep-19	13-Sep-19	25-Sep-19	26-Sep-19	26-Sep-19	24-Sep-19
Sample Matrix	CFR-Veg	CFR-Veg	CFR-Veg	Onsite-Invert	Onsite-Invert	Onsite-Invert	Onsite-Invert	Onsite-Invert	Onsite-Invert	Onsite-Invert
Eco SLEA Data Use	EPCs	EPCs	EPCs	EPCs/BSAF	ECPs/BSAF/Field Duplicate	EPCs/BSAF	EPCs/BSAF	EPCs/BSAF	EPCs/BSAF	EPCs/BSAF
Sample Delivery Group (SDG)	320-55583-1	320-55583-1	320-55583-1	320-54699-1	320-54699-1	320-54394-1	320-54770-1	320-54770-1	320-54770-1	320-54699-1
Lab Sample ID	320-55583-4	320-55583-5	320-55583-6	320-54699-9	320-54699-10	320-54394-2	320-54770-13	320-54770-12	320-54770-11	320-54699-11
Table 3+ Lab SOP (ppt)										
HFPO-DA	**26,000**	<1,300	<1,300	**4,900**	**5,200**	**6,200 J**	**19,000**	**1,400**	**5,200**	**5,700**
PFMOAA	**130,000**	<1,000	<1,000 R	<1,300 R	<1,200 R	**18,000 J**	**57,000**	<1,200 R	<1,000 R	<1,000 R
PFO2HxA	**38,000**	<1,000	<1,000	<1,300 UJ	<1,200 UJ	**4,200**	**14,000**	**870 J**	**2,300 J**	<1,000 UJ
PFO3OA	<1,300 UJ	**1,100 J**	<1,000 UJ	**240 J**	**230 J**	**2,600**	**6,700 J**	**520 J**	**3,500 J**	**610 J**
PFO4DA	<1,300 UJ	**1,700 J**	**1,000 J**	<1,300 R	<1,200 R	**410 J**	**280 J**	<1,200 UJ	**330 J**	<1,000 UJ
PFO5DA	<1,300	**1,500**	**1,400**	<1,500	**380**	**14,000 J**	**5,500 J**	**850**	**3,100 J**	**1,800**
PMPA	**60,000**	<1,000	<1,000	**3,600 J**	**680 J**	**1,800 J**	**1,100 J**	<1,200 UJ	<1,000 UJ	<1,000 UJ
PEPA	**12,000 J**	<1,000	<1,000	**1,900 J**	**990 J**	**1,300**	**1,400 J**	**520 J**	**730 J**	**1,300 J**
PFESA-BP1	<1,300	<1,000	<1,000 UJ	<1,300 UJ	<1,200 UJ	**220 J**	**630 J**	<1,200 UJ	<1,000 UJ	<1,000 UJ
PFESA-BP2	<1,300	<1,000	<1,000	<1,300 UJ	**210 J**	**1,500**	**4,200 J**	**420**	**2,100 J**	**360 J**
Byproduct 4	**1,400 J**	**1,700 J**	<1,000	**15,000 J**	**21,000 J**	**3,800 J**	**44,000 J**	**10,000 J**	**12,000 J**	**11,000 J**
Byproduct 5	<1,300	<1,000	<1,000	**2,100 J**	**1,900 J**	**6,200 J**	**20,000 J**	**450 J**	**480 J**	<1,100
Byproduct 6	<1,300	<1,000	<1,000	<1,300 UJ	<1,200 UJ	<2,200	<1,000 UJ	<1,200	<1,000 UJ	<1,000 UJ
NVHOS	**34,000 J**	<1,000	<1,000	<1,300 UJ	<1,200 UJ	**1,000**	**7,500**	**420 J**	**880 J**	<1,000 UJ
EVE Acid	<1,300 UJ	<1,000	<1,000 UJ	<1,300 UJ	<1,200 UJ	<2,200 UJ	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ
Hydro-EVE Acid	<1,300	<1,000	<1,000	<1,300 UJ	<1,200 UJ	**380**	**930 J**	<1,200	**400 J**	<1,000 UJ
R-EVE	**1,700 J**	<1,000	<1,000	**4,100 J**	**4,900 J**	**1,100 J**	**9,500 J**	**4,900 J**	**6,000 J**	**3,200**
PES	<1,300	<1,000	<1,000	<1,300 UJ	<1,200 UJ	<2,200	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ
PFECA B	<1,300 UJ	<1,000	<1,000	<1,300 UJ	<1,200 UJ	<2,200	<1,000 UJ	<1,200 UJ	<1,000 UJ	<1,000 UJ
PFECA-G	<1,300 UJ	<1,000 UJ	<1,000 UJ	<1,300 R	<1,200 R	<2,200	<1,000 R	<1,200 UJ	<1,000 UJ	<1,000 R
Other PFAS (ppt)										
10:2 Fluorotelomer sulfonate	<1,000	<1,000	<1,000	<1,000	<1,000	<1,300	<1,000	<1,000	<1,000	<1,000
11Cl-PF3OUdS	<1,000	<1,000	<1,000	<1,000	<1,000	<1,100	--	--	--	<1,000
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	<10,000	<10,000	<10,000	<10,000	<10,000	<12,000	<10,000	<10,000	<10,000	<10,000
1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	<10,000	<10,000	<10,000	<11,000	<10,000	<18,000	<10,000	<10,000	<10,000	<10,000
2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	<1,000	<1,000	<1,000	**250**	<1,000	<2,000 UJ	--	--	--	<1,000
2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	<1,000	<1,000	<1,000	<2,000	<2,000	<3,900 UJ	--	--	--	<1,500
6:2 Fluorotelomer sulfonate	<10,000	<10,000	<10,000	<10,000	<10,000	<10,000	<10,000	<10,000	<10,000	<10,000
9Cl-PF3ONS	<1,000	<1,000	<1,000	<2,100	<2,000	<3,500	--	--	--	<1,600
ADONA	<1,100	<1,100	<1,100	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
NaDONA	<1,100	<1,100	<1,100	<1,100	<1,100	<1,100	<1,100	<1,100	<1,100	<1,100
N-ethyl perfluorooctane sulfonamidoacetic acid	<10,000	<10,000	<10,000	<11,000	<10,000	<18,000	--	--	--	<10,000
N-ethylperfluoro-1-octanesulfonamide	<1,000	<1,000	<1,000	<5,500	<5,400	<11,000 UJ	<4,500	<5,100	<4,800 UJ	<4,200
N-methyl perfluoro-1-octanesulfonamide	<1,000	<1,000	<1,000	<1,000	<1,000	<1,800 UJ	--	--	--	<1,000
N-methyl perfluorooctane sulfonamidoacetic acid	<10,000	<10,000	<10,000	<11,000	<11,000	**2,100**	<10,000	**2,000**	**5,600**	**5,900**
Perfluorobutane Sulfonic Acid	<1,000	<1,000	<1,000	<1,000	**240**	**230**	**260**	**430**	**610**	**340**
Perfluorobutanoic Acid	**3,500**	<1,000	<1,000	**600**	**350**	**580**	**690**	**490**	<1,000	**480**
Perfluorodecane Sulfonic Acid	<1,000	<1,000	<1,000	<1,100	<1,100	**170**	<1,000	<1,000	**560**	**410**
Perfluorodecanoic Acid	<1,000	<1,000	<1,000	<1,000	<1,000	**580**	**570**	<1,000	**670**	**450**
Perfluorododecane sulfonic acid (PFDoS)	<1,000	<1,000	<1,000	<1,700	<1,700	<2,900	<1,400	<1,600	<1,500	<1,300
Perfluorododecanoic Acid	<1,000	**1,300**	**1,000**	**350**	**540**	**1,700**	**1,300**	**870**	**1,900**	**2,500**
Perfluoroheptane sulfonic acid (PFHpS)	<1,000	<1,000	<1,000	<1,000	<1,000	<1,700	<1,000	<1,000	**230**	<1,000
Perfluoroheptanoic Acid	<1,000	<1,000	<1,000	<1,000	<1,000	**310**	**730**	<1,000	**920**	**500**
Perfluorohexadecanoic acid (PFHxDA)	<1,000	<1,000	<1,000	**350 J**	**570 J**	**1,200 J**	**1,000 J**	**250 J**	**1,700 J**	**520 J**
Perfluorohexane Sulfonic Acid	<1,000	<1,000	<1,000	**250**	**330**	**800**	**1,600**	**360**	**1,800**	**570**
Perfluorohexanoic Acid	<1,000	<1,000	<1,000	**360**	<1,200	<2,100	<1,000	<1,100	<1,100	<1,000
Perfluorononanesulfonic acid	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
Perfluorononanoic Acid	<1,000	<1,000	<1,000	<1,000	<1,000	**540**	**670**	<1,000	**630**	<1,000
Perfluorooctadecanoic acid	<1,000	<1,000	<1,000	<1,000 UJ	<1,000	<1,400	<1,000 UJ	<1,000 UJ	<1,000 UJ	<1,000 UJ
Perfluorooctane Sulfonamide	<1,000	<1,000	<1,000	<2,400	<2,300	**420 J**	**400**	<2,200	**420**	<1,800
Perfluoropentane sulfonic acid (PFPeS)	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
Perfluoropentanoic Acid	**2,500**	<1,000	<1,000	<2,200	<2,200	<3,800	**670**	<2,000	<1,900	<1,700
Perfluorotetradecanoic Acid	<1,000	<1,000	<1,000	**1,200**	**1,900**	**2,600**	**2,400**	**1,100**	**4,200 J**	**3,000 J**
Perfluorotridecanoic Acid	<1,000	<1,000	<1,000	**470 J**	**1,100 J**	**1,600**	**1,400**	**720**	**1,700**	**1,600**
Perfluoroundecanoic Acid	<1,000	**1,700**	<1,000	**240**	**330**	**1,000**	**890**	**470**	**1,200**	**1,800**
PFOA	<1,000	<1,000	<1,000	<2,500	<2,400	**540**	**610**	<2,300	**980**	**450**
PFOS	<2,500	<2,500	<2,500	**3,000**	**3,100**	**7,400**	**6,700**	**3,100**	**12,000**	**6,100**
Other Parameters										
Percent Moisture	--	--	--	**84.2**	**82.6**	**92 J**	**79.8**	**81.9**	**80.8**	**77.3**
Total Organic Carbon (mg/kg)	--	--	--	--	--	--	--	--	--	--

Notes:
Bold - Analyte detected above associated reporting limit
B - analyte detected in an associated blank
EPA - Environmental Protection Agency
J - Analyte detected. Value may not be accurate or precise
mg/kg - milligrams per kilogram
ppt - part per trillion
QA/QC - Quality assurance/ quality control
R - Result rejected based on QA/QC criteria
SDG - Sample Delivery Group
SOP - standard operating procedure
< - Analyte not detected above associated reporting limit
-- - No data reported
UJ – Analyte not detected. Reporting limit may not be accurate or precise.

APPENDIX C
Photo Log

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU6_7 **Comments: Leafy vegetation taken as sample. No invertebrates found.**	
DU6_7 **Comments: Leafy vegetation taken as sample. No invertebrates found. (34.814; -78.835)**	

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU6_10	
Comments: Moved across the street to avoid manure pile. Leafy vegetation collected. No invertebrates found. (34.815; -78.833)	
DU6_16	
Comments: Flowery plant collected. No invertebrates found. (34.817; -78.832)	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	Site Location: Fayetteville, North Carolina

DU6_5

Comments: Moved to other side of highway to avoid U-turn. No invertebrates found. Thin vegetation collected. (34.811; -78.834)

DU6_17

Comments: Moved out of center of highway. No invertebrates found. Small leafy vegetation collected. (34.809; -78.832)

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU6_23	
Comments: Moved across highway. No invertebrates found. Weedy vegetation collected. (34.805; -78.828)	
DU6_12	
Comments: Moved off highway. Rocky soil found. No invertebrates found. Long leafy vegetation collected. (34.799; -78.822)	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU6_22 **Comments: No invertebrates found. Small ferns collected. (34.799; -78.823)**	
DU10_26 **Comments: No invertebrates found. (34.780532; -78.836691)**	

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	Site Location: Fayetteville, North Carolina

DU10_10 **Comments: Point moved off driveway. No visible invertebrates. (34.78; -78.764)**	
DU6_27 **Comments: No invertebrates found. Thin leafy vegetation collected. (34.799; -78.823)**	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU6_30

Comments: Long bladed grass. (34.819; -78.796)

DU6_15

Comments: No invertebrates; thin leafy vegetation . (34.834; -78.802)

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU6_11

Comments: No invertebrates found. Long grasses collected. (34.829; -78.807)

DU6_13

Comments: Moved back from the EU border. Ferns collected. No invertebrates found. (34.834; -78.812)

GEOSYNTEC CONSULTANTS
Photographic Record

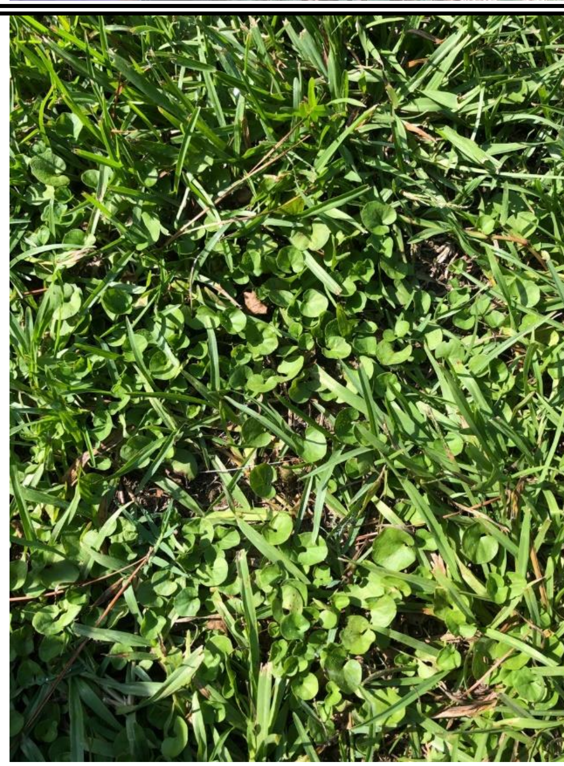
Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU2_23

Comments: Moved point out of street and closer to sample location. (34.835311; -78.823966)

DU2_30

Comments: No visible invertebrates. (34.835525; -78.824683)



GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	Site Location: Fayetteville, North Carolina

DU2_25 **Comments: No visible invertebrates. (34.832244; -78.825641)**	
DU2_25 **Comments: No visible invertebrates. (34.832244; -78.825641)**	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU2_2

Comments: multiple crickets and grasshoppers caught. (34.827473; -78.825059)

DU2_20

Comments: moved closer to side of the road and took sample at point. One cricket caught at location. (34.82626; -78.824887)

Geosyntec Consultants
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU2_6

Comments:
34.825906;
-78.824892

DU2_8

Comments:
34.821777;
-78.825388

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	Site Location: Fayetteville, North Carolina

DU2_22

Comments: EU2_22(0-0.5ft). (34.820023; -78.828723)

DU2_17

Comments: EU2_17(0-0.5ft) one cricket caught. (34.839601; -78.812775)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	Site Location: Fayetteville, North Carolina

DU2_12

Comments: EU2_12(0-0.5ft) no invertebrates caught. (34.839491; -78.812656)

DU11_19

Comments: Moved to avoid private drive. No invertebrates found. Flowery vegetation collected. (34.839491; -78.812656)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU11_1

Comments: No invertebrates found. Leafy vegetation collected. (34.806; -78.936)

DU11_16

Comments: (34.787; -78.854)

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU11_10

Comments: Moved away from other point. No invertebrates found. Leafy vegetation collected. (34.774; -78.877)

DU11_7

Comments: No invertebrates found. Leafy vegetation collected. (34.764; -78.895)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU3_12

Comments: No invertebrates, leafy vegetation. (34.836; -78.857)

DU3_12

Comments: No invertebrates, leafy vegetation. (34.836; -78.857)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	Site Location: Fayetteville, North Carolina

DU3_19

Comments: No invertebrates, leafy vegetation. (34.835; -78.857)

DU3_30

Comments: No invertebrates, grassy vegetation. (34.834; -78.856)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU3_1

Comments: No invertebrates, grassy vegetation. (34.826; -78.849)

DU3_3

Comments: No invertebrates, grassy vegetation. (34.82; -78.849)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU3_10

Comments: No invertebrates, grassy vegetation. (34.827; -78.85)

DU3_4

Comments: No invertebrates, grassy vegetation. (34.829; -78.852)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

SS-4-4.5

Comments: EU-8-Soil-4-4.5-081319. Duplicate made. Shallow sample taken as well at same location. No invertebrates found.

EU1-4-4.5

Comments: Shallow taken as well. No invertebrates in top 18 inches.

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU8-1

Comments: No invertebrates, flowery vegetation. (34.868; -78.847)

DU8-1

Comments: No invertebrates, flowery vegetation. (34.868; -78.847)

GEOSYNTEC CONSULTANTS
Photographic Record

Geosyntec consultants

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU8_6

Comments: No invertebrates, leafy vegetation. (34.867; -78.87)

DU8_4

Comments: No invertebrates, fern collected. (34.87; -78.868)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU8_19

Comments: No invertebrates, leafy vegetation. (34.868; -78.88)

DU8_11

Comments: No invertebrates, leafy vegetation. (34.859; -78.88)

GEOSYNTEC CONSULTANTS Photographic Record	
Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	Site Location: Fayetteville, North Carolina

DU8_22

Comments: No invertebrates, leafy vegetation. (34.852; -78.877)

DU8_13

Comments: No invertebrates, leafy vegetation. (34.855; -78.877)

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU4_11

Comments: Moved due to private property. No invertebrates, grassy vegetation. (34.853; -78.854)

DU4_17

Comments: No invertebrates, leafy vegetation. (34.848; -78.859)

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU4_9

Comments: No invertebrates, leafy vegetation. (34.848; -78.86)

DU4_16

Comments: 2 invertebrates, grassy vegetation. (34.845; -78.855)

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU4_5

Comments: 1 invertebrates, grassy vegetation. (34.845; -78.855)

DU7_27

Comments: Leafy vegetation collected. No invertebrates found. (34.833; -78.865)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU7_2

Comments: Leafy vegetation collected. No invertebrates found. (34.83; -78.873)

DU7_10

Comments: Tall grass collected. No invertebrates found. (34.813; -78.872)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU7_1

Comments: Long grasses collected. No invertebrates found. (34.815; -78.865)

DU12_10

Comments: No invertebrates, leafy vegetation; (34.921; -78.844)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU12_9

Comments: No invertebrates, leafy vegetation. (34.911; -78.839)

DU12_27

Comments: 6 grasshopper, grassy vegetation. (34.901; -78.853)

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	Site Location: Fayetteville, North Carolina

DU12_5	
Comments: No invertebrates, flowery vegetation. (34.886; -78.849)	
DU12_18	
Comments: 1 invertebrates, grassy vegetation. (34.905; -78.856)	

GEOSYNTEC CONSULTANTS
Photographic Record

Geosyntec consultants

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU12_22

Comments: 2 invertebrates, leafy vegetation. (34.909; -78.864)

DU12_1

Comments: No invertebrates, leafy vegetation. (34.902; -78.911)

GEOSYNTEC CONSULTANTS **Photographic Record**	
Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU12_15 **Comments: No invertebrates, grassy vegetation. (34.893; -78.916)**	
DU12_12 **Comments: No invertebrates, tall grassy vegetation. (34.894; -78.897)**	

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU12_26

Comments: No invertebrates, leafy vegetation. (34.893; -78.884)

DU12_28

Comments: No invertebrates, leafy vegetation. (34.857; -78.908)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU12_3

Comments: 1 invertebrates, no vegetation. (34.855; -78.909)

DU9_6

Comments: No invertebrates, leafy vegetation. (34.892; -78.827)

GEOSYNTEC CONSULTANTS
Photographic Record

Geosyntec consultants

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	Site Location: Fayetteville, North Carolina

DU9_16	
Comments: No invertebrates, fern collected. (34.886; -78.823)	

DU9_12	
Comments: No invertebrates, leafy vegetation. (34.924; -78.823)	

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	Site Location: Fayetteville, North Carolina

DU9_10

Comments: 2 invertebrates, grassy vegetation. (34.912; -78.823)

DU9_19

Comments: No invertebrates; grass. (34.88; -78.807)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	Site Location: Fayetteville, North Carolina

DU9_5	
Comments: 2 invertebrates, leafy vegetation. (34.874; -78.787)	

DU9_20	
Comments: No invertebrates; leafy vegetation. (34.894; -78.797)	

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	Site Location: Fayetteville, North Carolina

DU9_30	
Comments: Leafy vegetation: 2 invertebrates, one a dragonfly. (34.884; -78.789)	

DU10_24	
Comments: No invertebrates, tall grassy vegetation. (34.826; -78.735)	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU10_20

Comments: No invertebrates, fern collected. (34.803; -78.778)

DU10_17

Comments: 1 invertebrates, leafy vegetation. (34.834; -78.77)

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU10_5

Comments: 1 invertebrates, grassy vegetation. (34.76; -78.805)

DU10_29

Comments: 1 invertebrates, grassy vegetation. (34.761; -78.806)

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU5_8

Comments: Moved due to private property. 2 invertebrates found. Long grasses collected. (34.878; -78.831)

DU5_8

Comments: Moved due to private property. 2 invertebrates found. Long grasses collected. (34.878; -78.831)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	Site Location: Fayetteville, North Carolina

DU5_3

Comments: Moved due to private property. Long grasses collected. No invertebrates found. (34.877; -78.821)

DU5_3

Comments: Moved due to private property. Long grasses collected. No invertebrates found. (34.877; -78.821)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU5_5

Comments: 1 invertebrates found. Tall grasses collected. (34.865; -78.797)

DU5_22

Comments: Leafy vegetation collected. No invertebrates found. (34.863; -78.834)

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	Site Location: Fayetteville, North Carolina

DU5_9

Comments: No invertebrates found. Grasses collected. (34.863; -78.832)

DU1_7

Comments: No invertebrates, leafy vegetation. (34.856; -78.833)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU1_20

Comments: Leafy vegetation. No invertebrates. (34.841; -78.813)

DU1_22

Comments: Beetle, grasshoper, leafy vegetation. (34.857; -78.836)

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU1_17

Comments: No invertebrates found. Leafy vegetation. (34.841; -78.813)

DU1_9

Comments: No invertebrates, leafy vegetation. (34.858; -78.836)

Client: Chemours	Project Number: TR0795
Site Name: Fayetteville Works	Site Location: Fayetteville, North Carolina

DU1_27	
Comments: No invertebrates, leafy vegetation. (34.86; -78.836)	

DU1_23	
Comments: No invertebrates, leafy vegetation. (34.861; -78.834)	

GEOSYNTEC CONSULTANTS
Photographic Record

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU1_30

Comments: No invertebrates, leafy vegetation. (34.858; -78.832)

DU1_5

Comments: No invertebrates. Leafy vegetation. (34.862; -78.838)

Client: Chemours	**Project Number: TR0795**
Site Name: Fayetteville Works	**Site Location: Fayetteville, North Carolina**

DU1_19	
Comments: No invertebrate, leafy vegetation. (34.857; -78.832)	

DU1_6	
Comments: No invertebrates, leafy vegetation. (34.858; -78.829)	

APPENDIX D
ProUCL Output

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.112/2/2019 9:53:39 AM
User Selected Options	
From File	ProUCL_Inputdata_Terr_d.xls
Full Precision	OFF

From File: ProUCL_Inputdata_Terr_d.xls

Onsite Invertebrate General Statistics

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	6	0	6	0	0.00%	N/A	N/A	7093	36929080	6077	0.857
PFMOAA	6	0	2	4	66.67%	1000	1200	13167	4.228E+8	20562	1.562
PFO2HxA	6	0	4	2	33.33%	1000	1200	3852	22031447	4694	1.219
PFO3OA	6	0	6	0	0.00%	N/A	N/A	2360	6234197	2497	1.058
PFO4DA	6	0	3	3	50.00%	1000	1200	340	2867	53.54	0.157
PFO5DA	6	0	6	0	0.00%	N/A	N/A	4272	26092459	5108	1.196
PMPA	6	0	3	3	50.00%	1000	1200	1348	210434	458.7	0.34
PEPA	6	0	6	0	0.00%	N/A	N/A	1116	152020	389.9	0.349
PFESA-BP1	6	0	2	4	66.67%	1000	1200	425	42025	205	0.482
PFESA-BP2	6	0	6	0	0.00%	N/A	N/A	1465	2355153	1535	1.048
Byproduct 4	6	0	6	0	0.00%	N/A	N/A	16458	2.025E+8	14229	0.865
Byproduct 5	6	0	5	1	16.67%	1100	1100	4930	49534344	7038	1.428
Byproduct 6	6	0	0	6	100.00%	1000	2200	N/A	N/A	N/A	N/A
NVHOS	6	0	4	2	33.33%	1000	1200	1865	6403787	2531	1.357
EVE Acid	6	0	0	6	100.00%	1000	2200	N/A	N/A	N/A	N/A
Hydro-EVE Acid	6	0	3	3	50.00%	1000	1200	570	64867	254.7	0.447
R-EVE	6	0	6	0	0.00%	N/A	N/A	4865	7972150	2823	0.58
PES	6	0	0	6	100.00%	1000	2200	N/A	N/A	N/A	N/A
PFECA B	6	0	0	6	100.00%	1000	2200	N/A	N/A	N/A	N/A
PFECA-G	6	0	0	6	100.00%	1000	2200	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	6	0	1400	19000	7093	5450	36929080	6077	845.8	1.985	0.857
PFMOAA	2	0	18000	57000	37500	37500	7.605E+8	27577	28910	N/A	0.735
PFO2HxA	4	0	870	14000	5343	3250	35172558	5931	2468	1.693	1.11
PFO3OA	6	0	231.6	6700	2360	1605	6234197	2497	1822	1.195	1.058
PFO4DA	3	0	280	410	340	330	4300	65.57	74.13	0.67	0.193
PFO5DA	6	0	382.8	14000	4272	2450	26092459	5108	2718	1.816	1.196
PMPA	3	0	1100	2156	1685	1800	288787	537.4	528.2	-0.916	0.319
PEPA	6	0	520	1444	1116	1300	152020	389.9	180.8	-1.001	0.349
PFESA-BP1	2	0	220	630	425	425	84050	289.9	303.9	N/A	0.682
PFESA-BP2	6	0	208.8	4200	1465	960	2355153	1535	1002	1.349	1.048
Byproduct 4	6	0	3800	44000	16458	11500	2.025E+8	14229	5890	1.911	0.865
Byproduct 5	5	0	450	20000	5823	1984	68321039	8266	2274	1.834	1.42
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	4	0	420	7500	2450	940	11396933	3376	429.9	1.967	1.378
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	3	0	380	930	570	400	97300	311.9	29.65	1.724	0.547
R-EVE	6	0	1100	9500	4865	4695	7972150	2823	2076	0.573	0.58
PES	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA B	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	6	0	3230	5059	5094	5450	6075	6200	12600	15800	18360
PFMOAA	6	0	1000	1000	1050	1200	13800	18000	37500	47250	55050
PFO2HxA	6	0	935	1000	1050	1750	3725	4200	9100	11550	13510
PFO3OA	6	0	375.8	520	542.5	1605	3275	3500	5100	5900	6540
PFO4DA	6	0	305	330	350	705	1150	1200	1200	1200	1200
PFO5DA	6	0	616.4	850	1088	2450	4900	5500	9750	11875	13575
PMPA	6	0	1000	1000	1025	1150	1650	1800	1978	2067	2138
PEPA	6	0	625	730	872.5	1300	1375	1400	1422	1433	1442
PFESA-BP1	6	0	425	630	722.5	1000	1150	1200	1200	1200	1200
PFESA-BP2	6	0	284.4	360	375	960	1950	2100	3150	3675	4095
Byproduct 4	6	0	6900	10000	10250	11500	16459	17945	30973	37486	42697
Byproduct 5	6	0	465	480	635	1542	5146	6200	13100	16550	19310
Byproduct 6	6	0	1000	1000	1000	1100	1200	1200	1700	1950	2150
NVHOS	6	0	650	880	910	1000	1150	1200	4350	5925	7185
EVE Acid	6	0	1000	1000	1000	1100	1200	1200	1700	1950	2150
Hydro-EVE Acid	6	0	390	400	532.5	965	1150	1200	1200	1200	1200
R-EVE	6	0	2150	3200	3523	4695	5725	6000	7750	8625	9325
PES	6	0	1000	1000	1000	1100	1200	1200	1700	1950	2150
PFECA B	6	0	1000	1000	1000	1100	1200	1200	1700	1950	2150
PFECA-G	6	0	1000	1000	1050	1200	1200	1200	1700	1950	2150

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.112/2/2019 11:47:20 AM
From File	ReRun OffSite Veg and OnSite Invert_a.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Onsite Invertebrate UCLs

Hfpo Dimer Acid

General Statistics

Total Number of Observations	6	Number of Distinct Observations	6
		Number of Missing Observations	0
Minimum	1400	Mean	7093
Maximum	19000	Median	5450
SD	6077	Std. Error of Mean	2481
Coefficient of Variation	0.857	Skewness	1.985

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.739	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.392	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	12092	95% Adjusted-CLT UCL (Chen-1995)	13322
		95% Modified-t UCL (Johnson-1978)	12427

Gamma GOF Test

A-D Test Statistic	0.574	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.704	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.311	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.336	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.981	k star (bias corrected MLE)	1.102
Theta hat (MLE)	3581	Theta star (bias corrected MLE)	6439
nu hat (MLE)	23.77	nu star (bias corrected)	13.22
MLE Mean (bias corrected)	7093	MLE Sd (bias corrected)	6758
		Approximate Chi Square Value (0.05)	6.04
Adjusted Level of Significance	0.0122	Adjusted Chi Square Value	4.408

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	15524	95% Adjusted Gamma UCL (use when n<50)	21269

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.884	**Shapiro Wilk Lognormal GOF Test**

5% Shapiro Wilk Critical Value	0.788	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.302	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.325	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	7.244	Mean of logged Data	8.594
Maximum of Logged Data	9.852	SD of logged Data	0.829

Assuming Lognormal Distribution

95% H-UCL	28475	90% Chebyshev (MVUE) UCL	14258
95% Chebyshev (MVUE) UCL	17497	97.5% Chebyshev (MVUE) UCL	21993
99% Chebyshev (MVUE) UCL	30823		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	11174	95% Jackknife UCL	12092
95% Standard Bootstrap UCL	10838	95% Bootstrap-t UCL	25345
95% Hall's Bootstrap UCL	33407	95% Percentile Bootstrap UCL	11443
95% BCA Bootstrap UCL	12267		
90% Chebyshev(Mean, Sd) UCL	14536	95% Chebyshev(Mean, Sd) UCL	17907
97.5% Chebyshev(Mean, Sd) UCL	22586	99% Chebyshev(Mean, Sd) UCL	31778

Suggested UCL to Use

95% Adjusted Gamma UCL	21269

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFMOAA

General Statistics

Total Number of Observations	6	Number of Distinct Observations	4
Number of Detects	2	Number of Non-Detects	4
Number of Distinct Detects	2	Number of Distinct Non-Detects	2
Minimum Detect	18000	Minimum Non-Detect	1000
Maximum Detect	57000	Maximum Non-Detect	1200
Variance Detects	7.605E+8	Percent Non-Detects	66.67%
Mean Detects	37500	SD Detects	27577
Median Detects	37500	CV Detects	0.735
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	10.37	SD of Logged Detects	0.815

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	13167	KM Standard Error of Mean	11872
KM SD	20562	95% KM (BCA) UCL	N/A
95% KM (t) UCL	37089	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	32694	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	48782	95% KM Chebyshev UCL	64914
97.5% KM Chebyshev UCL	87305	99% KM Chebyshev UCL	131288

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	3.329	k star (bias corrected MLE)	N/A
Theta hat (MLE)	11263	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	13.32	nu star (bias corrected)	N/A
Mean (detects)	37500		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	13167	SD (KM)	20562
Variance (KM)	4.228E+8	SE of Mean (KM)	11872
k hat (KM)	0.41	k star (KM)	0.316
nu hat (KM)	4.92	nu star (KM)	3.793
theta hat (KM)	32112	theta star (KM)	41650
80% gamma percentile (KM)	20439	90% gamma percentile (KM)	38578
95% gamma percentile (KM)	59219	99% gamma percentile (KM)	112519

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0122
Approximate Chi Square Value (3.79, α)	0.642	Adjusted Chi Square Value (3.79, β)	0.306
95% Gamma Approximate KM-UCL (use when n>=50)	77819	95% Gamma Adjusted KM-UCL (use when n<50)	163087

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	13235	Mean in Log Scale	7.939
SD in Original Scale	22490	SD in Log Scale	2.047
95% t UCL (assumes normality of ROS data)	31736	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A	95% Bootstrap t UCL	N/A
95% H-UCL (Log ROS)	30799619		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	8.063	KM Geo Mean	3176
KM SD (logged)	1.668	95% Critical H Value (KM-Log)	6.486
KM Standard Error of Mean (logged)	0.963	95% H-UCL (KM -Log)	1609932
KM SD (logged)	1.668	95% Critical H Value (KM-Log)	6.486
KM Standard Error of Mean (logged)	0.963		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	12867	Mean in Log Scale	7.662
SD in Original Scale	22720	SD in Log Scale	2.134
95% t UCL (Assumes normality)	31557	95% H-Stat UCL	51575792

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 64914

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO2HxA

General Statistics

Total Number of Observations	6	Number of Distinct Observations	6
Number of Detects	4	Number of Non-Detects	2
Number of Distinct Detects	4	Number of Distinct Non-Detects	2
Minimum Detect	870	Minimum Non-Detect	1000
Maximum Detect	14000	Maximum Non-Detect	1200
Variance Detects	35172558	Percent Non-Detects	33.33%
Mean Detects	5343	SD Detects	5931
Median Detects	3250	CV Detects	1.11
Skewness Detects	1.693	Kurtosis Detects	2.951
Mean of Logged Detects	8.1	SD of Logged Detects	1.163

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.827	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.326	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3852	KM Standard Error of Mean	2213
KM SD	4694	95% KM (BCA) UCL	N/A
95% KM (t) UCL	8310	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	7491	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	10490	95% KM Chebyshev UCL	13496
97.5% KM Chebyshev UCL	17670	99% KM Chebyshev UCL	25867

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.258	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.665	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.224	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.401	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.172	k star (bias corrected MLE)	0.46

Theta hat (MLE)	4558	Theta star (bias corrected MLE)	11621
nu hat (MLE)	9.377	nu star (bias corrected)	3.678
Mean (detects)	5343		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	3562
Maximum	14000	Median	1585
SD	5359	CV	1.505
k hat (MLE)	0.174	k star (bias corrected MLE)	0.198
Theta hat (MLE)	20438	Theta star (bias corrected MLE)	17966
nu hat (MLE)	2.091	nu star (bias corrected)	2.379
Adjusted Level of Significance (β)	0.0122		
Approximate Chi Square Value (2.38, α)	0.215	Adjusted Chi Square Value (2.38, β)	0.104
95% Gamma Approximate UCL (use when n>=50)	39404	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3852	SD (KM)	4694
Variance (KM)	22031447	SE of Mean (KM)	2213
k hat (KM)	0.673	k star (KM)	0.448
nu hat (KM)	8.08	nu star (KM)	5.374
theta hat (KM)	5720	theta star (KM)	8601
80% gamma percentile (KM)	6284	90% gamma percentile (KM)	10654
95% gamma percentile (KM)	15385	99% gamma percentile (KM)	27146

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (5.37, α)	1.329	Adjusted Chi Square Value (5.37, β)	0.736
95% Gamma Approximate KM-UCL (use when n>=50)	15578	95% Gamma Adjusted KM-UCL (use when n<50)	28116

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.997	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.167	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3803	Mean in Log Scale	7.594
SD in Original Scale	5176	SD in Log Scale	1.193
95% t UCL (assumes normality of ROS data)	8061	95% Percentile Bootstrap UCL	7386
95% BCA Bootstrap UCL	8521	95% Bootstrap t UCL	20446
95% H-UCL (Log ROS)	52375		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.656	KM Geo Mean	2113
KM SD (logged)	1.034	95% Critical H Value (KM-Log)	4.248
KM Standard Error of Mean (logged)	0.488	95% H-UCL (KM -Log)	25726
KM SD (logged)	1.034	95% Critical H Value (KM-Log)	4.248
KM Standard Error of Mean (logged)	0.488		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	3745	Mean in Log Scale	7.502

SD in Original Scale	5218	SD in Log Scale	1.293
95% t UCL (Assumes normality)	8038	95% H-Stat UCL	81767

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 8310

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO3OA

General Statistics

Total Number of Observations	6	Number of Distinct Observations	6
		Number of Missing Observations	0
Minimum	231.6	Mean	2360
Maximum	6700	Median	1605
SD	2497	Std. Error of Mean	1019
Coefficient of Variation	1.058	Skewness	1.195

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.858	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.258	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	4414	95% Adjusted-CLT UCL (Chen-1995)	4568
		95% Modified-t UCL (Johnson-1978)	4497

Gamma GOF Test

A-D Test Statistic	0.325	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.716	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.262	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.341	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.953	k star (bias corrected MLE)	0.588
Theta hat (MLE)	2476	Theta star (bias corrected MLE)	4015
nu hat (MLE)	11.44	nu star (bias corrected)	7.054
MLE Mean (bias corrected)	2360	MLE Sd (bias corrected)	3079
		Approximate Chi Square Value (0.05)	2.2
Adjusted Level of Significance	0.0122	Adjusted Chi Square Value	1.353

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	7567	95% Adjusted Gamma UCL (use when n<50)	12302

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.935	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.788	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.216	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.325	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.445	Mean of logged Data	7.158
Maximum of Logged Data	8.81	SD of logged Data	1.307

Assuming Lognormal Distribution

95% H-UCL	62566	90% Chebyshev (MVUE) UCL	6249
95% Chebyshev (MVUE) UCL	7965	97.5% Chebyshev (MVUE) UCL	10345
99% Chebyshev (MVUE) UCL	15022		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	4037	95% Jackknife UCL	4414
95% Standard Bootstrap UCL	3917	95% Bootstrap-t UCL	5187
95% Hall's Bootstrap UCL	5651	95% Percentile Bootstrap UCL	3972
95% BCA Bootstrap UCL	4405		
90% Chebyshev(Mean, Sd) UCL	5418	95% Chebyshev(Mean, Sd) UCL	6803
97.5% Chebyshev(Mean, Sd) UCL	8726	99% Chebyshev(Mean, Sd) UCL	12502

Suggested UCL to Use

95% Student's-t UCL	4414

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO4DA

General Statistics

Total Number of Observations	6	Number of Distinct Observations	5
Number of Detects	3	Number of Non-Detects	3
Number of Distinct Detects	3	Number of Distinct Non-Detects	2
Minimum Detect	280	Minimum Non-Detect	1000
Maximum Detect	410	Maximum Non-Detect	1200
Variance Detects	4300	Percent Non-Detects	50%
Mean Detects	340	SD Detects	65.57
Median Detects	330	CV Detects	0.193
Skewness Detects	0.67	Kurtosis Detects	N/A
Mean of Logged Detects	5.817	SD of Logged Detects	0.191

Warning: Data set has only 3 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.983	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.227	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	340	KM Standard Error of Mean	37.86
KM SD	53.54	95% KM (BCA) UCL	N/A
95% KM (t) UCL	416.3	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	402.3	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	453.6	95% KM Chebyshev UCL	505
97.5% KM Chebyshev UCL	576.4	99% KM Chebyshev UCL	716.7

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	40.93	k star (bias corrected MLE)	N/A
Theta hat (MLE)	8.307	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	245.6	nu star (bias corrected)	N/A
Mean (detects)	340		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	280	Mean	339.5
Maximum	410	Median	334.2
SD	49.12	CV	0.145
k hat (MLE)	57.93	k star (bias corrected MLE)	29.07
Theta hat (MLE)	5.862	Theta star (bias corrected MLE)	11.68
nu hat (MLE)	695.1	nu star (bias corrected)	348.9
Adjusted Level of Significance (β)	0.0122		
Approximate Chi Square Value (348.89, α)	306.6	Adjusted Chi Square Value (348.89, β)	292.2
95% Gamma Approximate UCL (use when n>=50)	386.4	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	340	SD (KM)	53.54
Variance (KM)	2867	SE of Mean (KM)	37.86
k hat (KM)	40.33	k star (KM)	20.27
nu hat (KM)	483.9	nu star (KM)	243.3
theta hat (KM)	8.431	theta star (KM)	16.77
80% gamma percentile (KM)	401.4	90% gamma percentile (KM)	439.6
95% gamma percentile (KM)	473	99% gamma percentile (KM)	539.8

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (243.29, α)	208.2	Adjusted Chi Square Value (243.29, β)	196.4
95% Gamma Approximate KM-UCL (use when n>=50)	397.3	95% Gamma Adjusted KM-UCL (use when n<50)	421.2

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.994	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.203	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	338.8	Mean in Log Scale	5.817
SD in Original Scale	48.94	SD in Log Scale	0.143
95% t UCL (assumes normality of ROS data)	379	95% Percentile Bootstrap UCL	371
95% BCA Bootstrap UCL	370.9	95% Bootstrap t UCL	394.7
95% H-UCL (Log ROS)	385.6		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	5.817	KM Geo Mean	335.9
KM SD (logged)	0.156	95% Critical H Value (KM-Log)	2.01
KM Standard Error of Mean (logged)	0.11	95% H-UCL (KM -Log)	391.2
KM SD (logged)	0.156	95% Critical H Value (KM-Log)	2.01
KM Standard Error of Mean (logged)	0.11		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	453.3	Mean in Log Scale	6.076
SD in Original Scale	135.9	SD in Log Scale	0.316
95% t UCL (Assumes normality)	565.1	95% H-Stat UCL	629.7

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 416.3

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO5DA

General Statistics

Total Number of Observations	6	Number of Distinct Observations	6
		Number of Missing Observations	0
Minimum	382.8	Mean	4272
Maximum	14000	Median	2450
SD	5108	Std. Error of Mean	2085
Coefficient of Variation	1.196	Skewness	1.816

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.794	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.257	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	8474	95% Adjusted-CLT UCL (Chen-1995)	9354
		95% Modified-t UCL (Johnson-1978)	8732

Gamma GOF Test

A-D Test Statistic	0.198	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.717	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.141	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.342	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.926	k star (bias corrected MLE)	0.574
Theta hat (MLE)	4611	Theta star (bias corrected MLE)	7438
nu hat (MLE)	11.12	nu star (bias corrected)	6.892
MLE Mean (bias corrected)	4272	MLE Sd (bias corrected)	5637
		Approximate Chi Square Value (0.05)	2.112
Adjusted Level of Significance	0.0122	Adjusted Chi Square Value	1.288

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	13944	95% Adjusted Gamma UCL (use when n<50)	22854

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.994	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.788	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.11	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.325	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.948	Mean of logged Data	7.731
Maximum of Logged Data	9.547	SD of logged Data	1.294

Assuming Lognormal Distribution

95% H-UCL	103541	90% Chebyshev (MVUE) UCL	10909
95% Chebyshev (MVUE) UCL	13894	97.5% Chebyshev (MVUE) UCL	18036
99% Chebyshev (MVUE) UCL	26173		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	7702	95% Jackknife UCL	8474
95% Standard Bootstrap UCL	7444	95% Bootstrap-t UCL	15919
95% Hall's Bootstrap UCL	23218	95% Percentile Bootstrap UCL	7722
95% BCA Bootstrap UCL	8733		
90% Chebyshev(Mean, Sd) UCL	10528	95% Chebyshev(Mean, Sd) UCL	13362
97.5% Chebyshev(Mean, Sd) UCL	17295	99% Chebyshev(Mean, Sd) UCL	25021

Suggested UCL to Use

95% Student's-t UCL	8474

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PMPA

General Statistics

Total Number of Observations	6	Number of Distinct Observations	5
Number of Detects	3	Number of Non-Detects	3
Number of Distinct Detects	3	Number of Distinct Non-Detects	2
Minimum Detect	1100	Minimum Non-Detect	1000
Maximum Detect	2156	Maximum Non-Detect	1200
Variance Detects	288787	Percent Non-Detects	50%
Mean Detects	1685	SD Detects	537.4
Median Detects	1800	CV Detects	0.319
Skewness Detects	-0.916	Kurtosis Detects	N/A
Mean of Logged Detects	7.392	SD of Logged Detects	0.348

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.966	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.251	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1348	KM Standard Error of Mean	229.6
KM SD	458.7	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1811	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1726	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	2037	95% KM Chebyshev UCL	2349
97.5% KM Chebyshev UCL	2782	99% KM Chebyshev UCL	3633

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	13.26	k star (bias corrected MLE)	N/A
Theta hat (MLE)	127.1	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	79.54	nu star (bias corrected)	N/A
Mean (detects)	1685		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	185.3	Mean	1076
Maximum	2156	Median	874.6
SD	765.1	CV	0.711
k hat (MLE)	1.941	k star (bias corrected MLE)	1.082
Theta hat (MLE)	554.5	Theta star (bias corrected MLE)	995.1
nu hat (MLE)	23.29	nu star (bias corrected)	12.98
Adjusted Level of Significance (β)	0.0122		
Approximate Chi Square Value (12.98, α)	5.878	Adjusted Chi Square Value (12.98, β)	4.274
95% Gamma Approximate UCL (use when n>=50)	2376	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1348	SD (KM)	458.7
Variance (KM)	210434	SE of Mean (KM)	229.6
k hat (KM)	8.639	k star (KM)	4.43
nu hat (KM)	103.7	nu star (KM)	53.16
theta hat (KM)	156.1	theta star (KM)	304.3
80% gamma percentile (KM)	1837	90% gamma percentile (KM)	2206
95% gamma percentile (KM)	2545	99% gamma percentile (KM)	3264

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (53.16, α)	37.41	Adjusted Chi Square Value (53.16, β)	32.71
95% Gamma Approximate KM-UCL (use when n>=50)	1916	95% Gamma Adjusted KM-UCL (use when n<50)	2192

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.933	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.284	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1187	Mean in Log Scale	6.956
SD in Original Scale	649.1	SD in Log Scale	0.542
95% t UCL (assumes normality of ROS data)	1721	95% Percentile Bootstrap UCL	1625
95% BCA Bootstrap UCL	1628	95% Bootstrap t UCL	2200
95% H-UCL (Log ROS)	2362		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.155	KM Geo Mean	1280
KM SD (logged)	0.311	95% Critical H Value (KM-Log)	2.246
KM Standard Error of Mean (logged)	0.156	95% H-UCL (KM -Log)	1837
KM SD (logged)	0.311	95% Critical H Value (KM-Log)	2.246
KM Standard Error of Mean (logged)	0.156		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	1109	Mean in Log Scale	6.833
SD in Original Scale	717.7	SD in Log Scale	0.653
95% t UCL (Assumes normality)	1700	95% H-Stat UCL	2792

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 1811

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PEPA

General Statistics

Total Number of Observations	6	Number of Distinct Observations	5
		Number of Missing Observations	0
Minimum	520	Mean	1116
Maximum	1444	Median	1300
SD	389.9	Std. Error of Mean	159.2
Coefficient of Variation	0.349	Skewness	-1.001

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.805	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.348	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Data Not Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	1436	95% Adjusted-CLT UCL (Chen-1995)	1308
		95% Modified-t UCL (Johnson-1978)	1426

Gamma GOF Test

A-D Test Statistic	0.745	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.698	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.377	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.333	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	7.725	k star (bias corrected MLE)	3.974
Theta hat (MLE)	144.4	Theta star (bias corrected MLE)	280.8
nu hat (MLE)	92.7	nu star (bias corrected)	47.68
MLE Mean (bias corrected)	1116	MLE Sd (bias corrected)	559.7
		Approximate Chi Square Value (0.05)	32.84
Adjusted Level of Significance	0.0122	Adjusted Chi Square Value	28.46

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	1620	95% Adjusted Gamma UCL (use when n<50)	1869

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.782	**Shapiro Wilk Lognormal GOF Test**

5% Shapiro Wilk Critical Value	0.788	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.364	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.325	Data Not Lognormal at 5% Significance Level	

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	6.254	Mean of logged Data	6.951
Maximum of Logged Data	7.275	SD of logged Data	0.425

Assuming Lognormal Distribution

95% H-UCL	1825	90% Chebyshev (MVUE) UCL	1709
95% Chebyshev (MVUE) UCL	1974	97.5% Chebyshev (MVUE) UCL	2341
99% Chebyshev (MVUE) UCL	3063		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	1377	95% Jackknife UCL	1436
95% Standard Bootstrap UCL	1358	95% Bootstrap-t UCL	1385
95% Hall's Bootstrap UCL	1274	95% Percentile Bootstrap UCL	1357
95% BCA Bootstrap UCL	1317		
90% Chebyshev(Mean, Sd) UCL	1593	95% Chebyshev(Mean, Sd) UCL	1809
97.5% Chebyshev(Mean, Sd) UCL	2110	99% Chebyshev(Mean, Sd) UCL	2699

Suggested UCL to Use

95% Student's-t UCL	1436

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

PFESA-BP1

General Statistics

Total Number of Observations	6	Number of Distinct Observations	4
Number of Detects	2	Number of Non-Detects	4
Number of Distinct Detects	2	Number of Distinct Non-Detects	2
Minimum Detect	220	Minimum Non-Detect	1000
Maximum Detect	630	Maximum Non-Detect	1200
Variance Detects	84050	Percent Non-Detects	66.67%
Mean Detects	425	SD Detects	289.9
Median Detects	425	CV Detects	0.682
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	5.92	SD of Logged Detects	0.744

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	425	KM Standard Error of Mean	205
KM SD	205	95% KM (BCA) UCL	N/A
95% KM (t) UCL	838.1	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	762.2	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1040	95% KM Chebyshev UCL	1319
97.5% KM Chebyshev UCL	1705	99% KM Chebyshev UCL	2465

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	3.935	k star (bias corrected MLE)	N/A
Theta hat (MLE)	108	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	15.74	nu star (bias corrected)	N/A
Mean (detects)	425		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	425	SD (KM)	205
Variance (KM)	42025	SE of Mean (KM)	205
k hat (KM)	4.298	k star (KM)	2.26
nu hat (KM)	51.58	nu star (KM)	27.12
theta hat (KM)	98.88	theta star (KM)	188
80% gamma percentile (KM)	627.1	90% gamma percentile (KM)	803.4
95% gamma percentile (KM)	970.3	99% gamma percentile (KM)	1338

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0122
Approximate Chi Square Value (27.12, α)	16.25	Adjusted Chi Square Value (27.12, β)	13.3
95% Gamma Approximate KM-UCL (use when n>=50)	709.5	95% Gamma Adjusted KM-UCL (use when n<50)	866.4

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	425	Mean in Log Scale	5.92
SD in Original Scale	224.6	SD in Log Scale	0.576
95% t UCL (assumes normality of ROS data)	609.7	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A	95% Bootstrap t UCL	N/A
95% H-UCL (Log ROS)	911.2		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	5.92	KM Geo Mean	372.3
KM SD (logged)	0.526	95% Critical H Value (KM-Log)	2.701
KM Standard Error of Mean (logged)	0.526	95% H-UCL (KM -Log)	807.1
KM SD (logged)	0.526	95% Critical H Value (KM-Log)	2.701
KM Standard Error of Mean (logged)	0.526		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	508.3	Mean in Log Scale	6.177
SD in Original Scale	151.6	SD in Log Scale	0.396
95% t UCL (Assumes normality)	633	95% H-Stat UCL	798.2

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	1319

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFESA-BP2

General Statistics

Total Number of Observations	6	Number of Distinct Observations	6
		Number of Missing Observations	0
Minimum	208.8	Mean	1465
Maximum	4200	Median	960
SD	1535	Std. Error of Mean	626.5
Coefficient of Variation	1.048	Skewness	1.349

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.842	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.252	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	2727	95% Adjusted-CLT UCL (Chen-1995)	2864
		95% Modified-t UCL (Johnson-1978)	2785

Gamma GOF Test

A-D Test Statistic	0.337	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.714	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.268	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.34	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.085	k star (bias corrected MLE)	0.653
Theta hat (MLE)	1350	Theta star (bias corrected MLE)	2242
nu hat (MLE)	13.02	nu star (bias corrected)	7.841

MLE Mean (bias corrected)	1465	MLE Sd (bias corrected)	1812
		Approximate Chi Square Value (0.05)	2.643
Adjusted Level of Significance	0.0122	Adjusted Chi Square Value	1.685

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	4345	95% Adjusted Gamma UCL (use when n<50)	6819

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.933	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.788	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.231	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.325	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.341	Mean of logged Data	6.762
Maximum of Logged Data	8.343	SD of logged Data	1.174

Assuming Lognormal Distribution

95% H-UCL	20714	90% Chebyshev (MVUE) UCL	3537
95% Chebyshev (MVUE) UCL	4471	97.5% Chebyshev (MVUE) UCL	5768
99% Chebyshev (MVUE) UCL	8315		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	2495	95% Jackknife UCL	2727
95% Standard Bootstrap UCL	2415	95% Bootstrap-t UCL	3355
95% Hall's Bootstrap UCL	6490	95% Percentile Bootstrap UCL	2445
95% BCA Bootstrap UCL	2760		
90% Chebyshev(Mean, Sd) UCL	3344	95% Chebyshev(Mean, Sd) UCL	4196
97.5% Chebyshev(Mean, Sd) UCL	5377	99% Chebyshev(Mean, Sd) UCL	7699

Suggested UCL to Use

95% Student's-t UCL	2727

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Byproduct 4

General Statistics

Total Number of Observations	6	Number of Distinct Observations	6
		Number of Missing Observations	0
Minimum	3800	Mean	16458
Maximum	44000	Median	11500
SD	14229	Std. Error of Mean	5809
Coefficient of Variation	0.865	Skewness	1.911

**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1**

Normal GOF Test

Shapiro Wilk Test Statistic	0.784	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.292	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	28163	95% Adjusted-CLT UCL (Chen-1995)	30854
		95% Modified-t UCL (Johnson-1978)	28918

Gamma GOF Test

A-D Test Statistic	0.377	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.704	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.239	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.336	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.011	k star (bias corrected MLE)	1.117
Theta hat (MLE)	8184	Theta star (bias corrected MLE)	14740
nu hat (MLE)	24.13	nu star (bias corrected)	13.4
MLE Mean (bias corrected)	16458	MLE Sd (bias corrected)	15575
		Approximate Chi Square Value (0.05)	6.162
Adjusted Level of Significance	0.0122	Adjusted Chi Square Value	4.51

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	35787	95% Adjusted Gamma UCL (use when n<50)	48893

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.954	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.788	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.22	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.325	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	8.243	Mean of logged Data	9.44
Maximum of Logged Data	10.69	SD of logged Data	0.8

Assuming Lognormal Distribution

95% H-UCL	60093	90% Chebyshev (MVUE) UCL	32085
95% Chebyshev (MVUE) UCL	39249	97.5% Chebyshev (MVUE) UCL	49193
99% Chebyshev (MVUE) UCL	68726		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	26013	95% Jackknife UCL	28163
95% Standard Bootstrap UCL	25211	95% Bootstrap-t UCL	46133
95% Hall's Bootstrap UCL	79237	95% Percentile Bootstrap UCL	26300
95% BCA Bootstrap UCL	28658		
90% Chebyshev(Mean, Sd) UCL	33885	95% Chebyshev(Mean, Sd) UCL	41779
97.5% Chebyshev(Mean, Sd) UCL	52735	99% Chebyshev(Mean, Sd) UCL	74257

Suggested UCL to Use

95% Student's-t UCL	28163

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Byproduct 5

General Statistics

Total Number of Observations	6	Number of Distinct Observations	6
Number of Detects	5	Number of Non-Detects	1
Number of Distinct Detects	5	Number of Distinct Non-Detects	1
Minimum Detect	450	Minimum Non-Detect	1100
Maximum Detect	20000	Maximum Non-Detect	1100
Variance Detects	68321039	Percent Non-Detects	16.67%
Mean Detects	5823	SD Detects	8266
Median Detects	1984	CV Detects	1.42
Skewness Detects	1.834	Kurtosis Detects	3.318
Mean of Logged Detects	7.702	SD of Logged Detects	1.643

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.756	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.282	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.343	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	4930	KM Standard Error of Mean	3212
KM SD	7038	95% KM (BCA) UCL	10481
95% KM (t) UCL	11403	95% KM (Percentile Bootstrap) UCL	10486
95% KM (z) UCL	10214	95% KM Bootstrap t UCL	43926
90% KM Chebyshev UCL	14567	95% KM Chebyshev UCL	18932
97.5% KM Chebyshev UCL	24991	99% KM Chebyshev UCL	36893

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.355	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.704	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.232	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.369	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.634	k star (bias corrected MLE)	0.387
Theta hat (MLE)	9188	Theta star (bias corrected MLE)	15053
nu hat (MLE)	6.337	nu star (bias corrected)	3.868

Mean (detects)	5823

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	4852
Maximum	20000	Median	1232
SD	7766	CV	1.6
k hat (MLE)	0.25	k star (bias corrected MLE)	0.236
Theta hat (MLE)	19380	Theta star (bias corrected MLE)	20534
nu hat (MLE)	3.005	nu star (bias corrected)	2.836
Adjusted Level of Significance (β)	0.0122		
Approximate Chi Square Value (2.84, α)	0.325	Adjusted Chi Square Value (2.84, β)	0.146
95% Gamma Approximate UCL (use when n>=50)	42280	95% Gamma Adjusted UCL (use when n<50)	94010

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	4930	SD (KM)	7038
Variance (KM)	49534344	SE of Mean (KM)	3212
k hat (KM)	0.491	k star (KM)	0.356
nu hat (KM)	5.888	nu star (KM)	4.277
theta hat (KM)	10048	theta star (KM)	13831
80% gamma percentile (KM)	7830	90% gamma percentile (KM)	14196
95% gamma percentile (KM)	21306	99% gamma percentile (KM)	39413

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (4.28, α)	0.834	Adjusted Chi Square Value (4.28, β)	0.419
95% Gamma Approximate KM-UCL (use when n>=50)	25278	95% Gamma Adjusted KM-UCL (use when n<50)	50373

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.913	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.224	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.343	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	4932	Mean in Log Scale	7.446
SD in Original Scale	7709	SD in Log Scale	1.597
95% t UCL (assumes normality of ROS data)	11273	95% Percentile Bootstrap UCL	10239
95% BCA Bootstrap UCL	12142	95% Bootstrap t UCL	43990
95% H-UCL (Log ROS)	526407		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.442	KM Geo Mean	1707
KM SD (logged)	1.462	95% Critical H Value (KM-Log)	5.743
KM Standard Error of Mean (logged)	0.667	95% H-UCL (KM -Log)	212224
KM SD (logged)	1.462	95% Critical H Value (KM-Log)	5.743
KM Standard Error of Mean (logged)	0.667		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	4944	Mean in Log Scale	7.47
SD in Original Scale	7700	SD in Log Scale	1.575
95% t UCL (Assumes normality)	11278	95% H-Stat UCL	462594

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 11403

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Byproduct 6

General Statistics

Total Number of Observations	6	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	6
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Byproduct 6 was not processed!

NVHOS

General Statistics

Total Number of Observations	6	Number of Distinct Observations	5
Number of Detects	4	Number of Non-Detects	2
Number of Distinct Detects	4	Number of Distinct Non-Detects	2
Minimum Detect	420	Minimum Non-Detect	1000
Maximum Detect	7500	Maximum Non-Detect	1200
Variance Detects	11396933	Percent Non-Detects	33.33%
Mean Detects	2450	SD Detects	3376
Median Detects	940	CV Detects	1.378
Skewness Detects	1.967	Kurtosis Detects	3.896
Mean of Logged Detects	7.163	SD of Logged Detects	1.234

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use

guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.

For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).

Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.698	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.416	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1865	KM Standard Error of Mean	1196
KM SD	2531	95% KM (BCA) UCL	N/A
95% KM (t) UCL	4275	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	3832	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	5453	95% KM Chebyshev UCL	7078
97.5% KM Chebyshev UCL	9334	99% KM Chebyshev UCL	13765

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.568	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.668	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.396	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.403	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.91	k star (bias corrected MLE)	0.394
Theta hat (MLE)	2691	Theta star (bias corrected MLE)	6214
nu hat (MLE)	7.284	nu star (bias corrected)	3.154
Mean (detects)	2450		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	77.33	Mean	1741
Maximum	7500	Median	723.2
SD	2841	CV	1.632
k hat (MLE)	0.671	k star (bias corrected MLE)	0.447
Theta hat (MLE)	2593	Theta star (bias corrected MLE)	3896
nu hat (MLE)	8.055	nu star (bias corrected)	5.361
Adjusted Level of Significance (β)	0.0122		
Approximate Chi Square Value (5.36, α)	1.322	Adjusted Chi Square Value (5.36, β)	0.732
95% Gamma Approximate UCL (use when n>=50)	7056	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1865	SD (KM)	2531
Variance (KM)	6403787	SE of Mean (KM)	1196
k hat (KM)	0.543	k star (KM)	0.383
nu hat (KM)	6.515	nu star (KM)	4.591
theta hat (KM)	3434	theta star (KM)	4874
80% gamma percentile (KM)	2993	90% gamma percentile (KM)	5308
95% gamma percentile (KM)	7867	99% gamma percentile (KM)	14334

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (4.59, α)	0.968	Adjusted Chi Square Value (4.59, β)	0.501
95% Gamma Approximate KM-UCL (use when n>=50)	8842	95% Gamma Adjusted KM-UCL (use when n<50)	17081

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.877	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.332	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1849	Mean in Log Scale	6.928
SD in Original Scale	2777	SD in Log Scale	1.028
95% t UCL (assumes normality of ROS data)	4133	95% Percentile Bootstrap UCL	4037
95% BCA Bootstrap UCL	4174	95% Bootstrap t UCL	22238
95% H-UCL (Log ROS)	12078		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	6.933	KM Geo Mean	1025
KM SD (logged)	0.957	95% Critical H Value (KM-Log)	3.966
KM Standard Error of Mean (logged)	0.472	95% H-UCL (KM -Log)	8852
KM SD (logged)	0.957	95% Critical H Value (KM-Log)	3.966
KM Standard Error of Mean (logged)	0.472		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1817	Mean in Log Scale	6.877
SD in Original Scale	2793	SD in Log Scale	1.055
95% t UCL (Assumes normality)	4114	95% H-Stat UCL	12989

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Bootstrap t UCL	N/A	a Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	17081

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

EVE Acid

General Statistics

Total Number of Observations	6	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	6
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable EVE Acid was not processed!

Hydro-EVE Acid

General Statistics

Total Number of Observations	6	Number of Distinct Observations	5
Number of Detects	3	Number of Non-Detects	3
Number of Distinct Detects	3	Number of Distinct Non-Detects	2
Minimum Detect	380	Minimum Non-Detect	1000
Maximum Detect	930	Maximum Non-Detect	1200
Variance Detects	97300	Percent Non-Detects	50%
Mean Detects	570	SD Detects	311.9
Median Detects	400	CV Detects	0.547
Skewness Detects	1.724	Kurtosis Detects	N/A

Mean of Logged Detects	6.256	SD of Logged Detects	0.503

Warning: Data set has only 3 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.777	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.374	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	570	KM Standard Error of Mean	180.1
KM SD	254.7	95% KM (BCA) UCL	N/A
95% KM (t) UCL	932.9	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	866.2	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1110	95% KM Chebyshev UCL	1355
97.5% KM Chebyshev UCL	1695	99% KM Chebyshev UCL	2362

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	5.715	k star (bias corrected MLE)	N/A
Theta hat (MLE)	99.73	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	34.29	nu star (bias corrected)	N/A
Mean (detects)	570		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	380	Mean	564.6
Maximum	930	Median	475.9
SD	227.9	CV	0.404
k hat (MLE)	8.091	k star (bias corrected MLE)	4.157
Theta hat (MLE)	69.78	Theta star (bias corrected MLE)	135.8
nu hat (MLE)	97.1	nu star (bias corrected)	49.88
Adjusted Level of Significance (β)	0.0122		
Approximate Chi Square Value (49.88, α)	34.66	Adjusted Chi Square Value (49.88, β)	30.15
95% Gamma Approximate UCL (use when n>=50)	812.5	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	570	SD (KM)	254.7
Variance (KM)	64867	SE of Mean (KM)	180.1
k hat (KM)	5.009	k star (KM)	2.615
nu hat (KM)	60.1	nu star (KM)	31.39
theta hat (KM)	113.8	theta star (KM)	217.9

80% gamma percentile (KM)	826.5	90% gamma percentile (KM)	1042
95% gamma percentile (KM)	1245	99% gamma percentile (KM)	1688

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (31.39, α)	19.59	Adjusted Chi Square Value (31.39, β)	16.31
95% Gamma Approximate KM-UCL (use when n>=50)	913.4	95% Gamma Adjusted KM-UCL (use when n<50)	1097

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.793	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.367	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	552.6	Mean in Log Scale	6.256
SD in Original Scale	220.1	SD in Log Scale	0.366
95% t UCL (assumes normality of ROS data)	733.7	95% Percentile Bootstrap UCL	703.9
95% BCA Bootstrap UCL	707.2	95% Bootstrap t UCL	941.3
95% H-UCL (Log ROS)	817.4		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	6.256	KM Geo Mean	520.9
KM SD (logged)	0.41	95% Critical H Value (KM-Log)	2.437
KM Standard Error of Mean (logged)	0.29	95% H-UCL (KM -Log)	886.2
KM SD (logged)	0.41	95% Critical H Value (KM-Log)	2.437
KM Standard Error of Mean (logged)	0.29		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	568.3	Mean in Log Scale	6.296
SD in Original Scale	200.6	SD in Log Scale	0.328
95% t UCL (Assumes normality)	733.4	95% H-Stat UCL	798.8

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 932.9

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

R-EVE

General Statistics

Total Number of Observations	6	Number of Distinct Observations	6
		Number of Missing Observations	0
Minimum	1100	Mean	4865
Maximum	9500	Median	4695
SD	2823	Std. Error of Mean	1153
Coefficient of Variation	0.58	Skewness	0.573

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.972	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.788	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.177	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.325	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	7188	95% Adjusted-CLT UCL (Chen-1995)	7049
		95% Modified-t UCL (Johnson-1978)	7233

Gamma GOF Test

A-D Test Statistic	0.246	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.702	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.192	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.335	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.884	k star (bias corrected MLE)	1.553
Theta hat (MLE)	1687	Theta star (bias corrected MLE)	3133
nu hat (MLE)	34.6	nu star (bias corrected)	18.64
MLE Mean (bias corrected)	4865	MLE Sd (bias corrected)	3904
		Approximate Chi Square Value (0.05)	9.851
Adjusted Level of Significance	0.0122	Adjusted Chi Square Value	7.656

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	9203	95% Adjusted Gamma UCL (use when n<50)	11841

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.919	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.788	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.223	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.325	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	7.003	Mean of logged Data	8.307
Maximum of Logged Data	9.159	SD of logged Data	0.732

Assuming Lognormal Distribution

95% H-UCL	15451	90% Chebyshev (MVUE) UCL	9519
95% Chebyshev (MVUE) UCL	11552	97.5% Chebyshev (MVUE) UCL	14374
99% Chebyshev (MVUE) UCL	19916		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	6761	95% Jackknife UCL	7188

95% Standard Bootstrap UCL	6575	95% Bootstrap-t UCL	7554
95% Hall's Bootstrap UCL	8903	95% Percentile Bootstrap UCL	6682
95% BCA Bootstrap UCL	6750		
90% Chebyshev(Mean, Sd) UCL	8323	95% Chebyshev(Mean, Sd) UCL	9889
97.5% Chebyshev(Mean, Sd) UCL	12064	99% Chebyshev(Mean, Sd) UCL	16334

Suggested UCL to Use

95% Student's-t UCL	7188

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PES

General Statistics

Total Number of Observations	6	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	6
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PES was not processed!

PFECA B

General Statistics

Total Number of Observations	6	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	6
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFECA B was not processed!

PFECA-G

General Statistics

Total Number of Observations	6	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	6
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFECA-G was not processed!

General Statistics on Uncensored Data

Date/Time of Computation ProUCL 5.111/11/2019 1:41:56 PM

User Selected Options

From File ProUCL_Inputdata_Terr_a.xls

Full Precision OFF

From File: ProUCL_Inputdata_Terr_a.xls

Onsite Soil General Statistics

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	11	0	11	0	0.00%	N/A	N/A	10564	92376545	9611	0.91
PFMOAA	11	0	11	0	0.00%	N/A	N/A	26036	2.058E+9	45371	1.743
PFO2HxA	11	0	11	0	0.00%	N/A	N/A	13936	1.595E+8	12629	0.906
PFO3OA	11	0	9	2	18.18%	1000	2800	3873	10479862	3237	0.836
PFO4DA	11	0	8	3	27.27%	1000	2800	2214	2373692	1541	0.696
PFO5DA	11	0	10	1	9.09%	1000	1000	3036	6418678	2534	0.834
PMPA	11	0	8	3	27.27%	1000	2800	4724	25539987	5054	1.07
PEPA	11	0	6	5	45.45%	1000	2800	1913	2172189	1474	0.771
PFESA-BP1	11	0	1	10	90.91%	1000	2800	1182	330579	575	0.487
PFESA-BP2	11	0	4	7	63.64%	1000	2800	1280	179600	423.8	0.331
Byproduct 4	11	0	2	9	81.82%	1000	2800	1160	174400	417.6	0.36
Byproduct 5	11	0	0	11	100.00%	1000	2800	N/A	N/A	N/A	N/A
Byproduct 6	11	0	0	11	100.00%	1000	2800	N/A	N/A	N/A	N/A
NVHOS	11	0	1	10	90.91%	1000	2800	1030	8100	90	0.0874
EVE Acid	11	0	0	11	100.00%	1000	2800	N/A	N/A	N/A	N/A
Hydro-EVE Acid	11	0	2	9	81.82%	1000	2800	1040	6400	80	0.0769
R-EVE	11	0	0	11	100.00%	1000	2800	N/A	N/A	N/A	N/A
PES	11	0	0	11	100.00%	1000	2800	N/A	N/A	N/A	N/A
PFECA B	11	0	0	11	100.00%	1000	2800	N/A	N/A	N/A	N/A
PFECA-G	11	0	0	11	100.00%	1000	2800	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	11	0	1300	29500	10564	7900	92376545	9611	8895	1.041	0.91
PFMOAA	11	0	1100	150000	26036	7500	2.058E+9	45371	8747	2.49	1.743
PFO2HxA	11	0	2200	47000	13936	9300	1.595E+8	12629	6375	2.047	0.906
PFO3OA	9	0	1500	12000	4422	2200	12479444	3533	1038	1.437	0.799
PFO4DA	8	0	1200	5400	2625	1800	2990714	1729	815.4	1.017	0.659
PFO5DA	10	0	1000	10000	3240	2200	7338222	2709	1483	1.969	0.836
PMPA	8	0	1000	19000	6050	4850	32660000	5715	3632	1.976	0.945
PEPA	6	0	1300	6150	2592	2050	3440417	1855	1038	1.854	0.716
PFESA-BP1	1	0	3000	3000	3000	3000	N/A	N/A	0	N/A	N/A
PFESA-BP2	4	0	1100	2100	1700	1800	206667	454.6	370.6	-0.894	0.267
Byproduct 4	2	0	1200	2400	1800	1800	720000	848.5	889.5	N/A	0.471
Byproduct 5	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	1	0	1300	1300	1300	1300	N/A	N/A	0	N/A	N/A
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	2	0	1200	1200	1200	1200	0	0	0	N/A	N/A
R-EVE	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PES	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA B	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	11	0	1400	1900	3350	7900	15000	17000	25000	27250	29050
PFMOAA	11	0	1600	2500	2950	7500	19000	21000	68000	109000	141800
PFO2HxA	11	0	5000	6000	6350	9300	16250	17500	24000	35500	44700
PFO3OA	11	0	1500	2000	2000	2200	5150	5200	7700	9850	11570
PFO4DA	11	0	1000	1200	1250	1400	2900	3000	5100	5250	5370
PFO5DA	11	0	1000	1400	1400	2200	4000	4200	4700	7350	9470
PMPA	11	0	1000	1000	1550	2800	6050	6100	7800	13400	17880
PEPA	11	0	1000	1000	1000	1300	2650	2700	2800	4475	5815
PFESA-BP1	11	0	1000	1000	1000	1000	1000	1000	2800	2900	2980
PFESA-BP2	11	0	1000	1000	1000	1000	1800	2000	2100	2450	2730
Byproduct 4	11	0	1000	1000	1000	1000	1100	1200	2400	2600	2760
Byproduct 5	11	0	1000	1000	1000	1000	1000	1000	1000	1900	2620
Byproduct 6	11	0	1000	1000	1000	1000	1000	1000	1000	1900	2620
NVHOS	11	0	1000	1000	1000	1000	1000	1000	1300	2050	2650
EVE Acid	11	0	1000	1000	1000	1000	1000	1000	1000	1900	2620
Hydro-EVE Acid	11	0	1000	1000	1000	1000	1100	1200	1200	2000	2640
R-EVE	11	0	1000	1000	1000	1000	1000	1000	1000	1900	2620
PES	11	0	1000	1000	1000	1000	1000	1000	1000	1900	2620
PFECA B	11	0	1000	1000	1000	1000	1000	1000	1000	1900	2620
PFECA-G	11	0	1000	1000	1000	1000	1000	1000	1000	1900	2620

UCL Statistics for Data Sets with Non-Detects

Onsite Soil UCLs

User Selected Options	
Date/Time of Computation	ProUCL 5.111/11/2019 4:56:48 PM
From File	ProUCL_Inputdata_Terr_a.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Hfpo Dimer Acid

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	1300	Mean	10564
Maximum	29500	Median	7900
SD	9611	Std. Error of Mean	2898
Coefficient of Variation	0.91	Skewness	1.041

Normal GOF Test

Shapiro Wilk Test Statistic	0.869	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.238	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.251	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	15816	95% Adjusted-CLT UCL (Chen-1995)	16302
		95% Modified-t UCL (Johnson-1978)	15968

Gamma GOF Test

A-D Test Statistic	0.261	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.748	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.146	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.261	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.213	k star (bias corrected MLE)	0.943
Theta hat (MLE)	8706	Theta star (bias corrected MLE)	11201
nu hat (MLE)	26.7	nu star (bias corrected)	20.75
MLE Mean (bias corrected)	10564	MLE Sd (bias corrected)	10878
		Approximate Chi Square Value (0.05)	11.4
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	10.29

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	19218	95% Adjusted Gamma UCL (use when n<50)	21296

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.929	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.144	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.251	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	7.17	Mean of logged Data	8.8
Maximum of Logged Data	10.29	SD of logged Data	1.102

Assuming Lognormal Distribution

95% H-UCL	37078	90% Chebyshev (MVUE) UCL	23209
95% Chebyshev (MVUE) UCL	28625	97.5% Chebyshev (MVUE) UCL	36141
99% Chebyshev (MVUE) UCL	50906		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	15330	95% Jackknife UCL	15816
95% Standard Bootstrap UCL	15226	95% Bootstrap-t UCL	18219
95% Hall's Bootstrap UCL	18158	95% Percentile Bootstrap UCL	15218
95% BCA Bootstrap UCL	16345		
90% Chebyshev(Mean, Sd) UCL	19257	95% Chebyshev(Mean, Sd) UCL	23195
97.5% Chebyshev(Mean, Sd) UCL	28661	99% Chebyshev(Mean, Sd) UCL	39397

Suggested UCL to Use

95% Student's-t UCL	15816

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFMOAA

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	1100	Mean	26036
Maximum	150000	Median	7500
SD	45371	Std. Error of Mean	13680
Coefficient of Variation	1.743	Skewness	2.49

Normal GOF Test

Shapiro Wilk Test Statistic	0.607	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.362	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.251	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	50830	95% Adjusted-CLT UCL (Chen-1995)	59513
		95% Modified-t UCL (Johnson-1978)	52542

Gamma GOF Test

A-D Test Statistic	0.637	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.776	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.217	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.268	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.564	k star (bias corrected MLE)	0.471
Theta hat (MLE)	46187	Theta star (bias corrected MLE)	55328
nu hat (MLE)	12.4	nu star (bias corrected)	10.35
MLE Mean (bias corrected)	26036	MLE Sd (bias corrected)	37954
		Approximate Chi Square Value (0.05)	4.163
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	3.547

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	64742	95% Adjusted Gamma UCL (use when n<50)	76001

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.961	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.122	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.251	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	7.003	Mean of logged Data	9.061
Maximum of Logged Data	11.92	SD of logged Data	1.531

Assuming Lognormal Distribution

95% H-UCL	202191	90% Chebyshev (MVUE) UCL	57484
95% Chebyshev (MVUE) UCL	73067	97.5% Chebyshev (MVUE) UCL	94697
99% Chebyshev (MVUE) UCL	137183		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	48538	95% Jackknife UCL	50830
95% Standard Bootstrap UCL	47451	95% Bootstrap-t UCL	157981
95% Hall's Bootstrap UCL	152278	95% Percentile Bootstrap UCL	50073
95% BCA Bootstrap UCL	60164		
90% Chebyshev(Mean, Sd) UCL	67076	95% Chebyshev(Mean, Sd) UCL	85665
97.5% Chebyshev(Mean, Sd) UCL	111466	99% Chebyshev(Mean, Sd) UCL	162148

Suggested UCL to Use

95% Adjusted Gamma UCL	76001

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO2HxA

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	2200	Mean	13936
Maximum	47000	Median	9300
SD	12629	Std. Error of Mean	3808
Coefficient of Variation	0.906	Skewness	2.047

Normal GOF Test

Shapiro Wilk Test Statistic	0.786	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.207	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.251	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	20838	95% Adjusted-CLT UCL (Chen-1995)	22711
		95% Modified-t UCL (Johnson-1978)	21230

Gamma GOF Test

A-D Test Statistic	0.242	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.741	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.141	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.259	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.755	k star (bias corrected MLE)	1.337
Theta hat (MLE)	7940	Theta star (bias corrected MLE)	10423
nu hat (MLE)	38.61	nu star (bias corrected)	29.42
MLE Mean (bias corrected)	13936	MLE Sd (bias corrected)	12052
		Approximate Chi Square Value (0.05)	18.03
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	16.6

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	22732	95% Adjusted Gamma UCL (use when n<50)	24703

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.993	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.104	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.251	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	7.696	Mean of logged Data	9.231
Maximum of Logged Data	10.76	SD of logged Data	0.83

Assuming Lognormal Distribution

95% H-UCL	29149	90% Chebyshev (MVUE) UCL	24753
95% Chebyshev (MVUE) UCL	29689	97.5% Chebyshev (MVUE) UCL	36539
99% Chebyshev (MVUE) UCL	49995		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	20200	95% Jackknife UCL	20838
95% Standard Bootstrap UCL	19814	95% Bootstrap-t UCL	27929
95% Hall's Bootstrap UCL	48990	95% Percentile Bootstrap UCL	20355
95% BCA Bootstrap UCL	22382		
90% Chebyshev(Mean, Sd) UCL	25360	95% Chebyshev(Mean, Sd) UCL	30534
97.5% Chebyshev(Mean, Sd) UCL	37716	99% Chebyshev(Mean, Sd) UCL	51824

Suggested UCL to Use

95% Student's-t UCL	20838

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO3OA

General Statistics

Total Number of Observations	11	Number of Distinct Observations	10
Number of Detects	9	Number of Non-Detects	2
Number of Distinct Detects	8	Number of Distinct Non-Detects	2
Minimum Detect	1500	Minimum Non-Detect	1000
Maximum Detect	12000	Maximum Non-Detect	2800
Variance Detects	12479444	Percent Non-Detects	18.18%
Mean Detects	4422	SD Detects	3533
Median Detects	2200	CV Detects	0.799
Skewness Detects	1.437	Kurtosis Detects	1.635
Mean of Logged Detects	8.144	SD of Logged Detects	0.729

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.802	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.291	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3873	KM Standard Error of Mean	1036
KM SD	3237	95% KM (BCA) UCL	5636
95% KM (t) UCL	5751	95% KM (Percentile Bootstrap) UCL	5621
95% KM (z) UCL	5577	95% KM Bootstrap t UCL	7298
90% KM Chebyshev UCL	6981	95% KM Chebyshev UCL	8389
97.5% KM Chebyshev UCL	10344	99% KM Chebyshev UCL	14183

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.661	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.729	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.306	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.282	Detected Data Not Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.149	k star (bias corrected MLE)	1.506
Theta hat (MLE)	2058	Theta star (bias corrected MLE)	2935
nu hat (MLE)	38.68	nu star (bias corrected)	27.12
Mean (detects)	4422		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	3748
Maximum	12000	Median	2100
SD	3512	CV	0.937
k hat (MLE)	0.482	k star (bias corrected MLE)	0.411
Theta hat (MLE)	7769	Theta star (bias corrected MLE)	9109
nu hat (MLE)	10.61	nu star (bias corrected)	9.053
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (9.05, α)	3.359	Adjusted Chi Square Value (9.05, β)	2.818
95% Gamma Approximate UCL (use when n>=50)	10102	95% Gamma Adjusted UCL (use when n<50)	12042

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3873	SD (KM)	3237
Variance (KM)	10479862	SE of Mean (KM)	1036
k hat (KM)	1.431	k star (KM)	1.101
nu hat (KM)	31.48	nu star (KM)	24.23
theta hat (KM)	2706	theta star (KM)	3516
80% gamma percentile (KM)	6181	90% gamma percentile (KM)	8707
95% gamma percentile (KM)	11214	99% gamma percentile (KM)	16995

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (24.23, α)	14.02	Adjusted Chi Square Value (24.23, β)	12.77
95% Gamma Approximate KM-UCL (use when n>=50)	6691	95% Gamma Adjusted KM-UCL (use when n<50)	7346

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.879	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.286	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data Not Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3842	Mean in Log Scale	7.933
SD in Original Scale	3423	SD in Log Scale	0.836
95% t UCL (assumes normality of ROS data)	5713	95% Percentile Bootstrap UCL	5530
95% BCA Bootstrap UCL	5955	95% Bootstrap t UCL	7264
95% H-UCL (Log ROS)	8065		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.97	KM Geo Mean	2892
KM SD (logged)	0.738	95% Critical H Value (KM-Log)	2.528
KM Standard Error of Mean (logged)	0.238	95% H-UCL (KM -Log)	6849
KM SD (logged)	0.738	95% Critical H Value (KM-Log)	2.528
KM Standard Error of Mean (logged)	0.238		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	3791	Mean in Log Scale	7.887
SD in Original Scale	3464	SD in Log Scale	0.898
95% t UCL (Assumes normality)	5684	95% H-Stat UCL	8836

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Adjusted Gamma UCL	7346	95% GROS Adjusted Gamma UCL	12042

Warning: Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO4DA

General Statistics

Total Number of Observations	11	Number of Distinct Observations	9
Number of Detects	8	Number of Non-Detects	3
Number of Distinct Detects	7	Number of Distinct Non-Detects	2
Minimum Detect	1200	Minimum Non-Detect	1000
Maximum Detect	5400	Maximum Non-Detect	2800
Variance Detects	2990714	Percent Non-Detects	27.27%
Mean Detects	2625	SD Detects	1729
Median Detects	1800	CV Detects	0.659
Skewness Detects	1.017	Kurtosis Detects	-0.738
Mean of Logged Detects	7.698	SD of Logged Detects	0.617

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.79	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.261	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2214	KM Standard Error of Mean	498.2
KM SD	1541	95% KM (BCA) UCL	3044
95% KM (t) UCL	3117	95% KM (Percentile Bootstrap) UCL	3018
95% KM (z) UCL	3034	95% KM Bootstrap t UCL	4077
90% KM Chebyshev UCL	3709	95% KM Chebyshev UCL	4386
97.5% KM Chebyshev UCL	5325	99% KM Chebyshev UCL	7171

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.669	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.721	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.284	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.296	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	3.013	k star (bias corrected MLE)	1.966
Theta hat (MLE)	871.3	Theta star (bias corrected MLE)	1335
nu hat (MLE)	48.21	nu star (bias corrected)	31.46
Mean (detects)	2625		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	2003
Maximum	5400	Median	1400
SD	1816	CV	0.907
k hat (MLE)	0.31	k star (bias corrected MLE)	0.286
Theta hat (MLE)	6456	Theta star (bias corrected MLE)	6998
nu hat (MLE)	6.826	nu star (bias corrected)	6.298
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (6.30, α)	1.794	Adjusted Chi Square Value (6.30, β)	1.431
95% Gamma Approximate UCL (use when n>=50)	7033	95% Gamma Adjusted UCL (use when n<50)	8818

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	2214	SD (KM)	1541
Variance (KM)	2373692	SE of Mean (KM)	498.2
k hat (KM)	2.066	k star (KM)	1.563
nu hat (KM)	45.44	nu star (KM)	34.38
theta hat (KM)	1072	theta star (KM)	1417
80% gamma percentile (KM)	3410	90% gamma percentile (KM)	4568
95% gamma percentile (KM)	5690	99% gamma percentile (KM)	8215

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (34.38, α)	21.97	Adjusted Chi Square Value (34.38, β)	20.37
95% Gamma Approximate KM-UCL (use when n>=50)	3465	95% Gamma Adjusted KM-UCL (use when n<50)	3738

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.846	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.269	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2119	Mean in Log Scale	7.389
SD in Original Scale	1696	SD in Log Scale	0.77
95% t UCL (assumes normality of ROS data)	3045	95% Percentile Bootstrap UCL	2975
95% BCA Bootstrap UCL	3049	95% Bootstrap t UCL	3942
95% H-UCL (Log ROS)	4081		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.507	KM Geo Mean	1821
KM SD (logged)	0.591	95% Critical H Value (KM-Log)	2.301
KM Standard Error of Mean (logged)	0.192	95% H-UCL (KM -Log)	3333
KM SD (logged)	0.591	95% Critical H Value (KM-Log)	2.301
KM Standard Error of Mean (logged)	0.192		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	2127	Mean in Log Scale	7.387
SD in Original Scale	1695	SD in Log Scale	0.788
95% t UCL (Assumes normality)	3054	95% H-Stat UCL	4219

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	3117

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO5DA

General Statistics

Total Number of Observations	11	Number of Distinct Observations	8
Number of Detects	10	Number of Non-Detects	1
Number of Distinct Detects	8	Number of Distinct Non-Detects	1
Minimum Detect	1000	Minimum Non-Detect	1000
Maximum Detect	10000	Maximum Non-Detect	1000
Variance Detects	7338222	Percent Non-Detects	9.091%
Mean Detects	3240	SD Detects	2709
Median Detects	2200	CV Detects	0.836
Skewness Detects	1.969	Kurtosis Detects	4.388
Mean of Logged Detects	7.835	SD of Logged Detects	0.713

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.77	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.249	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3036	KM Standard Error of Mean	805.2
KM SD	2534	95% KM (BCA) UCL	4536
95% KM (t) UCL	4496	95% KM (Percentile Bootstrap) UCL	4427
95% KM (z) UCL	4361	95% KM Bootstrap t UCL	5897
90% KM Chebyshev UCL	5452	95% KM Chebyshev UCL	6546
97.5% KM Chebyshev UCL	8065	99% KM Chebyshev UCL	11048

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.473	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.735	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.218	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.27	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.168	k star (bias corrected MLE)	1.584
Theta hat (MLE)	1494	Theta star (bias corrected MLE)	2045
nu hat (MLE)	43.36	nu star (bias corrected)	31.68
Mean (detects)	3240		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	2945
Maximum	10000	Median	2200
SD	2749	CV	0.933
k hat (MLE)	0.496	k star (bias corrected MLE)	0.421
Theta hat (MLE)	5944	Theta star (bias corrected MLE)	6997
nu hat (MLE)	10.9	nu star (bias corrected)	9.262
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (9.26, α)	3.486	Adjusted Chi Square Value (9.26, β)	2.932
95% Gamma Approximate UCL (use when n>=50)	7826	95% Gamma Adjusted UCL (use when n<50)	9303

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3036	SD (KM)	2534
Variance (KM)	6418678	SE of Mean (KM)	805.2
k hat (KM)	1.436	k star (KM)	1.105
nu hat (KM)	31.6	nu star (KM)	24.32
theta hat (KM)	2114	theta star (KM)	2747
80% gamma percentile (KM)	4845	90% gamma percentile (KM)	6821
95% gamma percentile (KM)	8782	99% gamma percentile (KM)	13302

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (24.32, α)	14.09	Adjusted Chi Square Value (24.32, β)	12.83
95% Gamma Approximate KM-UCL (use when n>=50)	5240	95% Gamma Adjusted KM-UCL (use when n<50)	5752

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.937	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.177	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2986	Mean in Log Scale	7.677
SD in Original Scale	2705	SD in Log Scale	0.856
95% t UCL (assumes normality of ROS data)	4464	95% Percentile Bootstrap UCL	4358
95% BCA Bootstrap UCL	4903	95% Bootstrap t UCL	5633
95% H-UCL (Log ROS)	6516		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.751	KM Geo Mean	2324
KM SD (logged)	0.697	95% Critical H Value (KM-Log)	2.462
KM Standard Error of Mean (logged)	0.222	95% H-UCL (KM -Log)	5101
KM SD (logged)	0.697	95% Critical H Value (KM-Log)	2.462
KM Standard Error of Mean (logged)	0.222		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	2991	Mean in Log Scale	7.688
SD in Original Scale	2699	SD in Log Scale	0.834
95% t UCL (Assumes normality)	4466	95% H-Stat UCL	6284

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	4496

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PMPA

General Statistics

Total Number of Observations	11	Number of Distinct Observations	9
Number of Detects	8	Number of Non-Detects	3
Number of Distinct Detects	8	Number of Distinct Non-Detects	2
Minimum Detect	1000	Minimum Non-Detect	1000
Maximum Detect	19000	Maximum Non-Detect	2800
Variance Detects	32660000	Percent Non-Detects	27.27%
Mean Detects	6050	SD Detects	5715
Median Detects	4850	CV Detects	0.945
Skewness Detects	1.976	Kurtosis Detects	4.48
Mean of Logged Detects	8.363	SD of Logged Detects	0.9

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.788	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.255	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	4724	KM Standard Error of Mean	1631
KM SD	5054	95% KM (BCA) UCL	7482
95% KM (t) UCL	7679	95% KM (Percentile Bootstrap) UCL	7373
95% KM (z) UCL	7406	95% KM Bootstrap t UCL	10367
90% KM Chebyshev UCL	9616	95% KM Chebyshev UCL	11832
97.5% KM Chebyshev UCL	14907	99% KM Chebyshev UCL	20949

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.243	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.728	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.15	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.299	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.596	k star (bias corrected MLE)	1.081
Theta hat (MLE)	3790	Theta star (bias corrected MLE)	5596
nu hat (MLE)	25.54	nu star (bias corrected)	17.3
Mean (detects)	6050		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	4400
Maximum	19000	Median	2700
SD	5554	CV	1.262
k hat (MLE)	0.206	k star (bias corrected MLE)	0.21
Theta hat (MLE)	21396	Theta star (bias corrected MLE)	20936
nu hat (MLE)	4.524	nu star (bias corrected)	4.624
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (4.62, α)	0.982	Adjusted Chi Square Value (4.62, β)	0.742
95% Gamma Approximate UCL (use when n>=50)	20708	95% Gamma Adjusted UCL (use when n<50)	27431

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	4724	SD (KM)	5054
Variance (KM)	25539987	SE of Mean (KM)	1631
k hat (KM)	0.874	k star (KM)	0.696
nu hat (KM)	19.22	nu star (KM)	15.31
theta hat (KM)	5407	theta star (KM)	6787
80% gamma percentile (KM)	7766	90% gamma percentile (KM)	11873
95% gamma percentile (KM)	16111	99% gamma percentile (KM)	26233

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (15.31, α)	7.479	Adjusted Chi Square Value (15.31, β)	6.606
95% Gamma Approximate KM-UCL (use when n>=50)	9671	95% Gamma Adjusted KM-UCL (use when n<50)	10949

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.987	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.146	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	4601	Mean in Log Scale	7.855
SD in Original Scale	5390	SD in Log Scale	1.177
95% t UCL (assumes normality of ROS data)	7546	95% Percentile Bootstrap UCL	7173
95% BCA Bootstrap UCL	8577	95% Bootstrap t UCL	10211
95% H-UCL (Log ROS)	17942		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.998	KM Geo Mean	2974
KM SD (logged)	0.947	95% Critical H Value (KM-Log)	2.897
KM Standard Error of Mean (logged)	0.309	95% H-UCL (KM -Log)	11080
KM SD (logged)	0.947	95% Critical H Value (KM-Log)	2.897
KM Standard Error of Mean (logged)	0.309		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	4618	Mean in Log Scale	7.871
SD in Original Scale	5379	SD in Log Scale	1.162
95% t UCL (Assumes normality)	7557	95% H-Stat UCL	17393

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	7679

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PEPA

General Statistics

Total Number of Observations	11	Number of Distinct Observations	7
Number of Detects	6	Number of Non-Detects	5
Number of Distinct Detects	5	Number of Distinct Non-Detects	2
Minimum Detect	1300	Minimum Non-Detect	1000
Maximum Detect	6150	Maximum Non-Detect	2800
Variance Detects	3440417	Percent Non-Detects	45.45%
Mean Detects	2592	SD Detects	1855
Median Detects	2050	CV Detects	0.716
Skewness Detects	1.854	Kurtosis Detects	3.644
Mean of Logged Detects	7.69	SD of Logged Detects	0.604

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.757	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.31	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1913	KM Standard Error of Mean	491.5
KM SD	1474	95% KM (BCA) UCL	2686
95% KM (t) UCL	2803	95% KM (Percentile Bootstrap) UCL	2741
95% KM (z) UCL	2721	95% KM Bootstrap t UCL	3675
90% KM Chebyshev UCL	3387	95% KM Chebyshev UCL	4055
97.5% KM Chebyshev UCL	4982	99% KM Chebyshev UCL	6803

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.542	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.701	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.253	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.334	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	3.102	k star (bias corrected MLE)	1.662
Theta hat (MLE)	835.4	Theta star (bias corrected MLE)	1559
nu hat (MLE)	37.23	nu star (bias corrected)	19.95
Mean (detects)	2592		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1473
Maximum	6150	Median	1300
SD	1846	CV	1.253
k hat (MLE)	0.179	k star (bias corrected MLE)	0.191
Theta hat (MLE)	8235	Theta star (bias corrected MLE)	7725
nu hat (MLE)	3.935	nu star (bias corrected)	4.195
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (4.20, α)	0.8	Adjusted Chi Square Value (4.20, β)	0.593
95% Gamma Approximate UCL (use when n>=50)	7722	95% Gamma Adjusted UCL (use when n<50)	10424

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1913	SD (KM)	1474
Variance (KM)	2172189	SE of Mean (KM)	491.5
k hat (KM)	1.684	k star (KM)	1.285
nu hat (KM)	37.05	nu star (KM)	28.28
theta hat (KM)	1136	theta star (KM)	1488
80% gamma percentile (KM)	3008	90% gamma percentile (KM)	4139
95% gamma percentile (KM)	5250	99% gamma percentile (KM)	7783

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (28.28, α)	17.15	Adjusted Chi Square Value (28.28, β)	15.75
95% Gamma Approximate KM-UCL (use when n>=50)	3155	95% Gamma Adjusted KM-UCL (use when n<50)	3435

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.859	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.234	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1705	Mean in Log Scale	7.094
SD in Original Scale	1671	SD in Log Scale	0.861
95% t UCL (assumes normality of ROS data)	2618	95% Percentile Bootstrap UCL	2566
95% BCA Bootstrap UCL	2972	95% Bootstrap t UCL	3542
95% H-UCL (Log ROS)	3679		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.364	KM Geo Mean	1578
KM SD (logged)	0.561	95% Critical H Value (KM-Log)	2.258
KM Standard Error of Mean (logged)	0.189	95% H-UCL (KM -Log)	2755
KM SD (logged)	0.561	95% Critical H Value (KM-Log)	2.258
KM Standard Error of Mean (logged)	0.189		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	1723	Mean in Log Scale	7.113
SD in Original Scale	1668	SD in Log Scale	0.841
95% t UCL (Assumes normality)	2634	95% H-Stat UCL	3589

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	2803

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFESA-BP1

General Statistics

Total Number of Observations	11	Number of Distinct Observations	3
Number of Detects	1	Number of Non-Detects	10
Number of Distinct Detects	1	Number of Distinct Non-Detects	2

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!

It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFESA-BP1 was not processed!

PFESA-BP2

General Statistics

Total Number of Observations	11	Number of Distinct Observations	6
Number of Detects	4	Number of Non-Detects	7
Number of Distinct Detects	4	Number of Distinct Non-Detects	2
Minimum Detect	1100	Minimum Non-Detect	1000
Maximum Detect	2100	Maximum Non-Detect	2800
Variance Detects	206667	Percent Non-Detects	63.64%
Mean Detects	1700	SD Detects	454.6
Median Detects	1800	CV Detects	0.267
Skewness Detects	-0.894	Kurtosis Detects	-0.748
Mean of Logged Detects	7.408	SD of Logged Detects	0.295

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.918	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.245	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1280	KM Standard Error of Mean	154.7
KM SD	423.8	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1560	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1535	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1744	95% KM Chebyshev UCL	1955
97.5% KM Chebyshev UCL	2246	99% KM Chebyshev UCL	2820

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.359	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.276	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	16.54	k star (bias corrected MLE)	4.302
Theta hat (MLE)	102.8	Theta star (bias corrected MLE)	395.1
nu hat (MLE)	132.3	nu star (bias corrected)	34.42
Mean (detects)	1700		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	910.2
Maximum	2100	Median	835.8
SD	728.1	CV	0.8
k hat (MLE)	0.498	k star (bias corrected MLE)	0.423
Theta hat (MLE)	1826	Theta star (bias corrected MLE)	2151
nu hat (MLE)	10.96	nu star (bias corrected)	9.308
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (9.31, α)	3.514	Adjusted Chi Square Value (9.31, β)	2.958
95% Gamma Approximate UCL (use when n>=50)	2411	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1280	SD (KM)	423.8
Variance (KM)	179600	SE of Mean (KM)	154.7
k hat (KM)	9.122	k star (KM)	6.695
nu hat (KM)	200.7	nu star (KM)	147.3
theta hat (KM)	140.3	theta star (KM)	191.2
80% gamma percentile (KM)	1667	90% gamma percentile (KM)	1941
95% gamma percentile (KM)	2187	99% gamma percentile (KM)	2701

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (147.29, α)	120.2	Adjusted Chi Square Value (147.29, β)	116.3
95% Gamma Approximate KM-UCL (use when n>=50)	1568	95% Gamma Adjusted KM-UCL (use when n<50)	1622

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.891	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.244	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1057	Mean in Log Scale	6.823
SD in Original Scale	591.1	SD in Log Scale	0.558
95% t UCL (assumes normality of ROS data)	1380	95% Percentile Bootstrap UCL	1340
95% BCA Bootstrap UCL	1388	95% Bootstrap t UCL	1458
95% H-UCL (Log ROS)	1598		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.108	KM Geo Mean	1221
KM SD (logged)	0.293	95% Critical H Value (KM-Log)	1.943
KM Standard Error of Mean (logged)	0.107	95% H-UCL (KM -Log)	1527
KM SD (logged)	0.293	95% Critical H Value (KM-Log)	1.943
KM Standard Error of Mean (logged)	0.107		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1018	Mean in Log Scale	6.742
SD in Original Scale	650.9	SD in Log Scale	0.629
95% t UCL (Assumes normality)	1374	95% H-Stat UCL	1650

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 1560

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Byproduct 4

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	2	Number of Non-Detects	9
Number of Distinct Detects	2	Number of Distinct Non-Detects	2
Minimum Detect	1200	Minimum Non-Detect	1000
Maximum Detect	2400	Maximum Non-Detect	2800
Variance Detects	720000	Percent Non-Detects	81.82%
Mean Detects	1800	SD Detects	848.5
Median Detects	1800	CV Detects	0.471
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	7.437	SD of Logged Detects	0.49

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1160	KM Standard Error of Mean	186.8
KM SD	417.6	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1498	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1467	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1720	95% KM Chebyshev UCL	1974
97.5% KM Chebyshev UCL	2326	99% KM Chebyshev UCL	3018

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	8.653	k star (bias corrected MLE)	N/A
Theta hat (MLE)	208	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	34.61	nu star (bias corrected)	N/A
Mean (detects)	1800		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1160	SD (KM)	417.6

Variance (KM)	174400	SE of Mean (KM)	186.8
k hat (KM)	7.716	k star (KM)	5.672
nu hat (KM)	169.7	nu star (KM)	124.8
theta hat (KM)	150.3	theta star (KM)	204.5
80% gamma percentile (KM)	1538	90% gamma percentile (KM)	1811
95% gamma percentile (KM)	2060	99% gamma percentile (KM)	2581

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0278
Approximate Chi Square Value (124.78, α)	99.98	Adjusted Chi Square Value (124.78, β)	96.37
95% Gamma Approximate KM-UCL (use when n>=50)	1448	95% Gamma Adjusted KM-UCL (use when n<50)	1502

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	456.3	Mean in Log Scale	5.143
SD in Original Scale	727.3	SD in Log Scale	1.498
95% t UCL (assumes normality of ROS data)	853.7	95% Percentile Bootstrap UCL	845.5
95% BCA Bootstrap UCL	959.5	95% Bootstrap t UCL	2220
95% H-UCL (Log ROS)	3542		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.014	KM Geo Mean	1112
KM SD (logged)	0.262	95% Critical H Value (KM-Log)	1.914
KM Standard Error of Mean (logged)	0.117	95% H-UCL (KM -Log)	1348
KM SD (logged)	0.262	95% Critical H Value (KM-Log)	1.914
KM Standard Error of Mean (logged)	0.117		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	818.2	Mean in Log Scale	6.53
SD in Original Scale	616.1	SD in Log Scale	0.565
95% t UCL (Assumes normality)	1155	95% H-Stat UCL	1205

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1498	KM H-UCL	1348
95% KM (BCA) UCL	N/A		

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Byproduct 5

General Statistics

Total Number of Observations	11	Number of Distinct Observations	2
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	2

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Byproduct 5 was not processed!

Byproduct 6

General Statistics

Total Number of Observations	11	Number of Distinct Observations	2
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	2

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Byproduct 6 was not processed!

NVHOS

General Statistics

Total Number of Observations	11	Number of Distinct Observations	3
Number of Detects	1	Number of Non-Detects	10
Number of Distinct Detects	1	Number of Distinct Non-Detects	2

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable NVHOS was not processed!

EVE Acid

General Statistics

Total Number of Observations	11	Number of Distinct Observations	2
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	2

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable EVE Acid was not processed!

Hydro-EVE Acid

General Statistics

Total Number of Observations	11	Number of Distinct Observations	3
Number of Detects	2	Number of Non-Detects	9
Number of Distinct Detects	1	Number of Distinct Non-Detects	2

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Hydro-EVE Acid was not processed!

R-EVE

General Statistics

Total Number of Observations	11	Number of Distinct Observations	2
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	2

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable R-EVE was not processed!

PES

General Statistics

Total Number of Observations	11	Number of Distinct Observations	2
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	2

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PES was not processed!

PFECA B

General Statistics

Total Number of Observations	11	Number of Distinct Observations	2
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	2

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFECA B was not processed!

PFECA-G

General Statistics

Total Number of Observations	11	Number of Distinct Observations	2
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	2

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFECA-G was not processed!

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.111/11/2019 1:47:29 PM
User Selected Options	
From File	ProUCL_Inputdata_Terr_g.xls
Full Precision	OFF

From File: ProUCL_Inputdata_Terr_g.xls

Onsite Surface Water General Statistics

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	3	0	3	0	0.00%	N/A	N/A	811.7	12658	112.5	0.139
PFMOAA	3	0	3	0	0.00%	N/A	N/A	248.3	58.33	7.638	0.0308
PFO2HxA	3	0	3	0	0.00%	N/A	N/A	705	325	18.03	0.0256
PFO3OA	3	0	3	0	0.00%	N/A	N/A	92.33	10.33	3.215	0.0348
PFO4DA	3	0	3	0	0.00%	N/A	N/A	38.33	2.333	1.528	0.0398
PFO5DA	3	0	3	0	0.00%	N/A	N/A	9.867	0.0233	0.153	0.0155
PMPA	3	0	3	0	0.00%	N/A	N/A	830	300	17.32	0.0209
PEPA	3	0	3	0	0.00%	N/A	N/A	281.7	158.3	12.58	0.0447
PFESA-BP1	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A
PFESA-BP2	3	0	3	0	0.00%	N/A	N/A	31.5	0.75	0.866	0.0275
Byproduct 4	3	0	3	0	0.00%	N/A	N/A	94.17	13.08	3.617	0.0384
Byproduct 5	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A
Byproduct 6	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A
NVHOS	3	0	3	0	0.00%	N/A	N/A	5.983	0.116	0.34	0.0569
EVE Acid	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A
Hydro-EVE Acid	3	0	3	0	0.00%	N/A	N/A	3.45	0.0075	0.0866	0.0251
R-EVE	3	0	3	0	0.00%	N/A	N/A	54.83	7.583	2.754	0.0502
PES	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A
PFECA B	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A
PFECA-G	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	3	0	730	940	811.7	765	12658	112.5	51.89	1.545	0.139
PFMOAA	3	0	240	255	248.3	250	58.33	7.638	7.413	-0.935	0.0308
PFO2HxA	3	0	690	725	705	700	325	18.03	14.83	1.152	0.0256
PFO3OA	3	0	90	96	92.33	91	10.33	3.215	1.483	1.545	0.0348
PFO4DA	3	0	37	40	38.33	38	2.333	1.528	1.483	0.935	0.0398
PFO5DA	3	0	9.7	10	9.867	9.9	0.0233	0.153	0.148	-0.935	0.0155
PMPA	3	0	820	850	830	820	300	17.32	0	1.732	0.0209
PEPA	3	0	270	295	281.7	280	158.3	12.58	14.83	0.586	0.0447
PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP2	3	0	31	32.5	31.5	31	0.75	0.866	0	1.732	0.0275
Byproduct 4	3	0	90	96.5	94.17	96	13.08	3.617	0.741	-1.695	0.0384
Byproduct 5	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	3	0	5.6	6.25	5.983	6.1	0.116	0.34	0.222	-1.361	0.0569
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	3	0	3.4	3.55	3.45	3.4	0.0075	0.0866	0	1.732	0.0251
R-EVE	3	0	52	57.5	54.83	55	7.583	2.754	3.706	-0.271	0.0502
PES	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA B	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	3	0	737	744	747.5	765	852.5	870	905	922.5	936.5
PFMOAA	3	0	242	244	245	250	252.5	253	254	254.5	254.9
PFO2HxA	3	0	692	694	695	700	712.5	715	720	722.5	724.5
PFO3OA	3	0	90.2	90.4	90.5	91	93.5	94	95	95.5	95.9
PFO4DA	3	0	37.2	37.4	37.5	38	39	39.2	39.6	39.8	39.96
PFO5DA	3	0	9.74	9.78	9.8	9.9	9.95	9.96	9.98	9.99	9.998
PMPA	3	0	820	820	820	820	835	838	844	847	849.4
PEPA	3	0	272	274	275	280	287.5	289	292	293.5	294.7
PFESA-BP1	3	0	2	2	2	2	2	2	2	2	2
PFESA-BP2	3	0	31	31	31	31	31.75	31.9	32.2	32.35	32.47
Byproduct 4	3	0	91.2	92.4	93	96	96.25	96.3	96.4	96.45	96.49
Byproduct 5	3	0	2	2	2	2	2	2	2	2	2
Byproduct 6	3	0	2	2	2	2	2	2	2	2	2
NVHOS	3	0	5.7	5.8	5.85	6.1	6.175	6.19	6.22	6.235	6.247
EVE Acid	3	0	2	2	2	2	2	2	2	2	2
Hydro-EVE Acid	3	0	3.4	3.4	3.4	3.4	3.475	3.49	3.52	3.535	3.547
R-EVE	3	0	52.6	53.2	53.5	55	56.25	56.5	57	57.25	57.45
PES	3	0	2	2	2	2	2	2	2	2	2
PFECA B	3	0	2	2	2	2	2	2	2	2	2
PFECA-G	3	0	2	2	2	2	2	2	2	2	2

UCL Statistics for Data Sets with Non-Detects

Onsite Surface Water UCLs

User Selected Options	
Date/Time of Computation	ProUCL 5.111/11/2019 5:06:33 PM
From File	ProUCL_Inputdata_Terr_g.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Hfpo Dimer Acid

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	730	Mean	811.7
Maximum	940	Median	765
SD	112.5	Std. Error of Mean	64.96
Coefficient of Variation	0.139	Skewness	1.545

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.871	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.328	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	1001	95% Adjusted-CLT UCL (Chen-1995)	980.4
		95% Modified-t UCL (Johnson-1978)	1011

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	81.38	k star (bias corrected MLE)	N/A
Theta hat (MLE)	9.973	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	488.3	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.883	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.32	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	6.593	Mean of logged Data	6.693
Maximum of Logged Data	6.846	SD of logged Data	0.135

Assuming Lognormal Distribution

95% H-UCL	1073	90% Chebyshev (MVUE) UCL	1000
95% Chebyshev (MVUE) UCL	1086	97.5% Chebyshev (MVUE) UCL	1204
99% Chebyshev (MVUE) UCL	1437		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	918.5	95% Jackknife UCL	1001
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	1007	95% Chebyshev(Mean, Sd) UCL	1095
97.5% Chebyshev(Mean, Sd) UCL	1217	99% Chebyshev(Mean, Sd) UCL	1458

Suggested UCL to Use

95% Student's-t UCL 1001

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFMOAA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	240	Mean	248.3
Maximum	255	Median	250
SD	7.638	Std. Error of Mean	4.41
Coefficient of Variation	0.0308	Skewness	-0.935

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.964	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.253	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	261.2	95% Adjusted-CLT UCL (Chen-1995)	253

		95% Modified-t UCL (Johnson-1978)	260.8

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	1575	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.158	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	9451	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.961	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.256	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.481	Mean of logged Data	5.514
Maximum of Logged Data	5.541	SD of logged Data	0.0309

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	261.6
95% Chebyshev (MVUE) UCL	267.7	97.5% Chebyshev (MVUE) UCL	276
99% Chebyshev (MVUE) UCL	292.4		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	255.6	95% Jackknife UCL	261.2
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	261.6	95% Chebyshev(Mean, Sd) UCL	267.6
97.5% Chebyshev(Mean, Sd) UCL	275.9	99% Chebyshev(Mean, Sd) UCL	292.2

Suggested UCL to Use

95% Student's-t UCL	261.2

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

PFO2HxA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	690	Mean	705
Maximum	725	Median	700
SD	18.03	Std. Error of Mean	10.41
Coefficient of Variation	0.0256	Skewness	1.152

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.942	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.276	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	735.4	95% Adjusted-CLT UCL (Chen-1995)	729.5
		95% Modified-t UCL (Johnson-1978)	736.5

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	2308	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.305	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	13851	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.945	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.274	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	6.537	Mean of logged Data	6.558
Maximum of Logged Data	6.586	SD of logged Data	0.0255

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	736.1
95% Chebyshev (MVUE) UCL	750.2	97.5% Chebyshev (MVUE) UCL	769.7
99% Chebyshev (MVUE) UCL	808.1		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	722.1	95% Jackknife UCL	735.4
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	736.2	95% Chebyshev(Mean, Sd) UCL	750.4
97.5% Chebyshev(Mean, Sd) UCL	770	99% Chebyshev(Mean, Sd) UCL	808.6

Suggested UCL to Use

95% Student's-t UCL	735.4

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO3OA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	90	Mean	92.33
Maximum	96	Median	91
SD	3.215	Std. Error of Mean	1.856
Coefficient of Variation	0.0348	Skewness	1.545

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.871	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.328	Lilliefors GOF Test
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	97.75	95% Adjusted-CLT UCL (Chen-1995)	97.16
		95% Modified-t UCL (Johnson-1978)	98.03

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	1252	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.0738	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	7512	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A

		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.874	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.326	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.5	Mean of logged Data	4.525
Maximum of Logged Data	4.564	SD of logged Data	0.0345

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	97.85
95% Chebyshev (MVUE) UCL	100.4	97.5% Chebyshev (MVUE) UCL	103.8
99% Chebyshev (MVUE) UCL	110.6		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	95.39	95% Jackknife UCL	97.75
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	97.9	95% Chebyshev(Mean, Sd) UCL	100.4
97.5% Chebyshev(Mean, Sd) UCL	103.9	99% Chebyshev(Mean, Sd) UCL	110.8

Suggested UCL to Use

95% Student's-t UCL	97.75

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO4DA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	37	Mean	38.33
Maximum	40	Median	38
SD	1.528	Std. Error of Mean	0.882
Coefficient of Variation	0.0398	Skewness	0.935

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).

Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.964	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.253	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	40.91	95% Adjusted-CLT UCL (Chen-1995)	40.29
		95% Modified-t UCL (Johnson-1978)	40.99

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	951.9	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.0403	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	5712	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.968	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.249	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.611	Mean of logged Data	3.646
Maximum of Logged Data	3.689	SD of logged Data	0.0396

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	40.96
95% Chebyshev (MVUE) UCL	42.15	97.5% Chebyshev (MVUE) UCL	43.81
99% Chebyshev (MVUE) UCL	47.06		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	39.78	95% Jackknife UCL	40.91
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	40.98	95% Chebyshev(Mean, Sd) UCL	42.18
97.5% Chebyshev(Mean, Sd) UCL	43.84	99% Chebyshev(Mean, Sd) UCL	47.11

Suggested UCL to Use

95% Student's-t UCL	40.91

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO5DA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	9.7	Mean	9.867
Maximum	10	Median	9.9
SD	0.153	Std. Error of Mean	0.0882
Coefficient of Variation	0.0155	Skewness	-0.935

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.964	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.253	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	10.12	95% Adjusted-CLT UCL (Chen-1995)	9.961
		95% Modified-t UCL (Johnson-1978)	10.12

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	6238	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.00158	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	37426	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.963	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.255	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.272	Mean of logged Data	2.289
Maximum of Logged Data	2.303	SD of logged Data	0.0155

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	10.13
95% Chebyshev (MVUE) UCL	10.25	97.5% Chebyshev (MVUE) UCL	10.42
99% Chebyshev (MVUE) UCL	10.75		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	10.01	95% Jackknife UCL	10.12
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	10.13	95% Chebyshev(Mean, Sd) UCL	10.25
97.5% Chebyshev(Mean, Sd) UCL	10.42	99% Chebyshev(Mean, Sd) UCL	10.74

Suggested UCL to Use

95% Student's-t UCL	10.12

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

PMPA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	820	Mean	830
Maximum	850	Median	820
SD	17.32	Std. Error of Mean	10
Coefficient of Variation	0.0209	Skewness	1.732

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.385	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	859.2	95% Adjusted-CLT UCL (Chen-1995)	857.1
		95% Modified-t UCL (Johnson-1978)	860.9

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	3472	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.239	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	20831	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.385	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	6.709	Mean of logged Data	6.721
Maximum of Logged Data	6.745	SD of logged Data	0.0207

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	859.8
95% Chebyshev (MVUE) UCL	873.3	97.5% Chebyshev (MVUE) UCL	892.1
99% Chebyshev (MVUE) UCL	928.9		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	846.4	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	860	95% Chebyshev(Mean, Sd) UCL	873.6
97.5% Chebyshev(Mean, Sd) UCL	892.4	99% Chebyshev(Mean, Sd) UCL	929.5

Suggested UCL to Use

95% Student's-t UCL	859.2

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PEPA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	270	Mean	281.7
Maximum	295	Median	280
SD	12.58	Std. Error of Mean	7.265
Coefficient of Variation	0.0447	Skewness	0.586

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.987	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.219	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	302.9	95% Adjusted-CLT UCL (Chen-1995)	296.2
		95% Modified-t UCL (Johnson-1978)	303.3

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	755.4	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.373	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	4532	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.989	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.214	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.598	Mean of logged Data	5.64
Maximum of Logged Data	5.687	SD of logged Data	0.0445

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	303.4
95% Chebyshev (MVUE) UCL	313.2	97.5% Chebyshev (MVUE) UCL	326.9

99% Chebyshev (MVUE) UCL	353.7		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	293.6	95% Jackknife UCL	302.9
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	303.5	95% Chebyshev(Mean, Sd) UCL	313.3
97.5% Chebyshev(Mean, Sd) UCL	327	99% Chebyshev(Mean, Sd) UCL	354

Suggested UCL to Use

95% Student's-t UCL	302.9

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFESA-BP1

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFESA-BP1 was not processed!

PFESA-BP2

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	31	Mean	31.5
Maximum	32.5	Median	31
SD	0.866	Std. Error of Mean	0.5
Coefficient of Variation	0.0275	Skewness	1.732

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.385	**Lilliefors GOF Test**

5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level	

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	32.96	95% Adjusted-CLT UCL (Chen-1995)	32.86
		95% Modified-t UCL (Johnson-1978)	33.04

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	2005	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.0157	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	12031	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.385	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level	

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.434	Mean of logged Data	3.45
Maximum of Logged Data	3.481	SD of logged Data	0.0273

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	32.99
95% Chebyshev (MVUE) UCL	33.66	97.5% Chebyshev (MVUE) UCL	34.6
99% Chebyshev (MVUE) UCL	36.44		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	32.32	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	33	95% Chebyshev(Mean, Sd) UCL	33.68
97.5% Chebyshev(Mean, Sd) UCL	34.62	99% Chebyshev(Mean, Sd) UCL	36.47

Suggested UCL to Use

95% Student's-t UCL	32.96

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Byproduct 4

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	90	Mean	94.17
Maximum	96.5	Median	96
SD	3.617	Std. Error of Mean	2.088
Coefficient of Variation	0.0384	Skewness	-1.695

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.807	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.361	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	100.3	95% Adjusted-CLT UCL (Chen-1995)	95.42
		95% Modified-t UCL (Johnson-1978)	99.92

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	1002	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.094	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	6009	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.806	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.361	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.5	Mean of logged Data	4.545
Maximum of Logged Data	4.57	SD of logged Data	0.0388

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	100.5
95% Chebyshev (MVUE) UCL	103.4	97.5% Chebyshev (MVUE) UCL	107.4
99% Chebyshev (MVUE) UCL	115.2		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	97.6	95% Jackknife UCL	100.3
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	100.4	95% Chebyshev(Mean, Sd) UCL	103.3
97.5% Chebyshev(Mean, Sd) UCL	107.2	99% Chebyshev(Mean, Sd) UCL	114.9

Suggested UCL to Use

95% Student's-t UCL	100.3

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Byproduct 5

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Byproduct 5 was not processed!

Byproduct 6

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Byproduct 6 was not processed!

NVHOS

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	5.6	Mean	5.983
Maximum	6.25	Median	6.1
SD	0.34	Std. Error of Mean	0.196
Coefficient of Variation	0.0569	Skewness	-1.361

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.912	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.301	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	6.557	95% Adjusted-CLT UCL (Chen-1995)	6.142
		95% Modified-t UCL (Johnson-1978)	6.531

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	455.2	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.0131	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	2731	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.906	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.305	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.723	Mean of logged Data	1.788
Maximum of Logged Data	1.833	SD of logged Data	0.0577

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	6.581
95% Chebyshev (MVUE) UCL	6.852	97.5% Chebyshev (MVUE) UCL	7.227

99% Chebyshev (MVUE) UCL	7.965		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	6.307	95% Jackknife UCL	6.557
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	6.573	95% Chebyshev(Mean, Sd) UCL	6.84
97.5% Chebyshev(Mean, Sd) UCL	7.21	99% Chebyshev(Mean, Sd) UCL	7.938

Suggested UCL to Use

95% Student's-t UCL	6.557

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

EVE Acid

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable EVE Acid was not processed!

Hydro-EVE Acid

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	3.4	Mean	3.45
Maximum	3.55	Median	3.4
SD	0.0866	Std. Error of Mean	0.05
Coefficient of Variation	0.0251	Skewness	1.732

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.385	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level	

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	3.596	95% Adjusted-CLT UCL (Chen-1995)	3.586
		95% Modified-t UCL (Johnson-1978)	3.604

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	2403	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.00144	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	14419	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.385	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level	

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.224	Mean of logged Data	1.238
Maximum of Logged Data	1.267	SD of logged Data	0.0249

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	3.599
95% Chebyshev (MVUE) UCL	3.666	97.5% Chebyshev (MVUE) UCL	3.76
99% Chebyshev (MVUE) UCL	3.944		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	3.532	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	3.6	95% Chebyshev(Mean, Sd) UCL	3.668
97.5% Chebyshev(Mean, Sd) UCL	3.762	99% Chebyshev(Mean, Sd) UCL	3.947

Suggested UCL to Use

95% Student's-t UCL	3.596

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

R-EVE

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	52	Mean	54.83
Maximum	57.5	Median	55
SD	2.754	Std. Error of Mean	1.59
Coefficient of Variation	0.0502	Skewness	-0.271

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.997	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.191	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	59.48	95% Adjusted-CLT UCL (Chen-1995)	57.18
		95% Modified-t UCL (Johnson-1978)	59.43

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	592.4	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.0926	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	3554	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.996	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.197	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.951	Mean of logged Data	4.003
Maximum of Logged Data	4.052	SD of logged Data	0.0504

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	59.62
95% Chebyshev (MVUE) UCL	61.78	97.5% Chebyshev (MVUE) UCL	64.79
99% Chebyshev (MVUE) UCL	70.7		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	57.45	95% Jackknife UCL	59.48
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	59.6	95% Chebyshev(Mean, Sd) UCL	61.76
97.5% Chebyshev(Mean, Sd) UCL	64.76	99% Chebyshev(Mean, Sd) UCL	70.65

Suggested UCL to Use

95% Student's-t UCL	59.48

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

PES

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PES was not processed!

PFECA B

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFECA B was not processed!

PFECA-G

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFECA-G was not processed!

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.111/11/2019 1:44:36 PM
User Selected Options	
From File	ProUCL_Inputdata_Terr_c.xls
Full Precision	OFF

From File: ProUCL_Inputdata_Terr_c.xls

Offsite Invertebrate General Statistics

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	11	0	2	9	81.82%	1000	12000	1410	1281900	1132	0.803
PFMOAA	11	0	1	10	90.91%	1000	12000	1360	1166400	1080	0.794
PFO2HxA	11	0	0	11	100.00%	1000	12000	N/A	N/A	N/A	N/A
PFO3OA	11	0	0	11	100.00%	1000	12000	N/A	N/A	N/A	N/A
PFO4DA	11	0	0	11	100.00%	1000	12000	N/A	N/A	N/A	N/A
PFO5DA	11	0	0	11	100.00%	1000	12000	N/A	N/A	N/A	N/A
PMPA	11	0	3	8	72.73%	1000	12000	2707	26565708	5154	1.904
PEPA	11	0	1	10	90.91%	1000	12000	1067	35556	188.6	0.177
PFESA-BP1	11	0	1	10	90.91%	1000	1700	1227	516529	718.7	0.586
PFESA-BP2	11	0	0	11	100.00%	1000	12000	N/A	N/A	N/A	N/A
Byproduct 4	11	0	1	10	90.91%	1000	12000	1460	1904400	1380	0.945
Byproduct 5	11	0	0	11	100.00%	1000	12000	N/A	N/A	N/A	N/A
Byproduct 6	11	0	0	11	100.00%	1000	12000	N/A	N/A	N/A	N/A
NVHOS	11	0	0	11	100.00%	1000	12000	N/A	N/A	N/A	N/A
EVE Acid	11	0	0	11	100.00%	1000	12000	N/A	N/A	N/A	N/A
Hydro-EVE Acid	11	0	0	11	100.00%	1000	12000	N/A	N/A	N/A	N/A
R-EVE	11	0	2	9	81.82%	1000	12000	540	67600	260	0.481
PES	11	0	0	11	100.00%	1000	12000	N/A	N/A	N/A	N/A
PFECA B	11	0	0	11	100.00%	1000	12000	N/A	N/A	N/A	N/A
PFECA-G	11	0	0	11	100.00%	1000	12000	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	2	0	1200	4800	3000	3000	6480000	2546	2669	N/A	0.849
PFMOAA	1	0	4600	4600	4600	4600	N/A	N/A	0	N/A	N/A
PFO2HxA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO3OA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO4DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO5DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PMPA	3	0	1300	19000	7233	1400	1.038E+8	10190	148.3	1.732	1.409
PEPA	1	0	1600	1600	1600	1600	N/A	N/A	0	N/A	N/A
PFESA-BP1	1	0	3500	3500	3500	3500	N/A	N/A	0	N/A	N/A
PFESA-BP2	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 4	1	0	5600	5600	5600	5600	N/A	N/A	0	N/A	N/A
Byproduct 5	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R-EVE	2	0	280	800	540	540	135200	367.7	385.5	N/A	0.681
PES	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA B	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	11	0	1000	1000	1000	1200	2000	2300	4800	8400	11280
PFMOAA	11	0	1000	1000	1000	1000	1500	1700	4600	8300	11260
PFO2HxA	11	0	1000	1000	1000	1000	1150	1300	1700	6850	10970
PFO3OA	11	0	1000	1000	1000	1000	1150	1300	1700	6850	10970
PFO4DA	11	0	1000	1000	1000	1000	1150	1300	1700	6850	10970
PFO5DA	11	0	1000	1000	1000	1000	1150	1300	1700	6850	10970
PMPA	11	0	1000	1000	1000	1000	1350	1400	12000	15500	18300
PEPA	11	0	1000	1000	1000	1000	1450	1600	1700	6850	10970
PFESA-BP1	11	0	1000	1000	1000	1000	1150	1300	1700	2600	3320
PFESA-BP2	11	0	1000	1000	1000	1000	1150	1300	1700	6850	10970
Byproduct 4	11	0	1000	1000	1000	1000	1350	1700	5600	8800	11360
Byproduct 5	11	0	1000	1000	1000	1000	1150	1300	1700	6850	10970
Byproduct 6	11	0	1000	1000	1000	1000	1150	1300	1700	6850	10970
NVHOS	11	0	1000	1000	1000	1000	1150	1300	1700	6850	10970
EVE Acid	11	0	1000	1000	1000	1000	1150	1300	1700	6850	10970
Hydro-EVE Acid	11	0	1000	1000	1000	1000	1150	1300	1700	6850	10970
R-EVE	11	0	800	1000	1000	1000	1000	1000	1700	6850	10970
PES	11	0	1000	1000	1000	1000	1150	1300	1700	6850	10970
PFECA B	11	0	1000	1000	1000	1000	1150	1300	1700	6850	10970
PFECA-G	11	0	1000	1000	1000	1000	1150	1300	1700	6850	10970

UCL Statistics for Data Sets with Non-Detects

Offsite Invertebrate UCLs

User Selected Options	
Date/Time of Computation	ProUCL 5.111/11/2019 4:59:20 PM
From File	ProUCL_Inputdata_Terr_c.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Hfpo Dimer Acid

General Statistics

Total Number of Observations	11	Number of Distinct Observations	7
Number of Detects	2	Number of Non-Detects	9
Number of Distinct Detects	2	Number of Distinct Non-Detects	5
Minimum Detect	1200	Minimum Non-Detect	1000
Maximum Detect	4800	Maximum Non-Detect	12000
Variance Detects	6480000	Percent Non-Detects	81.82%
Mean Detects	3000	SD Detects	2546
Median Detects	3000	CV Detects	0.849
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	7.783	SD of Logged Detects	0.98

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1410	KM Standard Error of Mean	506.8
KM SD	1132	95% KM (BCA) UCL	N/A
95% KM (t) UCL	2329	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	2244	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	2930	95% KM Chebyshev UCL	3619
97.5% KM Chebyshev UCL	4575	99% KM Chebyshev UCL	6453

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	2.394	k star (bias corrected MLE)	N/A
Theta hat (MLE)	1253	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	9.577	nu star (bias corrected)	N/A
Mean (detects)	3000		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1410	SD (KM)	1132
Variance (KM)	1281900	SE of Mean (KM)	506.8
k hat (KM)	1.551	k star (KM)	1.189
nu hat (KM)	34.12	nu star (KM)	26.15
theta hat (KM)	909.1	theta star (KM)	1186
80% gamma percentile (KM)	2235	90% gamma percentile (KM)	3111
95% gamma percentile (KM)	3976	99% gamma percentile (KM)	5960

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0278
Approximate Chi Square Value (26.15, α)	15.49	Adjusted Chi Square Value (26.15, β)	14.17
95% Gamma Approximate KM-UCL (use when n>=50)	2380	95% Gamma Adjusted KM-UCL (use when n<50)	2602

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	670.8	Mean in Log Scale	5.333
SD in Original Scale	1408	SD in Log Scale	1.46
95% t UCL (assumes normality of ROS data)	1440	95% Percentile Bootstrap UCL	1492
95% BCA Bootstrap UCL	1925	95% Bootstrap t UCL	8638
95% H-UCL (Log ROS)	3715		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.092	KM Geo Mean	1202
KM SD (logged)	0.466	95% Critical H Value (KM-Log)	2.133
KM Standard Error of Mean (logged)	0.209	95% H-UCL (KM -Log)	1835
KM SD (logged)	0.466	95% Critical H Value (KM-Log)	2.133
KM Standard Error of Mean (logged)	0.209		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	1559	Mean in Log Scale	6.874
SD in Original Scale	1935	SD in Log Scale	0.912
95% t UCL (Assumes normality)	2617	95% H-Stat UCL	3318

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	3619

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFMOAA

General Statistics

Total Number of Observations	11	Number of Distinct Observations	5
Number of Detects	1	Number of Non-Detects	10
Number of Distinct Detects	1	Number of Distinct Non-Detects	4

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFMOAA was not processed!

PFO2HxA

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	11

Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFO2HxA was not processed!

PFO3OA

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFO3OA was not processed!

PFO4DA

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFO4DA was not processed!

PFO5DA

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFO5DA was not processed!

PMPA

General Statistics

Total Number of Observations	11	Number of Distinct Observations	5
Number of Detects	3	Number of Non-Detects	8
Number of Distinct Detects	3	Number of Distinct Non-Detects	2

Minimum Detect	1300	Minimum Non-Detect	1000
Maximum Detect	19000	Maximum Non-Detect	12000
Variance Detects	1.038E+8	Percent Non-Detects	72.73%
Mean Detects	7233	SD Detects	10190
Median Detects	1400	CV Detects	1.409
Skewness Detects	1.732	Kurtosis Detects	N/A
Mean of Logged Detects	8.089	SD of Logged Detects	1.528

Warning: Data set has only 3 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.754	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.383	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2707	KM Standard Error of Mean	1903
KM SD	5154	95% KM (BCA) UCL	N/A
95% KM (t) UCL	6157	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	5838	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	8417	95% KM Chebyshev UCL	11004
97.5% KM Chebyshev UCL	14594	99% KM Chebyshev UCL	21646

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	0.75	k star (bias corrected MLE)	N/A
Theta hat (MLE)	9638	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	4.503	nu star (bias corrected)	N/A
Mean (detects)	7233		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1973
Maximum	19000	Median	0.01
SD	5673	CV	2.876
k hat (MLE)	0.0938	k star (bias corrected MLE)	0.129
Theta hat (MLE)	21038	Theta star (bias corrected MLE)	15316
nu hat (MLE)	2.063	nu star (bias corrected)	2.834
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (2.83, α)	0.325	Adjusted Chi Square Value (2.83, β)	0.227
95% Gamma Approximate UCL (use when n>=50)	17206	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	2707	SD (KM)	5154
Variance (KM)	26565708	SE of Mean (KM)	1903
k hat (KM)	0.276	k star (KM)	0.261
nu hat (KM)	6.069	nu star (KM)	5.747

theta hat (KM)	9813	theta star (KM)	10363
80% gamma percentile (KM)	3991	90% gamma percentile (KM)	8098
95% gamma percentile (KM)	12931	99% gamma percentile (KM)	25720

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (5.75, α)	1.512	Adjusted Chi Square Value (5.75, β)	1.188
95% Gamma Approximate KM-UCL (use when n>=50)	10290	95% Gamma Adjusted KM-UCL (use when n<50)	13099

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.771	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.377	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2023	Mean in Log Scale	4.652
SD in Original Scale	5654	SD in Log Scale	2.703
95% t UCL (assumes normality of ROS data)	5113	95% Percentile Bootstrap UCL	5364
95% BCA Bootstrap UCL	7289	95% Bootstrap t UCL	29600
95% H-UCL (Log ROS)	1336402		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.236	KM Geo Mean	1388
KM SD (logged)	0.836	95% Critical H Value (KM-Log)	2.695
KM Standard Error of Mean (logged)	0.309	95% H-UCL (KM -Log)	4015
KM SD (logged)	0.836	95% Critical H Value (KM-Log)	2.695
KM Standard Error of Mean (logged)	0.309		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	2836	Mean in Log Scale	6.952
SD in Original Scale	5603	SD in Log Scale	1.241
95% t UCL (Assumes normality)	5898	95% H-Stat UCL	8851

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 6157

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PEPA

General Statistics

Total Number of Observations	11	Number of Distinct Observations	5
Number of Detects	1	Number of Non-Detects	10
Number of Distinct Detects	1	Number of Distinct Non-Detects	4

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PEPA was not processed!

PFESA-BP1

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	1	Number of Non-Detects	10
Number of Distinct Detects	1	Number of Distinct Non-Detects	3

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFESA-BP1 was not processed!

PFESA-BP2

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFESA-BP2 was not processed!

Byproduct 4

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	1	Number of Non-Detects	10
Number of Distinct Detects	1	Number of Distinct Non-Detects	3

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Byproduct 4 was not processed!

Byproduct 5

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Byproduct 5 was not processed!

Byproduct 6

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Byproduct 6 was not processed!

NVHOS

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable NVHOS was not processed!

EVE Acid

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable EVE Acid was not processed!

Hydro-EVE Acid

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Hydro-EVE Acid was not processed!

R-EVE

General Statistics

Total Number of Observations	11	Number of Distinct Observations	5
Number of Detects	2	Number of Non-Detects	9
Number of Distinct Detects	2	Number of Distinct Non-Detects	3
Minimum Detect	280	Minimum Non-Detect	1000
Maximum Detect	800	Maximum Non-Detect	12000
Variance Detects	135200	Percent Non-Detects	81.82%
Mean Detects	540	SD Detects	367.7
Median Detects	540	CV Detects	0.681
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	6.16	SD of Logged Detects	0.742

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	540	KM Standard Error of Mean	260
KM SD	260	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1011	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	967.7	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1320	95% KM Chebyshev UCL	1673
97.5% KM Chebyshev UCL	2164	99% KM Chebyshev UCL	3127

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	3.951	k star (bias corrected MLE)	N/A
Theta hat (MLE)	136.7	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	15.8	nu star (bias corrected)	N/A
Mean (detects)	540		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	540	SD (KM)	260
Variance (KM)	67600	SE of Mean (KM)	260
k hat (KM)	4.314	k star (KM)	3.198
nu hat (KM)	94.9	nu star (KM)	70.35
theta hat (KM)	125.2	theta star (KM)	168.9
80% gamma percentile (KM)	764.4	90% gamma percentile (KM)	944.9
95% gamma percentile (KM)	1113	99% gamma percentile (KM)	1476

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0278
Approximate Chi Square Value (70.35, α)	52.04	Adjusted Chi Square Value (70.35, β)	49.48
95% Gamma Approximate KM-UCL (use when n>=50)	730	95% Gamma Adjusted KM-UCL (use when n<50)	767.7

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	622.1	Mean in Log Scale	6.16
SD in Original Scale	513.6	SD in Log Scale	0.783
95% t UCL (assumes normality of ROS data)	902.7	95% Percentile Bootstrap UCL	884.6
95% BCA Bootstrap UCL	932.9	95% Bootstrap t UCL	1146
95% H-UCL (Log ROS)	1226		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	6.16	KM Geo Mean	473.3
KM SD (logged)	0.525	95% Critical H Value (KM-Log)	2.209
KM Standard Error of Mean (logged)	0.525	95% H-UCL (KM -Log)	783.8
KM SD (logged)	0.525	95% Critical H Value (KM-Log)	2.209
KM Standard Error of Mean (logged)	0.525		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1039	Mean in Log Scale	6.479
SD in Original Scale	1653	SD in Log Scale	0.79
95% t UCL (Assumes normality)	1942	95% H-Stat UCL	1711

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 1673

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PES

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PES was not processed!

PFECA B

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFECA B was not processed!

PFECA-G

General Statistics

Total Number of Observations	11	Number of Distinct Observations	4
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	4

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFECA-G was not processed!

General Statistics on Uncensored Data

Date/Time of Computation ProUCL 5.111/11/2019 1:43:54 PM

User Selected Options

From File ProUCL_Inputdata_Terr_b.xls

Full Precision OFF

From File: ProUCL_Inputdata_Terr_b.xls

Offsite Soil General Statistics

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	12	0	2	10	83.33%	250	250	455	419192	647.5	1.423
PFMOAA	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFO2HxA	12	0	2	10	83.33%	1000	1000	1142	134097	366.2	0.321
PFO3OA	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFO4DA	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFO5DA	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
PMPA	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
PEPA	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFESA-BP1	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFESA-BP2	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
Byproduct 4	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
Byproduct 5	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
Byproduct 6	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
NVHOS	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
EVE Acid	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
Hydro-EVE Acid	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
R-EVE	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
PES	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFECA B	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFECA-G	12	0	0	12	100.00%	1000	1000	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	2	0	360	2600	1480	1480	2508800	1584	1660	N/A	1.07
PFMOAA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO2HxA	2	0	1400	2300	1850	1850	405000	636.4	667.2	N/A	0.344
PFO3OA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO4DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO5DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PMPA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PEPA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP2	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 4	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 5	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R-EVE	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PES	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA B	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	12	0	250	250	250	250	250	250	349	1368	2354
PFMOAA	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFO2HxA	12	0	1000	1000	1000	1000	1000	1000	1360	1805	2201
PFO3OA	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFO4DA	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFO5DA	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PMPA	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PEPA	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFESA-BP1	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFESA-BP2	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Byproduct 4	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Byproduct 5	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Byproduct 6	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
NVHOS	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
EVE Acid	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydro-EVE Acid	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
R-EVE	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PES	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFECA B	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFECA-G	12	0	1000	1000	1000	1000	1000	1000	1000	1000	1000

UCL Statistics for Data Sets with Non-Detects

Offsite Soil UCLs

User Selected Options	
Date/Time of Computation	ProUCL 5.111/11/2019 4:58:33 PM
From File	ProUCL_Inputdata_Terr_b.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Hfpo Dimer Acid

General Statistics

Total Number of Observations	12	Number of Distinct Observations	3
Number of Detects	2	Number of Non-Detects	10
Number of Distinct Detects	2	Number of Distinct Non-Detects	1
Minimum Detect	360	Minimum Non-Detect	250
Maximum Detect	2600	Maximum Non-Detect	250
Variance Detects	2508800	Percent Non-Detects	83.33%
Mean Detects	1480	SD Detects	1584
Median Detects	1480	CV Detects	1.07
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	6.875	SD of Logged Detects	1.398

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	455	KM Standard Error of Mean	264.3
KM SD	647.5	95% KM (BCA) UCL	N/A
95% KM (t) UCL	929.7	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	889.8	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1248	95% KM Chebyshev UCL	1607
97.5% KM Chebyshev UCL	2106	99% KM Chebyshev UCL	3085

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	1.318	k star (bias corrected MLE)	N/A
Theta hat (MLE)	1123	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	5.272	nu star (bias corrected)	N/A
Mean (detects)	1480		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	455	SD (KM)	647.5
Variance (KM)	419192	SE of Mean (KM)	264.3
k hat (KM)	0.494	k star (KM)	0.426
nu hat (KM)	11.85	nu star (KM)	10.22
theta hat (KM)	921.3	theta star (KM)	1068
80% gamma percentile (KM)	739.2	90% gamma percentile (KM)	1271
95% gamma percentile (KM)	1850	99% gamma percentile (KM)	3296

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.029
Approximate Chi Square Value (10.22, α)	4.082	Adjusted Chi Square Value (10.22, β)	3.509
95% Gamma Approximate KM-UCL (use when n>=50)	1140	95% Gamma Adjusted KM-UCL (use when n<50)	1325

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	249.4	Mean in Log Scale	-0.512
SD in Original Scale	747.3	SD in Log Scale	4.764
95% t UCL (assumes normality of ROS data)	636.9	95% Percentile Bootstrap UCL	680.1
95% BCA Bootstrap UCL	898.8	95% Bootstrap t UCL	28542
95% H-UCL (Log ROS)	5.148E+11		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	5.747	KM Geo Mean	313.2
KM SD (logged)	0.646	95% Critical H Value (KM-Log)	2.335
KM Standard Error of Mean (logged)	0.264	95% H-UCL (KM -Log)	608.1
KM SD (logged)	0.646	95% Critical H Value (KM-Log)	2.335
KM Standard Error of Mean (logged)	0.264		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	350.8	Mean in Log Scale	5.169
SD in Original Scale	711.5	SD in Log Scale	0.901
95% t UCL (Assumes normality)	719.7	95% H-Stat UCL	555.6

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	1607

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFMOAA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFMOAA was not processed!

PFO2HxA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	3

Number of Detects	2	Number of Non-Detects	10
Number of Distinct Detects	2	Number of Distinct Non-Detects	1
Minimum Detect	1400	Minimum Non-Detect	1000
Maximum Detect	2300	Maximum Non-Detect	1000
Variance Detects	405000	Percent Non-Detects	83.33%
Mean Detects	1850	SD Detects	636.4
Median Detects	1850	CV Detects	0.344
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	7.492	SD of Logged Detects	0.351

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1142	KM Standard Error of Mean	149.5
KM SD	366.2	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1410	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1388	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1590	95% KM Chebyshev UCL	1793
97.5% KM Chebyshev UCL	2075	99% KM Chebyshev UCL	2629

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	16.56	k star (bias corrected MLE)	N/A
Theta hat (MLE)	111.7	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	66.24	nu star (bias corrected)	N/A
Mean (detects)	1850		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1142	SD (KM)	366.2
Variance (KM)	134097	SE of Mean (KM)	149.5
k hat (KM)	9.72	k star (KM)	7.345
nu hat (KM)	233.3	nu star (KM)	176.3
theta hat (KM)	117.5	theta star (KM)	155.4
80% gamma percentile (KM)	1473	90% gamma percentile (KM)	1704
95% gamma percentile (KM)	1911	99% gamma percentile (KM)	2342

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.029
Approximate Chi Square Value (176.29, α)	146.6	Adjusted Chi Square Value (176.29, β)	142.5
95% Gamma Approximate KM-UCL (use when n>=50)	1373	95% Gamma Adjusted KM-UCL (use when n<50)	1413

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	531.9	Mean in Log Scale	5.638
SD in Original Scale	673	SD in Log Scale	1.196
95% t UCL (assumes normality of ROS data)	880.8	95% Percentile Bootstrap UCL	846.9
95% BCA Bootstrap UCL	984.3	95% Bootstrap t UCL	1466
95% H-UCL (Log ROS)	1877		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.005	KM Geo Mean	1102
KM SD (logged)	0.24	95% Critical H Value (KM-Log)	1.875
KM Standard Error of Mean (logged)	0.0981	95% H-UCL (KM -Log)	1300
KM SD (logged)	0.24	95% Critical H Value (KM-Log)	1.875
KM Standard Error of Mean (logged)	0.0981		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	725	Mean in Log Scale	6.428
SD in Original Scale	559.4	SD in Log Scale	0.509
95% t UCL (Assumes normality)	1015	95% H-Stat UCL	979.2

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1410	KM H-UCL	1300
95% KM (BCA) UCL	N/A		

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO3OA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFO3OA was not processed!

PFO4DA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFO4DA was not processed!

PFO5DA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFO5DA was not processed!

PMPA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PMPA was not processed!

PEPA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PEPA was not processed!

PFESA-BP1

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFESA-BP1 was not processed!

PFESA-BP2

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFESA-BP2 was not processed!

Byproduct 4

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Byproduct 4 was not processed!

Byproduct 5

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Byproduct 5 was not processed!

Byproduct 6

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Byproduct 6 was not processed!

NVHOS

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable NVHOS was not processed!

EVE Acid

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable EVE Acid was not processed!

Hydro-EVE Acid

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Hydro-EVE Acid was not processed!

R-EVE

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable R-EVE was not processed!

PES

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1

Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PES was not processed!

PFECA B

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFECA B was not processed!

PFECA-G

General Statistics

Total Number of Observations	12	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFECA-G was not processed!

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.111/11/2019 1:46:49 PM
User Selected Options	
From File	ProUCL_Inputdata_Terr_f.xls
Full Precision	OFF

From File: ProUCL_Inputdata_Terr_f.xls

Offsite Surface Water General Statistics

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	3	0	3	0	0.00%	N/A	N/A	303.3	133.3	11.55	0.0381
PFMOAA	3	0	3	0	0.00%	N/A	N/A	67.67	9.333	3.055	0.0451
PFO2HxA	3	0	3	0	0.00%	N/A	N/A	216.7	33.33	5.774	0.0266
PFO3OA	3	0	3	0	0.00%	N/A	N/A	26.33	0.333	0.577	0.0219
PFO4DA	3	0	3	0	0.00%	N/A	N/A	8.667	0.0633	0.252	0.029
PFO5DA	3	0	2	1	33.33%	2	2	2.067	0.00222	0.0471	0.0228
PMPA	3	0	3	0	0.00%	N/A	N/A	346.7	33.33	5.774	0.0167
PEPA	3	0	3	0	0.00%	N/A	N/A	106.7	33.33	5.774	0.0541
PFESA-BP1	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A
PFESA-BP2	3	0	3	0	0.00%	N/A	N/A	25	0	0	N/A
Byproduct 4	3	0	3	0	0.00%	N/A	N/A	140	100	10	0.0714
Byproduct 5	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A
Byproduct 6	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A
NVHOS	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A
EVE Acid	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A
Hydro-EVE Acid	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A
R-EVE	3	0	3	0	0.00%	N/A	N/A	52.67	0.333	0.577	0.011
PES	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A
PFECA B	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A
PFECA-G	3	0	0	3	100.00%	2	2	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	3	0	290	310	303.3	310	133.3	11.55	0	-1.732	0.0381
PFMOAA	3	0	65	71	67.67	67	9.333	3.055	2.965	0.935	0.0451
PFO2HxA	3	0	210	220	216.7	220	33.33	5.774	0	-1.732	0.0266
PFO3OA	3	0	26	27	26.33	26	0.333	0.577	0	1.732	0.0219
PFO4DA	3	0	8.4	8.9	8.667	8.7	0.0633	0.252	0.297	-0.586	0.029
PFO5DA	2	0	2.1	2.1	2.1	2.1	0	0	0	N/A	N/A
PMPA	3	0	340	350	346.7	350	33.33	5.774	0	-1.732	0.0167
PEPA	3	0	100	110	106.7	110	33.33	5.774	0	-1.732	0.0541
PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP2	3	0	25	25	25	25	0	0	0	N/A	N/A
Byproduct 4	3	0	130	150	140	140	100	10	14.83	0	0.0714
Byproduct 5	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R-EVE	3	0	52	53	52.67	53	0.333	0.577	0	-1.732	0.011
PES	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA B	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	3	0	294	298	300	310	310	310	310	310	310
PFMOAA	3	0	65.4	65.8	66	67	69	69.4	70.2	70.6	70.92
PFO2HxA	3	0	212	214	215	220	220	220	220	220	220
PFO3OA	3	0	26	26	26	26	26.5	26.6	26.8	26.9	26.98
PFO4DA	3	0	8.46	8.52	8.55	8.7	8.8	8.82	8.86	8.88	8.896
PFO5DA	3	0	2.02	2.04	2.05	2.1	2.1	2.1	2.1	2.1	2.1
PMPA	3	0	342	344	345	350	350	350	350	350	350
PEPA	3	0	102	104	105	110	110	110	110	110	110
PFESA-BP1	3	0	2	2	2	2	2	2	2	2	2
PFESA-BP2	3	0	25	25	25	25	25	25	25	25	25
Byproduct 4	3	0	132	134	135	140	145	146	148	149	149.8
Byproduct 5	3	0	2	2	2	2	2	2	2	2	2
Byproduct 6	3	0	2	2	2	2	2	2	2	2	2
NVHOS	3	0	2	2	2	2	2	2	2	2	2
EVE Acid	3	0	2	2	2	2	2	2	2	2	2
Hydro-EVE Acid	3	0	2	2	2	2	2	2	2	2	2
R-EVE	3	0	52.2	52.4	52.5	53	53	53	53	53	53
PES	3	0	2	2	2	2	2	2	2	2	2
PFECA B	3	0	2	2	2	2	2	2	2	2	2
PFECA-G	3	0	2	2	2	2	2	2	2	2	2

UCL Statistics for Data Sets with Non-Detects

Offsite Surface Water UCLs

User Selected Options	
Date/Time of Computation	ProUCL 5.111/11/2019 5:03:57 PM
From File	ProUCL_Inputdata_Terr_f.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Hfpo Dimer Acid

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	290	Mean	303.3
Maximum	310	Median	310
SD	11.55	Std. Error of Mean	6.667
Coefficient of Variation	0.0381	Skewness	-1.732

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.75	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.385	Lilliefors GOF Test
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	322.8	95% Adjusted-CLT UCL (Chen-1995)	307.2
		95% Modified-t UCL (Johnson-1978)	321.7

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	1020	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.298	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	6118	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.75	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk Critical Value	0.767	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.385	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.67	Mean of logged Data	5.714

Maximum of Logged Data	5.737	SD of logged Data	0.0385

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	323.6
95% Chebyshev (MVUE) UCL	332.7	97.5% Chebyshev (MVUE) UCL	345.4
99% Chebyshev (MVUE) UCL	370.4		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	314.3	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	323.3	95% Chebyshev(Mean, Sd) UCL	332.4
97.5% Chebyshev(Mean, Sd) UCL	345	99% Chebyshev(Mean, Sd) UCL	369.7

Suggested UCL to Use

95% Student's-t UCL	322.8

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

PFMOAA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	65	Mean	67.67
Maximum	71	Median	67
SD	3.055	Std. Error of Mean	1.764
Coefficient of Variation	0.0451	Skewness	0.935

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.964	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.253	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	72.82	95% Adjusted-CLT UCL (Chen-1995)	71.59

		95% Modified-t UCL (Johnson-1978)	72.98

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	742.3	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.0912	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	4454	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.968	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.248	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.174	Mean of logged Data	4.214
Maximum of Logged Data	4.263	SD of logged Data	0.0449

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	72.92
95% Chebyshev (MVUE) UCL	75.3	97.5% Chebyshev (MVUE) UCL	78.61
99% Chebyshev (MVUE) UCL	85.1		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	70.57	95% Jackknife UCL	72.82
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	72.96	95% Chebyshev(Mean, Sd) UCL	75.36
97.5% Chebyshev(Mean, Sd) UCL	78.68	99% Chebyshev(Mean, Sd) UCL	85.22

Suggested UCL to Use

95% Student's-t UCL	72.82

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO2HxA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	210	Mean	216.7

Maximum	220	Median	220
SD	5.774	Std. Error of Mean	3.333
Coefficient of Variation	0.0266	Skewness	-1.732

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.385	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	226.4	95% Adjusted-CLT UCL (Chen-1995)	218.6
		95% Modified-t UCL (Johnson-1978)	225.8

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	2090	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.104	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	12543	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.385	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.347	Mean of logged Data	5.378
Maximum of Logged Data	5.394	SD of logged Data	0.0269

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	226.7
95% Chebyshev (MVUE) UCL	231.3	97.5% Chebyshev (MVUE) UCL	237.6
99% Chebyshev (MVUE) UCL	250.1		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	222.1	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	226.7	95% Chebyshev(Mean, Sd) UCL	231.2

97.5% Chebyshev(Mean, Sd) UCL	237.5	99% Chebyshev(Mean, Sd) UCL	249.8

Suggested UCL to Use

95% Student's-t UCL	226.4

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

PFO3OA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	26	Mean	26.33
Maximum	27	Median	26
SD	0.577	Std. Error of Mean	0.333
Coefficient of Variation	0.0219	Skewness	1.732

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.385	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	27.31	95% Adjusted-CLT UCL (Chen-1995)	27.24
		95% Modified-t UCL (Johnson-1978)	27.36

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	3146	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.00837	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	18879	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.385	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level	

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.258	Mean of logged Data	3.271
Maximum of Logged Data	3.296	SD of logged Data	0.0218

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	27.33
95% Chebyshev (MVUE) UCL	27.78	97.5% Chebyshev (MVUE) UCL	28.4
99% Chebyshev (MVUE) UCL	29.63		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	26.88	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	27.33	95% Chebyshev(Mean, Sd) UCL	27.79
97.5% Chebyshev(Mean, Sd) UCL	28.41	99% Chebyshev(Mean, Sd) UCL	29.65

Suggested UCL to Use

95% Student's-t UCL	27.31

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO4DA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	8.4	Mean	8.667
Maximum	8.9	Median	8.7
SD	0.252	Std. Error of Mean	0.145
Coefficient of Variation	0.029	Skewness	-0.586

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.987	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.219	**Lilliefors GOF Test**	

5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	9.091	95% Adjusted-CLT UCL (Chen-1995)	8.853
		95% Modified-t UCL (Johnson-1978)	9.083

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	1772	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.00489	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	10630	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.985	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.223	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.128	Mean of logged Data	2.159
Maximum of Logged Data	2.186	SD of logged Data	0.0291

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	9.104
95% Chebyshev (MVUE) UCL	9.302	97.5% Chebyshev (MVUE) UCL	9.577
99% Chebyshev (MVUE) UCL	10.12		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	8.906	95% Jackknife UCL	9.091
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	9.103	95% Chebyshev(Mean, Sd) UCL	9.3
97.5% Chebyshev(Mean, Sd) UCL	9.574	99% Chebyshev(Mean, Sd) UCL	10.11

Suggested UCL to Use

95% Student's-t UCL	9.091

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be

reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

PFO5DA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
Number of Detects	2	Number of Non-Detects	1
Number of Distinct Detects	1	Number of Distinct Non-Detects	1

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFO5DA was not processed!

PMPA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	340	Mean	346.7
Maximum	350	Median	350
SD	5.774	Std. Error of Mean	3.333
Coefficient of Variation	0.0167	Skewness	-1.732

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.75	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.385	Lilliefors GOF Test
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	356.4	95% Adjusted-CLT UCL (Chen-1995)	348.6
		95% Modified-t UCL (Johnson-1978)	355.8

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	5373	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.0645	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	32238	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.75	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk Critical Value	0.767	Data Not Lognormal at 5% Significance Level

Lilliefors Test Statistic	0.385	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level	

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.829	Mean of logged Data	5.848
Maximum of Logged Data	5.858	SD of logged Data	0.0167

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	356.7
95% Chebyshev (MVUE) UCL	361.3	97.5% Chebyshev (MVUE) UCL	367.6
99% Chebyshev (MVUE) UCL	380		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	352.1	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	356.7	95% Chebyshev(Mean, Sd) UCL	361.2
97.5% Chebyshev(Mean, Sd) UCL	367.5	99% Chebyshev(Mean, Sd) UCL	379.8

Suggested UCL to Use

95% Student's-t UCL	356.4

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

PEPA

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	100	Mean	106.7
Maximum	110	Median	110
SD	5.774	Std. Error of Mean	3.333
Coefficient of Variation	0.0541	Skewness	-1.732

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.

For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).

Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.385	**Lilliefors GOF Test**	

5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level	

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	116.4	95% Adjusted-CLT UCL (Chen-1995)	108.6
		95% Modified-t UCL (Johnson-1978)	115.8

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	501	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.213	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	3006	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.385	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.605	Mean of logged Data	4.669
Maximum of Logged Data	4.7	SD of logged Data	0.055

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	116.8
95% Chebyshev (MVUE) UCL	121.4	97.5% Chebyshev (MVUE) UCL	127.8
99% Chebyshev (MVUE) UCL	140.4		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	112.1	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	116.7	95% Chebyshev(Mean, Sd) UCL	121.2
97.5% Chebyshev(Mean, Sd) UCL	127.5	99% Chebyshev(Mean, Sd) UCL	139.8

Suggested UCL to Use

95% Student's-t UCL	116.4

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

PFESA-BP1

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFESA-BP1 was not processed!

PFESA-BP2

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	25	Mean	25
Maximum	25	Median	25

Warning: There is only one distinct observation value in this data set - resulting in '0' variance!
ProUCL (or any other software) should not be used on such a data set!
The data set for variable PFESA-BP2 was not processed!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Byproduct 4

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	130	Mean	140
Maximum	150	Median	140
SD	10	Std. Error of Mean	5.774
Coefficient of Variation	0.0714	Skewness	0

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	1	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.175	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	156.9	95% Adjusted-CLT UCL (Chen-1995)	149.5
		95% Modified-t UCL (Johnson-1978)	156.9

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	293.4	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.477	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	1760	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	1	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.177	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.868	Mean of logged Data	4.94
Maximum of Logged Data	5.011	SD of logged Data	0.0716

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	157.3
95% Chebyshev (MVUE) UCL	165.2	97.5% Chebyshev (MVUE) UCL	176.1
99% Chebyshev (MVUE) UCL	197.5		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	149.5	95% Jackknife UCL	156.9
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	157.3	95% Chebyshev(Mean, Sd) UCL	165.2
97.5% Chebyshev(Mean, Sd) UCL	176.1	99% Chebyshev(Mean, Sd) UCL	197.4

Suggested UCL to Use

95% Student's-t UCL	156.9

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Byproduct 5

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1

Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Byproduct 5 was not processed!

Byproduct 6

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Byproduct 6 was not processed!

NVHOS

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable NVHOS was not processed!

EVE Acid

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable EVE Acid was not processed!

Hydro-EVE Acid

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Hydro-EVE Acid was not processed!

R-EVE

General Statistics

Total Number of Observations	3	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	52	Mean	52.67
Maximum	53	Median	53
SD	0.577	Std. Error of Mean	0.333
Coefficient of Variation	0.011	Skewness	-1.732

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.75	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.767	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.385	Lilliefors GOF Test
5% Lilliefors Critical Value	0.425	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	53.64	95% Adjusted-CLT UCL (Chen-1995)	52.86
		95% Modified-t UCL (Johnson-1978)	53.58

Gamma GOF Test

Not Enough Data to Perform GOF Test

Gamma Statistics

k hat (MLE)	12429	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.00424	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	74574	nu star (bias corrected)	N/A
MLE Mean (bias corrected)	N/A	MLE Sd (bias corrected)	N/A
		Approximate Chi Square Value (0.05)	N/A
Adjusted Level of Significance	N/A	Adjusted Chi Square Value	N/A

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	N/A	95% Adjusted Gamma UCL (use when n<50)	N/A

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.75	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk Critical Value	0.767	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.385	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.425	Data appear Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.951	Mean of logged Data	3.964
Maximum of Logged Data	3.97	SD of logged Data	0.011

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	53.67
95% Chebyshev (MVUE) UCL	54.12	97.5% Chebyshev (MVUE) UCL	54.75
99% Chebyshev (MVUE) UCL	55.99		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	53.21	95% Jackknife UCL	N/A
95% Standard Bootstrap UCL	N/A	95% Bootstrap-t UCL	N/A
95% Hall's Bootstrap UCL	N/A	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A		
90% Chebyshev(Mean, Sd) UCL	53.67	95% Chebyshev(Mean, Sd) UCL	54.12
97.5% Chebyshev(Mean, Sd) UCL	54.75	99% Chebyshev(Mean, Sd) UCL	55.98

Suggested UCL to Use

95% Student's-t UCL	53.64

Recommended UCL exceeds the maximum observation

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

PES

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PES was not processed!

PFECA B

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFECA B was not processed!

PFECA-G

General Statistics

Total Number of Observations	3	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	3
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFECA-G was not processed!

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.111/11/2019 1:46:00 PM
User Selected Options	
From File	ProUCL_Inputdata_Terr_e.xls
Full Precision	OFF

From File: ProUCL_Inputdata_Terr_e.xls

Offsite Vegetation General Statistics

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	12	0	12	0	0.00%	N/A	N/A	9351	2.947E+8	17166	1.836
PFMOAA	12	0	3	9	75.00%	1000	5700	7392	2.696E+8	16418	2.221
PFO2HxA	12	0	9	3	25.00%	1000	1000	2380	4423633	2103	0.884
PFO3OA	12	0	1	11	91.67%	1000	5700	220	0	0	N/A
PFO4DA	12	0	2	10	83.33%	1000	5700	395	18225	135	0.342
PFO5DA	12	0	0	12	100.00%	1000	5700	N/A	N/A	N/A	N/A
PMPA	12	0	12	0	0.00%	N/A	N/A	10335	2.584E+8	16074	1.555
PEPA	12	0	5	7	58.33%	1000	5700	845.3	385732	621.1	0.735
PFESA-BP1	12	0	0	12	100.00%	1000	5700	N/A	N/A	N/A	N/A
PFESA-BP2	12	0	0	12	100.00%	1000	5700	N/A	N/A	N/A	N/A
Byproduct 4	12	0	8	4	33.33%	1000	1000	4405	52797275	7266	1.65
Byproduct 5	12	0	2	10	83.33%	1000	5700	470	10000	100	0.213
Byproduct 6	12	0	0	12	100.00%	1000	5700	N/A	N/A	N/A	N/A
NVHOS	12	0	10	2	16.67%	1000	5000	68415	3.987E+10	199668	2.918
EVE Acid	12	0	0	12	100.00%	1000	5700	N/A	N/A	N/A	N/A
Hydro-EVE Acid	12	0	0	12	100.00%	1000	5700	N/A	N/A	N/A	N/A
R-EVE	12	0	9	3	25.00%	1000	1000	2463	5477856	2340	0.95
PES	12	0	4	8	66.67%	1000	5000	681.8	585124	764.9	1.122
PFECA B	12	0	2	10	83.33%	1000	5700	598	695556	834	1.395
PFECA-G	12	0	0	12	100.00%	1000	5700	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	12	0	540	55000	9351	1850	2.947E+8	17166	1653	2.28	1.836
PFMOAA	3	0	970	59000	26657	20000	8.751E+8	29582	28213	0.961	1.11
PFO2HxA	9	0	790	6600	2910	1500	5371400	2318	1053	0.79	0.796
PFO3OA	1	0	220	220	220	220	N/A	N/A	0	N/A	N/A
PFO4DA	2	0	260	530	395	395	36450	190.9	200.1	N/A	0.483
PFO5DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PMPA	12	0	390	52000	10335	3300	2.584E+8	16074	3091	2.128	1.555
PEPA	5	0	410	2300	1134	850	702230	838	652.3	0.697	0.739
PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP2	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 4	8	0	600	22000	6239	1650	78962584	8886	1520	1.431	1.424
Byproduct 5	2	0	370	570	470	470	20000	141.4	148.3	N/A	0.301
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	10	0	650	730000	81845	5850	5.195E+10	227934	6931	3.152	2.785
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R-EVE	9	0	240	8500	3204	3100	5745178	2397	1927	1.318	0.748
PES	4	0	300	2900	1350	1100	1210000	1100	593	1.27	0.815
PFECA B	2	0	320	3100	1710	1710	3864200	1966	2061	N/A	1.15
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	12	0	611	952	1123	1850	5000	7860	31490	43450	52690
PFMOAA	12	0	1000	1000	1000	1000	5175	5560	18570	37550	54710
PFO2HxA	12	0	1000	1000	1000	1200	3375	4420	5970	6325	6545
PFO3OA	12	0	1000	1000	1000	1000	1000	1000	4600	5315	5623
PFO4DA	12	0	577	1000	1000	1000	1000	1000	4600	5315	5623
PFO5DA	12	0	1000	1000	1000	1000	1000	1000	4600	5315	5623
PMPA	12	0	667	1920	1975	3300	9150	11240	31800	42100	50020
PEPA	12	0	454	880	962.5	1000	1850	2180	4730	5315	5623
PFESA-BP1	12	0	1000	1000	1000	1000	1000	1000	4600	5315	5623
PFESA-BP2	12	0	1000	1000	1000	1000	1000	1000	4600	5315	5623
Byproduct 4	12	0	681	968	990	1000	2425	3140	17440	20350	21670
Byproduct 5	12	0	613	1000	1000	1000	1000	1000	4600	5315	5623
Byproduct 6	12	0	1000	1000	1000	1000	1000	1000	4600	5315	5623
NVHOS	12	0	1070	1900	2450	5000	19500	22800	25800	342800	652560
EVE Acid	12	0	1000	1000	1000	1000	1000	1000	4600	5315	5623
Hydro-EVE Acid	12	0	1000	1000	1000	1000	1000	1000	4600	5315	5623
R-EVE	12	0	1000	1000	1000	2000	3350	3900	4370	6245	8049
PES	12	0	1000	1000	1000	1000	1100	1100	2720	3845	4769
PFECA B	12	0	1000	1000	1000	1000	1525	2680	4810	5315	5623
PFECA-G	12	0	1000	1000	1000	1000	1000	1000	4600	5315	5623

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.112/2/2019 11:47:08 AM
From File	ReRun OffSite Veg and OnSite Invert.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Offsite Vegetation UCLs

Hfpo Dimer Acid

General Statistics

Total Number of Observations	12	Number of Distinct Observations	12
		Number of Missing Observations	0
Minimum	540	Mean	9351
Maximum	55000	Median	1850
SD	17166	Std. Error of Mean	4955
Coefficient of Variation	1.836	Skewness	2.28

Normal GOF Test

Shapiro Wilk Test Statistic	0.578	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.859	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.379	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.243	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	18250	95% Adjusted-CLT UCL (Chen-1995)	20987
		95% Modified-t UCL (Johnson-1978)	18794

Gamma GOF Test

A-D Test Statistic	1.263	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.783	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.305	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.258	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.523	k star (bias corrected MLE)	0.448
Theta hat (MLE)	17881	Theta star (bias corrected MLE)	20883
nu hat (MLE)	12.55	nu star (bias corrected)	10.75
MLE Mean (bias corrected)	9351	MLE Sd (bias corrected)	13974
		Approximate Chi Square Value (0.05)	4.413
Adjusted Level of Significance	0.029	Adjusted Chi Square Value	3.814

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	22768	95% Adjusted Gamma UCL (use when n<50)	26350

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.879	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.859	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.231	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.243	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	6.292	Mean of logged Data	7.937
Maximum of Logged Data	10.92	SD of logged Data	1.494

Assuming Lognormal Distribution

95% H-UCL	49091	90% Chebyshev (MVUE) UCL	17563
95% Chebyshev (MVUE) UCL	22227	97.5% Chebyshev (MVUE) UCL	28700
99% Chebyshev (MVUE) UCL	41415		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	17502	95% Jackknife UCL	18250
95% Standard Bootstrap UCL	17115	95% Bootstrap-t UCL	65264
95% Hall's Bootstrap UCL	68965	95% Percentile Bootstrap UCL	17888
95% BCA Bootstrap UCL	20513		
90% Chebyshev(Mean, Sd) UCL	24217	95% Chebyshev(Mean, Sd) UCL	30951
97.5% Chebyshev(Mean, Sd) UCL	40298	99% Chebyshev(Mean, Sd) UCL	58657

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	30951

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFMOAA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	6
Number of Detects	3	Number of Non-Detects	9
Number of Distinct Detects	3	Number of Distinct Non-Detects	3
Minimum Detect	970	Minimum Non-Detect	1000
Maximum Detect	59000	Maximum Non-Detect	5700
Variance Detects	8.751E+8	Percent Non-Detects	75%
Mean Detects	26657	SD Detects	29582
Median Detects	20000	CV Detects	1.11
Skewness Detects	0.961	Kurtosis Detects	N/A
Mean of Logged Detects	9.255	SD of Logged Detects	2.129

Warning: Data set has only 3 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.962	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.256	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	7392	KM Standard Error of Mean	5805
KM SD	16418	95% KM (BCA) UCL	N/A
95% KM (t) UCL	17816	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	16940	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	24806	95% KM Chebyshev UCL	32694
97.5% KM Chebyshev UCL	43643	99% KM Chebyshev UCL	65149

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	0.653	k star (bias corrected MLE)	N/A
Theta hat (MLE)	40853	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	3.915	nu star (bias corrected)	N/A
Mean (detects)	26657		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	8207
Maximum	59000	Median	256.9
SD	17217	CV	2.098
k hat (MLE)	0.114	k star (bias corrected MLE)	0.141
Theta hat (MLE)	71752	Theta star (bias corrected MLE)	58067
nu hat (MLE)	2.745	nu star (bias corrected)	3.392
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (3.39, α)	0.498	Adjusted Chi Square Value (3.39, β)	0.362
95% Gamma Approximate UCL (use when n>=50)	55960	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	7392	SD (KM)	16418
Variance (KM)	2.696E+8	SE of Mean (KM)	5805
k hat (KM)	0.203	k star (KM)	0.208
nu hat (KM)	4.864	nu star (KM)	4.982
theta hat (KM)	36469	theta star (KM)	35611
80% gamma percentile (KM)	9926	90% gamma percentile (KM)	22355
95% gamma percentile (KM)	37715	99% gamma percentile (KM)	79749

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (4.98, α)	1.144	Adjusted Chi Square Value (4.98, β)	0.891
95% Gamma Approximate KM-UCL (use when n>=50)	32196	95% Gamma Adjusted KM-UCL (use when n<50)	41310

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.93	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.286	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	7858	Mean in Log Scale	7.392
SD in Original Scale	17032	SD in Log Scale	1.801
95% t UCL (assumes normality of ROS data)	16687	95% Percentile Bootstrap UCL	16755
95% BCA Bootstrap UCL	21802	95% Bootstrap t UCL	77214
95% H-UCL (Log ROS)	95993		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.472	KM Geo Mean	1758
KM SD (logged)	1.348	95% Critical H Value (KM-Log)	3.583
KM Standard Error of Mean (logged)	0.476	95% H-UCL (KM -Log)	18688
KM SD (logged)	1.348	95% Critical H Value (KM-Log)	3.583
KM Standard Error of Mean (logged)	0.476		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	7402	Mean in Log Scale	7.254

SD in Original Scale	17164	SD in Log Scale	1.637
95% t UCL (Assumes normality)	16300	95% H-Stat UCL	42461

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 17816

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO2HxA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	9
Number of Detects	9	Number of Non-Detects	3
Number of Distinct Detects	8	Number of Distinct Non-Detects	1
Minimum Detect	790	Minimum Non-Detect	1000
Maximum Detect	6600	Maximum Non-Detect	1000
Variance Detects	5371400	Percent Non-Detects	25%
Mean Detects	2910	SD Detects	2318
Median Detects	1500	CV Detects	0.796
Skewness Detects	0.79	Kurtosis Detects	-1.288
Mean of Logged Detects	7.681	SD of Logged Detects	0.817

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.814	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.284	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2380	KM Standard Error of Mean	644
KM SD	2103	95% KM (BCA) UCL	3483
95% KM (t) UCL	3537	95% KM (Percentile Bootstrap) UCL	3433
95% KM (z) UCL	3439	95% KM Bootstrap t UCL	3996
90% KM Chebyshev UCL	4312	95% KM Chebyshev UCL	5187
97.5% KM Chebyshev UCL	6402	99% KM Chebyshev UCL	8788

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.654	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.731	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.265	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.283	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.844	k star (bias corrected MLE)	1.303
Theta hat (MLE)	1578	Theta star (bias corrected MLE)	2233
nu hat (MLE)	33.19	nu star (bias corrected)	23.46
Mean (detects)	2910		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	2200
Maximum	6600	Median	1200
SD	2357	CV	1.071
k hat (MLE)	0.305	k star (bias corrected MLE)	0.284
Theta hat (MLE)	7217	Theta star (bias corrected MLE)	7742
nu hat (MLE)	7.317	nu star (bias corrected)	6.821
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (6.82, α)	2.073	Adjusted Chi Square Value (6.82, β)	1.698
95% Gamma Approximate UCL (use when n>=50)	7241	95% Gamma Adjusted UCL (use when n<50)	8840

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	2380	SD (KM)	2103
Variance (KM)	4423633	SE of Mean (KM)	644
k hat (KM)	1.28	k star (KM)	1.016
nu hat (KM)	30.73	nu star (KM)	24.38
theta hat (KM)	1859	theta star (KM)	2343
80% gamma percentile (KM)	3826	90% gamma percentile (KM)	5459
95% gamma percentile (KM)	7090	99% gamma percentile (KM)	10874

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (24.38, α)	14.14	Adjusted Chi Square Value (24.38, β)	12.96
95% Gamma Approximate KM-UCL (use when n>=50)	4104	95% Gamma Adjusted KM-UCL (use when n<50)	4477

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.876	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.229	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2319	Mean in Log Scale	7.325
SD in Original Scale	2249	SD in Log Scale	0.962
95% t UCL (assumes normality of ROS data)	3485	95% Percentile Bootstrap UCL	3378
95% BCA Bootstrap UCL	3550	95% Bootstrap t UCL	3889
95% H-UCL (Log ROS)	5507		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.429	KM Geo Mean	1684
KM SD (logged)	0.797	95% Critical H Value (KM-Log)	2.566
KM Standard Error of Mean (logged)	0.244	95% H-UCL (KM -Log)	4288
KM SD (logged)	0.797	95% Critical H Value (KM-Log)	2.566
KM Standard Error of Mean (logged)	0.244		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	2308	Mean in Log Scale	7.314
SD in Original Scale	2257	SD in Log Scale	0.962
95% t UCL (Assumes normality)	3478	95% H-Stat UCL	5446

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Adjusted Gamma UCL	4477	95% GROS Adjusted Gamma UCL	8840

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO3OA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	4
Number of Detects	1	Number of Non-Detects	11
Number of Distinct Detects	1	Number of Distinct Non-Detects	3

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFO3OA was not processed!

PFO4DA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	5
Number of Detects	2	Number of Non-Detects	10
Number of Distinct Detects	2	Number of Distinct Non-Detects	3
Minimum Detect	260	Minimum Non-Detect	1000
Maximum Detect	530	Maximum Non-Detect	5700
Variance Detects	36450	Percent Non-Detects	83.33%
Mean Detects	395	SD Detects	190.9
Median Detects	395	CV Detects	0.483
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	5.917	SD of Logged Detects	0.504

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	395	KM Standard Error of Mean	135
KM SD	135	95% KM (BCA) UCL	N/A
95% KM (t) UCL	637.4	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	617.1	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	800	95% KM Chebyshev UCL	983.5
97.5% KM Chebyshev UCL	1238	99% KM Chebyshev UCL	1738

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	8.214	k star (bias corrected MLE)	N/A
Theta hat (MLE)	48.09	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	32.86	nu star (bias corrected)	N/A
Mean (detects)	395		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	395	SD (KM)	135
Variance (KM)	18225	SE of Mean (KM)	135

k hat (KM)	8.561	k star (KM)	6.476
nu hat (KM)	205.5	nu star (KM)	155.4
theta hat (KM)	46.14	theta star (KM)	60.99
80% gamma percentile (KM)	516.3	90% gamma percentile (KM)	602.4
95% gamma percentile (KM)	680	99% gamma percentile (KM)	842.3

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.029
Approximate Chi Square Value (155.43, α)	127.6	Adjusted Chi Square Value (155.43, β)	123.8
95% Gamma Approximate KM-UCL (use when n>=50)	481.1	95% Gamma Adjusted KM-UCL (use when n<50)	496.1

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	426.6	Mean in Log Scale	5.917
SD in Original Scale	243.8	SD in Log Scale	0.554
95% t UCL (assumes normality of ROS data)	553	95% Percentile Bootstrap UCL	540.5
95% BCA Bootstrap UCL	561.5	95% Bootstrap t UCL	626.1
95% H-UCL (Log ROS)	625.5		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	5.917	KM Geo Mean	371.2
KM SD (logged)	0.356	95% Critical H Value (KM-Log)	1.981
KM Standard Error of Mean (logged)	0.356	95% H-UCL (KM -Log)	489.2
KM SD (logged)	0.356	95% Critical H Value (KM-Log)	1.981
KM Standard Error of Mean (logged)	0.356		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	845	Mean in Log Scale	6.444
SD in Original Scale	860.9	SD in Log Scale	0.702
95% t UCL (Assumes normality)	1291	95% H-Stat UCL	1342

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 983.5

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO5DA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFO5DA was not processed!

PMPA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	12
		Number of Missing Observations	0
Minimum	390	Mean	10335
Maximum	52000	Median	3300
SD	16074	Std. Error of Mean	4640
Coefficient of Variation	1.555	Skewness	2.128

Normal GOF Test

Shapiro Wilk Test Statistic	0.649	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.859	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.315	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.243	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	18668	95% Adjusted-CLT UCL (Chen-1995)	21013
		95% Modified-t UCL (Johnson-1978)	19143

Gamma GOF Test

A-D Test Statistic	0.633	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.775	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.239	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.257	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.634	k star (bias corrected MLE)	0.531
Theta hat (MLE)	16306	Theta star (bias corrected MLE)	19466
nu hat (MLE)	15.21	nu star (bias corrected)	12.74
MLE Mean (bias corrected)	10335	MLE Sd (bias corrected)	14184
		Approximate Chi Square Value (0.05)	5.72
Adjusted Level of Significance	0.029	Adjusted Chi Square Value	5.02

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	23024	95% Adjusted Gamma UCL (use when n<50)	26235

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.959	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.859	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.149	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.243	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	5.966	Mean of logged Data	8.276
Maximum of Logged Data	10.86	SD of logged Data	1.474

Assuming Lognormal Distribution

95% H-UCL	64114	90% Chebyshev (MVUE) UCL	23875
95% Chebyshev (MVUE) UCL	30178	97.5% Chebyshev (MVUE) UCL	38927
99% Chebyshev (MVUE) UCL	56112		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	17967	95% Jackknife UCL	18668
95% Standard Bootstrap UCL	17650	95% Bootstrap-t UCL	43795
95% Hall's Bootstrap UCL	54398	95% Percentile Bootstrap UCL	18133
95% BCA Bootstrap UCL	20416		
90% Chebyshev(Mean, Sd) UCL	24256	95% Chebyshev(Mean, Sd) UCL	30561
97.5% Chebyshev(Mean, Sd) UCL	39313	99% Chebyshev(Mean, Sd) UCL	56504

Suggested UCL to Use

95% Adjusted Gamma UCL 26235

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PEPA

General Statistics

Total Number of Observations	12	Number of Distinct Observations	7
Number of Detects	5	Number of Non-Detects	7
Number of Distinct Detects	4	Number of Distinct Non-Detects	3
Minimum Detect	410	Minimum Non-Detect	1000
Maximum Detect	2300	Maximum Non-Detect	5700
Variance Detects	702230	Percent Non-Detects	58.33%
Mean Detects	1134	SD Detects	838
Median Detects	850	CV Detects	0.739
Skewness Detects	0.697	Kurtosis Detects	-1.645
Mean of Logged Detects	6.791	SD of Logged Detects	0.794

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.875	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.233	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.343	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	845.3	KM Standard Error of Mean	235.3
KM SD	621.1	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1268	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1232	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1551	95% KM Chebyshev UCL	1871
97.5% KM Chebyshev UCL	2315	99% KM Chebyshev UCL	3187

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.394	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.684	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.255	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.36	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.217	k star (bias corrected MLE)	1.02
Theta hat (MLE)	511.5	Theta star (bias corrected MLE)	1112
nu hat (MLE)	22.17	nu star (bias corrected)	10.2
Mean (detects)	1134		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	125.1	Mean	831.9
Maximum	2300	Median	722.9
SD	615.2	CV	0.74
k hat (MLE)	2.186	k star (bias corrected MLE)	1.695
Theta hat (MLE)	380.6	Theta star (bias corrected MLE)	490.8
nu hat (MLE)	52.46	nu star (bias corrected)	40.68
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (40.68, α)	27.06	Adjusted Chi Square Value (40.68, β)	25.38
95% Gamma Approximate UCL (use when n>=50)	1250	95% Gamma Adjusted UCL (use when n<50)	1333

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	845.3	SD (KM)	621.1
Variance (KM)	385732	SE of Mean (KM)	235.3
k hat (KM)	1.853	k star (KM)	1.445
nu hat (KM)	44.46	nu star (KM)	34.68
theta hat (KM)	456.3	theta star (KM)	585
80% gamma percentile (KM)	1313	90% gamma percentile (KM)	1778
95% gamma percentile (KM)	2230	99% gamma percentile (KM)	3253

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (34.68, α)	22.21	Adjusted Chi Square Value (34.68, β)	20.7
95% Gamma Approximate KM-UCL (use when n>=50)	1320	95% Gamma Adjusted KM-UCL (use when n<50)	1417

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.879	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.235	Lilliefors GOF Test
5% Lilliefors Critical Value	0.343	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	824.5	Mean in Log Scale	6.526
SD in Original Scale	597	SD in Log Scale	0.614
95% t UCL (assumes normality of ROS data)	1134	95% Percentile Bootstrap UCL	1106
95% BCA Bootstrap UCL	1201	95% Bootstrap t UCL	1568
95% H-UCL (Log ROS)	1259		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	6.525	KM Geo Mean	682.2
KM SD (logged)	0.618	95% Critical H Value (KM-Log)	2.296
KM Standard Error of Mean (logged)	0.26	95% H-UCL (KM -Log)	1267
KM SD (logged)	0.618	95% Critical H Value (KM-Log)	2.296
KM Standard Error of Mean (logged)	0.26		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1127	Mean in Log Scale	6.734
SD in Original Scale	935.6	SD in Log Scale	0.773
95% t UCL (Assumes normality)	1612	95% H-Stat UCL	2041

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1268

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFESA-BP1

General Statistics

Total Number of Observations	12	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFESA-BP1 was not processed!

PFESA-BP2

General Statistics

Total Number of Observations	12	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFESA-BP2 was not processed!

Byproduct 4

General Statistics

Total Number of Observations	12	Number of Distinct Observations	9
Number of Detects	8	Number of Non-Detects	4
Number of Distinct Detects	8	Number of Distinct Non-Detects	1
Minimum Detect	600	Minimum Non-Detect	1000
Maximum Detect	22000	Maximum Non-Detect	1000
Variance Detects	78962584	Percent Non-Detects	33.33%
Mean Detects	6239	SD Detects	8886
Median Detects	1650	CV Detects	1.424
Skewness Detects	1.431	Kurtosis Detects	0.159
Mean of Logged Detects	7.808	SD of Logged Detects	1.428

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.669	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.375	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	4405	KM Standard Error of Mean	2243
KM SD	7266	95% KM (BCA) UCL	7717
95% KM (t) UCL	8433	95% KM (Percentile Bootstrap) UCL	7935

95% KM (z) UCL	8094	95% KM Bootstrap t UCL	33483
90% KM Chebyshev UCL	11133	95% KM Chebyshev UCL	14181
97.5% KM Chebyshev UCL	18411	99% KM Chebyshev UCL	26720

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.81	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.752	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.256	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.306	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.655	k star (bias corrected MLE)	0.493
Theta hat (MLE)	9518	Theta star (bias corrected MLE)	12655
nu hat (MLE)	10.49	nu star (bias corrected)	7.888
Mean (detects)	6239		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	4213
Maximum	22000	Median	805
SD	7696	CV	1.827
k hat (MLE)	0.197	k star (bias corrected MLE)	0.203
Theta hat (MLE)	21427	Theta star (bias corrected MLE)	20751
nu hat (MLE)	4.718	nu star (bias corrected)	4.872
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (4.87, α)	1.094	Adjusted Chi Square Value (4.87, β)	0.849
95% Gamma Approximate UCL (use when n>=50)	18768	95% Gamma Adjusted UCL (use when n<50)	24176

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	4405	SD (KM)	7266
Variance (KM)	52797275	SE of Mean (KM)	2243
k hat (KM)	0.367	k star (KM)	0.331
nu hat (KM)	8.819	nu star (KM)	7.948
theta hat (KM)	11987	theta star (KM)	13301
80% gamma percentile (KM)	6904	90% gamma percentile (KM)	12824
95% gamma percentile (KM)	19510	99% gamma percentile (KM)	36682

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (7.95, α)	2.705	Adjusted Chi Square Value (7.95, β)	2.261
95% Gamma Approximate KM-UCL (use when n>=50)	12943	95% Gamma Adjusted KM-UCL (use when n<50)	15485

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.858	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.192	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	4403	Mean in Log Scale	7.345
SD in Original Scale	7593	SD in Log Scale	1.38
95% t UCL (assumes normality of ROS data)	8340	95% Percentile Bootstrap UCL	7907
95% BCA Bootstrap UCL	9112	95% Bootstrap t UCL	33876
95% H-UCL (Log ROS)	18325		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.399	KM Geo Mean	1634
KM SD (logged)	1.24	95% Critical H Value (KM-Log)	3.37
KM Standard Error of Mean (logged)	0.387	95% H-UCL (KM -Log)	12431
KM SD (logged)	1.24	95% Critical H Value (KM-Log)	3.37
KM Standard Error of Mean (logged)	0.387		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4326	Mean in Log Scale	7.277
SD in Original Scale	7631	SD in Log Scale	1.383
95% t UCL (Assumes normality)	8282	95% H-Stat UCL	17279

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Bootstrap t UCL	33483	a Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	15485

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Byproduct 5

General Statistics

Total Number of Observations	12	Number of Distinct Observations	5
Number of Detects	2	Number of Non-Detects	10
Number of Distinct Detects	2	Number of Distinct Non-Detects	3
Minimum Detect	370	Minimum Non-Detect	1000
Maximum Detect	570	Maximum Non-Detect	5700
Variance Detects	20000	Percent Non-Detects	83.33%
Mean Detects	470	SD Detects	141.4
Median Detects	470	CV Detects	0.301
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	6.13	SD of Logged Detects	0.306

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	470	KM Standard Error of Mean	100
KM SD	100	95% KM (BCA) UCL	N/A
95% KM (t) UCL	649.6	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	634.5	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	770	95% KM Chebyshev UCL	905.9
97.5% KM Chebyshev UCL	1094	99% KM Chebyshev UCL	1465

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	21.75	k star (bias corrected MLE)	N/A
Theta hat (MLE)	21.61	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	87.01	nu star (bias corrected)	N/A
Mean (detects)	470		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	470	SD (KM)	100
Variance (KM)	10000	SE of Mean (KM)	100
k hat (KM)	22.09	k star (KM)	16.62
nu hat (KM)	530.2	nu star (KM)	399
theta hat (KM)	21.28	theta star (KM)	28.27
80% gamma percentile (KM)	563.3	90% gamma percentile (KM)	622.5
95% gamma percentile (KM)	674.3	99% gamma percentile (KM)	778.8

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.029
Approximate Chi Square Value (398.95, α)	353.7	Adjusted Chi Square Value (398.95, β)	347.1
95% Gamma Approximate KM-UCL (use when n>=50)	530.2	95% Gamma Adjusted KM-UCL (use when n<50)	540.1

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	483.5	Mean in Log Scale	6.13
SD in Original Scale	164.5	SD in Log Scale	0.336
95% t UCL (assumes normality of ROS data)	568.8	95% Percentile Bootstrap UCL	558.3
95% BCA Bootstrap UCL	572.4	95% Bootstrap t UCL	585.1
95% H-UCL (Log ROS)	592.6		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	6.13	KM Geo Mean	459.2
KM SD (logged)	0.216	95% Critical H Value (KM-Log)	1.855
KM Standard Error of Mean (logged)	0.216	95% H-UCL (KM -Log)	530.5
KM SD (logged)	0.216	95% Critical H Value (KM-Log)	1.855
KM Standard Error of Mean (logged)	0.216		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	857.5	Mean in Log Scale	6.48
SD in Original Scale	853.4	SD in Log Scale	0.666
95% t UCL (Assumes normality)	1300	95% H-Stat UCL	1309

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	649.6	KM H-UCL	530.5
95% KM (BCA) UCL	N/A		

Warning: One or more Recommended UCL(s) not available!

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Byproduct 6

General Statistics			
Total Number of Observations	12	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Byproduct 6 was not processed!

NVHOS

General Statistics			
Total Number of Observations	12	Number of Distinct Observations	11
Number of Detects	10	Number of Non-Detects	2
Number of Distinct Detects	10	Number of Distinct Non-Detects	2
Minimum Detect	650	Minimum Non-Detect	1000
Maximum Detect	730000	Maximum Non-Detect	5000
Variance Detects	5.195E+10	Percent Non-Detects	16.67%
Mean Detects	81845	SD Detects	227934
Median Detects	5850	CV Detects	2.785
Skewness Detects	3.152	Kurtosis Detects	9.953
Mean of Logged Detects	9.091	SD of Logged Detects	1.951

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.401	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.497	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	68415	KM Standard Error of Mean	60757
KM SD	199668	95% KM (BCA) UCL	188408
95% KM (t) UCL	177528	95% KM (Percentile Bootstrap) UCL	187575
95% KM (z) UCL	168352	95% KM Bootstrap t UCL	1894137
90% KM Chebyshev UCL	250687	95% KM Chebyshev UCL	333249
97.5% KM Chebyshev UCL	447843	99% KM Chebyshev UCL	672941

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.385	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.812	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.368	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.288	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.309	k star (bias corrected MLE)	0.283
Theta hat (MLE)	264943	Theta star (bias corrected MLE)	289300
nu hat (MLE)	6.178	nu star (bias corrected)	5.658
Mean (detects)	81845		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	68204
Maximum	730000	Median	4350
SD	208621	CV	3.059
k hat (MLE)	0.174	k star (bias corrected MLE)	0.186
Theta hat (MLE)	392058	Theta star (bias corrected MLE)	366632
nu hat (MLE)	4.175	nu star (bias corrected)	4.465
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (4.46, α)	0.913	Adjusted Chi Square Value (4.46, β)	0.698
95% Gamma Approximate UCL (use when n>=50)	333377	95% Gamma Adjusted UCL (use when n<50)	436203

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	68415	SD (KM)	199668
Variance (KM)	3.987E+10	SE of Mean (KM)	60757
k hat (KM)	0.117	k star (KM)	0.144
nu hat (KM)	2.818	nu star (KM)	3.447
theta hat (KM)	582728	theta star (KM)	476398
80% gamma percentile (KM)	71778	90% gamma percentile (KM)	201547
95% gamma percentile (KM)	379653	99% gamma percentile (KM)	901223

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (3.45, α)	0.516	Adjusted Chi Square Value (3.45, β)	0.377
95% Gamma Approximate KM-UCL (use when n>=50)	456820	95% Gamma Adjusted KM-UCL (use when n<50)	625569

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.916	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.191	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	68343	Mean in Log Scale	8.662
SD in Original Scale	208572	SD in Log Scale	2.049
95% t UCL (assumes normality of ROS data)	176472	95% Percentile Bootstrap UCL	187365
95% BCA Bootstrap UCL	248841	95% Bootstrap t UCL	1945202
95% H-UCL (Log ROS)	1079733		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	8.724	KM Geo Mean	6149
KM SD (logged)	1.897	95% Critical H Value (KM-Log)	4.738
KM Standard Error of Mean (logged)	0.581	95% H-UCL (KM -Log)	558390
KM SD (logged)	1.897	95% Critical H Value (KM-Log)	4.738
KM Standard Error of Mean (logged)	0.581		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	68454	Mean in Log Scale	8.746
SD in Original Scale	208533	SD in Log Scale	1.97
95% t UCL (Assumes normality)	176563	95% H-Stat UCL	802095

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	447843	99% KM (Chebyshev) UCL	672941

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

EVE Acid

General Statistics

Total Number of Observations	12	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable EVE Acid was not processed!

Hydro-EVE Acid

General Statistics

Total Number of Observations	12	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Hydro-EVE Acid was not processed!

R-EVE

General Statistics

Total Number of Observations	12	Number of Distinct Observations	8
Number of Detects	9	Number of Non-Detects	3
Number of Distinct Detects	7	Number of Distinct Non-Detects	1
Minimum Detect	240	Minimum Non-Detect	1000
Maximum Detect	8500	Maximum Non-Detect	1000
Variance Detects	5745178	Percent Non-Detects	25%
Mean Detects	3204	SD Detects	2397
Median Detects	3100	CV Detects	0.748
Skewness Detects	1.318	Kurtosis Detects	2.632
Mean of Logged Detects	7.741	SD of Logged Detects	1.016

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.896	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.198	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2463	KM Standard Error of Mean	716.6
KM SD	2340	95% KM (BCA) UCL	3805
95% KM (t) UCL	3750	95% KM (Percentile Bootstrap) UCL	3717
95% KM (z) UCL	3642	95% KM Bootstrap t UCL	4175
90% KM Chebyshev UCL	4613	95% KM Chebyshev UCL	5587
97.5% KM Chebyshev UCL	6939	99% KM Chebyshev UCL	9594

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.302	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.733	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.169	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.284	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.655	k star (bias corrected MLE)	1.177
Theta hat (MLE)	1936	Theta star (bias corrected MLE)	2722
nu hat (MLE)	29.79	nu star (bias corrected)	21.19
Mean (detects)	3204		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	2435
Maximum	8500	Median	2000
SD	2475	CV	1.017
k hat (MLE)	0.304	k star (bias corrected MLE)	0.283
Theta hat (MLE)	8015	Theta star (bias corrected MLE)	8592
nu hat (MLE)	7.29	nu star (bias corrected)	6.801
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (6.80, α)	2.062	Adjusted Chi Square Value (6.80, β)	1.688
95% Gamma Approximate UCL (use when n>=50)	8030	95% Gamma Adjusted UCL (use when n<50)	9808

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	2463	SD (KM)	2340
Variance (KM)	5477856	SE of Mean (KM)	716.6
k hat (KM)	1.108	k star (KM)	0.886
nu hat (KM)	26.59	nu star (KM)	21.27
theta hat (KM)	2224	theta star (KM)	2779
80% gamma percentile (KM)	4000	90% gamma percentile (KM)	5843
95% gamma percentile (KM)	7703	99% gamma percentile (KM)	12061

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (21.27, α)	11.79	Adjusted Chi Square Value (21.27, β)	10.73
95% Gamma Approximate KM-UCL (use when n>=50)	4443	95% Gamma Adjusted KM-UCL (use when n<50)	4883

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.883	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.215	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.274	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2505	Mean in Log Scale	7.289
SD in Original Scale	2406	SD in Log Scale	1.209
95% t UCL (assumes normality of ROS data)	3752	95% Percentile Bootstrap UCL	3674
95% BCA Bootstrap UCL	3885	95% Bootstrap t UCL	4250
95% H-UCL (Log ROS)	10150		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.176	KM Geo Mean	1307
KM SD (logged)	1.283	95% Critical H Value (KM-Log)	3.454
KM Standard Error of Mean (logged)	0.393	95% H-UCL (KM -Log)	11324
KM SD (logged)	1.283	95% Critical H Value (KM-Log)	3.454

KM Standard Error of Mean (logged)	0.393		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2528	Mean in Log Scale	7.359
SD in Original Scale	2382	SD in Log Scale	1.108
95% t UCL (Assumes normality)	3763	95% H-Stat UCL	8207

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	3750

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PES

General Statistics

Total Number of Observations	12	Number of Distinct Observations	5
Number of Detects	4	Number of Non-Detects	8
Number of Distinct Detects	3	Number of Distinct Non-Detects	2
Minimum Detect	300	Minimum Non-Detect	1000
Maximum Detect	2900	Maximum Non-Detect	5000
Variance Detects	1210000	Percent Non-Detects	66.67%
Mean Detects	1350	SD Detects	1100
Median Detects	1100	CV Detects	0.815
Skewness Detects	1.27	Kurtosis Detects	2.426
Mean of Logged Detects	6.921	SD of Logged Detects	0.931

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.879	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.34	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	681.8	KM Standard Error of Mean	266.3
KM SD	764.9	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1160	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1120	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1481	95% KM Chebyshev UCL	1843
97.5% KM Chebyshev UCL	2345	99% KM Chebyshev UCL	3332

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.331	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.661	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.26	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.398	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.89	k star (bias corrected MLE)	0.639
Theta hat (MLE)	714.2	Theta star (bias corrected MLE)	2112
nu hat (MLE)	15.12	nu star (bias corrected)	5.114

Mean (detects)	1350		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	596.6
Maximum	2900	Median	319.2
SD	826.3	CV	1.385
k hat (MLE)	0.243	k star (bias corrected MLE)	0.238
Theta hat (MLE)	2457	Theta star (bias corrected MLE)	2510
nu hat (MLE)	5.829	nu star (bias corrected)	5.705
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (5.70, α)	1.491	Adjusted Chi Square Value (5.70, β)	1.189
95% Gamma Approximate UCL (use when n>=50)	2283	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	681.8	SD (KM)	764.9
Variance (KM)	585124	SE of Mean (KM)	266.3
k hat (KM)	0.794	k star (KM)	0.651
nu hat (KM)	19.07	nu star (KM)	15.63
theta hat (KM)	858.2	theta star (KM)	1047
80% gamma percentile (KM)	1123	90% gamma percentile (KM)	1740
95% gamma percentile (KM)	2382	99% gamma percentile (KM)	3922

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (15.63, α)	7.705	Adjusted Chi Square Value (15.63, β)	6.871
95% Gamma Approximate KM-UCL (use when n>=50)	1384	95% Gamma Adjusted KM-UCL (use when n<50)	1551

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.935	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.285	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	669.7	Mean in Log Scale	6.065
SD in Original Scale	776.6	SD in Log Scale	0.949
95% t UCL (assumes normality of ROS data)	1072	95% Percentile Bootstrap UCL	1063
95% BCA Bootstrap UCL	1233	95% Bootstrap t UCL	1585
95% H-UCL (Log ROS)	1516		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	6.146	KM Geo Mean	467
KM SD (logged)	0.761	95% Critical H Value (KM-Log)	2.508
KM Standard Error of Mean (logged)	0.265	95% H-UCL (KM -Log)	1109
KM SD (logged)	0.761	95% Critical H Value (KM-Log)	2.508
KM Standard Error of Mean (logged)	0.265		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	950	Mean in Log Scale	6.584
SD in Original Scale	857.6	SD in Log Scale	0.71
95% t UCL (Assumes normality)	1395	95% H-Stat UCL	1566

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1160

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFECA B

General Statistics

Total Number of Observations	12	Number of Distinct Observations	5
Number of Detects	2	Number of Non-Detects	10
Number of Distinct Detects	2	Number of Distinct Non-Detects	3
Minimum Detect	320	Minimum Non-Detect	1000
Maximum Detect	3100	Maximum Non-Detect	5700
Variance Detects	3864200	Percent Non-Detects	83.33%
Mean Detects	1710	SD Detects	1966
Median Detects	1710	CV Detects	1.15
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	6.904	SD of Logged Detects	1.606

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	598	KM Standard Error of Mean	373
KM SD	834	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1268	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1211	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1717	95% KM Chebyshev UCL	2224
97.5% KM Chebyshev UCL	2927	99% KM Chebyshev UCL	4309

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	1.061	k star (bias corrected MLE)	N/A
Theta hat (MLE)	1612	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	4.243	nu star (bias corrected)	N/A
Mean (detects)	1710		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	598	SD (KM)	834
Variance (KM)	695556	SE of Mean (KM)	373
k hat (KM)	0.514	k star (KM)	0.441
nu hat (KM)	12.34	nu star (KM)	10.59
theta hat (KM)	1163	theta star (KM)	1356
80% gamma percentile (KM)	974.5	90% gamma percentile (KM)	1659
95% gamma percentile (KM)	2401	99% gamma percentile (KM)	4249

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.029
Approximate Chi Square Value (10.59, α)	4.312	Adjusted Chi Square Value (10.59, β)	3.721

95% Gamma Approximate KM-UCL (use when n>=50)	1468	95% Gamma Adjusted KM-UCL (use when n<50)	1702

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	631.3	Mean in Log Scale	5.955
SD in Original Scale	827.1	SD in Log Scale	0.982
95% t UCL (assumes normality of ROS data)	1060	95% Percentile Bootstrap UCL	1062
95% BCA Bootstrap UCL	1300	95% Bootstrap t UCL	2087
95% H-UCL (Log ROS)	1468		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	5.995	KM Geo Mean	401.6
KM SD (logged)	0.681	95% Critical H Value (KM-Log)	2.386
KM Standard Error of Mean (logged)	0.305	95% H-UCL (KM -Log)	826.8
KM SD (logged)	0.681	95% Critical H Value (KM-Log)	2.386
KM Standard Error of Mean (logged)	0.305		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	1064	Mean in Log Scale	6.609
SD in Original Scale	1066	SD in Log Scale	0.814
95% t UCL (Assumes normality)	1617	95% H-Stat UCL	1950

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

975% KM (Chebyshev) UCL	2927

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFECA-G

General Statistics

Total Number of Observations	12	Number of Distinct Observations	3
Number of Detects	0	Number of Non-Detects	12
Number of Distinct Detects	0	Number of Distinct Non-Detects	3

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFECA-G was not processed!

General Statistics on Uncensored Data

Date/Time of Computation ProUCL 5.111/13/2019 4:42:28 PM

User Selected Options

From File CFR SW.xls

Full Precision OFF

Cape Fear River Surface Water General Statistics

From File: CFR SW.xls

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	9	0	7	2	22.22%	2	2	5.333	17.27	4.155	0.779
PFMOAA	9	0	6	3	33.33%	5	5	19.3	424.4	20.6	1.067
PFO2HxA	9	0	9	0	0.00%	N/A	N/A	7.356	55.99	7.482	1.017
PFO3OA	9	0	3	6	66.67%	2	2	2.622	1.924	1.387	0.529
PFO4DA	9	0	1	8	88.89%	2	2	2.033	0.00889	0.0943	0.0464
PFO5DA	9	0	0	9	100.00%	2	2	N/A	N/A	N/A	N/A
PMPA	9	0	3	6	66.67%	10	10	11.56	8.025	2.833	0.245
PEPA	9	0	0	9	100.00%	20	20	N/A	N/A	N/A	N/A
PFESA-BP1	9	0	0	9	100.00%	2	2	N/A	N/A	N/A	N/A
PFESA-BP2	9	0	0	9	100.00%	2	2	N/A	N/A	N/A	N/A
Byproduct 4	9	0	8	1	11.11%	2	2	6.122	3.577	1.891	0.309
Byproduct 5	9	0	6	3	33.33%	2	2	5.544	28.61	5.349	0.965
Byproduct 6	9	0	0	9	100.00%	2	2	N/A	N/A	N/A	N/A
NVHOS	9	0	9	0	0.00%	N/A	N/A	6.533	0.143	0.377	0.0578
EVE Acid	9	0	0	9	100.00%	2	2	N/A	N/A	N/A	N/A
Hydro-EVE Acid	9	0	0	9	100.00%	2	2	N/A	N/A	N/A	N/A
R-EVE	9	0	7	2	22.22%	2	2	2.867	0.351	0.593	0.207
PES	9	0	0	9	100.00%	2	2	N/A	N/A	N/A	N/A
PFECA B	9	0	0	9	100.00%	2	2	N/A	N/A	N/A	N/A
PFECA-G	9	0	0	9	100.00%	2	2	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	7	0	2.1	15	6.286	4.3	21.14	4.598	1.779	1.417	0.731
PFMOAA	6	0	8.8	71	26.45	16.5	580	24.08	10.6	1.634	0.91
PFO2HxA	9	0	2.2	25	7.356	4.5	55.99	7.482	3.41	1.993	1.017
PFO3OA	3	0	2	6.4	3.867	3.2	5.173	2.274	1.779	1.206	0.588
PFO4DA	1	0	2.3	2.3	2.3	2.3	N/A	N/A	0	N/A	N/A
PFO5DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PMPA	3	0	12	19	14.67	13	14.33	3.786	1.483	1.597	0.258
PEPA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP2	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 4	8	0	4.8	8.9	6.638	6.7	1.868	1.367	1.557	0.265	0.206
Byproduct 5	6	0	2.5	19	7.317	4.85	40.2	6.34	3.039	1.583	0.867
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	9	0	6	7.2	6.533	6.6	0.143	0.377	0.297	0.151	0.0578
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R-EVE	7	0	2.7	3.8	3.114	2.9	0.205	0.453	0.297	0.656	0.145
PES	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA B	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	9	0	2	2.06	2.1	3.7	5.5	7.3	11	13	14.6
PFMOAA	9	0	5	5	5	9.9	21	27	43	57	68.2
PFO2HxA	9	0	2.2	2.26	2.3	4.5	8.1	10.06	15.4	20.2	24.04
PFO3OA	9	0	2	2	2	2	2	2.48	3.84	5.12	6.144
PFO4DA	9	0	2	2	2	2	2	2	2.06	2.18	2.276
PFO5DA	9	0	2	2	2	2	2	2	2	2	2
PMPA	9	0	10	10	10	10	12	12.4	14.2	16.6	18.52
PEPA	9	0	20	20	20	20	20	20	20	20	20
PFESA-BP1	9	0	2	2	2	2	2	2	2	2	2
PFESA-BP2	9	0	2	2	2	2	2	2	2	2	2
Byproduct 4	9	0	4.24	5.16	5.4	6.5	7.5	7.54	7.86	8.38	8.796
Byproduct 5	9	0	2	2	2	3.1	6.6	7.8	11.48	15.24	18.25
Byproduct 6	9	0	2	2	2	2	2	2	2	2	2
NVHOS	9	0	6.08	6.16	6.2	6.6	6.7	6.74	6.88	7.04	7.168
EVE Acid	9	0	2	2	2	2	2	2	2	2	2
Hydro-EVE Acid	9	0	2	2	2	2	2	2	2	2	2
R-EVE	9	0	2	2.42	2.7	2.8	3.3	3.42	3.64	3.72	3.784
PES	9	0	2	2	2	2	2	2	2	2	2
PFECA B	9	0	2	2	2	2	2	2	2	2	2
PFECA-G	9	0	2	2	2	2	2	2	2	2	2

UCL Statistics for Data Sets with Non-Detects

Cape Fear River Surface Water UCLs

User Selected Options	
Date/Time of Computation	ProUCL 5.111/13/2019 4:44:13 PM
From File	CFR SW.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Hfpo Dimer Acid

General Statistics

Total Number of Observations	9	Number of Distinct Observations	8
Number of Detects	7	Number of Non-Detects	2
Number of Distinct Detects	7	Number of Distinct Non-Detects	1
Minimum Detect	2.1	Minimum Non-Detect	2
Maximum Detect	15	Maximum Non-Detect	2
Variance Detects	21.14	Percent Non-Detects	22.22%
Mean Detects	6.286	SD Detects	4.598
Median Detects	4.3	CV Detects	0.731
Skewness Detects	1.417	Kurtosis Detects	1.278
Mean of Logged Detects	1.635	SD of Logged Detects	0.672

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.835	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.282	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.304	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	5.333	KM Standard Error of Mean	1.496
KM SD	4.155	95% KM (BCA) UCL	7.733
95% KM (t) UCL	8.115	95% KM (Percentile Bootstrap) UCL	7.767
95% KM (z) UCL	7.794	95% KM Bootstrap t UCL	12.65
90% KM Chebyshev UCL	9.822	95% KM Chebyshev UCL	11.85
97.5% KM Chebyshev UCL	14.68	99% KM Chebyshev UCL	20.22

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.369	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.713	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.215	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.314	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.62	k star (bias corrected MLE)	1.592
Theta hat (MLE)	2.399	Theta star (bias corrected MLE)	3.948
nu hat (MLE)	36.67	nu star (bias corrected)	22.29
Mean (detects)	6.286		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	4.891
Maximum	15	Median	3.7
SD	4.849	CV	0.991
k hat (MLE)	0.478	k star (bias corrected MLE)	0.393
Theta hat (MLE)	10.24	Theta star (bias corrected MLE)	12.46
nu hat (MLE)	8.601	nu star (bias corrected)	7.067
Adjusted Level of Significance (β)	0.0231		
Approximate Chi Square Value (7.07, α)	2.207	Adjusted Chi Square Value (7.07, β)	1.68
95% Gamma Approximate UCL (use when n>=50)	15.66	95% Gamma Adjusted UCL (use when n<50)	20.57

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	5.333	SD (KM)	4.155
Variance (KM)	17.27	SE of Mean (KM)	1.496
k hat (KM)	1.647	k star (KM)	1.172
nu hat (KM)	29.65	nu star (KM)	21.1
theta hat (KM)	3.238	theta star (KM)	4.549
80% gamma percentile (KM)	8.464	90% gamma percentile (KM)	11.81
95% gamma percentile (KM)	15.11	99% gamma percentile (KM)	22.7

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (21.10, α)	11.67	Adjusted Chi Square Value (21.10, β)	10.22
95% Gamma Approximate KM-UCL (use when n>=50)	9.646	95% Gamma Adjusted KM-UCL (use when n<50)	11.01

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.955	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.175	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.304	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	5.104	Mean in Log Scale	1.259
SD in Original Scale	4.622	SD in Log Scale	0.952
95% t UCL (assumes normality of ROS data)	7.969	95% Percentile Bootstrap UCL	7.667
95% BCA Bootstrap UCL	8.036	95% Bootstrap t UCL	11.33
95% H-UCL (Log ROS)	15.93		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.426	KM Geo Mean	4.162
KM SD (logged)	0.674	95% Critical H Value (KM-Log)	2.575
KM Standard Error of Mean (logged)	0.243	95% H-UCL (KM -Log)	9.646
KM SD (logged)	0.674	95% Critical H Value (KM-Log)	2.575
KM Standard Error of Mean (logged)	0.243		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	5.111	Mean in Log Scale	1.272
SD in Original Scale	4.614	SD in Log Scale	0.926
95% t UCL (Assumes normality)	7.971	95% H-Stat UCL	15.02

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	8.115

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFMOAA

General Statistics

Total Number of Observations	9	Number of Distinct Observations	7
Number of Detects	6	Number of Non-Detects	3
Number of Distinct Detects	6	Number of Distinct Non-Detects	1
Minimum Detect	8.8	Minimum Non-Detect	5
Maximum Detect	71	Maximum Non-Detect	5
Variance Detects	580	Percent Non-Detects	33.33%
Mean Detects	26.45	SD Detects	24.08
Median Detects	16.5	CV Detects	0.91
Skewness Detects	1.634	Kurtosis Detects	2.415
Mean of Logged Detects	2.974	SD of Logged Detects	0.822

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.798	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.256	Lilliefors GOF Test
5% Lilliefors Critical Value	0.325	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	19.3	KM Standard Error of Mean	7.523
KM SD	20.6	95% KM (BCA) UCL	31.31
95% KM (t) UCL	33.29	95% KM (Percentile Bootstrap) UCL	31.42
95% KM (z) UCL	31.67	95% KM Bootstrap t UCL	60.81
90% KM Chebyshev UCL	41.87	95% KM Chebyshev UCL	52.09
97.5% KM Chebyshev UCL	66.28	99% KM Chebyshev UCL	94.15

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.413	Anderson-Darling GOF Test
5% A-D Critical Value	0.706	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.251	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.336	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.808	k star (bias corrected MLE)	1.015
Theta hat (MLE)	14.63	Theta star (bias corrected MLE)	26.06
nu hat (MLE)	21.69	nu star (bias corrected)	12.18
Mean (detects)	26.45		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	17.64
Maximum	71	Median	9.9
SD	23.18	CV	1.314
k hat (MLE)	0.287	k star (bias corrected MLE)	0.265
Theta hat (MLE)	61.5	Theta star (bias corrected MLE)	66.49
nu hat (MLE)	5.162	nu star (bias corrected)	4.774
Adjusted Level of Significance (β)	0.0231		
Approximate Chi Square Value (4.77, α)	1.049	Adjusted Chi Square Value (4.77, β)	0.732
95% Gamma Approximate UCL (use when n>=50)	80.24	95% Gamma Adjusted UCL (use when n<50)	115

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	19.3	SD (KM)	20.6
Variance (KM)	424.4	SE of Mean (KM)	7.523
k hat (KM)	0.878	k star (KM)	0.659
nu hat (KM)	15.8	nu star (KM)	11.86
theta hat (KM)	21.99	theta star (KM)	29.28
80% gamma percentile (KM)	31.78	90% gamma percentile (KM)	49.13
95% gamma percentile (KM)	67.13	99% gamma percentile (KM)	110.3

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (11.86, α)	5.138	Adjusted Chi Square Value (11.86, β)	4.243
95% Gamma Approximate KM-UCL (use when n>=50)	44.57	95% Gamma Adjusted KM-UCL (use when n<50)	53.97

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.91	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.224	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	18.41	Mean in Log Scale	2.234
SD in Original Scale	22.55	SD in Log Scale	1.313
95% t UCL (assumes normality of ROS data)	32.38	95% Percentile Bootstrap UCL	30.91
95% BCA Bootstrap UCL	36.57	95% Bootstrap t UCL	53.56
95% H-UCL (Log ROS)	139.8		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.519	KM Geo Mean	12.42
KM SD (logged)	0.888	95% Critical H Value (KM-Log)	2.996
KM Standard Error of Mean (logged)	0.324	95% H-UCL (KM -Log)	47.21
KM SD (logged)	0.888	95% Critical H Value (KM-Log)	2.996
KM Standard Error of Mean (logged)	0.324		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	18.47	Mean in Log Scale	2.288
SD in Original Scale	22.49	SD in Log Scale	1.217
95% t UCL (Assumes normality)	32.41	95% H-Stat UCL	103.3

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	33.29

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO2HxA

General Statistics

Total Number of Observations	9	Number of Distinct Observations	8
		Number of Missing Observations	0
Minimum	2.2	Mean	7.356
Maximum	25	Median	4.5
SD	7.482	Std. Error of Mean	2.494
Coefficient of Variation	1.017	Skewness	1.993

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.736	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.295	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	11.99	95% Adjusted-CLT UCL (Chen-1995)	13.23
		95% Modified-t UCL (Johnson-1978)	12.27

Gamma GOF Test

A-D Test Statistic	0.554	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.734	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.245	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.284	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.555	k star (bias corrected MLE)	1.11
Theta hat (MLE)	4.731	Theta star (bias corrected MLE)	6.624
nu hat (MLE)	27.98	nu star (bias corrected)	19.99
MLE Mean (bias corrected)	7.356	MLE Sd (bias corrected)	6.98
		Approximate Chi Square Value (0.05)	10.84
Adjusted Level of Significance	0.0231	Adjusted Chi Square Value	9.454

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	13.56	95% Adjusted Gamma UCL (use when n<50)	15.55

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.902	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.829	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.191	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.274	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.788	Mean of logged Data	1.641
Maximum of Logged Data	3.219	SD of logged Data	0.847

Assuming Lognormal Distribution

95% H-UCL	17.65	90% Chebyshev (MVUE) UCL	13.16
95% Chebyshev (MVUE) UCL	15.94	97.5% Chebyshev (MVUE) UCL	19.8
99% Chebyshev (MVUE) UCL	27.38		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	11.46	95% Jackknife UCL	11.99
95% Standard Bootstrap UCL	11.24	95% Bootstrap-t UCL	20.66
95% Hall's Bootstrap UCL	28.95	95% Percentile Bootstrap UCL	11.54
95% BCA Bootstrap UCL	13.07		
90% Chebyshev(Mean, Sd) UCL	14.84	95% Chebyshev(Mean, Sd) UCL	18.23
97.5% Chebyshev(Mean, Sd) UCL	22.93	99% Chebyshev(Mean, Sd) UCL	32.17

Suggested UCL to Use

95% Adjusted Gamma UCL	15.55

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO3OA

General Statistics

Total Number of Observations	9	Number of Distinct Observations	3
Number of Detects	3	Number of Non-Detects	6
Number of Distinct Detects	3	Number of Distinct Non-Detects	1
Minimum Detect	2	Minimum Non-Detect	2
Maximum Detect	6.4	Maximum Non-Detect	2
Variance Detects	5.173	Percent Non-Detects	66.67%
Mean Detects	3.867	SD Detects	2.274
Median Detects	3.2	CV Detects	0.588
Skewness Detects	1.206	Kurtosis Detects	N/A
Mean of Logged Detects	1.238	SD of Logged Detects	0.585

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.936	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.282	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2.622	KM Standard Error of Mean	0.566
KM SD	1.387	95% KM (BCA) UCL	N/A
95% KM (t) UCL	3.675	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	3.554	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	4.321	95% KM Chebyshev UCL	5.091
97.5% KM Chebyshev UCL	6.159	99% KM Chebyshev UCL	8.257

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	4.513	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.857	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	27.08	nu star (bias corrected)	N/A
Mean (detects)	3.867		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.296
Maximum	6.4	Median	0.01
SD	2.239	CV	1.728
k hat (MLE)	0.244	k star (bias corrected MLE)	0.237
Theta hat (MLE)	5.3	Theta star (bias corrected MLE)	5.466
nu hat (MLE)	4.4	nu star (bias corrected)	4.266
Adjusted Level of Significance (β)	0.0231		
Approximate Chi Square Value (4.27, α)	0.83	Adjusted Chi Square Value (4.27, β)	0.563
95% Gamma Approximate UCL (use when n>=50)	6.662	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	2.622	SD (KM)	1.387
Variance (KM)	1.924	SE of Mean (KM)	0.566
k hat (KM)	3.574	k star (KM)	2.457
nu hat (KM)	64.33	nu star (KM)	44.22
theta hat (KM)	0.734	theta star (KM)	1.067
80% gamma percentile (KM)	3.831	90% gamma percentile (KM)	4.863
95% gamma percentile (KM)	5.837	99% gamma percentile (KM)	7.97

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (44.22, α)	29.97	Adjusted Chi Square Value (44.22, β)	27.52
95% Gamma Approximate KM-UCL (use when n>=50)	3.869	95% Gamma Adjusted KM-UCL (use when n<50)	4.214

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.988	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level	

Lilliefors Test Statistic	0.217	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.552	Mean in Log Scale	-0.403
SD in Original Scale	2.089	SD in Log Scale	1.451
95% t UCL (assumes normality of ROS data)	2.847	95% Percentile Bootstrap UCL	2.762
95% BCA Bootstrap UCL	3.093	95% Bootstrap t UCL	4.858
95% H-UCL (Log ROS)	17.51		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.875	KM Geo Mean	2.398
KM SD (logged)	0.377	95% Critical H Value (KM-Log)	2.104
KM Standard Error of Mean (logged)	0.154	95% H-UCL (KM -Log)	3.407
KM SD (logged)	0.377	95% Critical H Value (KM-Log)	2.104
KM Standard Error of Mean (logged)	0.154		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.956	Mean in Log Scale	0.413
SD in Original Scale	1.83	SD in Log Scale	0.684
95% t UCL (Assumes normality)	3.09	95% H-Stat UCL	3.575

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	3.675

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PFO4DA

General Statistics

Total Number of Observations	9	Number of Distinct Observations	2
Number of Detects	1	Number of Non-Detects	8
Number of Distinct Detects	1	Number of Distinct Non-Detects	1

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFO4DA was not processed!

PFO5DA

General Statistics

Total Number of Observations	9	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	9
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFO5DA was not processed!

PMPA

General Statistics

Total Number of Observations	9	Number of Distinct Observations	4
Number of Detects	3	Number of Non-Detects	6
Number of Distinct Detects	3	Number of Distinct Non-Detects	1
Minimum Detect	12	Minimum Non-Detect	10
Maximum Detect	19	Maximum Non-Detect	10
Variance Detects	14.33	Percent Non-Detects	66.67%
Mean Detects	14.67	SD Detects	3.786
Median Detects	13	CV Detects	0.258
Skewness Detects	1.597	Kurtosis Detects	N/A
Mean of Logged Detects	2.665	SD of Logged Detects	0.245

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.855	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.337	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	11.56	KM Standard Error of Mean	1.156
KM SD	2.833	95% KM (BCA) UCL	N/A
95% KM (t) UCL	13.71	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	13.46	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	15.02	95% KM Chebyshev UCL	16.6
97.5% KM Chebyshev UCL	18.78	99% KM Chebyshev UCL	23.06

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	24.19	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.606	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	145.1	nu star (bias corrected)	N/A
Mean (detects)	14.67		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	6.395
Maximum	19	Median	4.456
SD	6.846	CV	1.071
k hat (MLE)	0.38	k star (bias corrected MLE)	0.327
Theta hat (MLE)	16.84	Theta star (bias corrected MLE)	19.54
nu hat (MLE)	6.835	nu star (bias corrected)	5.89
Adjusted Level of Significance (β)	0.0231		
Approximate Chi Square Value (5.89, α)	1.584	Adjusted Chi Square Value (5.89, β)	1.161
95% Gamma Approximate UCL (use when n>=50)	23.78	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	11.56	SD (KM)	2.833
Variance (KM)	8.025	SE of Mean (KM)	1.156
k hat (KM)	16.64	k star (KM)	11.17
nu hat (KM)	299.5	nu star (KM)	201
theta hat (KM)	0.694	theta star (KM)	1.035
80% gamma percentile (KM)	14.32	90% gamma percentile (KM)	16.15
95% gamma percentile (KM)	17.77	99% gamma percentile (KM)	21.08

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (201.01, α)	169.2	Adjusted Chi Square Value (201.01, β)	163
95% Gamma Approximate KM-UCL (use when n>=50)	13.73	95% Gamma Adjusted KM-UCL (use when n<50)	14.25

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.876	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.325	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	8.612	Mean in Log Scale	2
SD in Original Scale	5.148	SD in Log Scale	0.589
95% t UCL (assumes normality of ROS data)	11.8	95% Percentile Bootstrap UCL	11.38
95% BCA Bootstrap UCL	12.03	95% Bootstrap t UCL	12.94
95% H-UCL (Log ROS)	14.51		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.423	KM Geo Mean	11.28
KM SD (logged)	0.206	95% Critical H Value (KM-Log)	1.914
KM Standard Error of Mean (logged)	0.0842	95% H-UCL (KM -Log)	13.25
KM SD (logged)	0.206	95% Critical H Value (KM-Log)	1.914
KM Standard Error of Mean (logged)	0.0842		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	8.222	Mean in Log Scale	1.961
SD in Original Scale	5.191	SD in Log Scale	0.542
95% t UCL (Assumes normality)	11.44	95% H-Stat UCL	12.79

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	13.71

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PEPA

General Statistics

Total Number of Observations	9	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	9
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PEPA was not processed!

PFESA-BP1

General Statistics

Total Number of Observations	9	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	9
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFESA-BP1 was not processed!

PFESA-BP2

General Statistics

Total Number of Observations	9	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	9
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFESA-BP2 was not processed!

Byproduct 4

General Statistics

Total Number of Observations	9	Number of Distinct Observations	9
Number of Detects	8	Number of Non-Detects	1
Number of Distinct Detects	8	Number of Distinct Non-Detects	1
Minimum Detect	4.8	Minimum Non-Detect	2
Maximum Detect	8.9	Maximum Non-Detect	2

Variance Detects	1.868	Percent Non-Detects	11.11%
Mean Detects	6.638	SD Detects	1.367
Median Detects	6.7	CV Detects	0.206
Skewness Detects	0.265	Kurtosis Detects	-0.673
Mean of Logged Detects	1.874	SD of Logged Detects	0.208

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.963	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.172	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	6.122	KM Standard Error of Mean	0.674
KM SD	1.891	95% KM (BCA) UCL	7.078
95% KM (t) UCL	7.376	95% KM (Percentile Bootstrap) UCL	7.156
95% KM (z) UCL	7.231	95% KM Bootstrap t UCL	7.181
90% KM Chebyshev UCL	8.144	95% KM Chebyshev UCL	9.06
97.5% KM Chebyshev UCL	10.33	99% KM Chebyshev UCL	12.83

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.234	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.716	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.186	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.294	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	26.89	k star (bias corrected MLE)	16.89
Theta hat (MLE)	0.247	Theta star (bias corrected MLE)	0.393
nu hat (MLE)	430.2	nu star (bias corrected)	270.2
Mean (detects)	6.638		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	3.58	Mean	6.298
Maximum	8.9	Median	6.5
SD	1.635	CV	0.26
k hat (MLE)	15.46	k star (bias corrected MLE)	10.38
Theta hat (MLE)	0.407	Theta star (bias corrected MLE)	0.607
nu hat (MLE)	278.3	nu star (bias corrected)	186.9
Adjusted Level of Significance (β)	0.0231		
Approximate Chi Square Value (186.88, α)	156.3	Adjusted Chi Square Value (186.88, β)	150.3
95% Gamma Approximate UCL (use when n>=50)	7.532	95% Gamma Adjusted UCL (use when n<50)	7.828

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	6.122	SD (KM)	1.891

Variance (KM)	3.577	SE of Mean (KM)	0.674
k hat (KM)	10.48	k star (KM)	7.059
nu hat (KM)	188.6	nu star (KM)	127.1
theta hat (KM)	0.584	theta star (KM)	0.867
80% gamma percentile (KM)	7.93	90% gamma percentile (KM)	9.198
95% gamma percentile (KM)	10.34	99% gamma percentile (KM)	12.71

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (127.07, α)	102	Adjusted Chi Square Value (127.07, β)	97.3
95% Gamma Approximate KM-UCL (use when n>=50)	7.625	95% Gamma Adjusted KM-UCL (use when n<50)	7.995

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.965	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.168	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	6.332	Mean in Log Scale	1.817
SD in Original Scale	1.573	SD in Log Scale	0.259
95% t UCL (assumes normality of ROS data)	7.307	95% Percentile Bootstrap UCL	7.143
95% BCA Bootstrap UCL	7.189	95% Bootstrap t UCL	7.306
95% H-UCL (Log ROS)	7.619		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.743	KM Geo Mean	5.713
KM SD (logged)	0.414	95% Critical H Value (KM-Log)	2.149
KM Standard Error of Mean (logged)	0.147	95% H-UCL (KM -Log)	8.523
KM SD (logged)	0.414	95% Critical H Value (KM-Log)	2.149
KM Standard Error of Mean (logged)	0.147		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	6.011	Mean in Log Scale	1.666
SD in Original Scale	2.273	SD in Log Scale	0.654
95% t UCL (Assumes normality)	7.42	95% H-Stat UCL	11.79

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	7.376

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Byproduct 5

General Statistics

Total Number of Observations	9	Number of Distinct Observations	6
Number of Detects	6	Number of Non-Detects	3
Number of Distinct Detects	5	Number of Distinct Non-Detects	1
Minimum Detect	2.5	Minimum Non-Detect	2

Maximum Detect	19	Maximum Non-Detect	2
Variance Detects	40.2	Percent Non-Detects	33.33%
Mean Detects	7.317	SD Detects	6.34
Median Detects	4.85	CV Detects	0.867
Skewness Detects	1.583	Kurtosis Detects	2.341
Mean of Logged Detects	1.712	SD of Logged Detects	0.795

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.808	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.247	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.325	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	5.544	KM Standard Error of Mean	1.953
KM SD	5.349	95% KM (BCA) UCL	8.811
95% KM (t) UCL	9.177	95% KM (Percentile Bootstrap) UCL	8.811
95% KM (z) UCL	8.757	95% KM Bootstrap t UCL	15.44
90% KM Chebyshev UCL	11.4	95% KM Chebyshev UCL	14.06
97.5% KM Chebyshev UCL	17.74	99% KM Chebyshev UCL	24.98

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.432	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.705	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.287	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.336	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.948	k star (bias corrected MLE)	1.085
Theta hat (MLE)	3.756	Theta star (bias corrected MLE)	6.742
nu hat (MLE)	23.38	nu star (bias corrected)	13.02
Mean (detects)	7.317		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	4.881
Maximum	19	Median	3.1
SD	6.202	CV	1.271
k hat (MLE)	0.341	k star (bias corrected MLE)	0.302
Theta hat (MLE)	14.31	Theta star (bias corrected MLE)	16.19
nu hat (MLE)	6.141	nu star (bias corrected)	5.428
Adjusted Level of Significance (β)	0.0231		
Approximate Chi Square Value (5.43, α)	1.355	Adjusted Chi Square Value (5.43, β)	0.975
95% Gamma Approximate UCL (use when n>=50)	19.56	95% Gamma Adjusted UCL (use when n<50)	27.18

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	5.544	SD (KM)	5.349
Variance (KM)	28.61	SE of Mean (KM)	1.953
k hat (KM)	1.074	k star (KM)	0.79
nu hat (KM)	19.34	nu star (KM)	14.23
theta hat (KM)	5.161	theta star (KM)	7.016
80% gamma percentile (KM)	9.067	90% gamma percentile (KM)	13.52
95% gamma percentile (KM)	18.06	99% gamma percentile (KM)	28.8

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (14.23, α)	6.726	Adjusted Chi Square Value (14.23, β)	5.675
95% Gamma Approximate KM-UCL (use when n>=50)	11.73	95% Gamma Adjusted KM-UCL (use when n<50)	13.9

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.902	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.267	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	5.116	Mean in Log Scale	1.002
SD in Original Scale	6.004	SD in Log Scale	1.262
95% t UCL (assumes normality of ROS data)	8.838	95% Percentile Bootstrap UCL	8.551
95% BCA Bootstrap UCL	9.284	95% Bootstrap t UCL	13.81
95% H-UCL (Log ROS)	33.67		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.372	KM Geo Mean	3.945
KM SD (logged)	0.763	95% Critical H Value (KM-Log)	2.738
KM Standard Error of Mean (logged)	0.279	95% H-UCL (KM -Log)	11.04
KM SD (logged)	0.763	95% Critical H Value (KM-Log)	2.738
KM Standard Error of Mean (logged)	0.279		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	5.211	Mean in Log Scale	1.141
SD in Original Scale	5.924	SD in Log Scale	1.062
95% t UCL (Assumes normality)	8.883	95% H-Stat UCL	19.56

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	9.177

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Byproduct 6

General Statistics

Total Number of Observations	9	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	9
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Byproduct 6 was not processed!

NVHOS

General Statistics

Total Number of Observations	9	Number of Distinct Observations	7
		Number of Missing Observations	0
Minimum	6	Mean	6.533
Maximum	7.2	Median	6.6
SD	0.377	Std. Error of Mean	0.126
Coefficient of Variation	0.0578	Skewness	0.151

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.935	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.237	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	6.767	95% Adjusted-CLT UCL (Chen-1995)	6.747
		95% Modified-t UCL (Johnson-1978)	6.768

Gamma GOF Test

A-D Test Statistic	0.398	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.72	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.248	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.279	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	337.6	k star (bias corrected MLE)	225.1
Theta hat (MLE)	0.0194	Theta star (bias corrected MLE)	0.029
nu hat (MLE)	6076	nu star (bias corrected)	4052
MLE Mean (bias corrected)	6.533	MLE Sd (bias corrected)	0.435
		Approximate Chi Square Value (0.05)	3905
Adjusted Level of Significance	0.0231	Adjusted Chi Square Value	3874

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	6.779	95% Adjusted Gamma UCL (use when n<50)	6.833

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.935	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.829	Data appear Lognormal at 5% Significance Level

Lilliefors Test Statistic	0.247	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.274	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.792	Mean of logged Data	1.875
Maximum of Logged Data	1.974	SD of logged Data	0.0577

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	6.911
95% Chebyshev (MVUE) UCL	7.082	97.5% Chebyshev (MVUE) UCL	7.319
99% Chebyshev (MVUE) UCL	7.785		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	6.74	95% Jackknife UCL	6.767
95% Standard Bootstrap UCL	6.726	95% Bootstrap-t UCL	6.753
95% Hall's Bootstrap UCL	6.766	95% Percentile Bootstrap UCL	6.722
95% BCA Bootstrap UCL	6.733		
90% Chebyshev(Mean, Sd) UCL	6.911	95% Chebyshev(Mean, Sd) UCL	7.082
97.5% Chebyshev(Mean, Sd) UCL	7.319	99% Chebyshev(Mean, Sd) UCL	7.785

Suggested UCL to Use

95% Student's-t UCL	6.767

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

EVE Acid

General Statistics

Total Number of Observations	9	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	9
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable EVE Acid was not processed!

Hydro-EVE Acid

General Statistics

Total Number of Observations	9	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	9
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Hydro-EVE Acid was not processed!

R-EVE

General Statistics

Total Number of Observations	9	Number of Distinct Observations	7
Number of Detects	7	Number of Non-Detects	2
Number of Distinct Detects	6	Number of Distinct Non-Detects	1
Minimum Detect	2.7	Minimum Non-Detect	2
Maximum Detect	3.8	Maximum Non-Detect	2
Variance Detects	0.205	Percent Non-Detects	22.22%
Mean Detects	3.114	SD Detects	0.453
Median Detects	2.9	CV Detects	0.145
Skewness Detects	0.656	Kurtosis Detects	-1.519
Mean of Logged Detects	1.127	SD of Logged Detects	0.142

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.861	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.254	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.304	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2.867	KM Standard Error of Mean	0.213
KM SD	0.593	95% KM (BCA) UCL	3.167
95% KM (t) UCL	3.263	95% KM (Percentile Bootstrap) UCL	3.189
95% KM (z) UCL	3.218	95% KM Bootstrap t UCL	3.233
90% KM Chebyshev UCL	3.507	95% KM Chebyshev UCL	3.797
97.5% KM Chebyshev UCL	4.199	99% KM Chebyshev UCL	4.989

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.509	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.708	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.259	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.311	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	57.26	k star (bias corrected MLE)	32.81
Theta hat (MLE)	0.0544	Theta star (bias corrected MLE)	0.0949
nu hat (MLE)	801.6	nu star (bias corrected)	459.4
Mean (detects)	3.114		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	1.943	Mean	2.881

Maximum	3.8	Median	2.8
SD	0.609	CV	0.211
k hat (MLE)	24.35	k star (bias corrected MLE)	16.31
Theta hat (MLE)	0.118	Theta star (bias corrected MLE)	0.177
nu hat (MLE)	438.3	nu star (bias corrected)	293.5
Adjusted Level of Significance (β)	0.0231		
Approximate Chi Square Value (293.52, α)	254.8	Adjusted Chi Square Value (293.52, β)	247.2
95% Gamma Approximate UCL (use when n>=50)	3.319	95% Gamma Adjusted UCL (use when n<50)	3.421

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	2.867	SD (KM)	0.593
Variance (KM)	0.351	SE of Mean (KM)	0.213
k hat (KM)	23.41	k star (KM)	15.68
nu hat (KM)	421.3	nu star (KM)	282.2
theta hat (KM)	0.122	theta star (KM)	0.183
80% gamma percentile (KM)	3.452	90% gamma percentile (KM)	3.825
95% gamma percentile (KM)	4.152	99% gamma percentile (KM)	4.814

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (282.19, α)	244.3	Adjusted Chi Square Value (282.19, β)	236.8
95% Gamma Approximate KM-UCL (use when n>=50)	3.311	95% Gamma Adjusted KM-UCL (use when n<50)	3.416

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.866	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.242	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.304	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.905	Mean in Log Scale	1.049
SD in Original Scale	0.572	SD in Log Scale	0.199
95% t UCL (assumes normality of ROS data)	3.26	95% Percentile Bootstrap UCL	3.208
95% BCA Bootstrap UCL	3.216	95% Bootstrap t UCL	3.33
95% H-UCL (Log ROS)	3.33		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.031	KM Geo Mean	2.803
KM SD (logged)	0.214	95% Critical H Value (KM-Log)	1.922
KM Standard Error of Mean (logged)	0.0772	95% H-UCL (KM -Log)	3.318
KM SD (logged)	0.214	95% Critical H Value (KM-Log)	1.922
KM Standard Error of Mean (logged)	0.0772		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	2.644	Mean in Log Scale	0.877
SD in Original Scale	1.011	SD in Log Scale	0.512
95% t UCL (Assumes normality)	3.271	95% H-Stat UCL	4.114

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	3.263

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

PES

General Statistics

Total Number of Observations	9	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	9
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PES was not processed!

PFECA B

General Statistics

Total Number of Observations	9	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	9
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFECA B was not processed!

PFECA-G

General Statistics

Total Number of Observations	9	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	9
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PFECA-G was not processed!

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.111/13/2019 12:41:09 PM
User Selected Options	
From File	ProUCL_Inputdata_Aquatic.xls
Full Precision	OFF

From File: ProUCL_Inputdata_Aquatic.xls

Sediment General Statistics

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	6	0	1	5	83.33%	0.25	0.25	0.252	1.3889E-5	0.00373	0.0148
PFMOAA	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
PFO2HxA	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
PFO3OA	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
PFO4DA	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
PFO5DA	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
PMPA	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
PEPA	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
PFESA-BP1	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
PFESA-BP2	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
Byproduct 4	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
Byproduct 5	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
Byproduct 6	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
NVHOS	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
EVE Acid	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
Hydro-EVE Acid	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
R-EVE	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
PES	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
PFECA B	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A
PFECA-G	6	0	0	6	100.00%	1	1	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	1	0	0.26	0.26	0.26	0.26	N/A	N/A	0	N/A	N/A
PFMOAA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO2HxA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO3OA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO4DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO5DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PMPA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PEPA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP2	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 4	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 5	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R-EVE	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PES	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA B	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	6	0	0.25	0.25	0.25	0.25	0.25	0.25	0.255	0.258	0.26
PFMOAA	6	0	1	1	1	1	1	1	1	1	1
PFO2HxA	6	0	1	1	1	1	1	1	1	1	1
PFO3OA	6	0	1	1	1	1	1	1	1	1	1
PFO4DA	6	0	1	1	1	1	1	1	1	1	1
PFO5DA	6	0	1	1	1	1	1	1	1	1	1
PMPA	6	0	1	1	1	1	1	1	1	1	1
PEPA	6	0	1	1	1	1	1	1	1	1	1
PFESA-BP1	6	0	1	1	1	1	1	1	1	1	1
PFESA-BP2	6	0	1	1	1	1	1	1	1	1	1
Byproduct 4	6	0	1	1	1	1	1	1	1	1	1
Byproduct 5	6	0	1	1	1	1	1	1	1	1	1
Byproduct 6	6	0	1	1	1	1	1	1	1	1	1
NVHOS	6	0	1	1	1	1	1	1	1	1	1
EVE Acid	6	0	1	1	1	1	1	1	1	1	1
Hydro-EVE Acid	6	0	1	1	1	1	1	1	1	1	1
R-EVE	6	0	1	1	1	1	1	1	1	1	1
PES	6	0	1	1	1	1	1	1	1	1	1
PFECA B	6	0	1	1	1	1	1	1	1	1	1
PFECA-G	6	0	1	1	1	1	1	1	1	1	1

General Statistics on Uncensored Data

Date/Time of Computation ProUCL 5.111/13/2019 12:44:15 PM

User Selected Options

From File ProUCL_Inputdata_Aquatic_a.xls

Full Precision OFF

From File: ProUCL_Inputdata_Aquatic_a.xls

Aquatic Vegetation General Statistics

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	6	0	4	2	33.33%	1.3	1.3	7.817	82.74	9.096	1.164
PFMOAA	6	0	2	4	66.67%	1	1	84	18578	136.3	1.623
PFO2HxA	6	0	2	4	66.67%	1	1	11.83	241.5	15.54	1.313
PFO3OA	6	0	1	5	83.33%	1	2.4	1.025	0.00188	0.0433	0.0422
PFO4DA	6	0	2	4	66.67%	1	2.4	1.14	0.0784	0.28	0.246
PFO5DA	6	0	2	4	66.67%	1	2.4	1.18	0.0496	0.223	0.189
PMPA	6	0	2	4	66.67%	1	1	21.67	857.2	29.28	1.351
PEPA	6	0	1	5	83.33%	1	2.4	2.833	16.81	4.099	1.447
PFESA-BP1	6	0	0	6	100.00%	1	2.4	N/A	N/A	N/A	N/A
PFESA-BP2	6	0	0	6	100.00%	1	2.4	N/A	N/A	N/A	N/A
Byproduct 4	6	0	3	3	50.00%	1	1	1.567	0.669	0.818	0.522
Byproduct 5	6	0	0	6	100.00%	1	2.4	N/A	N/A	N/A	N/A
Byproduct 6	6	0	0	6	100.00%	1	2.4	N/A	N/A	N/A	N/A
NVHOS	6	0	1	5	83.33%	1	2.4	6.5	151.3	12.3	1.892
EVE Acid	6	0	0	6	100.00%	1	2.4	N/A	N/A	N/A	N/A
Hydro-EVE Acid	6	0	0	6	100.00%	1	2.4	N/A	N/A	N/A	N/A
R-EVE	6	0	2	4	66.67%	1	1	1.417	0.448	0.669	0.472
PES	6	0	0	6	100.00%	1	2.4	N/A	N/A	N/A	N/A
PFECA B	6	0	0	6	100.00%	1	2.4	N/A	N/A	N/A	N/A
PFECA-G	6	0	0	6	100.00%	1	2.4	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	4	0	2.1	26	11.08	8.1	123	11.09	8.08	1.036	1.001
PFMOAA	2	0	130	370	250	250	28800	169.7	177.9	N/A	0.679
PFO2HxA	2	0	29	38	33.5	33.5	40.5	6.364	6.672	N/A	0.19
PFO3OA	1	0	1.1	1.1	1.1	1.1	N/A	N/A	0	N/A	N/A
PFO4DA	2	0	1	1.7	1.35	1.35	0.245	0.495	0.519	N/A	0.367
PFO5DA	2	0	1.4	1.5	1.45	1.45	0.005	0.0707	0.0741	N/A	0.0488
PMPA	2	0	60	66	63	63	18	4.243	4.448	N/A	0.0673
PEPA	1	0	12	12	12	12	N/A	N/A	0	N/A	N/A
PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP2	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 4	3	0	1.4	3.3	2.133	1.7	1.043	1.021	0.445	1.565	0.479
Byproduct 5	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	1	0	34	34	34	34	N/A	N/A	0	N/A	N/A
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R-EVE	2	0	1.7	2.8	2.25	2.25	0.605	0.778	0.815	N/A	0.346
PES	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA B	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	6	0	1.3	1.3	1.5	2.65	10.55	13	19.5	22.75	25.35
PFMOAA	6	0	1	1	1	1	97.75	130	250	310	358
PFO2HxA	6	0	1	1	1	1	22	29	33.5	35.75	37.55
PFO3OA	6	0	1	1	1	1.05	1.25	1.3	1.85	2.125	2.345
PFO4DA	6	0	1	1	1	1.15	1.6	1.7	2.05	2.225	2.365
PFO5DA	6	0	1	1	1.075	1.35	1.475	1.5	1.95	2.175	2.355
PMPA	6	0	1	1	1	1	45.25	60	63	64.5	65.7
PEPA	6	0	1	1	1	1	2.05	2.4	7.2	9.6	11.52
PFESA-BP1	6	0	1	1	1	1	1.225	1.3	1.85	2.125	2.345
PFESA-BP2	6	0	1	1	1	1	1.225	1.3	1.85	2.125	2.345
Byproduct 4	6	0	1	1	1	1.2	1.625	1.7	2.5	2.9	3.22
Byproduct 5	6	0	1	1	1	1	1.225	1.3	1.85	2.125	2.345
Byproduct 6	6	0	1	1	1	1	1.225	1.3	1.85	2.125	2.345
NVHOS	6	0	1	1	1	1	2.05	2.4	18.2	26.1	32.42
EVE Acid	6	0	1	1	1	1	1.225	1.3	1.85	2.125	2.345
Hydro-EVE Acid	6	0	1	1	1	1	1.225	1.3	1.85	2.125	2.345
R-EVE	6	0	1	1	1	1	1.525	1.7	2.25	2.525	2.745
PES	6	0	1	1	1	1	1.225	1.3	1.85	2.125	2.345
PFECA B	6	0	1	1	1	1	1.225	1.3	1.85	2.125	2.345
PFECA-G	6	0	1	1	1	1	1.225	1.3	1.85	2.125	2.345

General Statistics on Uncensored Data

Date/Time of Computation ProUCL 5.111/13/2019 12:45:45 PM

User Selected Options

From File ProUCL_Inputdata_Aquatic_b.xls

Full Precision OFF

From File: ProUCL_Inputdata_Aquatic_b.xls

Largemouth Bass Fillet General Statistics

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PFMOAA	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PFO2HxA	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PFO3OA	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PFO4DA	4	0	2	2	50.00%	1000	1000	852.5	1017919	1009	1.183
PFO5DA	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PMPA	4	0	2	2	50.00%	1000	1000	320	2500	50	0.156
PEPA	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PFESA-BP1	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PFESA-BP2	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
Byproduct 4	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
Byproduct 5	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
Byproduct 6	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
NVHOS	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
EVE Acid	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
Hydro-EVE Acid	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
R-EVE	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PES	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PFECA B	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PFECA-G	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFMOAA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO2HxA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO3OA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO4DA	2	0	270	2600	1435	1435	2714450	1648	1727	N/A	1.148
PFO5DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PMPA	2	0	270	370	320	320	5000	70.71	74.13	N/A	0.221
PEPA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP2	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 4	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 5	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R-EVE	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PES	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA B	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PFMOAA	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PFO2HxA	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PFO3OA	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PFO4DA	4	0	489	708	817.5	1000	1400	1640	2120	2360	2552
PFO5DA	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PMPA	4	0	300	330	345	685	1000	1000	1000	1000	1000
PEPA	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PFESA-BP1	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PFESA-BP2	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
Byproduct 4	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
Byproduct 5	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
Byproduct 6	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
NVHOS	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
EVE Acid	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
Hydro-EVE Acid	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
R-EVE	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PES	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PFECA B	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PFECA-G	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.112/2/2019 1:22:19 PM
User Selected Options	
From File	Fish_ProUCL Input_ReRun.xls
Full Precision	OFF

From File: Fish_ProUCL Input_ReRun.xls

Largemouth Bass Whole Body General Statistics

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	2	0	0	2	100.00%	1000	1300	N/A	N/A	N/A	N/A
PFMOAA	2	0	1	1	50.00%	1000	1000	3050	4202500	2050	0.672
PFO2HxA	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFO3OA	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFO4DA	2	0	2	0	0.00%	N/A	N/A	1700	80000	282.8	0.166
PFO5DA	2	0	1	1	50.00%	1000	1000	1050	2500	50	0.0476
PMPA	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PEPA	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFESA-BP1	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFESA-BP2	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
Byproduct 4	2	0	1	1	50.00%	1000	1000	3700	7290000	2700	0.73
Byproduct 5	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
Byproduct 6	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
NVHOS	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
EVE Acid	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
Hydro-EVE Acid	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
R-EVE	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PES	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFECA B	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFECA-G	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFMOAA	1	0	5100	5100	5100	5100	N/A	N/A	0	N/A	N/A
PFO2HxA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO3OA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO4DA	2	0	1500	1900	1700	1700	80000	282.8	296.5	N/A	0.166
PFO5DA	1	0	1100	1100	1100	1100	N/A	N/A	0	N/A	N/A
PMPA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PEPA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP2	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 4	1	0	6400	6400	6400	6400	N/A	N/A	0	N/A	N/A
Byproduct 5	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R-EVE	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PES	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA B	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	2	0	1030	1060	1075	1150	1225	1240	1270	1285	1297
PFMOAA	2	0	1410	1820	2025	3050	4075	4280	4690	4895	5059
PFO2HxA	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFO3OA	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFO4DA	2	0	1540	1580	1600	1700	1800	1820	1860	1880	1896
PFO5DA	2	0	1010	1020	1025	1050	1075	1080	1090	1095	1099
PMPA	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PEPA	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFESA-BP1	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFESA-BP2	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Byproduct 4	2	0	1540	2080	2350	3700	5050	5320	5860	6130	6346
Byproduct 5	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Byproduct 6	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
NVHOS	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
EVE Acid	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydro-EVE Acid	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
R-EVE	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PES	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFECA B	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFECA-G	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.112/2/2019 1:23:18 PM
User Selected Options	
From File	Fish_ProUCL Input_ReRun_a.xls
Full Precision	OFF

From File: Fish_ProUCL Input_ReRun_a.xls

Dusky and Comely Shiner General Statistics

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFMOAA	2	0	1	1	50.00%	1000	1000	2100	1210000	1100	0.524
PFO2HxA	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFO3OA	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFO4DA	2	0	2	0	0.00%	N/A	N/A	5550	1125000	1061	0.191
PFO5DA	2	0	2	0	0.00%	N/A	N/A	2400	980000	989.9	0.412
PMPA	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PEPA	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFESA-BP1	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFESA-BP2	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
Byproduct 4	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
Byproduct 5	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
Byproduct 6	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
NVHOS	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
EVE Acid	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
Hydro-EVE Acid	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
R-EVE	2	0	1	1	50.00%	1000	1000	2600	2560000	1600	0.615
PES	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFECA B	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFECA-G	2	0	0	2	100.00%	1000	1000	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFMOAA	1	0	3200	3200	3200	3200	N/A	N/A	0	N/A	N/A
PFO2HxA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO3OA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO4DA	2	0	4800	6300	5550	5550	1125000	1061	1112	N/A	0.191
PFO5DA	2	0	1700	3100	2400	2400	980000	989.9	1038	N/A	0.412
PMPA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PEPA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP2	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 4	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 5	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R-EVE	1	0	4200	4200	4200	4200	N/A	N/A	0	N/A	N/A
PES	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA B	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFMOAA	2	0	1220	1440	1550	2100	2650	2760	2980	3090	3178
PFO2HxA	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFO3OA	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFO4DA	2	0	4950	5100	5175	5550	5925	6000	6150	6225	6285
PFO5DA	2	0	1840	1980	2050	2400	2750	2820	2960	3030	3086
PMPA	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PEPA	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFESA-BP1	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFESA-BP2	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Byproduct 4	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Byproduct 5	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Byproduct 6	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
NVHOS	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
EVE Acid	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydro-EVE Acid	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
R-EVE	2	0	1320	1640	1800	2600	3400	3560	3880	4040	4168
PES	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFECA B	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFECA-G	2	0	1000	1000	1000	1000	1000	1000	1000	1000	1000

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.111/13/2019 12:52:05 PM
User Selected Options	
From File	ProUCL_Inputdata_Aquatic_d.xls
Full Precision	OFF

From File: ProUCL_Inputdata_Aquatic_d.xls

Sunfish Whole Body General Statistics

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	4	0	0	4	100.00%	2200	10000	N/A	N/A	N/A	N/A
PFMOAA	4	0	4	0	0.00%	N/A	N/A	4125	589167	767.6	0.186
PFO2HxA	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PFO3OA	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PFO4DA	4	0	4	0	0.00%	N/A	N/A	18420	4.288E+8	20707	1.124
PFO5DA	4	0	4	0	0.00%	N/A	N/A	882.5	307425	554.5	0.628
PMPA	4	0	3	1	25.00%	1000	1000	670	504600	710.4	1.06
PEPA	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PFESA-BP1	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PFESA-BP2	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
Byproduct 4	4	0	3	1	25.00%	1000	1000	526.7	21089	145.2	0.276
Byproduct 5	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
Byproduct 6	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
NVHOS	4	0	1	3	75.00%	1000	1000	710	0	0	N/A
EVE Acid	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
Hydro-EVE Acid	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
R-EVE	4	0	3	1	25.00%	1000	1000	1136	835523	914.1	0.804
PES	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PFECA B	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A
PFECA-G	4	0	0	4	100.00%	1000	1100	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFMOAA	4	0	3000	4700	4125	4400	589167	767.6	296.5	-1.733	0.186
PFO2HxA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO3OA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO4DA	4	0	580	41000	18420	16050	4.288E+8	20707	22550	0.197	1.124
PFO5DA	4	0	470	1700	882.5	680	307425	554.5	177.9	1.793	0.628
PMPA	3	0	240	1900	806.7	280	896933	947.1	59.3	1.729	1.174
PEPA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP2	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 4	3	0	400	730	526.7	450	31633	177.9	74.13	1.579	0.338
Byproduct 5	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	1	0	710	710	710	710	N/A	N/A	0	N/A	N/A
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R-EVE	3	0	450	2700	1310	780	1476300	1215	489.3	1.589	0.928
PES	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA B	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	4	0	2830	3460	3775	4750	6400	7120	8560	9280	9856
PFMOAA	4	0	3390	3780	3975	4400	4550	4580	4640	4670	4694
PFO2HxA	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PFO3OA	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PFO4DA	4	0	736	892	970	16050	33500	35000	38000	39500	40700
PFO5DA	4	0	524	578	605	680	957.5	1106	1403	1552	1670
PMPA	4	0	252	264	270	640	1225	1360	1630	1765	1873
PEPA	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PFESA-BP1	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PFESA-BP2	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
Byproduct 4	4	0	415	430	437.5	590	797.5	838	919	959.5	991.9
Byproduct 5	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
Byproduct 6	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
NVHOS	4	0	797	884	927.5	1000	1000	1000	1000	1000	1000
EVE Acid	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
Hydro-EVE Acid	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
R-EVE	4	0	549	648	697.5	890	1425	1680	2190	2445	2649
PES	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PFECA B	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097
PFECA-G	4	0	1000	1000	1000	1000	1025	1040	1070	1085	1097

General Statistics on Uncensored Data

Date/Time of Computation ProUCL 5.111/13/2019 12:46:34 PM

User Selected Options

From File ProUCL_Inputdata_Aquatic_c.xls

Full Precision OFF

From File: ProUCL_Inputdata_Aquatic_c.xls

Catfish Fillet General Statistics

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
PFMOAA	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
PFO2HxA	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
PFO3OA	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
PFO4DA	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
PFO5DA	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
PMPA	6	0	2	4	66.67%	1000	1000	275	25	5	0.0182
PEPA	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
PFESA-BP1	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
PFESA-BP2	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
Byproduct 4	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
Byproduct 5	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
Byproduct 6	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
NVHOS	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
EVE Acid	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
Hydro-EVE Acid	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
R-EVE	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
PES	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
PFECA B	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A
PFECA-G	6	0	0	6	100.00%	1000	1200	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFMOAA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO2HxA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO3OA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO4DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO5DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PMPA	2	0	270	280	275	275	50	7.071	7.413	N/A	0.0257
PEPA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP2	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 4	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 5	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R-EVE	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PES	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA B	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
PFMOAA	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
PFO2HxA	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
PFO3OA	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
PFO4DA	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
PFO5DA	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
PMPA	6	0	275	280	460	1000	1000	1000	1000	1000	1000
PEPA	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
PFESA-BP1	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
PFESA-BP2	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
Byproduct 4	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
Byproduct 5	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
Byproduct 6	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
NVHOS	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
EVE Acid	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
Hydro-EVE Acid	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
R-EVE	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
PES	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
PFECA B	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190
PFECA-G	6	0	1000	1000	1000	1000	1000	1000	1100	1150	1190

General Statistics on Uncensored Data

Date/Time of Computation	ProUCL 5.112/2/2019 1:23:54 PM
User Selected Options	
From File	Fish_ProUCL Input_ReRun_b.xls
Full Precision	OFF

From File: Fish_ProUCL Input_ReRun_b.xls

American Eel General Statistics

General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method

Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
Hfpo Dimer Acid	1	0	1	0	0.00%	N/A	N/A	N/A	N/A	N/A	N/A
PFMOAA	0	1	0	0	NaN%	N/A	N/A	N/A	N/A	N/A	N/A
PFO2HxA	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFO3OA	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFO4DA	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFO5DA	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
PMPA	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
PEPA	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFESA-BP1	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFESA-BP2	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
Byproduct 4	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
Byproduct 5	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
Byproduct 6	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
NVHOS	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
EVE Acid	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
Hydro-EVE Acid	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
R-EVE	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
PES	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFECA B	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A
PFECA-G	1	0	0	1	100.00%	1000	1000	N/A	N/A	N/A	N/A

General Statistics for Raw Data Sets using Detected Data Only

Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.675	Skewness	CV
Hfpo Dimer Acid	1	0	1000	1000	1000	1000	N/A	N/A	0	N/A	N/A
PFMOAA	0	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO2HxA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO3OA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO4DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO5DA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PMPA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PEPA	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP1	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFESA-BP2	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 4	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 5	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Byproduct 6	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NVHOS	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hydro-EVE Acid	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R-EVE	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PES	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA B	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFECA-G	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percentiles using all Detects (Ds) and Non-Detects (NDs)

Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
Hfpo Dimer Acid	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFMOAA	0	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PFO2HxA	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFO3OA	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFO4DA	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFO5DA	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PMPA	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PEPA	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFESA-BP1	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFESA-BP2	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Byproduct 4	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Byproduct 5	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Byproduct 6	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
NVHOS	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
EVE Acid	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydro-EVE Acid	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
R-EVE	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PES	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFECA B	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000
PFECA-G	1	0	1000	1000	1000	1000	1000	1000	1000	1000	1000

APPENDIX E
Laboratory Report and Data Validation Summaries

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

ADQM DATA REVIEW
NARRATIVE

Site	**Chemours FAY – Fayetteville**
Project	**2019 SLEA Sampling (updated)**
Project Reviewer	**Michael Aucoin, AECOM as a Chemours contractor**
Sampling Dates	**July 24, 25, 30, and 31, 2019** **August 1, 2, 13 - 16, 19 – 23, and 27, 2019** **September 10 -13, and 23 – 27, 2019** **October 21, 2019**

Analytical Protocol

Laboratory	Analytical Method	Parameter(s)
TestAmerica - Sacramento	537 Modified	PFAS[1]
TestAmerica - Sacramento	Cl. Spec. Table 3 Compound SOP	Table 3+ compounds
TestAmerica – Sacramento/Denver/Seattle	9060A	Total Organic Carbon
TestAmerica - Sacramento	D2216-90	Percent Moisture

[1] Perfluoroalkylsubstances, a list of 33 or 37 compounds including HFPO-DA.

Sample Receipt

The following items are noted for this data set:

- All samples were received in satisfactory condition and within EPA temperature guidelines on:
    - August 1, 3, 6, 16, 21, 23, 24, and 28, 2019.
    - September 13, 17, 25, 27, and 30, 2019
    - October 23, 2019

Data Review

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

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

- Non-detect results for Byproduct 4, Byproduct 5, PFECA-G, PFMOAA, PFO4DA, and R-EVE in one or more soil or tissue samples were qualified R and are considered to be unusable due to very poor matrix spike (MS) relative percent recoveries (RPR).
- The result for PFBS in one tissue sample has been qualified B, and may be biased high, or may be a false positive, because an associated lab method blank contained a comparable concentration.

- Several analytical results have been qualified J as estimated, and non-detect results qualified UJ indicating an estimated reporting limit, due to poor or very poor recovery of surrogate, laboratory blank spike, or matrix spike compounds; sample preparation and/or analysis which exceeded the laboratory hold times; and poor field duplicate or lab replicate precision. See the Data Verification Module (DVM) Narrative Report for which samples were qualified, the specific reasons for qualification, and potential bias in reported results.

Attachments

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

Data Verification Module (DVM)

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

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

There are two qualifier fields in EIM:

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

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

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

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

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

DVM Narrative Report

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-SOIL-4-4.5-082219	08/22/2019	320-53607-11	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-SOIL-4-4.5-082219	08/22/2019	320-53607-11	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-SOIL-4-4.5-082219	08/22/2019	320-53607-11	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-SOIL-4-4.5-082219	08/22/2019	320-53607-11	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-SOIL-4-4.5-082219	08/22/2019	320-53607-11	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-SOIL-4-4.5-082219	08/22/2019	320-53607-11	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-3-veg	07/31/2019	320-52871-2	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-SOIL-4-4.5-081519	08/15/2019	320-53349-8	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-SOIL-4-4.5-081519	08/15/2019	320-53349-8	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-SOIL-4-4.5-081519	08/15/2019	320-53349-8	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-SOIL-4-4.5-081519	08/15/2019	320-53349-8	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-SOIL-4-4.5-081519	08/15/2019	320-53349-8	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-SOIL-4-4.5-081519	08/15/2019	320-53349-8	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
										SOP		
EU-5-VEG-082319	08/23/2019	320-53637-2	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-6-SOIL-4-4.5-081519	08/15/2019	320-53349-9	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-6-SOIL-4-4.5-081519	08/15/2019	320-53349-9	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-Soil-4-4.5-081419	08/14/2019	320-53349-4	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-Soil-4-4.5-081419	08/14/2019	320-53349-4	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-Soil-4-4.5-081419	08/14/2019	320-53349-4	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-Soil-4-4.5-081419	08/14/2019	320-53349-4	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-Soil-4-4.5-081419	08/14/2019	320-53349-4	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-Soil-4-4.5-081419	08/14/2019	320-53349-4	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-Soil-4-4.5-081319	08/13/2019	320-53349-1	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-Soil-4-4.5-081319	08/13/2019	320-53349-1	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-Soil-4-4.5-081319	08/13/2019	320-53349-1	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-Soil-4-4.5-081319	08/13/2019	320-53349-1	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-Soil-4-4.5-081319	08/13/2019	320-53349-1	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-8-Soil-4-4.5-081319	08/13/2019	320-53349-1	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-Soil-4-4.5-081319-D	08/13/2019	320-53349-2	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-Soil-4-4.5-081319-D	08/13/2019	320-53349-2	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-Soil-4-4.5-081319-D	08/13/2019	320-53349-2	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-Soil-4-4.5-081319-D	08/13/2019	320-53349-2	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-Soil-4-4.5-081319-D	08/13/2019	320-53349-2	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-Soil-4-4.5-081319-D	08/13/2019	320-53349-2	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFO4DA	1.3	UG/KG	PQL		1.3	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFO4DA	1.3	UG/KG	PQL		1.3	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFMOAA	1.3	UG/KG	PQL		1.3	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFMOAA	1.3	UG/KG	PQL		1.3	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFECA-G	1.3	UG/KG	PQL		1.3	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFECA-G	1.3	UG/KG	PQL		1.3	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFO4DA	1.2	UG/KG	PQL		1.2	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFO4DA	1.2	UG/KG	PQL		1.2	R	Cl. Spec. Table 3 Compound		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
										SOP		
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFMOAA	1.2	UG/KG	PQL		1.2	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFMOAA	1.2	UG/KG	PQL		1.2	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFECA-G	1.2	UG/KG	PQL		1.2	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFECA-G	1.2	UG/KG	PQL		1.2	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PFECA-G	1.0	UG/KG	PQL		1.2	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PFECA-G	1.2	UG/KG	PQL		1.2	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PFMOAA	1.2	UG/KG	PQL		1.2	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PFMOAA	1.2	UG/KG	PQL		1.2	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFMOAA	1.0	UG/KG	PQL		1.1	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFMOAA	1.1	UG/KG	PQL		1.1	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORMSOIL-092619	09/26/2019	320-54770-3	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORMSOIL-092619	09/26/2019	320-54770-3	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORMSOIL-092619	09/26/2019	320-54770-3	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORMSOIL-092619	09/26/2019	320-54770-3	Byproduct 4	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SEEP-D-WORMSOIL-092619	09/26/2019	320-54770-3	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORMSOIL-092619	09/26/2019	320-54770-3	Byproduct 5	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-CFR-ACINV-01-20191021	10/21/2019	320-55583-18	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-CFR-ACINV-01-20191021	10/21/2019	320-55583-18	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-CFR-ACINV-02-20191021	10/21/2019	320-55583-19	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-CFR-ACINV-02-20191021	10/21/2019	320-55583-19	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-CFR-ACINV-03-20191021	10/21/2019	320-55583-20	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-CFR-ACINV-03-20191021	10/21/2019	320-55583-20	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-SOIL-092419	09/24/2019	320-54699-6	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-SOIL-092419	09/24/2019	320-54699-6	R-EVE	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED6-VEG-20191021	10/21/2019	320-55583-6	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED6-VEG-20191021	10/21/2019	320-55583-6	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PFMOAA	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PFECA-G	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PFECA-G	1.0	UG/KG	PQL		1.0	R	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU2-veg	07/25/2019	320-52868-7	Perfluorobutane Sulfonic Acid	1.5	UG/KG	PQL		1.0	B	537 Modified		Shake_Bath_14D

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-7-Soil-4-4.5-081419	08/14/2019	320-53349-4	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-Soil-4-4.5-081419	08/14/2019	320-53349-4	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-5-INV-082319	08/23/2019	320-53637-3	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-04-Redbreast	09/27/2019	320-54836-14	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Channel catfish	09/27/2019	320-54836-15	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Channel catfish	09/27/2019	320-54836-15	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-02-Redbreast	09/27/2019	320-54836-12	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-02-Redbreast	09/27/2019	320-54836-12	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-03-Redbreast	09/27/2019	320-54836-13	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-03-Redbreast	09/27/2019	320-54836-13	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-04-Redbreast	09/27/2019	320-54836-14	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	N-ethylperfluoro-1-octanesulfonamide	4.8	UG/KG	PQL		4.8	UJ	537 Modified		Shake_Bath_14D
SLEA-SED3-VEG-20191021	10/21/2019	320-55583-3	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SLEA-CFR-INV-01-02-03 COMP	10/21/2019	320-55583-21	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SLEA-CFR-INV-01-02-03 COMP	10/21/2019	320-55583-21	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SLEA-SED3-VEG-20191021	10/21/2019	320-55583-3	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SLEA-SED3-VEG-20191021	10/21/2019	320-55583-3	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SLEA-SED1-VEG-20191021	10/21/2019	320-55583-1	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SLEA-SED1-VEG-20191021	10/21/2019	320-55583-1	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SLEA-SED3-VEG-20191021	10/21/2019	320-55583-3	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SLEA-SED4-20191021	10/21/2019	320-55583-10	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
SLEA-SED4-20191021	10/21/2019	320-55583-10	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
SLEA-CFR-ACINV-03-20191021	10/21/2019	320-55583-20	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SLEA-CFR-ACINV-03-20191021	10/21/2019	320-55583-20	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SLEA-CFR-ACINV-03-20191021	10/21/2019	320-55583-20	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SLEA-CFR-ACINV-02-20191021	10/21/2019	320-55583-19	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SLEA-CFR-ACINV-02-20191021	10/21/2019	320-55583-19	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SLEA-CFR-ACINV-02-20191021	10/21/2019	320-55583-19	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SLEA-CFR-ACINV-01-20191021	10/21/2019	320-55583-18	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SEEP-C-WORMSOIL-092619	09/26/2019	320-54770-6	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
Seep B-02-Redbreast Sunfish	09/26/2019	320-54836-8	Perfluorooctadecanoic acid	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
Seep B-02-Redbreast Sunfish	09/26/2019	320-54836-8	Perfluorohexadecanoic acid (PFHxDA)	1.7	UG/KG	PQL		1.7	UJ	537 Modified		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason Surrogates had relative percent recovery (RPR) values less than the lower control limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-8-Soil-4-4.5-081319-D	08/13/2019	320-53349-2	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-Soil-4-4.5-081319-D	08/13/2019	320-53349-2	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-5-SOIL-4-4.5-081519	08/15/2019	320-53349-8	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-5-SOIL-4-4.5-081519	08/15/2019	320-53349-8	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values less than the lower control limit but above 10%. The actual detection limits may be higher than reported.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-9-INV-082119	08/21/2019	320-53607-3	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA SAMPLING **Validation Options:** LABSTATS

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values less than the lower control limit but above 10%. The actual detection limits may be higher than reported.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-9-INV-082119	08/21/2019	320-53607-3	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values less than the lower control limit but above 10%. The actual detection limits may be higher than reported.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
										SOP		
EU-11-inv	07/31/2019	320-52871-17	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	Byproduct 4	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	Byproduct 4	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	Byproduct 5	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values less than the lower control limit but above 10%. The actual detection limits may be higher than reported.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-10-INV-082119	08/21/2019	320-53607-6	Byproduct 5	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	10:2 Fluorotelomer sulfonate	4.2	UG/KG	PQL		4.2	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	10:2 Fluorotelomer sulfonate	1.5	UG/KG	PQL		1.5	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	10:2 Fluorotelomer sulfonate	7.3	UG/KG	PQL		7.3	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	10:2 Fluorotelomer sulfonate	1.5	UG/KG	PQL		1.5	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	10:2 Fluorotelomer sulfonate	3.0	UG/KG	PQL		3.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	Hfpo Dimer Acid	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	Hfpo Dimer Acid	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PFECA B	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PFECA B	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PEPA	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PEPA	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PFESA-BP1	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PFESA-BP1	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PFO2HxA	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PFO2HxA	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values less than the lower control limit but above 10%. The actual detection limits may be higher than reported.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-10-INV-082119	08/21/2019	320-53607-6	PFO3OA	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PFO3OA	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PFO4DA	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PFO4DA	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PFESA-BP2	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PFESA-BP2	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PFECA-G	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PFECA-G	1.7	UG/KG	PQL		1.7	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED6-20191021	10/21/2019	320-55583-12	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED6-20191021	10/21/2019	320-55583-12	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-EQBLK-091119	09/11/2019	320-54392-3	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SLEA-EQBLK-091119	09/11/2019	320-54392-3	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SLEA-SED2-20191021	10/21/2019	320-55583-8	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED2-20191021	10/21/2019	320-55583-8	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED3-20191021	10/21/2019	320-55583-9	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED3-20191021	10/21/2019	320-55583-9	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED3-20191021-DUP	10/21/2019	320-55583-13	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values less than the lower control limit but above 10%. The actual detection limits may be higher than reported.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
SLEA-SED3-20191021-DUP	10/21/2019	320-55583-13	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED1-20191021	10/21/2019	320-55583-7	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED1-20191021	10/21/2019	320-55583-7	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-EQBLK-091319	09/13/2019	320-54392-4	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SLEA-EQBLK-091319	09/13/2019	320-54392-4	PFO5DA	0.0020	ug/L	PQL		0.0020	UJ	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
SLEA-SED4-20191021	10/21/2019	320-55583-10	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-20191021	10/21/2019	320-55583-10	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED5-20191021	10/21/2019	320-55583-11	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED5-20191021	10/21/2019	320-55583-11	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep B-01-Spotted bass	09/24/2019	320-54836-2	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	10:2 Fluorotelomer sulfonate	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	10:2 Fluorotelomer sulfonate	5.9	UG/KG	PQL		5.9	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	10:2 Fluorotelomer sulfonate	6.1	UG/KG	PQL		6.1	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
Pond-1-NE-072419	07/24/2019	280-126823-2	Perfluorooctadecanoic acid	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC
Pond-1-SE-072419-2	07/24/2019	280-126823-1	Perfluorooctadecanoic acid	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values less than the lower control limit but above 10%. The actual detection limits may be higher than reported.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
Pond-1-NW-072419	07/24/2019	280-126823-3	Perfluorooctadecanoic acid	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC
Pond-1-SE-072419	07/24/2019	280-126823-4	Perfluorooctadecanoic acid	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC
EU6-inv	07/25/2019	320-52868-12	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Validation Reason Associated LCS and/or LCSD analysis had relative percent recovery (RPR) values less than the lower control limit but above 10%. The actual detection limits may be higher than reported.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU6-inv	07/25/2019	320-52868-12	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU2-veg	07/25/2019	320-52868-7	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
										SOP		
EU-7-VEG-081919	08/19/2019	320-53490-5	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-INV-081619	08/16/2019	320-53490-9	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-INV-081619	08/16/2019	320-53490-9	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-INV-081619	08/16/2019	320-53490-9	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-INV-081619	08/16/2019	320-53490-9	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-INV-081619	08/16/2019	320-53490-9	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-INV-081619	08/16/2019	320-53490-9	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-VEG-081619	08/16/2019	320-53490-8	PFMOAA	5.0	UG/KG	PQL		8.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-VEG-081619	08/16/2019	320-53490-8	PFMOAA	8.1	UG/KG	PQL		8.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-7-VEG-081919	08/19/2019	320-53490-5	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-Soil-4-4.5-081419	08/14/2019	320-53349-4	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-Soil-4-4.5-081419	08/14/2019	320-53349-4	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-6-SOIL-4-4.5-081519	08/15/2019	320-53349-9	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-6-SOIL-4-4.5-081519	08/15/2019	320-53349-9	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
EU-5-VEG-082319	08/23/2019	320-53637-2	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-4-VEG-081919	08/19/2019	320-53490-2	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
										SOP		
EU-3-veg	07/31/2019	320-52871-2	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-INV-081919	08/19/2019	320-53490-3	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-INV-081919	08/19/2019	320-53490-3	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-INV-081919	08/19/2019	320-53490-3	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-INV-081919	08/19/2019	320-53490-3	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
EU-2-SOIL-4-4.5-082219	08/22/2019	320-53607-10	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-2-SOIL-4-4.5-082219	08/22/2019	320-53607-10	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-2-SOIL-4-4.5-082219	08/22/2019	320-53607-10	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-2-SOIL-4-4.5-082219	08/22/2019	320-53607-10	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-2-SOIL-4-4.5-082219	08/22/2019	320-53607-10	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-2-SOIL-4-4.5-082219	08/22/2019	320-53607-10	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-12-VEG-082019	08/20/2019	320-53490-13	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-Soil-4-4.5-081419	08/14/2019	320-53349-5	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-Soil-4-4.5-081419	08/14/2019	320-53349-5	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-Soil-4-4.5-081419	08/14/2019	320-53349-5	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-Soil-4-4.5-081419	08/14/2019	320-53349-5	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-Soil-4-4.5-081419	08/14/2019	320-53349-5	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-1-Soil-4-4.5-081419	08/14/2019	320-53349-5	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	PMPA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-INV-091219	09/12/2019	320-54302-5	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
EU-1-INV-091219	09/12/2019	320-54302-5	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-INV-091219	09/12/2019	320-54302-5	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-INV-091219	09/12/2019	320-54302-5	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-INV-091219	09/12/2019	320-54302-5	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-INV-091219	09/12/2019	320-54302-5	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-INV-091219	09/12/2019	320-54302-5	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-INV-091219	09/12/2019	320-54302-5	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-INV-091219	09/12/2019	320-54302-5	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-INV-091219	09/12/2019	320-54302-5	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-INV-091219	09/12/2019	320-54302-5	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-INV-091219	09/12/2019	320-54302-5	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-INV-091219	09/12/2019	320-54302-5	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-INV-091219	09/12/2019	320-54302-5	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-VEG-091219	09/12/2019	320-54302-4	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-VEG-091219	09/12/2019	320-54302-4	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
WC-WORM-092419	09/24/2019	320-54699-11	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED6-VEG-20191021	10/21/2019	320-55583-6	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED6-VEG-20191021	10/21/2019	320-55583-6	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED6-VEG-20191021	10/21/2019	320-55583-6	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED6-VEG-20191021	10/21/2019	320-55583-6	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED6-VEG-20191021	10/21/2019	320-55583-6	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED6-VEG-20191021	10/21/2019	320-55583-6	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED6-VEG-20191021	10/21/2019	320-55583-6	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED6-VEG-20191021	10/21/2019	320-55583-6	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
WC-WORM-092419	09/24/2019	320-54699-11	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-CFR-ACINV-03-20191021	10/21/2019	320-55583-20	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-CFR-ACINV-03-20191021	10/21/2019	320-55583-20	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED2-VEG-20191021	10/21/2019	320-55583-2	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED2-VEG-20191021	10/21/2019	320-55583-2	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED2-VEG-20191021	10/21/2019	320-55583-2	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED2-VEG-20191021	10/21/2019	320-55583-2	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED1-20191021	10/21/2019	320-55583-7	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED1-20191021	10/21/2019	320-55583-7	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SLEA-SED1-VEG-20191021	10/21/2019	320-55583-1	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED1-VEG-20191021	10/21/2019	320-55583-1	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED1-VEG-20191021	10/21/2019	320-55583-1	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED1-VEG-20191021	10/21/2019	320-55583-1	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	PFECA B	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	PFECA B	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	PFO3OA	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	PFO3OA	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	PFO4DA	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	PFO4DA	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	EVE Acid	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	EVE Acid	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	PFECA-G	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	PFECA-G	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED5-VEG-20191021	10/21/2019	320-55583-5	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED5-VEG-20191021	10/21/2019	320-55583-5	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-CFR-ACINV-02-20191021	10/21/2019	320-55583-19	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
SLEA-CFR-ACINV-02-20191021	10/21/2019	320-55583-19	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-CFR-ACINV-03-20191021	10/21/2019	320-55583-20	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-CFR-ACINV-03-20191021	10/21/2019	320-55583-20	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-CFR-ACINV-01-20191021	10/21/2019	320-55583-18	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-CFR-ACINV-01-20191021	10/21/2019	320-55583-18	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-CFR-ACINV-02-20191021	10/21/2019	320-55583-19	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-CFR-ACINV-02-20191021	10/21/2019	320-55583-19	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	EVE Acid	1.0	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	EVE Acid	1.1	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	Byproduct 6	1.0	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	Byproduct 6	1.1	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PES	1.0	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PES	1.1	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PMPA	1.0	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PMPA	1.1	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFECA B	1.0	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFECA B	1.1	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFESA-BP1	1.0	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFESA-BP1	1.1	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	EVE Acid	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	EVE Acid	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PES	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PES	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PMPA	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PMPA	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PFECA B	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PFECA B	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	Byproduct 6	1.0	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	Byproduct 6	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PFESA-BP1	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PFESA-BP1	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-SOIL-092619	09/26/2019	320-54770-7	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-SOIL-092619	09/26/2019	320-54770-7	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
										SOP		
SEEP-C-SOIL-092619	09/26/2019	320-54770-7	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-SOIL-092619	09/26/2019	320-54770-7	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-SOIL-092619	09/26/2019	320-54770-7	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-SOIL-092619	09/26/2019	320-54770-7	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PFECA B	1.0	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PFECA B	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	EVE Acid	1.0	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	EVE Acid	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-SOIL-092519	09/25/2019	320-54770-9	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-SOIL-092519	09/25/2019	320-54770-9	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-SOIL-092519	09/25/2019	320-54770-9	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-SOIL-092519	09/25/2019	320-54770-9	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PES	1.0	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PES	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	EVE Acid	2.2	UG/KG	PQL		3.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	EVE Acid	3.2	UG/KG	PQL		3.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep C-02-Redbreast Sunfish	09/26/2019	320-54836-9	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep C-02-Redbreast Sunfish	09/26/2019	320-54836-9	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep C-02-Redbreast Sunfish	09/26/2019	320-54836-9	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep C-02-Redbreast Sunfish	09/26/2019	320-54836-9	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFESA-BP1	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFESA-BP1	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFO2HxA	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFO2HxA	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	Byproduct 6	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	Byproduct 6	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	EVE Acid	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	EVE Acid	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	Hydro-EVE Acid	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
										SOP		
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	Hydro-EVE Acid	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORMSOIL-092419-D	09/24/2019	320-54699-3	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORMSOIL-092419-D	09/24/2019	320-54699-3	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	PMPA	1.1	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	PFO2HxA	1.1	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	PFO2HxA	1.1	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	PFO3OA	1.1	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	PFO3OA	1.1	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	PFECA-G	1.1	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	PFECA-G	1.1	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
INTAK-WORM-SOIL-092419	09/24/2019	320-54699-2	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAK-WORM-SOIL-092419	09/24/2019	320-54699-2	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	EVE Acid	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	EVE Acid	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	Byproduct 6	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	Byproduct 6	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	NVHOS	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	NVHOS	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PES	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PES	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFESA-BP2	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFESA-BP2	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	Hydro-EVE Acid	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	Hydro-EVE Acid	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFECA B	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFECA B	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	NVHOS	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	NVHOS	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PES	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PES	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFECA B	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFECA B	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFESA-BP1	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFESA-BP1	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFO2HxA	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFO2HxA	1.3	UG/KG	PQL		1.3	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-6-SOIL-4-4.5-081519	08/15/2019	320-53349-9	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-6-SOIL-4-4.5-081519	08/15/2019	320-53349-9	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU2-veg	07/25/2019	320-52868-7	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFO2HxA	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFO2HxA	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFO3OA	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFO3OA	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFO4DA	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFO4DA	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFO5DA	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFO5DA	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFMOAA	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFMOAA	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	EVE Acid	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	EVE Acid	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFESA-BP2	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU2-inv	07/25/2019	320-52868-8	PFESA-BP2	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Hydro-EVE Acid	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Hydro-EVE Acid	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFECA-G	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFECA-G	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	R-EVE	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	R-EVE	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Byproduct 4	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Byproduct 4	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Byproduct 5	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Byproduct 5	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Byproduct 6	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Byproduct 6	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU2-soil-0-0.5	07/25/2019	320-52868-1	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	NaDONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	NVHOS	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	NVHOS	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PES	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PES	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PMPA	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU2-inv	07/25/2019	320-52868-8	PMPA	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Hfpo Dimer Acid	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Hfpo Dimer Acid	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFECA B	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFECA B	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PEPA	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PEPA	12	UG/KG	PQL		12	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-Soil-4-4.5-081319-D	08/13/2019	320-53349-2	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	10:2 Fluorotelomer sulfonate	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Hfpo Dimer Acid	0.25	UG/KG	PQL		0.25	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluorooctadecanoic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluoroundecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	N-methyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluoropentanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluoropentane sulfonic acid (PFPeS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	6:2 Fluorotelomer sulfonate	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	N-ethyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluorohexanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluorododecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	PFOA	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluorodecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluorodecane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluorohexane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluorobutanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluoroheptanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluoroheptane sulfonic acid (PFHpS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluorononanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluorotetradecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluorohexadecanoic acid (PFHxDA)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluorononanesulfonic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluorotridecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluorooctane Sulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	9Cl-PF3ONS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	11Cl-PF3OUdS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	Perfluorododecane sulfonic acid (PFDoS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	ADONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	NaDONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	10:2 Fluorotelomer sulfonate	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Hfpo Dimer Acid	0.25	UG/KG	PQL		0.25	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluorooctadecanoic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	PFOS	0.50	UG/KG	PQL		0.50	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluoroundecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	N-methyl perfluorooctane sulfonamidoacetic	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
			acid									
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluoropentanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluoropentane sulfonic acid (PFPeS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	6:2 Fluorotelomer sulfonate	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	N-ethyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluorohexanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluorododecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	PFOA	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluorodecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluorodecane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluorohexane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluorobutanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluoroheptanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluoroheptane sulfonic acid (PFHpS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluorononanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluorotetradecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluorohexadecanoic acid (PFHxDA)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluorononanesulfonic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluorotridecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluorooctane Sulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	9Cl-PF3ONS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	11Cl-PF3OUdS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Perfluorododecane sulfonic acid (PFDoS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	ADONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU-5-SOIL-4-4.5-081519	08/15/2019	320-53349-8	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluoroundecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	N-methyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluoropentanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluoropentane sulfonic acid (PFPeS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	6:2 Fluorotelomer sulfonate	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	N-ethyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluorohexanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluorododecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	PFOA	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluorodecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluorodecane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluorohexane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluorobutanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluoroheptanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluoroheptane sulfonic acid (PFHpS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluorononanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluorotetradecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluorohexadecanoic acid (PFHxDA)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluorononanesulfonic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluorotridecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluorooctane Sulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	9Cl-PF3ONS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	11Cl-PF3OUdS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluorododecane sulfonic acid (PFDoS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	ADONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	NaDONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU-7-Soil-4-4.5-081419	08/14/2019	320-53349-4	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	10:2 Fluorotelomer sulfonate	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Hfpo Dimer Acid	0.25	UG/KG	PQL		0.25	UJ	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	Perfluorooctadecanoic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	PFOA	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluorohexadecanoic acid (PFHxDA)	6.1	UG/KG	PQL		6.1	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluorooctane Sulfonamide	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-3-veg	07/31/2019	320-52871-2	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFOA	1.2	UG/KG	PQL		1.2	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	N-ethylperfluoro-1-octanesulfonamide	2.7	UG/KG	PQL		2.7	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	10:2 Fluorotelomer sulfonate	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Hfpo Dimer Acid	0.25	UG/KG	PQL		0.25	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluorooctadecanoic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluorodecane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluorohexane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluorobutanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluoroheptanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluoroheptane sulfonic acid (PFHpS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluorononanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluorotetradecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluorohexadecanoic acid (PFHxDA)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluorononanesulfonic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluorotridecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluorooctane Sulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	9Cl-PF3ONS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	11Cl-PF3OUdS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluorododecane sulfonic acid (PFDoS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	ADONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	NaDONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluoroundecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	N-methyl perfluorooctane	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
			sulfonamidoacetic acid									
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluoropentanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluoropentane sulfonic acid (PFPeS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	6:2 Fluorotelomer sulfonate	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	N-ethyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluorohexanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	10:2 Fluorotelomer sulfonate	0.50	UG/KG	PQL		0.50	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluorooctadecanoic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	NaDONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	10:2 Fluorotelomer sulfonate	3.6	UG/KG	PQL		3.6	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFOS	2.8	UG/KG	PQL		2.8	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluoroundecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	2-(N-methyl perfluoro-1-octanesulfonamido)-	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
			ethanol									
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluoroundecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	N-methyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	6:2 Fluorotelomer sulfonate	21	UG/KG	PQL		21	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	35	UG/KG	PQL		35	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PES	5.9	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-11-veg	07/31/2019	320-52871-16	Byproduct 5	5.7	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Byproduct 5	5.9	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Byproduct 6	5.7	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Byproduct 6	5.9	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	10:2 Fluorotelomer sulfonate	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Hfpo Dimer Acid	0.25	UG/KG	PQL		0.25	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorooctadecanoic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluoropentanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluoropentane sulfonic acid (PFPeS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	6:2 Fluorotelomer sulfonate	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	N-ethyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluorohexanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluorododecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFOA	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluorodecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluorodecane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluorohexane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluorobutanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluoroheptanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluoroheptane sulfonic acid (PFHpS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluorononanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluorotetradecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	2.5	UG/KG	PQL		2.5	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluorohexadecanoic acid (PFHxDA)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluorononanesulfonic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluorotridecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluorooctane Sulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	9Cl-PF3ONS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	3.7	UG/KG	PQL		3.7	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	11Cl-PF3OUdS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Perfluorododecane sulfonic acid (PFDoS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	ADONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	PFOA(trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorobutanoic Acid (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluoropentanoic Acid (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorohexanoic Acid (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluoroheptanoic Acid (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorononanoic Acid (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorodecanoic Acid (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluoroundecanoic Acid (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorododecanoic Acid (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorobutane Sulfonic Acid (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorohexane Sulfonic Acid (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorooctane Sulfonamide (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Hfpo Dimer Acid (trial)	0.25	UG/KG	PQL		0.25	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	N-ethyl perfluorooctane sulfonamidoacetic acid (TRIAL)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	N-methyl perfluorooctane sulfonamidoacetic acid (TRIAL)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorotetradecanoic acid (TRIAL)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorotridecanoic Acid (TRIAL)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	NaDONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	10:2 FTS (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	8:2 FTS (trial)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	4:2 FTS (trial)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	6:2 FTS (trial)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	ADONA (trial)	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	NaDONA (trial)	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	PFDS (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	PFDoS (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	PFHpS (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	PFHxDA (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorononanesulfonic acid (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorooctadecanoic acid (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	PFPeS (trial)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	10:2 Fluorotelomer sulfonate	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Hfpo Dimer Acid	0.25	UG/KG	PQL		0.25	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluorooctadecanoic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluoroundecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	N-methyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluoropentanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluoropentane sulfonic acid (PFPeS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	6:2 Fluorotelomer sulfonate	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	N-ethyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluorohexanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluorododecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	PFOA	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluorodecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluorodecane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluorohexane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluorobutanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluoroheptanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluoroheptane sulfonic acid (PFHpS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluorononanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluorotetradecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluorohexadecanoic acid (PFHxDA)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluorononanesulfonic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluorotridecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluorooctane Sulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	9Cl-PF3ONS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	11Cl-PF3OUdS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	Perfluorododecane sulfonic acid (PFDoS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	ADONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	NaDONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFECA B	5.7	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFECA B	5.9	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFOS	2.5	UG/KG	PQL		2.5	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluoroundecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PEPA	5.7	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PEPA	5.9	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	6:2 Fluorotelomer sulfonate	18	UG/KG	PQL		18	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFESA-BP1	5.7	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFESA-BP1	5.9	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-11-veg	07/31/2019	320-52871-16	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Hfpo Dimer Acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFOS	3.7	UG/KG	PQL		3.7	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluoroundecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluoropentanoic Acid	1.4	UG/KG	PQL		1.4	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	6:2 Fluorotelomer sulfonate	28	UG/KG	PQL		28	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	N-ethyl perfluorooctane	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
			sulfonamidoacetic acid									
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	10:2 Fluorotelomer sulfonate	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluoroundecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	N-methyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	NaDONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	30	UG/KG	PQL		30	UJ	537 Modified		Shake_Bath_14D

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-11-veg	07/31/2019	320-52871-16	PFO2HxA	5.9	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFO3OA	5.7	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFO3OA	5.9	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFO4DA	5.7	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFO4DA	5.9	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFO5DA	5.7	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFO5DA	5.9	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	N-ethylperfluoro-1-octanesulfonamide	23	UG/KG	PQL		23	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFMOAA	5.7	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFMOAA	5.9	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	EVE Acid	5.7	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	EVE Acid	5.9	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFESA-BP2	5.7	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFESA-BP2	5.9	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-11-veg	07/31/2019	320-52871-16	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	45	UG/KG	PQL		45	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Hydro-EVE Acid	5.7	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Hydro-EVE Acid	5.9	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFECA-G	5.7	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PFECA-G	5.9	UG/KG	PQL		5.9	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluoroundecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	N-methyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluoropentanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluoropentane sulfonic acid (PFPeS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	6:2 Fluorotelomer sulfonate	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	N-ethyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorohexanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorododecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	PFOA	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorodecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorodecane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorohexane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorobutanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluoroheptanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluoroheptane sulfonic acid (PFHpS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorononanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorotetradecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorohexadecanoic acid (PFHxDA)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorononanesulfonic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorotridecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorooctane Sulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	9Cl-PF3ONS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	11Cl-PF3OUdS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	Perfluorododecane sulfonic acid (PFDoS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	ADONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluorododecanoic Acid	1.2	UG/KG	PQL		1.2	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFOA	1.6	UG/KG	PQL		1.6	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluorobutanoic Acid	5.2	UG/KG	PQL		5.2	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	47	UG/KG	PQL		47	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	N-ethylperfluoro-1-octanesulfonamide	3.6	UG/KG	PQL		3.6	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-11-inv	07/31/2019	320-52871-17	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluorooctane Sulfonamide	1.5	UG/KG	PQL		1.5	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	9Cl-PF3ONS	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	11Cl-PF3OUdS	4.1	UG/KG	PQL		4.1	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluorododecane sulfonic acid (PFDoS)	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	10:2 Fluorotelomer sulfonate	0.50	UG/KG	PQL		0.50	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Hfpo Dimer Acid	0.25	UG/KG	PQL		0.25	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluorooctadecanoic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluoropentanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluoropentane sulfonic acid (PFPeS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	6:2 Fluorotelomer sulfonate	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	N-ethyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluorohexanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluorododecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFOA	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluorodecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluorodecane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluorohexane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluorobutanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluoroheptanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluoroheptane sulfonic acid (PFHpS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluorononanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluorotetradecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	2.5	UG/KG	PQL		2.5	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluorohexadecanoic acid (PFHxDA)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluorononanesulfonic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluorotridecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluorooctane Sulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	9Cl-PF3ONS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	3.7	UG/KG	PQL		3.7	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	11Cl-PF3OUdS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Perfluorododecane sulfonic acid (PFDoS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	ADONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Hfpo Dimer Acid	1.8	UG/KG	PQL		1.8	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	N-methyl perfluorooctane sulfonamidoacetic acid	62	UG/KG	PQL		62	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluoropentanoic Acid	1.2	UG/KG	PQL		1.2	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	6:2 Fluorotelomer sulfonate	24	UG/KG	PQL		24	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-05-1-LMB	08/01/2019	320-52951-13	N-ethyl perfluorooctane sulfonamidoacetic acid	59	UG/KG	PQL		59	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	40	UG/KG	PQL		40	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-04-LMB	09/27/2019	320-54836-19	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-04-Redbreast	09/27/2019	320-54836-14	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-04-Redbreast	09/27/2019	320-54836-14	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-04-Redbreast	09/27/2019	320-54836-14	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluorobutanoic Acid	1.6	UG/KG	PQL		1.6	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	14	UG/KG	PQL		14	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Channel catfish	09/27/2019	320-54836-15	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Channel catfish	09/27/2019	320-54836-15	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Channel catfish	09/27/2019	320-54836-15	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Channel catfish	09/27/2019	320-54836-15	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-LMB	09/27/2019	320-54836-16	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-02-LMB	09/27/2019	320-54836-17	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR Bladen-02-LMB	09/27/2019	320-54836-17	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-02-LMB	09/27/2019	320-54836-17	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-02-Redbreast	09/27/2019	320-54836-12	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-02-Redbreast	09/27/2019	320-54836-12	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-02-Redbreast	09/27/2019	320-54836-12	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-02-Redbreast	09/27/2019	320-54836-12	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-03-LMB	09/27/2019	320-54836-18	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-03-LMB	09/27/2019	320-54836-18	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-03-LMB	09/27/2019	320-54836-18	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-03-LMB	09/27/2019	320-54836-18	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-03-Redbreast	09/27/2019	320-54836-13	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-03-Redbreast	09/27/2019	320-54836-13	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-03-Redbreast	09/27/2019	320-54836-13	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-03-Redbreast	09/27/2019	320-54836-13	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-04-LMB	09/27/2019	320-54836-19	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-02-LMB	09/27/2019	320-54836-17	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-04-LMB	09/27/2019	320-54836-19	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-04-LMB	09/27/2019	320-54836-19	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-04-Redbreast	09/27/2019	320-54836-14	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluorooctane Sulfonamide	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	9Cl-PF3ONS	1.2	UG/KG	PQL		1.2	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	59	UG/KG	PQL		59	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.4	UG/KG	PQL		1.4	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	N-methyl perfluorooctane sulfonamidoacetic acid	15	UG/KG	PQL		15	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	N-ethyl perfluorooctane sulfonamidoacetic acid	15	UG/KG	PQL		15	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-05-2 FH	08/01/2019	320-52951-14	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	15	UG/KG	PQL		15	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	N-methyl perfluorooctane sulfonamidoacetic acid	14	UG/KG	PQL		14	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	N-ethyl perfluorooctane sulfonamidoacetic acid	13	UG/KG	PQL		13	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-05-3 BC	08/01/2019	320-52951-15	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	13	UG/KG	PQL		13	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Hfpo Dimer Acid	3.1	UG/KG	PQL		3.1	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	PFOS	5.6	UG/KG	PQL		5.6	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	N-methyl perfluorooctane sulfonamidoacetic acid	11	UG/KG	PQL		11	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluoropentanoic Acid	2.2	UG/KG	PQL		2.2	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	6:2 Fluorotelomer sulfonate	42	UG/KG	PQL		42	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluorohexanoic Acid	1.2	UG/KG	PQL		1.2	UJ	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	PFOA	1.4	UG/KG	PQL		1.4	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	PFOA	2.4	UG/KG	PQL		2.4	UJ	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluorodecane Sulfonic Acid	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	70	UG/KG	PQL		70	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluorohexadecanoic acid (PFHxDA)	1.2	UG/KG	PQL		1.2	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluorooctane Sulfonamide	2.3	UG/KG	PQL		2.3	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	9Cl-PF3ONS	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	100	UG/KG	PQL		100	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluorododecane sulfonic acid (PFDoS)	1.7	UG/KG	PQL		1.7	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-06-1 BC	07/31/2019	320-52951-5	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-06-1 BC	07/31/2019	320-52951-5	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	NVHOS	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	NVHOS	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PES	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PES	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	15	UG/KG	PQL		15	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Hfpo Dimer Acid	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Hfpo Dimer Acid	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFECA B	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFECA B	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PEPA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PEPA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFESA-BP1	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFESA-BP1	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFO2HxA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFO2HxA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFO3OA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-06-2 BC	07/31/2019	320-52951-6	PFO3OA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFO4DA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFO4DA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFO5DA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFO5DA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFMOAA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFMOAA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	EVE Acid	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	EVE Acid	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Hydro-EVE Acid	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Hydro-EVE Acid	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFECA-G	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFECA-G	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	R-EVE	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	R-EVE	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Byproduct 4	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Byproduct 4	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-06-2 BC	07/31/2019	320-52951-6	Byproduct 5	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Byproduct 5	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Byproduct 6	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Byproduct 6	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	6:2 Fluorotelomer sulfonate	17	UG/KG	PQL		17	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFESA-BP2	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFESA-BP2	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
CFR-06-3 BC	07/31/2019	320-52951-9	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-06-3 BC	07/31/2019	320-52951-9	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-09-1 BC	07/31/2019	320-52951-7	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	29	UG/KG	PQL		29	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-09-1 BC	07/31/2019	320-52951-7	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-09-1 BC	07/31/2019	320-52951-7	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-09-1 LMB	07/30/2019	320-52951-4	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	NVHOS	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-09-2 BC	07/31/2019	320-52951-8	NVHOS	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PES	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PES	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Hfpo Dimer Acid	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Hfpo Dimer Acid	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PFECA B	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PFECA B	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Hydro-EVE Acid	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Hydro-EVE Acid	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-09-2 BC	07/31/2019	320-52951-8	PFECA-G	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PFECA-G	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	R-EVE	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	R-EVE	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Byproduct 4	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Byproduct 4	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Byproduct 5	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Byproduct 5	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Byproduct 6	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Byproduct 6	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Hfpo Dimer Acid	1.8	UG/KG	PQL		1.8	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PEPA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PEPA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PFESA-BP1	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PFESA-BP1	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PFO5DA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PFO5DA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-09-2 BC	07/31/2019	320-52951-8	PFMOAA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PFMOAA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	EVE Acid	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	EVE Acid	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluoropentanoic Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville | Sampling Program: 2019 SLEA Sampling | Validation Options: LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-09-2 BC	07/31/2019	320-52951-8	PFO2HxA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PFO2HxA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PFO3OA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PFO3OA	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PFESA-BP2	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PFESA-BP2	1	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PFOA	1.4	UG/KG	PQL		1.4	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	9Cl-PF3ONS	1.2	UG/KG	PQL		1.2	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
DERC-1 LMB	07/30/2019	320-52951-1	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
DERC-1 LMB	07/30/2019	320-52951-1	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
DERC-2 LMB	07/30/2019	320-52951-2	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
DERC-2 LMB	07/30/2019	320-52951-2	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
DERC-3 LMB	07/30/2019	320-52951-3	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
DERC-3 LMB	07/30/2019	320-52951-3	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
DERC-3 LMB	07/30/2019	320-52951-3	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluorooctadecanoic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	PFOS	0.50	UG/KG	PQL		0.50	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluoroundecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	N-methyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluoropentanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluoropentane sulfonic acid (PFPeS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	6:2 Fluorotelomer sulfonate	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	N-ethyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluorohexanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluorododecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	PFOA	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluorodecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluorodecane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluorohexane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluorobutanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluoroheptanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluoroheptane sulfonic acid (PFHpS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluorononanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluorotetradecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	2.4	UG/KG	PQL		2.4	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluorohexadecanoic acid (PFHxDA)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluorononanesulfon ic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluorotridecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluorooctane Sulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	9Cl-PF3ONS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	1H,1H,2H,2H-perfluorohexanesulfon ate (4:2 FTS)	3.6	UG/KG	PQL		3.6	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	11Cl-PF3OUdS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Perfluorododecane sulfonic acid (PFDoS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	ADONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	NaDONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
SLEA-EQBLK-091119	09/11/2019	320-54392-3	Hfpo Dimer Acid	0.0040	UG/L	PQL		0.0040	UJ	537 Modified		3535_PFC

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SLEA-EQBLK-1-081319	08/13/2019	320-53349-6	Perfluorooctadecanoic acid	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC
SLEA-EQBLK-2-081419	08/14/2019	320-53349-7	Perfluorooctadecanoic acid	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC
SLEA-EQBLK-3-081519	08/15/2019	320-53349-12	Perfluorooctadecanoic acid	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC
SLEA-FB-2-081519	08/15/2019	320-53349-11	Perfluorooctadecanoic acid	0.0020	ug/L	PQL		0.0020	UJ	537 Modified		3535_PFC
SLEA-EQBLK-091319	09/13/2019	320-54392-4	Hfpo Dimer Acid	0.0040	UG/L	PQL		0.0040	UJ	537 Modified		3535_PFC
SEEP-D-RIVERSOIL-091119	09/11/2019	320-54392-1	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
SEEP-D-RIVERSOIL-091119	09/11/2019	320-54392-1	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	N-ethylperfluoro-1-octanesulfonamide	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	N-ethylperfluoro-1-octanesulfonamide	11	UG/KG	PQL		11	UJ	537 Modified		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	3.9	UG/KG	PQL		3.9	UJ	537 Modified		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	N-methyl perfluoro-1-octanesulfonamide	1.8	UG/KG	PQL		1.8	UJ	537 Modified		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
Seep B-02-Redbreast Sunfish	09/26/2019	320-54836-8	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
Seep C-02-Redbreast Sunfish	09/26/2019	320-54836-9	10:2 Fluorotelomer sulfonate	1.6	UG/KG	PQL		1.6	UJ	537 Modified		Shake_Bath_14D
SEEP-A-RIVERSOIL-091319	09/13/2019	320-54392-2	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
SEEP-A-RIVERSOIL-091319	09/13/2019	320-54392-2	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
MM-68-1 FH	08/01/2019	320-52951-10	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	N-ethyl perfluorooctane sulfonamidoacetic acid	15	UG/KG	PQL		15	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
MM-68-1 FH	08/01/2019	320-52951-10	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	15	UG/KG	PQL		15	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluoroundecanoic Acid	1.4	UG/KG	PQL		1.4	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	N-methyl perfluorooctane sulfonamidoacetic acid	15	UG/KG	PQL		15	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	N-ethyl perfluorooctane sulfonamidoacetic acid	14	UG/KG	PQL		14	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
MM-68-2 CC	08/01/2019	320-52951-11	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluorododecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	14	UG/KG	PQL		14	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
MM-68-2 CC	08/01/2019	320-52951-11	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	PFOS	2.5	UG/KG	PQL		2.5	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluoroundecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluorododecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
MM-68-3 BC	08/01/2019	320-52951-12	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-3 BC	08/01/2019	320-52951-12	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Hfpo Dimer Acid	2.5	UG/KG	PQL		2.5	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
MM-68-4 LMB	08/02/2019	320-52951-17	N-methyl perfluorooctane sulfonamidoacetic acid	88	UG/KG	PQL		88	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluoropentanoic Acid	1.7	UG/KG	PQL		1.7	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	6:2 Fluorotelomer sulfonate	34	UG/KG	PQL		34	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	N-ethyl perfluorooctane sulfonamidoacetic acid	84	UG/KG	PQL		84	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	PFOA	1.9	UG/KG	PQL		1.9	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	57	UG/KG	PQL		57	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluorooctane Sulfonamide	1.9	UG/KG	PQL		1.9	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	9Cl-PF3ONS	1.6	UG/KG	PQL		1.6	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	84	UG/KG	PQL		84	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluorododecane sulfonic acid (PFDoS)	1.4	UG/KG	PQL		1.4	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
MM-68-4 LMB	08/02/2019	320-52951-17	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	6:2 Fluorotelomer sulfonate	35	UG/KG	PQL		35	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluorobutanoic Acid	6.5	UG/KG	PQL		6.5	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	86	UG/KG	PQL		86	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	1H,1H,2H,2H-perfluorodecanesulf	58	UG/KG	PQL		58	UJ	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
			onate (8:2 FTS)									
MM-68-5 LMB	08/01/2019	320-52951-18	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluorotetradecanoic Acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
MM-68-5 LMB	08/01/2019	320-52951-18	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluorohexadecanoic acid (PFHxDA)	1.6	UG/KG	PQL		1.6	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	14	UG/KG	PQL		14	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	10:2 Fluorotelomer sulfonate	1.2	UG/KG	PQL		1.2	UJ	537 Modified		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	NaDONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU6-veg	07/25/2019	320-52868-11	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	10:2 Fluorotelomer sulfonate	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Hfpo Dimer Acid	0.25	UG/KG	PQL		0.25	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluorooctadecanoic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	PFOS	0.50	UG/KG	PQL		0.50	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluoroundecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	N-methyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluoropentanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluoropentane sulfonic acid (PFPeS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	6:2 Fluorotelomer sulfonate	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	N-ethyl perfluorooctane sulfonamidoacetic	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
			acid									
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluorohexanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluorododecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	PFOA	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluorodecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluorodecane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluorohexane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluorobutanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluoroheptanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluoroheptane sulfonic acid (PFHpS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluorononanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluorotetradecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluorohexadecanoic acid (PFHxDA)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluorononanesulfonic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluorotridecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluorooctane Sulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	9Cl-PF3ONS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	1H,1H,2H,2H-perfluorohexanesulf	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
			onate (4:2 FTS)									
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	11Cl-PF3OUdS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Perfluorododecane sulfonic acid (PFDoS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	ADONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU6-inv	07/25/2019	320-52868-12	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	NVHOS	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PES	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PMPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Hfpo Dimer Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFECA B	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU6-soil-0-0.5	07/25/2019	320-52868-3	PEPA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFO2HxA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFO3OA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFO5DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFMOAA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFESA-BP2	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU6-soil-0-0.5	07/25/2019	320-52868-3	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFECA-G	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Hydro-EVE Acid	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Byproduct 6	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFESA-BP1	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason One or more surrogates had relative percent recovery (RPR) values less than the data rejection level. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-7-INV-081919	08/19/2019	320-53490-6	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU-7-INV-081919	08/19/2019	320-53490-6	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-LMB	09/27/2019	320-54836-16	Perfluorooctadecanoic acid	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR Bladen-01-LMB	09/27/2019	320-54836-16	Perfluorohexadecanoic acid (PFHxDA)	1.7	UG/KG	PQL		1.7	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Validation Reason One or more surrogates had relative percent recovery (RPR) values less than the data rejection level. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
WC-WORM-092419	09/24/2019	320-54699-11	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SLEA-CFR-INV-01-02-03 COMP	10/21/2019	320-55583-21	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
SLEA-SED1-VEG-20191021	10/21/2019	320-55583-1	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
SLEA-SED3-VEG-20191021	10/21/2019	320-55583-3	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SLEA-CFR-ACINV-03-20191021	10/21/2019	320-55583-20	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
SLEA-CFR-ACINV-02-20191021	10/21/2019	320-55583-19	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
Seep B-01-Spotted bass	09/24/2019	320-54836-2	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
Seep B-01-Spotted bass	09/24/2019	320-54836-2	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	Perfluorooctadecanoic acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	Perfluorohexadecanoic acid (PFHxDA)	2.1	UG/KG	PQL		2.1	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU2-veg	07/25/2019	320-52868-7	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	39	UG/KG	PQL		39	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluorohexadecanoic acid (PFHxDA)	6.8	UG/KG	PQL		6.8	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluorooctane Sulfonamide	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	10:2 Fluorotelomer sulfonate	4.0	UG/KG	PQL		4.0	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluorooctadecanoic acid	4.4	UG/KG	PQL		4.4	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFOS	3.1	UG/KG	PQL		3.1	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluoroundecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluoropentanoic Acid	1.2	UG/KG	PQL		1.2	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	6:2 Fluorotelomer sulfonate	23	UG/KG	PQL		23	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFOA	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU2-veg	07/25/2019	320-52868-7	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	N-ethyl perfluorooctane sulfonamidoacetic acid	120	UG/KG	PQL		120	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorohexanoic Acid	14	UG/KG	PQL		14	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorododecanoic Acid	22	UG/KG	PQL		22	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFOA	28	UG/KG	PQL		28	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorodecanoic Acid	7.2	UG/KG	PQL		7.2	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorodecane Sulfonic Acid	13	UG/KG	PQL		13	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorohexane Sulfonic Acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorobutanoic Acid	9.1	UG/KG	PQL		9.1	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorobutane Sulfonic Acid	5.1	UG/KG	PQL		5.1	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluoroheptanoic Acid	9.5	UG/KG	PQL		9.5	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluoroheptane sulfonic acid (PFHpS)	11	UG/KG	PQL		11	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorononanoic Acid	12	UG/KG	PQL		12	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorotetradecanoic Acid	18	UG/KG	PQL		18	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	820	UG/KG	PQL		820	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorohexadecanoic acid (PFHxDA)	14	UG/KG	PQL		14	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorononanesulfonic acid	6.5	UG/KG	PQL		6.5	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorotridecanoic Acid	17	UG/KG	PQL		17	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorooctane Sulfonamide	27	UG/KG	PQL		27	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	9Cl-PF3ONS	23	UG/KG	PQL		23	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU2-inv	07/25/2019	320-52868-8	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	120	UG/KG	PQL		120	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	11Cl-PF3OUdS	7.2	UG/KG	PQL		7.2	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorododecane sulfonic acid (PFDoS)	20	UG/KG	PQL		20	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	ADONA	6.1	UG/KG	PQL		6.1	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFOS (trial)	65	UG/KG	PQL		65	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFOA(trial)	28	UG/KG	PQL		28	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorobutanoic Acid (trial)	9.1	UG/KG	PQL		9.1	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluoropentanoic Acid (trial)	25	UG/KG	PQL		25	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorohexanoic Acid (trial)	14	UG/KG	PQL		14	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluoroheptanoic Acid (trial)	9.5	UG/KG	PQL		9.5	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorononanoic Acid (trial)	12	UG/KG	PQL		12	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorodecanoic Acid (trial)	7.2	UG/KG	PQL		7.2	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluoroundecanoic Acid (trial)	12	UG/KG	PQL		12	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorododecanoic Acid (trial)	22	UG/KG	PQL		22	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorobutane Sulfonic Acid (trial)	5.1	UG/KG	PQL		5.1	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorohexane Sulfonic Acid (trial)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorooctane Sulfonamide (trial)	27	UG/KG	PQL		27	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Hfpo Dimer Acid (trial)	36	UG/KG	PQL		36	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	N-ethyl perfluorooctane sulfonamidoacetic acid (TRIAL)	120	UG/KG	PQL		120	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	N-methyl perfluorooctane sulfonamidoacetic acid (TRIAL)	130	UG/KG	PQL		130	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorotetradecanoic acid (TRIAL)	18	UG/KG	PQL		18	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU2-inv	07/25/2019	320-52868-8	Perfluorotridecanoic Acid (TRIAL)	17	UG/KG	PQL		17	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	NaDONA	6.2	UG/KG	PQL		6.2	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	10:2 FTS (trial)	85	UG/KG	PQL		85	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	8:2 FTS (trial)	820	UG/KG	PQL		820	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	4:2 FTS (trial)	120	UG/KG	PQL		120	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	6:2 FTS (trial)	490	UG/KG	PQL		490	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	ADONA (trial)	6.1	UG/KG	PQL		6.1	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	NaDONA (trial)	6.2	UG/KG	PQL		6.2	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFDS (trial)	13	UG/KG	PQL		13	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFDoS (trial)	20	UG/KG	PQL		20	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFHpS (trial)	11	UG/KG	PQL		11	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFHxDA (trial)	14	UG/KG	PQL		14	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorononanesulfonic acid (trial)	6.5	UG/KG	PQL		6.5	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorooctadecanoic acid (trial)	9.1	UG/KG	PQL		9.1	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFPeS (trial)	6.5	UG/KG	PQL		6.5	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	10:2 Fluorotelomer sulfonate	0.50	UG/KG	PQL		0.50	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Hfpo Dimer Acid	0.25	UG/KG	PQL		0.25	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluorooctadecanoic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluoroundecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	N-methyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluoropentanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluoropentane sulfonic acid (PFPeS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	6:2 Fluorotelomer sulfonate	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	N-ethyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluorohexanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluorododecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFOA	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluorodecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluorodecane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluorohexane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluorobutanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluoroheptanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluoroheptane sulfonic acid (PFHpS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluorononanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluorotetradecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	2.5	UG/KG	PQL		2.5	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluorohexadecanoic acid (PFHxDA)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluorononanesulfonic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluorotridecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluorooctane Sulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	9Cl-PF3ONS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	3.7	UG/KG	PQL		3.7	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	11Cl-PF3OUdS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	Perfluorododecane sulfonic acid (PFDoS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	ADONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	10:2 Fluorotelomer sulfonate	85	UG/KG	PQL		85	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Hfpo Dimer Acid	36	UG/KG	PQL		36	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluorooctadecanoic acid	9.1	UG/KG	PQL		9.1	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFOS	65	UG/KG	PQL		65	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluoroundecanoic Acid	12	UG/KG	PQL		12	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	N-methyl perfluorooctane sulfonamidoacetic acid	130	UG/KG	PQL		130	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluoropentanoic Acid	25	UG/KG	PQL		25	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	Perfluoropentane sulfonic acid (PFPeS)	6.5	UG/KG	PQL		6.5	UJ	537 Modified		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	6:2 Fluorotelomer sulfonate	490	UG/KG	PQL		490	UJ	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	NaDONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	10:2 Fluorotelomer sulfonate	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-06-1 BC	07/31/2019	320-52951-5	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFOS	2.5	UG/KG	PQL		2.5	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluoroundecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	N-ethyl perfluorooctane sulfonamidoacetic acid	18	UG/KG	PQL		18	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	12	UG/KG	PQL		12	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	18	UG/KG	PQL		18	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	10:2 Fluorotelomer sulfonate	4.1	UG/KG	PQL		4.1	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Hfpo Dimer Acid	1.7	UG/KG	PQL		1.7	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFOS	3.2	UG/KG	PQL		3.2	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluoroundecanoic Acid	5.7	UG/KG	PQL		5.7	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	N-methyl perfluorooctane	62	UG/KG	PQL		62	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
			sulfonamidoacetic acid									
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluoropentanoic Acid	1.2	UG/KG	PQL		1.2	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	6:2 Fluorotelomer sulfonate	24	UG/KG	PQL		24	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	N-ethyl perfluorooctane sulfonamidoacetic acid	59	UG/KG	PQL		59	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	40	UG/KG	PQL		40	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	9Cl-PF3ONS	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	59	UG/KG	PQL		59	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PFOA	1.4	UG/KG	PQL		1.4	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	14	UG/KG	PQL		14	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-06-3 BC	07/31/2019	320-52951-9	PFOS	2.5	UG/KG	PQL		2.5	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluoroundecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	N-ethyl perfluorooctane sulfonamidoacetic acid	14	UG/KG	PQL		14	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluorododecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	10:2 Fluorotelomer sulfonate	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	2-(N-ethyl perfluoro-1-	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
			octanesulfonamido)-ethanol									
CFR-09-1 BC	07/31/2019	320-52951-7	PFOS	2.5	UG/KG	PQL		2.5	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	N-ethyl perfluorooctane sulfonamidoacetic acid	18	UG/KG	PQL		18	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	12	UG/KG	PQL		12	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-09-1 BC	07/31/2019	320-52951-7	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	18	UG/KG	PQL		18	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFOS	2.5	UG/KG	PQL		2.5	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-09-2 BC	07/31/2019	320-52951-8	10:2 Fluorotelomer sulfonate	4.8	UG/KG	PQL		4.8	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Hfpo Dimer Acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluorooctadecanoic acid	5.1	UG/KG	PQL		5.1	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	9Cl-PF3ONS	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	68	UG/KG	PQL		68	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluorododecane sulfonic acid (PFDoS)	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluoropentanoic Acid	1.4	UG/KG	PQL		1.4	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	6:2 Fluorotelomer sulfonate	28	UG/KG	PQL		28	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-09-2 BC	07/31/2019	320-52951-8	PFOA	1.6	UG/KG	PQL		1.6	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluorohexadecanoic acid (PFHxDA)	8.1	UG/KG	PQL		8.1	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	46	UG/KG	PQL		46	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluoroundecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	N-ethyl perfluorooctane sulfonamidoacetic acid	17	UG/KG	PQL		17	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluorododecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
DERC-1 LMB	07/30/2019	320-52951-1	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	11	UG/KG	PQL		11	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	17	UG/KG	PQL		17	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
DERC-1 LMB	07/30/2019	320-52951-1	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	10:2 Fluorotelomer sulfonate	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluorododecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
DERC-2 LMB	07/30/2019	320-52951-2	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	11	UG/KG	PQL		11	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	10:2 Fluorotelomer sulfonate	4.5	UG/KG	PQL		4.5	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	10:2 Fluorotelomer sulfonate	1.2	UG/KG	PQL		1.2	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Hfpo Dimer Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	2-(N-ethyl perfluoro-1-	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
			octanesulfonamido)-ethanol									
DERC-3 LMB	07/30/2019	320-52951-3	Hfpo Dimer Acid	19	UG/KG	PQL		19	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluoropentanoic Acid	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFOA	1.5	UG/KG	PQL		1.5	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluorobutanoic Acid	4.9	UG/KG	PQL		4.9	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluorooctane Sulfonamide	1.4	UG/KG	PQL		1.4	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	9Cl-PF3ONS	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
DERC-3 LMB	07/30/2019	320-52951-3	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	10:2 Fluorotelomer sulfonate	8.2	UG/KG	PQL		8.2	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Hfpo Dimer Acid	1.7	UG/KG	PQL		1.7	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluoropentanoic Acid	1.2	UG/KG	PQL		1.2	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	44	UG/KG	PQL		44	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFOA	1.4	UG/KG	PQL		1.4	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluorobutanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	79	UG/KG	PQL		79	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluorooctane Sulfonamide	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	9Cl-PF3ONS	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluorooctane Sulfonamide	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFOS	2.7	UG/KG	PQL		2.7	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluoroundecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFOA	1.2	UG/KG	PQL		1.2	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU6-veg	07/25/2019	320-52868-11	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	34	UG/KG	PQL		34	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	10:2 Fluorotelomer sulfonate	1.3	UG/KG	PQL		1.3	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Hfpo Dimer Acid	5.5	UG/KG	PQL		5.5	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluorooctadecanoic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFOS	2.5	UG/KG	PQL		2.5	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluoroundecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	N-methyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluoropentanoic Acid	3.9	UG/KG	PQL		3.9	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	6:2 Fluorotelomer sulfonate	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU6-inv	07/25/2019	320-52868-12	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluorododecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	N-methyl perfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	PFOA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluorodecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluorohexane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluorobutanoic Acid	1.4	UG/KG	PQL		1.4	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluorobutane Sulfonic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluoroheptanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluoroheptane sulfonic acid (PFHpS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluorononanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluorotetradecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	13	UG/KG	PQL		13	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	N-ethylperfluoro-1-octanesulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluorononanesulfonic acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluorotridecanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluorooctane Sulfonamide	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	9Cl-PF3ONS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU6-inv	07/25/2019	320-52868-12	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-inv	07/25/2019	320-52868-12	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	10:2 Fluorotelomer sulfonate	0.51	UG/KG	PQL		0.51	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Hfpo Dimer Acid	0.25	UG/KG	PQL		0.25	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluorooctadecanoic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluoroundecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	N-methyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluoropentanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluoropentane sulfonic acid (PFPeS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	6:2 Fluorotelomer sulfonate	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	N-ethyl perfluorooctane sulfonamidoacetic acid	2.0	UG/KG	PQL		2.0	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluorohexanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluorododecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	N-methyl perfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFOA	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluorodecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluorodecane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluorohexane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluorobutanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluorobutane Sulfonic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluoroheptanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluoroheptane sulfonic acid (PFHpS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluorononanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluorotetradecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	2.5	UG/KG	PQL		2.5	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	N-ethylperfluoro-1-octanesulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluorohexadecanoic acid (PFHxDA)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluorononanesulfonic acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluorotridecanoic Acid	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluorooctane Sulfonamide	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	9Cl-PF3ONS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)	3.8	UG/KG	PQL		3.8	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	11Cl-PF3OUdS	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	Perfluorododecane sulfonic acid (PFDoS)	0.20	UG/KG	PQL		0.20	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	ADONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	9Cl-PF3ONS	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	1H,1H,2H,2H-perfluorohexanesulf	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
			onate (4:2 FTS)									
EU2-veg	07/25/2019	320-52868-7	11Cl-PF3OUdS	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluorododecane sulfonic acid (PFDoS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	ADONA	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	NaDONA	1.1	UG/KG	PQL		1.1	UJ	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	NaDONA	0.21	UG/KG	PQL		0.21	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	10:2 Fluorotelomer sulfonate	3.5	UG/KG	PQL		3.5	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluoropentanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluoropentane sulfonic acid (PFPeS)	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	6:2 Fluorotelomer sulfonate	20	UG/KG	PQL		20	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	N-ethyl perfluorooctane sulfonamidoacetic acid	10	UG/KG	PQL		10	UJ	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluorohexanoic Acid	1.0	UG/KG	PQL		1.0	UJ	537 Modified		Shake_Bath_14D

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the data rejection level. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
WC-WORM-092419	09/24/2019	320-54699-11	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PFO4DA	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORMSOIL-092419	09/24/2019	320-54699-8	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORMSOIL-092419	09/24/2019	320-54699-8	R-EVE	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORMSOIL-092419	09/24/2019	320-54699-8	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORMSOIL-092419	09/24/2019	320-54699-8	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORMSOIL-092419	09/24/2019	320-54699-8	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORMSOIL-092419	09/24/2019	320-54699-8	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-SOIL-092419	09/24/2019	320-54699-6	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-SOIL-092419	09/24/2019	320-54699-6	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-SOIL-092419	09/24/2019	320-54699-6	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-SOIL-092419	09/24/2019	320-54699-6	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFECA-G	1.0	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFECA-G	1.1	UG/KG	PQL		1.1	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PFO4DA	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PFO4DA	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the data rejection level. The non-detect reporting limit may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PFECA-G	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PFECA-G	1.2	UG/KG	PQL		1.2	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	Byproduct 4	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	Byproduct 5	1.0	UG/KG	PQL		1.0	UJ	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-1-INV-091219	09/12/2019	320-54302-5	Hfpo Dimer Acid	19.0	UG/KG	PQL		3.1	J	537 Modified		Shake_Bath_14D
CFR Bladen-04-LMB	09/27/2019	320-54836-19	Perfluorohexadecanoic acid (PFHxDA)	1.1	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR Bladen-02-LMB	09/27/2019	320-54836-17	Perfluorooctadecanoic acid	1.8	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR Bladen-04-LMB	09/27/2019	320-54836-19	Perfluorooctadecanoic acid	1.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR Bladen-03-LMB	09/27/2019	320-54836-18	Perfluorohexadecanoic acid (PFHxDA)	1.7	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR Bladen-03-LMB	09/27/2019	320-54836-18	Perfluorooctadecanoic acid	1.7	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR Bladen-02-LMB	09/27/2019	320-54836-17	Perfluorohexadecanoic acid (PFHxDA)	1.7	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	Perfluorohexadecanoic acid (PFHxDA)	2.2	UG/KG	PQL		1.3	J	537 Modified		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	Byproduct 5	13	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	Byproduct 5	13.0	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Pond-1-SE-072419	07/24/2019	280-126823-4	PFO5DA	0.010	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-SE-072419	07/24/2019	280-126823-4	PFO5DA	0.01	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-NW-072419	07/24/2019	280-126823-3	PFO5DA	0.0099	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-NW-072419	07/24/2019	280-126823-3	PFO5DA	0.0095	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-SE-072419-2	07/24/2019	280-126823-1	PFO5DA	0.010	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-SE-072419-2	07/24/2019	280-126823-1	PFO5DA	0.0097	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-NE-072419	07/24/2019	280-126823-2	PFO5DA	0.0097	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-NE-072419	07/24/2019	280-126823-2	PFO5DA	0.0093	ug/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	Perfluorohexadecanoic acid (PFHxDA)	3.3	UG/KG	PQL		1.2	J	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	Byproduct 5	11	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	Byproduct 5	11.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	Perfluorohexadecanoic acid (PFHxDA)	5.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	Byproduct 5	97.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	Byproduct 5	84.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	Byproduct 5	2.5	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	Byproduct 5	2.3	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	Perfluorohexadecanoic acid (PFHxDA)	1.4	UG/KG	PQL		1.2	J	537 Modified		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	Byproduct 5	2.5	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	Byproduct 5	2.8	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	Perfluorohexadecanoic acid (PFHxDA)	8.7	UG/KG	PQL		1.1	J	537 Modified		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	Perfluorohexadecanoic acid (PFHxDA)	2.3	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-1-VEG-091219	09/12/2019	320-54302-4	R-EVE	7.3	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-VEG-091219	09/12/2019	320-54302-4	R-EVE	7.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-VEG-091219	09/12/2019	320-54302-4	Byproduct 4	6.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-VEG-091219	09/12/2019	320-54302-4	Byproduct 4	7.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-INV-091219	09/12/2019	320-54302-5	R-EVE	1.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-INV-091219	09/12/2019	320-54302-5	R-EVE	1.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	R-EVE	8.7	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Byproduct 4	2.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Byproduct 4	2.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-07-CM-072519	07/25/2019	320-52969-6	R-EVE	0.0036	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-CM-072519	07/25/2019	320-52969-6	R-EVE	0.0034	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-CM-072519	07/25/2019	320-52969-6	Byproduct 4	0.0054	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-CM-072519	07/25/2019	320-52969-6	Byproduct 4	0.0047	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-CM-072519	07/25/2019	320-52969-6	Byproduct 5	0.0096	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-CM-072519	07/25/2019	320-52969-6	Byproduct 5	0.01	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-CT-072519	07/25/2019	320-52969-5	R-EVE	0.0027	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-07-CT-072519	07/25/2019	320-52969-5	R-EVE	0.0026	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-CT-072519	07/25/2019	320-52969-5	Byproduct 4	0.0089	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-CT-072519	07/25/2019	320-52969-5	Byproduct 5	0.0066	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-CT-072519	07/25/2019	320-52969-5	Byproduct 5	0.0066	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-E-072519	07/25/2019	320-52969-7	R-EVE	0.0029	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-E-072519	07/25/2019	320-52969-7	R-EVE	0.0026	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-E-072519	07/25/2019	320-52969-7	Byproduct 4	0.0075	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-E-072519	07/25/2019	320-52969-7	Byproduct 4	0.007	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-E-072519	07/25/2019	320-52969-7	Byproduct 5	0.0031	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-E-072519	07/25/2019	320-52969-7	Byproduct 5	0.003	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-E-072519-2	07/25/2019	320-52969-8	R-EVE	0.0028	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-E-072519-2	07/25/2019	320-52969-8	R-EVE	0.0031	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-E-072519-2	07/25/2019	320-52969-8	Byproduct 4	0.0069	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-E-072519-2	07/25/2019	320-52969-8	Byproduct 4	0.0068	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-E-072519-2	07/25/2019	320-52969-8	Byproduct 5	0.0031	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-E-072519-2	07/25/2019	320-52969-8	Byproduct 5	0.0031	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-W-072519	07/25/2019	320-52969-4	R-EVE	0.0033	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound		PFAS_DI_Prep

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
CFR-07-W-072519	07/25/2019	320-52969-4	R-EVE	0.0033	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-W-072519	07/25/2019	320-52969-4	Byproduct 4	0.0065	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-W-072519	07/25/2019	320-52969-4	Byproduct 4	0.007	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-W-072519	07/25/2019	320-52969-4	Byproduct 5	0.019	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-04-CM-072519	07/25/2019	320-52969-2	R-EVE	0.0027	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-04-CM-072519	07/25/2019	320-52969-2	R-EVE	0.0033	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-04-CT-072519	07/25/2019	320-52969-1	R-EVE	0.0038	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-04-CT-072519	07/25/2019	320-52969-1	Byproduct 4	0.0055	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-04-E-072519	07/25/2019	320-52969-3	Byproduct 4	0.0076	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-04-E-072519	07/25/2019	320-52969-3	Byproduct 4	0.0084	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-04-W-072519	07/25/2019	320-52969-9	Byproduct 4	0.0048	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-04-W-072519	07/25/2019	320-52969-9	Byproduct 4	0.0047	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-04-W-072519	07/25/2019	320-52969-9	Byproduct 5	0.0025	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-04-W-072519	07/25/2019	320-52969-9	Byproduct 5	0.0025	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	R-EVE	1.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFO4DA	3.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFO4DA	3.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	R-EVE	3.8	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	R-EVE	4.3	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	Byproduct 5	1.5	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	Byproduct 5	1.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	Byproduct 4	3.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	Byproduct 4	2.5	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	R-EVE	13	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	R-EVE	14.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	Byproduct 4	57	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	Byproduct 4	56.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	Byproduct 5	1.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	Byproduct 5	1.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	Byproduct 4	1.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	Byproduct 4	1.5	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	R-EVE	1.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	R-EVE	1.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
EU-9-VEG-082119	08/21/2019	320-53607-2	NVHOS	34	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-VEG-081619	08/16/2019	320-53490-8	R-EVE	16	UG/KG	PQL		8.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-VEG-081619	08/16/2019	320-53490-8	R-EVE	19.0	UG/KG	PQL		8.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-VEG-081619	08/16/2019	320-53490-8	Byproduct 4	13	UG/KG	PQL		8.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-VEG-081619	08/16/2019	320-53490-8	Byproduct 4	15.0	UG/KG	PQL		8.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	Byproduct 4	3.3	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	Byproduct 4	3.8	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	NVHOS	50	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	NVHOS	50.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	R-EVE	10	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	R-EVE	11.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Byproduct 4	11	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Byproduct 4	12.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	R-EVE	8.7	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	R-EVE	8.3	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	R-EVE	26	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
INTAKE-WORM-092419	09/24/2019	320-54699-9	R-EVE	27.0	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	Byproduct 4	95	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	Byproduct 4	3.6	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	Byproduct 4	3.6	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Pond-1-SE-072419	07/24/2019	280-126823-4	R-EVE	0.058	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-SE-072419	07/24/2019	280-126823-4	R-EVE	0.059	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-SE-072419	07/24/2019	280-126823-4	Byproduct 4	0.094	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-SE-072419	07/24/2019	280-126823-4	Byproduct 4	0.097	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-NW-072419	07/24/2019	280-126823-3	R-EVE	0.055	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-NW-072419	07/24/2019	280-126823-3	R-EVE	0.057	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-NW-072419	07/24/2019	280-126823-3	Byproduct 4	0.096	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-NW-072419	07/24/2019	280-126823-3	Byproduct 4	0.1	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-SE-072419-2	07/24/2019	280-126823-1	R-EVE	0.057	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-SE-072419-2	07/24/2019	280-126823-1	R-EVE	0.053	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-SE-072419-2	07/24/2019	280-126823-1	Byproduct 4	0.099	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-SE-072419-2	07/24/2019	280-126823-1	Byproduct 4	0.092	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
POND-B-EAST-091219	09/12/2019	320-54303-3	R-EVE	0.053	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound		PFAS_DI_Prep

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
POND-B-EAST-091219	09/12/2019	320-54303-3	R-EVE	0.053	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
POND-B-EAST-091219	09/12/2019	320-54303-3	Byproduct 4	0.14	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
POND-B-EAST-091219	09/12/2019	320-54303-3	Byproduct 4	0.14	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
POND-B-SOUTH-091219	09/12/2019	320-54303-4	R-EVE	0.053	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
POND-B-SOUTH-091219	09/12/2019	320-54303-4	R-EVE	0.058	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
POND-B-SOUTH-091219	09/12/2019	320-54303-4	Byproduct 4	0.15	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
POND-B-SOUTH-091219	09/12/2019	320-54303-4	Byproduct 4	0.16	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
POND-B-WEST-091219	09/12/2019	320-54303-2	R-EVE	0.052	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
POND-B-WEST-091219	09/12/2019	320-54303-2	R-EVE	0.049	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
POND-B-WEST-091219	09/12/2019	320-54303-2	Byproduct 4	0.13	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
POND-B-WEST-091219	09/12/2019	320-54303-2	Byproduct 4	0.12	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-NE-072419	07/24/2019	280-126823-2	R-EVE	0.052	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-NE-072419	07/24/2019	280-126823-2	R-EVE	0.052	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-NE-072419	07/24/2019	280-126823-2	Byproduct 4	0.090	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
Pond-1-NE-072419	07/24/2019	280-126823-2	Byproduct 4	0.09	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	PFO4DA	2.9	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	PFO4DA	3.7	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	R-EVE	15	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	R-EVE	28	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	R-EVE	29.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep C-02-Redbreast Sunfish	09/26/2019	320-54836-9	Byproduct 4	1.8	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep C-02-Redbreast Sunfish	09/26/2019	320-54836-9	Byproduct 4	1.9	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep B-02-Redbreast Sunfish	09/26/2019	320-54836-8	R-EVE	1.9	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep B-02-Redbreast Sunfish	09/26/2019	320-54836-8	R-EVE	2.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	Byproduct 4	1.7	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	Byproduct 4	1.8	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	R-EVE	14	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	R-EVE	14.0	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	Byproduct 4	48	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	Byproduct 4	51.0	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	Byproduct 5	78	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	Byproduct 5	82.0	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	PFMOAA	230.0	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	PFMOAA	210	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	PFMOAA	21	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	R-EVE	47	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	R-EVE	42.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	R-EVE	27.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	R-EVE	25.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	Byproduct 4	57	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	Byproduct 4	60.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORMSOIL-092619	09/26/2019	320-54770-6	PFO2HxA	24	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORMSOIL-092619	09/26/2019	320-54770-6	PFO2HxA	23.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	Byproduct 4	64.0	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	Byproduct 4	71.0	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED5-VEG-20191021	10/21/2019	320-55583-5	Byproduct 4	1.7	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED5-VEG-20191021	10/21/2019	320-55583-5	Byproduct 4	1.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	R-EVE	1.7	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	R-EVE	1.4	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	Byproduct 4	1.4	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	Byproduct 4	1.3	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	Byproduct 4	49	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	Byproduct 4	46.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-8-Soil-4-4.5-081319	08/13/2019	320-53349-1	Perfluorobutane Sulfonic Acid	1.2	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
EU-8-Soil-4-4.5-081319	08/13/2019	320-53349-1	Percent Moisture	10.5	%	PQL		0.1	J	D2216-90		
EU-8-Soil-4-4.5-081319-D	08/13/2019	320-53349-2	Percent Moisture	27.6	%	PQL		0.1	J	D2216-90		
INTAKE-WORM-092419	09/24/2019	320-54699-9	PEPA	12.0	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PMPA	23.0	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAK-WORM-SOIL-092419	09/24/2019	320-54699-2	PMPA	14	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAK-WORM-SOIL-092419	09/24/2019	320-54699-2	PMPA	14.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAK-WORM-SOIL-092419	09/24/2019	320-54699-2	Hfpo Dimer Acid	24.0	UG/KG	PQL		0.25	J	537 Modified		Shake_Bath_14D
INTAK-WORM-SOIL-092419	09/24/2019	320-54699-2	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.9	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
INTAK-WORM-SOIL-092419	09/24/2019	320-54699-2	PEPA	4.8	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAK-WORM-SOIL-092419	09/24/2019	320-54699-2	PEPA	4.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAK-WORM-SOIL-092419	09/24/2019	320-54699-2	PFOA	1.8	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
INTAK-WORM-SOIL-092419	09/24/2019	320-54699-2	PFO2HxA	16	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAK-WORM-SOIL-092419	09/24/2019	320-54699-2	PFO2HxA	16.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAK-WORM-SOIL-092419	09/24/2019	320-54699-2	PFMOAA	2.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAK-WORM-SOIL-092419	09/24/2019	320-54699-2	PFMOAA	2.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PEPA	5.7	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PEPA	5.8	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PMPA	3.9	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PMPA	3.3	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	Perfluorotridecanoic Acid	3.0	UG/KG	PQL		1.5	J	537 Modified		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	Byproduct 4	95.0	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	Perfluorotridecanoic Acid	6.6	UG/KG	PQL		1.4	J	537 Modified		Shake_Bath_14D
INTAKE-WORMSOIL-092419-D	09/24/2019	320-54699-3	PMPA	24	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORMSOIL-092419-D	09/24/2019	320-54699-3	PMPA	27.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORMSOIL-092419-D	09/24/2019	320-54699-3	Hfpo Dimer Acid	35.0	UG/KG	PQL		0.25	J	537 Modified		Shake_Bath_14D
INTAKE-WORMSOIL-092419-D	09/24/2019	320-54699-3	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	4.4	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
INTAKE-WORMSOIL-092419-D	09/24/2019	320-54699-3	PEPA	7.5	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORMSOIL-092419-D	09/24/2019	320-54699-3	PEPA	8.5	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORMSOIL-092419-D	09/24/2019	320-54699-3	PFOA	1.2	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
INTAKE-WORMSOIL-092419-D	09/24/2019	320-54699-3	Perfluorobutanoic Acid	2.3	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
INTAKE-WORMSOIL-092419-D	09/24/2019	320-54699-3	PFO2HxA	19	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORMSOIL-092419-D	09/24/2019	320-54699-3	PFO2HxA	20.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORMSOIL-092419-D	09/24/2019	320-54699-3	PFMOAA	4.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORMSOIL-092419-D	09/24/2019	320-54699-3	PFMOAA	5.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
										SOP		
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	Byproduct 4	120	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	Byproduct 4	130.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-1-Soil-4-4.5-081419	08/14/2019	320-53349-5	Hfpo Dimer Acid	0.43	UG/KG	PQL		0.25	J	537 Modified		Shake_Bath_14D
CFR Bladen-01-LMB	09/27/2019	320-54836-16	Perfluorotetradecanoic Acid	12	UG/KG	PQL		2.1	J	537 Modified		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	Perfluorotetradecanoic Acid	13	UG/KG	PQL		2.6	J	537 Modified		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	Perfluorotetradecanoic Acid	9.5	UG/KG	PQL		1.1	J	537 Modified		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	Perfluorooctane Sulfonamide	5.3	UG/KG	PQL		4.0	J	537 Modified		Shake_Bath_14D
Seep B-01-Spotted bass	09/24/2019	320-54836-2	Perfluorotetradecanoic Acid	3.2	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	Perfluorotetradecanoic Acid	22.0	UG/KG	PQL		1.4	J	537 Modified		Shake_Bath_14D
SLEA-SED3-VEG-20191021	10/21/2019	320-55583-3	Perfluorobutanoic Acid	2.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	Perfluorotetradecanoic Acid	13.0	UG/KG	PQL		1.2	J	537 Modified		Shake_Bath_14D

Validation Reason Quality review criteria exceeded between the REP (laboratory replicate) and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-1-VEG-091219	09/12/2019	320-54302-4	PEPA	11.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	R-EVE	11.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-07-CT-072519	07/25/2019	320-52969-5	Byproduct 4	0.0077	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-07-W-072519	07/25/2019	320-52969-4	Byproduct 5	0.021	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-04-CT-072519	07/25/2019	320-52969-1	R-EVE	0.0027	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR-04-CT-072519	07/25/2019	320-52969-1	Byproduct 4	0.004	UG/L	PQL		0.0020	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	PFMOAA	5.3	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	PFO4DA	110	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	PFO4DA	90	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PMPA	4.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	R-EVE	13.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Byproduct 4	55	UG/KG	PQL		5.9	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Byproduct 4	65.0	UG/KG	PQL		5.9	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PMPA	130.0	UG/KG	PQL		5.9	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	PMPA	150	UG/KG	PQL		5.9	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PMPA	12.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	NVHOS	9.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA SAMPLING **Validation Options:** LABSTATS

Validation Reason Quality review criteria exceeded between the REP (laboratory replicate) and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-9-VEG-082119	08/21/2019	320-53607-2	NVHOS	38.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PEPA	8.5	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PMPA	140	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PMPA	20.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFECA B	11.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	PFO4DA	130	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	PFO4DA	150	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	R-EVE	20.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	PMPA	3.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	PMPA	23	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	PMPA	27.0	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep B-02-Redbreast Sunfish	09/26/2019	320-54836-8	PFMOAA	23	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	PMPA	6.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	PMPA	4.8	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	PFO5DA	210.0	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	PFO2HxA	12	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	PFO2HxA	10.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason Quality review criteria exceeded between the REP (laboratory replicate) and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	PFO5DA	10	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	PFO5DA	8.8	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	PFMOAA	18.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PFO5DA	27	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PFO5DA	34.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	Byproduct 4	220	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	Byproduct 4	180.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFO2HxA	15.0	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFO3OA	21.0	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFO5DA	18.0	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	R-EVE	31	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	R-EVE	35.0	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-RIVERSOIL-091119	09/11/2019	320-54392-1	PFMOAA	7.5	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-RIVERSOIL-091119	09/11/2019	320-54392-1	PFMOAA	8.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-RIVERSOIL-091119	09/11/2019	320-54392-1	PFO2HxA	6.7	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-RIVERSOIL-091119	09/11/2019	320-54392-1	PFO2HxA	7.8	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFESA-BP2	14.0	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason Quality review criteria exceeded between the REP (laboratory replicate) and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	PEPA	12	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	PEPA	10	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED3-VEG-20191021	10/21/2019	320-55583-3	PFMOAA	370	UG/KG	PQL		2.4	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED3-VEG-20191021	10/21/2019	320-55583-3	PFMOAA	160	UG/KG	PQL		2.4	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED3-VEG-20191021	10/21/2019	320-55583-3	PFO2HxA	29	UG/KG	PQL		2.4	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED3-VEG-20191021	10/21/2019	320-55583-3	PFO2HxA	20	UG/KG	PQL		2.4	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason The analysis hold time for this sample was exceeded by a factor of 2. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Percent Moisture	0.1	%	PQL		0.1	J	D2216-90		
CFR Bladen-01-LMB	09/27/2019	320-54836-16	Percent Moisture	76.5	%	PQL		0.1	J	D2216-90		
EU-11-soil-0-0.5	07/31/2019	320-52871-15	Percent Moisture	1.7	%	PQL		0.1	J	D2216-90		
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Percent Moisture	3.4	%	PQL		0.1	J	D2216-90		
EU2-soil-0-0.5	07/25/2019	320-52868-1	Percent Moisture	4.0	%	PQL		0.1	J	D2216-90		
EU6-soil-0-0.5	07/25/2019	320-52868-3	Percent Moisture	5.1	%	PQL		0.1	J	D2216-90		
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	Percent Moisture	79.6	%	PQL		0.1	J	D2216-90		
Seep C-02-Redbreast Sunfish	09/26/2019	320-54836-9	Percent Moisture	74.9	%	PQL		0.1	J	D2216-90		
Seep B-02-Redbreast Sunfish	09/26/2019	320-54836-8	Percent Moisture	76.3	%	PQL		0.1	J	D2216-90		
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	Percent Moisture	76.3	%	PQL		0.1	J	D2216-90		

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluorotridecanoic Acid	6.5	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluorobutane Sulfonic Acid	4.5	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluorodecanoic Acid	11.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluorodecane Sulfonic Acid	1.9	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluorododecanoic Acid	11.0	UG/KG	PQL		1.1	J	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFOS	4700.0	UG/KG	PQL		63	J	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluoroundecanoic Acid	24.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluorotridecanoic Acid	4.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluorotetradecanoic Acid	2.1	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluorobutane Sulfonic Acid	1.7	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluorodecanoic Acid	4.2	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluorodecane Sulfonic Acid	1.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluorododecanoic Acid	4.9	UG/KG	PQL		1.2	J	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFOS	93.0	UG/KG	PQL		3.5	J	537 Modified		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	Perfluoroundecanoic Acid	9.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
DERC-1 LMB	07/30/2019	320-52951-1	PFOS	14.0	UG/KG	PQL		2.5	J	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	PFOS	12.0	UG/KG	PQL		2.5	J	537 Modified		Shake_Bath_14D
DERC-2 LMB	07/30/2019	320-52951-2	Perfluoroundecanoic Acid	1.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluorooctane Sulfonamide	1.8	UG/KG	PQL		1.5	J	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluorotridecanoic Acid	2.1	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluorotetradecanoic Acid	2.8	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluorobutane Sulfonic Acid	12.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluorododecanoic Acid	2.7	UG/KG	PQL		1.2	J	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-09-2 BC	07/31/2019	320-52951-8	PFOS	8.3	UG/KG	PQL		3.7	J	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	Perfluoroundecanoic Acid	1.8	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluorodecane Sulfonic Acid	1.2	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluorobutane Sulfonic Acid	22.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluorododecanoic Acid	1.7	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	Perfluoroundecanoic Acid	1.7	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluorododecanoic Acid	1.5	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-09-1 BC	07/31/2019	320-52951-7	Perfluoroundecanoic Acid	1.2	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-06-3 BC	07/31/2019	320-52951-9	Perfluorobutane Sulfonic Acid	6.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluorooctane Sulfonamide	2.2	UG/KG	PQL		1.3	J	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluorotetradecanoic Acid	6.1	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluorobutane Sulfonic Acid	20.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluorodecanoic Acid	1.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluorotridecanoic Acid	4.1	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	Perfluorododecanoic Acid	6.4	UG/KG	PQL		1.1	J	537 Modified		Shake_Bath_14D
CFR-06-1 BC	07/31/2019	320-52951-5	Perfluorododecanoic Acid	1.1	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	Perfluorotetradecanoic Acid	4.9	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
EU-11-inv	07/31/2019	320-52871-17	Perfluorohexanoic Acid	2.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluorododecanoic Acid	2.3	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Perfluorobutanoic Acid	2.1	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Hfpo Dimer Acid	6.0	UG/KG	PQL		1.3	J	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluorododecanoic Acid	1.7	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluoropentanoic Acid	3.0	UG/KG	PQL		1.1	J	537 Modified		Shake_Bath_14D

Validation Reason The preparation hold time for this sample was exceeded by a factor of 2. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-3-veg	07/31/2019	320-52871-2	Hfpo Dimer Acid	6.6	UG/KG	PQL		1.5	J	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Perfluorobutanoic Acid	2.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	Perfluorobutane Sulfonic Acid	1.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.34	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
EU2-soil-0-0.5	07/25/2019	320-52868-1	PFOS	0.55	UG/KG	PQL		0.50	J	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluorobutanoic Acid	13.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Perfluorododecanoic Acid	3.9	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Hfpo Dimer Acid	110.0	UG/KG	PQL		1.7	J	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluorododecanoic Acid	4.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Hfpo Dimer Acid	5.7	UG/KG	PQL		1.5	J	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.2	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
EU6-soil-0-0.5	07/25/2019	320-52868-3	PFOS	0.73	UG/KG	PQL		0.50	J	537 Modified		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Perfluorobutanoic Acid	2.3	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA SAMPLING **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-10-INV-082119	08/21/2019	320-53607-6	Percent Moisture	68.6	%	PQL		0.1	J	D2216-90		
EU-1-Soil-4-4.5-081419	08/14/2019	320-53349-5	Percent Moisture	9.2	%	PQL		0.1	J	D2216-90		
EU-10-VEG-082119	08/21/2019	320-53607-5	Percent Moisture	62.2	%	PQL		0.1	J	D2216-90		
EU-12-SOIL-4-4.5-082219	08/22/2019	320-53607-11	Percent Moisture	10.2	%	PQL		0.1	J	D2216-90		
EU-2-SOIL-4-4.5-082219	08/22/2019	320-53607-10	Percent Moisture	11.2	%	PQL		0.1	J	D2216-90		
EU-3-SOIL-4-4.5-082219	08/22/2019	320-53607-9	Percent Moisture	5.5	%	PQL		0.1	J	D2216-90		
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	Percent Moisture	11.3	%	PQL		0.1	J	D2216-90		
EU-5-SOIL-0-.5-082319	08/23/2019	320-53637-1	Percent Moisture	12.7	%	PQL		0.1	J	D2216-90		
EU-7-Soil-4-4.5-081419	08/14/2019	320-53349-4	Percent Moisture	15.4	%	PQL		0.1	J	D2216-90		
EU10-SOIL-4-4.5-082719	08/27/2019	320-53747-2	Percent Moisture	5.2	%	PQL		0.1	J	D2216-90		
EU-9-INV-082119	08/21/2019	320-53607-3	Percent Moisture	64.4	%	PQL		0.1	J	D2216-90		
EU-9-VEG-082119	08/21/2019	320-53607-2	Percent Moisture	80.3	%	PQL		0.1	J	D2216-90		
EU9-SOIL-4-4.5-082719	08/27/2019	320-53747-1	Percent Moisture	2.2	%	PQL		0.1	J	D2216-90		
INTAK-WORM-SOIL-092419	09/24/2019	320-54699-2	Percent Moisture	48.7	%	PQL		0.1	J	D2216-90		
INTAKE-WORMSOIL-092419-D	09/24/2019	320-54699-3	Percent Moisture	59.2	%	PQL		0.1	J	D2216-90		
SEEP-A-RIVERSOIL-091319	09/13/2019	320-54392-2	Percent Moisture	34.5	%	PQL		0.1	J	D2216-90		
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	Percent Moisture	92.0	%	PQL		0.1	J	D2216-90		
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	Percent Moisture	38.3	%	PQL		0.1	J	D2216-90		
SEEP-D-RIVERSOIL-091119	09/11/2019	320-54392-1	Percent Moisture	20.1	%	PQL		0.1	J	D2216-90		
WC-WORMSOIL-092419	09/24/2019	320-54699-8	Percent Moisture	25.2	%	PQL		0.1	J	D2216-90		

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-10-INV-082119	08/21/2019	320-53607-6	PMPA	4.2	UG/KG	PQL		1.7	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-INV-082119	08/21/2019	320-53607-6	PMPA	4.2	UG/KG	PQL		1.7	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	Hfpo Dimer Acid	3.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-INV-082119	08/21/2019	320-53607-3	Hfpo Dimer Acid	3.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-1-VEG-091219	09/12/2019	320-54302-4	PEPA	9.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-VEG-091219	09/12/2019	320-54302-4	PFO2HxA	33	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-VEG-091219	09/12/2019	320-54302-4	PFO2HxA	35.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-VEG-091219	09/12/2019	320-54302-4	PFO3OA	1.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-VEG-091219	09/12/2019	320-54302-4	PFO3OA	1.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-VEG-091219	09/12/2019	320-54302-4	PFO4DA	1.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-VEG-091219	09/12/2019	320-54302-4	PFO4DA	1.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR Bladen-03-Redbreast	09/27/2019	320-54836-13	PFMOAA	2.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR Bladen-03-Redbreast	09/27/2019	320-54836-13	PFMOAA	2.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR Bladen-03-LMB	09/27/2019	320-54836-18	PFMOAA	8.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR Bladen-03-LMB	09/27/2019	320-54836-18	PFMOAA	7.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR Bladen-02-LMB	09/27/2019	320-54836-17	PFMOAA	1.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR Bladen-02-LMB	09/27/2019	320-54836-17	PFMOAA	1.3	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	PFMOAA	6.7	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR Bladen-01-LMB	09/27/2019	320-54836-16	PFMOAA	21	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR Bladen-01-LMB	09/27/2019	320-54836-16	PFMOAA	19	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PMPA	3.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR Bladen-04-Redbreast	09/27/2019	320-54836-14	PFMOAA	2.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR Bladen-04-Redbreast	09/27/2019	320-54836-14	PFMOAA	3.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	R-EVE	11	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PES	3.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PES	3.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PMPA	1.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-10-VEG-082119	08/21/2019	320-53607-5	PMPA	1.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-VEG-091219	09/12/2019	320-54302-4	PMPA	63	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-1-VEG-091219	09/12/2019	320-54302-4	PMPA	66.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFO2HxA	14	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PFO2HxA	15.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PEPA	1.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PEPA	1.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	PMPA	11	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	NVHOS	1.9	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	NVHOS	1.7	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound		Shake_Bath_14D

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
										SOP		
EU-12-VEG-082019	08/20/2019	320-53490-13	PMPA	1.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PMPA	1.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFECA B	1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	PFECA B	1.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	PFO2HxA	2.3	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-Soil-4-4.5-081319	08/13/2019	320-53349-3	PFO2HxA	2.7	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFO2HxA	3.5	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PFO2HxA	3.3	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	NVHOS	8.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PES	3.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PES	3.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PMPA	5.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PMPA	5.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PFO4DA	1.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PFO4DA	1.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PFO2HxA	2.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-5-VEG-082319	08/23/2019	320-53637-2	PFO2HxA	2.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PEPA	1.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-5-VEG-082319	08/23/2019	320-53637-2	PEPA	1.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	NVHOS	17	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	NVHOS	16.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PFO2HxA	4.8	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PFO2HxA	4.3	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PES	1.5	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PES	1.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PMPA	9.9	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PMPA	9.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-INV-081619	08/16/2019	320-53490-9	PMPA	1.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-INV-081619	08/16/2019	320-53490-9	PMPA	1.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-INV-081619	08/16/2019	320-53490-9	PEPA	1.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-INV-081619	08/16/2019	320-53490-9	PEPA	1.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-VEG-081619	08/16/2019	320-53490-8	PMPA	26	UG/KG	PQL		8.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-VEG-081619	08/16/2019	320-53490-8	PMPA	27.0	UG/KG	PQL		8.1	J	Cl. Spec. Table 3 Compound		Shake_Bath_14D

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
										SOP		
EU-8-VEG-081619	08/16/2019	320-53490-8	PFO2HxA	9.4	UG/KG	PQL		8.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-8-VEG-081619	08/16/2019	320-53490-8	PFO2HxA	11.0	UG/KG	PQL		8.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	NVHOS	5.3	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	NVHOS	5.9	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PFMOAA	4.9	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-9-VEG-082119	08/21/2019	320-53607-2	PFMOAA	5.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFESA-BP1	220.0	UG/KG	PQL		12	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-inv	07/25/2019	320-52868-8	PFESA-BP1	230	UG/KG	PQL		12	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PEPA	7.3	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PMPA	110.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFO2HxA	21	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFO2HxA	20.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PMPA	23	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFO2HxA	3.3	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFO2HxA	2.5	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PEPA	2.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU6-veg	07/25/2019	320-52868-11	PEPA	2.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFO3OA	1.5	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PFO3OA	1.4	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PEPA	12	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419	09/24/2019	320-54699-9	PMPA	23	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	PFO5DA	3.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	PFO5DA	3.3	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	PFMOAA	18	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-02-Redbreast Sunfish	09/26/2019	320-54836-7	PFMOAA	16	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	PFMOAA	22.0	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	PFMOAA	22	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep A-01-Redbreast Sunfish	09/24/2019	320-54836-1	PMPA	1.2	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
POND-B-EAST-091219	09/12/2019	320-54303-3	PMPA	0.35	UG/L	PQL		0.010	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
POND-B-EAST-091219	09/12/2019	320-54303-3	PMPA	0.35	UG/L	PQL		0.010	J	Cl. Spec. Table 3 Compound SOP		PFAS_DI_Prep
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	PMPA	3.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFESA-BP2	1.2	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFESA-BP2	1.2	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound		Shake_Bath_14D

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method SOP	Pre-prep	Prep
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFO3OA	1.3	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
INTAKE-WORM-092419-D	09/24/2019	320-54699-10	PFO3OA	1.4	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep C-02-Redbreast Sunfish	09/26/2019	320-54836-9	PFMOAA	12.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep C-02-Redbreast Sunfish	09/26/2019	320-54836-9	PFMOAA	11	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
Seep B-02-Redbreast Sunfish	09/26/2019	320-54836-8	PFMOAA	20	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	PFO4DA	5.1	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	PFO4DA	5.9	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	PFO5DA	170	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	PFESA-BP1	2.8	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	PFESA-BP1	3.4	UG/KG	PQL		3.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PMPA	5.5	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PMPA	4.4	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PFESA-BP2	21.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PFESA-BP2	21.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	Hydro-EVE Acid	4.6	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	Hydro-EVE Acid	4.5	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PEPA	7.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PEPA	6.9	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PFESA-BP1	3.1	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PFESA-BP1	2.5	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PFO3OA	33	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PFO3OA	34.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	NVHOS	2.3	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	NVHOS	2.1	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PFO2HxA	4.8	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PFO2HxA	4.3	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PFO3OA	2.9	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PFO3OA	3.0	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMSOIL-092519	09/25/2019	320-54770-8	PFO2HxA	47	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PEPA	2.9	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-C-WORM-092619	09/26/2019	320-54770-12	PEPA	2.7	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFO2HxA	12	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFO3OA	18.0	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound		Shake_Bath_14D

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
										SOP		
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFO5DA	16	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PEPA	3.8	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PEPA	3.4	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	NVHOS	4.6	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	NVHOS	5.1	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORMSOIL-092619	09/26/2019	320-54770-3	PFO2HxA	15	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORMSOIL-092619	09/26/2019	320-54770-3	PFO2HxA	15.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORMSOIL-092619	09/26/2019	320-54770-3	PFO3OA	7.7	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORMSOIL-092619	09/26/2019	320-54770-3	PFO3OA	8.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORMSOIL-092619	09/26/2019	320-54770-3	PFO4DA	5.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORMSOIL-092619	09/26/2019	320-54770-3	PFO4DA	5.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFESA-BP2	11	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	Hydro-EVE Acid	2.1	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	Hydro-EVE Acid	3.0	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED5-VEG-20191021	10/21/2019	320-55583-5	PFO3OA	1.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED5-VEG-20191021	10/21/2019	320-55583-5	PFO3OA	1.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SLEA-SED5-VEG-20191021	10/21/2019	320-55583-5	PFO4DA	1.7	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED5-VEG-20191021	10/21/2019	320-55583-5	PFO4DA	1.8	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED4-VEG-20191021	10/21/2019	320-55583-4	NVHOS	34	UG/KG	PQL		1.3	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PEPA	5.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PEPA	5.7	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED6-VEG-20191021	10/21/2019	320-55583-6	PFO4DA	1.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SLEA-SED6-VEG-20191021	10/21/2019	320-55583-6	PFO4DA	1.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PFO3OA	2.7	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PFO3OA	2.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PFESA-BP2	1.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
WC-WORM-092419	09/24/2019	320-54699-11	PFESA-BP2	1.5	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the rejection level. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-12-VEG-082019	08/20/2019	320-53490-13	NVHOS	74	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-VEG-082019	08/20/2019	320-53490-13	NVHOS	81.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PMPA	6.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-4-VEG-081919	08/19/2019	320-53490-2	PMPA	6.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PMPA	13	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-7-VEG-081919	08/19/2019	320-53490-5	PMPA	13.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	PFECA B	8.6	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PFO4DA	1.4	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-B-WORMS-092519	09/25/2019	320-54770-13	PFO4DA	1.5	UG/KG	PQL		1.2	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFO4DA	1.7	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
SEEP-D-WORM-092619	09/26/2019	320-54770-11	PFO4DA	2.0	UG/KG	PQL		1.1	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-1-Soil-4-4.5-081419	08/14/2019	320-53349-5	Perfluorobutane Sulfonic Acid	0.2	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
EU-1-Soil-4-4.5-081419	08/14/2019	320-53349-5	Perfluorobutane Sulfonic Acid (trial)	0.2	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFESA-BP2	1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFESA-BP2	1.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFO4DA	3.3	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFO4DA	3.8	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFO5DA	2.8	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PFO5DA	3.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFO4DA	1.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PFO4DA	1.5	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PMPA	2.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB-Carcass	07/30/2019	320-52951-19	PMPA	2.7	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PMPA	1.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
DERC-3 LMB	07/30/2019	320-52951-3	PMPA	1.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluorodecanoic Acid	1.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PFO4DA	11	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PFO4DA	11.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluorotridecanoic Acid	1.8	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluorooctane Sulfonamide	7.2	UG/KG	PQL		1.3	J	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluorododecanoic Acid	5.0	UG/KG	PQL		1.1	J	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	PFOS	61.0	UG/KG	PQL		3.3	J	537 Modified		Shake_Bath_14D
CFR-09-2 BC-Carcass	07/31/2019	320-52951-21	Perfluoroundecanoic Acid	4.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFO4DA	5.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-1 LMB	07/30/2019	320-52951-4	PFO4DA	5.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PMPA	1.9	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-09-2 BC	07/31/2019	320-52951-8	PMPA	1.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluorotridecanoic Acid	5.3	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluorooctane Sulfonamide	4.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluorotetradecanoic Acid	10.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluorodecanoic Acid	2.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluorododecanoic Acid	9.9	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluorodecanoic Acid	2.6	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	PFOS	1700.0	UG/KG	PQL		23	J	537 Modified		Shake_Bath_14D
CFR-06-2 BC-Carcass	07/31/2019	320-52951-20	Perfluoroundecanoic Acid	6.1	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluorotridecanoic Acid	3.7	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluorooctane Sulfonamide	1.8	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluorotetradecanoic Acid	5.6	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluorobutanoic Acid	3.2	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluorobutane Sulfonic Acid	1.1	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluorododecanoic Acid	9.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PMPA	1.4	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-06-2 BC	07/31/2019	320-52951-6	PMPA	1.3	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	PFOS	360.0	UG/KG	PQL		4.6	J	537 Modified		Shake_Bath_14D
CFR-05-4 CC-Carcass	08/01/2019	320-52951-23	Perfluoroundecanoic Acid	6.6	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluorotridecanoic Acid	2.4	UG/KG	PQL		1.4	J	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluorotetradecanoic Acid	3.6	UG/KG	PQL		1.5	J	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluorobutane Sulfonic Acid	2.9	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluorodecanoic Acid	1.1	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluorodecanoic Acid	14.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluorodecane Sulfonic Acid	6.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluorododecanoic Acid	3.5	UG/KG	PQL		1.9	J	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluorotridecanoic Acid	1.9	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-4 CC	08/01/2019	320-52951-16	Perfluoroundecanoic Acid	2.6	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluorotetradecanoic Acid	1.1	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluorododecanoic Acid	1.6	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	PFOS	3.5	UG/KG	PQL		2.5	J	537 Modified		Shake_Bath_14D
CFR-05-3 BC	08/01/2019	320-52951-15	Perfluoroundecanoic Acid	1.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluorotetradecanoic Acid	2.1	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluorodecanoic Acid	14.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluorodecane Sulfonic Acid	2.2	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluorododecanoic Acid	9.7	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR-05-2 FH	08/01/2019	320-52951-14	PFOS	52.0	UG/KG	PQL		2.5	J	537 Modified		Shake_Bath_14D
CFR-05-2 FH	08/01/2019	320-52951-14	Perfluoroundecanoic Acid	17.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluorotetradecanoic Acid	17.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluorododecanoic Acid	35.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	PFOS	410.0	UG/KG	PQL		11	J	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluoroundecanoic Acid	58.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluorotridecanoic Acid	6.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluorotetradecanoic Acid	6.2	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluorododecanoic Acid	11.0	UG/KG	PQL		11	J	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	PFOS	180.0	UG/KG	PQL		3.2	J	537 Modified		Shake_Bath_14D
CFR-05-1-LMB	08/01/2019	320-52951-13	Perfluoroundecanoic Acid	18.0	UG/KG	PQL		5.8	J	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluorodecanoic Acid	39.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluorodecane Sulfonic Acid	9.5	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluorotridecanoic Acid	13.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR-05-1 LMB-Carcass	08/01/2019	320-52951-22	Perfluorooctane Sulfonamide	1.1	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	PFOS	1.5	UG/KG	PQL		0.50	J	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	PFOS (trial)	0.54	UG/KG	PQL		0.50	J	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	R-EVE	21	UG/KG	PQL		5.9	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	R-EVE	19.0	UG/KG	PQL		5.9	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-SOIL-4-4.5-081519	08/15/2019	320-53349-10	Perfluorobutane Sulfonic Acid	0.31	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
EU-11-soil-0-0.5	07/31/2019	320-52871-15	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	3.1	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EU-1-DiscreteSoil-0-.5-081419	08/14/2019	320-53747-4	Hfpo Dimer Acid	0.53	UG/KG	PQL		0.25	J	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	NVHOS	1800.0	UG/KG	PQL		5.9	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	NVHOS	2000	UG/KG	PQL		5.9	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.29	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019-D	08/20/2019	320-53490-15	PFOS	0.6	UG/KG	PQL		0.50	J	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.3	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
EU-12-SOIL-0-.5-082019	08/20/2019	320-53490-12	PFOS	1.3	UG/KG	PQL		0.50	J	537 Modified		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Hfpo Dimer Acid	9.3	UG/KG	PQL		5.9	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-11-veg	07/31/2019	320-52871-16	Hfpo Dimer Acid	11.0	UG/KG	PQL		5.9	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.69	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Hfpo Dimer Acid	1.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-veg	07/31/2019	320-52871-2	Hfpo Dimer Acid	1.2	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.2	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	PFOS	1.1	UG/KG	PQL		0.50	J	537 Modified		Shake_Bath_14D
EU-3-soil-0-0.5	07/31/2019	320-52871-1	Hfpo Dimer Acid	0.36	UG/KG	PQL		0.25	J	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluorododecanoic Acid	0.23	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	2-(N-ethyl perfluoro-1-octanesulfonamido)-	0.4	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
			ethanol									
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	PFOS	0.94	UG/KG	PQL		0.50	J	537 Modified		Shake_Bath_14D
EU-4-SOIL-0-.5-081919	08/19/2019	320-53490-1	Perfluorodecanoic Acid	0.46	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
EU-6-SOIL-4-4.5-081519	08/15/2019	320-53349-9	Perfluorobutane Sulfonic Acid	0.22	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.35	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
EU-7-SOIL-0-.5-081919	08/19/2019	320-53490-4	PFOS	0.61	UG/KG	PQL		0.50	J	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.28	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
EU-8-SOIL-0-.5-081619	08/16/2019	320-53490-7	PFOS	0.92	UG/KG	PQL		0.50	J	537 Modified		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Hfpo Dimer Acid	19	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	Hfpo Dimer Acid	21.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFMOAA	190.0	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU2-veg	07/25/2019	320-52868-7	PFMOAA	210	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Hfpo Dimer Acid	1.5	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
EU6-veg	07/25/2019	320-52868-11	Hfpo Dimer Acid	1.1	UG/KG	PQL		1.0	J	Cl. Spec. Table 3 Compound SOP		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluorodecanoic Acid	1.9	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluorotetradecanoic Acid	16.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluorododecanoic Acid	2.5	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	PFOS	31.0	UG/KG	PQL		2.5	J	537 Modified		Shake_Bath_14D
MM-68-5 LMB	08/01/2019	320-52951-18	Perfluoroundecanoic Acid	2.6	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluorohexadecanoic acid (PFHxDA)	1.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluorononanesulfonic acid	1.7	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluorotridecanoic Acid	15.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluoroheptane sulfonic acid (PFHpS)	1.9	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluorodecanoic Acid	69.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluorodecane Sulfonic Acid	21.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluorohexane Sulfonic Acid	1.2	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluorododecanoic Acid	58.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	PFOS	2200.0	UG/KG	PQL		47	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB-Carcass	08/02/2019	320-52951-24	Perfluoroundecanoic Acid	73.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluorotridecanoic Acid	7.1	UG/KG	PQL		1.2	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluorotetradecanoic Acid	6.1	UG/KG	PQL		1.2	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluorobutane Sulfonic Acid	1.3	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluorodecanoic Acid	20.0	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluorodecane Sulfonic Acid	9.5	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluorododecanoic Acid	18.0	UG/KG	PQL		1.5	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	PFOS	270.0	UG/KG	PQL		4.5	J	537 Modified		Shake_Bath_14D
MM-68-4 LMB	08/02/2019	320-52951-17	Perfluoroundecanoic Acid	21.0	UG/KG	PQL		8.1	J	537 Modified		Shake_Bath_14D
MM-68-2 CC	08/01/2019	320-52951-11	PFOS	2.6	UG/KG	PQL		2.5	J	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluorotridecanoic Acid	2.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluorotetradecanoic Acid	2.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluorodecanoic Acid	3.7	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluorodecane Sulfonic Acid	1.5	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
MM-68-1 FH	08/01/2019	320-52951-10	PFOS	28.0	UG/KG	PQL		2.5	J	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluoroundecanoic Acid	5.8	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
MM-68-1 FH	08/01/2019	320-52951-10	Perfluorododecanoic Acid	5.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	Hfpo Dimer Acid	77.0	UG/KG	PQL		6.2	J	537 Modified		Shake_Bath_14D
SEEP-A-RIVERSOIL-091319	09/13/2019	320-54392-2	Hfpo Dimer Acid	17.0	UG/KG	PQL		0.25	J	537 Modified		Shake_Bath_14D
SEEP-A-RIVERSOIL-091319	09/13/2019	320-54392-2	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.4	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
SEEP-A-RIVERSOIL-091319	09/13/2019	320-54392-2	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.64	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	Hfpo Dimer Acid	13.0	UG/KG	PQL		1.3	J	537 Modified		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	2.6	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
SEEP-A-WORMSOIL-091319	09/13/2019	320-54394-1	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	1.4	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
SEEP-A-WORMS-091319	09/13/2019	320-54394-2	Perfluorohexadecanoic acid (PFHxDA)	15.0	UG/KG	PQL		2.5	J	537 Modified		Shake_Bath_14D
SEEP-D-RIVERSOIL-091119	09/11/2019	320-54392-1	Hfpo Dimer Acid	1.9	UG/KG	PQL		0.25	J	537 Modified		Shake_Bath_14D
SEEP-D-RIVERSOIL-091119	09/11/2019	320-54392-1	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	1.1	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
SEEP-D-RIVERSOIL-091119	09/11/2019	320-54392-1	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.64	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

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

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	Perfluorotetradecanoic Acid	3.9	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	Perfluorobutanoic Acid	5.5	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
CFR Bladen-01-Bluegill	09/26/2019	320-54836-6	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	3.6	UG/KG	PQL		1.0	J	537 Modified		Shake_Bath_14D
SLEA-SED2-20191021	10/21/2019	320-55583-8	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.28	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
SLEA-SED2-20191021	10/21/2019	320-55583-8	2-(N-methyl perfluoro-1-octanesulfonamido)-ethanol	0.30	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D
SLEA-SED4-20191021	10/21/2019	320-55583-10	2-(N-ethyl perfluoro-1-octanesulfonamido)-ethanol	0.74	UG/KG	PQL		0.20	J	537 Modified		Shake_Bath_14D

Site: Fayetteville **Sampling Program:** 2019 SLEA Sampling **Validation Options:** LABSTATS

Validation Reason The result is estimated since the concentration is between the method detection limit and practical quantitation limit.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Type	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
EB-SLEA-092419	09/24/2019	320-54699-1	Carbon	0.48	MG/L	MDL	0.35	1.0	J	9060A		
EB-SLEA-092519	09/25/2019	320-54770-2	Carbon	0.65	MG/L	MDL	0.35	1.0	J	9060A		
SLEA-EQBLK-091119	09/11/2019	320-54392-3	Carbon	0.51	MG/L	MDL	0.35	1.0	J	9060A		
SLEA-EQBLK-091319	09/13/2019	320-54392-4	Carbon	0.41	MG/L	MDL	0.35	1.0	J	9060A		

Geosyntec consultants

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

APPENDIX H

Numerical Groundwater Modeling Report

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

NUMERICAL MODELING

Chemours Fayetteville Works

Prepared for

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

Prepared by

Geosyntec Consultants of NC, P.C.
2501 Blue Ridge Road, Suite 430
Raleigh, NC 27607

Geosyntec Project Number TR0795

December 2019

TABLE OF CONTENTS

EXECUTIVE SUMMARY vi

1. INTRODUCTION ... 1
   1.1 Purpose of the Report ... 1
   1.2 Approach ... 1

2. GENERAL SETTING ... 2
   2.1 Site Description and Surroundings ... 2
   2.2 Geomorphologic Site Setting ... 2

3. CONCEPTUAL MODEL ... 2
   3.1 Aquifer System Framework ... 3
      3.1.1 General ... 3
      3.1.2 EVS Model ... 5
   3.2 Groundwater Flow System ... 6
      3.2.1 Perched Zone ... 6
      3.2.2 Surficial Aquifer ... 6
      3.2.3 Black Creek Aquifer ... 7
   3.3 Boundaries, Sources and Sinks ... 7
   3.4 Water Budget ... 7

4. COMPUTER MODEL ... 8
   4.1 Model Selection ... 8
   4.2 Model Description ... 8

5. GROUNDWATER FLOW MODEL CONSTRUCTION ... 8
   5.1 Model Mesh ... 8
   5.2 Hydraulic Parameters ... 9
   5.3 Flow Model Boundary Conditions ... 10
   5.4 Selection of Calibration Targets ... 11

6. CALIBRATION ... 12
   6.1 Residual Analysis ... 12
   6.2 Seeps and Discharges ... 14
   6.3 Sensitivity Analysis ... 14

7. PREDICTIVE SIMULATIONS ... 15
   7.1 Extraction Wells Scenario with no Barrier Wall ... 20

7.2 Extraction Wells Scenario and Barrier Wall 20
7.3 Extraction Wells Scenario and Barrier Wall Adjacent to the Plant 21

8. LIMITATIONS AND RECOMMENDATIONS 21
8.1 Model Assumptions and Limitations 21
8.2 Summary and Recommendations 22

9. REFERENCES 23

LIST OF TABLES

Table 1: Site Aquifer System

Table 2: Calibrated Model Hydraulic Parameters for Each Hydrostratigraphic Unit

Table 3: Final Calibrated Groundwater Flow Model Statistics

Table 4: Calibration to Seeps and Discharges

Table 5: Calibrated Model Sensitivity to Model Boundary Conditions and Hydraulic Parameters

Table 6: Summary of Prediction Scenarios

Table 7: Summary of Prediction Scenarios Results

LIST OF FIGURES

Figure 1: Site Location Map

Figure 2: Regional Topographic Map

Figure 3: Site Topographic Map

Figure 4: Typical Site Cross-Section

Figure 5: Overview of EVS Model

Figure 6: Model Computed Groundwater Elevation Map – Perched Zone, October 2019

Figure 7: Model Computed Groundwater Elevation Map – Surficial Aquifer, October 2019

Figure 8: Model Computed Groundwater Elevation Map – Black Creek Aquifer, October 2019

Figure 9: Comparison of Observed and Computed Hydraulic Head Elevations

LIST OF APPENDICES

Appendix A: Extracts from EVS Model

LIST OF ABBREVIATIONS

CAP	Corrective Action Plan
CFRW	Cape Fear River Watch
CO	Consent Order
EVS	Environmental Visualization System
ft	feet
ft bgs	feet below ground surface
ft/day	feet per day
GPM	gallons per minute
K	hydraulic conductivity
HPT	hydraulic profiling tool
LiDAR	Light Detection and Ranging
MSL	mean sea level
NCDEQ	North Carolina Department of Environmental Quality
NRMS	Normalized Root Mean Square
P_c	capillary pressure
PFAS	per- and polyfluoroalkyl substances
RMS	Root Mean Square
S_r	residual wetting phase saturation
S_s	specific storage
S_w	wetting phase saturation
USGS	United States Geological Survey
WWTP	wastewater treatment plant
α	Brooks-Corey-Burdine constitutive fitted parameter, alpha
δ	Brooks-Corey-Burdine constitutive fitted parameter, delta
λ	Brooks-Corey-Burdine constitutive fitted parameter, lambda
θ	unsaturated-flow porosity, theta

EXECUTIVE SUMMARY

This numerical modeling report was prepared by Geosyntec Consultants of NC, P.C. (Geosyntec) for The Chemours Company FC, LLC (Chemours) to assess groundwater flow at the Chemours Fayetteville Works facility (Site) using numerical modelng, pursuant to Paragraph 16 of the February 25, 2019 Consent Order (CO) among Chemours, the North Carolina Department of Environmental Quality (NCDEQ) and Cape Fear River Watch (CFRW). Paragraph 16 requires Chemours to submit a Corrective Action Plan (CAP) for the Site by 31 December 2019.

The objective of the numerical modeling program is to develop a model for use in the design and costing assessment of the various proposed groundwater remedies for the Site. In addition, the model will aid in assessing the effectiveness of each remedy. Based on the requirements of the modeling, the finite element code FEFLOW was chosen for the project. The model is intended to be hydraulic only, to aid in assessment of pumping and recharge reduction approaches. The model is not intended (in its current formulation) to simulate contaminant fate and transport. The modeling was conducted in accordance with NC guidance and the NCDEQ's 2007 Groundwater Modeling Policy (NCDEQ, 2007). Initial model parameters were chosen based on the available field data and published literature values where field data were not available. Calibration was performed using a sequenced trial and adjustment approach.

The calibrated model developed had a Normalized Root Mean Square (NRMS) error of 12.5% which is considered satisfactory based on the scale of the model and its intended end use in costing and preliminary design focusing on hydraulics only (as opposed to contaminant fate and transport). The majority of the error in the calibrated model occurs in the Perched Zone and will have limited effect of the ability of the model to predict capture of groundwater discharge to the surface water bodies. The steep topography, presence of a perched water bearing region, and lack of laterally extensive hydrostratagraphic units in many regions of the model domain makes this a challenging scenario to model, in both development and calibration stages.

Twenty simulations were conducted using the calibrated model to aid in the evaluation of the appropriate groundwater remedy of the CAP. Table 7 presents a description of the six key simulations examined in the model study area. All simulations consisted of groundwater extraction in some cases coupled with a barrier wall along the Cape Fear River. In general, to avoid capture of large volumes of water from the Cape Fear River, a barrier wall was required. Groundwater extraction minimization simulations of the location and extraction rates of the pumping wells (in combination with the barrier wall) indicated that a well spacing of 200 feet with extraction rates between 20 and 35 GPM provided capture of groundwater discharge to the Cape Fear River without excessive capture of Cape Fear River water.

Based on the results of the numerical modeling program, groundwater remedy development would be supported by reducing uncertainty regarding:

- Interactions between the Surficial Aquifer and the Black Creek Aquifer along the bluffs; and
- Distribution of groundwater flows into surface water drainage features including onsite groundwater seeps, Willis Creek and Old Outfall 002.

A combination of additional simulations and targeted field investigations (aquifer testing) to address these uncertainties is recommended before final remedy design.

1. INTRODUCTION

1.1 Purpose of the Report

This numerical modeling report was prepared by Geosyntec Consultants of NC, P.C. (Geosyntec) for The Chemours Company FC, LLC (Chemours) to assess groundwater flow at the Chemours Fayetteville Works facility (Site) using numerical modelng, pursuant to Paragraph 16 of the February 25, 2019 Consent Order (CO) among Chemours, the North Carolina Department of Environmental Quality (NCDEQ) and Cape Fear River Watch (CFRW). Paragraph 16 requires Chemours to submit a Corrective Action Plan (CAP) for the Site by 31 December 2019. This CAP describes how groundwater will be remediated at Site with a primary focus on reducing Site associated per and polyfluoroalkyl substances (PFAS) from reaching the Cape Fear River.

This document focuses on the development, calibration and implementation of the numerical groundwater model to support remedy evaluation, selection and design at the Site.

1.2 Approach

The model was developed in accordance with the guidelines described in the NCDEQ 2007 Groundwater Modeling Policy (NCDEQ, 2007) to help support potential future discussions with the NCDEQ about modeling results and interpretations and decisions based on modeling effort.

To meet this requirement, the report was prepared based on the following structure:

- **Introduction** (this section);
- **General Setting** (Section 2) – describes the Site and surrounding areas, and geomorphological Site setting;
- **Conceptual Model** (Section 2.2) – describes the geology and hydrogeology of the Site, and Site-specific hydrologic and hydraulic boundaries;
- **Computer Model** (Section 4) – describes the model selection process, the capabilities of the selected model;
- **Groundwater Model Construction** (Section 5) – describes the model mesh development, hydraulic parameters of hydrostratigraphic units, groundwater model boundary conditions based on available Site-specific data, and selected model calibration targets;
- **Calibration** (Section 6) – discusses the residual and sensitivity analysis results of the model calibration process;

- **Predictive Simulations** (Section 7) – discusses the results of the predictive simulation suite performed to assess different groundwater extraction remedial strategies;

- **Summary and Conclusions** (Section 8) – discusses model assumption and limitations, and recommendations for potential future modeling efforts;

- **References** (Section 9).

2. GENERAL SETTING

2.1 Site Description and Surroundings

The Site is located within a 2,177-acre property at 22828 NC Highway 87, approximately 20 miles southeast of the city of Fayetteville along the Bladen-Cumberland county line in North Carolina. Figure 1 presents an overview of the Site location. Figure 2 presents a regional topographic map and Figure 3 presents a higher resolution topographic map of the Site.

The Site is bounded by NC Highway 87 to the west, Cape Fear River to the east, and on the north and south by forested areas, farmland and private residences. Zoning maps indicate that the surrounding areas are zoned as residential, agricultural, conservation, industrial or commercial.

The manufacturing area of the Site covers approximately 312 acres (Figure 3). Chemours also operates a wastewater treatment plant (WWTP) at the Site. The remaining areas are grassy areas, forests and wetlands.

2.2 Geomorphologic Site Setting

The Site is located on the Coastal Plain. In North Carolina, the Coastal Plain Physiographic Province extends from the present Atlantic Ocean inland to the Fall Line, an erosional contact boundary with the Piedmont Province. The Fall Line is approximately 40 miles northwest of the Site.

Most of the Site sits on a rather flat-lying area at typical elevations ranging from 125 feet above mean sea level (ft MSL) to 150 ft above MSL (Figure 3). The topography mildly slopes from the western boundary towards the north, east and south. The slope then steepens quite abruptly in these directions, resulting from incisions carved by surface water courses including:

- Towards the north, coinciding with the course of Willis Creek where the topography decreases to elevations ranging between 35 ft above MSL and 70 ft above MSL;

- Towards the east, coinciding with the course of the Cape Fear River where the elevation drops sharply to approximately 35 ft above MSL, forming a bluff face between the Site and the River;

- Towards the south, coinciding with the course of Georgia Branch Creek where the topography decreases to elevations ranging between 35 ft above MSL and 110 ft above MSL.

A topographic incision also coincides with the Old Outfall 002, sloping more mildly in the southern portion of the Site.

Willis Creek and Georgia Branch Creek are tributaries to the Cape Fear River. Willis Creek flows in an easterly direction and was observed to have flow rates around 2,900 gallons per minute (GPM) in dry weather and around 6,500 GPM following rainfall. Georgia Branch Creek, which is offsite for its entire course, is flowing in a southeasterly direction and was observed to have flow rates between 2,400 and 2,600 GPM in both wet and dry weather. Georgia Branch Creek runs northwest-southeast beside Highway 87 before turning east towards the Cape Fear River to the south of the Site. The median flow rate in the Cape Fear River is in the order of 750,000 GPM.

3. CONCEPTUAL MODEL

3.1 Aquifer System Framework

3.1.1 General

Multiple aquifer units occur underneath the Site, which are summarized in Table 1 (from youngest to oldest) while their typical positions in the vertical profile are illustrated in Figure 4.

Table 1: Site Aquifer System

Unit	Description	Classification	Typical K-values*
Floodplain Deposits	Predominantly fine-grained deposits. Closely associated with the Cape Fear River course, typically 10 to 15 ft in thickness.	Aquitard (where fine-grained), local aquifer (where more sandy)	0.1 ft/day to 1 ft/day

Unit	Description	Classification	Typical K-values*
Perched Zone	Predominantly loose silty sand, brown to reddish brown. Relatively thin in the eastern portion of the Site to a depth of about 20 ft below ground surface (bgs). In the western portion, an inferred erosional feature has likely resulted in the unit being thicker.	Unconfined perched groundwater body of local extent, porous medium	2 ft/day to 5 ft/day
Perched Clay	Predominantly stiff clay with minor silts, dark grey. Also spatially limited. Pinching out to the north. To the east and south, outcrops along the bluff face. To the west, terminates and becomes absent, presumably eroded by the erosional feature.	Aquitard of local extent, porous medium	< 1ft/day
Surficial Aquifer	Predominantly fine to medium-grained sand, white to light brown. Mostly continuous layer across Site area, typically 20 ft to 40 ft thick with a mild dip to the south. In the western portion, the absence of Perched Clay does not enable to differentiate the contact with the lithology representing the Perched Zone.	Unconfined aquifer, porous medium	2 ft/day to 5 ft/day
Black Creek Confining Unit	Predominantly organic-rich clay, hard, dark grey to black. Regionally extensive layer, 20 ft to 40 ft thick with a mild dip to the south.	Aquitard of regional extent, porous medium	<1 ft/day
Black Creek Aquifer	Predominantly dense medium-grained sand, dark grey. Regionally extensive layer, typically 20 ft to 40 ft thick. Thins out in the Cape Fear River vicinity (up to less than 5 ft), likely due to erosion and emplacement of recent Floodplain Deposits.	Confined aquifer of regional extent, porous medium	5 ft/day to 80 ft/day
Cape Fear Confining Unit	Predominantly clay, hard. Regionally extensive layer.	Aquitard of regional extent, porous medium	<1 ft/day

Notes to Table: *Sourced from the On and Offsite Assessment Report (Geosyntec, 2019) and the Additional Site Investigation Report (Parsons, 2018). Aquifer values derived from aquifer testing (i.e. slug test and pumping test), aquitard values derived from grain-sized analysis.

In the western portion of the Site (Figure 4), an erosional feature (i.e. paleochannel) is indicated to occur. The erosional feature is interpreted to have completely eroded the Perched Clay, enabling direct hydraulic connection between the Perched Zone and the Surficial Aquifer. In parts (northwest), the erosional feature is also interpreted to have incised into the top of the Black Creek Aquifer.

3.1.2 EVS Model

A three-dimensional (3D) hydrostratigraphic model of the Site was constructed using CTech's Earth Volumetric Studio (EVS) software (https://www.ctech.com/products/earth-volumetric-studio/). The EVS model was developed to interpolate the hydrostratigraphic model, along the horizontal and vertical directions, and develop the model mesh for the numerical groundwater model.

A review of the available borehole logs, hydraulic profiling tool (HPT) logs and geological mapping observations indicated that the horizontal and vertical distribution of available data varied throughout the Site; with a dense distribution in some areas (e.g., onsite observations of the Perched Zone) and sparse in others (e.g., western portion of the Site, south of Old Outfall 002, and onsite observations below the Perched Clay). The EVS model was therefore constructed using an iterative process, by generating and incorporating control points which were guided by the cross-sections from the On and Offsite Assessment Report (Geosyntec, 2019), field observations and professional judgement.

A review of the available borehole logs also suggested that the hydrostratigraphic units within the Site vicinity are not continuous and not hierarchically layered (i.e., not "pancake" layered), especially in units above the Black Creek Aquifer. The "indicator kriging" method was therefore utilized to develop the EVS model. This approach involved computing the probability for each hydrostratigraphic unit at every cell within the model domain, and then assigning the unit with the highest probability to the cell.

Using this approach, the EVS model was constructed using the kriging interpolation method. Model input parameters were selected based on a review of the overall data distribution, visual comparisons of results with various input parameters, overall interpolating computing time and software limitations. A total of 98 boring locations, 28 HPT locations, 42 geological mapping observations, and 36 control points were incorporated to the EVS model.

The top of the model (i.e., ground surface) was determined based on the Light Detection and Ranging (LiDAR) data from NC Dept. of Public Safety published on 18 October 2015. The streambeds of the Willis Creek and Old Outfall 002 were further refined based on surveyed data. The bottom of the model was set to -20 ft MSL, which is below the

Black Creek Aquifer and intersects the Cape Fear Confining Unit. However, the bottom of the model does not represent the bottom of the Cape Fear Confining Unit.

An overview of the EVS model is presented in Figure 5. Visuals from the EVS model are also provided in Appendix A, which includes an the EVS model boundary, aerial view of the input data, and model outputs in aerial views, 3D views and cross-sectional views along selected portions of the Site.

3.2 Groundwater Flow System

The groundwater flow system in the Perched Zone, Surficial Aquifer and Black Creek Aquifer and their relative interactions are briefly described in the following sections. Further description is available in the On and Offsite Assessment Report (Geosyntec, 2019).

3.2.1 Perched Zone

Groundwater levels in the Perched Zone are distributed according to a mound-like shape. Higher groundwater levels are indicated in the northeast of the manufacturing area, typically over 140 ft above MSL. Lower groundwater levels, at the edge of the mound, are less than 120 ft above MSL, coinciding with the edge of the Perched Clay or the bluff.

Groundwater from the Perched Zone is anticipated to be a manifestation of surface infiltration due to its localized nature i.e. not in connection with regional flow.

Groundwater flow in the Perched Zone is likely to be radial i.e. outward from the top of the mound. Groundwater from the Perched Zone discharges along the bluff, above the contact between the Perched Zone and the Perched Clay. Groundwater from the Perched Zone is also anticipated to recharge the Surficial Aquifer, either via leakage through the Perched Clay or else via the erosional feature i.e. where the Perched Zone is directly connected to the Surficial Aquifer.

3.2.2 Surficial Aquifer

Groundwater levels in the Surficial Aquifer range from above 115 ft above MSL in the western area of the Site to about 90 ft above MSL in the northern and eastern areas. Groundwater in this aquifer unit is indicated to predominantly flow in a northeasterly and easterly direction, towards Willis Creek and the Cape Fear River, respectively. Groundwater from the Surficial Aquifer also discharges near the toe of the bluff, above the contact with the Black Creek confining unit. Discharge from the Surficial Aquifer into the Old Outfall 002 is also likely where it cuts across this unit.

Groundwater in the Surficial Aquifer is recharged by the regional flow and leakage from the above units.

3.2.3 Black Creek Aquifer

In the eastern part of the Site, groundwater levels in the Black Creek Aquifer range from 90 ft above MSL near the top of the bluff to about 35 ft above MSL near the Cape Fear River. There is limited information in the western part of the Site. Groundwater flow in the Black Creek Aquifer is predominantly in an easterly direction, towards the river although localized flow towards Willis Creek is anticipated where the creek is incised into this aquifer. While the Cape Fear River acts as a groundwater discharge zone for the Black Creek Aquifer, the steep gradient along the bluff (0.03 to 0.04 ft/ft) combined with the thin section of the aquifer (up to less than 5 ft) likely indicates resistance to flow.

3.3 Boundaries, Sources and Sinks

The dominant hydrologic boundary is the Cape Fear River, which acts as the regional groundwater discharge zone for the Black Creek Aquifer. The tributaries to the Cape Fear River are also indicated to act as more localized hydrologic boundaries, with groundwater from the Site variably interacting with these surface water bodies.

The bluff above the Cape Fear River acts as a seepage face. The steep slope results in groundwater discharge above the interface between the two shallow aquifer units (i.e. Perched Zone and Surficial Aquifer) and their underlying aquitard. The Cape Fear Confining Unit is considered to form the base of the Site aquifer system, providing a hydraulic barrier to the deeper hydrostratigraphic units (not included in the geologic or numerical models).

The main source of water in the Perched Zone is indicated to be derived from Site infiltration (both rainfall, stormwater recharge and infiltration from previously unlined sediment ponds and ditches). The source of water in the Surficial Aquifer and the Black Creek Aquifer are leakage from the shallower units and throughflow from the regional aquifer system.

Responses from rainfall were assessed by comparing rainfall events against changes in groundwater levels. Initial results from selected wells across the three aquifer units indicated an increase in groundwater level following a 0.08-inch rain event after a lag time typically ranging between 1.5 and 2 days.

3.4 Water Budget

Over the long term, the rate of water inflow to the Site is equal to the rate of water outflow from the Site. Water enters the groundwater system from regional flow, Site rainfall, stormwater recharge and infiltration from previously unlined sediment ponds and previously ditches. Water leaves the system through discharge primarily to the Cape Fear River via direct discharge and onsite groundwater seeps, and to a lesser extent discharge to Willis Creek, Georgia Branch Creek, and Old Outfall 002. No water balance was developed for the Site during the EVS model development stage. One of the intended outcomes of the numerical model is to provide an initial water budget estimate in order to inform future work.

4. COMPUTER MODEL

4.1 Model Selection

The model is required to simulate variably saturated flow behaviors at the Site. The steep topography surrounding the Site is challenging to simulate, and therefore a finite element model was deemed to be more appropriate than a finite difference model. Various commercially available finite element models were assessed based on their ability to meet the study objectives and their maturity and acceptance in the scientific and regulatory communities. FEFLOW (DHI-WASY) was the most suitable numerical model based on those criteria.

4.2 Model Description

FEFLOW is a 3D finite element groundwater model widely recognized in industry, research and government and considered to be an industry standard for finite element groundwater modeling. The code uses the Richards' equation, the conservation of mass, and nonlinear relationships between capillary pressure (P_c) and wetting phase saturation (S_w) and between S_w and hydraulic conductivity (K) to solve for hydraulic heads. FEFLOW simulates 3D transient groundwater flow in unsaturated and variably saturated, confined and unconfined heterogeneous systems, and models the dynamic interaction with injection/extraction wells, recharge and surface water systems. This study used FEFLOW version 7.2 for the numerical groundwater flow model simulations. All groundwater models were simulated and post-processed within the built-in FEFLOW graphical user interface.

5. GROUNDWATER FLOW MODEL CONSTRUCTION

5.1 Model Mesh

The EVS geologic model described in Section 3.1.2 of this report was translated into a series of shape files representing each of the seven hydrostratigraphic units. The numerical model mesh was developed using the contact points for the seven hydrostratigraphic units, ground surface elevation from the LiDAR remote sensing dataset and field measurements along Willis Creek and the Old Outfall 002. This data were assembled and meshed within FEFLOW using the triangle mesh generation algorithm. The model mesh contained 1,878,129 elements and 372,054 nodes. The model varies in thickness from about 170 ft on top of the bluff to 55 ft at the base of bluff near the Cape Fear River.

5.2 Hydraulic Parameters

Initial model parameters were chosen based on the available field data (Geosyntec, 2019). Where ranges in data existed, mid-points of the ranges were chosen as the initial set of parameters. Hydraulic conductivity ranges for each hydrostratigraphic unit were presented in Table 1.

Hydraulic conductivity, specific storage (S_s), unsaturated-flow porosity (θ), residual wetting phase saturation (S_r), and Brooks-Corey-Burdine P_c-S_w-K constitutive parameters (alpha (α), lambda (λ), delta (δ)) are the main hydraulic parameters in the model. The distribution and assignment of these parameters is based on the conceptual model hydrostratigraphy. Hydraulic parameter distribution in the model was uniform across individual hydrostratigraphic units. The parameter values for each hydrostratigraphic unit were determined during the flow model calibration process (Section 6) and presented in Table 2.

Table 2: Calibrated Model Hydraulic Parameters For Each Hydrostratigraphic Unit

Hydrostratigraphic Unit	K (ft/day)	S_s (m^{-1})	θ	S_r (-)	α (m^{-1})	λ (-)	δ (-)
Floodplain Deposits	1.4	1.0×10^{-8}	0.32	0.2	0.5	0.15	25
Perched Zone	2.6	1.0×10^{-3}	0.3	0.1	11.5	0.56	7.3
Perched Clay	0.0014	1.0×10^{-8}	0.5	0.2	0.5	0.15	25
Surficial Aquifer	72	1.0×10^{-3}	0.33	0.1	11.5	0.56	7.3
Black Creek Confining Unit	0.43	1.0×10^{-8}	0.55	0.2	0.5	0.15	25
Black Creek Aquifer	144	5.1×10^{-5}	0.34	0.1	11.5	0.56	7.3
Cape Fear Confining Unit	1.1	1.0×10^{-8}	0.28	0.2	0.5	0.15	25

The hydraulic conductivities of the Surficial Aquifer and Black Creek Aquifer are greater than the original estimates presented in Table 1 (see calibration section for additional details). The estimates presented in Table 1 were based primarily on grain size distributions. The calibrated hydraulic conductivity of the Surficial Aquifer is in agreement with the aquifer test (72.3 ft/d) performed by Parsons (Parsons, 2018) and the ratio of hydraulic conductivities of the Surficial and Black Creek Aquifers is in agreement with the differences in geologic description based on the borehole logs (fine vs. medium grained sand).

S_r and the Brooks-Corey-Burdine (α, λ, δ) constitutive parameters for each hydrostratigraphic unit were selected based on the soil textural class and the estimated model parameters reviewed from Madi et al. (2018), Matlan et al. (2014), and Shao and

Irannejad (1999). These parameter assignments were simplified for the model by separating the hydrostratigraphic units as either aquifers or aquitards (see Table 1), after performing the first set of flow model calibration runs where each hydrostratigraphic unit was assigned distinct parameter sets. Aquifer units were assigned S_r and Brooks-Corey-Burdine constitutive parameters representative of sands; aquitard units were assigned S_r and Brooks-Corey-Burdine constitutive parameters representative of sandy clay, silty clay, and clay soil types.

5.3 Flow Model Boundary Conditions

The numerical model extent is a subset of the EVS model extent. The lack of available data on a regional scale required the model to be site-scale focused. Focusing on the Site enabled a detailed examination and quantitation of the steep topography and steep vertical gradients. The numerical model extent was closely tied to the boundary conditions chosen for the model:

Top Boundary: Established as the ground surface, taken from a combination of LiDAR data and topographic surveys performed along Willis Creek and the Outfall. Boundary conditions on the top boundary were either constant flux (to simulate rainfall recharge) or constant head equal to elevation (with a no inward flow constraint) to simulate seepage faces on the bluffs. Initial rainfall recharge values were selected with reference to the annual precipitation and evapotranspiration estimates for the Mid-Atlantic Coastal Plain (United States Geological Survey (USGS), 2005).

Bottom Boundary: Chosen as flat at an elevation of -20 ft above MSL which is located within the Upper Cape Fear confining unit. A no-flow hydraulic condition was applied to the entire bottom boundary of the model.

Northern Boundary: Willis Creek forms a hydraulic boundary north of the model domain. The creek is treated as a spatially-varying constant hydraulic head boundary from the northwest model corner to the outflow to the Cape Fear River located at the northeast model corner. The uppermost active nodes in the mesh along the Willis Creek boundary were linearly interpolated, from west to east along the creek, from a hydraulic head equal to the ground surface elevation at the westmost part of Willis Creek to a hydraulic head equal to the constant hydraulic head boundary value of the Cape Fear River. Application of this constant head condition to only the upper nodes in the mesh forces all groundwater flowing towards the boundary to discharge into the creek (as all nodes below the upper nodes were assigned a no-flow condition).

Eastern Boundary: The Cape Fear River forms a hydraulic boundary east of the model domain. The river is treated as a constant hydraulic head boundary in the uppermost active nodes with an elevation representative of a daily median water elevation in the river, as measured at the W.O. Huske Dam (United States Geological Survey (USGS) 2105500). The river wraps partially around the northeast and southeast corners of the model. Application of this constant head condition to only the uppermost nodes in the mesh forces all groundwater flowing towards the boundary to discharge into the river.

Southern Boundary: The model domain southern extent was chosen to represent a flow line from the western boundary to the eastern boundary. This selection was based on the available measured hydraulic head data and professional judgement (Geosyntec, 2019). A no flow condition was applied to the southern boundary.

Western Boundary: The western model boundary is not bounded by any clearly defined hydraulic features and may be a flow divide beneath a topographic high. This boundary was chosen as parallel to the Cape Fear River as limited hydraulic information was available to make a more refined choice. This boundary is located more than a quarter mile from the manufacturing area of the Site. Spatially-varying constant hydraulic head boundary conditions were applied linearly ranging from 125 ft (in the shallower portion of the domain) or 122 ft (in the deeper portion of the domain) at the southern end of the boundary to the elevation of Willis Creek at the northern end of the boundary.

5.4 Selection of Calibration Targets

The steady state flow model calibration targets were water level measurements taken at 77 of the 147 monitoring wells synoptically surveyed on October 15, 2019, screened in the Perched Zone, Surficial Aquifer, and Black Creek Aquifer units (Geosyntec, 2019). Of these 77 monitoring wells, 33 wells were located in the Perched Zone (Figure 6), 23 wells were located in the Surficial Aquifer (Figure 7), and 21 wells were located in the Black Creek Aquifer (Figure 8). The focus of this modeling study was on flow behaviors in the Black Creek Aquifer, and to a lesser extent the flow behaviors in the Surficial Aquifer and Perched Zone. Computed nodal hydraulic heads at the approximate reference well screen midpoint elevations in the FEFLOW model domain were compared to the field measured hydraulic heads at these 77 wells. FEFLOW calculates hydraulic heads at individual nodes rather than nodal intervals, therefore only monitoring well locations which had field measured hydraulic heads greater or equal to their respective well screen midpoints were included in the calibration analysis.

Seventy of the 147 wells from the October 15, 2019 synoptic water level survey were excluded from the calibration analysis based on one or more of the following criteria:

- Wells located offsite (20 monitoring wells);
- Wells located outside of the model domain (3 monitoring wells);

- Wells screened within the Floodplain Deposits hydrostratigraphic unit (6 monitoring wells);
- Wells where the hydraulic head groundwater elevation measurement was lower than the elevation of the well screen midpoint (19 monitoring wells);
- Wells where water levels were not measured in this synoptic water level survey (10 monitoring wells);
- Wells where the well construction details were not available to estimate an approximate well screen midpoint elevation (MW-7S); or
- Wells where the hydraulic head measured was considered anomalous/inconsistent and was either not used in the groundwater elevation contour development (pre-calibration) or removed from calibration analysis based on professional judgement and review (11 monitoring wells). For example, a high density of wells exists to the immediate southwest of the plant in the vicinity of the top of Old Outfall 002. Three of these eleven wells were retained for the calibration, with MW-31, MW-33, MW-34, MW-35, MW-36, PZ-29, PZ-32, and PZ-34 excluded from the calibration analysis.

6. CALIBRATION

6.1 Residual Analysis

The groundwater flow model was calibrated using a staged approach starting with the initial hydraulic parameter set described in Section 5.2 and the boundary conditions described in Section 5.3. Calibration testing was performed by trial and adjustment, evaluating the modeled hydraulic heads against the water level data described in Section 5.4. The final calibrated hydraulic parameters are presented in Table 3. Groundwater recharge due to rainfall was determined to result in a best fit when 70% of rainfall recharge (total precipitation multiplied by non-evapotranspiration fraction) was allowed to infiltrate to the Perched Zone. Localized anthropogenic stormwater recharge (in addition to rainfall recharge) and historical infiltration from previously unlined sedimentation basins was also included distributed across the footprint of the plant at a scoping level infiltration rate estimate of 80,000 GPD.

The final calibration statistics of the calibrated groundwater flow model are presented in Table 3. A graphical comparison of the model computed hydraulic heads versus the measured hydraulic heads from the October 2019 water level synoptic survey are presented in Figure 9.

Table 3: Final Calibrated Groundwater Flow Model Statistics

Hydro-stratigraphic Unit	Number of Well Observations	Mean Hydraulic Head Residual (ft)	Minimum Hydraulic Head Residual (ft)	Maximum Hydraulic Head Residual (ft)	RMS Error (ft)	NRMS Error (%)
Perched Zone	33	-1.33	-9.91	7.86	4.59	25.2%
Surficial Aquifer	23	-2.93	-12.62	4.84	5.47	6.2%
Black Creek Aquifer	21	2.52	-4.37	10.57	5.43	6.2%

Notes: RMS – Root Mean Square. NRMS – Normalized Root Mean Square. Residuals are calculated as the difference between computed hydraulic heads from the groundwater flow model and the measured hydraulic heads from the October 2019 synoptic water level survey (Geosyntec, 2019).

Assessing a model calibration based on statistics derived from residuals is driven by the end requirements of the model, its predictive use, and the quantity of quality data available during the calibration process. The end use of the current model is to assist in the design and costing of potential hydraulic approaches to managing flow into the Cape Fear River. This end use allows for a greater level of uncertainty than a detailed contaminant fate and transport modeling program used to inform risk. Overall, a Normalized Root Mean Square (NRMS) error of less than 10% is considered acceptable for the intended end use of this model. The calibration achieves this for the Surficial and Black Creek Aquifers individually and also for the overall model when not separated into individual hydrostratigraphic units. The calibration does not achieve this for the Perched Zone, and additional calibration efforts may be required.

Computed hydraulic head contours and hydraulic head residuals are presented in Figures 6 to 8, for the Perched Zone, Surficial Aquifer, and Black Creek Aquifer, respectively. Overall, the model computed hydraulic heads provide a reasonable fit to the October 2019 synoptic survey water level data in the Surficial Aquifer and Black Creek Aquifer units.

Outlier hydraulic heads (greatest residuals) can be grouped into three types:

- Overestimates of hydraulic head in the Black Creek Aquifer in the vicinity of the Cape Fear River (PW-10R, PIW-4D, PIW-9D, SMW-12).

- Underestimates of the hydraulic heads along the mid to bottom of the bluff slopes in the Surficial Aquifer (MW-9S, PIW-5S, PW-03, SMW-09).

- Overestimates of the hydraulic head along the Cape Fear River bluffs in the Perched Zone (MW-23, MW-30).

There is likely a correlation between the tendency of the model to overpredict hydraulic heads in the Black Creek Aquifer and underpredict hydraulic heads in the Surficial Aquifer in similar geographical locations. It is likely that there is better hydraulic communication across the Black Creek Confining Unit in the vicinity of the Cape Fear River than is present in the model. Adjustments to the hydraulic conductivity of the Black Creek Confining Unit resulted in poorer fits elsewhere in the model and no geologic evidence is present in the borehole logs to indicate a localized phenomenon. The higher hydraulic heads in the Black Creek Aquifer in the model result in larger gradients and conservative overestimates of discharge to the Cape Fear River so additional, unsupported localized parameter modifications were not attempted.

6.2 Seeps and Discharges

The model calibration process also included comparison of predicted seepage rates from the Willis Creek and Cape Fear River bluffs as well as discharges to the Old Outfall 002 and the Cape Fear River. Results of this secondary calibration assessment are presented in Table 4.

Table 4: Calibration to Seeps and Discharges

Seep/Discharge Target	Measured/Estimated[1]	Modeled
Willis Creek Bluff Seeps	> 50 GPM	102 GPM
Cape Fear River Bluff Seeps	280 GPM	34 GPM
Old Outfall 002 Flow	500 – 750 GPM	1,202 GPM[2]

Notes: [1]Data taken from CAP or Investigation Report. [2]This estimate includes discharge in the vicinity of the Cape Fear River that likely is directly discharged to the river and as such is an overestimate of the actual flow in the Old Outfall 002.

6.3 Sensitivity Analysis

Following model calibration, a sensitivity analysis was performed to key variables modified during the calibration process or chosen based on literature values:

- Recharge due to rainfall;
- Perched Zone Hydraulic Conductivity;
- Surficial Aquifer Hydraulic Conductivity;
- Black Creek Aquifer Hydraulic Conductivity;

- Perched Clay Hydraulic Conductivity;
- Western Boundary Condition Hydraulic Head Distribution.

The sensitivity of the model calibration to each variable is assessed qualitatively and quantitatively (where possible) in Table 5.

Table 5: Calibrated Model Sensitivity to Model Boundary Conditions and Hydraulic Parameters

Sensitivity Variable	Change	Sensitivity	NRMS Error
Calibrated Model	N/A	N/A	12.5%
Rainfall Recharge	+/- 20%	Low	13.6%/12.7%
Perched Zone K	+/- 50%	Low	11.6%/13.3%
Surficial K	+/- 20%	Low	12.7%/12.8%
Black Creek K	+/- 20%	Low	12.4%/12.7%
Perched Clay K	Across three orders of magnitude	High	31.7% at reference hydraulic conductivity. Sensitivity limited to Perched Zone.
Western Boundary Condition	Change in spatial distribution of hydraulic heads and absolute values of hydraulic heads	Moderate	Wide range depending on changes. Sensitivity limited to Surficial and Black Creek, limited sensitivity in Perched Zone.

The higher calibration assessment statistics (poorer fit) of the model in the Perched Zone are primarily due to the small range of observed hydraulic heads in the system (as compared to the Surficial and Black Creek Aquifers). The distribution of hydraulic heads in the Perched Zone is likely dependent on the actual locations of anthropogenic recharge which have been spatially variable over time. The model used a uniform spatially distributed recharge (in addition to rainfall recharge) to replicate the general mounding observed at the Site. This approach captured the overall behavior but does not capture the detailed spatial variability to a high degree of certainty.

7. PREDICTIVE SIMULATIONS

The predictive simulations were designed to investigate the effectiveness of extraction gallery well field distribution as a mechanism to capture the groundwater discharging to the Cape Fear River. The modeling conducted was comprised of the following:

- Extraction Wells Scenario with no Barrier Wall at the Base of the Bluff;
- Extraction Wells Scenario and Barrier Wall at the Base of the Bluff; and
- Extraction Wells Scenario and Barrier Wall Adjacent to the Plant.

A summary of the simulations conducted are presented in Table 6. For each scenario a base case was established, and sensitivity analyses were completed to assess and minimize the simulated degree of groundwater capture needed to reduce discharge to the Cape Fear River.

Table 6: Summary of Prediction Scenarios

Scenario Type	Scenario Description	Number of Extraction Wells
Extraction Wells Scenario with no Barrier Wall at the Base of the Bluff	Well Spacing at 50 ft and a uniform pumping rate of 30 GPM	164
	Well Spacing at 50 ft and a spatially variable pumping rate between 20 to 40 GPM	
	Well Spacing at 50 ft and a spatially variables pumping rate between 20 to 40 GPM, adjusted hydraulic conductivity within the Surficial and Black Creek Aquifers as sensitivity analysis	
Extraction Wells Scenario and Barrier Wall at the Base of the Bluff	Well Spacing at 200 ft spacing with a uniform pumping rate at 20 GPM	41
	Well Spacing at 200 ft spacing with a spatially variable pumping rate between 20 to 30 GPM	
	Well Spacing at 200 ft spacing with a spatially variable pumping rate between 20 to 30 GPM, adjusted extraction location towards the bluff as sensitivity analysis	
	Well Spacing at 200 ft spacing with a spatially variable pumping rate between 20 to 30 GPM, adjusted hydraulic conductivity within the Surficial and Black Creek Aquifers as sensitivity analysis	
	Well Spacing at 250 ft spacing with a uniform pumping rate at 30 GPM	31
	Well Spacing at 250 ft spacing with a spatially variable pumping rate between 20 to 30 GPM	

Scenario Type	Scenario Description	Number of Extraction Wells
	Well Spacing at 250 ft spacing with a spatially variable pumping rate between 20 to 30 GPM, adjusted extraction location towards the bluff as sensitivity analysis	
	Well Spacing at 250 ft spacing with a spatially variable pumping rate between 20 to 30 GPM, adjusted hydraulic conductivity within the Surficial and Black Creek Aquifers as sensitivity analysis	
Extraction Wells Scenario and Barrier Wall Adjacent to the Plant	Extraction wells west of the plant area. Well spacing of 200 ft with a uniform pumping rate of 40 GPM	49
	Extraction wells east of the plant area. Well spacing of 200 ft with a uniform pumping rate of 40 GPM	51
	Extraction wells west of the plant area. Well spacing of 250 ft with a uniform pumping rate of 40 GPM	36
	Extraction wells east of the plant area. Well spacing of 250 ft with a uniform pumping rate of 40 GPM	38

The following assumptions were made for the predictive model runs:

- Model parameters were taken from the model consistent with the model discussed in Section 5.0;
- The model was run for a forecast period of 1 year; and
- Initial conditions were taken from the final head of the model consistent with the model discussed in Section 5.0.

A summary of the predictive simulation results is presented in Table 7.

Table 7: Summary of Prediction Scenarios Results

Scenario Type	Scenario Description	Number of Extraction Wells	Black Creek Groundwater Discharge Rate into the Cape Fear River – Before Simulated Pumping (GPM)	Black Creek Groundwater Capture Flow into the Cape Fear River – By Simulated Pumping (GPM)
Extraction Wells Scenario with no Barrier Wall at the Base of the Bluff	Well Spacing at 50 ft and a uniform pumping rate of 30 GPM	164	1151	3522
	Well Spacing at 50 ft and a spatially variables pumping rate between 20 to 40 GPM		1151	3772
	Well Spacing at 50 ft and a spatially variables pumping rate between 20 to 40 GPM, adjusted hydraulic conductivity as sensitivity analysis		1445	3862
Extraction Wells Scenario and Barrier Wall at the Base of the Bluff	Well Spacing at 200 ft spacing with a uniform pumping rate at 20 GPM	41	1551	1389
	Well Spacing at 200 ft spacing with a spatially variable pumping rate between 20 to 30 GPM		1551	1421
	Well Spacing at 200 ft spacing with a spatially variable pumping rate between 20 to 30 GPM, adjusted extraction location towards the bluff as sensitivity analysis		1551	1459

Scenario Type	Scenario Description	Number of Extraction Wells	Black Creek Groundwater Discharge Rate into the Cape Fear River – Before Simulated Pumping (GPM)	Black Creek Groundwater Capture Flow into the Cape Fear River – By Simulated Pumping (GPM)
	Well Spacing at 200 ft spacing with a spatially variable pumping rate between 20 to 30 GPM, adjusted hydraulic conductivity as sensitivity analysis		1551	1532
	Well Spacing at 250 ft spacing with a uniform pumping rate at 30 GPM	31	1551	1419
	Well Spacing at 250 ft spacing with a spatially variable pumping rate between 20 to 30 GPM		1551	1322
	Well Spacing at 250 ft spacing with a spatially variable pumping rate between 20 to 30 GPM, adjusted extraction location towards the bluff as sensitivity analysis		1551	1337
	Well Spacing at 250 ft spacing with a spatially variable pumping rate between 20 to 30 GPM, adjusted hydraulic conductivity as sensitivity analysis		1551	1446
Extraction Wells Scenario and Barrier Wall Adjacent to the Plant	Extraction wells east of the plant area. Well spacing of 200 ft with a uniform pumping rate of 40 GPM	49	1551	1021
	Extraction wells west of the plant area. Well spacing of 200 ft with a uniform pumping rate of 40 GPM	51	1551	822

Scenario Type	Scenario Description	Number of Extraction Wells	Black Creek Groundwater Discharge Rate into the Cape Fear River – Before Simulated Pumping (GPM)	Black Creek Groundwater Capture Flow into the Cape Fear River – By Simulated Pumping (GPM)
	Extraction wells east of the plant area. Well spacing of 250 ft with a uniform pumping rate of 40 GPM	36	1551	824
	Extraction wells west of the plant area. Well spacing of 250 ft with a uniform pumping rate of 40 GPM	38	1551	719

7.1 Extraction Wells Scenario with no Barrier Wall

The initial model assumed an extraction well spacing of 5 feet apart along the base of the bluff between Willis Creek and the Old Outfall 002. These pumping scenarios indicated dewatering would occur along sections of the aquifer at the base of the bluff, resulting in significant capture of water from the Cape Fear River. Additional model runs were completed with the aim of reducing the capture of Cape Fear River water while providing capture of groundwater discharge. The minimal pumping scenario, based on the model runs completed, recommended the extraction gallery wells spacing of 50 feet apart.

7.2 Extraction Wells Scenario and Barrier Wall

The initial model assumed an extraction well spacing of 200 to 250 feet apart along the base of the bluff between Willis Creek and the Old Outfall 002. In addition to the extraction well gallery a low permeability barrier wall was placed between Cape Fear River and the extraction wells. A uniform pumping rate of 30 GPM was applied along the extraction galley of 41 wells. This extraction rate resulted in a groundwater depression along the base of the bluff between the extraction wells and the barrier wall. Additional model runs were completed to refine the extraction rate and spacing within the extraction gallery. The minimal pumping scenario, based on the model runs completed, recommended the extraction gallery wells to have a well spacing of 200 feet, and a variable pumping rate along the extraction gallery wellfield between 20 to 35 GPM. This scenario results in a minimum of excess produced water while still providing capture of discharging groundwater and minimal to no flow from the Cape Fear River to the extraction gallery.

In addition to the groundwater extraction minimization analyses for the remedial design simulations sensitivity analysis was also completed by increasing the hydraulic conductivities of hydrostratigraphic units to emphasize the flow interactions between the aquifer units and adjusted the recharge rate. The results indicated that the model is moderately sensitivity to the changes in hydraulic conductivity and is not sensitivity to the changes in recharge for the Black Creek Aquifer.

7.3 Extraction Wells Scenario and Barrier Wall Adjacent to the Plant

The initial model assumed an extraction well spacing of 200 to 250 feet apart west and/or east of the plant. Similar to the scenario of pumping along the Cape Fear River, this scenario resulted in dewatering of the aquifer along section at the base of the bluff, resulting in significant capture of water from the Cape Fear River. Model runs were completed with the goal of reducing the capture of water from the Cape Fear River and reducing the dewatering of the aquifers. The minimal pumping scenario, based on the model runs completed, recommended the extraction gallery wells spacing be less than 200 feet apart if extraction wells are placed above the bluff adjacent to the plant and required pumping rates to be above 40 GPM. The groundwater extraction minimization process indicated that greater volumes of extraction are required to provide the required hydraulic control at the base of the bluff as compared to other scenarios.

8. LIMITATIONS AND RECOMMENDATIONS

8.1 Model Assumptions and Limitations

The hydrogeologic conditions that control the movement of groundwater in the subsurface are complex and, as such, assumptions and simplifications must be made during the construction of the numerical model that are used to simulated groundwater flow. The following assumptions were made in the design of the Chemours Fayetteville Works groundwater flow model and should be considered when assessing any model predictions in the future:

- The model domain was limited to the spatial extent where hydrogeological data was available;
- Boundary conditions are aligned with geological and hydraulic boundaries identified within the EVS model;
- Changes to geology derived via the EVS model and Site data during the calibration process were avoided where possible; and

- The model was calibrated to an average steady-state condition based on data from October 2019.

- The modeling conducted for the Site was challenging from both design (three dimensional, spatially variable hydrostratigraphy, unsaturated, and steep topography driving steep hydraulic gradients) and calibration (day-long simulation times, significant hours to make changes to the complex model between calibration runs) standpoints. There are some identified regions of error in the predictions that are likely tied to uncertainties in the conceptual site model, and these could impact on the design of groundwater remedies for the Site. The process of site investigation – modeling – design is best undertaken in an iterative manner, with feedback from each step incorporated into the following steps.

8.2 Summary and Recommendations

The calibrated FEFLOW model meets the requirements of the NCDEQ's 2007 Groundwater Modeling Policy (NCDEQ, 2007) and supports remedy evaluation, selection and design at the Site. The calibrated model is deemed sufficiently accurate for the modeling goals of this work however new data should be incorporated into both the conceptual and numerical models when it becomes available.

Numerical modeling is an effective technique for identifying areas of uncertainty in conceptual models and source-pathway-receptor models. Based on the results of the numerical modeling program, groundwater remedy development would be supported by reducing uncertainty regarding:

- Interactions between the Surficial Aquifer and the Black Creek Aquifer along the bluffs; and

- Distribution of groundwater flows into surface water drainage features including onsite groundwater seeps, Willis Creek and Old Outfall 002.

A combination of additional simulations and targeted field investigations (aquifer testing) to address these uncertainties is recommended before final remedy design.

9. REFERENCES

Diersch, H.J.G. 2014. FEFLOW: Finite Element Modeling of Flow, Mass and Heat Transport in Porous and Fractured Media. Springer-Verlag Berlin Heidelberg. 2014.

Geosyntec, 2019. On and Offsite Assessment Report, Chemours Fayetteville Works. Geosyntec Consultants of NC, PC. September 30, 2019.

Madi, R., de Rooij, G.H., Mielenz, H., & Mai, J. 2018. Parametric soil water retention models: critical evaluation of expressions for the full moisture range. Hydrology and Earth System Sciences, 22. 2018.

Matlan, S.J., Mukhlisin, M., & Taha, MR. 2014. Performance Evaluation of Four-Parameter Models of the Soil-Water Characteristic Curve. The Scientific World Journal, 2014(569851). 2014.

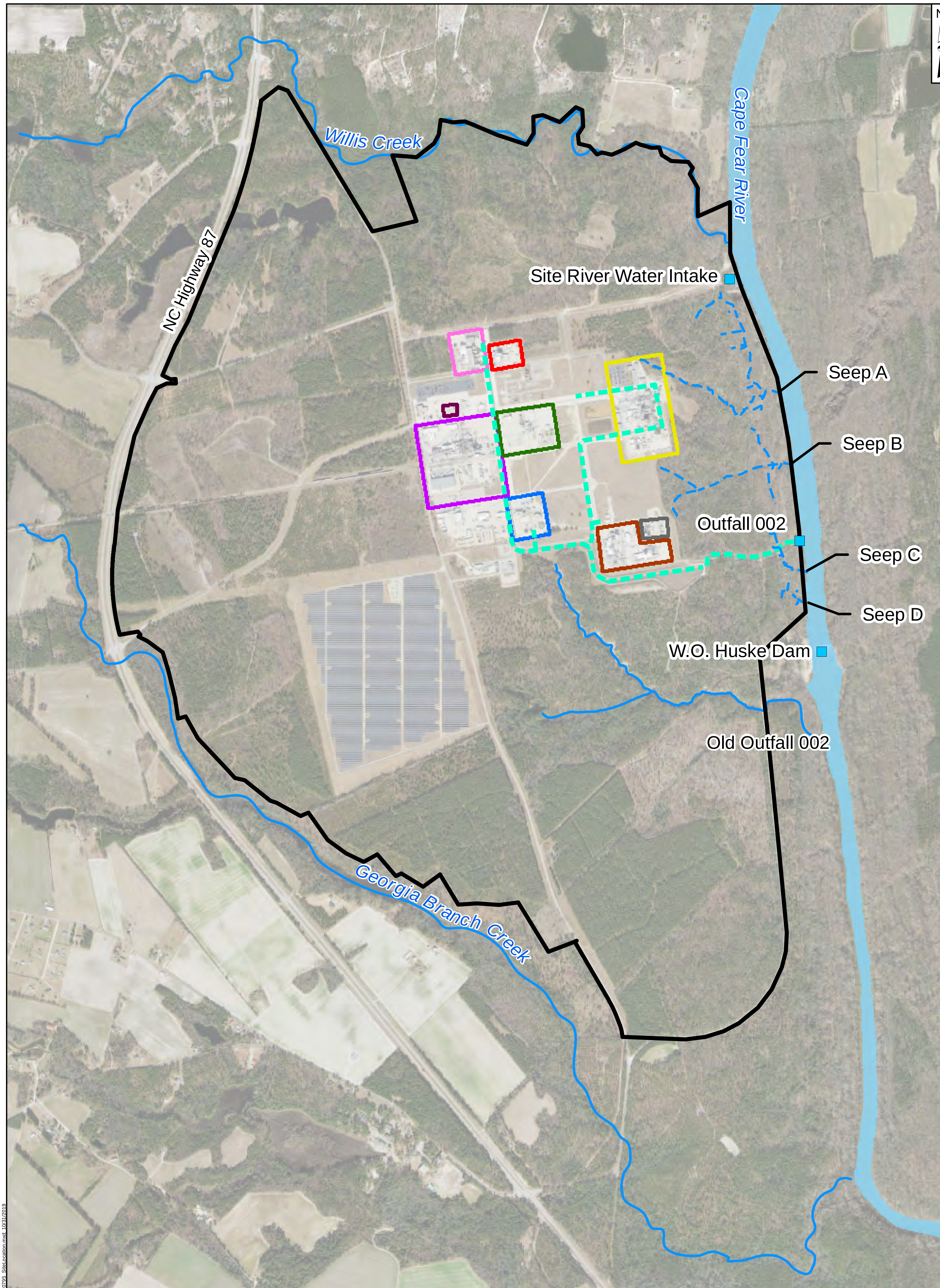
NCDEQ, 2007. Groundwater Modeling Policy, North Carolina Department of Environmental Quality. May 31, 2007.

Parsons, 2018. Additional Site Investigation Report, Chemours Fayetteville Works Site, RCRA Permit No. NCD047368641-R1. March 30, 2018.

Shao, Y., & Irannejad, P. 1999. On The Choice of Soil Hydraulic Models in Land-Surface Schemes. Boundary-Layer Meteorology, 90(1). 1999.

USGS. A Surficial Hydrogeologic Framework for the Mid-Atlantic Coastal Plain, Professional Paper 1680. 2005.

FIGURES



Legend

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

Areas at Site

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

2,000 1,000 0 2,000 Feet

Site Location Map

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

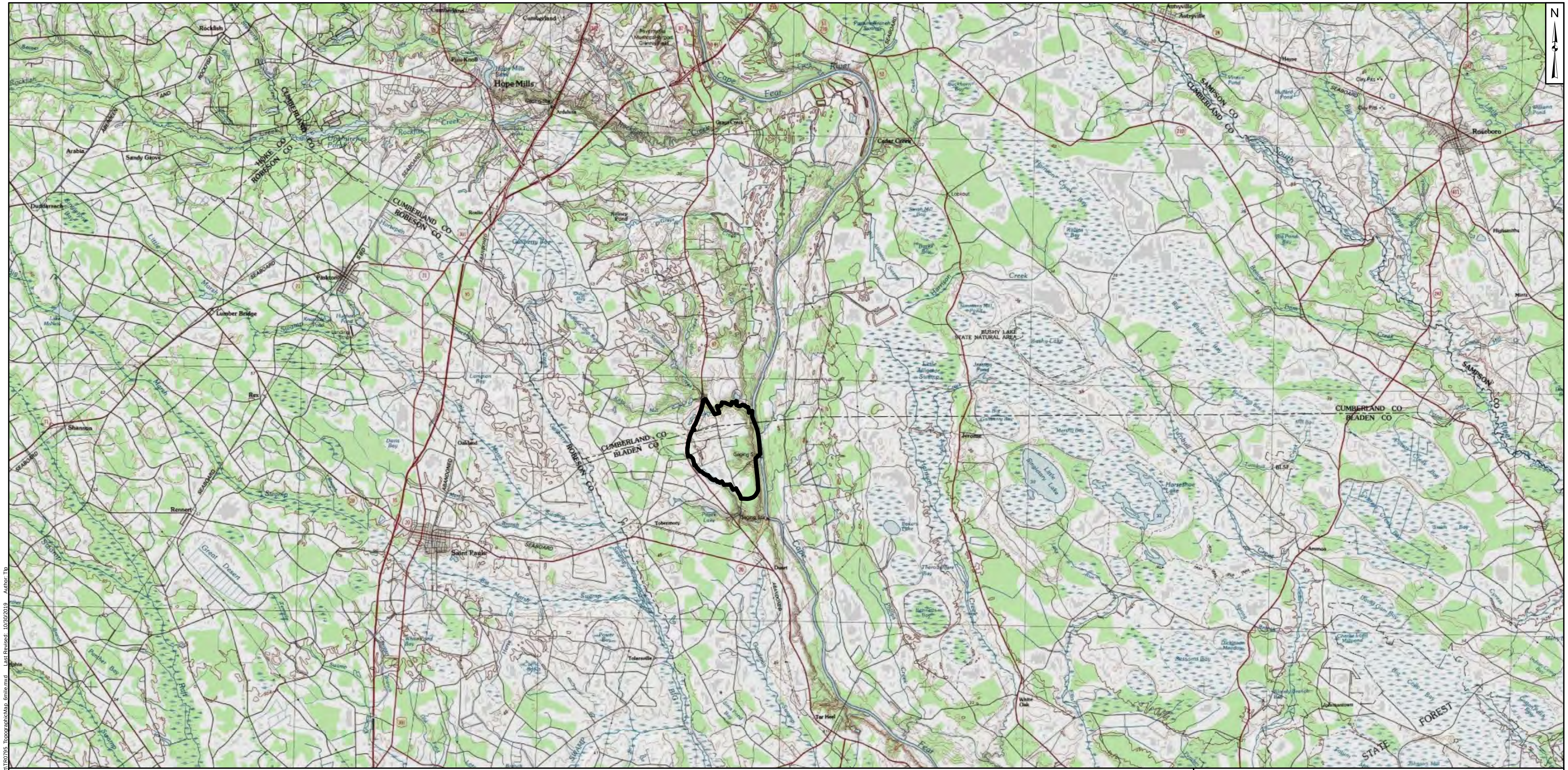
Figure

1

Raleigh | December 2019

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

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_SiteLocation.mxd; 10/31/2019



Legend

Site Boundary

Notes:
1. For topographic map symbols, please refer to this document: https://pubs.usgs.gov/gip/TopographicMapSymbols/topomapsymbols.pdf
2. Basemap source: © 2013 National Geographic Society, i-cubed

2 1 0 2 Miles

Regional Topographic Map

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure

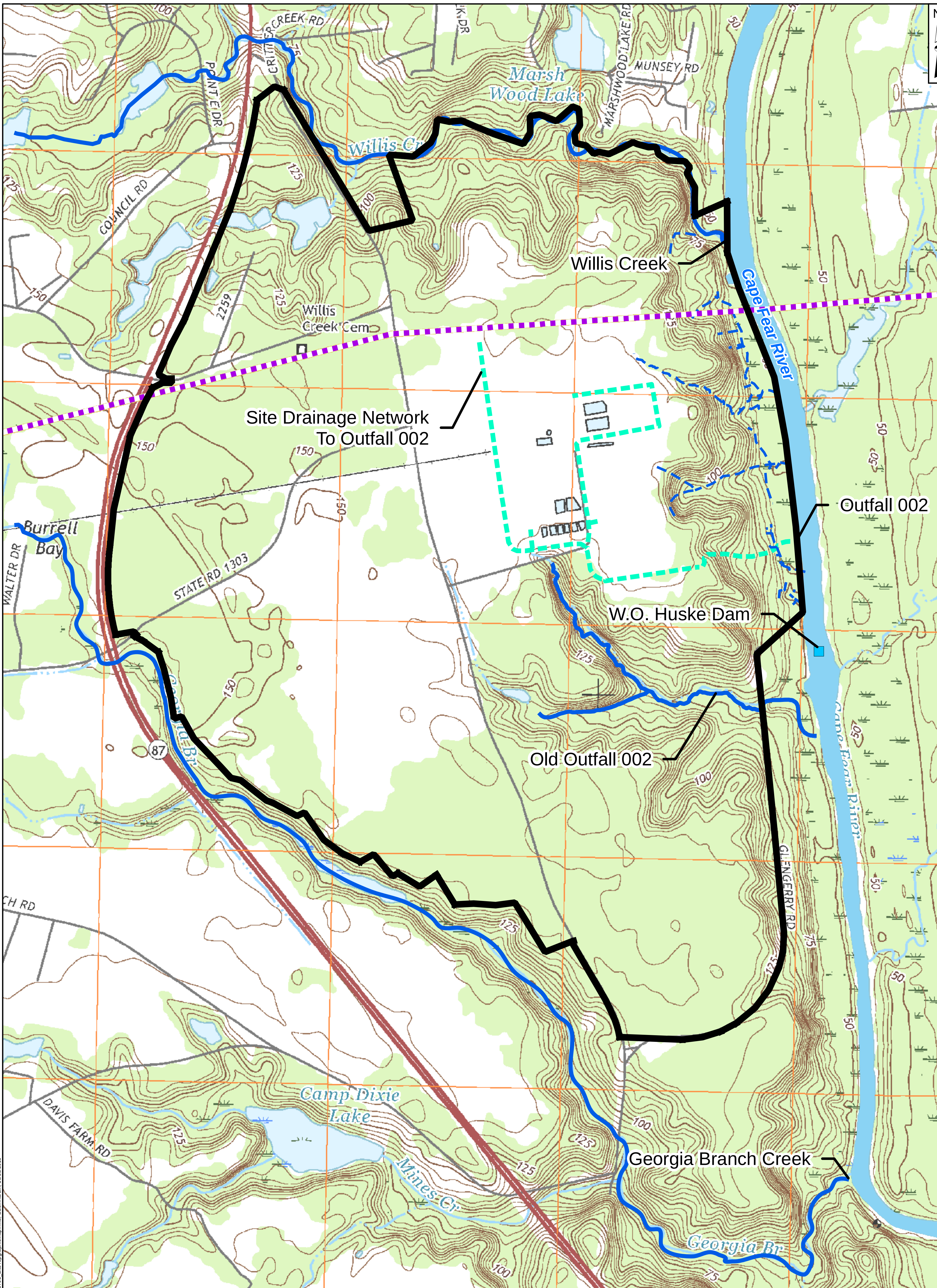
2

Raleigh

December 2019

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_TopographicMap_6mile.mxd Last Revised: 10/30/2019 Author: Tip

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



Legend

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

2,000 1,000 0 2,000 Feet

Site Topographic Map

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

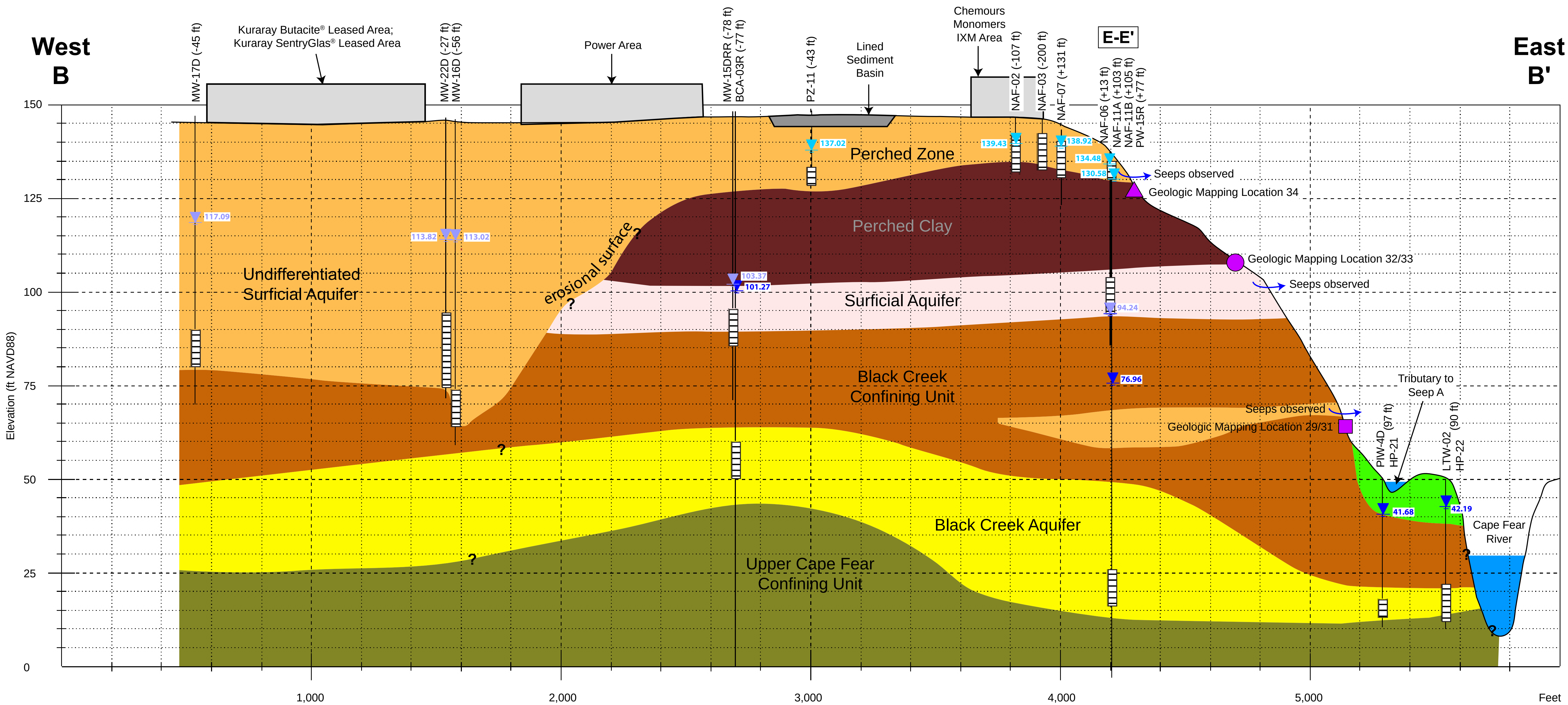
Geosyntec Consultants of NC, P.C.
NC License No.: C 3500 and C 295

Figure 3

Raleigh | December 2019

Notes:
Basemap sources: Esri, Garmin, USGS, NPS (World Terrain Reference); Esri, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community (World Hillshade)

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Onsite and Offsite Assessment Report\TR0795_SiteTopgraphicMap.mxd; SSomnarain; 10/30/2019



Legend

- Clay
- Silty or Sandy Clay with Organics
- Micaceous Clay
- Predominantly Fine to Medium-grained Sand
- Floodplain Deposits
- Fine to Medium-grained Sand with Variable Silt Content
- Fine to Medium Sand

MW-17D (100 ft) — Offset Distance +/- north/south of line; Location Name

Well Screen

110.98 — Perched Zone Groundwater Elevation

102.94 — Surficial Aquifer Groundwater Elevation

64.55 — Black Creek Aquifer Groundwater Elevation

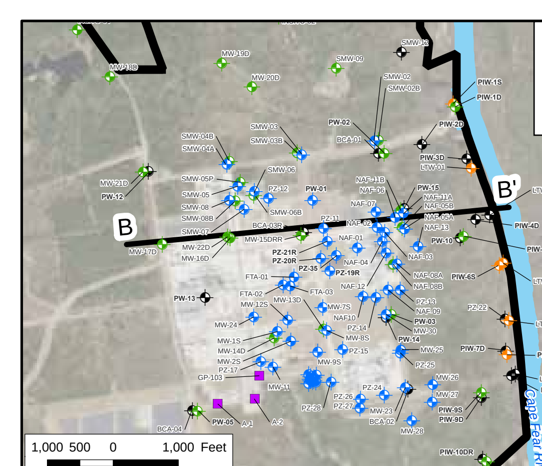
Geological Mapping Location

E-E' — Corresponds to Section

Notes

ft NAVD88 - feet in 1988 North American Vertical Datum
Vertical Exaggeration = 15x

1. Lithology between borings is interpolated and estimated.
2. Groundwater elevations calculated from measured depth to water on 15 October 2019.
3. Cape Fear River water level indicated is median value for 15 October 2019 measured at the W.O. Huske Dam (USGS 2105500). Data obtained from National Water Information System (URL: https://waterdata.usgs.gov/nwis/inventory/?site_no=02105769, date accessed: 2019-09-24).
4. Geological Mapping Locations from Figure 6-1. Approximate mapping elevations listed in Table 6-1.
5. Seeps observed reported in Seeps and Creeks Investigation Report (Geosyntec, 2019)



Typical Site Cross-Section

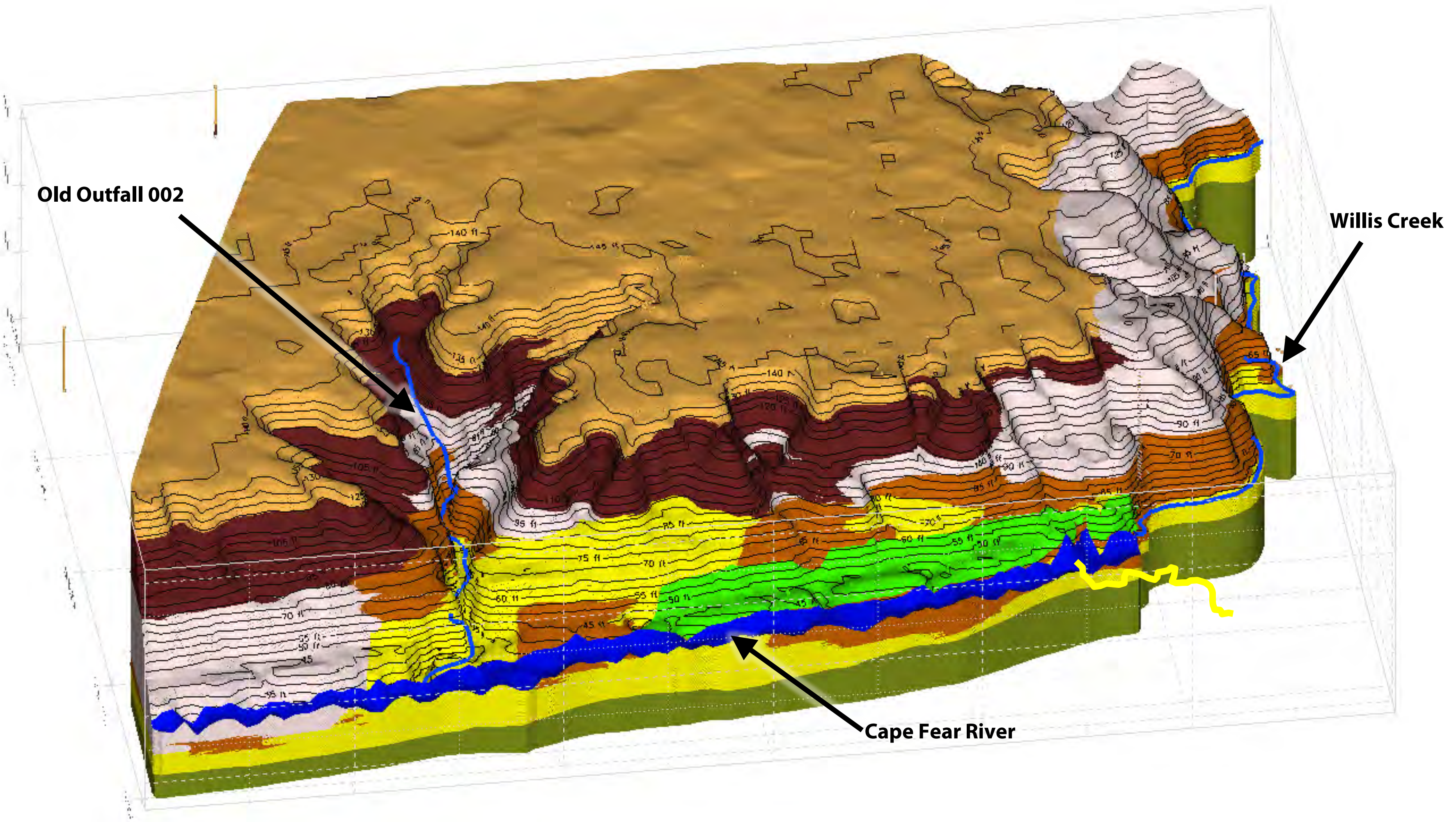
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | December 2019

Figure 4



Units

- Perch Zone
- Perch Clay
- Floodplain Deposits
- Surficial
- Black Creek Confining Unit
- Black Creek Aquifer
- Cape Fear Confining Unit[1]

- Water Features
- Elevation Contour Line (every 5-ft)

Note

1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.

Overview of EVS Model

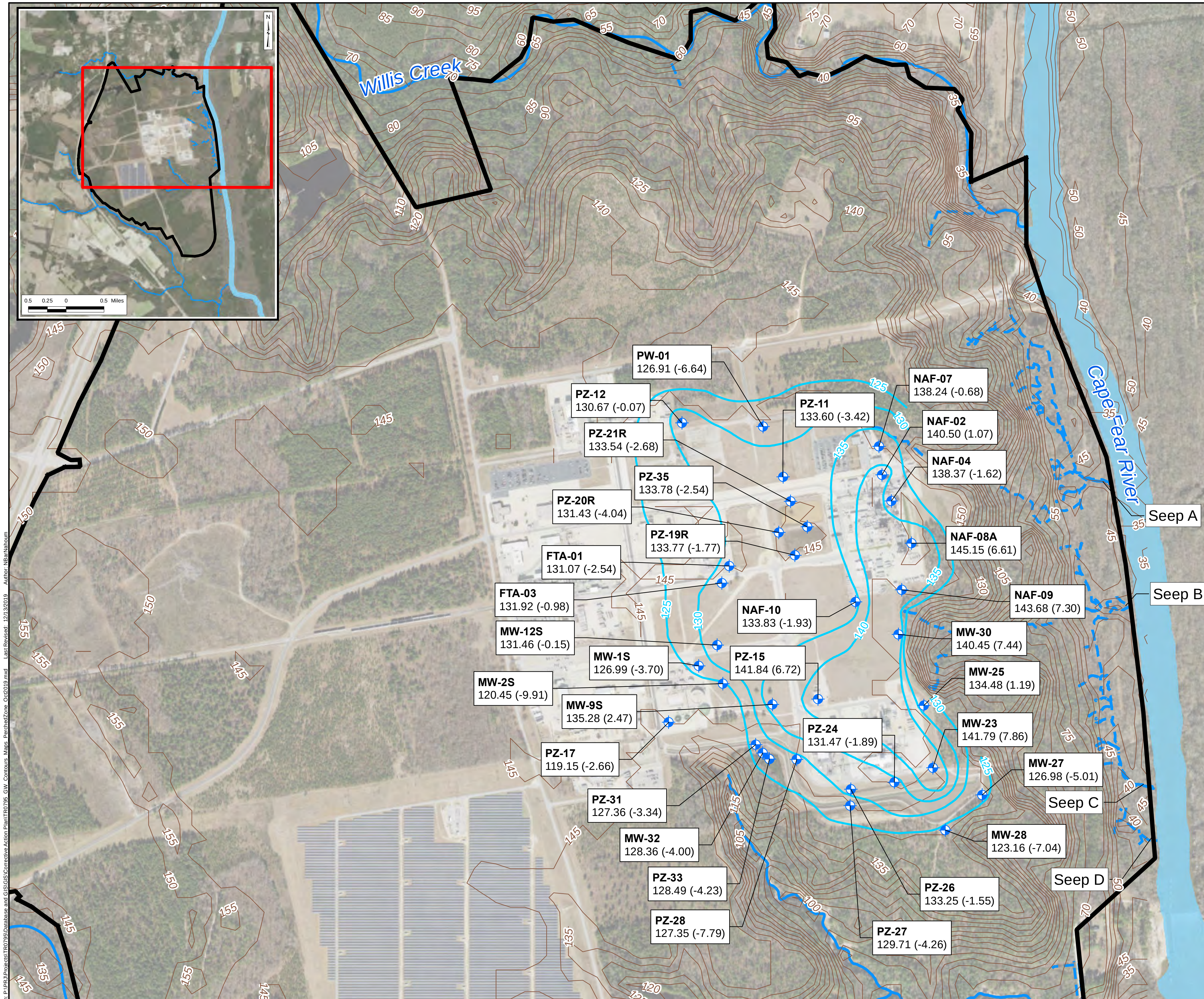
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Raleigh | December 2019

Figure 5



Legend

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

Well Location → PW-01
Model Computed Groundwater Elevation (ft NAVD88) → 126.91 (-6.64) ← Groundwater Elevation Residual (ft)

Notes:
ft NAVD88 - feet North American Vertical Datum 1988.
1. Groundwater contours were visually interpolated using the computed groundwater elevations from the calibrated groundwater flow model.
2. Depth to water measurements collected on October 15, 2019 used to calculate the groundwater elevation residual.
3. Groundwater elevation residuals are calculated as the difference between the model computed groundwater elevations and the field measured groundwater elevations from October 15, 2019. Groundwater elevation residuals are presented in brackets.
4. Topographic contours from LiDAR Digital Elevation Model ground surface elevations collected by NC Dept. of Public Safety published 18 October 2015.
5. Seep locations identified visually as reported in Geosyntec, 2019. Seeps and Creeks Investigation Report. Chemours Fayetteville Works. 26 August 2019.
6. 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).
7. 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

Model Computed Groundwater Elevation Map - Perched Zone, October 2019

Chemours Fayetteville Works, North Carolina

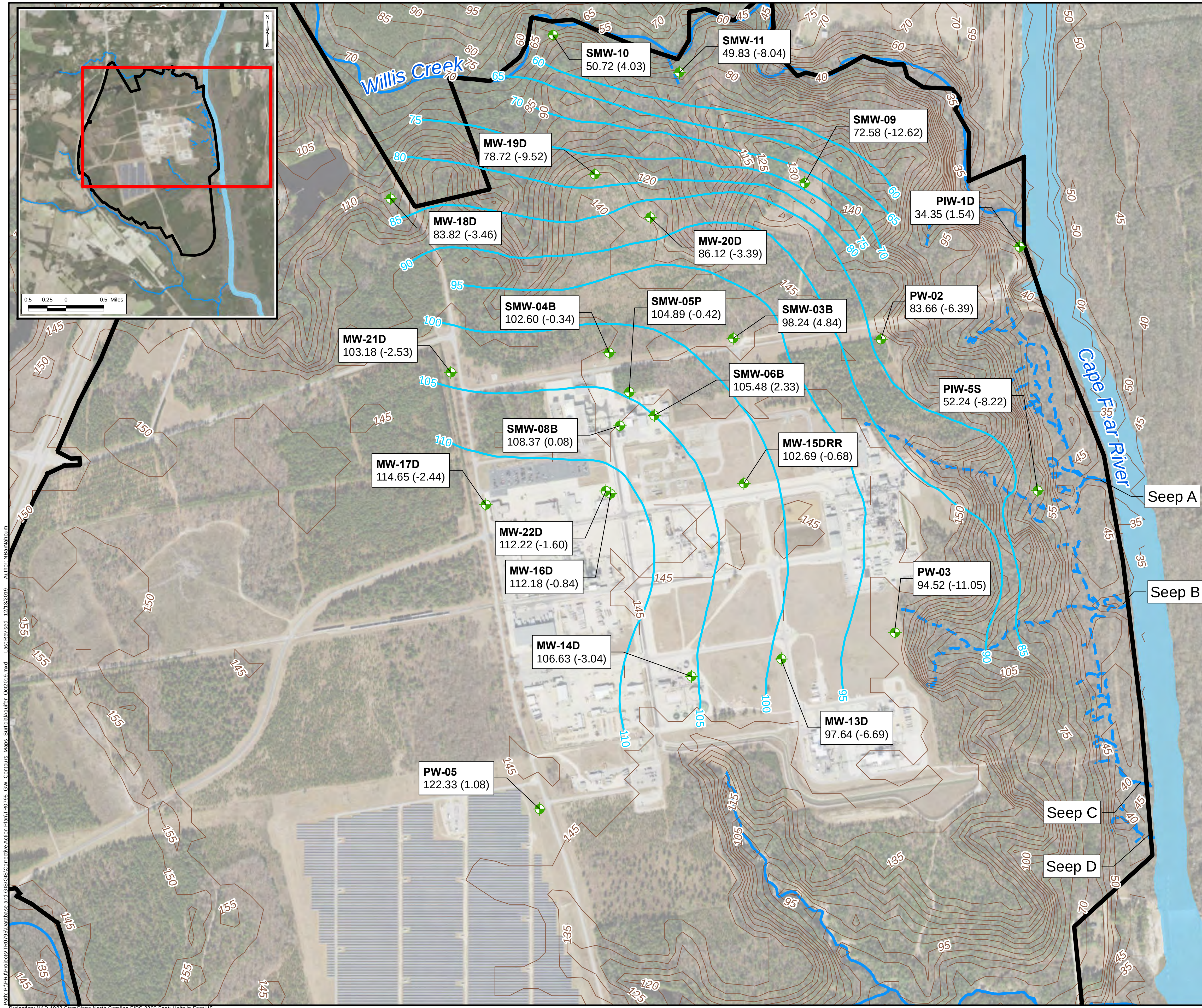
Geosyntec consultants

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

Figure 6

Raleigh | December 2019

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



Legend

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

Well Location → **PW-03**
Model Computed Groundwater Elevation (ft NAVD88) → 94.52 (-11.05) ← Groundwater Elevation Residual (ft)

Notes:
ft NAVD88 - feet North American Vertical Datum 1988.
1. Groundwater contours were visually interpolated using the computed groundwater elevations from the calibrated groundwater flow model.
2. Depth to water measurements collected on October 15, 2019 used to calculate the groundwater elevation residual.
3. Groundwater elevation residuals are calculated as the difference between the model computed groundwater elevations and the field measured groundwater elevations from October 15, 2019. Groundwater elevation residuals are presented in brackets.
4. Topographic contours from LiDAR Digital Elevation Model ground surface elevations collected by NC Dept. of Public Safety published 18 October 2015.
5. Seep locations identified visually as reported in Geosyntec, 2019. Seeps and Creeks Investigation Report. Chemours Fayetteville Works. 26 August 2019.
6. 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).
7. 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

Model Computed Groundwater Elevation Map - Surficial Aquifer, October 2019

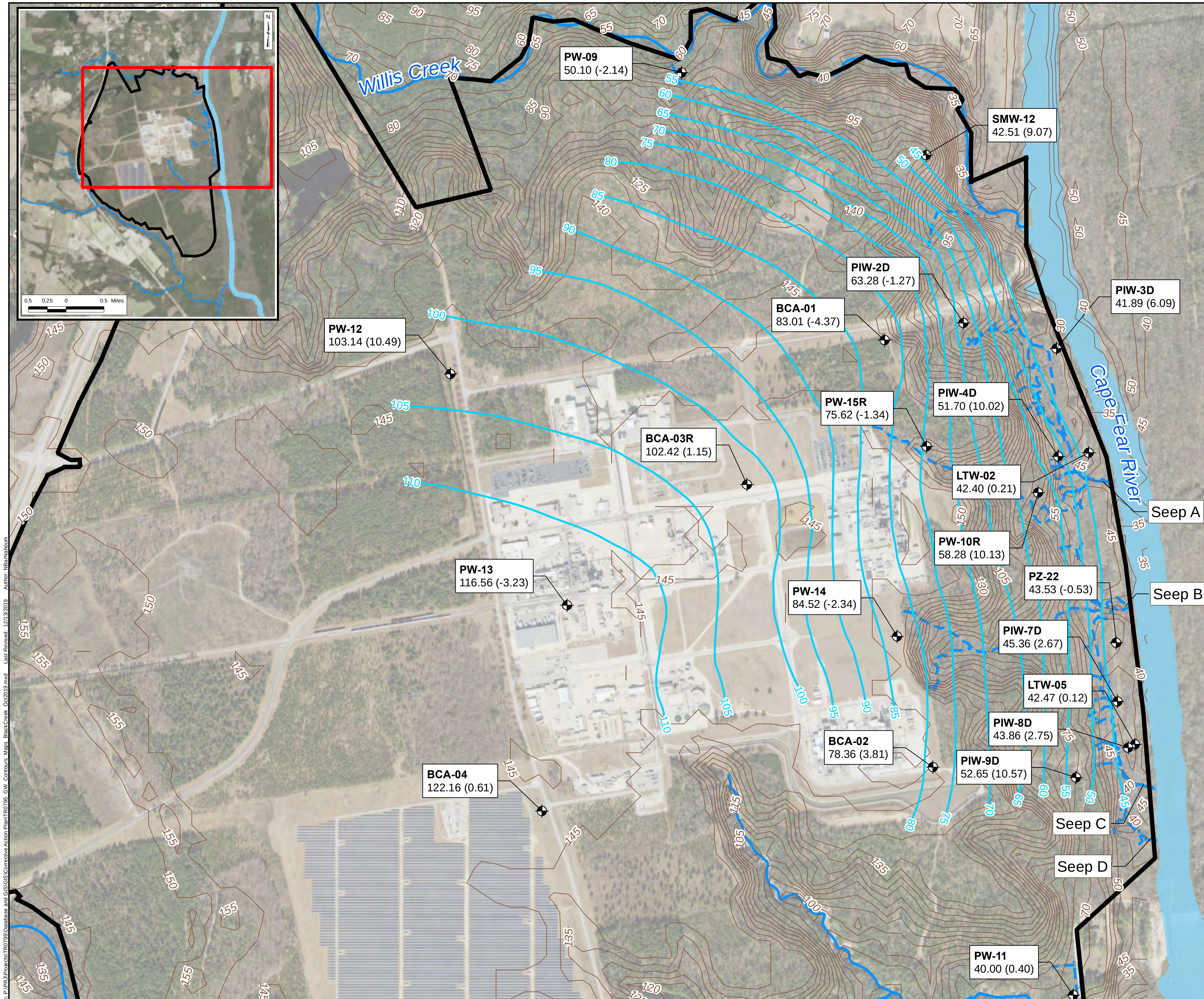
Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

Figure 7

Raleigh | December 2019



Legend

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

Well Location → PZ-22
Model Computed Groundwater Elevation (ft NAVD88) → 43.53 (-0.53) ← Groundwater Elevation Residual (ft)

Notes:
ft NAVD88 - feet North American Vertical Datum 1988.
1. Groundwater contours were visually interpolated using the computed groundwater elevations from the calibrated groundwater flow model.
2. Depth to water measurements collected on October 15, 2019 used to calculate the groundwater elevation residual.
3. Groundwater elevation residuals are calculated as the difference between the model computed groundwater elevations and the field measured groundwater elevations from October 15, 2019. Groundwater elevation residuals are presented in brackets.
4. Topographic contours from LiDAR Digital Elevation Model ground surface elevations collected by NC Dept. of Public Safety published 18 October 2015.
5. Seep locations identified visually as reported in Geosyntec, 2019. Seeps and Creeks Investigation Report. Chemours Fayetteville Works. 26 August 2019.
6. 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).
7. 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

Model Computed Groundwater Elevation Map - Black Creek Aquifer, October 2019

Chemours Fayetteville Works, North Carolina

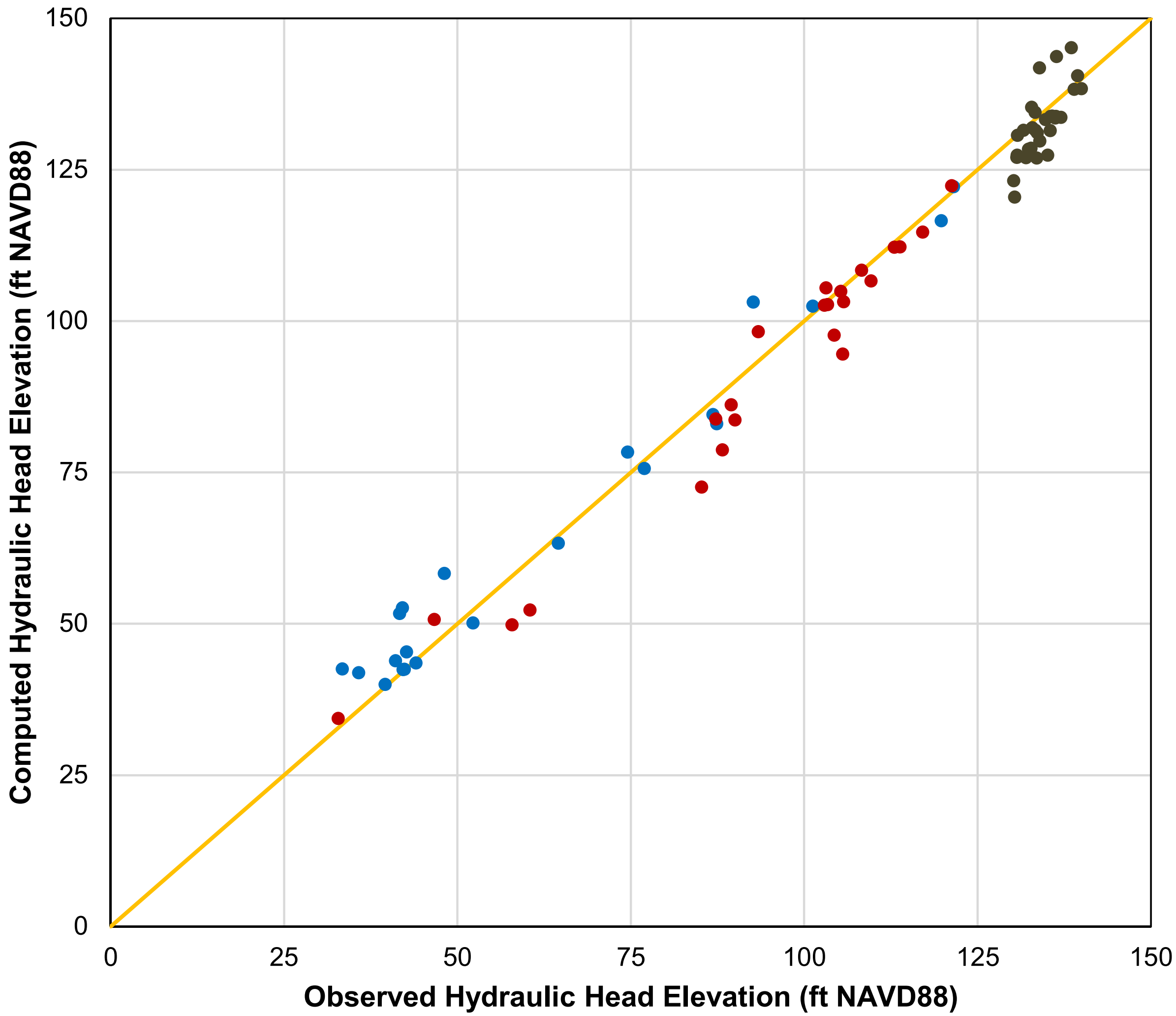
Geosyntec consultants

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

Raleigh	December 2019	Figure 8

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\Corrective Action Plan\TR0795_GW_Contours_Maps_BlackCreek_Oct2019.mxd Last Revised: 12/13/2019 Author: NBarNahoum

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



Legend

- Black Creek Aquifer
- Surficial Aquifer
- Perched Zone

Notes

NAVD88 - North American Vertical Datum of 1988

1. Observed hydraulic head elevations were obtained from a synoptic water level survey conducted on October 15, 2019.
2. Computed hydraulic head elevations were obtained from the calibrated steady state groundwater flow model.
3. Orange line represents the ideal calibration scenario where observed and computed hydraulic heads are equal.

Comparison of Observed and Computed Hydraulic Head Elevations

Chemours Fayetteville Works, North Carolina

Geosyntec consultants

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

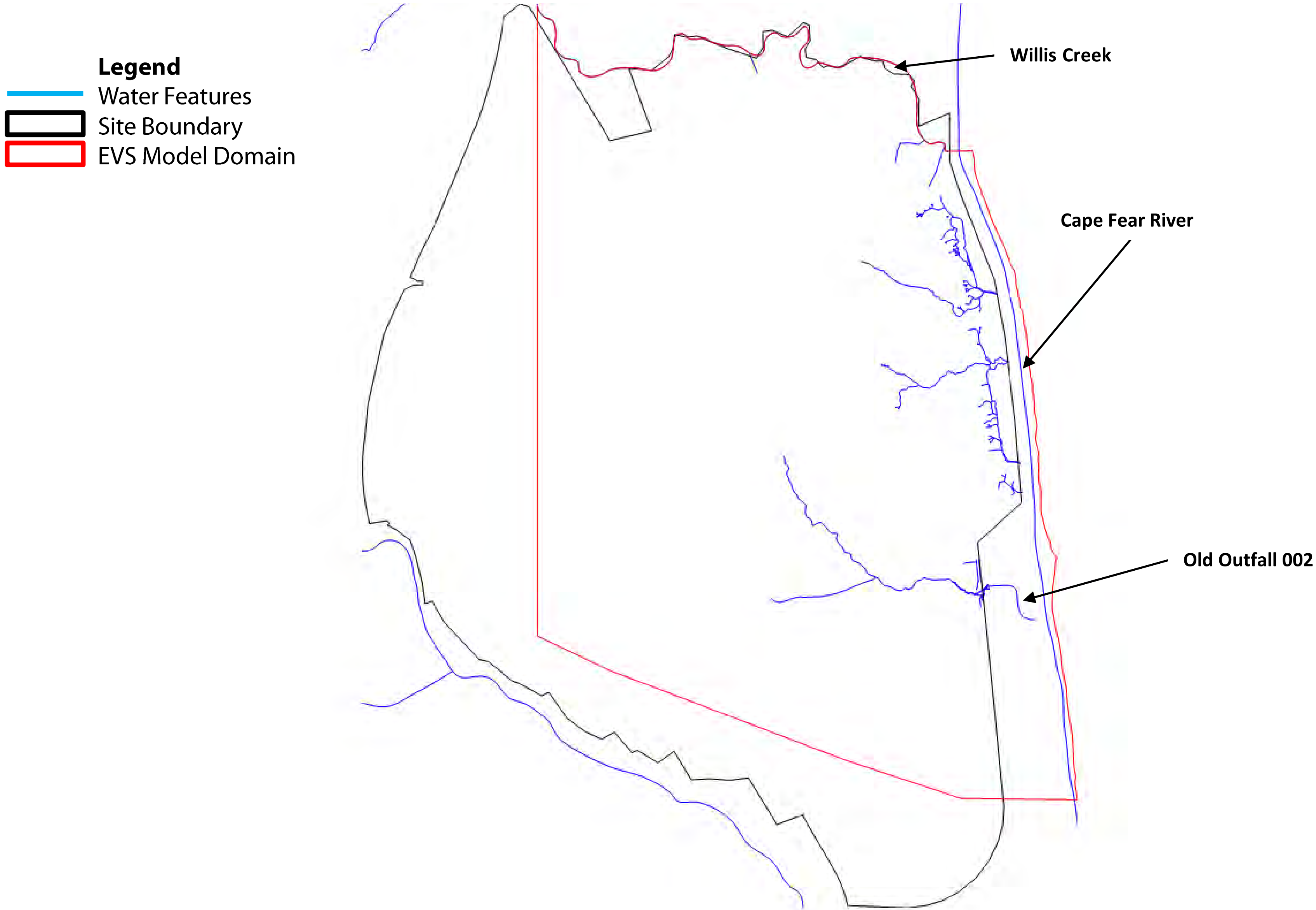
Figure 9

Raleigh | December 2019

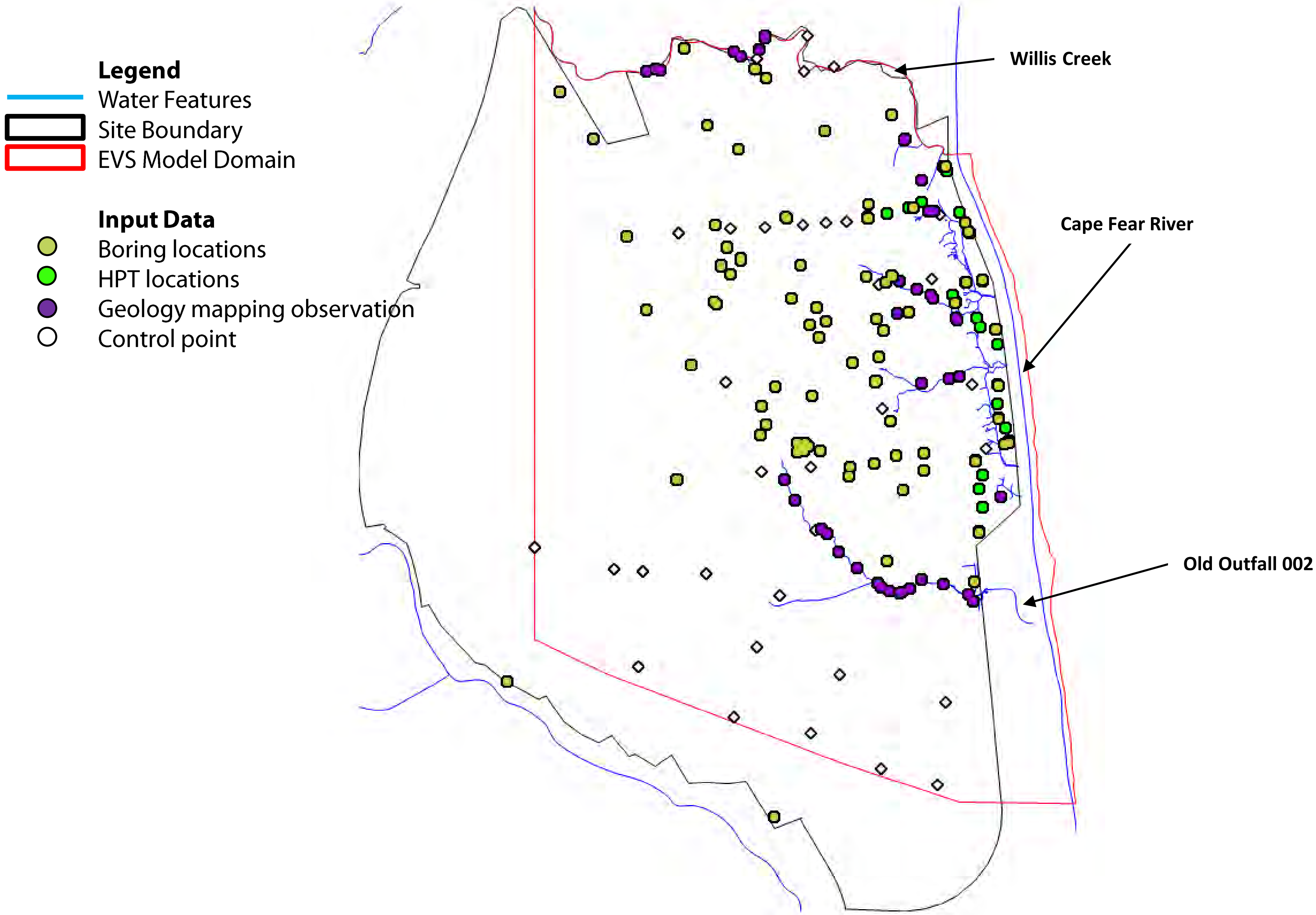
APPENDIX A
EXTRACTS FROM EVS MODEL

EVS Model Domain

Geosyntec consultants

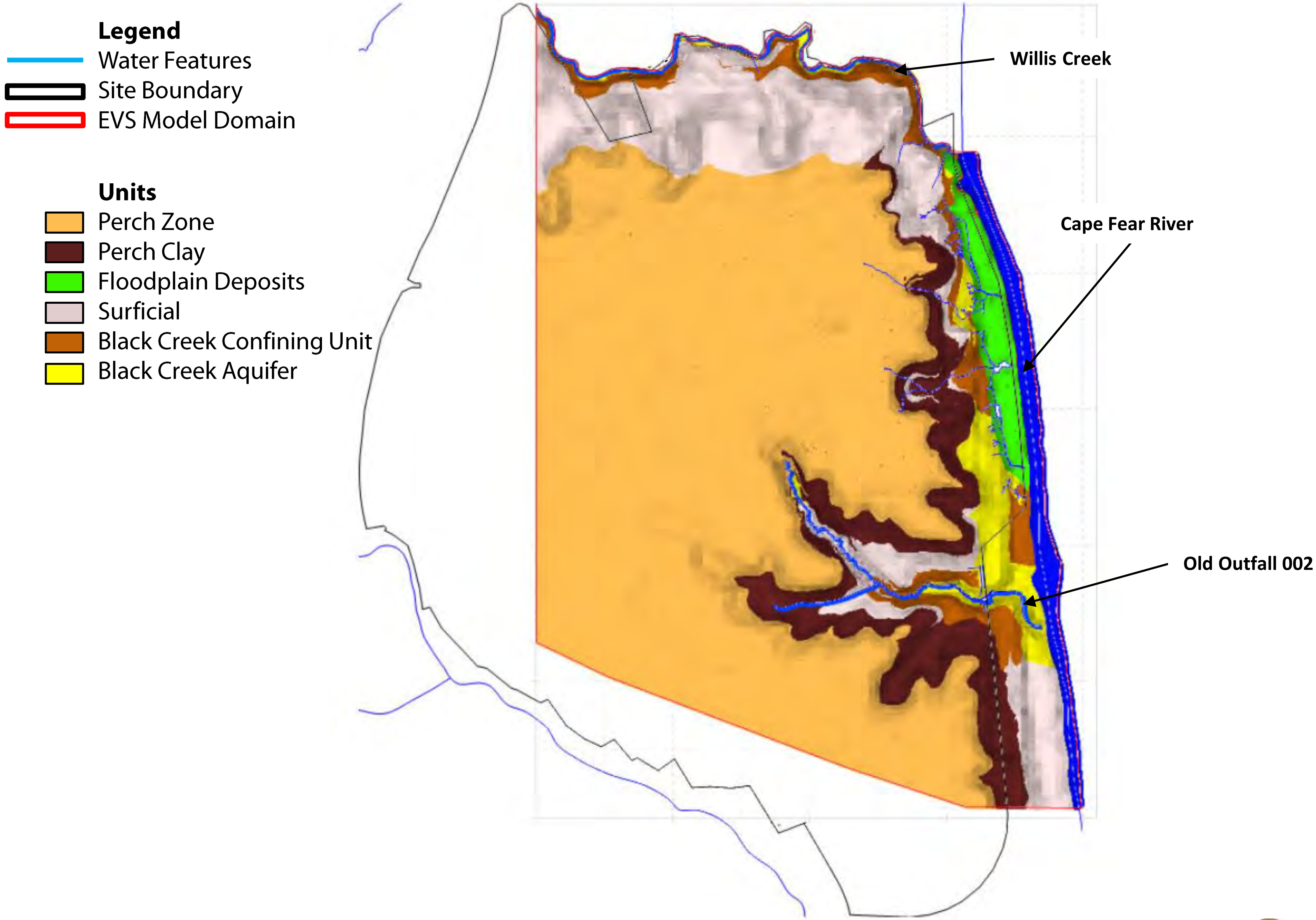


Input Data for EVS Model



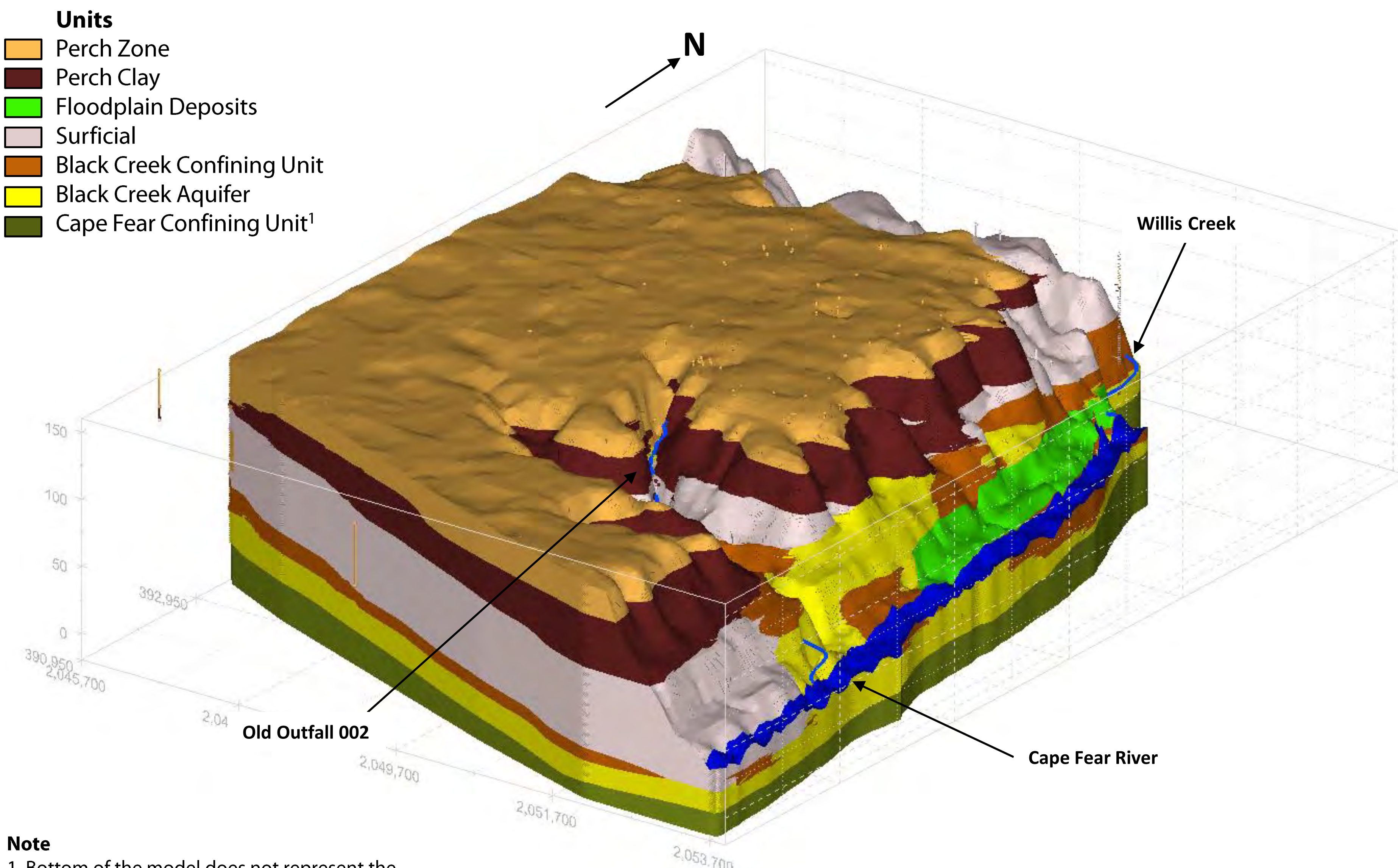
EVS Model Output – Plan View

Geosyntec consultants



EVS Model Output – 3D View (Facing Northwest)

Geosyntec consultants



Note
1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.

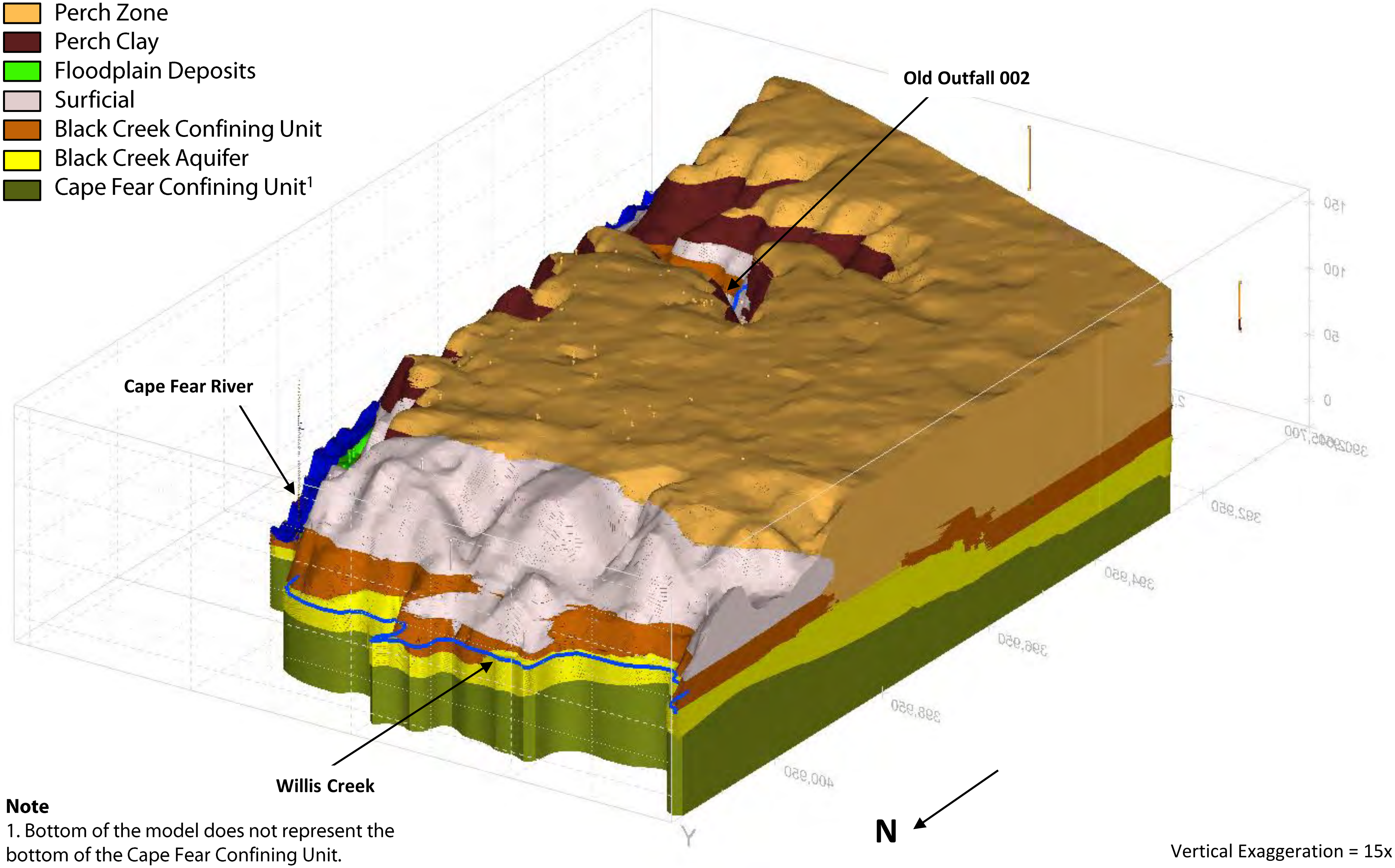
Vertical Exaggeration = 15x

EVS Model Output – 3D View (Facing Southeast)

Geosyntec consultants

Units

- Perch Zone
- Perch Clay
- Floodplain Deposits
- Surficial
- Black Creek Confining Unit
- Black Creek Aquifer
- Cape Fear Confining Unit[1]



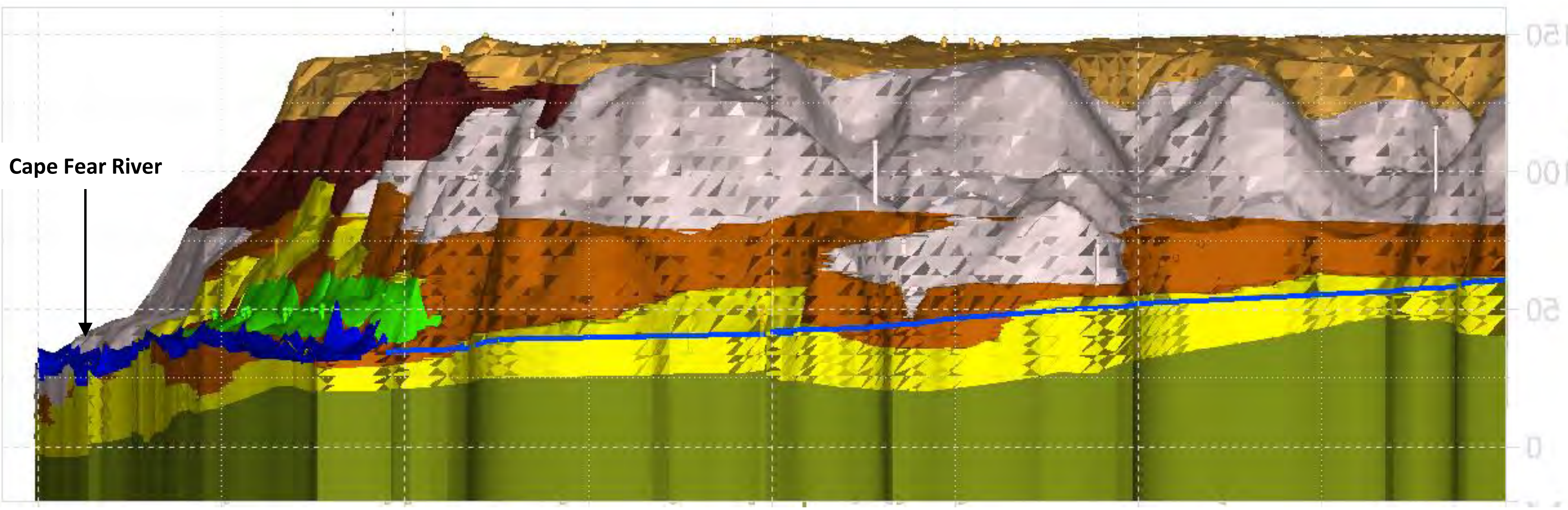
Note

1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.

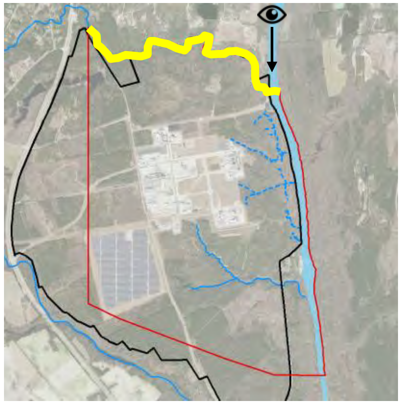
EVS Model Output – 3D View (North Boundary)

Geosyntec consultants

East **West**



Units
- Perch Zone
- Perch Clay
- Floodplain Deposits
- Surficial
- Black Creek Confining Unit
- Black Creek Aquifer
- Cape Fear Confining Unit[1]



Note
1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.

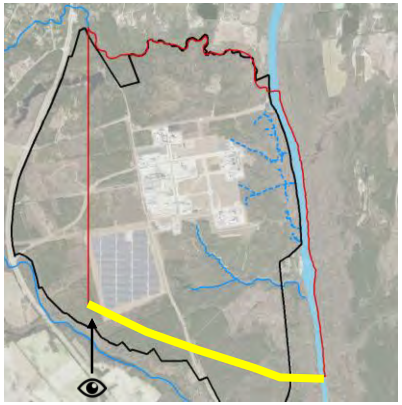
Vertical Exaggeration = 15x

EVS Model Output – 3D View (South Boundary)

Geosyntec consultants

Units

- Perch Zone
- Perch Clay
- Floodplain Deposits
- Surficial
- Black Creek Confining Unit
- Black Creek Aquifer
- Cape Fear Confining Unit[1]



Note

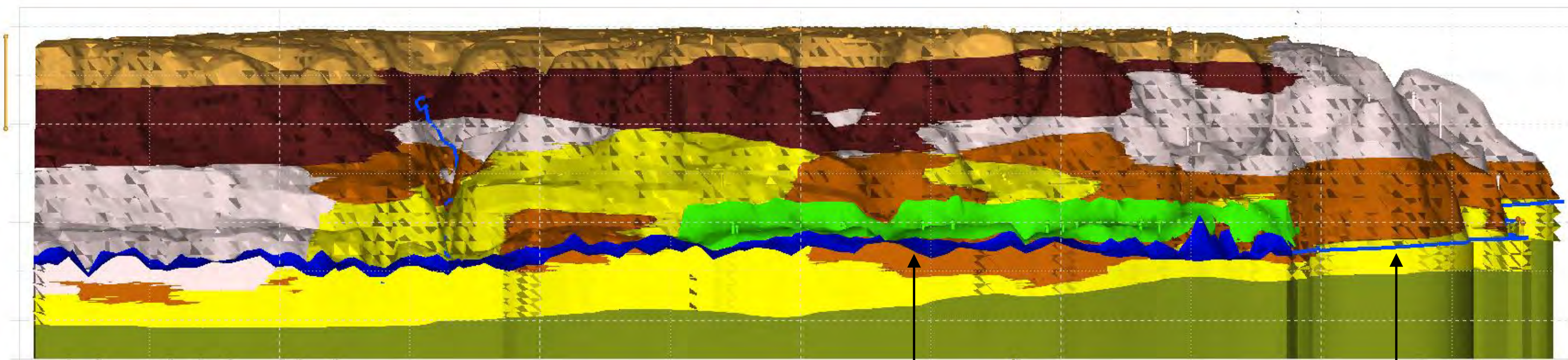
1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.

Vertical Exaggeration = 15x

EVS Model Output – 3D View (East Boundary)

Geosyntec consultants

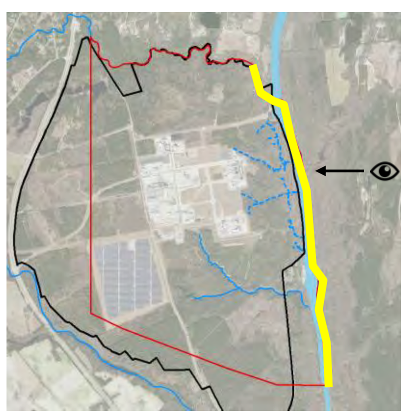
South North



Cape Fear River

Willis Creek

Units
- Perch Zone
- Perch Clay
- Floodplain Deposits
- Surficial
- Black Creek Confining Unit
- Black Creek Aquifer
- Cape Fear Confining Unit[1]



Note

1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.

Vertical Exaggeration = 15x

EVS Model Output – 3D View (West Boundary)

Geosyntec consultants

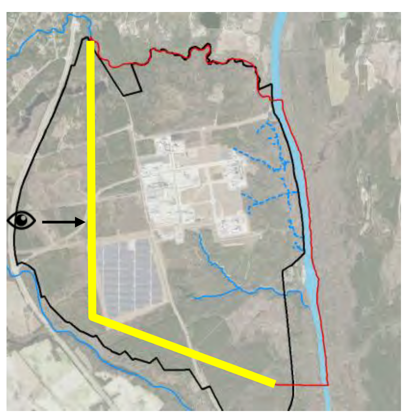
North

South

Willis Creek

Units

- Perch Zone
- Perch Clay
- Floodplain Deposits
- Surficial
- Black Creek Confining Unit
- Black Creek Aquifer
- Cape Fear Confining Unit[1]



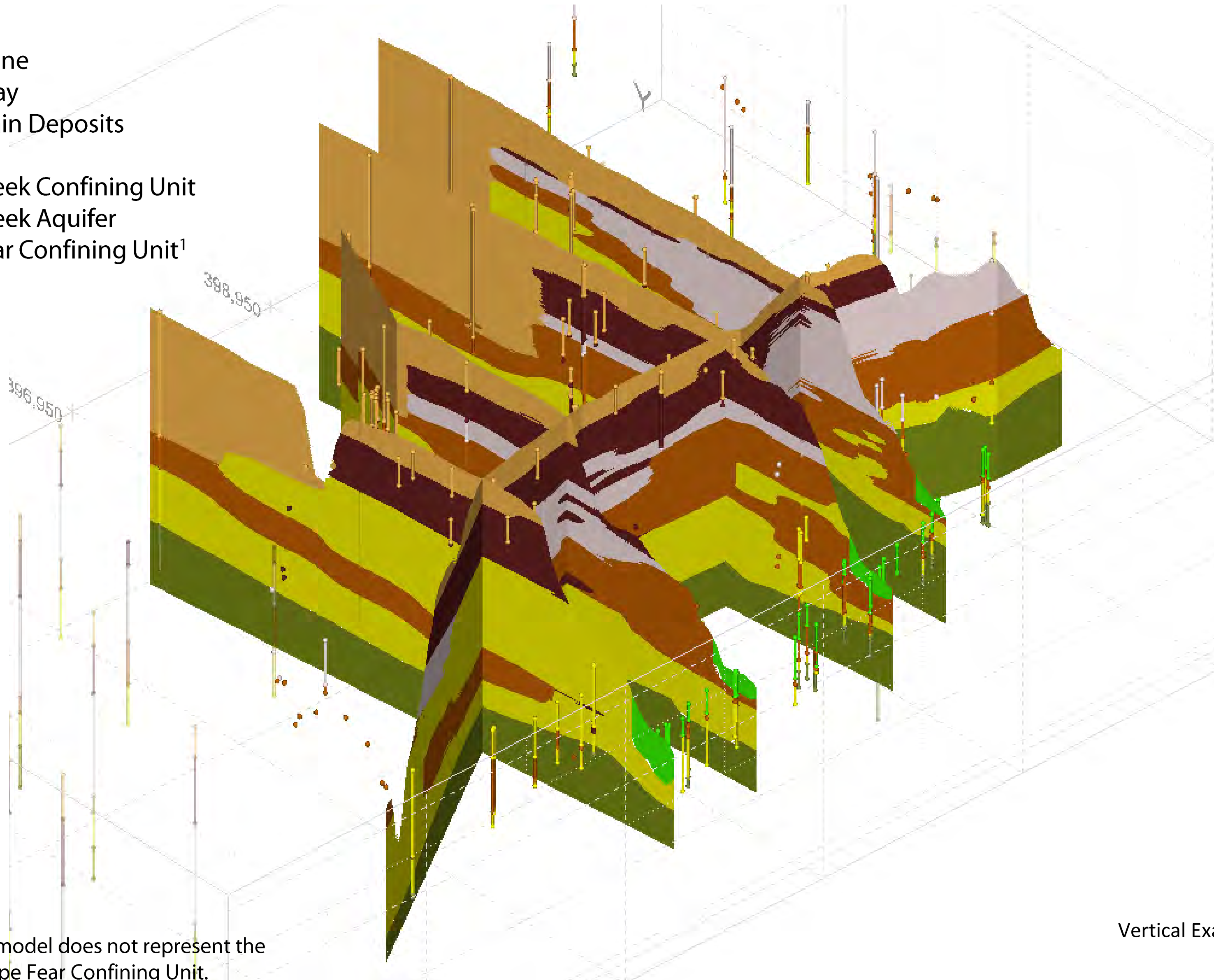
Note

1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.

Vertical Exaggeration = 15x

EVS Model Output – Cross-Sections in 3D View

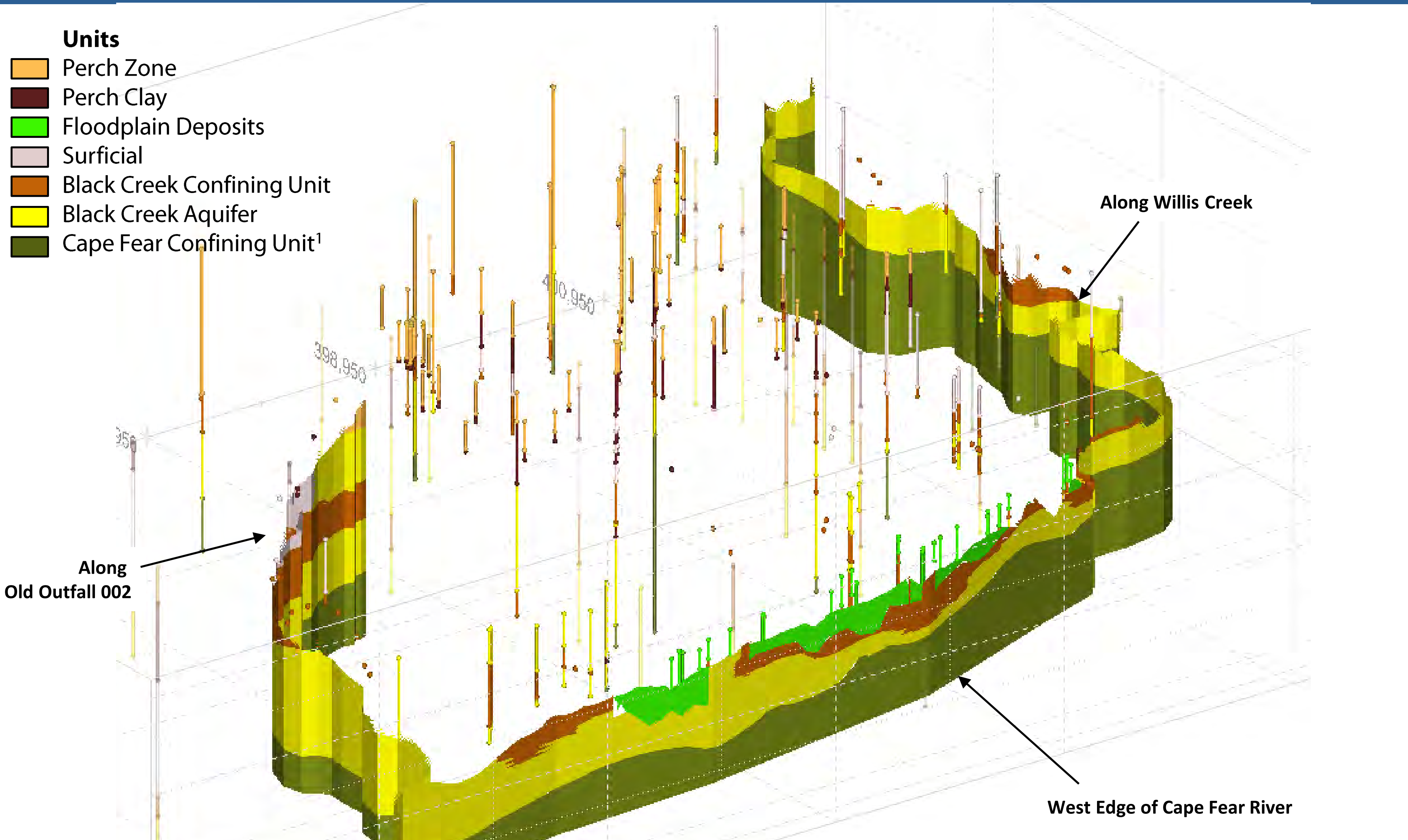
Units
- Perch Zone
- Perch Clay
- Floodplain Deposits
- Surficial
- Black Creek Confining Unit
- Black Creek Aquifer
- Cape Fear Confining Unit[1]



Note
1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.

Vertical Exaggeration = 15x

EVS Model Output – Cross-Sections in 3D View



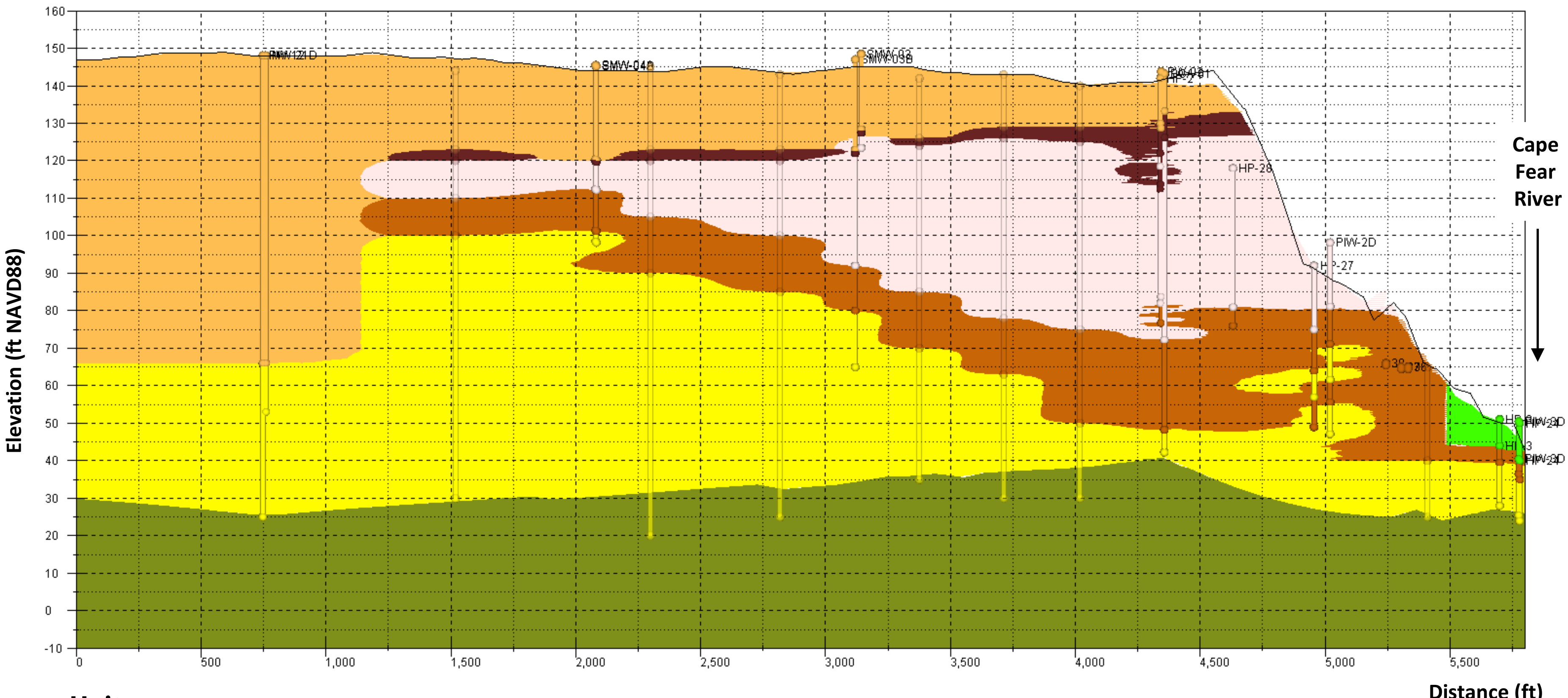
Note

1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.

EVS Model Output – Cross-Section A-A'

Geosyntec consultants

A (West) **A' (East)**



Units

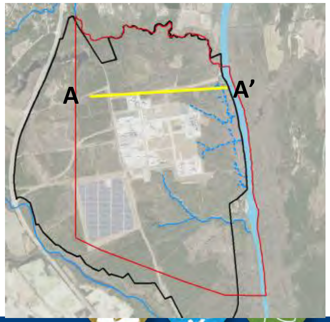
- Perch Zone
- Perch Clay
- Floodplain Deposits
- Surficial
- Black Creek Confining Unit
- Black Creek Aquifer
- Cape Fear Confining Unit[1]

Locations

- Boring or HPT location
- Geology mapping observation point (elevation obtained from LiDAR data)

Note

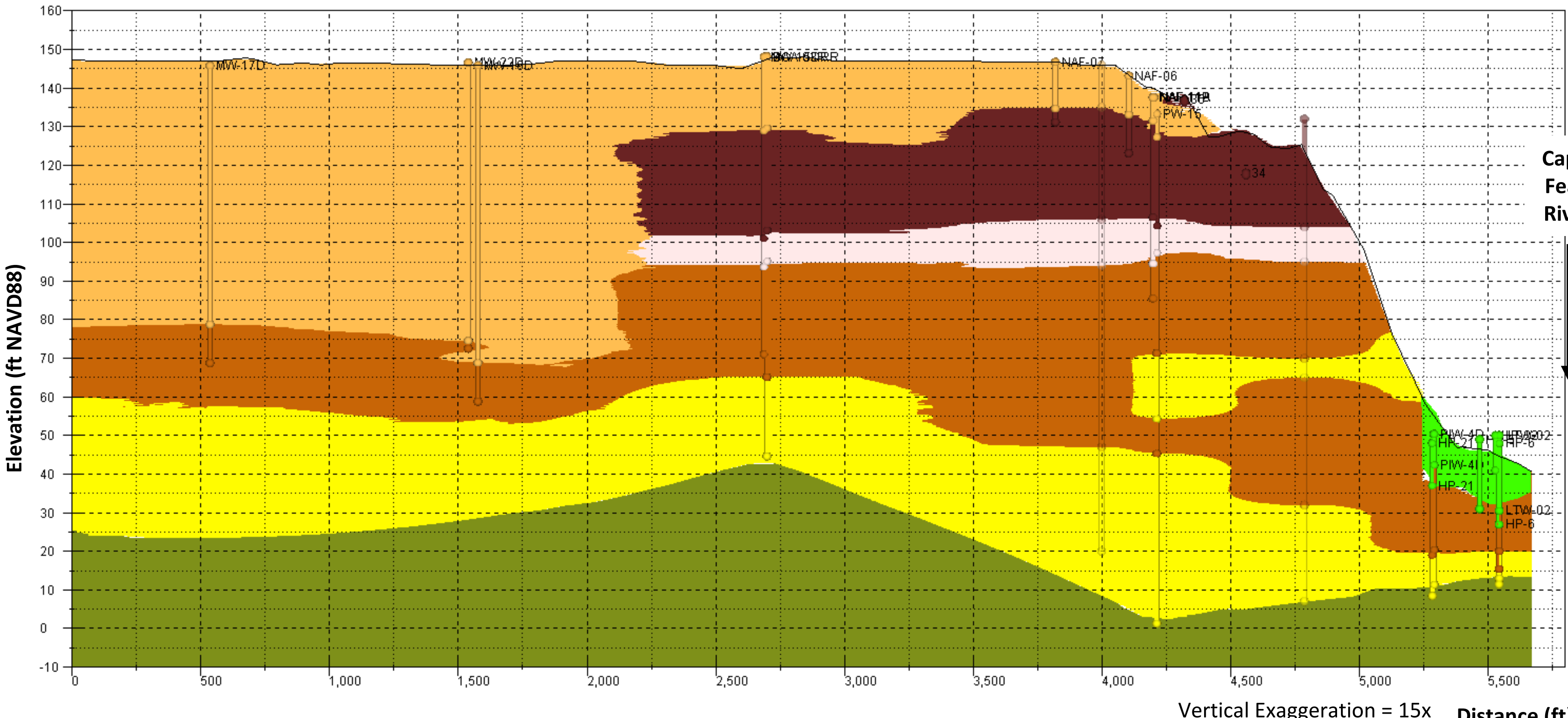
1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.



EVS Model Output – Cross-Section B-B’

Geosyntec consultants

B (West) **B’ (East)**



Units

- Perch Zone
- Perch Clay
- Floodplain Deposits
- Surficial
- Black Creek Confining Unit
- Black Creek Aquifer
- Cape Fear Confining Unit[1]

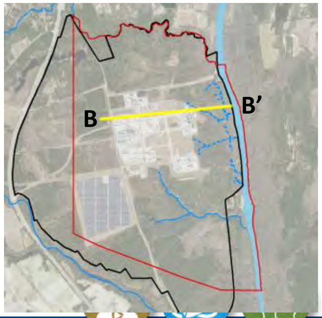
Locations

Boring or HPT location

Geology mapping observation point (elevation obtained from LiDAR data)

Note

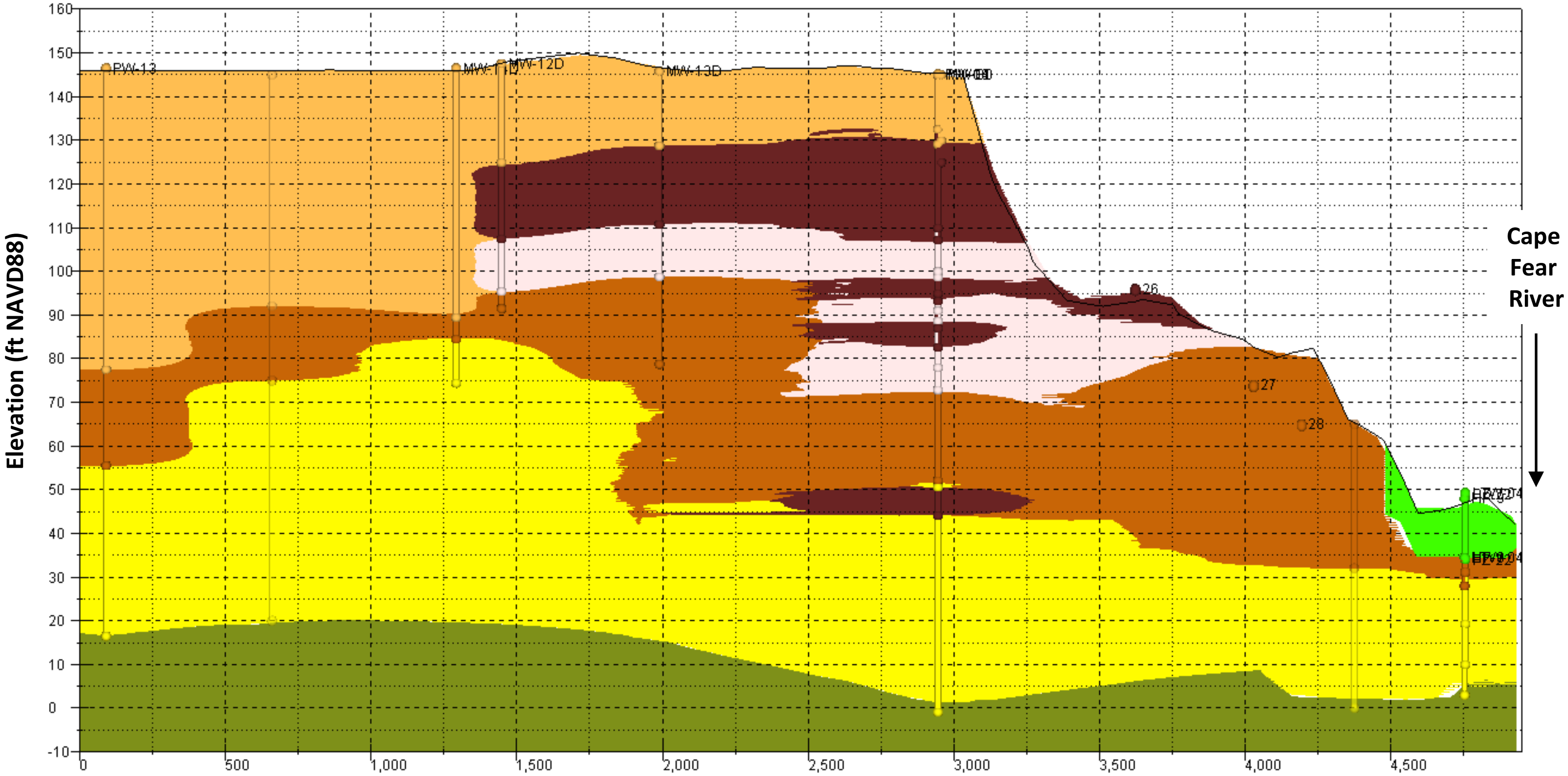
1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.



EVS Model Output – Cross-Section C-C’

Geosyntec consultants

C (West) C’ (East)

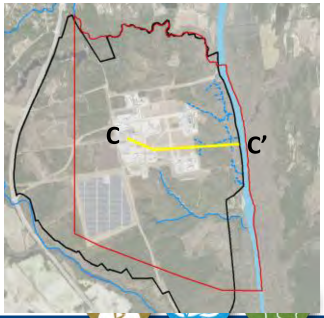


Vertical Exaggeration = 15x **Distance (ft)**

Units
- Perch Zone
- Perch Clay
- Floodplain Deposits
- Surficial
- Black Creek Confining Unit
- Black Creek Aquifer
- Cape Fear Confining Unit[1]

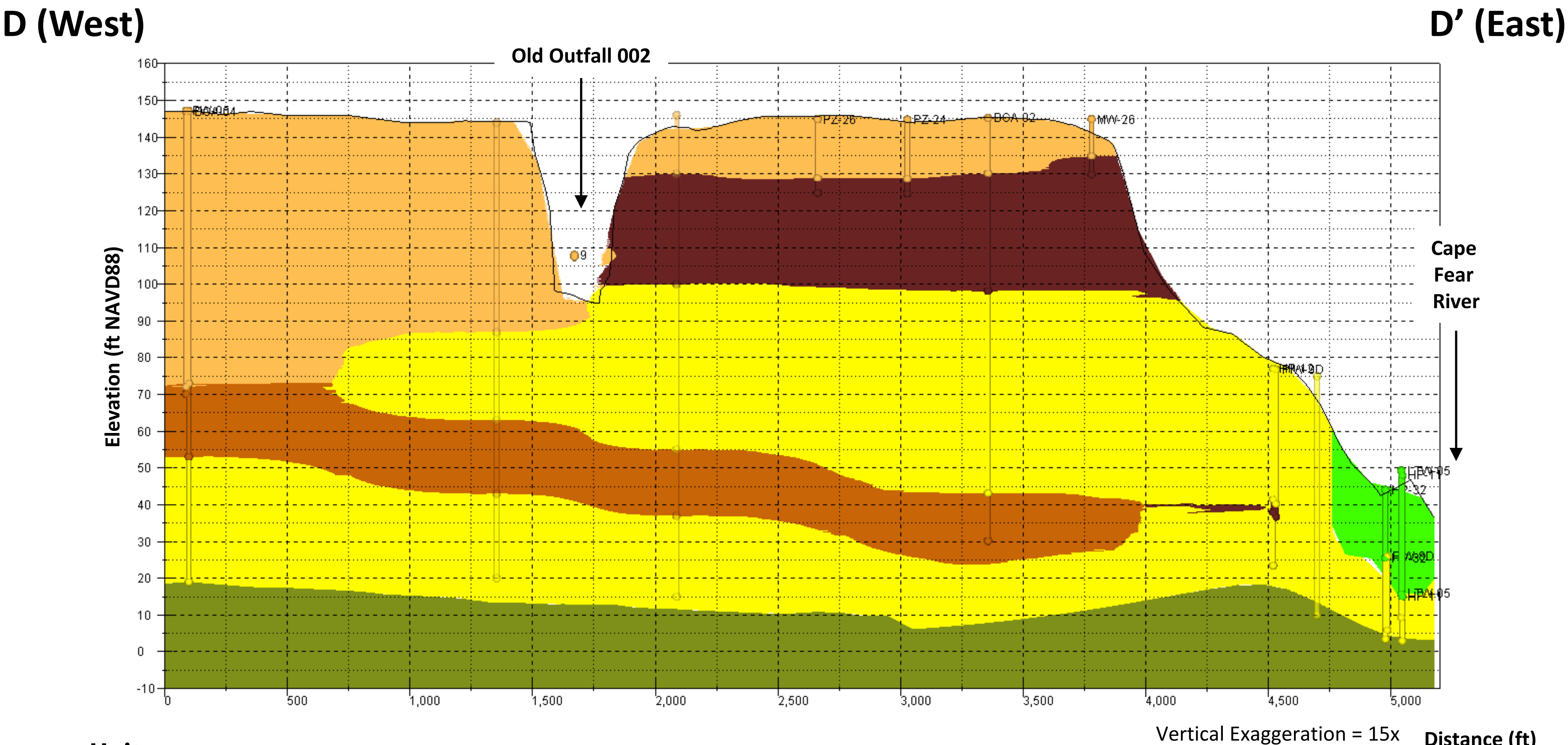
Locations
- Boring or HPT location
- Geology mapping observation point (elevation obtained from LiDAR data)

Note
1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.



EVS Model Output – Cross-Section D-D’

Geosyntec consultants



Units

- Perch Zone
- Perch Clay
- Floodplain Deposits
- Surficial
- Black Creek Confining Unit
- Black Creek Aquifer
- Cape Fear Confining Unit[1]

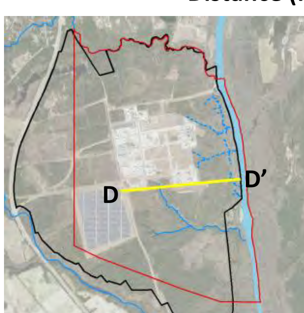
Locations

Boring or HPT location

Geology mapping observation point (elevation obtained from LiDAR data)

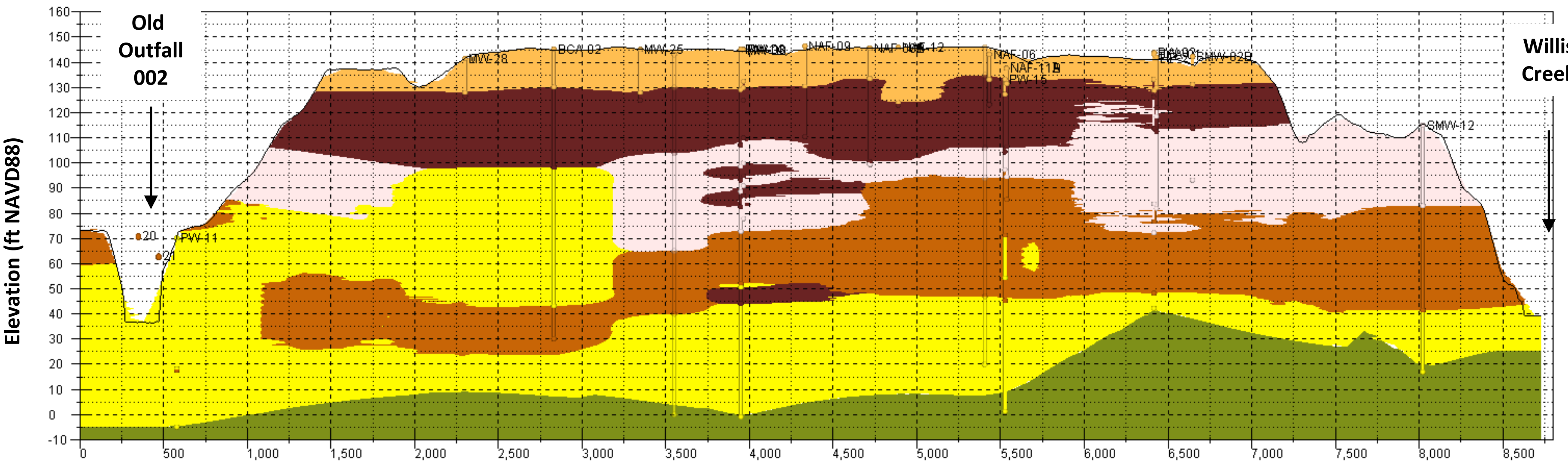
Note

1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.



EVS Model Output – Cross-Section E-E’

E (South) **E’ (North)**



Vertical Exaggeration = 15x

Distance (ft)

Vertical Exaggeration = 15x

Units

- Perch Zone
- Perch Clay
- Floodplain Deposits
- Surficial
- Black Creek Confining Unit
- Black Creek Aquifer
- Cape Fear Confining Unit[1]

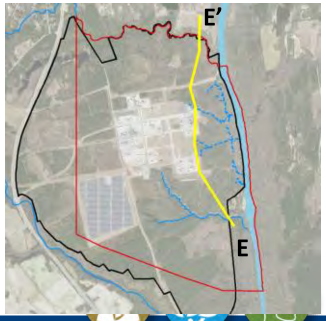
Locations

Boring or HPT location

Geology mapping observation point (elevation obtained from LiDAR data)

Note

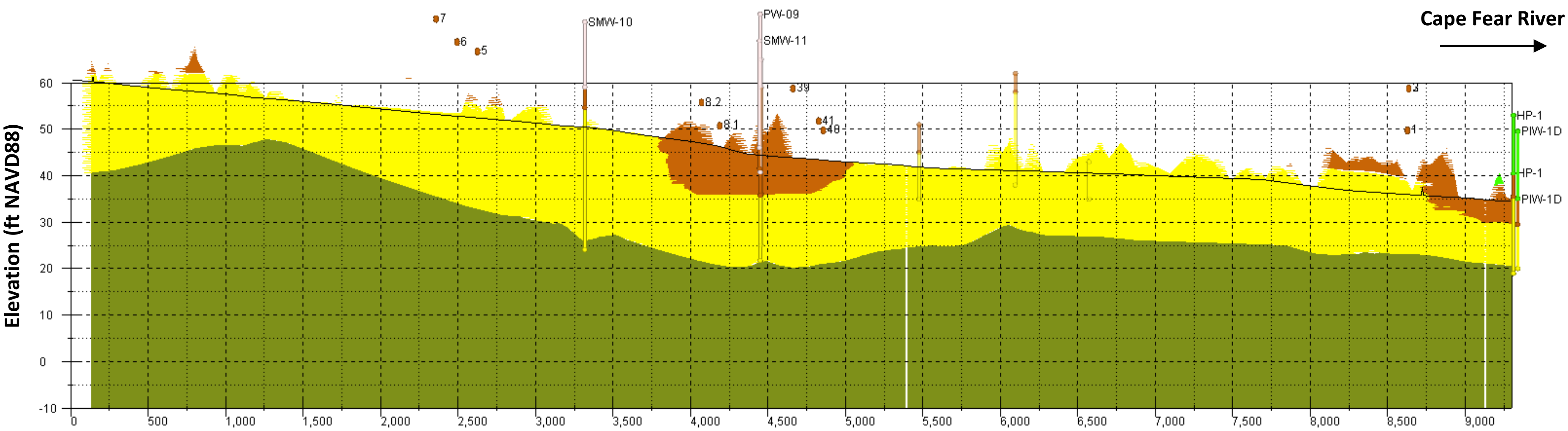
1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.



EVS Model Output – Cross-Section Along Willis Creek

Geosyntec consultants

1 (West) **1’ (East)**



Vertical Exaggeration = 15x

Distance (ft)

Vertical Exaggeration = 15x

Units

- Perch Zone
- Perch Clay
- Floodplain Deposits
- Surficial
- Black Creek Confining Unit
- Black Creek Aquifer
- Cape Fear Confining Unit[1]

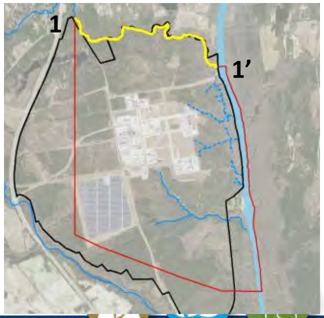
Locations

Boring or HPT location

Geology mapping observation point (elevation obtained from LiDAR data)

Note

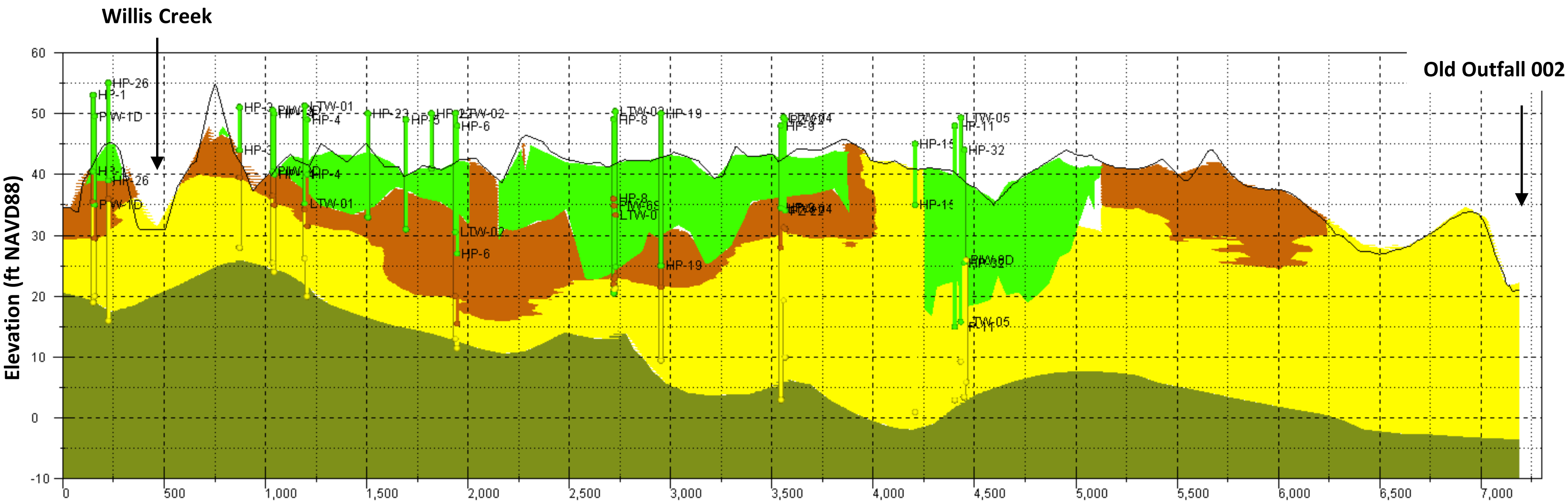
1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.



EVS Model Output – Cross-Section Along Cape Fear River

Geosyntec consultants

2 (North) **2' (South)**



Vertical Exaggeration = 15x

Distance (ft)

Vertical Exaggeration = 15x

Units

- Perch Zone
- Perch Clay
- Floodplain Deposits
- Surficial
- Black Creek Confining Unit
- Black Creek Aquifer
- Cape Fear Confining Unit[1]

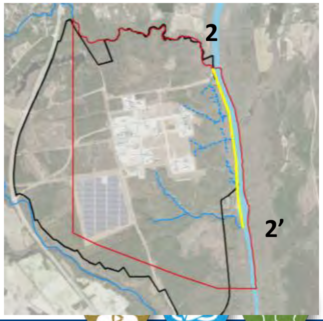
Locations

Boring or HPT location

Geology mapping observation point (elevation obtained from LiDAR data)

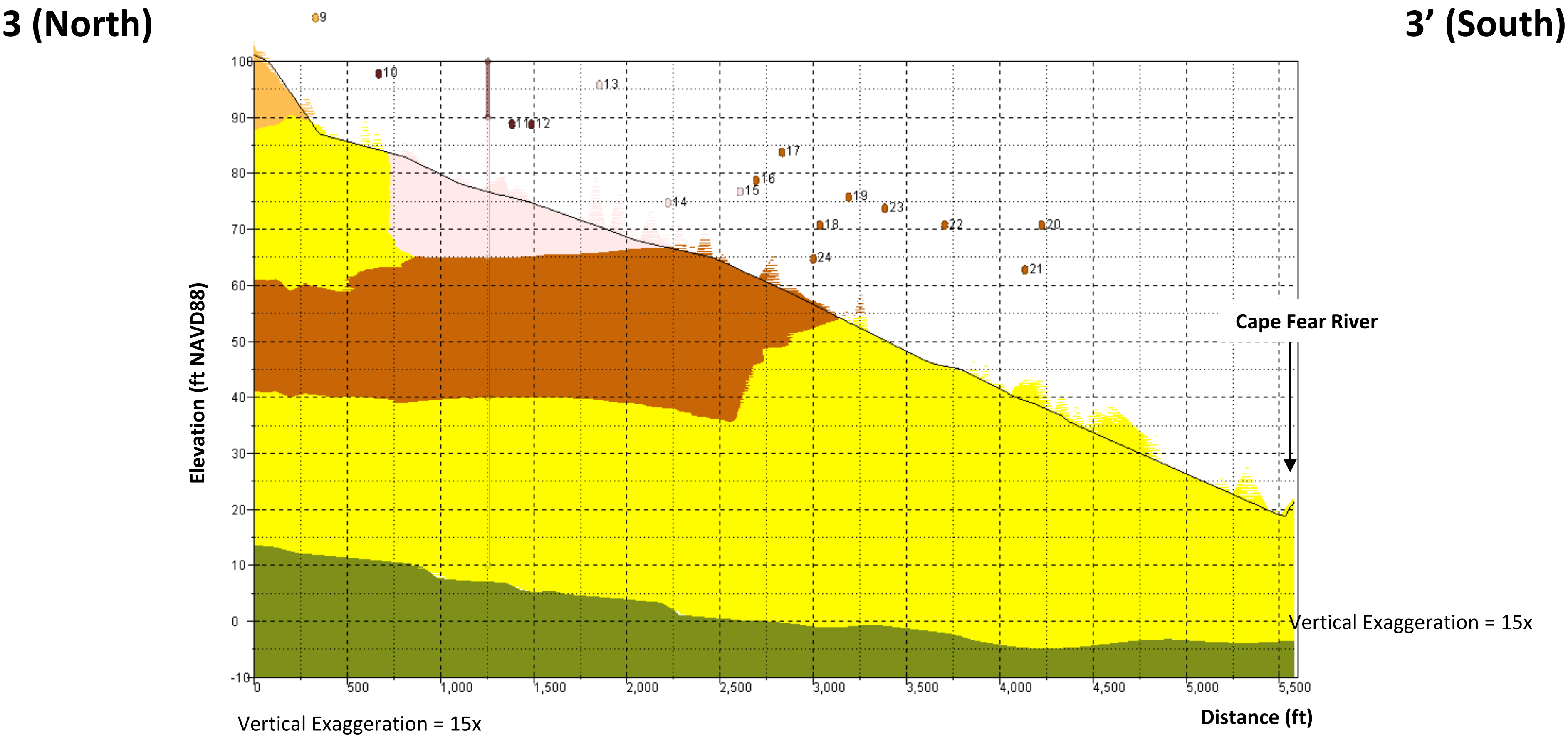
Note

1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.



EVS Model Output – Cross-Section Along Old Outfall 002

Geosyntec consultants



Vertical Exaggeration = 15x

Units

- Perch Zone
- Perch Clay
- Floodplain Deposits
- Surficial
- Black Creek Confining Unit
- Black Creek Aquifer
- Cape Fear Confining Unit[1]

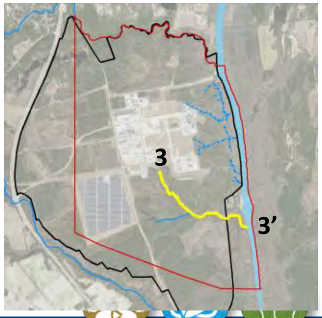
Locations

Boring or HPT location

Geology mapping observation point (elevation obtained from LiDAR data)

Note

1. Bottom of the model does not represent the bottom of the Cape Fear Confining Unit.



APPENDIX I

Detailed Costs

Rough Order of Magnitude Cost Estimate for Treatment at Old Outfall 002 without Iron Removal
Chemours Fayetteville Works, North Carolina

Basis of Cost Estimate (Scope and Assumptions):

Direct Discharge-750 gpm without Iron Removal, No Pre-Fab Building

Scaled costs used from 1000 gpm (Using six-tenths rule of cost estimation)

Item	Qty	Unit	Unit Cost	Total	Notes
Construction Costs					
Influent & Effluent Handling	Process Package		$ 108,000	$ 108,000	
Multi Media Filtration	Process Package		$ 331,000	$ 331,000	
Granular Activated Carbon	Process Package		$ 1,239,000	$ 1,239,000	
Solids Handling and Chemical Precipitation	Process Package		$ 1,074,000	$ 1,074,000	
Prefabricated Building & Containment Structure	Process Package		$ -	$ -	
Land Costs	Package		$ -	$ -	
Raw Construction Costs				$ 2,752,000	
Installation Cost (Construction, Site Preparation, Civil, Structural)	60%	of	Raw Construction Costs	$ 1,700,000	
Anciliary Cost (I&C, Piping-Mechanical & Electrical)	40%	of	Sum of Raw Construction Costs and Installation Cost	$ 1,800,000	
Total Construction Cost	Sum	of	Raw Construction Costs, Installation Cost and Anciliary Cost	$ 6,300,000	
Professional Services Costs					
Engineering and Project Management	12%	of	Total Construction Cost	$ 800,000	
Construction Management, Project Management, General Conditions	8%	of	Sum of Total Construction Cost, Engineering/PM & Contingency Costs	$ 800,000	
Professional Services Subtotal				$ 1,600,000	
Contingency	30%	of	Sum of Total Construction Cost and Engineering/PM cost	$ 2,200,000	
C_0,Construction Cost				**$ 10,100,000**	
+50%				$ 15,150,000	
-30%				$ 7,070,000	
Annual Operations & Maintenance Costs					
Electricity			$ 26,680	$ 26,680	
GAC Usage & Replacement			$ 552,000	$ 552,000	
Chemicals for treatment (Acid, Caustic, Ferric, Polymer)			$ 27,000	$ 27,000	
Solids Disposal			$ 25,000	$ 25,000	
Sampling & Analytical			$ 53,000	$ 53,000	
Operational Labor			$ 450,000	$ 450,000	
Equipment Maintenance			$ 237,000	$ 237,000	
Annual O&M Subtotal				$ 1,400,000	
C,Annual Cost				**$ 1,400,000**	
+50%				$ 2,100,000	
-30%				$ 980,000	
n,Years	**20**				
r,Discount Rate	**3.5%**				
Present Worth Formula	$PV = C_o + C\left[\frac{(1+r)^n - 1}{r(1+r)^n}\right]$				
Total: Present Worth Value of Construction & Annual O&M Costs over 20 Years				**$ 30,000,000**	
+50%				$ 45,000,000	
-30%				$ 21,000,000	

Costs are rough order of magnitude estimates, and assumed to represent the actual installed cost within a range of -30%/ +50% of the value indicated above. The estimates have been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on final approved design, actual labor and material costs, and competitive variable factors. These estimates are not intended for budgetary or future planning purposes; they have been prepared to facilitate an inter-remedial alternative comparison.

Rough Order of Magnitude Cost Estimate for Interim Seep Remedies: Flow Through Cells (Seeps A-C) and French Drain (Seep D)
Chemours Fayetteville Works, North Carolina

Basis of Cost Estimate (Scope and Assumptions):

IM: Seeps A, B, and C Flow Through Structures, and Seep D French Drain capture

See supporting document for treatment scenario, assumptions, and drawing

Item	Qty	Unit	Unit Cost	Total	Notes
Construction Costs					
Flow Through Cells A-C					
Road Installation Along River	1	Lump	$ 500,000	$ 500,000	
Clearing, Grubbing, and Seep Access	3	Seep	$ 10,000	$ 30,000	
Sheet Pile Installation	1,350	ft^2	$ 40	$ 54,000	
Gabion Baskets and Frame (1 frame and 3 baskets per seep)	3	Seep	$ 6,200	$ 18,600	
First Install GAC Seep A	3,742	Pound	$ 1.50	$ 5,613	
First Install GAC Seep B	3,742	Pound	$ 1.50	$ 5,613	
First Install GAC Seep C	3,742	Pound	$ 1.50	$ 5,613	
French Drain D					
Pipeline and Power Installation Along River	2,000	linear ft	$ 29	$ 58,000	
Lift Station at south end	1	lump	$ 25,000	$ 25,000	
Clearing, Grubbing, and Seep Access	1	Seep	$ 10,000	$ 10,000	
French Drain Installation	360	ft^2	$ 42	$ 15,120	
Sump Pump Installation	1	Seep	$ 2,980	$ 2,980	
Feeder Electrical and discharge Line Seep D	910	linear ft	$ 29	$ 26,390	
Raw Construction Costs				$ 756,930	
Total Construction Cost	Sum	of	Raw Construction Costs, Installation Cost and Anciliary Cost	$ 800,000	
Professional Services Costs					
Engineering and Project Management	12%	of	Total Construction Cost	$ 100,000	
Construction Management, Project Management, General Conditions	18%	of	Sum of Total Construction Cost, Engineering/PM & Contingency Costs	$ 220,000	
Professional Services Subtotal				$ 320,000	
Contingency	30%	of	Sum of Total Construction Cost and Engineering/PM cost	$ 270,000	
C_0,Construction Cost				**$ 1,400,000**	
+50%				$ 2,100,000	
-30%				$ 980,000	

Rough Order of Magnitude Cost Estimate for Interim Seep Remedies: Flow Through Cells (Seeps A-C) and French Drain (Seep D)
Chemours Fayetteville Works, North Carolina

Annual Operations & Maintenance Costs						
Flow Through Cells A-C						
GAC Usage & Replacement	82,328	pound	$	1.50	$	123,493
GAC Changeout Equipment and Labor	12	event	$	3,200.00	$	38,400
Brush clearing and Path Maintenance	12	monthly	$	2,500	$	30,000
Solids Disposal	4	event	$	640	$	2,560
Sampling & Analytical (monthly performance sampling)	12	month	$	14,800	$	177,600
Operational Labor	4	event	$	7,500	$	30,000
Equipment Maintenance	1	event	$	5,000	$	5,000
Road Maintenance	1	event	$	5,000	$	5,000
Storm Damage Repair and Gabion Replacement	1	event	$	18,600	$	18,600
Annual Data Management and Performance Reporting	1	event	$	35,000	$	35,000
French Drain D						
Electrical Power	1	lump	$	2,500.00	$	2,500
GAC Usage & Replacement	10,000	pound	$	1.50	$	15,000
Brush clearing and Path Maintenance	12	monthly	$	500	$	6,000
Solids Disposal	12	event	$	240	$	2,880
Sampling & Analytical (monthly performance sampling)	12	month	$	4,000	$	48,000
Operational Labor	12	event	$	1,500	$	18,000
Equipment Maintenance	1	event	$	3,000	$	3,000
Road, Pipe, and Power Maintenance	1	event	$	5,000	$	5,000
Storm Damage Repair and Pump Replacement	1	event	$	10,000	$	10,000
Annual O&M Subtotal					$	580,000
C,Annual Cost					**$**	**600,000**
+50%					$	870,000
-30%					$	406,000

Costs are rough order of magnitude estimates, and assumed to represent the actual installed cost within a range of -30%/ +50% of the value indicated above. The estimates have been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on final approved design, actual labor and material costs, and competitive variable factors. These estimates are not intended for budgetary or future planning purposes; they have been prepared to facilitate an inter-remedial alternative comparison.

Rough Order of Magnitude Cost Estimate for Low Range Permanent Seep Remedy: Flow Through Cells (Seeps A-C) and French Drain (Seep D)
Chemours Fayetteville Works, North Carolina

Basis of Cost Estimate (Scope and Assumptions):

IM: Seeps A, B, and C Flow Through Structures, and Seep D French Drain capture
See supporting document for treatment scenario, assumptions, and drawing

Item	Qty	Unit	Unit Cost	Total	Notes
Construction Costs					
Flow Through Cells A-C					
Road Installation Along River	1	Lump	$ 500,000	$ 500,000	
Clearing, Grubbing, and Seep Access	3	Seep	$ 10,000	$ 30,000	
Sheet Pile Installation	1,350	ft^2	$ 40	$ 54,000	
Gabion Baskets and Frame (1 frame and 3 baskets per seep)	3	Seep	$ 6,200	$ 18,600	
First Install GAC Seep A	3,742	Pound	$ 1.50	$ 5,613	
First Install GAC Seep B	3,742	Pound	$ 1.50	$ 5,613	
First Install GAC Seep C	3,742	Pound	$ 1.50	$ 5,613	
French Drain D					
Pipeline and Power Installation Along River	2,000	linear ft	$ 29	$ 58,000	
Lift Station at south end	1	lump	$ 25,000	$ 25,000	
Clearing, Grubbing, and Seep Access	1	Seep	$ 10,000	$ 10,000	
French Drain Installation	360	ft^2	$ 42	$ 15,120	
Sump Pump Installation	1	Seep	$ 2,980	$ 2,980	
Feeder Electrical and discharge Line Seep D	910	linear ft	$ 29	$ 26,390	
Raw Construction Costs				$ 756,930	
Total Construction Cost	Sum	of	Raw Construction Costs, Installation Cost and Anciliary Cost	$ 800,000	
Professional Services Costs					
Engineering and Project Management	12%	of	Total Construction Cost	$ 100,000	
Construction Management, Project Management, General Conditions	18%	of	Sum of Total Construction Cost, Engineering/PM & Contingency Costs	$ 220,000	
Professional Services Subtotal				$ 320,000	
Contingency	30%	of	Sum of Total Construction Cost and Engineering/PM cost	$ 270,000	
C_0, Construction Cost				**$ 1,400,000**	
+50%				$ 2,100,000	
-30%				$ 980,000	

Rough Order of Magnitude Cost Estimate for Low Range Permanent Seep Remedy: Flow Through Cells (Seeps A-C) and French Drain (Seep D)
Chemours Fayetteville Works, North Carolina

Annual Operations & Maintenance Costs				
Flow Through Cells A-C				
GAC Usage & Replacement	82,328	pound	$ 1.50	$ 123,493
GAC Changeout Equipment and Labor	12	event	$ 3,200.00	$ 38,400
Brush clearing and Path Maintenance	12	monthly	$ 2,500	$ 30,000
Solids Disposal	4	event	$ 640	$ 2,560
Sampling & Analytical (monthly performance sampling)	12	month	$ 14,800	$ 177,600
Operational Labor	4	event	$ 7,500	$ 30,000
Equipment Maintenance	1	event	$ 5,000	$ 5,000
Road Maintenance	1	event	$ 5,000	$ 5,000
Storm Damage Repair and Gabion Replacement	1	event	$ 18,600	$ 18,600
Annual Data Management and Performance Reporting	1	event	$ 35,000	$ 35,000
French Drain D				
Electrical Power	1	lump	$ 2,500.00	$ 2,500
GAC Usage & Replacement	10,000	pound	$ 1.50	$ 15,000
Brush clearing and Path Maintenance	12	monthly	$ 500	$ 6,000
Solids Disposal	12	event	$ 240	$ 2,880
Sampling & Analytical (monthly performance sampling)	12	month	$ 4,000	$ 48,000
Operational Labor	12	event	$ 1,500	$ 18,000
Equipment Maintenance	1	event	$ 3,000	$ 3,000
Road, Pipe, and Power Maintenance	1	event	$ 5,000	$ 5,000
Storm Damage Repair and Pump Replacement	1	event	$ 10,000	$ 10,000
Annual O&M Subtotal				$ 580,000
C,Annual Cost				**$ 600,000**
+50%				$ 870,000
-30%				$ 406,000
n,Years	**20**			
r,Discount Rate	**3.5%**			
Present Worth Formula	$PW = C_o + C\left[\frac{(1+r)^n - 1}{r(1+r)^n}\right]$			

Total: Present Worth Value of Construction & Annual O&M Costs over 20 Years	**$ 9,000,000**
+50%	$ 13,500,000
-30%	$ 6,300,000

Costs are rough order of magnitude estimates, and assumed to represent the actual installed cost within a range of -30%/ +50% of the value indicated above. The estimates have been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on final approved design, actual labor and material costs, and competitive variable factors. These estimates are not intended for budgetary or future planning purposes; they have been prepared to facilitate an inter-remedial alternative comparison.

Rough Order of Magnitude Cost Estimate for High Range Permanent Seep Remedy: Ex Situ Capture using French Drains at All Seeps
Chemours Fayetteville Works, North Carolina

Basis of Cost Estimate (Scope and Assumptions):

Seeps A, B, C, and D Capture and Treat using French Drains. Would require dismantling flow through cells at Seeps A-C
See supporting document for treatment scenario, assumptions, and drawing

Item	Qty	Unit	Unit Cost	Total	Notes
Construction Costs					
Deconstruction of Flow Through Cells at Seeps A-C	1	lump	$ 100,000	$ 100,000	
Treatment Plant Expansion to Handle Additional 300 gpm Flow	1	lump	$ 6,800,000	$ 6,800,000	
Pipeline and Power Installation Along River	5,900	linear ft	$ 29	$ 171,100	
Lift Station at south end	1	lump	$ 25,000	$ 25,000	
Clearing, Grubbing, and Seep Access	3	Seep	$ 10,000	$ 30,000	
French Drain Installation	1,080	ft^2	$ 42	$ 45,360	
Sump Pump Installation	3	Seep	$ 2,980	$ 8,940	
Feeder Electrical and discharge Line Seep A	800	linear ft	$ 29	$ 23,200	
Feeder Electrical and discharge Line Seep B	720	linear ft	$ 29	$ 20,880	
Feeder Electrical and discharge Line Seep C	670	linear ft	$ 29	$ 19,430	
Raw Construction Costs				$ 7,243,910	
Total Construction Cost	Sum	of	Raw Construction Costs, Installation Cost and Anciliary Cost	$ 7,300,000	
Professional Services Costs					
Engineering and Project Management	12%	of	Total Construction Cost	$ 900,000	
Construction Management, Project Management, General Conditions	18%	of	Sum of Total Construction Cost, Engineering/PM & Contingency Costs	$ 2,000,000	
Professional Services Subtotal				$ 2,900,000	
Contingency	30%	of	Sum of Total Construction Cost and Engineering/PM cost	$ 2,500,000	
C_0,Construction Cost				**$ 12,700,000**	
+50%				$ 19,050,000	
-30%				$ 8,890,000	
Annual Operations & Maintenance Costs					
Electrical Power	1	lump	$ 25,000.00	$ 25,000	
GAC Usage & Replacement	90,000	pound	$ 1.50	$ 135,000	
Brush clearing and Path Maintenance	12	monthly	$ 2,500	$ 30,000	
Solids Disposal	12	event	$ 320	$ 3,840	
Sampling & Analytical (monthly performance sampling)	12	month	$ 17,200	$ 206,400	
Operational Labor	12	event	$ 7,500	$ 90,000	
Equipment Maintenance	1	event	$ 11,900	$ 11,900	
Road, Pipe, and Power Maintenance	1	event	$ 35,000	$ 35,000	
Storm Damage Repair and Pump Replacement	1	event	$ 21,920	$ 21,920	
Annual O&M Subtotal				$ 560,000	
Annual Cost				**$ 560,000**	
+50%				$ 840,000	
-30%				$ 392,000	
n,Years	**20**				
r,Discount Rate	**3.5%**				
Present Worth Formula	$PV = C_0 + C\left[\frac{(1+r)^n - 1}{r(1+r)^n}\right]$				
Total: Present Worth Value of Construction & Annual O&M Costs over 20 Years				**$ 21,000,000**	
+50%				$ 31,500,000	
-30%				$ 14,700,000	

Costs are rough order of magnitude estimates, and assumed to represent the actual installed cost within a range of -30%/ +50% of the value indicated above. The estimates have been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on final approved design, actual labor and material costs, and competitive variable factors. These estimates are not intended for budgetary or future planning purposes; they have been prepared to facilitate an inter-remedial alternative comparison.

Rough Order of Magnitude Cost Estimate for Interim Groundwater Extraction from Existing Black Creek Monitoring Wells Chemours Fayetteville Works, North Carolina

Basis of Cost Estimate (Scope and Assumptions):

Extract GW from seven existing black creek monitoring wells for treatment
- BCA-01, PW-15R, PW-14, BCA-02, PIW-09D, PW-10DR, PW-11
- Assumes OOF2 Treatment Plant has excess capacity
- No NPDES permitting required (covered by OOF2)
- Assumes 2 gpm per well (14 gpm total)

Item	Qty	Unit	Unit Cost	Total	Notes
Construction Costs					
Clearing and Grubbing	1	Acre	$ 10,000	$ 10,000	
Subsurface Trenching/Piping - 0.5-inch (Installed)	850	Feet	$ 22	$ 18,700	
Subsurface Trenching/Piping - 1-inch (Installed)	3950	Feet	$ 24	$ 94,800	
Subsurface Trenching/Piping - 2-inch (Installed)	1900	Feet	$ 29	$ 55,100	
Subsurface Trenching Conduit (Installed)	6700	Feet	$ 6	$ 40,200	
Sumbersible Pumps & Controls (Installed)	7	EA	$ 10,000	$ 70,000	
Valve Boxes/Vaults	7	EA	$ 3,000	$ 3,000	
Total Construction Cost				$ 291,800	
Professional Services Costs					
Engineering and Project Management	12%	of	Total Construction Cost	$ 100,000	
Construction Management, Project Management, General Conditions	18%	of	Sum of Total Construction Cost, Engineering/PM & Contingency Costs	$ 200,000	
Professional Services Subtotal				$ 300,000	
Contingency	30%	of	Sum of Total Construction Cost and Engineering/PM cost	$ 200,000	
C_0,Construction Cost				**$ 800,000**	
+50%				$ 1,200,000	
-30%				$ 560,000	
Annual Operations & Maintenance Costs					
Electricity	LS		$ 5,000	$ 5,000	
Operational Labor	LS		$ 58,240	$ 58,240	
Equipment Maintenance	LS		$ 5,000	$ 5,000	
				$ -	
				$ -	
				$ -	
				$ -	
Annual O&M Subtotal				$ 68,240	
C,Annual Cost				**$ 70,000**	
+50%				$ 102,000	
-30%				$ 48,000	

Costs are rough order of magnitude estimates, and assumed to represent the actual installed cost within a range of -30%/ +50% of the value indicated above. The estimates have been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on final approved design, actual labor and material costs, and competitive variable factors. These estimates are not intended for budgetary or future planning purposes; they have been prepared to facilitate an inter-remedial alternative comparison.

Rough Order of Magnitude Cost Estimate for Onsite Barrier Wall and Groundwater Capture (Low Range Scenario)
Chemours Fayetteville Works, North Carolina

Basis of Cost Estimate (Scope and Assumptions) for Low Range Onsite Groundwater Remedy:

Dewind one-pass slurry wall to cut off groundwater-surface water interface, with hydraulic containment behind the wall and ex-situ treatment.
Total impacted riverine length is 8,500 linear feet. Geotechnical predesign investigation every 100 feet.
Average depth of barrier wall to key into the Upper Cape Fear Confining Unit is 50 feet.
Based on numerical model drawdown scenarios, extraction wells will be spaced 200 feet apart and pumping rates will range from 20 to 30 gpm.
A total of 41 wells and 930 gpm (1.3 MGD) would be required for hydraulic containment.
The average PMPA and PFMOAA concentration of the extracted groundwater is estimated to be 8,200 and 150,000 ng/L, respectively.
Wells will convey groundwater under pressure to the new standalone system, with basic heat tracing (no prefabricated building).
Piping will be HDPE and trenches will be approximately 3 feet deep, and reuse of excacated soils as backfill will be permitted.
HDPE pipe sizes range from 2 to 18 inch diameter SDR 11.
Treated groundwater will be discharged to the Cape Fear river.
Includes a 20-year net present value cost with a 3.5% discount factor applied.
Parameters that were estimated using RACER v 11.2.16.0 are identified below, and are fully marked-up costs.

Item	Qty	Unit	Unit Cost	Total	Notes
Construction Costs					
Barrier Wall					
Geotechnical predesign investigation	4,250	LF	$ 100	$ 425,000	Engineer's Estimate
Contractor mob and demob	1	LS	$ 100,000	$ 100,000	Dewind
Site clearing and prep (veg clearing, grading, E&S)	8	ACRE	$ 100,000	$ 780,533	Engineer's Estimate
Utility location (for steel barrier and well locations)	1	LS	$ 10,000	$ 10,000	Engineer's Estimate
Slurry wall installation and key trench	425,000	SF	$ 9.30	$ 3,952,500	Dewind
Site restoration and revegetation	8	ACRE	$ 50,000	$ 390,266	Engineer's Estimate
Sheet Piling Subtotal				$ 5,658,299	
Drilling Costs					
Driller mobilization	1	LS	$ 10,000	$ 10,000	Engineer's Estimate
Extraction Wells drilling and well installation (no appurtenances)	2,050	LF	$ 225	$ 461,250	Engineer's Estimate
Aquifer pump testing on 25% of extraction wells	10	EA	$ 15,000	$ 153,750	Engineer's Estimate
Monitoring Wells drilling and installation	683	LF	$ 75	$ 51,250	Engineer's Estimate
IDW	2,733	LF	$ 10	$ 27,333	Engineer's Estimate
Drilling Subtotal				$ 703,583	
Site Work Costs					
HDPE SDR 11 - 2"	200	LF	$ 1.35	$ 270	Engineer's Estimate
HDPE SDR 11 - 3"	200	LF	$ 2.35	$ 470	Engineer's Estimate
HDPE SDR 11 - 4"	500	LF	$ 3.90	$ 1,949	Engineer's Estimate
HDPE SDR 11 - 6"	700	LF	$ 8.43	$ 5,898	Engineer's Estimate
HDPE SDR 11 - 8"	1,000	LF	$ 14.28	$ 14,280	Engineer's Estimate
HDPE SDR 11 - 10"	1,000	LF	$ 22.18	$ 22,178	Engineer's Estimate
HDPE SDR 11 - 12"	700	LF	$ 31.20	$ 21,840	Engineer's Estimate
HDPE SDR 11 - 14"	1,500	LF	$ 37.61	$ 56,422	Engineer's Estimate
HDPE SDR 11 - 16"	1,500	LF	$ 49.07	$ 73,612	Engineer's Estimate
HDPE SDR 11 - 18"	1,200	LF	$ 62.17	$ 74,609	Engineer's Estimate
HDPE fusing and fittings	1	LS	$ 2,000.00	$ 2,000	Engineer's Estimate
3'x3'x3' Well Vault + H20-Rated Lid (4.5x4.5x4.5)	41	ea	$ 12,993.00	$ 532,713	Engineer's Estimate
Flow Meters, Level and Pressure Transmitters	41	ea	$ 1,603.00	$ 65,723	Engineer's Estimate
Grundfos 3" 15SQ05-110-240V Submersible Pump, fittings, appurtenances	41	ea	$ 2,190.58	$ 89,814	Engineer's Estimate
Power poles, hardware, guy wires, excavation, wiring, transformers	8	ea	$ 30,639.71	$ 245,118	Engineer's Estimate
Local control panels	41	ea	$ 5,000.00	$ 205,000	Engineer's Estimate
Utility Connection to System	1	ea	$ 120,000.00	$ 120,000	Engineer's Estimate
Subcontractor Installation Costs-Piping 2"-6"	1,600	LF	$ 75.00	$ 120,000	Engineer's Estimate
Subcontractor Installation Costs-Piping 8"-14"	4,200	LF	$ 100.00	$ 420,000	Engineer's Estimate
Subcontractor Installation Costs-Piping 16"-18"	2,700	LF	$ 125.00	$ 337,500	Engineer's Estimate
Subcontractor Installation Costs-Well Vault	41	ea	$ 5,000.00	$ 205,000	Engineer's Estimate
Subcontractor Installation Costs-Electrical	1	LS	$ 270,000.00	$ 270,000	Engineer's Estimate
Subcontractor mobilization	5%	of	$ 2,884,395	$ 144,220	Engineer's Estimate
Site Work Subtotal				$ 3,028,615	

Rough Order of Magnitude Cost Estimate for Onsite Barrier Wall and Groundwater Capture (Low Range Scenario)
Chemours Fayetteville Works, North Carolina

930 GPM (1.3 MGD) Treatment Plant Cost						
GW Pipeline	Process Package		$ 440,000	$	440,000	Parsons
Influent & Effluent Handling, includes lift stations, EQ tanks, feed forward pumps, discharge pumps	Process Package		$ 71,964	$	71,964	Parsons
Multi Media Filtration, includes skids and backwash pumps	Process Package		$ 304,464	$	304,464	Parsons
Granular Activated Carbon, includes skid, water suppy tank, backwash waste tank, backwash pumps	Process Package		$ 1,245,536	$	1,245,536	Parsons
Solids Handling and Chemical Precipitation, includes feed pumps, clarifiers, sludge pumps, filter press, chemicals	Process Package		$ 996,429	$	996,429	Parsons
Enclosures and Heat Tracing	Process Package		$ 393,036	$	393,036	Parsons
Installation Cost (Construction, Site Preparation, Civil, Structural)	70%	of	$ 2,618,393	$	1,900,000	Parsons
Anciliary Cost (I&C, Piping-Mechanical & Electrical)	30%	of	$ 4,911,429	$	1,473,429	Parsons
1.3 MGD Treatment Plant Subtotal				$	6,824,857	
Total Construction Costs				$	16,215,355	
Professional Services Costs						
Modeling, Design, Work Planning, and Permitting	10%	of	$ 16,215,355	$	1,621,535	adapted from EPA Guidance
Construction Oversight	10%	of	$ 16,215,355	$	1,621,535	adapted from EPA Guidance
Project Management	8%	of	$ 16,215,355	$	1,297,228	adapted from EPA Guidance
Professional Services Subtotal				$	4,540,299	
Contingency	30%	of	$ 20,755,654	$	6,226,696	
Construction Cost				**$**	**27,000,000**	
+50%				$	40,500,000	
-30%				$	18,900,000	
Annual Operations & Maintenance Costs						
Electricity - Field Equipment	1	LS	$ 53,000	$	53,000	Engineer's Estimate
Electricity - Treatment Systems	1	LS	$ 21,589	$	21,589	Parsons
GAC Usage & Replacement	1	LS	$ 808,214	$	808,214	Parsons
Chemicals for treatment (Acid, Caustic, Ferric, Polymer)	1	LS	$ 24,357	$	24,357	Parsons
Solids Disposal	1	LS	$ 22,696	$	22,696	Parsons
Sampling & Analytical	1	LS	$ 48,714	$	48,714	Parsons
Operational Labor	1	LS	$ 470,536	$	470,536	Parsons
Equipment Maintenance	1	LS	$ 221,429	$	221,429	Parsons
Annual O&M Subtotal				$	1,670,536	
Annual Cost				**$**	**1,700,000**	
+50%				$	2,505,804	
-30%				$	1,169,375	
Years	**20**					
Discount Rate	**3.5%**					
Net Present Value (NPV) of Annual Costs over 20 Years				**$**	**24,000,000**	
+50%				$	36,000,000	
-30%				$	16,800,000	
Total Cost - Construction and Annual O&M						
Total: Construction + NPV of Annual Costs over 20 Years				**$**	**51,000,000**	
+50%				$	76,500,000	
-30%				$	35,700,000	

Costs are rough order of magnitude estimates, and assumed to represent the actual installed cost within a range of -30%/ +50% of the value indicated above. The estimates have been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on final approved design, actual labor and material costs, and competitive variable factors. These estimates are not intended for budgetary or future planning purposes; they have been prepared to facilitate an inter-remedial alternative comparison.

Rough Order of Magnitude Cost Estimate for Onsite Barrier Wall and Groundwater Capture (High Range Scenario)
Chemours Fayetteville Works, North Carolina

Basis of Cost Estimate (Scope and Assumptions) for High Range Onsite Groundwater Remedy:

Dewind one-pass slurry wall to cut off groundwater-surface water interface, with hydraulic containment behind the wall and ex-situ treatment.
Total impacted riverine length is 8,500 linear feet.
Average depth of barrier wall to key into the Upper Cape Fear Confining Unit is 50 feet.
Based on numerical model drawdown scenarios, extraction wells will be spaced 200 feet apart and pumping rates will range from 20 to 30 gpm.
A total of 41 wells and 930 gpm (1.3 MGD) would be required for hydraulic containment.
The average PMPA and PFMOAA concentration of the extracted groundwater is estimated to be 8,200 and 150,000 ng/L, respectively.
Wells will convey groundwater under pressure to the new standalone system, fully enclosed from the elements.
Piping will be HDPE and trenches will be approximately 3 feet deep, and reuse of excacated soils as backfill will be permitted.
HDPE pipe sizes range from 2 to 18 inch diameter SDR 11.
Treated groundwater will be discharged to the Cape Fear river.
Includes a 20-year net present value cost with a 3.5% discount factor applied.
Parameters that were estimated using RACER v 11.2.16.0 are identified below, and are fully marked-up costs.

Item	Qty	Unit	Unit Cost	Total	Notes
Construction Costs					
Sheet Piling					
Geotechnical predesign investigation	4,250	LF	$ 100	$ 425,000	Engineer's Estimate
Contractor mob and demob	1	LS	$ 200,000	$ 200,000	Sevenson
Site clearing and prep (veg clearing, grading, pits, E&S)	10	ACRE	$ 30,000	$ 292,700	Sevenson
Utility location (for steel barrier and well locations)	1	LS	$ 10,000	$ 10,000	Engineer's Estimate
Permanent steel sheet piling, 38 psf, furnish and install	425,000	SF	$ 37	$ 15,725,000	RACER, Sevenson
Site restoration and revegetation	10	ACRE	$ 60,000	$ 585,399	Engineer's Estimate
Sheet Piling Subtotal				$ 17,238,099	
Drilling Costs					
Driller mobilization	1	LS	$ 10,000	$ 10,000	Engineer's Estimate
Extraction Wells drilling and well installation (no appurtenances)	2,050	LF	$ 225	$ 461,250	Engineer's Estimate
Aquifer pump testing on 25% of extraction wells	10	EA	$ 15,000	$ 153,750	Engineer's Estimate
Monitoring Wells drilling and installation	683	LF	$ 75	$ 51,250	Engineer's Estimate
IDW	2,733	LF	$ 10	$ 27,333	Engineer's Estimate
Drilling Subtotal				$ 703,583	
Site Work Costs					
HDPE SDR 11 - 2"	200	LF	$ 1.35	$ 270	Engineer's Estimate
HDPE SDR 11 - 3"	200	LF	$ 2.35	$ 470	Engineer's Estimate
HDPE SDR 11 - 4"	400	LF	$ 3.90	$ 1,559	Engineer's Estimate
HDPE SDR 11 - 6"	600	LF	$ 8.43	$ 5,056	Engineer's Estimate
HDPE SDR 11 - 8"	1,000	LF	$ 14.28	$ 14,280	Engineer's Estimate
HDPE SDR 11 - 10"	1,000	LF	$ 22.18	$ 22,178	Engineer's Estimate
HDPE SDR 11 - 12"	600	LF	$ 31.20	$ 18,720	Engineer's Estimate
HDPE SDR 11 - 14"	1,400	LF	$ 37.61	$ 52,661	Engineer's Estimate
HDPE SDR 11 - 16"	1,400	LF	$ 49.07	$ 68,704	Engineer's Estimate
HDPE SDR 11 - 18"	1,700	LF	$ 62.17	$ 105,697	Engineer's Estimate
HDPE fusing and fittings	1	LS	$ 2,000.00	$ 2,000	Engineer's Estimate
3'x3'x3' Well Vault + H20-Rated Lid (4.5x4.5x4.5)	41	ea	$ 12,993.00	$ 532,713	Engineer's Estimate
Flow Meters, Level and Pressure Transmitters	41	ea	$ 1,603.00	$ 65,723	Engineer's Estimate
Grundfos 3" 15SQ05-110-240V Submersible Pump, fittings, appurtenances	41	ea	$ 2,190.58	$ 89,814	Engineer's Estimate
Power poles, hardware, guy wires, excavation, wiring, transformers	8	ea	$ 30,639.71	$ 245,118	Engineer's Estimate
Local control panels	41	ea	$ 5,000.00	$ 205,000	Engineer's Estimate
Utility Connection to System	1	ea	$ 120,000.00	$ 120,000	Engineer's Estimate
Subcontractor Installation Costs-Piping 2"-6"	1,400	LF	$ 75.00	$ 105,000	Engineer's Estimate
Subcontractor Installation Costs-Piping 8"-14"	4,000	LF	$ 100.00	$ 400,000	Engineer's Estimate
Subcontractor Installation Costs-Piping 16"-18"	3,100	LF	$ 125.00	$ 387,500	Engineer's Estimate
Subcontractor Installation Costs-Well Vault	41	ea	$ 5,000.00	$ 205,000	Engineer's Estimate
Subcontractor Installation Costs-Electrical	1	LS	$ 270,000.00	$ 270,000	Engineer's Estimate
Subcontractor mobilization	5%	of	$ 2,917,461	$ 145,873	Engineer's Estimate
Site Work Subtotal				$ 3,063,334	

Rough Order of Magnitude Cost Estimate for Onsite Barrier Wall and Groundwater Capture (High Range Scenario)
Chemours Fayetteville Works, North Carolina

930 GPM (1.3 MGD) Treatment Plant Cost						
GW Pipeline	Process Package		$ 440,000	$	440,000	Parsons
Influent & Effluent Handling, includes lift stations, EQ tanks, feed forward pumps, discharge pumps	Process Package		$ 71,964.29	$	71,964	Parsons
Multi Media Filtration, includes skids and backwash pumps	Process Package		$ 304,464.29	$	304,464	Parsons
Granular Activated Carbon, includes skid, water suppy tank, backwash waste tank, backwash pumps	Process Package		$ 1,245,535.71	$	1,245,536	Parsons
Solids Handling and Chemical Precipitation, includes feed pumps, clarifiers, sludge pumps, filter press, chemicals	Process Package		$ 996,428.57	$	996,429	Parsons
Prefabricated Building & Containment Structure	Process Package		$ 3,487,500.00	$	3,487,500	Parsons
Installation Cost (Construction, Site Preparation, Civil, Structural)	70%	of	$ 2,618,393	$	1,900,000	Parsons
Anciliary Cost (I&C, Piping-Mechanical & Electrical)	30%	of	$ 4,518,393	$	1,400,000	Parsons
1.3 MGD Treatment Plant Subtotal				$	9,845,893	
Total Construction Costs				$	30,850,910	
Professional Services Costs						
Modeling, Design, Work Planning, and Permitting	8%	of	$ 30,850,910	$	2,468,073	adapted from EPA Guidance
Construction Oversight	8%	of	$ 30,850,910	$	2,468,073	adapted from EPA Guidance
Project Management	6%	of	$ 30,850,910	$	1,851,055	adapted from EPA Guidance
Professional Services Subtotal				$	6,787,200	
Contingency	30%	of	$ 37,638,110	$	11,291,433	
Construction Cost				**$**	**49,000,000**	
+50%				$	73,500,000	
-30%				$	34,300,000	
Annual Operations & Maintenance Costs						
Electricity - Field Equipment	1	LS	$ 53,000	$	53,000	Engineer's Estimate
Electricity - Treatment Systems	1	LS	$ 21,589	$	21,589	Parsons
GAC Usage & Replacement	1	LS	$ 808,214	$	808,214	Parsons
Chemicals for treatment (Acid, Caustic, Ferric, Polymer)	1	LS	$ 24,357	$	24,357	Parsons
Solids Disposal	1	LS	$ 22,696	$	22,696	Parsons
Sampling & Analytical	1	LS	$ 48,714	$	48,714	Parsons
Operational Labor	1	LS	$ 470,536	$	470,536	Parsons
Equipment Maintenance	1	LS	$ 221,429	$	221,429	Parsons
Annual O&M Subtotal				$	1,670,536	
Annual Cost				**$**	**1,700,000**	
+50%				$	2,505,804	
-30%				$	1,169,375	
Years	**20**					
Discount Rate	**3.5%**					
Net Present Value (NPV) of Annual Costs over 20 Years				**$**	**24,000,000**	
+50%				$	36,000,000	
-30%				$	16,800,000	
Total Cost - Construction and Annual O&M						
Total: Construction + NPV of Annual Costs over 20 Years				**$**	**73,000,000**	
+50%				$	109,500,000	
-30%				$	51,100,000	

Costs are rough order of magnitude estimates, and assumed to represent the actual installed cost within a range of -30%/ +50% of the value indicated above. The estimates have been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on final approved design, actual labor and material costs, and competitive variable factors. These estimates are not intended for budgetary or future planning purposes; they have been prepared to facilitate an inter-remedial alternative comparison.