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APPENDIX F

Offsite Human Health Screening Level Exposure Assessment (SLEA) of Table 3+ PFAS

Geosyntec consultants

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NC License No.: C-3500 and C-295

OFFSITE HUMAN HEALTH SCREENING LEVEL EXPOSURE ASSESSMENT (SLEA) OF TABLE 3+ PFAS

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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).

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[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 Surface Water

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.

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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	Perfluoroethoxypropanoic 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

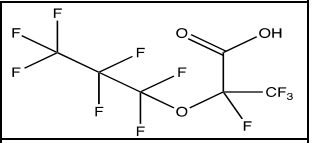
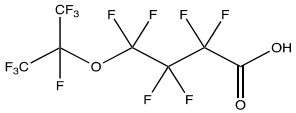
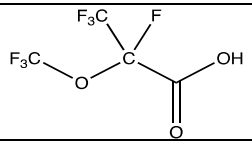
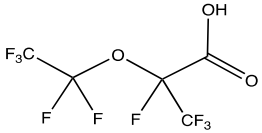
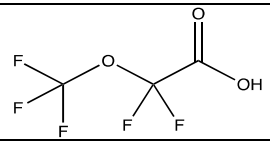
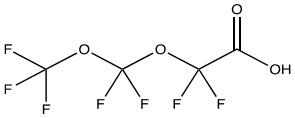
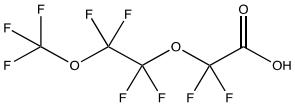
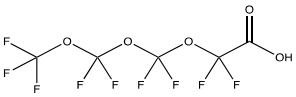
Common Name	Chemical Name	CAS #	Formula	Degree of Fluorination	Ether Bonds	Isomer type	Functional Groups			Diprotic[d]	Structure
							R-C=C[a]	R-CO_2H[b]	R-SO_3H[c]		
Per- and polyfluoroalkyl ether carboxylic acids (PFECAs)											
HFPO-DA	Hexafluoropropylene oxide dimer acid	13252-13-6	$C_6HF_{11}O_3$	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

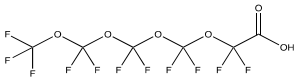
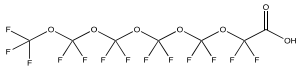
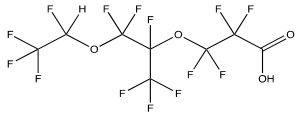
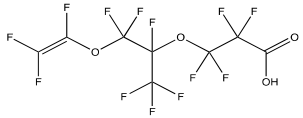
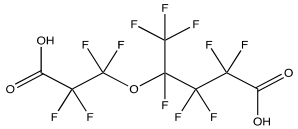
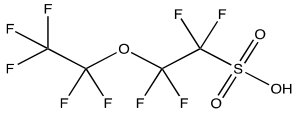
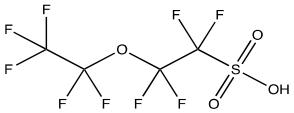
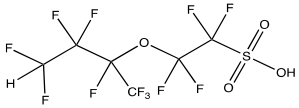
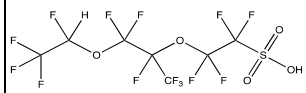
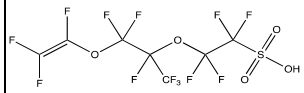
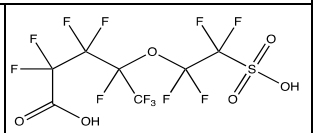
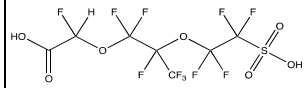
Common Name	Chemical Name	CAS #	Formula	Degree of Fluorination	Ether Bonds	Isomer type	Functional Groups			Diprotic[d]	Structure
							R-C=C[a]	R-CO_2H[b]	R-SO_3H[c]		
PFO4DA	Perfluoro(3,5,7,9-tetraoxadecanoic) acid	39492-90-5	$C_6HF_{11}O_6$	Per	4	Linear	--	✓	--	--	
PFO5DA	Perfluoro-3,5,7,9,11-pentaoxadodecanoic 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 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 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

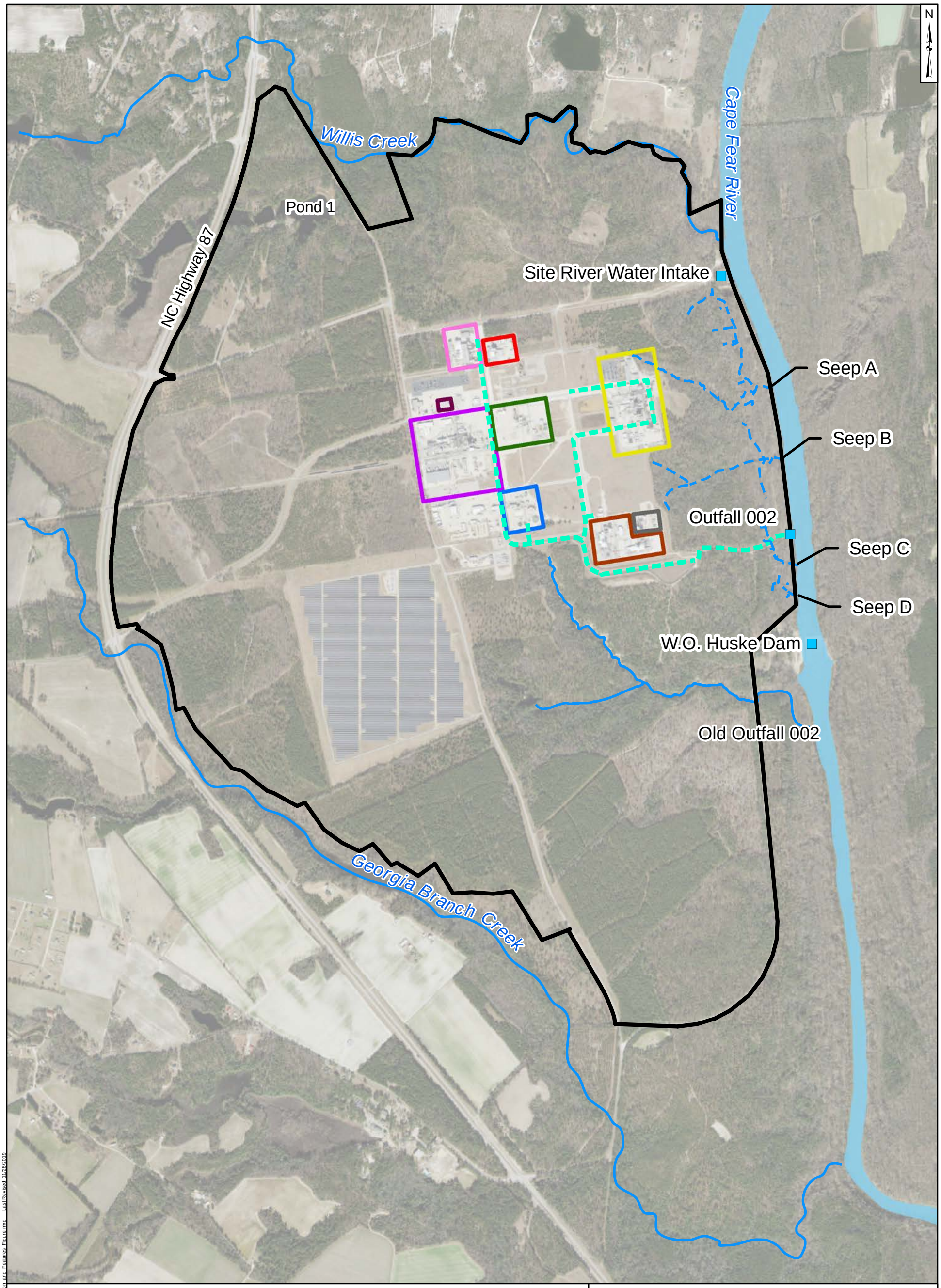
TABLE 4
SUPPLEMENTAL HAZARD CHARACTERIZATION BASED ON ALTERNATIVE RfD VALUES
Chemours Fayetteville Works, North Carolina

			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

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

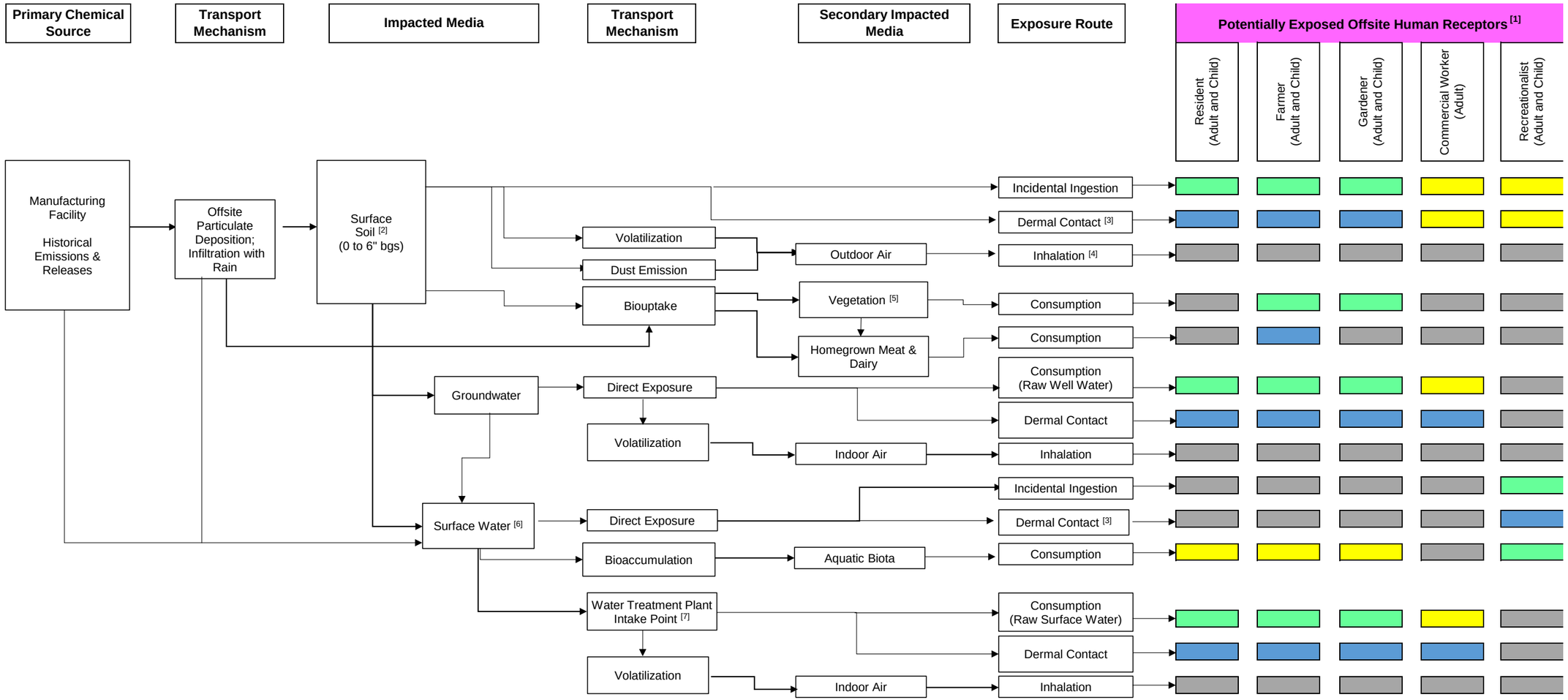
Figure 1

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.

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

Path: P:\PRJ\Projects\TR0795\Database and GIS\GIS\SLEA\TR0795_HH_Facility_Location_and_Features_Figure.mxd Last Revised: 11/28/2019



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

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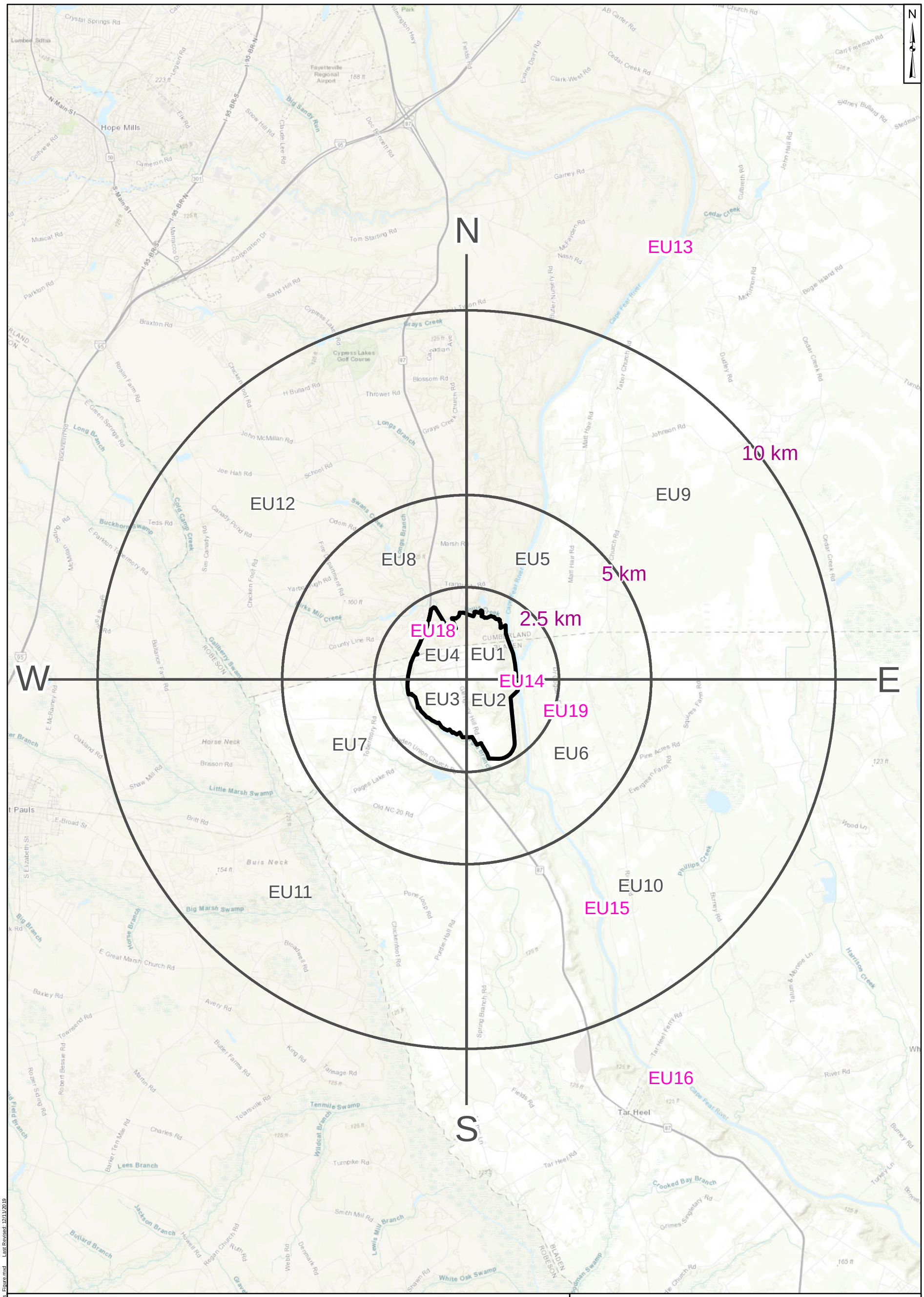
Figure 2

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

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.

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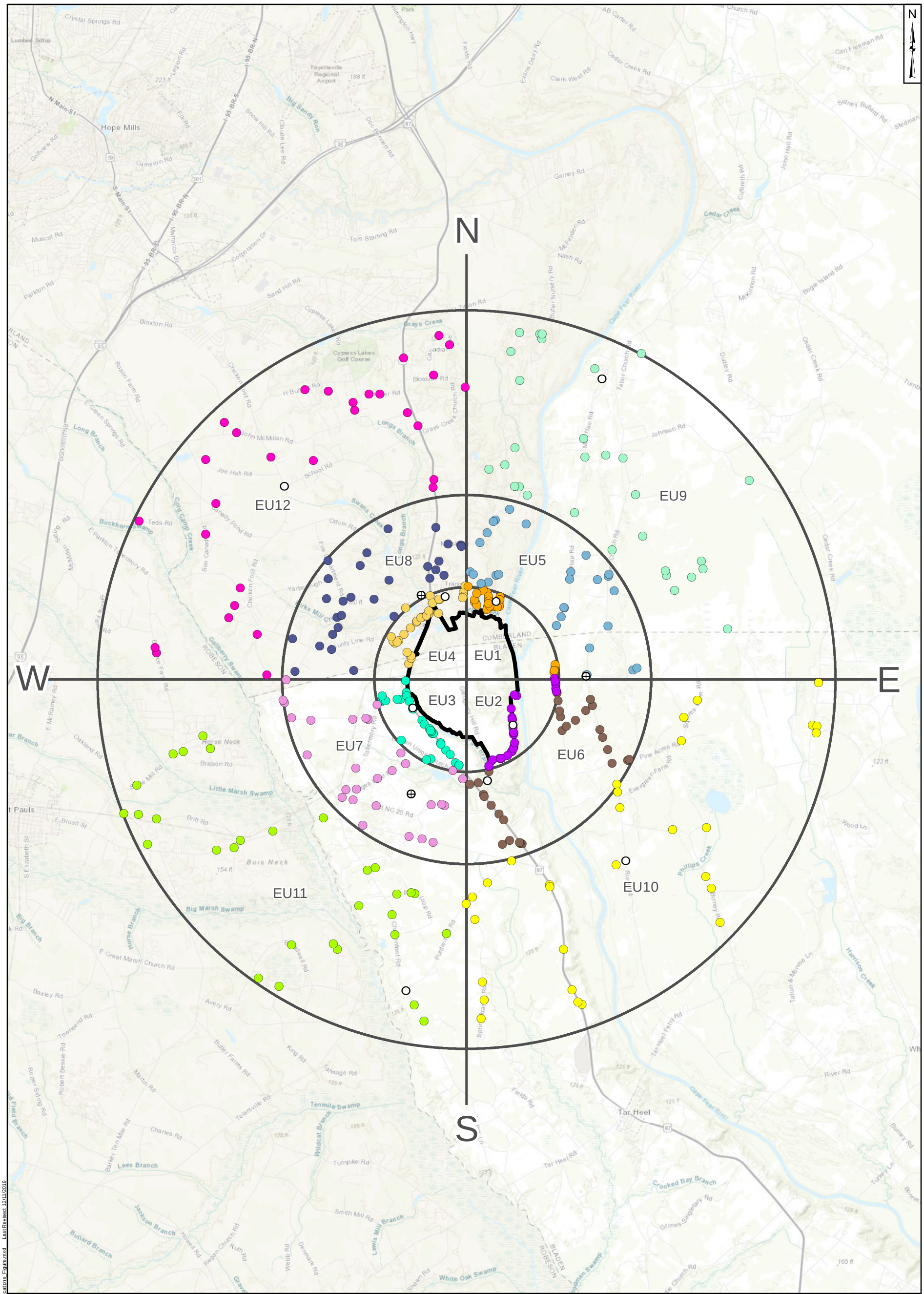
Raleigh | December 2019

Figure 3

Path: P:\PR\JRProjects\TR0795\Database and GIS\GIS\SLEA\TR0795_HH_Exposure_Units_Figure.mxd Last Revised: 12/11/2019

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

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.

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Figure 4

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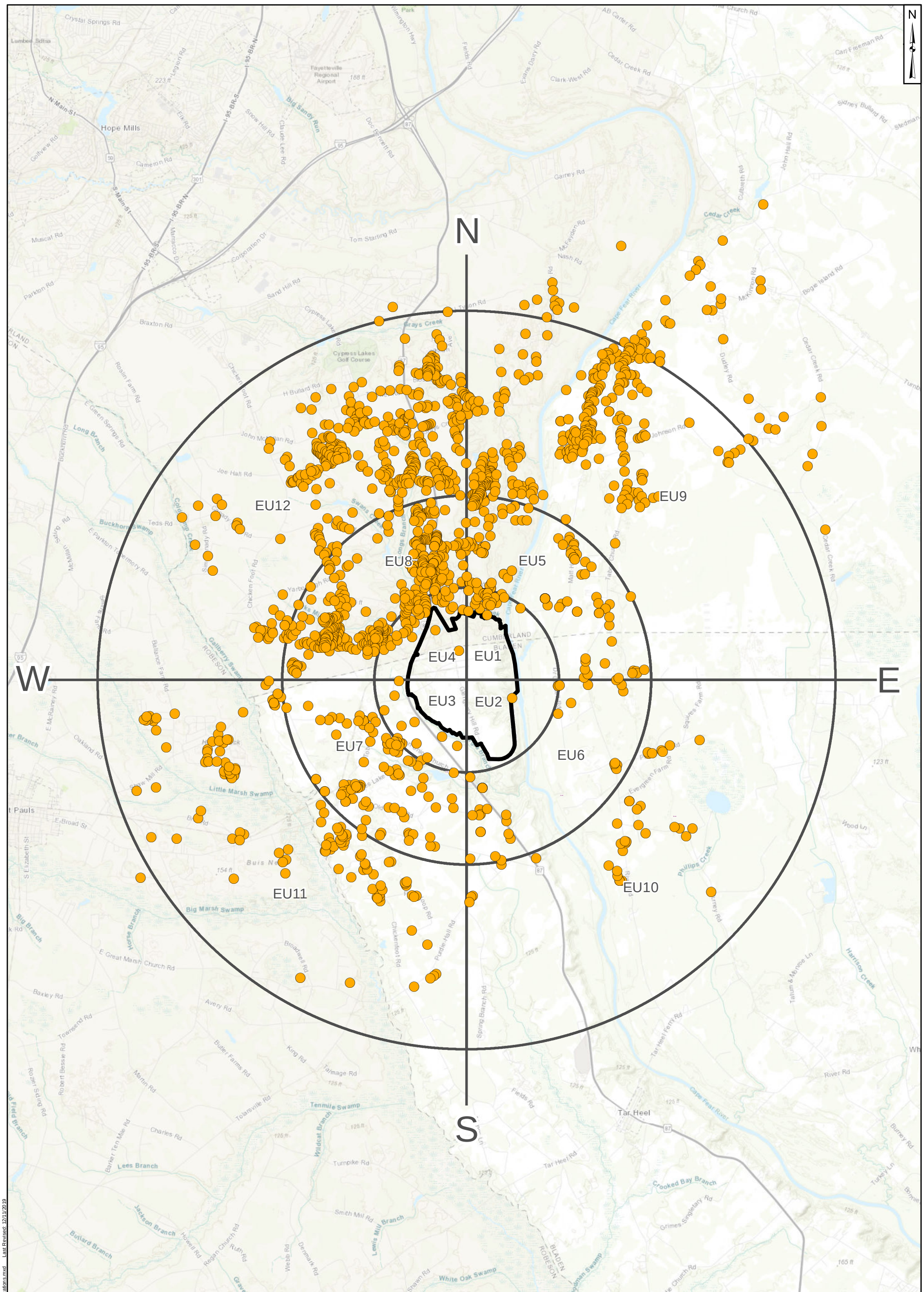
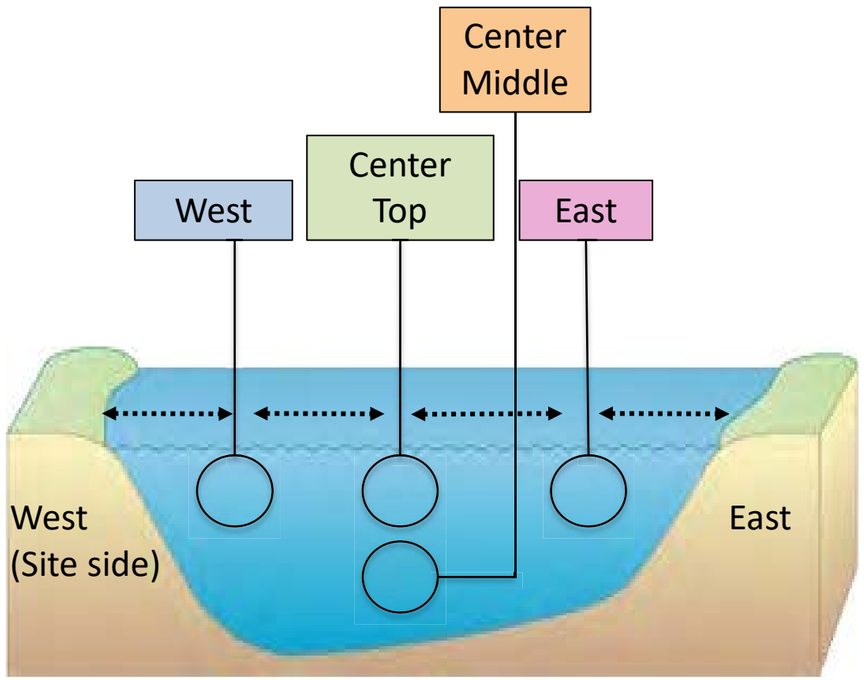
Path: P:\PR\Projects\TR0795\Database and GIS\GIS\SLEA\TR0795_HH_Soil_Sample_Locations_Figure.mxd Last Revised: 12/11/2019

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


N
W
E
S
EU1
EU2
EU3
EU4
EU5
EU6
EU7
EU8
EU9
EU10
EU11
EU12
Hope Mills
Fayetteville Regional Airport
Cypress Lakes Golf Course
Tar Heel
Cape Fear River
Big Sandy Run
Little Marsh Swamp
Big Marsh Swamp
Tenmile Swamp
White Oak Swamp
Crooked Bay Branch
Lees Branch
Buckhorn Swamp
Long Branch
Brays Creek
Cedar Creek
Phillips Creek
Harrison Creek
Gallberry Swamp
Swans Creek
Lewis Mill Branch
Wildcat Branch
Jackson Branch
Bullard Branch
Horse Branch
Big Branch
Field Branch
Little Branch
Lees Branch
Tom Starling Rd
Cameron Rd
Braxton Rd
Sand Hill Rd
Cypress Lakes Rd
Joe Hall Rd
Teds Rd
Chicken Foot Rd
Tolarsville Rd
Turnpike Rd
Smith Mill Rd
Tar Heel Rd
Fields Rd
Clark West Rd
Cedar Creek Rd
Carl Freeman Rd
Sidney Bullard Rd
Bogue Island Rd
Dudley Rd
Johnson Rd
Nash Rd
Gainey Rd
Evergreen Farm Rd
Squires Farm Rd
Wood Ln
River Rd
Burney Rd
Turkey Ln
Grimes Singletary Rd
Purdie Hall Rd
Spring Branch Rd
Broadwell Rd
Avery Rd
Baxley Rd
Townsend Rd
Butler Farms Rd
King Rd
Talmage Rd
Martin Rd
Charles Rd
Howell Rd
Regan Church Rd
Ruth Rd
Webb Rd
Denmark Rd
Shawn Rd
Taylor Rd
Taylor Ln
Tatum & Monroe Ln
Tar Heel Ferry Rd
Fields Rd
Evans Dairy Rd
Doc Bennett Rd
Snow Hill Rd
Claude Lee Rd
Elk Rd
Legion Rd
Crystal Springs Rd
Golfview Rd
Muscat Rd
Parkton Rd
Rosin Farm Rd
Buckhorn Rd
E Green Springs Rd
E Parkton
Ballance Farm Rd
Oakland Rd
Oak Mill Rd
E Broad St
S Elizabeth St
E Great Marsh Church Rd
Robert Bessie Rd
Roper Saling Rd
Barker Ten Mile Rd
Bullard Rd
Cumberland
Bladen
Robeson
Hoke
Pauls
Lumber Sdtrs
Wilmington Hwy
N Main St
S Main St
I-95-BR-N
I-95-BR-S
I-95
Park
Church Rd
AB Carter Rd
Cedar Creek Rd
Clark West Rd
Fields Rd
Evans Dairy Rd
Doc Bennett Rd
Tom Starling

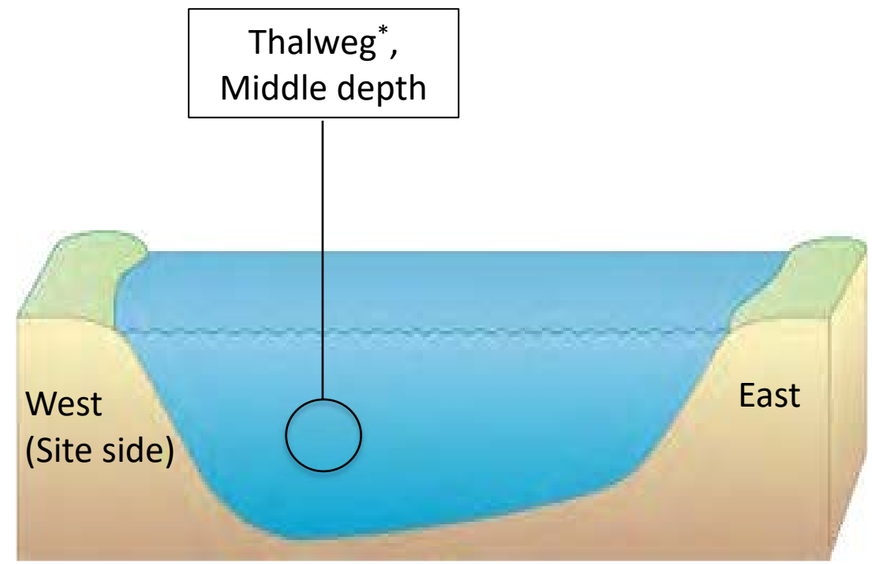
2017-2018 Local Program and 2019 SLEA Surface Water Sampling



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.
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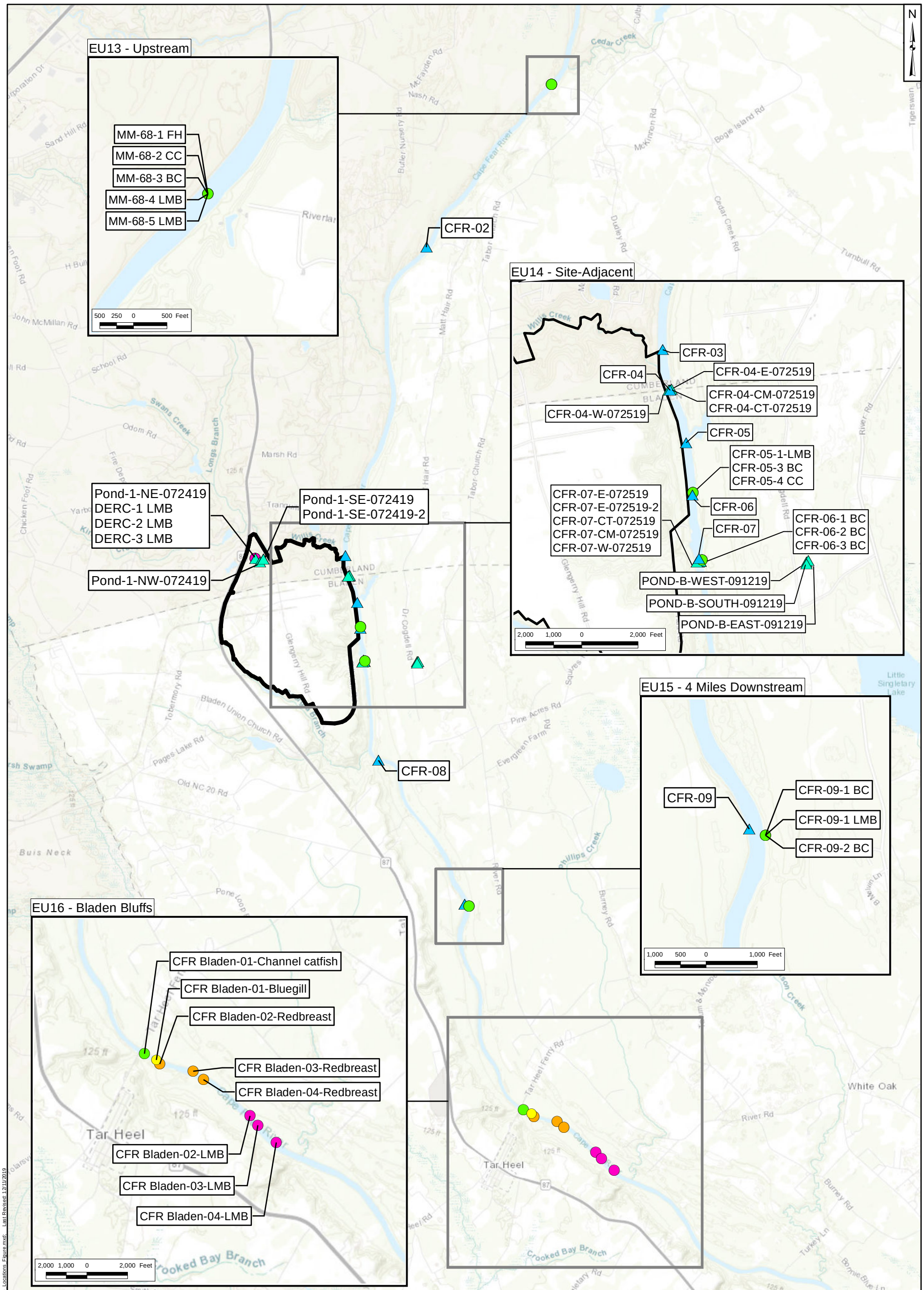
Figure 6



Legend

- Bluegill
- Catfish
- Largemouth Bass
- Redbreasted Sunfish
- Surface Water
- CFR - Cape Fear River Sampling Transects
- Site Boundary

2 1 0 2 Miles

Human Health SLEA Fish Fillet and Surface Water Sampling Locations

Chemours Fayetteville Works, North Carolina

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.

Geosyntec consultants

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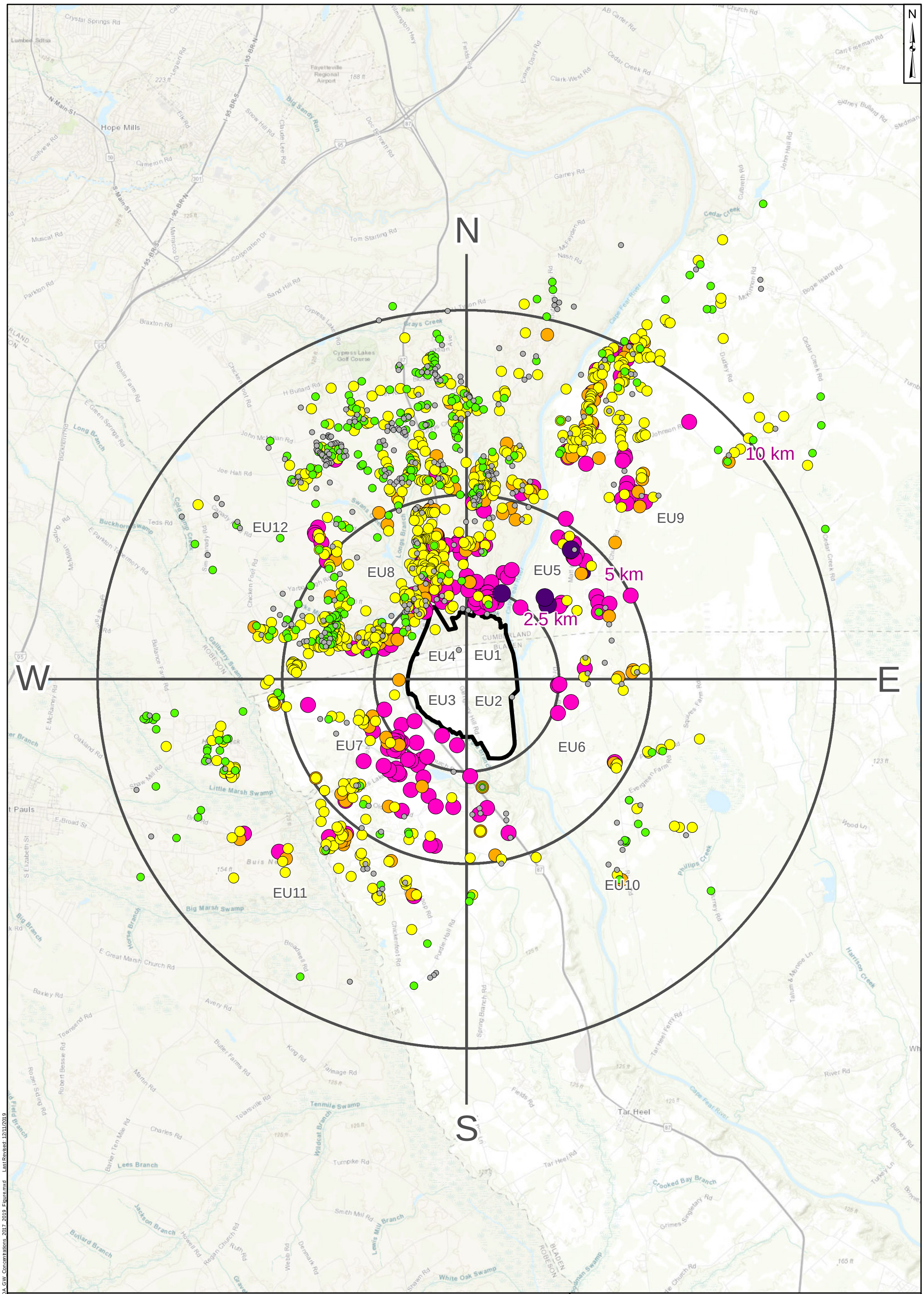
Figure 7

Path: P:\PR\Projects\TR0795\Database and GIS\GIS\SLEA\TR0795_HH_Fish_SW_Sample_Locations_Figure.mxd; Last Revised: 12/11/2019

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



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.

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

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Path: P:\PR\Projects\TR0795\Database and GIS\GIS\SLEA\TR0795_HH_Offsite_HFPO_DA_GW_Concentrations_2017_2019_Figure.mxd Last Revised: 12/11/2019

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

APPENDIX A

Consent Order

FILED

2019 FEB 25 P 4: 24

BLADEN COUNTY, C.S.C.

BY

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,	)	**CONSENT ORDER**
CAPE FEAR RIVER WATCH,	)	
Plaintiff-Intervenor,	)	
v.	)	
THE CHEMOURS COMPANY FC, LLC,	)	
Defendant.	)	

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. Provision of Public Water Supplies or Whole Building Filtration Systems: 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

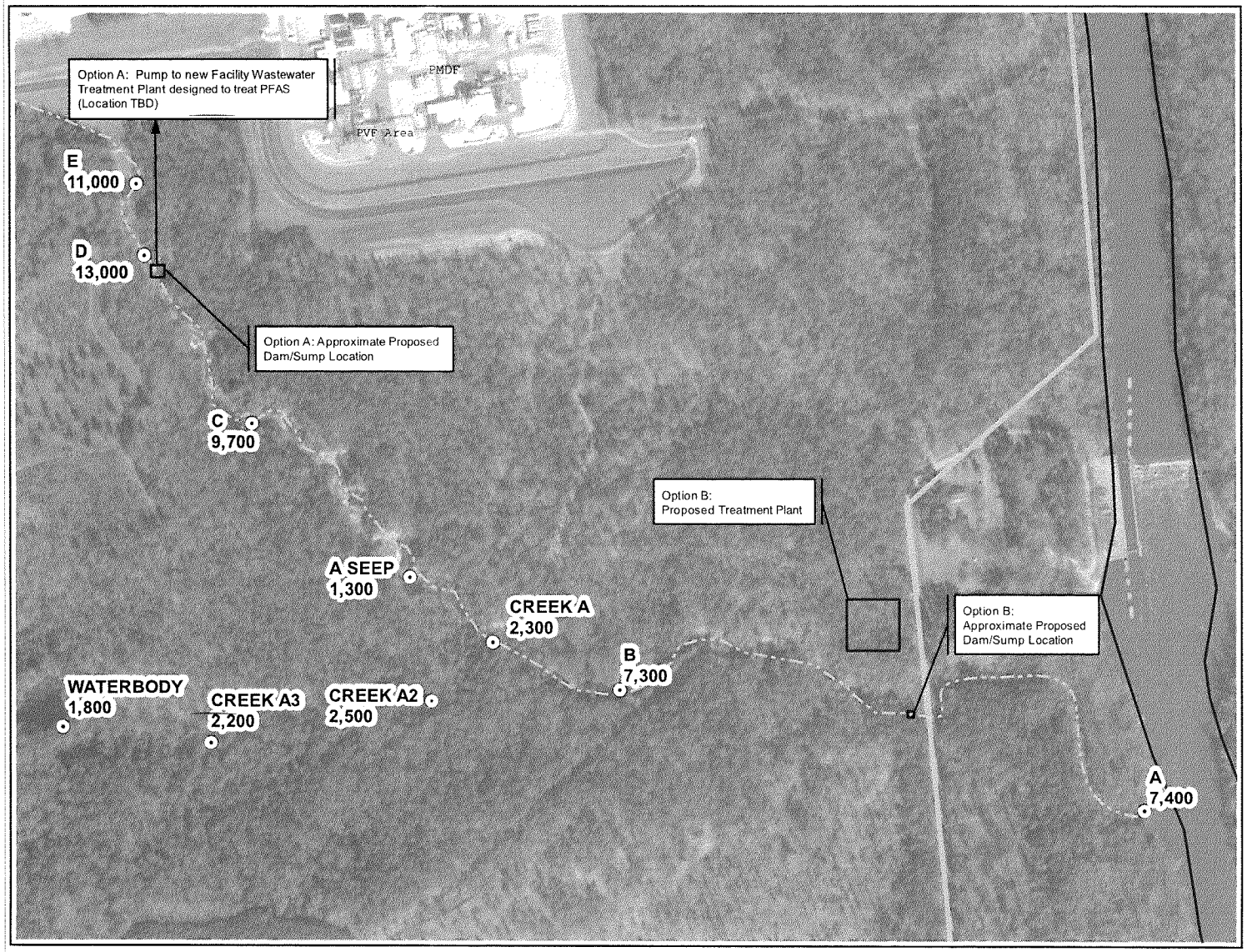
By: _____ Date: 19 February 2019
David Shelton
Senior Vice President, General Counsel, and Corporate Secretary

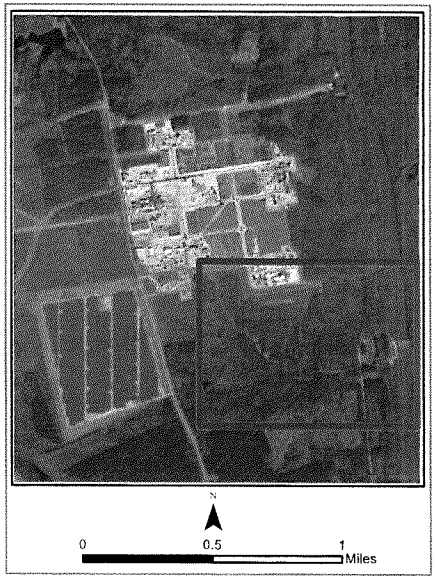
By: _____ Date: 2/19/2019
John Savarese
Counsel for Chemours

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





Sample Location and HFPO-DA result in ng/L

Plant Border

Drainage Channel

River

N

0 500 1,000 Feet

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: C. Oneal	Date: 3/26/2018	File Project Number: 449338.01050
Revision: 1	Figure Number: 5	
Name: Option_F4		

Path: D:\GIS\Fayetville\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:*

Common Name		Chemical Name		CASN		Chemical Formula
PFMOAA		Perfluoro- 2-methoxyacetic acid		674-13-5		C3HF5O3
PMPA	PFMOPrA	Perfluoro-2-methoxypropanoic acid	Perfluoro-3-methoxypropanoic acid	13140-29-9	377-73-1	C4HF7O3
PFO2HXA		Perfluoro(3,5-dioxahexanoic) acid		39492-88-1		C4HF7O4
PEPA	PFMOBA	2,3,3,3-Tetrafluoro-2-(pentafluoroethoxy) propanoic acid	Perfluoro-4-methoxybutanoic acid	267239-61-2	863090-89-5	C5HF9O3
PFESA-BP2 / Nafion BP #2		Nafion Byproduct 2		749836-20-2		C7H2F14O5S

* 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:

Common Name		Chemical Name		CASN		Chemical Formula
PFMOAA		Perfluoro- 2-methoxyacetic acid		674-13-5		C3HF5O3
PMPA	PFMOPrA	Perfluoro-2-methoxypropanoic acid	Perfluoro-3-methoxypropanoic acid	13140-29-9	377-73-1	C4HF7O3
PFO2HXA		Perfluoro(3,5-dioxahexanoic) acid		39492-88-1		C4HF7O4
PEPA	PFMOBA	2,3,3,3-Tetrafluoro-2-(pentafluoroethoxy) propanoic acid	Perfluoro-4-methoxybutanoic acid	267239-61-2	863090-89-5	C5HF9O3
PFO3OA		Perfluoro(3,5,7-trioxaoctanoic) acid		39492-89-2		C5HF9O5
PFO4DA		Perfluoro(3,5,7,9-tetraoxadecanoic) acid		39492-90-5		C6HF11O6
PFESA-BP1 / Nafion BP #1		Nafion Byproduct 1		66796-30-3; 29311-67-9		C7HF13O5S
PFESA-BP2 / Nafion BP #2		Nafion Byproduct 2		749836-20-2		C7H2F14O5S
PFECA-G		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]-		174767-10-3; 801212-59-9		C7HF13O3
TAFN4 / PF05DA		Perfluoro(3,5,7,9,11-pentadodecanoic) acid		39492-91-6		C7HF13O7
PFHpA		Perfluoroheptanoic acid		375-85-9		C7HF13O2
HFPO-DA / PFPrOPrA / "GenX"		2,3,3,3-Tetrafluoro-2 (1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid)		13252-13-6		C6HF11O3

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	EU5 - 5 kilometer radius, northeast	EU9 - 10 kilometer radius, northeast
EU2 - 2.5 kilometer radius, southeast	EU6 - 5 kilometer radius, southeast	EU10 - 10 kilometer radius, southeast
EU3 - 2.5 kilometer radius, southwest	EU7 - 5 kilometer radius, southwest	EU11 - 10 kilometer radius, southwest
EU4 - 2.5 kilometer radius, northwest	EU8 - 5 kilometer radius, northwest	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**

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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**

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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**	--	--	--	--	--	--	--	--	--	--

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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

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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

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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**

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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**

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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**

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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

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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
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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:
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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

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

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

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

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

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

				Calculation of Aboveground and Belowground Produce Concentrations for HFPO-DA [1]								
				Aboveground Calculations		Belowground Calculations						
Common Name	**Chemical Name**	**CASN**	**Chemical Formula**	**PRag** [2]	**BRag** [3]	**PRbg** [4]	**$BR_{rootveg}$** [5]	**RCF** [5a]	**Kd_s** [5b]	**Log K_{oc}** [5c,8]	**$VG_{rootveg}$** [6]	**Log K_{ow}** [7]
				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

Exposure Unit (EU)	EU Location Description	Modeled Deposition Flux Estimates for HFPO-DA, CY2020 [1]				HFPO-DA Emission Rate (Q) for 2020 [2]	Unitized Deposition Rates [3]			
		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

$$kp = \frac{\ln(2)}{t_{0.5}} * 365 \ {}^{days}/_{year}$$

[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	$ADI\text{-}S_{adj} = CS \times IRS_{adj} \times RBA \times EF \times CFs \times (1/AT_{adj})$
CS	Exposure Point Concentration of Constituent in Soil	ng/kg	EU-specific	Table 3-1	$ADI\text{-}S_{child} = CS \times IRS_{child} \times RBA \times EF \times ED_{child} \times CFs \times (1/BW_{child}) \times (1/AT_{child})$
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	$IRS_{adj} = (ED_{child} \times IRS_{child} / BW_{child}) + (ED_{adult} \times IRS_{adult} / BW_{adult})$
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	$ADI\text{-}W_{adj} = CW \times IRW_{adj} \times EF \times CFm \times (1/AT_{adj})$
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	Ingestion of Home Grown Produce:
ED_{adj}	Age-Adjusted Exposure Duration	years	26	[6] EPA, 2014	$ADI\text{-}HP_{adj} = IHP_{adj} \times EF \times (1/AT_{adj})$
BW_{child}	Body Weight - Child	kg	15	[7] EPA, 2014	$ADI\text{-}HP_{child} = IHP_{child} \times EF \times ED \times (1/AT_{child})$
BW_{adult}	Body Weight - Adult	kg	80	[7] EPA, 2014	*where:*
AT_{adj}	Age-Adjusted Averaging Time	days	9,490	[8] EPA, 2014	$IHP_{child} = [((Pd+PRag) \times CRag_{child}) + (PRag \times CRpp_{child}) + (PRbg \times CRbg_{child})] \times Fp$
AT_{child}	Child-Specific Averaging Time	days	2,190	[8] EPA, 2014	$IHP_{adj} = [((Pd+PRag) \times CRag_{adj}) + (PRag \times CRpp_{adj}) + (PRbg \times CRbg_{adj})] \times Fp$
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	$PRag = CS \times BRag$
BRag	Plant-Soil Bioconcentration Factor for Aboveground Produce	([mg/kg DW]/[mg/kg])	chemical-specific	[9] EPA, 2005	$PRbg = CS \times BRrootveg \times VGrootveg$
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	$CRag_{adj} = (CRag_{child} \times ED_{child} + CRag_{adult} \times ED_{adult})$
IHP_{adult}	Daily Intake From Homegrown Produce - adult	mg/kg-day	chemical-specific	[9] EPA, 2005	$CRbg_{adj} = (CRbg_{child} \times ED_{child} + CRbg_{adult} \times ED_{adult})$
IHP_{adj}	Age-Adjusted Daily Intake From Homegrown Produce	mg-yr/kg-day	chemical-specific	[3] EPA, 2019a	$CRpp_{adj} = (CRpp_{child} \times ED_{child} + CRpp_{adult} \times ED_{adult})$
$CRag_{child}$	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	$ADI\text{-}S_{adj} = CS \times IRS_{adj} \times RBA \times EF \times CFs \times (1/AT_{adj})$
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	$ADI\text{-}S_{child} = CS \times IRS_{child} \times RBA \times EF \times ED_{child} \times CFs \times (1/BW_{child}) \times (1/AT_{child})$
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	Ingestion of Home Grown Produce:
ED_{adj}	Age-Adjusted Exposure Duration	years	26	[6] EPA, 2014	$ADI\text{-}HP_{adj} = IHP_{adj} \times EF \times (1/AT_{adj})$
BW_{child}	Body Weight - Child	kg	15	[7] EPA, 2014	$ADI\text{-}HP_{child} = IHP_{child} \times EF \times ED \times (1/AT_{child})$
BW_{adult}	Body Weight - Adult	kg	80	[7] EPA, 2014	*where:*
AT_{adj}	Age-Adjusted Averaging Time	days	9,490	[8] EPA, 2014	$IHP_{child} = [((Pd+PRag) \times CRag_{child}) + (PRag \times CRpp_{child}) + (PRbg \times CRbg_{child})] \times Fp$
AT_{child}	Child-Specific Averaging Time	days	2,190	[8] EPA, 2014	$IHP_{adj} = [((Pd+PRag) \times CRag_{adj}) + (PRag \times CRpp_{adj}) + (PRbg \times CRbg_{adj})] \times Fp$
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	$CRag_{adj} = (CRag_{child} \times ED_{child} + CRag_{adult} \times ED_{adult})$
IHP_{adj}	Age-Adjusted Daily Intake From Homegrown Produce	mg-yr/kg-day	chemical-specific	[3] EPA, 2019a	$CRbg_{adj} = (CRbg_{child} \times ED_{child} + CRbg_{adult} \times ED_{adult})$
$CRag_{child}$	Aboveground Produce Ingestion Rate - Child	kg DW/kg-day	1.13E-03	[9] EPA, 2005	$CRpp_{adj} = (CRpp_{child} \times ED_{child} + CRpp_{adult} \times ED_{adult})$
$CRag_{adult}$	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

Exposure Medium	EPC Statistic [2]	Chemical Abbreviation	Chemical Name	Units	Offiste Soil EPCs											
					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

					Modeled Offsite Homegrown Produce EPCs [1]											
Exposure Medium	**EPC Statistic [2]**	**Chemical Abbreviation**	**Chemical Name**	**Units**	**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	Perfluoroethoxypropanoic 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	Perfluoroethoxypropanoic 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**

Table F-3-4
Screening-Level Exposure Assessment
Intake and Hazard Calculations
Summary of Exposure Point Concentrations
Cape Fear River and Pond Surface Water

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 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
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 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
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 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
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 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
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	Untreated Well Water	Soil	Untreated Well Water	Total Intake	Soil	Untreated Well Water	Soil	Untreated Well Water	Total Intake
			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	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	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	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	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	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	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	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	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-4-3
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	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	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	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	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	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	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	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	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	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	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	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	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	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-4-5
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
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	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	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	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	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	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	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	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	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	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	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	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	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				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-4-6
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	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	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	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	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	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	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	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	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	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	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	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	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 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
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 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
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 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
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 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
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

			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
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 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
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 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	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

			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	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]					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
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

			HFPO-DA Intake Summary						NC DHHS HFPO-DA RfDo	HFPO-DA Hazard Quotient (HQ)	
			CTE Intake			RME Intake					
Exposure Unit	EU Description	Receptor	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

			HFPO-DA Intake Summary		NC DHHS HFPO-DA RfDo	HFPO-DA Hazard Quotient (HQ)	
Exposure Unit	**EU Description**	**Receptor**	**Total CTE** mg/kg-day	**Total RME** mg/kg-day	mg/kg-day	**CTE HQ** unitless	**RME HQ** 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
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CFR - Cape Fear River
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HFPO-DA - Hexafluoropropylene oxide dimer acid
HQ - hazard quotient
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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