ENVIRONMENTAL DATA SERVICES, LTD.

DATA VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility
Joint Base Pearl Harbor-Hickam
CV 23F0104

SDG: 22L0057
APPL, INC.

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

Prepared for

AECOM Environmental

Released: 1/13/23

Data Validators and Peer Reviewers:

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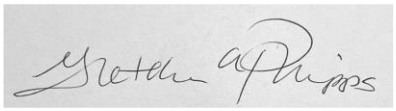
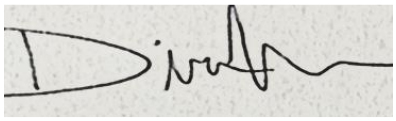
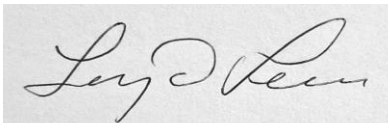


Gretchen Phipps



Dina Manov



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EXECUTIVE NARRATIVE

Sample Delivery Group: 22L0057
Laboratory: APPL, Inc.
Site: Red Hill Bulk Storage Facility, CV 23F0104
Sampling dates: 12/7/2022
Number of Samples: 3
Test Method: USEPA Method 1633
Analysis: per- and polyfluoroalkyl substances (PFAS)

Quality Assurance Project Plan: Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017); PFAS-Specific Sampling and Analysis plan, Red Hill Bulk Fuel Storage Facility, Adit 6, Joint Base Pearl Harbor-Hickam, O'Ahu, Hawai'i (November 30, 2022) (SAP).

Validation Guidelines: United States Department of Defense Data Validation Guidelines Module 6: Data Validation Procedure for Per- and Polyfluoroalkyl Substances analysis by QSM Table B-24, Environmental Data Quality Workgroup, October 18, 2022; United States Department of Defense (DOD) Environmental Data Quality Workgroup (EDQW), General Validation Guidelines, November 2019.

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
ADIT6-DU03-SON01MI-22DEC[1]	22L0057-01	soil	S2BVEM
ADIT6-DU03-WQFB01-22DEC	22L0057-02	ambient blank	S2BVEM
AF-RHMW17-WGN01LF-2212W1	22L0057-03	water	S2BVEM

[1]Sample also analyzed using the Synthetic Precipitation Leaching Procedure (SPLP)

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with "X", rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an "X" flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. "X" values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The samples arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Proper sample handling and preservation also play a role in the chemical stability of analytes in the sample matrix. If samples are not collected and stored using proper containers and/or preservatives, data may not be valid.

No problems were found for this criterion.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance. Additionally, a continuing calibration is analyzed at the end of each 12-hour analytical sequence, denoted as a "closing" calibration verification and ascertains acceptable performance at the conclusion of the analytical sequence.

A) Initial Calibration

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range.

An RSD value outside the initial calibration limit indicates the potential for quantitation errors. For this reason, all positive and non-detected results are qualified as estimated. Severe performance failures (RSD >30%) requires rejection of all results. The following QC criteria have been applied for this project: The %RSD of initial calibration must be <20%.

No problems were found for this criterion.

B) Continuing Calibration

The Percent Recovery (%R) for all target analytes in the continuing calibration must be within 70-130%. All initial calibration verification (ICV) and continuing calibration verification (CCV) %Rs were with acceptance limits with the following exceptions.

No problems were found for this criterion requiring result qualification.

C) Instrument Sensitivity Check

Prior to analysis an instrument sensitivity check (ISC) must be performed. The ISC must be at the limit of quantitation (LOQ). All analyte concentrations must be within ±30%. Note: the laboratory reports refer to the ISC as Low-Concentration Calibration Verification (LCCV). The validator has determined that the LCCV in the laboratory's report is equivalent to the method required ISC.

No problems were found for this criterion with the following exceptions.

The observed recoveries for the analytes listed below were outside of acceptance limits for the ISC associated with soil sample ADIT6-DU03-SON01MI-22DEC. The results reported for the impacted analytes in the associated sample have been qualified estimated "UJ" as appropriate on this basis.

PFDoA	*PFTeDA*
8:2FTS	*7:3FTCA*

The observed recovery for NFDHA was greater than 150% for the ISC associated with samples ADIT6-DU03-WQFB01-22DEC and AF-RHMW17-WGN01LF-2212W1. The non-detected results reported for the impacted analyte in the associated samples have been qualified estimated "UJ" on this basis. It is the data validators recommendation that these results be considered estimated "UJ" when using data as the recovery was higher than the upper acceptance limit, but the sample results were non-detect rather than applying an "X" qualifier as the validation module instructs.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. When an equipment blank, or lab blank has an analyte detection, then all associated field samples are qualified per validation guidance as appropriate.

A) Method blank contamination:

No problems were found for this criterion with the following exceptions.

PFOS and PFOA were detected in the method blank associated with the soil sample in this sample delivery group (SDG). The positive results reported for the impacted analytes in the associated sample have been evaluated and qualified per validation guidance as appropriate.

PFOS was positively detected in the method blank associated with the SPLP sample in this SDG. The positive result reported for the impacted analyte in the associated sample has been evaluated and qualified per validation guidance as appropriate.

PFOS was detected in the method blank associated with the aqueous samples in this SDG. The positive results reported for the impacted analyte in the associated sample have been evaluated and qualified per validation guidance as appropriate.

B) Instrument blank contamination:

No problems were found for this criterion.

B) Field/Equipment blank contamination:

Sample ADIT6-DU03-WQFB01-22DEC was submitted as field/equipment blank in association with the sample ADIT6-DU03-SON01MI-22DEC. No problems were found for this criterion.

6. EXTRACTED INTERNAL STANDARDS

All samples are spiked with labeled standard compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique. The reported project samples had observed surrogate recoveries within the established limits in all cases with the following exceptions.

No problems requiring result qualification were found for this criterion with the following exceptions.

The observed isotope dilution standard recovery for 13C2-8:2FTS was less than the lower acceptance limit but greater than ten percent during the analysis of the SPLP of sample ADIT6-DU03-SON01MI-22DEC. The result reported for associated target analyte has been qualified "UJ" on this basis.

The observed isotope dilution standard recovery for 13C2-6:2FTS was greater than the upper acceptance limit during the analysis of sample AF-RHMW17-WGN01LF-2212W1. The result reported for associated target analyte has been qualified "J-" on this basis.

7. NON-EXTRACTED INTERNAL STANDARDS

Non-extracted internal standard peak areas are used to quantify extracted internal standard recoveries. The reported project samples had non-extracted internal standard area counts within the established limits in all cases with the following exceptions.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION

The project target analyte compounds are identified on the LC/MS/MS by using the analytes retention time (RT). The retention time of each target analyte should be within ± 0.4 minutes of the predicted retention. Target analyte detections should display a signal-to-noise of ≥ 3:1, have proper peak integration, and display all ions at the correct retention times.

Target analyte detections should have passing ion ratios (50 - 150% of theoretical). Ion ratio failures could be caused by matrix interference and/or be the result of the presence of isomers in the sample at different ratios than the ratio of isomers present in the calibration standards.

Target compound identification was verified. No anomalies were identified.

9. COMPOUND QUANTIFICATION

Target compound quantitation were not reviewed as part of the Level 2B data validation. No anomalies were identified.

Manual integrations were not reviewed at the Stage 2B level.

10. MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Matrix spike/matrix spike duplicate (MS/MSD) data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

Soil sample ADIT6-DU03-SON01MI-22DEC was submitted for MS/MSD and/or matrix duplicate evaluation in association with this SDG. Upon evaluation all accuracy and precision indicators were acceptable or did not result in a need to qualify sample results.

11. FIELD DUPLICATES/ TRIPLICATES

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of ≤ 30% for the Relative Percent Difference (RPD) for water samples and ≤ 50% RPD for solid samples, shall be used when original and duplicate sample values are greater than or equal to the sample specific LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate. A control limit of ≤35% RSD was applied for field triplicate samples when original and triplicate sample values are greater than the sample specific LOQ. For field triplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample, duplicate and triplicate.

No samples were submitted as a field duplicate/triplicate set-in association with this SDG.

12. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The LCS results are used to verify that the laboratory can perform the analysis in a clean matrix. Note: in addition to the standard LCS the laboratory has also provided a second LCS referred to as the MRL check in the laboratory report. The validator has determined that the MRL check in the laboratory's report is equivalent to the required low level LCS.

No problems requiring result qualification were found for this criterion with the following exception.

The observed recovery was less than the lower limit for NFDHA in the low level LCS associated with samples ADIT6-DU03-WQFB01-22DEC and AF-RHMW17-WGN01LF-2212W1. The non-detected results reported for the impacted analyte in the associated samples have been qualified estimated "UJ" on this basis. It is the data validators recommendation that these results be considered estimated "UJ" when using data as the recovery was less than the lower acceptance limit but greater than 10% in low level LCS; rather than applying an "X" qualifier as the validation module instructs.

13. DILUTIONS, RE-EXTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Samples were re-extracted and/or reanalyzed in several cases to confirm quality control results or bring analytes into calibration range. Upon review, the laboratory reported the best and final result.

14. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Overall, the laboratory data generated met the project goals and quality control criteria, with the exceptions identified in this report and as summarized in Table 1.

Table 1
Review Elements Summary

	Were acceptance criteria met?		
	Yes	No	
Per-fluorinated Compounds		Major	Minor
Holding Time/Sample Handling	x		
Method Blanks			x
Instrument Blanks	x		
Field Blanks	x		
Calibration Percent Relative Standard Deviation and Percent Difference	x		
Instrument Sensitivity Check			x
Extracted Internal Standards			x
Non-Extracted Internal Standards	x		
Compound Identification	x		
Matrix Spike/Matrix Spike Duplicate	x		
Laboratory Control Sample			x
Other Quality Control Data out of Specification	x		
Field Duplicate / Triplicate	NA		

Major= Major data quality issue identified resulting in rejection of data.
Minor= Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2
Data Validation Qualifiers

Data Qualifier	Definition
U	**The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.**
J	**The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.**
J+	**The result is an estimated quantity, but the result may be biased high.**
J-	**The result is an estimated quantity, but the result may be biased low.**
UJ	**The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.**
X	**The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.**
R	**The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.**

Table 3
PFAS Definitions Table

NO	CAS #	Target Name	Target Abbreviation
1	763051-92-9	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS
2	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA
3	812-70-4	3-Perfluoroheptyl propanoic acid	7:3FTCA
4	356-02-5	3-Perfluoropropyl propanoic acid	3:3FTCA
5	919005-14-4	4,8-Dioxa-3H-perfluorononanoic acid	ADONA
6	757124-72-4	4:2 Fluorotelomer sulfonic acid	4:2 FTS
7	27619-97-2	6:2 Fluorotelomer sulfonic acid	6:2 FTS
8	39108-34-4	8:2 Fluorotelomer sulfonic acid	8:2 FTS
9	756426-58-1	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS
10	13252-13-6	Hexafluoropropylene oxide dimer acid	HFPO-DA
11	4151-50-2	N-Ethyl perfluorooctanesulfonamide	NEtFOSA
12	2991-50-6	N-Ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA
13	1691-99-2	N-Ethyl perfluorooctanesulfonamidoethanol	NEtFOSE
14	31506-32-8	N-Methyl heptadecafluorooctanesulfonamide	NMeFOSA
15	2355-31-9	N-Methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA
16	24448-09-7	N-Methyl perfluorooctanesulfonamidoethanol	NMeFOSE
17	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA
18	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA
19	377-73-1	Perfluoro-3-methoxypropanoic acid	PFMPA
20	863090-89-5	Perfluoro-4-methoxybutanoic acid	PFMBA
21	375-73-5	Perfluorobutanesulfonic acid	PFBASA
22	375-22-4	Perfluorobutanoic acid	PFBA
23	335-77-3	Perfluorodecanesulfonic acid	PFDS
24	335-76-2	Perfluorodecanoic acid	PFDA
25	79780-39-5	Perfluorododecanesulfonic acid	PFDoS
26	307-55-1	Perfluorododecanoic acid	PFDoA
27	375-92-8	Perfluoroheptanesulfonic acid	PFHpS
28	375-85-9	Perfluoroheptanoic acid	PFHpA
29	355-46-4	Perfluorohexanesulfonic acid	PFHXSA
30	307-24-4	Perfluorohexanoic acid	PFHxA
31	68259-12-1	Perfluorononanesulfonic acid	PFNS
32	375-95-1	Perfluorononanoic acid	PFNA
33	754-91-6	Perfluorooctanesulfonamide	PFOSA
34	1763-23-1	Perfluorooctanesulfonic acid	PFOS
35	335-67-1	Perfluorooctanoic acid	PFOA
36	2706-91-4	Perfluoropentanesulfonic acid	PFPeS
37	2706-90-3	Perfluoropentanoic acid	PFPeA
38	376-06-7	Perfluorotetradecanoic acid	PFTeDA
39	72629-94-8	Perfluorotridecanoic acid	PFTrDA
40	2058-94-8	Perfluoroundecanoic acid	PFUnA

Data Qualification Reason Codes	
Reason Code	**Reason Code Description**
A	**Serial dilution**
A1	**Ambient Blank**
B	**The analyte was found in an associated blank as well as in the sample.**
B2	**CCB**
B3	**CCB - Neg**
B4	**Grinding Blank**
C	**LCS Recovery**
C1	**Reference Recovery**
C2	**Reference Recovery RPD**
D	**MS RPD**
D1	**Lab Replicate RPD**
D2	**No precision available**
D3	**Field Duplicate RPD**
D4	**Field Triplicate RSD**
D5	**Laboratory Triplicate RSD**
F	**Field Blank**
F1	**Hydrocarbon pattern does not match standard**
G1	**Initial Calibration RRF**
G2	**Initial Calibration RSD/r^2/r**
G3	**ICV RRF**
H1	**Test Hold Time**
H2	**Prep Hold Time**
I	**Surrogate recovery outside project limits.**
J	**CRA/CRI Recovery**
K	**An analyte (non-common laboratory artifact) was detected in the sample at a concentration less than 5X the concentration detected in the associated method blank.**
L	**Lab Blank**
L1	**Lab Blank - Neg**
M	**MS Recovery**
M2	**Post Spike**
N	**Blank - No Action**
O	**ICS**
P	**Sample preservation/collection requirement not met.**
P1	**Column RPD**
P2	**Improper preparation/extraction**
Q	**Encore sample holding time exceeded by more than 2X.**
Q1	**Material Blank**

Q2	**Encore sample holding time exceeded by less than 2X.**
R	**Exceeds LinearCalibration Range**
S	**Internal standard**
T	**Trip Blank**
TI	**Tentatively Identified Compound**
TR	**Trace Level Detect**
U	**Receipt Temperature**
V	**Equipment Blank**
V1	**ICV**
V2	**CCV**
V3	**CCV RRF**
V4	**Sample Receipt Condition**
V5	**Ending Continuing Calibration Verification**
V6	**Low Level Calibration Verification**
V7	**Interference Check Sample A**
V8	**Interference Check Sample AB**
V9	**Interference Check Sample A - Negative**
W	**Column breakdown (pesticides/8270)**
X	**Raised reporting limit**
Y	**Cooler temperature greater than 10 degreec C.**
Y1	**False Positive**
Y2	**Data rejected due to radiological anomolies**
Y3	**Non-accredited analyte/compound. Accreditation not offered at time of analyses for the analyte/compound by the stated method and matrix.**
Y4	**Performance Check - Degradation of DDT**
Y5	**Extracted Internal Standard**
Y6	**Analyte not confirmed on second column.**
Y7	**Signal to Noise Ratio not met**
Z	**LCS RPD**
Z1	**Non-accredited analyte/compound**
Z1	**Data rejected, more valid data available.**
Z2	**Detection Level not met uncertainty greater than DL**
Z4	**MDA Greater than RDL.**
Z5	**Ion Ratio**
Z6	**Samples were analyzed past the 12 hour time period from the Tune or opening CCV.**

Data Validation Worksheet

DATA VALIDATION PFAS

Module 6; PFAS by QSM Table 5-24; October 18, 2022

Validator: DM

Reviewer: GAP

Date Validated: 1/11/23

Reviewed: 1/13/2023

Project: Red Hill

SDG: 22L0057

LAB: APPL

Samples Collected: 12/7/2022

2 soils; 1 GW Samples

SAMPLE RECEIPT AND CASE NARRATIVE REVIEW

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.
- ✓ AFFF samples are to be shipped in HDPE containers with an unlined cap
- ✓ Shipment temp 0-6°C: recommended to freeze tissue samples upon receipt
- ✓ If temp upon receipt is greater than 6°C J/UJ all

Received on 12/8 all cooler <6C

HOLDING TIMES

- ✓ Recommended storage temp is ≤ -20°C
- ✓ Per method 1633: aqueous samples may be held in the lab for up to 90 days when stored at recommended temp and protected from light; when stored at 0-6 °C and protected from light samples can be held for up to 28 days (see method for additional details)
- ✓ Per method 1633: solid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C (see method for additional details)
- ✓ Per method 1633: biosolid samples may be held in the lab for up to 90 days when stored at recommended temp or 0-6 °C; however, freezing is recommended (see method for additional details)
- ✓ Samples extracts should be stored at 0-4°C protected from light and analyzed within 90 days

- ✓ If hold time is exceeded qualify J/UJ
- ✓ If hold time is grossly exceeded (2X hold time) J/X

244 **Table II. Sample Storage and Holding Time Requirements**

Matrix Type	Stored at 0 - 6°C, protected from light		Stored at ≤ -20°C, protected from light	
	Holding Time	Caveat	Holding Time	Caveat
Aqueous	28 days	Precursor degradation occurs after 7 days	90 days	None
Solid and Tissue	90 days	Should be prepared as soon as possible if NFDHA is a target analyte	90 days	Should be prepared as soon as possible if NFDHA is a target analyte
Biosolid	90 days	Not recommended due to the production of gases due to microbiological activity	90 days	None

all inside holding time
SPLP were extracted 11 days after collection; not hold time defined in method, QAPP or
Based on professional judgement acceptable

Extracted Internal STANDARDS

- ✓ Added to all QC and field samples
- ✓ Recoveries are within the limits as defined in QAPP; otherwise QSM criteria (20-150%) should be used
- ✓ Detected for analytes qualified using an EIS percent recovery >200% should be qualified J-. Nod-detects should not be qualified.
- ✓ If EIS recovery is <10%; associated detected and non-detects should be qualified X
- ✓ EIS retention times should be within 0.4 minutes of standard; use professional judgment to qualify

For Red Hill project(see Kristin's email on file in project folder 12/14/22 at 3:25pm)

For EIS %Rs >150% J- positive results, no action on non-detects

For EIS %Rs between lab limit of 20-150%; no action

For EIS %Rs <20% but >10%; J+ positive results, UJ non-detects

For EIS %Rs <10% X positive and non-detected (and recommend R of non-detected, J+ of positive results)

SPLP SAMPLE

ADIT6-DU03-SON01MI-22DEC

13C2-8:2FTS 18.8 assoc 8:2 FTS flag UJ

AF-RHMW17-WGN01LF-2212W1 (22L0057-03)

13C2-4:2FTS 397↑ ND No Q

13C2-6:2FTS 165↑ flag J-

13C2-8:2FTS 156↑ ND no Q

D5-NETFOSAA 164↑ (RE 180)assoc NEtFOSAA ND no Q

Non-Extracted Internal STANDARDS

- ✓ Used to quantify EIS
- ✓ If low are counts are reported (<30%) detected and non-detected should be qualified X

Laboratory Control Sample (LCS) and Low-Level Laboratory Control Sample (LLLCS)
(MRL in APPL data package)

- ✓ LCMS Lab Control Recovery (Form III), Form I, prep log, run log
- ✓ LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG.
- ✓ Laboratory Control Samples were analyzed for all the target analytes that the samples are analyzed for.
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If LCS or LLLCS %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If LCS or LLLCS %R is < lower limit; qualify detected J- and non-detected X

Use lab limits (40-150) to evaluate

All 40 compounds included.

Solid
LCS (BBL0206-BS1) all ok
LCS (BBL0400-BS1) all ok

SPLP
LCS (BBL0372-BS1) all ok

Aqueous
LCS (BBL0205-BS1) all ok

BBL0400-MRL1 associated with 1RE

BBL0205-MRL1 assoc samples 2, 3, 3RE
NFDHA 35.3% flag X but recommended UJ

BBL0206-MRL1 associated with 1
PFDA 161% ND; no action

SPLP
BBL0372-MRL1 all ok

MS/MSD and Matrix Duplicate

- ✓ LCMS Matrix Spike Recovery (Form III)
- ✓ The Matrix Spike Samples were spiked and analyzed for all the target analytes that the samples are analyzed for (Same analytes as LCS).
- ✓ Per module 6: MS and MSD are applicable where the spike concentration is a least 3 times greater than the native analyte concentration **(3X rule)**
- ✓ Use limits as defined in QAPP; otherwise lab limits or QSM criteria of 40-150%.
- ✓ If MS or MSD %R is > upper limit; qualify detects J+; no action on non-detected
- ✓ If MS or MSD %R is < lower limit but >10%; qualify detected J- and non-detected UJ
- ✓ If MS or MSD %R is < 10%; qualify detected J- and non-detected X
- ✓ If MS/MSD RPD is out; qualify detected J and non-detected UJ
- ✓ For matrix duplicate; for concentrations of analytes that are equal to or greater than the LOQ, the RPD must be ≤30%; if out qualified detected J; no action on non-detects

Use lab limits to evaluate

Sample: **ADIT6-DU03-SON01MI-22DEC solid**

Analyte	MS	MSD	RPD	flag
PFHXA	4x rule	4x rule	out	4x rule; no flag
PFTrDA	ok	ok	out	ND no Q
6:2 FTS	4x rule	4x rule	ok	4x rule; no flag
NFDHA	ok	ok	out	ND no Q

BLANKS

- ✓ LCMS Method Blank Summary (Form IV), method blank Form I, prep log, run log
- ✓ Frequency of Analysis: method blank has been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch.
- ✓ Continuing Calibration Blanks (Form I) and run log
- ✓ Frequency of Analysis: immediately following the highest standard analyzed and daily prior to sample analysis.
- ✓ Field/rinse blanks are non-detected for all analytes

312 **Table III: Sample Qualification in the Presence of Blank Contamination**

	Sample		
Row Number	Result	Validated Result	Validation Qualifier
1	Non-detect or detect ≤ LOD	Report at LOD	U
2	> LOQ but ≤ 5x blank	Report at Sample Result	J+
3	> LOQ and > 5x blank	Report at Sample Result	None

313 LOD = Limit of Detection

MB solid
BBL0206-BLK1 assoc sample 1
PFOS .0118J flag >LOQ but <5x blank flag J+
PFOA .0293J flag >LOQ but <5x blank flag J+

BBL0400-BLK1 assoc sample -01RE2
PFOS .0107J not analyzed for 01RE2 no Q
PFOA .0235J not analyzed for 01RE2 no Q

SPLP
BBL0372-BLK1 assoc sample 1
PFOS .604J >LOQ and <5x blank flag J+

MB Aqueous
BBL0205-BLK1 assoc samples 2, 3, 3RE1
PFOS 0.0893J Sample 3 <LOD flag U

ADIT6-DU03-WQFB01-22DEC all ND

ICBs/CCBs see below

MASS CALIBRATION

- ✓ Verified to be ±0.2 amu of true value

Bile Salt Interference Check and Qualitative Identification Standard

- ✓ Provided and requirements met
- ✓ See Module 6

acceptable

ICAL

- ✓ Initial Calibration Data Curve Evaluation (Form VI) and run log
- ✓ Lowest standard should be at or below LOQ
- ✓ %RSD <20% or relative standard error (RSE) <20%
- ✓ If %RSD > 20% but <30% J/UJ
- ✓ If %RSD >30% J/R

See below

INSTRUMENT PERFORMANCE CHECK PER DRAFT METHOD 1633 (LCV in APPL data package)

- ✓ Concentration equal to LOQ
- ✓ Analyzed after ICAL and daily before samples
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

CCAL

- ✓ Continuing Calibration Data (Form VII) and run log
- ✓ Continuing calibration standard analyzed on each working day, prior to sample analyses.
- ✓ Calibration verification/continuing calibration standard been analyzed after every 10 samples and at the end of each analytical sequence
- ✓ If not analyzed all associated data should be qualified X
- ✓ The %R for ICV and CCV 30%; if out >130% qualify positive J+ and nondetected UJ; if out <70% qualify positives J- and nondetects UJ
- ✓ Per module if gross exceedances of recoveries <50% or >150%; qualify all associate data X

LCV is the method required ISC

Instrument Saphira

12/13/2022
ICAL SB03823 all %RSE <20%

Initial Cal Blank SB03823-ICB1 S2022-12-13A (9) 12/13/22 21:45 all ND

Secondary Cal Check SB03823-SCV1 S2022-12-13A (10) 12/13/22 21:58 all ok

Calibration Blank SB03835-CCB1 S2022-12-14A (1) 12/14/22 10:56 all ND

Low Cal Check SB03835-LCV1 S2022-12-14A (2) 12/14/22 11:08 assoc samples 2, 3

NFDHA 150% >150 qualify X but recommended UJ

Calibration Check SB03835-CCV1 S2022-12-14A (3) 12/14/22 11:21 all ok

Calibration Blank SB03835-CCB2 S2022-12-14A (4) 12/14/22 11:59 all ND
Assoc samples 2, 3

Calibration Check SB03835-CCV2 S2022-12-14A (24) 12/14/22 16:13 all ok

Calibration Blank SB03835-CCB3 S2022-12-14A (25) 12/14/22 16:26 all ND

Calibration Blank SB03845-CCB1 S2022-12-14B (1) 12/14/22 23:25 all ND

Low Cal Check SB03845-LCV1 S2022-12-14B (2) 12/14/22 23:38 ASSOC SAMPLE 1

PFDoA <70% but >50% FLAG UJ

PFTeDA <70% but >50% FLAG UJ

8:2FTS <70% but >50% FLAG UJ

7:3FTCA <70% but >50% FLAG UJ

Calibration Check SB03845-CCV1 S2022-12-14B (3) 12/14/22 23:51

Calibration Blank SB03845-CCB2 S2022-12-14B (4) 12/15/22 00:29

SB03941-CAL1 S2022-12-21A (1) 12/21/22 14:26 assoc 01RE2
8:2 FTS 140.6% not assoc with 01RE2 no Q
NEtFOSAA 130.9% not assoc with 01RE2 no Q

NEtFOSE 132.3% ND no Q

Initial Cal Blank SB03941-ICB1 S2022-12-21A (9) 12/21/22 16:08

Secondary Cal Check SB03941-SCV1 S2022-12-21A (10) 12/21/22 16:20

Low Cal Check SB03951-LCV1 S2022-12-22A (2) 12/22/22 11:14

PFTeDA <70% but >50% sample 1 flag UJ

Calibration Check SB03951-CCV1 S2022-12-22A (3) 12/22/22 11:26

Calibration Blank SB03951-CCB2 S2022-12-22A (4) 12/22/22 12:04

Calibration Check SB03951-CCV2 S2022-12-22A (16) 12/22/22 14:37

Calibration Blank SB03951-CCB3 S2022-12-22A (17) 12/22/22 14:50

SPLP Sample

SB03941-SCV1 all ok

Low Cal Check SB03942-LCV1 S2022-12-21B (2) 12/21/22 16:58 all ok

Calibration Check SB03942-CCV2 S2022-12-21B (5) 12/21/22 19:31 all ok

Calibration Blank SB03942-CCB3 S2022-12-21B (6) 12/21/22 19:44 all ND

Calibration Check SB03942-CCV3 S2022-12-21B (30) 12/22/22 00:49 all ok

Calibration Blank SB03942-CCB4 S2022-12-21B (31) 12/22/22 01:01 all ND

COMPOUND INDENTIFICATION

- ✓ RT within ±0.4 RRT units (review for Level 4)
- ✓ S/N ration 3:1 (review for Level 4)
- ✓ Ion response ratio with ±50% (review for Level 2B)
- ✓ If ion ratio is outside limit; qualify J

Use J flag for module 6
Reason Code: Z5

Ion ratio out for:

NONE

FIELD DUPLICATES

- ✓ Use QAPP defined criteria
- ✓ If outside acceptance criteria qualify J/UJ (MODULE FLAGS NONDETECTS TOO)

For field triplicates use 35% RSD per Kristin's email on file from 12/14/22

The following analytes were >35%

NONE

SEE FIELD DUPLICATE WORKSHEET

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
RHS PFAS UFP-QAPP

Sample Summary

Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	D2216	E1633DR
ADIT6-DU3	ADIT6-DU03-SON01MI-22DEC	12-07-2022	1350	N	SO	0.00	0.00	X	X
FIELDQC	ADIT6-DU03-WQFB01-22DEC	12-07-2022	1505	AB	WQ	0.00	0.00		X
ADIT6-DU3	ADIT6-DU03-SON01MI-22DEC	12-07-2022	1350	MS	SO	0.00	0.00		X
ADIT6-DU3	ADIT6-DU03-SON01MI-22DEC	12-07-2022	1350	SD	SO	0.00	0.00		X
							Total	**1**	**4**

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
RHS PFAS UFP-QAPP

Batch Report

Test Method: D2216 Analysis Batch: SC00004

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
ADIT6-DU3	SO	ADIT6-DU03-SON01MI-22DEC	22L0057-01		1/1	12/7/2022 13:50		12/12/2022 08:39	/	N

Test Method: E1633DR Analysis Batch: SB03835

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LABQC	BBL0205-BLK1	2251013	1/1	12/9/2022 14:19	12/9/2022 14:19	12/14/2022 12:12	BBL0205/	LB
LABQC	WQ	LABQC	BBL0205-BS1	2251013	1/1	12/9/2022 14:19	12/9/2022 14:19	12/14/2022 12:25	BBL0205/	BS
FIELDQC	WQ	ADIT6-DU03-WQFB01-22DEC	22L0057-02	2251013	1/1	12/7/2022 15:05	12/12/2022 14:19	12/14/2022 12:50	BBL0205/	AB

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
RHS PFAS UFP-QAPP

Batch Report

Test Method: E1633DR Analysis Batch: SB03845

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LABQC	BBL0206-BLK1	2251013	1/1	12/9/2022 15:06	12/9/2022 15:06	12/15/2022 00:42	BBL0206/	LB
LABQC	SQ	LABQC	BBL0206-BS1	2251013	1/1	12/9/2022 15:06	12/9/2022 15:06	12/15/2022 00:55	BBL0206/	BS
LABQC	SQ	LABQC	BBL0206-BSD1	2251013	1/1	12/9/2022 15:06	12/9/2022 15:06	12/15/2022 01:07	BBL0206/	BD
ADIT6-DU3	SO	ADIT6-DU03-SON01MI-22DEC	BBL0206-MS1	2251013	1/1	12/7/2022 13:50	12/9/2022 15:06	12/15/2022 01:33	BBL0206/	MS
ADIT6-DU3	SO	ADIT6-DU03-SON01MI-22DEC	BBL0206-MSD1	2251013	1/1	12/7/2022 13:50	12/9/2022 15:06	12/15/2022 01:45	BBL0206/	SD
ADIT6-DU3	SO	ADIT6-DU03-SON01MI-22DEC	22L0057-01	2251013	1/1	12/7/2022 13:50	12/9/2022 15:06	12/15/2022 01:58	BBL0206/	N

Test Method: E1633DR/SW1312 Analysis Batch: SB03942

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Leach Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LABQC	BBL0372-BLK1	2252011	1/1	12/19/2022 12:22	12/19/2022 11:59	12/19/2022 12:22	12/21/2022 19:57	BBL0372/BBL0370	LB
LABQC	SQ	LABQC	BBL0372-BS1	2252011	1/1	12/19/2022 12:22	12/19/2022 11:59	12/19/2022 12:22	12/21/2022 20:09	BBL0372/BBL0370	BS
ADIT6-DU3	SO	ADIT6-DU03-SON01MI-22DEC	22L0057-01	2252011	1/1	12/7/2022 13:50	12/19/2022 11:59	12/19/2022 12:22	12/22/2022 00:23	BBL0372/BBL0370	N
ADIT6-DU3	SO	ADIT6-DU03-SON01MI-22DEC	22L0057-01	2252011	2/10	12/7/2022 13:50	12/19/2022 11:59	12/19/2022 12:22	12/22/2022 00:36	BBL0372/BBL0370	N

Test Method: E1633DR Analysis Batch: SB03951

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LABQC	BBL0400-BLK1	2252011	1/1	12/20/2022 14:19	12/20/2022 14:19	12/22/2022 12:17	BBL0400/	LB

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
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Test Method: E1633DR Analysis Batch: SB03951

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	SQ	LABQC	BBL0400-BS1	2252011	1/1	12/20/2022 14:19	12/20/2022 14:19	12/22/2022 12:30	BBL0400/	BS
ADIT6-DU3	SO	ADIT6-DU03-SON01MI-22DEC	22L0057-01	2252011	2/1	12/7/2022 13:50	12/9/2022 15:06	12/22/2022 13:46	BBL0400/	N

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
RHS PFAS UFP-QAPP

Field Batch Report

Test Method: E1633DR Extraction Method: METHOD Leach Method: NONE

EBLOT	TBLOT	ABLOT	LOCID	Matrix	FLDSAMPID	LABSAMPID	LOGDATE	SACODE
		07122201	FIELDQC	WQ	ADIT6-DU03-WQFB01-22DEC	22L0057-02	12/7/2022 15:05	AB
		07122201	ADIT6-DU3	SO	ADIT6-DU03-SON01MI-22DEC	BBL0206-MS1	12/7/2022 13:50	MS
		07122201	ADIT6-DU3	SO	ADIT6-DU03-SON01MI-22DEC	22L0057-01	12/7/2022 13:50	N
		07122201	ADIT6-DU3	SO	ADIT6-DU03-SON01MI-22DEC	BBL0206-MSD1	12/7/2022 13:50	SD

MS Mismatch Report

E1633DR	FLDSAMPID	LABSAMPID	EXMCODE / LCHMETH	Analyte	Run#/ Dil.	MS/MSD FLDSAMPID	MS/MSD LABSAMPID	MS/MSD Run#/ Dil.	Sample Type
	ADIT6-DU03-SON01MI-22DEC	22L0057-01	METHOD/SW1312	13C2-6:2 Fluorotelomer sulfonate (13C2-6:2 FTS)	2	ADIT6-DU03-SON01MI-22DEC	BBL0206-MS1	1/1	N
	ADIT6-DU03-SON01MI-22DEC	22L0057-01	METHOD/SW1312	13C2-6:2 Fluorotelomer sulfonate (13C2-6:2 FTS)	2	ADIT6-DU03-SON01MI-22DEC	BBL0206-MSD1	1/1	N
	ADIT6-DU03-SON01MI-22DEC	22L0057-01	METHOD/SW1312	13C2-8:2 Fluorotelomer sulfonate (13C2-8:2 FTS)	2	ADIT6-DU03-SON01MI-22DEC	BBL0206-MS1	1/1	N
	ADIT6-DU03-SON01MI-22DEC	22L0057-01	METHOD/SW1312	13C2-8:2 Fluorotelomer sulfonate (13C2-8:2 FTS)	2	ADIT6-DU03-SON01MI-22DEC	BBL0206-MSD1	1/1	N
	ADIT6-DU03-SON01MI-22DEC	22L0057-01	METHOD/SW1312	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	2	ADIT6-DU03-SON01MI-22DEC	BBL0206-MS1	1/1	N
	ADIT6-DU03-SON01MI-22DEC	22L0057-01	METHOD/SW1312	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	2	ADIT6-DU03-SON01MI-22DEC	BBL0206-MSD1	1/1	N

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
RHS PFAS UFP-QAPP

QC Outlier Report

Test Method: E1633DR Extraction Method: METHOD Leach Method: NONE

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
Extracted Internal Standard	ADIT6-DU03-SON01MI-22DEC (MS) / BBL0206-MS1	1 / 1.00	13C2-6:2 Fluorotelomer sulfonate (13C2-6:2 FTS)	188.0 (percent)	J/None	20 - 150	10 - 150	Y5			
Extracted Internal Standard	ADIT6-DU03-SON01MI-22DEC (MS) / BBL0206-MS1	1 / 1.00	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid (13C3-PFBS)	151.0 (percent)	J/None	20 - 150	10 - 150	Y5			
Lab Blank	BBL0205-BLK1 (LB) / BBL0205-BLK1	1 / 1.00	Perfluorooctanesulfonic acid (PFOS)	0.08930 (ng/l)	U/None*	< 0.064	< 0.4	L		5	0.447
Lab Blank	BBL0206-BLK1 (LB) / BBL0206-BLK1	1 / 1.00	Perfluorooctanesulfonic acid (PFOS)	0.01180 (ug/kg)	U/None*	< 0.0097	< 0.04	L		5	0.0590
Lab Blank	BBL0206-BLK1 (LB) / BBL0206-BLK1	1 / 1.00	Perfluorooctanoic acid (PFOA)	0.02930 (ug/kg)	U/None*	< 0.021	< 0.04	L		5	0.147
Lab Blank	BBL0400-BLK1 (LB) / BBL0400-BLK1	1 / 1.00	Perfluorooctanesulfonic acid (PFOS)	0.01070 (ug/kg)	U/None*	< 0.0097	< 0.04	L		5	0.0535
Lab Blank	BBL0400-BLK1 (LB) / BBL0400-BLK1	1 / 1.00	Perfluorooctanoic acid (PFOA)	0.02350 (ug/kg)	U/None*	< 0.021	< 0.04	L		5	0.117
MS Recovery	ADIT6-DU03-SON01MI-22DEC (MS) / BBL0206-MS1	1 / 1.00	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	-44.00 (percent)	J/X	40 - 150	10 - 150	M	Spike amount Insignificant	4.00	
MS Recovery	ADIT6-DU03-SON01MI-22DEC (MS) / BBL0206-MS1	1 / 1.00	Perfluorohexanoic acid (PFHxA)	-1378 (percent)	J/X	40 - 150	10 - 150	M	Spike amount Insignificant	4.00	
MS Recovery	ADIT6-DU03-SON01MI-22DEC (SD) / BBL0206-MSD1	1 / 1.00	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	33.00 (percent)	J/UJ	40 - 150	10 - 150	M	Spike amount Insignificant	4.00	
MS Recovery	ADIT6-DU03-SON01MI-22DEC (SD) / BBL0206-MSD1	1 / 1.00	Perfluorohexanoic acid (PFHxA)	-1195 (percent)	J/X	40 - 150	10 - 150	M	Spike amount Insignificant	4.00	

*Blank flags displayed in the above table identify qualification of the sample result when it is less than or equal to the LOQ/RL. Sample results above the LOQ will be qualified based on the validation type such as J+ at the sample result.

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
RHS PFAS UFP-QAPP

QC Outlier Report

Test Method: E1633DR Extraction Method: METHOD Leach Method: SW1312

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
Extracted Internal Standard	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	13C2-8:2 Fluorotelomer sulfonate (13C2-8:2 FTS)	19.00 (percent)	J/UJ	20 - 150	10 - 200	Y5			
Lab Blank	BBL0372-BLK1 (LB) / BBL0372-BLK1	1 / 1.00	Perfluorooctanesulfonic acid (PFOS)	0.6040 (ng/l)	U/None*	< 0.32	< 2	L		5	3.02
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	13C2-4:2 Fluorotelomer sulfonate (13C2-4:2 FTS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	13C2-8:2 Fluorotelomer sulfonate (13C2-8:2 FTS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	3-Perfluoroheptyl propanoic acid (7:3FTCA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	3-Perfluoropropyl propanoic acid (3:3FTCA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
RHS PFAS UFP-QAPP

QC Outlier Report

Test Method: E1633DR Extraction Method: METHOD Leach Method: SW1312

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Hexafluoropropylene oxide dimer acid (HFPO-DA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	N-Ethyl perfluorooctanesulfonamide (NEtFOSA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	N-Ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	N-Ethyl-d5-perfluoro-1-octanesulfonamide (d5-NEtFOSA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	N-Ethyl-d9-perfluorooctanesulfonamidoethanol (d9 -NEtFOSE)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	N-Methyl heptadecafluorooctanesulfonamide (NMeFOSA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	N-Methyl perfluorooctanesulfonamide - d3 (d3-NMeFOSA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
RHS PFAS UFP-QAPP

QC Outlier Report

Test Method: E1633DR Extraction Method: METHOD Leach Method: SW1312

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	N-Methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	N-Methyl-d7-perfluorooctanesulfonamidoethanol (d7 -NMeFOSE)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro-1-(13C8)octanesulfonamide (13C8-PFOSA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro-1-[1,2,3-13C3]hexane sulfonate (13C3-PFHxS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro-1-[13C8]octane sulfonate (13C8-PFOS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid (13C3-PFBS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro-3-methoxypropanoic acid (PFMPA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
RHS PFAS UFP-QAPP

QC Outlier Report

Test Method: E1633DR Extraction Method: METHOD Leach Method: SW1312

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro-4-methoxybutanoic acid (PFMBA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluorobutanesulfonic acid	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluorobutanoic acid (PFBA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluorodecanesulfonic acid (PFDS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluorodecanoic acid (PFDA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluorododecanesulfonic acid (PFDoS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluorododecanoic acid (PFDoA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoroheptanesulfonic acid (PFHpS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoroheptanoic acid (PFHpA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluorohexanesulfonic acid	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
RHS PFAS UFP-QAPP

QC Outlier Report

Test Method: E1633DR Extraction Method: METHOD Leach Method: SW1312

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluorohexanoic acid (PFHxA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid (13C7-PFUnA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid (13C6-PFDA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid (13C4-PFHpA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro-n-[1,2-13C2]dodecanoic acid (13C2-PFDoA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro-n-[1,2-13C2]tetradecanoic acid (13C2-PFTeDA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro-n-[13C4]butanoic acid (13C4 -PFBA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro-n-[13C5]pentanoic acid (13C5-PFPeA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro-n-[13C8]octanoic acid (13C8-PFOA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoro-n-[13C9]nonanoic acid (13C9 -PFNA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
RHS PFAS UFP-QAPP

QC Outlier Report

Test Method: E1633DR Extraction Method: METHOD Leach Method: SW1312

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluorononanesulfonic acid (PFNS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluorononanoic acid (PFNA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluorooctanesulfonamide (PFOSA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluorooctanesulfonic acid (PFOS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluorooctanoic acid (PFOA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoropentanesulfonic acid (PFPeS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoropentanoic acid (PFPeA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluorotetradecanoic acid (PFTeDA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluorotridecanoic acid (PFTrDA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Perfluoroundecanoic acid (PFUnA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
RHS PFAS UFP-QAPP

QC Outlier Report

Test Method: E1633DR Extraction Method: METHOD Leach Method: SW1312

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	1 / 1.00	Tetrafluoro-2-heptafluoropropoxy-13C3 -propanoic acid (13C3-HFPO-DA)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	2 / 10.00	13C2-6:2 Fluorotelomer sulfonate (13C2-6:2 FTS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		
Test Hold Time	ADIT6-DU03-SON01MI-22DEC (N) / 22L0057-01	2 / 10.00	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	11.92 (days)	J/UJ	< 0	< 0	H1	Sampling to Leach Exceeds UCL		

*Blank flags displayed in the above table identify qualification of the sample result when it is less than or equal to the LOQ/RL. Sample results above the LOQ will be qualified based on the validation type such as J+ at the sample result.

Rule is the multiplier used when blank contamination occurs to determine action level.

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
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Qualified Results

Test Method: E1633DR Extraction Method: METHOD Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	3-Perfluoroheptyl propanoic acid (7:3FTCA)	0.160	0.0790 U	0.0790 UJ		ug/kg	V6
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	0.160	0.0790 U	0.0790 UJ		ug/kg	V6
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	Perfluorododecanoic acid (PFDoA)	0.0390	0.0290 U	0.0290 UJ		ug/kg	V6
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	Perfluorooctanesulfonic acid (PFOS)	0.0390	0.0510	0.0510 J	+	ug/kg	L
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	Perfluorooctanoic acid (PFOA)	0.0390	0.120	0.120 J	+	ug/kg	L
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	Perfluorotetradecanoic acid (PFTeDA)	0.0390	0.0290 U	0.0290 UJ		ug/kg	V6
ADIT6-DU03-WQFB01-22DEC	22L0057-02	W	AB	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	1.30	0.660 U	0.660 UJ		ng/l	V6/C

Test Method: E1633DR Extraction Method: METHOD Leach Method: SW1312

FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	7.50	3.70 UR	3.70 UJ		ng/l	Y5
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	Perfluorohexanesulfonic acid	1.90	0.360 FJ	0.360 J		ng/l	TR
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	Perfluorooctanesulfonic acid (PFOS)	1.90	2.90	2.90 J	+	ng/l	L

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

Automated Data Review Detail Report for 22L0057s
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Detected Results

Test Method: D2216 Extraction Method: NONE Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	Solids	2.00	91.1	91.1	percent	

Test Method: E1633DR Extraction Method: METHOD Leach Method: NONE

FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	0.160	0.290	0.290	ug/kg	
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	0.160	0.310	0.310	ug/kg	
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	0.130	48.0 M	48.0	ug/kg	
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	Perfluorobutanoic acid (PFBA)	0.290	1.40	1.40	ug/kg	
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	Perfluoroheptanoic acid (PFHpA)	0.0390	0.120	0.120	ug/kg	
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	Perfluorohexanoic acid (PFHxA)	0.0390	8.00 M	8.00	ug/kg	
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	Perfluorooctanesulfonic acid (PFOS)	0.0390	0.0510	0.0510 J	ug/kg	L
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	Perfluorooctanoic acid (PFOA)	0.0390	0.120	0.120 J	ug/kg	L
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	Perfluoropentanoic acid (PFPeA)	0.0790	0.850	0.850	ug/kg	

Test Method: E1633DR Extraction Method: METHOD Leach Method: SW1312

FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	7.50	35.0	35.0	ng/l	
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	7.50	35.0	35.0 J	ng/l	
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	10	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	75.0	4700	4700	ng/l	
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	Perfluorobutanoic acid (PFBA)	7.50	190	190	ng/l	
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	Perfluorodecanoic acid (PFDA)	1.90	3.80	3.80	ng/l	
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	Perfluoroheptanoic acid (PFHpA)	1.90	13.0	13.0	ng/l	

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
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Detected Results

Test Method: E1633DR Extraction Method: METHOD Leach Method: SW1312

FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	Perfluorohexanesulfonic acid	1.90	0.360 FJ	0.360 J	ng/l	TR
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	Perfluorohexanoic acid (PFHxA)	1.90	410	410	ng/l	
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	Perfluorooctanesulfonic acid (PFOS)	1.90	2.90	2.90 J	ng/l	L
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	Perfluorooctanoic acid (PFOA)	1.90	25.0	25.0	ng/l	
ADIT6-DU03-SON01MI-22DEC	22L0057-01	S	N	1	Perfluoropentanoic acid (PFPeA)	3.70	65.0	65.0	ng/l	

Automated Data Review Detail Report for 22L0057s
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Rejected Results

--No Records Found--

Anomalies Count

--No Records Found--

Reporting Anomalies

--No Records Found--

Automated Data Review Detail Report for 22L0057s
RH Fire Suppression System
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Review Questions

Automated Data Review Detail Report for 22L0057water
RH Fire Suppression System
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Sample Summary

Location	Field Sample ID	Date	Time	Sample Type	Matrix	SBD	SED	E1633DR
RHMW17	AF-RHMW17-WGN01LF-2212W1	12-07-2022	1325	N	WG	0.00	0.00	X
							Total	**1**

Automated Data Review Detail Report for 22L0057water
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Batch Report

Test Method: E1633DR Analysis Batch: SB03835

Location	Matrix	Field Sample ID	Lab Sample ID	Calibration Ref	Run#/ Dil'n	Collection Date/Time	Extraction Date/Time	Analysis Date/Time	Prep/Leach Batch	Sample Type
LABQC	WQ	LABQC	BBL0205-BLK1	2251013	1/1	12/9/2022 14:19	12/9/2022 14:19	12/14/2022 12:12	BBL0205/	LB
LABQC	WQ	LABQC	BBL0205-BS1	2251013	1/1	12/9/2022 14:19	12/9/2022 14:19	12/14/2022 12:25	BBL0205/	BS
RHMW17	WG	AF-RHMW17-WGN01LF-2212W1	22L0057-03	2251013	1/1	12/7/2022 13:25	12/12/2022 14:19	12/14/2022 13:15	BBL0205/	N

Automated Data Review Detail Report for 22L0057water
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Field Batch Report

--No Records Found--

MS Mismatch Report

--No Records Found--

Section to identify Matrix Spike mismatches where parent sample differs from MS by dilution.

Automated Data Review Detail Report for 22L0057water
RH Fire Suppression System
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QC Outlier Report

Test Method: E1633DR Extraction Method: METHOD Leach Method: NONE

QC Element	Sample ID/ Lab Sample ID	Run#/ Dil'n	Analyte	Result (Units)	Qualifier	Warning Limits	Control Limits	Reason	Comment	Rule	Action Level
Extracted Internal Standard	AF-RHMW17-WGN01LF-2212W1 (N) / 22L0057-03	1 / 1.00	13C2-4:2 Fluorotelomer sulfonate (13C2-4:2 FTS)	398.0 (percent)	J/None	20 - 150	10 - 150	Y5			
Extracted Internal Standard	AF-RHMW17-WGN01LF-2212W1 (N) / 22L0057-03	1 / 1.00	13C2-6:2 Fluorotelomer sulfonate (13C2-6:2 FTS)	166.0 (percent)	J/None	20 - 150	10 - 150	Y5			
Extracted Internal Standard	AF-RHMW17-WGN01LF-2212W1 (N) / 22L0057-03	1 / 1.00	13C2-8:2 Fluorotelomer sulfonate (13C2-8:2 FTS)	157.0 (percent)	J/None	20 - 150	10 - 150	Y5			
Extracted Internal Standard	AF-RHMW17-WGN01LF-2212W1 (N) / 22L0057-03	1 / 1.00	d5-N-Ethylperfluoro-1-octanesulfonamidoacetic acid	164.0 (percent)	J/None	20 - 150	10 - 150	Y5			
Lab Blank	BBL0205-BLK1 (LB) / BBL0205-BLK1	1 / 1.00	Perfluorooctanesulfonic acid (PFOS)	0.08930 (ng/l)	U/None*	< 0.064	< 0.4	L		5	0.447

*Blank flags displayed in the above table identify qualification of the sample result when it is less than or equal to the LOQ/RL. Sample results above the LOQ will be qualified based on the validation type such as J+ at the sample result.

Rule is the multiplier used when blank contamination occurs to determine action level.

Automated Data Review Detail Report for 22L0057water
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Qualified Results

Test Method: E1633DR	Extraction Method: METHOD		Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
AF-RHMW17-WGN01LF-2212W1	22L0057-03	W	N	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	1.40	13.0 J	13.0 J	-	ng/l	Y5
AF-RHMW17-WGN01LF-2212W1	22L0057-03	W	N	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.690	0.340 U	0.340 UJ		ng/l	V6/C
AF-RHMW17-WGN01LF-2212W1	22L0057-03	W	N	Perfluorobutanesulfonic acid	0.340	0.190 FJ	0.190 J		ng/l	TR
AF-RHMW17-WGN01LF-2212W1	22L0057-03	W	N	Perfluorohexanesulfonic acid	0.340	0.0530 FMI J	0.0530 J		ng/l	TR
AF-RHMW17-WGN01LF-2212W1	22L0057-03	W	N	Perfluorooctanesulfonic acid (PFOS)	0.340	0.0960 FMI J	0.170 U		ng/l	L
AF-RHMW17-WGN01LF-2212W1	22L0057-03	W	N	Perfluorooctanoic acid (PFOA)	0.340	0.230 FJ	0.230 J		ng/l	TR

Qualified analytes in samples are reported as estimated, not detected (UJ) at the Limit of Detection (LOD).

Automated Data Review Detail Report for 22L0057water
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Detected Results

Test Method: E1633DR	Extraction Method: METHOD		Leach Method: NONE							
FieldSample ID	LabSample ID	Matrix	Type	Dilution	Analyte	LOQ	Lab Result	Qualified Result	Units	Reason
AF-RHMW17-WGN01LF-2212W1	22L0057-03	W	N	1	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	1.40	13.0 J	13.0 J	ng/l	Y5
AF-RHMW17-WGN01LF-2212W1	22L0057-03	W	N	1	Perfluorobutanesulfonic acid	0.340	0.190 FJ	0.190 J	ng/l	TR
AF-RHMW17-WGN01LF-2212W1	22L0057-03	W	N	1	Perfluorobutanoic acid (PFBA)	1.40	4.60	4.60	ng/l	
AF-RHMW17-WGN01LF-2212W1	22L0057-03	W	N	1	Perfluoroheptanoic acid (PFHpA)	0.340	0.980	0.980	ng/l	
AF-RHMW17-WGN01LF-2212W1	22L0057-03	W	N	1	Perfluorohexanesulfonic acid	0.340	0.0530 FMI J	0.0530 J	ng/l	TR
AF-RHMW17-WGN01LF-2212W1	22L0057-03	W	N	1	Perfluorohexanoic acid (PFHxA)	0.340	2.90	2.90	ng/l	
AF-RHMW17-WGN01LF-2212W1	22L0057-03	W	N	1	Perfluorooctanesulfonamide (PFOSA)	0.340	0.720	0.720	ng/l	
AF-RHMW17-WGN01LF-2212W1	22L0057-03	W	N	1	Perfluorooctanoic acid (PFOA)	0.340	0.230 FJ	0.230 J	ng/l	TR
AF-RHMW17-WGN01LF-2212W1	22L0057-03	W	N	1	Perfluoropentanoic acid (PFPeA)	0.690	7.60	7.60	ng/l	

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Rejected Results

--No Records Found--

Anomalies Count

--No Records Found--

Reporting Anomalies

--No Records Found--

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Review Questions