

ANALYTICAL REPORT

PREPARED FOR

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City & County of Honolulu
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Generated 1/16/2024 10:39:30 AM

JOB DESCRIPTION

RED-HILL [PFAS]
RUSH Weekly Red Hill

JOB NUMBER

380-78227-1

Eurofins Eaton Analytical Pomona

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Eaton Analytical, LLC Project Manager.

Compliance Statement

1. Laboratory is accredited in accordance with TNI 2016 Standards and ISO/IEC 17025:2017.
2. Laboratory certifies that the test results meet all TNI 2016 and ISO/IEC 17025:2017 requirements unless noted under the individual analysis
3. Test results relate only to the sample(s) tested.
4. This report shall not be reproduced except in full, without the written approval of the laboratory.
5. Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below. (DW, Water matrices)

Authorization



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Definitions/Glossary

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: City & County of Honolulu
Project: RED-HILL [PFAS]

Job ID: 380-78227-1

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Job Narrative 380-78227-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 1/11/2024 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.1°C

PFAS

EPA 537.1 and EPA 533 are two distinct methods for the analysis of PFAS in drinking water. The analyses are conducted on differing instrumentation, with calibrations, extraction solvents and sample preservatives being dissimilar among the two methods. Therefore it is probable and not unexpected to see the methods having slight variations in analytical results. HALAWA WELLS UNITS 1 (331-206-TP065) (380-78227-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Client Sample ID: HALAWA WELLS UNITS 1 (331-206-TP065)
PWSID Number: HI0000331

Lab Sample ID: 380-78227-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	2.6		2.0	ng/L	1		533	Total/NA
Perfluorohexanoic acid (PFHxA)	2.2		2.0	ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.4		2.0	ng/L	1		533	Total/NA
Perfluorooctanoic acid (PFOA)	2.2		2.0	ng/L	1		533	Total/NA
Perfluoropentanoic acid (PFPeA)	2.4		2.0	ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.2		2.0	ng/L	1		537.1	Total/NA
Perfluorohexanoic acid (PFHxA)	2.0		2.0	ng/L	1		537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.5		2.0	ng/L	1		537.1	Total/NA

Client Sample ID: FB: HALAWA WELLS UNITS 1 (331-206-TP065)

Lab Sample ID: 380-78227-2

PWSID Number: HI0000331

No Detections.

This Detection Summary does not include radiochemical test results.

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Client Sample Results

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Client Sample ID: HALAWA WELLS UNITS 1 (331-206-TP065)

Lab Sample ID: 380-78227-1

Date Collected: 01/08/24 10:23

Matrix: Drinking Water

Date Received: 01/11/24 09:50

PWSID Number: HI0000331

Method: EPA 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluorohexanesulfonic acid (PFHxS)	2.6		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluorohexanoic acid (PFHxA)	2.2		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluorooctanesulfonic acid (PFOS)	2.4		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluorooctanoic acid (PFOA)	2.2		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluoropentanoic acid (PFPeA)	2.4		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	87		50 - 200	01/12/24 05:26	01/13/24 18:03	1
13C6 PFDA	89		50 - 200	01/12/24 05:26	01/13/24 18:03	1
13C5 PFHxA	89		50 - 200	01/12/24 05:26	01/13/24 18:03	1
13C4 PFHpA	91		50 - 200	01/12/24 05:26	01/13/24 18:03	1
13C8 PFOA	90		50 - 200	01/12/24 05:26	01/13/24 18:03	1
13C9 PFNA	88		50 - 200	01/12/24 05:26	01/13/24 18:03	1
13C7 PFUnA	88		50 - 200	01/12/24 05:26	01/13/24 18:03	1
13C2 PFDoA	89		50 - 200	01/12/24 05:26	01/13/24 18:03	1
13C4 PFBA	86		50 - 200	01/12/24 05:26	01/13/24 18:03	1
13C5 PFPeA	91		50 - 200	01/12/24 05:26	01/13/24 18:03	1
13C3 PFBS	101		50 - 200	01/12/24 05:26	01/13/24 18:03	1
13C3 PFHxS	100		50 - 200	01/12/24 05:26	01/13/24 18:03	1

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Client Sample Results

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Client Sample ID: HALAWA WELLS UNITS 1 (331-206-TP065)

Lab Sample ID: 380-78227-1

Date Collected: 01/08/24 10:23

Matrix: Drinking Water

Date Received: 01/11/24 09:50

PWSID Number: HI0000331

Method: EPA 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOS	99		50 - 200	01/12/24 05:26	01/13/24 18:03	1
13C2-4:2-FTS	112		50 - 200	01/12/24 05:26	01/13/24 18:03	1
13C2-6:2-FTS	99		50 - 200	01/12/24 05:26	01/13/24 18:03	1
13C2-8:2-FTS	102		50 - 200	01/12/24 05:26	01/13/24 18:03	1

Method: EPA 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
Perfluorooctanesulfonic acid (PFOS)	2.2		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
Perfluorohexanoic acid (PFHxA)	2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
Perfluorohexanesulfonic acid (PFHxS)	2.5		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:37	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac		
d5-NEtFOSAA	94		70 - 130	01/12/24 12:08	01/15/24 13:37	1		
13C2 PFHxA	104		70 - 130	01/12/24 12:08	01/15/24 13:37	1		
13C2 PFDA	101		70 - 130	01/12/24 12:08	01/15/24 13:37	1		
13C3-GenX	93		70 - 130	01/12/24 12:08	01/15/24 13:37	1		

Client Sample ID: FB: HALAWA WELLS UNITS 1 (331-206-TP065)

Lab Sample ID: 380-78227-2

Date Collected: 01/08/24 10:23

Matrix: Water

Date Received: 01/11/24 09:50

PWSID Number: HI0000331

Method: EPA 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1

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Client Sample Results

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

**Client Sample ID: FB: HALAWA WELLS UNITS 1
(331-206-TP065)**

Lab Sample ID: 380-78227-2

Date Collected: 01/08/24 10:23

Matrix: Water

Date Received: 01/11/24 09:50

PWSID Number: HI0000331

Method: EPA 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 18:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	105		50 - 200	01/12/24 05:26	01/13/24 18:23	1
13C6 PFDA	100		50 - 200	01/12/24 05:26	01/13/24 18:23	1
13C5 PFHxA	105		50 - 200	01/12/24 05:26	01/13/24 18:23	1
13C4 PFHpA	104		50 - 200	01/12/24 05:26	01/13/24 18:23	1
13C8 PFOA	103		50 - 200	01/12/24 05:26	01/13/24 18:23	1
13C9 PFNA	99		50 - 200	01/12/24 05:26	01/13/24 18:23	1
13C7 PFUnA	95		50 - 200	01/12/24 05:26	01/13/24 18:23	1
13C2 PFDoA	95		50 - 200	01/12/24 05:26	01/13/24 18:23	1
13C4 PFBA	103		50 - 200	01/12/24 05:26	01/13/24 18:23	1
13C5 PFPeA	100		50 - 200	01/12/24 05:26	01/13/24 18:23	1
13C3 PFBS	95		50 - 200	01/12/24 05:26	01/13/24 18:23	1
13C3 PFHxS	102		50 - 200	01/12/24 05:26	01/13/24 18:23	1
13C8 PFOS	98		50 - 200	01/12/24 05:26	01/13/24 18:23	1
13C2-4:2-FTS	106		50 - 200	01/12/24 05:26	01/13/24 18:23	1
13C2-6:2-FTS	102		50 - 200	01/12/24 05:26	01/13/24 18:23	1
13C2-8:2-FTS	92		50 - 200	01/12/24 05:26	01/13/24 18:23	1

Eurofins Eaton Analytical Pomona

Client Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

**Client Sample ID: FB: HALAWA WELLS UNITS 1
 (331-206-TP065)**

Lab Sample ID: 380-78227-2

Date Collected: 01/08/24 10:23

Matrix: Water

Date Received: 01/11/24 09:50

PWSID Number: HI0000331

Method: EPA 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
N-methylperfluorooctanesulfonamide cetic acid (NMeFOSAA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
N-ethylperfluorooctanesulfonamide cetic acid (NEtFOSAA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
Perfluorotridecanoic acid (PFTTrDA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		01/12/24 12:08	01/15/24 13:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	98		70 - 130	01/12/24 12:08	01/15/24 13:46	1
13C2 PFHxA	95		70 - 130	01/12/24 12:08	01/15/24 13:46	1
13C2 PFDA	97		70 - 130	01/12/24 12:08	01/15/24 13:46	1
13C3-GenX	93		70 - 130	01/12/24 12:08	01/15/24 13:46	1

Surrogate Summary

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Drinking Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		d5NEFOS (70-130)	PFHxA (70-130)	PFDA (70-130)	GenX (70-130)
380-78227-1	HALAWA WELLS UNITS 1 (331)	94	104	101	93

Surrogate Legend

d5NEFOS = d5-NEtFOSAA
 PFHxA = 13C2 PFHxA
 PFDA = 13C2 PFDA
 GenX = 13C3-GenX

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		d5NEFOS (70-130)	PFHxA (70-130)	PFDA (70-130)	GenX (70-130)
380-78227-2	FB: HALAWA WELLS UNITS 1 (	98	95	97	93
380-78239-E-1-A MS	Matrix Spike	99	100	98	93
380-78239-F-1-A MSD	Matrix Spike Duplicate	88	92	93	85
LCS 380-71412/23-A	Lab Control Sample	99	102	99	91
MBL 380-71412/21-A	Method Blank	95	91	97	85
MRL 380-71412/22-A	Lab Control Sample	96	93	93	88

Surrogate Legend

d5NEFOS = d5-NEtFOSAA
 PFHxA = 13C2 PFHxA
 PFDA = 13C2 PFDA
 GenX = 13C3-GenX

Isotope Dilution Summary

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Matrix: Drinking Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (50-200)	C6PFDA (50-200)	13C5PHA (50-200)	C4PFHA (50-200)	C8PFOA (50-200)	C9PFNA (50-200)	13C7PUA (50-200)	PFDaA (50-200)
380-78227-1	HALAWA WELLS UNITS 1 (331)	87	89	89	91	90	88	88	89

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (50-200)	PFPeA (50-200)	C3PFBS (50-200)	C3PFHS (50-200)	C8PFOS (50-200)	42FTS (50-200)	62FTS (50-200)	82FTS (50-200)
380-78227-1	HALAWA WELLS UNITS 1 (331)	86	91	101	100	99	112	99	102

Surrogate Legend

- HFPODA = 13C3 HFPO-DA
- C6PFDA = 13C6 PFDA
- 13C5PHA = 13C5 PFHxA
- C4PFHA = 13C4 PFHpA
- C8PFOA = 13C8 PFOA
- C9PFNA = 13C9 PFNA
- 13C7PUA = 13C7 PFUnA
- PFDaA = 13C2 PFDaA
- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- C3PFBS = 13C3 PFBS
- C3PFHS = 13C3 PFHxS
- C8PFOS = 13C8 PFOS
- 42FTS = 13C2-4:2-FTS
- 62FTS = 13C2-6:2-FTS
- 82FTS = 13C2-8:2-FTS

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (50-200)	C6PFDA (50-200)	13C5PHA (50-200)	C4PFHA (50-200)	C8PFOA (50-200)	C9PFNA (50-200)	13C7PUA (50-200)	PFDaA (50-200)
380-78227-2	FB: HALAWA WELLS UNITS 1 (	105	100	105	104	103	99	95	95
380-77931-AU-1-A MS	Matrix Spike	94	92	95	94	95	94	93	91
380-77931-AV-1-A MSD	Matrix Spike Duplicate	104	97	100	98	99	96	95	97
LCS 380-71342/23-A	Lab Control Sample	104	100	104	102	102	100	98	95
MBL 380-71342/21-A	Method Blank	98	96	102	102	101	94	90	89
MRL 380-71342/22-A	Lab Control Sample	103	98	105	105	101	99	92	95

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (50-200)	PFPeA (50-200)	C3PFBS (50-200)	C3PFHS (50-200)	C8PFOS (50-200)	42FTS (50-200)	62FTS (50-200)	82FTS (50-200)
380-78227-2	FB: HALAWA WELLS UNITS 1 (	103	100	95	102	98	106	102	92
380-77931-AU-1-A MS	Matrix Spike	91	98	95	95	96	97	91	96
380-77931-AV-1-A MSD	Matrix Spike Duplicate	96	101	93	96	93	103	93	97
LCS 380-71342/23-A	Lab Control Sample	100	100	96	98	96	101	93	93
MBL 380-71342/21-A	Method Blank	99	98	98	100	99	107	97	95
MRL 380-71342/22-A	Lab Control Sample	97	100	97	100	98	104	92	91

Surrogate Legend

- HFPODA = 13C3 HFPO-DA
- C6PFDA = 13C6 PFDA
- 13C5PHA = 13C5 PFHxA

Isotope Dilution Summary

Job ID: 380-78227-1

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

C4PFHA = 13C4 PFHpA
C8PFOA = 13C8 PFOA
C9PFNA = 13C9 PFNA
13C7PUA = 13C7 PFUnA
PFDoA = 13C2 PFDoA
PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
C3PFBS = 13C3 PFBS
C3PFHS = 13C3 PFHxS
C8PFOS = 13C8 PFOS
42FTS = 13C2-4:2-FTS
62FTS = 13C2-6:2-FTS
82FTS = 13C2-8:2-FTS

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Lab Sample ID: MBL 380-71342/21-A
Matrix: Water
Analysis Batch: 71524

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 71342

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosfluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorononanoic acid (PFNA)	<0.40		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorobutanoic acid (PFBA)	<0.69		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.38		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.37		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.48		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.47		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<0.25		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.46		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.15		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluoropentanoic acid (PFPeA)	<0.38		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.36		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluoropentanesulfonic acid (PFPeS)	<0.39		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	98		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C6 PFDA	96		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C5 PFHxA	102		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C4 PFHpA	102		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C8 PFOA	101		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C9 PFNA	94		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C7 PFUnA	90		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C2 PFDoA	89		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C4 PFBA	99		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C5 PFPeA	98		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C3 PFBS	98		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C3 PFHxS	100		50 - 200	01/12/24 05:26	01/13/24 15:50	1

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QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: MBL 380-71342/21-A
Matrix: Water
Analysis Batch: 71524

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 71342

Isotope Dilution	MBL MBL		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C8 PFOS	99		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C2-4:2-FTS	107		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C2-6:2-FTS	97		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C2-8:2-FTS	95		50 - 200	01/12/24 05:26	01/13/24 15:50	1

Lab Sample ID: LCS 380-71342/23-A
Matrix: Water
Analysis Batch: 71524

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71342

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	120	123		ng/L		102	70 - 130
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	120	117		ng/L		97	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	120	128		ng/L		106	70 - 130
Perfluorobutanesulfonic acid (PFBS)	120	125		ng/L		104	70 - 130
Perfluorodecanoic acid (PFDA)	120	122		ng/L		102	70 - 130
Perfluorododecanoic acid (PFDoA)	120	127		ng/L		106	70 - 130
Perfluoroheptanoic acid (PFHpA)	120	116		ng/L		96	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	120	122		ng/L		102	70 - 130
Perfluorohexanoic acid (PFHxA)	120	120		ng/L		99	70 - 130
Perfluorononanoic acid (PFNA)	120	124		ng/L		103	70 - 130
Perfluorooctanesulfonic acid (PFOS)	120	115		ng/L		95	70 - 130
Perfluorooctanoic acid (PFOA)	120	118		ng/L		98	70 - 130
Perfluoroundecanoic acid (PFUnA)	120	124		ng/L		103	70 - 130
Perfluorobutanoic acid (PFBA)	120	122		ng/L		101	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	120	131		ng/L		109	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	120	120		ng/L		100	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	120	126		ng/L		105	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	120	123		ng/L		102	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	120	122		ng/L		102	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	120	123		ng/L		102	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	120	122		ng/L		102	70 - 130
Perfluoropentanoic acid (PFPeA)	120	118		ng/L		98	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	120	121		ng/L		100	70 - 130

Eurofins Eaton Analytical Pomona

QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: LCS 380-71342/23-A
Matrix: Water
Analysis Batch: 71524

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71342

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanesulfonic acid (PFPeS)	120	124		ng/L		103	70 - 130
LCS LCS							
Isotope Dilution	%Recovery	Qualifier	Limits				
13C3 HFPO-DA	104		50 - 200				
13C6 PFDA	100		50 - 200				
13C5 PFHxA	104		50 - 200				
13C4 PFHpA	102		50 - 200				
13C8 PFOA	102		50 - 200				
13C9 PFNA	100		50 - 200				
13C7 PFUnA	98		50 - 200				
13C2 PFDoA	95		50 - 200				
13C4 PFBA	100		50 - 200				
13C5 PFPeA	100		50 - 200				
13C3 PFBS	96		50 - 200				
13C3 PFHxS	98		50 - 200				
13C8 PFOS	96		50 - 200				
13C2-4:2-FTS	101		50 - 200				
13C2-6:2-FTS	93		50 - 200				
13C2-8:2-FTS	93		50 - 200				

Lab Sample ID: MRL 380-71342/22-A
Matrix: Water
Analysis Batch: 71524

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71342

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	2.00	2.21	J	ng/L		110	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	2.00	2.20	J	ng/L		110	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.00	2.25	J	ng/L		112	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	2.22	J	ng/L		111	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.00	2.28	J	ng/L		114	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.40	J	ng/L		120	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.36	J	ng/L		118	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.25	J	ng/L		112	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.00	2.26	J	ng/L		113	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.19	J	ng/L		109	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.26	J	ng/L		113	50 - 150
Perfluorooctanesulfonic acid (PFOS)	2.00	2.44	J	ng/L		122	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.56	J	ng/L		128	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.29	J	ng/L		114	50 - 150
Perfluorobutanoic acid (PFBA)	2.00	2.42	J	ng/L		121	50 - 150

Eurofins Eaton Analytical Pomona

QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: MRL 380-71342/22-A
Matrix: Water
Analysis Batch: 71524

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71342

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	2.00	2.42	J	ng/L		121	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	2.00	2.46	J	ng/L		123	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	2.00	2.78	J	ng/L		139	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.00	2.39	J	ng/L		119	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	2.00	2.15	J	ng/L		107	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	2.44	J	ng/L		122	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	2.00	2.11	J	ng/L		105	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	2.57	J	ng/L		128	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	2.00	2.29	J	ng/L		114	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	2.00	2.22	J	ng/L		111	50 - 150

Isotope Dilution	MRL %Recovery	MRL Qualifier	MRL Limits
13C3 HFPO-DA	103		50 - 200
13C6 PFDA	98		50 - 200
13C5 PFHxA	105		50 - 200
13C4 PFHpA	105		50 - 200
13C8 PFOA	101		50 - 200
13C9 PFNA	99		50 - 200
13C7 PFUnA	92		50 - 200
13C2 PFDoA	95		50 - 200
13C4 PFBA	97		50 - 200
13C5 PFPeA	100		50 - 200
13C3 PFBS	97		50 - 200
13C3 PFHxS	100		50 - 200
13C8 PFOS	98		50 - 200
13C2-4:2-FTS	104		50 - 200
13C2-6:2-FTS	92		50 - 200
13C2-8:2-FTS	91		50 - 200

Lab Sample ID: 380-77931-AU-1-A MS
Matrix: Water
Analysis Batch: 71524

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 71342

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		120	118		ng/L		98	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		120	126		ng/L		105	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		120	121		ng/L		100	70 - 130

QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: 380-77931-AU-1-A MS
Matrix: Water
Analysis Batch: 71524

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 71342

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide	<2.0		120	131		ng/L		109	70 - 130
Dimer Acid (HFPO-DA/GenX)									
Perfluorobutanesulfonic acid (PFBS)	<2.0		120	125		ng/L		104	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		120	131		ng/L		109	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		120	131		ng/L		109	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		120	125		ng/L		104	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	<2.0		120	124		ng/L		104	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		120	125		ng/L		104	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		120	127		ng/L		106	70 - 130
Perfluorooctanesulfonic acid (PFOS)	<2.0		120	117		ng/L		98	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		120	123		ng/L		102	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		120	128		ng/L		106	70 - 130
Perfluorobutanoic acid (PFBA)	<2.0		120	132		ng/L		110	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		120	130		ng/L		108	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		120	133		ng/L		110	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		120	131		ng/L		109	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		120	130		ng/L		108	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<2.0		120	128		ng/L		107	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		120	130		ng/L		108	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		120	120		ng/L		100	70 - 130
Perfluoropentanoic acid (PFPeA)	<2.0		120	126		ng/L		105	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		120	121		ng/L		101	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	<2.0		120	129		ng/L		107	70 - 130

Isotope Dilution	MS MS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	94		50 - 200
13C6 PFDA	92		50 - 200
13C5 PFHxA	95		50 - 200
13C4 PFHpA	94		50 - 200
13C8 PFOA	95		50 - 200
13C9 PFNA	94		50 - 200
13C7 PFUnA	93		50 - 200
13C2 PFDoA	91		50 - 200
13C4 PFBA	91		50 - 200
13C5 PFPeA	98		50 - 200
13C3 PFBS	95		50 - 200
13C3 PFHxS	95		50 - 200
13C8 PFOS	96		50 - 200

QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: 380-77931-AU-1-A MS
Matrix: Water
Analysis Batch: 71524

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 71342

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
13C2-4:2-FTS	97		50 - 200
13C2-6:2-FTS	91		50 - 200
13C2-8:2-FTS	96		50 - 200

Lab Sample ID: 380-77931-AV-1-A MSD
Matrix: Water
Analysis Batch: 71524

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 71342

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		120	120		ng/L		100	70 - 130	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		120	127		ng/L		106	70 - 130	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		120	119		ng/L		99	70 - 130	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		120	122		ng/L		102	70 - 130	7	30
Perfluorobutanesulfonic acid (PFBS)	<2.0		120	118		ng/L		98	70 - 130	6	30
Perfluorodecanoic acid (PFDA)	<2.0		120	124		ng/L		103	70 - 130	6	30
Perfluorododecanoic acid (PFDoA)	<2.0		120	125		ng/L		104	70 - 130	5	30
Perfluoroheptanoic acid (PFHpA)	<2.0		120	119		ng/L		99	70 - 130	5	30
Perfluorohexanesulfonic acid (PFHxS)	<2.0		120	119		ng/L		99	70 - 130	4	30
Perfluorohexanoic acid (PFHxA)	<2.0		120	121		ng/L		100	70 - 130	4	30
Perfluorononanoic acid (PFNA)	<2.0		120	126		ng/L		105	70 - 130	1	30
Perfluorooctanesulfonic acid (PFOS)	<2.0		120	116		ng/L		97	70 - 130	1	30
Perfluorooctanoic acid (PFOA)	<2.0		120	121		ng/L		101	70 - 130	2	30
Perfluoroundecanoic acid (PFUnA)	<2.0		120	125		ng/L		104	70 - 130	2	30
Perfluorobutanoic acid (PFBA)	<2.0		120	128		ng/L		106	70 - 130	3	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		120	124		ng/L		103	70 - 130	5	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		120	120		ng/L		100	70 - 130	10	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		120	121		ng/L		101	70 - 130	8	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		120	130		ng/L		108	70 - 130	1	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<2.0		120	124		ng/L		103	70 - 130	4	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		120	125		ng/L		104	70 - 130	4	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		120	122		ng/L		101	70 - 130	1	30
Perfluoropentanoic acid (PFPeA)	<2.0		120	120		ng/L		100	70 - 130	5	30
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		120	120		ng/L		100	70 - 130	1	30
Perfluoropentanesulfonic acid (PFPeS)	<2.0		120	126		ng/L		105	70 - 130	2	30

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QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Isotope Dilution	MSD MSD		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	104		50 - 200
13C6 PFDA	97		50 - 200
13C5 PFHxA	100		50 - 200
13C4 PFHpA	98		50 - 200
13C8 PFOA	99		50 - 200
13C9 PFNA	96		50 - 200
13C7 PFUnA	95		50 - 200
13C2 PFDoA	97		50 - 200
13C4 PFBA	96		50 - 200
13C5 PFPeA	101		50 - 200
13C3 PFBS	93		50 - 200
13C3 PFHxS	96		50 - 200
13C8 PFOS	93		50 - 200
13C2-4:2-FTS	103		50 - 200
13C2-6:2-FTS	93		50 - 200
13C2-8:2-FTS	97		50 - 200

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MBL 380-71412/21-A
 Matrix: Water
 Analysis Batch: 71616

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 71412

Analyte	MBL MBL		RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.58		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.42		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
Perfluorononanoic acid (PFNA)	<0.40		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
Perfluorotetradecanoic acid (PFTA)	<0.54		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
Perfluorotridecanoic acid (PFTrDA)	<0.36		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0	ng/L		01/12/24 12:08	01/15/24 11:58	1
Surrogate	MBL MBL		Limits			Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier						
d5-NEtFOSAA	95		70 - 130			01/12/24 12:08	01/15/24 11:58	1
13C2 PFHxA	91		70 - 130			01/12/24 12:08	01/15/24 11:58	1
13C2 PFDA	97		70 - 130			01/12/24 12:08	01/15/24 11:58	1

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QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: MBL 380-71412/21-A
Matrix: Water
Analysis Batch: 71616

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 71412

<i>Surrogate</i>	<i>MBL</i>	<i>MBL</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3-GenX	85	Qualifier	70 - 130	01/12/24 12:08	01/15/24 11:58	1

Lab Sample ID: LCS 380-71412/23-A
Matrix: Water
Analysis Batch: 71616

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71412

<i>Analyte</i>	<i>Spike</i>	<i>LCS</i>	<i>LCS</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec</i>
	<i>Added</i>	<i>Result</i>	<i>Qualifier</i>				<i>Limits</i>
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	25.1	21.2		ng/L		84	70 - 130
Perfluorooctanesulfonic acid (PFOS)	25.1	23.9		ng/L		96	70 - 130
Perfluoroundecanoic acid (PFUnA)	25.1	23.7		ng/L		95	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	25.1	26.0		ng/L		104	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	25.1	25.4		ng/L		102	70 - 130
Perfluorohexanoic acid (PFHxA)	25.1	24.9		ng/L		99	70 - 130
Perfluorododecanoic acid (PFDoA)	25.1	22.8		ng/L		91	70 - 130
Perfluorooctanoic acid (PFOA)	25.1	24.0		ng/L		96	70 - 130
Perfluorodecanoic acid (PFDA)	25.1	22.7		ng/L		90	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	25.1	24.5		ng/L		98	70 - 130
Perfluorobutanesulfonic acid (PFBS)	25.1	23.5		ng/L		94	70 - 130
Perfluoroheptanoic acid (PFHpA)	25.1	23.8		ng/L		95	70 - 130
Perfluorononanoic acid (PFNA)	25.1	23.9		ng/L		96	70 - 130
Perfluorotetradecanoic acid (PFTA)	25.1	24.2		ng/L		97	70 - 130
Perfluorotridecanoic acid (PFTrDA)	25.1	28.0		ng/L		112	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	25.1	23.5		ng/L		94	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	25.1	22.0		ng/L		88	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	25.1	23.8		ng/L		95	70 - 130

<i>Surrogate</i>	<i>LCS</i>	<i>LCS</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
d5-NEtFOSAA	99		70 - 130
13C2 PFHxA	102		70 - 130
13C2 PFDA	99		70 - 130
13C3-GenX	91		70 - 130

QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: MRL 380-71412/22-A
Matrix: Water
Analysis Batch: 71616

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71412

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	1.83	J	ng/L		92	50 - 150
Perfluorooctanesulfonic acid (PFOS)	2.00	2.09	J	ng/L		104	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	1.99	J	ng/L		99	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.04	J	ng/L		102	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	2.08	J	ng/L		104	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.09	J	ng/L		104	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	1.94	J	ng/L		97	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.15	J	ng/L		107	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.01	J	ng/L		100	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.00	2.07	J	ng/L		103	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.00	1.97	J	ng/L		98	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	1.99	J	ng/L		99	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.06	J	ng/L		103	50 - 150
Perfluorotetradecanoic acid (PFTA)	2.00	2.10	J	ng/L		105	50 - 150
Perfluorotridecanoic acid (PFTrDA)	2.00	2.35	J	ng/L		117	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	2.00	1.98	J	ng/L		99	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	2.00	1.80	J	ng/L		90	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.00	1.93	J	ng/L		97	50 - 150

Surrogate	MRL %Recovery	MRL Qualifier	Limits
d5-NEtFOSAA	96		70 - 130
13C2 PFHxA	93		70 - 130
13C2 PFDA	93		70 - 130
13C3-GenX	88		70 - 130

Lab Sample ID: 380-78239-E-1-A MS
Matrix: Water
Analysis Batch: 71616

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 71412

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		25.1	19.9		ng/L		79	70 - 130
Perfluorooctanesulfonic acid (PFOS)	<2.0		25.1	25.1		ng/L		94	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		25.1	22.5		ng/L		90	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		25.1	24.2		ng/L		97	70 - 130

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QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: 380-78239-E-1-A MS
Matrix: Water
Analysis Batch: 71616

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 71412

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		25.1	24.0		ng/L		96	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		25.1	24.2		ng/L		93	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		25.1	21.5		ng/L		86	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		25.1	24.3		ng/L		94	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		25.1	22.7		ng/L		91	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	<2.0		25.1	25.2		ng/L		96	70 - 130
Perfluorobutanesulfonic acid (PFBS)	<2.0		25.1	25.0		ng/L		98	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		25.1	22.5		ng/L		88	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		25.1	23.2		ng/L		93	70 - 130
Perfluorotetradecanoic acid (PFTA)	<2.0		25.1	22.8		ng/L		91	70 - 130
Perfluorotridecanoic acid (PFTrDA)	<2.0		25.1	24.4		ng/L		98	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		25.1	23.0		ng/L		92	70 - 130
11-Chloroeicosasfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		25.1	21.0		ng/L		84	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		25.1	22.0		ng/L		88	70 - 130

Surrogate	MS %Recovery	MS Qualifier	MS Limits
d5-NEtFOSAA	99		70 - 130
13C2 PFHxA	100		70 - 130
13C2 PFDA	98		70 - 130
13C3-GenX	93		70 - 130

Lab Sample ID: 380-78239-F-1-A MSD
Matrix: Water
Analysis Batch: 71616

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 71412

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		25.1	19.8		ng/L		79	70 - 130	0	30
Perfluorooctanesulfonic acid (PFOS)	<2.0		25.1	25.5		ng/L		96	70 - 130	1	30
Perfluoroundecanoic acid (PFUnA)	<2.0		25.1	23.1		ng/L		92	70 - 130	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		25.1	23.2		ng/L		92	70 - 130	4	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		25.1	22.2		ng/L		88	70 - 130	8	30
Perfluorohexanoic acid (PFHxA)	<2.0		25.1	24.7		ng/L		95	70 - 130	2	30
Perfluorododecanoic acid (PFDoA)	<2.0		25.1	22.3		ng/L		89	70 - 130	4	30
Perfluorooctanoic acid (PFOA)	<2.0		25.1	24.3		ng/L		94	70 - 130	0	30
Perfluorodecanoic acid (PFDA)	<2.0		25.1	22.6		ng/L		90	70 - 130	0	30

Eurofins Eaton Analytical Pomona

QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: 380-78239-F-1-A MSD
Matrix: Water
Analysis Batch: 71616

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 71412

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanesulfonic acid (PFHxS)	<2.0		25.1	25.2		ng/L		96	70 - 130	0	30
Perfluorobutanesulfonic acid (PFBS)	<2.0		25.1	25.1		ng/L		98	70 - 130	0	30
Perfluoroheptanoic acid (PFHpA)	<2.0		25.1	22.1		ng/L		86	70 - 130	2	30
Perfluorononanoic acid (PFNA)	<2.0		25.1	23.4		ng/L		93	70 - 130	1	30
Perfluorotetradecanoic acid (PFTA)	<2.0		25.1	22.9		ng/L		91	70 - 130	0	30
Perfluorotridecanoic acid (PFTTrDA)	<2.0		25.1	24.3		ng/L		97	70 - 130	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		25.1	22.7		ng/L		91	70 - 130	1	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		25.1	21.5		ng/L		86	70 - 130	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		25.1	21.8		ng/L		87	70 - 130	1	30
Surrogate		MSD %Recovery	MSD Qualifier								Limits
d5-NEtFOSAA		88									70 - 130
13C2 PFHxA		92									70 - 130
13C2 PFDA		93									70 - 130
13C3-GenX		85									70 - 130

QC Association Summary

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

LCMS

Prep Batch: 71342

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-78227-1	HALAWA WELLS UNITS 1 (331-206-TP065)	Total/NA	Drinking Water	533	
380-78227-2	FB: HALAWA WELLS UNITS 1 (331-206-TP065)	Total/NA	Water	533	
MBL 380-71342/21-A	Method Blank	Total/NA	Water	533	
LCS 380-71342/23-A	Lab Control Sample	Total/NA	Water	533	
MRL 380-71342/22-A	Lab Control Sample	Total/NA	Water	533	
380-77931-AU-1-A MS	Matrix Spike	Total/NA	Water	533	
380-77931-AV-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	

Prep Batch: 71412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-78227-1	HALAWA WELLS UNITS 1 (331-206-TP065)	Total/NA	Drinking Water	537.1 DW	
380-78227-2	FB: HALAWA WELLS UNITS 1 (331-206-TP065)	Total/NA	Water	537.1 DW	
MBL 380-71412/21-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 380-71412/23-A	Lab Control Sample	Total/NA	Water	537.1 DW	
MRL 380-71412/22-A	Lab Control Sample	Total/NA	Water	537.1 DW	
380-78239-E-1-A MS	Matrix Spike	Total/NA	Water	537.1 DW	
380-78239-F-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	537.1 DW	

Analysis Batch: 71524

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-78227-1	HALAWA WELLS UNITS 1 (331-206-TP065)	Total/NA	Drinking Water	533	71342
380-78227-2	FB: HALAWA WELLS UNITS 1 (331-206-TP065)	Total/NA	Water	533	71342
MBL 380-71342/21-A	Method Blank	Total/NA	Water	533	71342
LCS 380-71342/23-A	Lab Control Sample	Total/NA	Water	533	71342
MRL 380-71342/22-A	Lab Control Sample	Total/NA	Water	533	71342
380-77931-AU-1-A MS	Matrix Spike	Total/NA	Water	533	71342
380-77931-AV-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	71342

Analysis Batch: 71616

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-78227-1	HALAWA WELLS UNITS 1 (331-206-TP065)	Total/NA	Drinking Water	537.1	71412
380-78227-2	FB: HALAWA WELLS UNITS 1 (331-206-TP065)	Total/NA	Water	537.1	71412
MBL 380-71412/21-A	Method Blank	Total/NA	Water	537.1	71412
LCS 380-71412/23-A	Lab Control Sample	Total/NA	Water	537.1	71412
MRL 380-71412/22-A	Lab Control Sample	Total/NA	Water	537.1	71412
380-78239-E-1-A MS	Matrix Spike	Total/NA	Water	537.1	71412
380-78239-F-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	537.1	71412

Lab Chronicle

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Client Sample ID: HALAWA WELLS UNITS 1 (331-206-TP065)

Lab Sample ID: 380-78227-1

Date Collected: 01/08/24 10:23

Matrix: Drinking Water

Date Received: 01/11/24 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			71342	XTD8	EA POM	01/12/24 05:26
Total/NA	Analysis	533		1	71524	SZ9R	EA POM	01/13/24 18:03
Total/NA	Prep	537.1 DW			71412	A5GB	EA POM	01/12/24 12:08
Total/NA	Analysis	537.1		1	71616	R6YA	EA POM	01/15/24 13:37

Client Sample ID: FB: HALAWA WELLS UNITS 1 (331-206-TP065)

Lab Sample ID: 380-78227-2

Date Collected: 01/08/24 10:23

Matrix: Water

Date Received: 01/11/24 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			71342	XTD8	EA POM	01/12/24 05:26
Total/NA	Analysis	533		1	71524	SZ9R	EA POM	01/13/24 18:23
Total/NA	Prep	537.1 DW			71412	A5GB	EA POM	01/12/24 12:08
Total/NA	Analysis	537.1		1	71616	R6YA	EA POM	01/15/24 13:46

Laboratory References:

EA POM = Eurofins Eaton Analytical Pomona, 941 Corporate Center Drive, Pomona, CA 91768-2642, TEL (626)386-1100

Accreditation/Certification Summary

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Laboratory: Eurofins Eaton Analytical Pomona

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Hawaii	State	CA00006	01-31-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
533	533	Drinking Water	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
533	533	Drinking Water	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)
533	533	Drinking Water	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)
533	533	Drinking Water	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)
533	533	Drinking Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
533	533	Drinking Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)
533	533	Drinking Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
533	533	Drinking Water	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)
533	533	Drinking Water	Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)
533	533	Drinking Water	Perfluoro-3-methoxypropanoic acid (PFMPA)
533	533	Drinking Water	Perfluoro-4-methoxybutanoic acid (PFMBA)
533	533	Drinking Water	Perfluorobutanoic acid (PFBA)
533	533	Drinking Water	Perfluoroheptanesulfonic acid (PFHpS)
533	533	Drinking Water	Perfluoropentanesulfonic acid (PFPeS)
533	533	Drinking Water	Perfluoropentanoic acid (PFPeA)
533	533	Water	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
533	533	Water	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)
533	533	Water	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)
533	533	Water	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)
533	533	Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
533	533	Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)
533	533	Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
533	533	Water	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)
533	533	Water	Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)
533	533	Water	Perfluoro-3-methoxypropanoic acid (PFMPA)
533	533	Water	Perfluoro-4-methoxybutanoic acid (PFMBA)
533	533	Water	Perfluorobutanoic acid (PFBA)
533	533	Water	Perfluoroheptanesulfonic acid (PFHpS)
533	533	Water	Perfluoropentanesulfonic acid (PFPeS)

Accreditation/Certification Summary

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Laboratory: Eurofins Eaton Analytical Pomona (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
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The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
533	533	Water	Perfluoropentanoic acid (PFPeA)
537.1	537.1 DW	Drinking Water	11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
537.1	537.1 DW	Drinking Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
537.1	537.1 DW	Drinking Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)
537.1	537.1 DW	Drinking Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
537.1	537.1 DW	Water	11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
537.1	537.1 DW	Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
537.1	537.1 DW	Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)
537.1	537.1 DW	Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)



Method Summary

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Method	Method Description	Protocol	Laboratory
533	Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water	EPA	EA POM
537.1	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA POM
533	Extraction of Perfluorinated and Polyfluorinated Alkyl Acids	EPA	EA POM
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	EA POM

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA POM = Eurofins Eaton Analytical Pomona, 941 Corporate Center Drive, Pomona, CA 91768-2642, TEL (626)386-1100



Sample Summary

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78227-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	PWSID Number
380-78227-1	HALAWA WELLS UNITS 1 (331-206-TP065)	Drinking Water	01/08/24 10:23	01/11/24 09:50	HI0000331
380-78227-2	FB: HALAWA WELLS UNITS 1 (331-206-TP065)	Water	01/08/24 10:23	01/11/24 09:50	HI0000331

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Monrovia, CA (Suite 100)
 750 Royal Oaks Drive Suite 100
 Monrovia, CA 91016
 Phone (626) 366-1100

Chain of Custody Record



Environment Testing
 America

Client Information Client Contact: Dr Ron Fenstermacher Phone: 808-748-5840 City and County of Honolulu Address: 630 South Beretania St. Chemistry Lab City: Honolulu State, Zip: Hawaii 96843 Phone: 808-748-5841 Email: RFENSTERMACHER@hbws.org Project Name: RED HILL/HBWS Sites Event Desc. RUSH Weekly Red Hill Site: Hawaii		Lab PM: Arada, Rachelle E-Mail: Rachelle.Arada@et.eurofins.com PWSID:		Carrier Tracking No(s): State of Origin:		COC No: Page: Page 1 of 1 Job #:			
Due Date Requested: TAT Requested (days): Standard Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No PO #: C20525101 exp 05312023 WC #:		Analysis Requested SUBCONTRACT - 625 PAH Physis LL (EAL) + TICs SUBCONTRACT - 8015 Gas (Purgeable) LL (EAL) SUBCONTRACT - 8015 Diesel LL (EAL) and Motor Oil 525.2.PREC. (MOD) 525 Plus Plus TICs SUBCONTRACT - 8015 Gas (Purgeable) LL (EAL) 537.1.DW.PREC - 537.1 Full List 533 - All Analytes		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: ammonium acetate		Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4.5 Y - Trizma Z - other (specify) ammonium acetate		Total Number of Containers:	
Sample Identification Sample Date: 1/8/24 Sample Time: 1023 Sample Type (C=Comp, G=grab): G Matrix (W=water, G=solid, O=wastewat, BT=Tissue, A=Air)		Field Filtered Sample (Yes or No): Perform MS/MSD (Yes or No):		Special Instructions/Note:		Temp blank: 0.5 °C			
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		380-78227 COC			
Empty Kit Relinquished by Relinquished by: Lestli Laanui Relinquished by: Relinquished by:		Date: 1-10-2024 1200 Date/Time: 01/11/2024 09:50 Date/Time:		Method of Shipment: FED EX 7747 5382 4481 Date/Time:		Company: HBWS Company:			
Custody Seal No.: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Cooler Temperature(s) °C and Other Remarks: (75A) 1.2°-0.1°=11° Gel-Frozen		Received by: GRETNER Received by:		Company:			

Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-78227-1

Login Number: 78227

List Number: 1

Creator: Do, Michelle

List Source: Eurofins Eaton Analytical Pomona

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

