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ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Erwin Kawata
City & County of Honolulu
630 South Beretania Street
Public Service Bldg. Room 310
Honolulu, Hawaii 96843

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JOB DESCRIPTION

RED-HILL

JOB NUMBER

380-140544-1

Eurofins Eaton Analytical Pomona

Job Notes

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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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Authorized for release by
Rachelle Arada, Project Manager
Rachelle.Arada@et.eurofinsus.com
(626)386-1106



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Definitions/Glossary

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

Job ID: 380-140544-1

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.
☼	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

Job ID: 380-140544-1

Job ID: 380-140544-1

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Job Narrative 380-140544-1

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 and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided 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 3/13/2025 9:29 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 1.3°C.

PFAS

Method 533: The method blank associated with preparation batch 380-141893 and analytical batch 380-142040 contained 1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) greater than one-third the reporting limit (RL). This has also caused MRL check to fail, biased high. The samples could not be re-analyzed because there is insufficient volume for re-extraction. Results not acceptable per method. Sample results showed detections. Data for both field sample and field blank excluded due to this QC failure.

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

Job ID: 380-140544-1

Client Sample ID: Halawa Shaft Viewing Pool

Lab Sample ID: 380-140544-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	3.6		2.0	ng/L	1		537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.9		2.0	ng/L	1		537.1	Total/NA

Client Sample ID: FB: Halawa Shaft Viewing Pool

Lab Sample ID: 380-140544-2

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

Job ID: 380-140544-1

Client Sample ID: Halawa Shaft Viewing Pool

Lab Sample ID: 380-140544-1

Date Collected: 03/11/25 10:00

Matrix: Water

Date Received: 03/13/25 09:29

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		03/14/25 04:08	03/14/25 17:07	1
Perfluorooctanesulfonic acid (PFOS)	3.6		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
Perfluorohexanesulfonic acid (PFHxS)	3.9		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 17:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	110		70 - 130	03/14/25 04:08	03/14/25 17:07	1
13C2 PFHxA	117		70 - 130	03/14/25 04:08	03/14/25 17:07	1
13C2 PFDA	120		70 - 130	03/14/25 04:08	03/14/25 17:07	1
13C3-GenX	114		70 - 130	03/14/25 04:08	03/14/25 17:07	1

Client Sample ID: FB: Halawa Shaft Viewing Pool

Lab Sample ID: 380-140544-2

Date Collected: 03/11/25 10:00

Matrix: Water

Date Received: 03/13/25 09:29

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		03/14/25 04:08	03/14/25 18:35	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1

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Client Sample Results

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

Job ID: 380-140544-1

Client Sample ID: FB: Halawa Shaft Viewing Pool

Lab Sample ID: 380-140544-2

Date Collected: 03/11/25 10:00

Matrix: Water

Date Received: 03/13/25 09:29

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		03/14/25 04:08	03/14/25 18:35	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	112		70 - 130			03/14/25 04:08	03/14/25 18:35	1
13C2 PFHxA	115		70 - 130			03/14/25 04:08	03/14/25 18:35	1
13C2 PFDA	121		70 - 130			03/14/25 04:08	03/14/25 18:35	1
13C3-GenX	113		70 - 130			03/14/25 04:08	03/14/25 18:35	1

Action Limit Summary

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

Job ID: 380-140544-1

Client Sample ID: Halawa Shaft Viewing Pool

Lab Sample ID: 380-140544-1

Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits have been highlighted for your convenience.

Analyte	Result	Qualifier	Unit	EPAMCL	RL	Method	Prep Type
				Limit			
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	537.1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.6		ng/L	4	2.0	537.1	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.9		ng/L	10	2.0	537.1	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	537.1	Total/NA

Client Sample ID: FB: Halawa Shaft Viewing Pool

Lab Sample ID: 380-140544-2

Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits have been highlighted for your convenience.

Analyte	Result	Qualifier	Unit	EPAMCL	RL	Method	Prep Type
				Limit			
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	537.1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	<2.0		ng/L	4	2.0	537.1	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	<2.0		ng/L	10	2.0	537.1	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	537.1	Total/NA

Surrogate Summary

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

Job ID: 380-140544-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	d5NEFOS	PFHxA	PFDA	GenX
		(70-130)	(70-130)	(70-130)	(70-130)
380-140544-1	Halawa Shaft Viewing Pool	110	117	120	114
380-140544-1 MS	Halawa Shaft Viewing Pool	107	116	118	114
380-140544-1 MSD	Halawa Shaft Viewing Pool	106	120	123	118
380-140544-2	FB: Halawa Shaft Viewing Pool	112	115	121	113
LCS 380-141879/22-A	Lab Control Sample	106	108	115	105
MBL 380-141879/20-A	Method Blank	114	110	118	108
MRL 380-141879/21-A	Lab Control Sample	105	118	123	117

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

Job ID: 380-140544-1

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)	PFDoA (50-200)
380-140544-1	Halawa Shaft Viewing Pool	93	94	92	94	96	97	92	91
380-140753-AV-1-A MS	Matrix Spike	103	105	101	107	106	107	102	103
380-140753-AW-1-A MSD	Matrix Spike Duplicate	106	105	104	109	109	109	104	103
LCS 380-142152/22-A	Lab Control Sample	96	101	98	103	103	104	101	98
MBL 380-142152/20-A	Method Blank	105	110	111	113	114	112	104	104
MRL 380-142152/21-A	Lab Control Sample	98	106	104	109	109	108	103	104

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)
380-140544-1	Halawa Shaft Viewing Pool	99	101	104	101	105	136	131	112
380-140753-AV-1-A MS	Matrix Spike	106	109	107	108	109	129	130	116
380-140753-AW-1-A MSD	Matrix Spike Duplicate	107	112	105	106	110	132	132	119
LCS 380-142152/22-A	Lab Control Sample	99	103	101	106	107	118	123	109
MBL 380-142152/20-A	Method Blank	107	109	113	111	113	137	134	118
MRL 380-142152/21-A	Lab Control Sample	105	108	107	104	107	133	135	112

Surrogate Legend

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

QC Sample Results

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

Job ID: 380-140544-1

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

Lab Sample ID: MBL 380-141879/20-A
Matrix: Water
Analysis Batch: 142012

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 141879

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.58		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.42		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
Perfluorononanoic acid (PFNA)	<0.40		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
Perfluorotetradecanoic acid (PFTA)	<0.54		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
Perfluorotridecanoic acid (PFTrDA)	<0.36		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<0.30		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0	ng/L		03/14/25 04:08	03/14/25 16:37	1
Surrogate	MBL %Recovery	MBL Qualifier	Limits			Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	114		70 - 130			03/14/25 04:08	03/14/25 16:37	1
13C2 PFHxA	110		70 - 130			03/14/25 04:08	03/14/25 16:37	1
13C2 PFDA	118		70 - 130			03/14/25 04:08	03/14/25 16:37	1
13C3-GenX	108		70 - 130			03/14/25 04:08	03/14/25 16:37	1

Lab Sample ID: LCS 380-141879/22-A
Matrix: Water
Analysis Batch: 142012

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 141879

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	25.1	25.4		ng/L		101	70 - 130
Perfluorooctanesulfonic acid (PFOS)	25.1	27.8		ng/L		111	70 - 130
Perfluoroundecanoic acid (PFUnA)	25.1	27.6		ng/L		110	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	25.1	26.9		ng/L		107	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	25.1	25.9		ng/L		103	70 - 130
Perfluorohexanoic acid (PFHxA)	25.1	25.9		ng/L		103	70 - 130
Perfluorododecanoic acid (PFDoA)	25.1	26.1		ng/L		104	70 - 130
Perfluorooctanoic acid (PFOA)	25.1	26.8		ng/L		107	70 - 130
Perfluorodecanoic acid (PFDA)	25.1	28.4		ng/L		113	70 - 130

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QC Sample Results

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

Job ID: 380-140544-1

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

Lab Sample ID: LCS 380-141879/22-A
Matrix: Water
Analysis Batch: 142012

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 141879

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	25.1	27.2		ng/L		109	70 - 130
Perfluorobutanesulfonic acid (PFBS)	25.1	25.7		ng/L		102	70 - 130
Perfluoroheptanoic acid (PFHpA)	25.1	27.2		ng/L		108	70 - 130
Perfluorononanoic acid (PFNA)	25.1	28.5		ng/L		114	70 - 130
Perfluorotetradecanoic acid (PFTA)	25.1	27.2		ng/L		108	70 - 130
Perfluorotridecanoic acid (PFTTrDA)	25.1	26.6		ng/L		106	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	25.1	25.9		ng/L		103	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	25.1	27.3		ng/L		109	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	25.1	26.8		ng/L		107	70 - 130
LCS LCS							
Surrogate	%Recovery	Qualifier	Limits				
d5-NEtFOSAA	106		70 - 130				
13C2 PFHxA	108		70 - 130				
13C2 PFDA	115		70 - 130				
13C3-GenX	105		70 - 130				

Lab Sample ID: MRL 380-141879/21-A
Matrix: Water
Analysis Batch: 142012

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 141879

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	2.11	J	ng/L		105	50 - 150
Perfluorooctanesulfonic acid (PFOS)	2.00	2.25	J	ng/L		112	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.26	J	ng/L		113	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.07	J	ng/L		103	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	2.06	J	ng/L		103	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.20	J	ng/L		110	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.20	J	ng/L		110	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.22	J	ng/L		111	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.34	J	ng/L		117	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.00	2.19	J	ng/L		109	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.00	2.06	J	ng/L		103	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.27	J	ng/L		113	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.34	J	ng/L		117	50 - 150
Perfluorotetradecanoic acid (PFTA)	2.00	2.39	J	ng/L		119	50 - 150

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-140544-1

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

Lab Sample ID: MRL 380-141879/21-A
Matrix: Water
Analysis Batch: 142012

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 141879

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorotridecanoic acid (PFTTrDA)	2.00	2.27	J	ng/L		113	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	2.00	2.07	J	ng/L		103	50 - 150
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	2.00	2.13	J	ng/L		106	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.00	2.18	J	ng/L		109	50 - 150
Surrogate							
		MRL %Recovery	MRL Qualifier				Limits
d5-NEtFOSAA		105					70 - 130
13C2 PFHxA		118					70 - 130
13C2 PFDA		123					70 - 130
13C3-GenX		117					70 - 130

Lab Sample ID: 380-140544-1 MS
Matrix: Water
Analysis Batch: 142012

Client Sample ID: Halawa Shaft Viewing Pool
Prep Type: Total/NA
Prep Batch: 141879

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		25.2	26.2		ng/L		104	70 - 130
Perfluorooctanesulfonic acid (PFOS)	3.6		25.2	30.5		ng/L		107	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		25.2	27.5		ng/L		109	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		25.2	26.5		ng/L		105	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		25.2	26.0		ng/L		103	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		25.2	28.8		ng/L		109	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		25.2	26.1		ng/L		104	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		25.2	29.0		ng/L		111	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		25.2	29.0		ng/L		115	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	3.9		25.2	30.5		ng/L		106	70 - 130
Perfluorobutanesulfonic acid (PFBS)	<2.0		25.2	27.7		ng/L		108	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		25.2	28.3		ng/L		110	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		25.2	28.5		ng/L		113	70 - 130
Perfluorotetradecanoic acid (PFTA)	<2.0		25.2	27.4		ng/L		109	70 - 130
Perfluorotridecanoic acid (PFTTrDA)	<2.0		25.2	27.3		ng/L		109	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		25.2	25.5		ng/L		101	70 - 130
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		25.2	27.5		ng/L		109	70 - 130

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-140544-1

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

Lab Sample ID: 380-140544-1 MS
Matrix: Water
Analysis Batch: 142012

Client Sample ID: Halawa Shaft Viewing Pool
Prep Type: Total/NA
Prep Batch: 141879

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		25.2	27.3		ng/L		108	70 - 130
Surrogate	%Recovery	MS MS Qualifier	Limits						
d5-NEtFOSAA	107		70 - 130						
13C2 PFHxA	116		70 - 130						
13C2 PFDA	118		70 - 130						
13C3-GenX	114		70 - 130						

Lab Sample ID: 380-140544-1 MSD
Matrix: Water
Analysis Batch: 142012

Client Sample ID: Halawa Shaft Viewing Pool
Prep Type: Total/NA
Prep Batch: 141879

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		25.2	27.3		ng/L		108	70 - 130	4	30
Perfluorooctanesulfonic acid (PFOS)	3.6		25.2	31.1		ng/L		109	70 - 130	2	30
Perfluoroundecanoic acid (PFUnA)	<2.0		25.2	28.7		ng/L		114	70 - 130	4	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		25.2	26.6		ng/L		105	70 - 130	0	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		25.2	25.9		ng/L		103	70 - 130	0	30
Perfluorohexanoic acid (PFHxA)	<2.0		25.2	29.3		ng/L		110	70 - 130	2	30
Perfluorododecanoic acid (PFDoA)	<2.0		25.2	27.9		ng/L		111	70 - 130	6	30
Perfluorooctanoic acid (PFOA)	<2.0		25.2	29.3		ng/L		112	70 - 130	1	30
Perfluorodecanoic acid (PFDA)	<2.0		25.2	29.7		ng/L		118	70 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)	3.9		25.2	31.3		ng/L		109	70 - 130	3	30
Perfluorobutanesulfonic acid (PFBS)	<2.0		25.2	27.3		ng/L		107	70 - 130	1	30
Perfluoroheptanoic acid (PFHpA)	<2.0		25.2	29.4		ng/L		114	70 - 130	4	30
Perfluorononanoic acid (PFNA)	<2.0		25.2	30.0		ng/L		119	70 - 130	5	30
Perfluorotetradecanoic acid (PFTA)	<2.0		25.2	28.5		ng/L		113	70 - 130	4	30
Perfluorotridecanoic acid (PFTTrDA)	<2.0		25.2	28.4		ng/L		113	70 - 130	4	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		25.2	26.1		ng/L		103	70 - 130	2	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		25.2	28.4		ng/L		113	70 - 130	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		25.2	28.2		ng/L		112	70 - 130	3	30
Surrogate	%Recovery	MSD MSD Qualifier	Limits								
d5-NEtFOSAA	106		70 - 130								
13C2 PFHxA	120		70 - 130								
13C2 PFDA	123		70 - 130								

QC Sample Results

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

Job ID: 380-140544-1

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

Lab Sample ID: 380-140544-1 MSD
Matrix: Water
Analysis Batch: 142012

Client Sample ID: Halawa Shaft Viewing Pool
Prep Type: Total/NA
Prep Batch: 141879

<i>Surrogate</i>	<i>MSD</i>	<i>MSD</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C3-GenX	118		70 - 130

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QC Association Summary

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

Job ID: 380-140544-1

LCMS

Prep Batch: 141879

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-140544-1	Halawa Shaft Viewing Pool	Total/NA	Water	537.1 DW	
380-140544-2	FB: Halawa Shaft Viewing Pool	Total/NA	Water	537.1 DW	
MBL 380-141879/20-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 380-141879/22-A	Lab Control Sample	Total/NA	Water	537.1 DW	
MRL 380-141879/21-A	Lab Control Sample	Total/NA	Water	537.1 DW	
380-140544-1 MS	Halawa Shaft Viewing Pool	Total/NA	Water	537.1 DW	
380-140544-1 MSD	Halawa Shaft Viewing Pool	Total/NA	Water	537.1 DW	

Analysis Batch: 142012

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-140544-1	Halawa Shaft Viewing Pool	Total/NA	Water	537.1	141879
380-140544-2	FB: Halawa Shaft Viewing Pool	Total/NA	Water	537.1	141879
MBL 380-141879/20-A	Method Blank	Total/NA	Water	537.1	141879
LCS 380-141879/22-A	Lab Control Sample	Total/NA	Water	537.1	141879
MRL 380-141879/21-A	Lab Control Sample	Total/NA	Water	537.1	141879
380-140544-1 MS	Halawa Shaft Viewing Pool	Total/NA	Water	537.1	141879
380-140544-1 MSD	Halawa Shaft Viewing Pool	Total/NA	Water	537.1	141879



Lab Chronicle

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

Job ID: 380-140544-1

Client Sample ID: Halawa Shaft Viewing Pool

Lab Sample ID: 380-140544-1

Date Collected: 03/11/25 10:00

Matrix: Water

Date Received: 03/13/25 09:29

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	537.1 DW			141879	G9MN	EA POM	03/14/25 04:08
Total/NA	Analysis	537.1		1	142012	Y5FM	EA POM	03/14/25 17:07

Client Sample ID: FB: Halawa Shaft Viewing Pool

Lab Sample ID: 380-140544-2

Date Collected: 03/11/25 10:00

Matrix: Water

Date Received: 03/13/25 09:29

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	537.1 DW			141879	G9MN	EA POM	03/14/25 04:08
Total/NA	Analysis	537.1		1	142012	Y5FM	EA POM	03/14/25 18:35

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

Job ID: 380-140544-1

Laboratory: Eurofins Eaton Analytical Pomona

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Hawaii	State	CA00006	01-31-25 *

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* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

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

Job ID: 380-140544-1

Method	Method Description	Protocol	Laboratory
537.1	Perfluorinated Alkyl Acids (LC/MS)	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

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Sample Summary

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

Job ID: 380-140544-1

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Collected</u>	<u>Received</u>
380-140544-1	Halawa Shaft Viewing Pool	Water	03/11/25 10:00	03/13/25 09:29
380-140544-2	FB: Halawa Shaft Viewing Pool	Water	03/11/25 10:00	03/13/25 09:29

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Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-140544-1

Login Number: 140544

List Source: Eurofins Eaton Analytical Pomona

List Number: 1

Creator: Sanchez Velasquez, Gustavo

Question	Answer	Comment
The coolers custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler(s) Temperature is acceptable.	True	
Cooler(s) Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and is 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	
CIO4 headspace requirement met (>50% for CA, >30% for other states).	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	