

ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Erwin Kawata
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630 South Beretania Street
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JOB DESCRIPTION

RED-HILL
RUSH Weekly Red Hill

JOB NUMBER

380-37893-1

Eurofins Eaton Analytical Pomona

Job Notes

Laboratory certifies that the test results meet all TNI 2016 and ISO/IEC 17025:2017 requirements unless noted under the individual analysis.

Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report, Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.

Test results relate only to the sample(s) tested.

Test results apply to the sample(s) as received, unless otherwise noted in the comments report (ISO/IEC 17025:2017).

This report shall not be reproduced except in full, without the written approval of the laboratory.

This report includes ISO/IEC 17025 and non-ISO 17025 accredited methods.

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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Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	6
Detection Summary	7
Client Sample Results	8
Action Limit Summary	13
Surrogate Summary	14
Isotope Dilution Summary	18
QC Sample Results	20
QC Association Summary	43
Lab Chronicle	46
Certification Summary	47
Method Summary	49
Sample Summary	50
Subcontract Data	51
Chain of Custody	108
Receipt Checklists	113



Definitions/Glossary

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

Job ID: 380-37893-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*3	ISTD response or retention time outside acceptable limits.
B	Analyte was found in the associated method blank.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1-	Surrogate recovery exceeds control limits, low biased.

GC/MS Semi VOA TICs

Qualifier	Qualifier Description
J	Indicates an Estimated Value for TICs
N	Presumptive evidence of material.
T	Result is a tentatively identified compound (TIC) and an estimated value.

LCMS

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Subcontract

Qualifier	Qualifier Description
U	This analyte was not detected.

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)

Definitions/Glossary

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

Job ID: 380-37893-1

Glossary (Continued)

Abbreviation **These commonly used abbreviations may or may not be present in this report.**

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

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Case Narrative

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

Job ID: 380-37893-1

Job ID: 380-37893-1

Laboratory: Eurofins Eaton Analytical Pomona

Narrative

Job Narrative 380-37893-1

Comments

No additional comments.

Receipt

The samples were received on 2/15/2023 10:30 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 was 1.5° C.

GC/MS Semi VOA

Method 525.2: Batch LCS and MB were extracted with poor extraction media and therefore failed criteria. The samples could not be re-extracted due to hold time. Samples were reanalyzed with LCS and MB from a different extraction batch. This is not acceptable for compliance samples, however some clients may accept the data. MOANALUA WELLS (331-223-TP202) (380-37893-1)

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

LCMS

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

Subcontract non-Sister

See attached subcontract report.

Organic Prep

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

Subcontract Work

Methods 8015 Gas (Purgeable) LL (EAL), 8015 LL DRO/MRO/JP5/JP8: These methods were subcontracted to EMAX Laboratories Inc. The subcontract laboratory certifications are different from that of the facility issuing the final report.

Method 625 PAH Physis LL (EAL) + TICs: This method was subcontracted to Physis Environmental Laboratories. The subcontract laboratory certification is different from that of the facility issuing the final report.

Detection Summary

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

Job ID: 380-37893-1

Client Sample ID: MOANALUA WELLS (331-223-TP202)
PWSID Number: HI0000331

Lab Sample ID: 380-37893-1

No Detections.

Client Sample ID: TB:MOANALUA WELLS (331-223-TP202)

Lab Sample ID: 380-37893-2

No Detections.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18

This Detection Summary does not include radiochemical test results.

Eurofins Eaton Analytical Pomona

Client Sample Results

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

Job ID: 380-37893-1

Client Sample ID: MOANALUA WELLS (331-223-TP202)

Lab Sample ID: 380-37893-1

Date Collected: 02/14/23 10:08

Matrix: Drinking Water

Date Received: 02/15/23 10:30

PWSID Number: HI0000331

Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
2,4'-DDE	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
2,4'-DDT	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
2,4-Dinitrotoluene	ND	*-	0.49	ug/L		02/28/23 09:00	03/02/23 06:39	1
2,6-Dinitrotoluene	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
4,4'-DDD	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
4,4'-DDE	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
4,4'-DDT	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Acenaphthene	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Acenaphthylene	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Acetochlor	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Alachlor	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
alpha-BHC	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
alpha-Chlordane	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Anthracene	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Atrazine	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Benz(a)anthracene	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Benzo[a]pyrene	ND		0.020	ug/L		02/28/23 09:00	03/02/23 06:39	1
Benzo[b]fluoranthene	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Benzo[g,h,i]perylene	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Benzo[k]fluoranthene	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
beta-BHC	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Bis(2-ethylhexyl) phthalate	ND	*-	0.59	ug/L		02/28/23 09:00	03/02/23 06:39	1
Bromacil	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Butachlor	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Butylbenzylphthalate	ND		0.99	ug/L		02/28/23 09:00	03/02/23 06:39	1
Chlorobenzilate	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Chloroneb	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Chlorothalonil (Draconil, Bravo)	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Chlorpyrifos	ND		0.049	ug/L		02/28/23 09:00	03/02/23 06:39	1
Chrysene	ND	*+	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
delta-BHC	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Di(2-ethylhexyl)adipate	ND		0.59	ug/L		02/28/23 09:00	03/02/23 06:39	1
Dibenz(a,h)anthracene	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Diclorvos (DDVP)	ND	*-	0.049	ug/L		02/28/23 09:00	03/02/23 06:39	1
Dieldrin	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Diethylphthalate	ND	*-	0.99	ug/L		02/28/23 09:00	03/02/23 06:39	1
Dimethylphthalate	ND	*-	0.99	ug/L		02/28/23 09:00	03/02/23 06:39	1
Di-n-octyl phthalate	ND	*-	2.0	ug/L		02/28/23 09:00	03/02/23 06:39	1
Di-n-butyl phthalate	ND		2.0	ug/L		02/28/23 09:00	03/02/23 06:39	1
Endosulfan I (Alpha)	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Endosulfan II (Beta)	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Endosulfan sulfate	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Endrin	ND		0.0099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Endrin aldehyde	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
EPTC	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Fluoranthene	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Fluorene	ND	*+	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
gamma-Chlordane	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1

Eurofins Eaton Analytical Pomona

Client Sample Results

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

Job ID: 380-37893-1

Client Sample ID: MOANALUA WELLS (331-223-TP202)

Lab Sample ID: 380-37893-1

Date Collected: 02/14/23 10:08

Matrix: Drinking Water

Date Received: 02/15/23 10:30

PWSID Number: HI0000331

Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlor	ND		0.039	ug/L		02/28/23 09:00	03/02/23 06:39	1
Heptachlor epoxide (isomer B)	ND	*-	0.020	ug/L		02/28/23 09:00	03/02/23 06:39	1
Hexachlorocyclopentadiene	ND	**	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Hexachlorobenzene	ND	**	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Indeno[1,2,3-cd]pyrene	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Isophorone	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
gamma-BHC (Lindane)	ND	*-	0.020	ug/L		02/28/23 09:00	03/02/23 06:39	1
Malathion	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Methoxychlor	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Metolachlor	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Metribuzin	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Molinate	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Naphthalene	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Parathion	ND		0.49	ug/L		02/28/23 09:00	03/02/23 06:39	1
Phenanthrene	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Propachlor	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Pyrene	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Simazine	ND	*-	0.069	ug/L		02/28/23 09:00	03/02/23 06:39	1
Terbacil	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Thiobencarb	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Total Permethrin (mixed isomers)	ND		0.20	ug/L		02/28/23 09:00	03/02/23 06:39	1
trans-Nonachlor	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Trifluralin	ND	**	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Pendimethalin (Penoxaline)	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
Terbuthylazine	ND	*-	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
1-Methylnaphthalene	ND	B	0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
2-Methylnaphthalene	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
cis-Permethrin	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1
trans-Permethrin	ND		0.099	ug/L		02/28/23 09:00	03/02/23 06:39	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L			N/A	02/28/23 09:00	03/02/23 06:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Nitro-m-xylene	95		70 - 130	02/28/23 09:00	03/02/23 06:39	1
Triphenylphosphate	98		70 - 130	02/28/23 09:00	03/02/23 06:39	1
Perylene-d12	88		70 - 130	02/28/23 09:00	03/02/23 06:39	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosfluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluorodecanoic acid (PFDA)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1

Eurofins Eaton Analytical Pomona

Client Sample Results

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

Job ID: 380-37893-1

Client Sample ID: MOANALUA WELLS (331-223-TP202)

Lab Sample ID: 380-37893-1

Date Collected: 02/14/23 10:08

Matrix: Drinking Water

Date Received: 02/15/23 10:30

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
Perfluoroheptanoic acid (PFHpA)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluorononanoic acid (PFNA)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluorooctanoic acid (PFOA)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluorobutanoic acid (PFBA)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.9	ng/L		03/08/23 06:36	03/09/23 23:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	50		50 - 200	03/08/23 06:36	03/09/23 23:27	1
13C6 PFDA	55		50 - 200	03/08/23 06:36	03/09/23 23:27	1
13C5 PFHxA	56		50 - 200	03/08/23 06:36	03/09/23 23:27	1
13C4 PFHpA	53		50 - 200	03/08/23 06:36	03/09/23 23:27	1
13C8 PFOA	52		50 - 200	03/08/23 06:36	03/09/23 23:27	1
13C9 PFNA	53		50 - 200	03/08/23 06:36	03/09/23 23:27	1
13C7 PFUnA	62		50 - 200	03/08/23 06:36	03/09/23 23:27	1
13C2 PFDoA	68		50 - 200	03/08/23 06:36	03/09/23 23:27	1
13C4 PFBA	60		50 - 200	03/08/23 06:36	03/09/23 23:27	1
13C5 PFPeA	58		50 - 200	03/08/23 06:36	03/09/23 23:27	1
13C3 PFBS	97		50 - 200	03/08/23 06:36	03/09/23 23:27	1
13C3 PFHxS	95		50 - 200	03/08/23 06:36	03/09/23 23:27	1
13C8 PFOS	94		50 - 200	03/08/23 06:36	03/09/23 23:27	1
13C2-4:2-FTS	89		50 - 200	03/08/23 06:36	03/09/23 23:27	1
13C2-6:2-FTS	94		50 - 200	03/08/23 06:36	03/09/23 23:27	1
13C2-8:2-FTS	95		50 - 200	03/08/23 06:36	03/09/23 23:27	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosfluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1

Eurofins Eaton Analytical Pomona

Client Sample Results

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

Job ID: 380-37893-1

Client Sample ID: MOANALUA WELLS (331-223-TP202)

Lab Sample ID: 380-37893-1

Date Collected: 02/14/23 10:08

Matrix: Drinking Water

Date Received: 02/15/23 10:30

PWSID Number: HI0000331

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
Perfluorodecanoic acid (PFDA)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
Perfluorononanoic acid (PFNA)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
Perfluorooctanoic acid (PFOA)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
Perfluorotetradecanoic acid (PFTA)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
Perfluorotridecanoic acid (PFTTrDA)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.9	ng/L		02/27/23 08:28	02/28/23 12:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	109		70 - 130	02/27/23 08:28	02/28/23 12:57	1
13C2 PFDA	103		70 - 130	02/27/23 08:28	02/28/23 12:57	1
d5-NEtFOSAA	110		70 - 130	02/27/23 08:28	02/28/23 12:57	1
13C3 HFPO-DA	98		70 - 130	02/27/23 08:28	02/28/23 12:57	1

Method: 625 PAH Physis LL (EAL) + TICs - EPA 625 Base/Neutral and Acid Organics i

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Acenaphthene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Acenaphthylene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Anthracene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Biphenyl	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Chrysene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Dibenzo[a,i]pyrene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Dibenzothiophene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Disalicylideneprapanediamine	ND		0.1	0.05	µg/L		02/16/23 00:00	02/26/23 06:57	1
Fluoranthene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Fluorene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1

Eurofins Eaton Analytical Pomona

Client Sample Results

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

Job ID: 380-37893-1

Client Sample ID: MOANALUA WELLS (331-223-TP202)

Lab Sample ID: 380-37893-1

Date Collected: 02/14/23 10:08

Matrix: Drinking Water

Date Received: 02/15/23 10:30

PWSID Number: HI0000331

Method: 625 PAH Physis LL (EAL) + TICs - EPA 625 Base/Neutral and Acid Organics i (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Naphthalene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Perylene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Phenanthrene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1
Pyrene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 06:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	85		27 - 133	02/16/23 00:00	02/26/23 06:57	1
(d10-Phenanthrene)	96		43 - 129	02/16/23 00:00	02/26/23 06:57	1
(d12-Chrysene)	100		52 - 144	02/16/23 00:00	02/26/23 06:57	1
(d12-Perylene)	92		36 - 161	02/16/23 00:00	02/26/23 06:57	1
(d8-Naphthalene)	77		25 - 125	02/16/23 00:00	02/26/23 06:57	1

Method: 8015 Gas (Purgeable) LL (EAL) - SW846 8015B Gasoline Range Organics

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GASOLINE	ND	U	0.020		mg/L			02/17/23 23:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
BROMOFLUOROBENZENE	82		60 - 140		02/17/23 23:18	1

Method: 8015 LL DRO/MRO/JP5/JP8 - 8015 - TPH DRO/ORO

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DIESEL	ND	U	0.030		mg/L			02/20/23 16:46	1
JP5	ND	U	0.059		mg/L			02/20/23 16:46	1
JP8	ND	U	0.059		mg/L			02/20/23 16:46	1
MOTOR OIL	ND	U	0.059		mg/L			02/20/23 16:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
BROMOBENZENE	85		60 - 130		02/20/23 16:46	1
HEXACOSANE	93		60 - 130		02/20/23 16:46	1

Client Sample ID: TB:MOANALUA WELLS (331-223-TP202)

Lab Sample ID: 380-37893-2

Date Collected: 02/14/23 10:08

Matrix: Water

Date Received: 02/15/23 10:30

Method: 8015 Gas (Purgeable) LL (EAL) - SW846 8015B Gasoline Range Organics

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GASOLINE	ND	U	0.020		mg/L			02/17/23 23:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
BROMOFLUOROBENZENE	83		60 - 140		02/17/23 23:54	1

Action Limit Summary

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

Job ID: 380-37893-1

Client Sample ID: MOANALUA WELLS (331-223-TP202)
PWSID Number: HI0000331

Lab Sample ID: 380-37893-1

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			
Alachlor	ND	*-	ug/L	2	0.099	525.2	Total/NA
Atrazine	ND	*-	ug/L	3	0.099	525.2	Total/NA
Benzo[a]pyrene	ND		ug/L	0.2	0.020	525.2	Total/NA
Bis(2-ethylhexyl) phthalate	ND	*-	ug/L	6	0.59	525.2	Total/NA
Di(2-ethylhexyl)adipate	ND		ug/L	400	0.59	525.2	Total/NA
Endrin	ND		ug/L	2	0.0099	525.2	Total/NA
Heptachlor	ND		ug/L	0.4	0.039	525.2	Total/NA
Heptachlor epoxide (isomer B)	ND	*-	ug/L	0.2	0.020	525.2	Total/NA
Hexachlorocyclopentadiene	ND	*+	ug/L	50	0.099	525.2	Total/NA
Hexachlorobenzene	ND	*+	ug/L	1	0.099	525.2	Total/NA
gamma-BHC (Lindane)	ND	*-	ug/L	0.2	0.020	525.2	Total/NA
Methoxychlor	ND		ug/L	40	0.099	525.2	Total/NA
Simazine	ND	*-	ug/L	4	0.069	525.2	Total/NA

Surrogate Summary

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

Job ID: 380-37893-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Matrix: Drinking Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		2NMX (70-130)	TPP (70-130)	PRY (70-130)
380-37893-1	MOANALUA WELLS (331-223-T	95	98	88

Surrogate Legend
 2NMX = 2-Nitro-m-xylene
 TPP = Triphenylphosphate
 PRY = Perylene-d12

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		2NMX (70-130)	TPP (70-130)	PRY (70-130)
810-53874-B-1-A MS	Matrix Spike	15 *3 S1-	25 *3 S1-	88 *3
810-54050-B-1-A DU	Duplicate	84	102	93
LCS 810-49455/2-A	Lab Control Sample	106	104	99
LLCS 810-49616/23-A	Lab Control Sample	94	83	78
MB 810-49444/1-A	Method Blank	104	95	86

Surrogate Legend
 2NMX = 2-Nitro-m-xylene
 TPP = Triphenylphosphate
 PRY = Perylene-d12

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)			
		PFHxA (70-130)	PFDA (70-130)	d5NEFOS (70-130)	HFPODA (70-130)
380-37893-1	MOANALUA WELLS (331-223-T	109	103	110	98

Surrogate Legend
 PFHxA = 13C2 PFHxA
 PFDA = 13C2 PFDA
 d5NEFOS = d5-NEtFOSAA
 HFPODA = 13C3 HFPO-DA

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)			
		PFHxA (70-130)	PFDA (70-130)	d5NEFOS (70-130)	HFPODA (70-130)
810-53647-O-1-A DU	Duplicate	96	99	93	84
810-53656-O-1-A LMS	Matrix Spike	93	97	97	95
LCS 810-49449/3-A	Lab Control Sample	93	97	96	96
LLCS 810-49449/2-A	Lab Control Sample	97	109	103	85
MBL 810-49449/1-A	Method Blank	90	88	87	84

Surrogate Legend
 PFHxA = 13C2 PFHxA
 PFDA = 13C2 PFDA

Surrogate Summary

Client: City & County of Honolulu

Job ID: 380-37893-1

Project/Site: RED-HILL

d5NEFOS = d5-NEtFOSAA

HFPODA = 13C3 HFPO-DA

Method: 625 PAH Physis LL (EAL) + TICs - EPA 625 Base/Neutral and Acid Organics i

Matrix: BlankMatrix

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)				
		Acenaphtl (27-133)	Phenanth (43-129)	CRY (52-144)	NPT (25-125)	PRY (36-161)
104252-B1	Method Blank	88	93	96	86	93
104252-BS1	Lab Control Sample	104	106	105	96	108
104252-BS2	Lab Control Sample Dup	98	106	108	88	106

Surrogate Legend

(d10-Acenaphthene) = (d10-Acenaphthene)

(d10-Phenanthrene) = (d10-Phenanthrene)

CRY = (d12-Chrysene)

NPT = (d8-Naphthalene)

PRY = (d12-Perylene)

Method: 625 PAH Physis LL (EAL) + TICs - EPA 625 Base/Neutral and Acid Organics i

Matrix: Drinking Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)				
		Acenaphtl (27-133)	Phenanth (43-129)	CRY (52-144)	NPT (25-125)	PRY (36-161)
380-37893-1	MOANALUA WELLS (331-223-T	85	96	100	77	92

Surrogate Legend

(d10-Acenaphthene) = (d10-Acenaphthene)

(d10-Phenanthrene) = (d10-Phenanthrene)

CRY = (d12-Chrysene)

NPT = (d8-Naphthalene)

PRY = (d12-Perylene)

Method: 8015 Gas (Purgeable) LL (EAL) - SW846 8015B Gasoline Range Organics

Matrix: Drinking Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		BFB (60-140)
380-37893-1	MOANALUA WELLS (331-223-T	82

Surrogate Legend

BFB = BROMOFLUOROBENZENE

Method: 8015 Gas (Purgeable) LL (EAL) - SW846 8015B Gasoline Range Organics

Matrix: WATER

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		BFB
23VG39B12B	Method Blank	

Surrogate Legend

BFB = BROMOFLUOROBENZENE

Surrogate Summary

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

Job ID: 380-37893-1

Method: 8015 Gas (Purgeable) LL (EAL) - SW846 8015B Gasoline Range Organics

Matrix: WATER

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB (70-130)
23VG39B12C	LCD	110
23VG39B12L	Lab Control Sample	118

Surrogate Legend

BFB = BROMOFLUOROBENZENE

Method: 8015 Gas (Purgeable) LL (EAL) - SW846 8015B Gasoline Range Organics

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB (60-140)
380-37893-2	TB:MOANALUA WELLS (331-22	83

Surrogate Legend

BFB = BROMOFLUOROBENZENE

Method: 8015 LL DRO/MRO/JP5/JP8 - 8015 - TPH DRO/ORO

Matrix: Drinking Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BB (60-130)	XACOSAI (60-130)
380-37893-1	MOANALUA WELLS (331-223-T	85	93

Surrogate Legend

BB = BROMOBENZENE

HEXACOSANE = HEXACOSANE

Method: 8015 LL DRO/MRO/JP5/JP8 - 8015 - TPH DRO/ORO

Matrix: WATER

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BB (60-130)	XACOSAI (60-130)
23DSB031WC	LCD	86	105
23DSB031WL	Lab Control Sample	108	99
23J5B031WC	LCD	101	101
23J5B031WL	Lab Control Sample	96	94
23J8B031WC	LCD	107	97
23J8B031WL	Lab Control Sample	109	106

Surrogate Legend

BB = BROMOBENZENE

HEXACOSANE = HEXACOSANE

Method: 8015 LL DRO/MRO/JP5/JP8 - 8015 - TPH DRO/ORO

Matrix: WATER

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BB	XACOSAI
23DSB031WB	Method Blank		

Surrogate Summary

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

Job ID: 380-37893-1

Surrogate Legend

BB = BROMOBENZENE

HEXACOSANE = HEXACOSANE

1

2

3

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Isotope Dilution Summary

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

Job ID: 380-37893-1

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)	PFDoA (50-200)
380-37893-1	MOANALUA WELLS (331-223-T	50	55	56	53	52	53	62	68

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)
380-37893-1	MOANALUA WELLS (331-223-T	60	58	97	95	94	89	94	95

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

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)
380-37960-C-1-A DU	Duplicate	100	91	94	94	95	96	90	89
810-53787-AT-1-A LMS	Matrix Spike	82	73	89	85	80	77	73	76
LCS 810-50731/3-A	Lab Control Sample	114	94	98	98	97	97	91	90
LLCS 810-50731/2-A	Lab Control Sample	85	86	89	87	88	88	85	83
MBL 810-50731/1-A	Method Blank	88	93	94	93	95	93	92	90

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)
380-37960-C-1-A DU	Duplicate	96	93	100	97	95	90	95	96
810-53787-AT-1-A LMS	Matrix Spike	95	90	102	97	91	97	102	95
LCS 810-50731/3-A	Lab Control Sample	97	96	97	96	94	100	104	101
LLCS 810-50731/2-A	Lab Control Sample	89	91	92	87	85	85	84	86
MBL 810-50731/1-A	Method Blank	94	93	93	92	92	92	91	92

Surrogate Legend

- HFPODA = 13C3 HFPO-DA
- C6PFDA = 13C6 PFDA
- 13C5PHA = 13C5 PFHxA
- C4PFHA = 13C4 PFHpA
- C8PFOA = 13C8 PFOA

Isotope Dilution Summary

Client: City & County of Honolulu

Project/Site: RED-HILL

Job ID: 380-37893-1

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
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- 5
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QC Sample Results

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

Job ID: 380-37893-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 810-49444/1-A
Matrix: Water
Analysis Batch: 49915

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49444

Analyte	MB	MB	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
2,4'-DDD	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
2,4'-DDE	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
2,4'-DDT	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
2,4-Dinitrotoluene	ND		0.49	ug/L		02/27/23 07:16	03/02/23 15:29	1
2,6-Dinitrotoluene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
4,4'-DDD	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
4,4'-DDE	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
4,4'-DDT	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Acenaphthene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Acenaphthylene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Acetochlor	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Alachlor	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
alpha-BHC	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
alpha-Chlordane	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Anthracene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Atrazine	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Benz(a)anthracene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Benzo[a]pyrene	ND		0.020	ug/L		02/27/23 07:16	03/02/23 15:29	1
Benzo[b]fluoranthene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Benzo[g,h,i]perylene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Benzo[k]fluoranthene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
beta-BHC	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Bis(2-ethylhexyl) phthalate	ND		0.59	ug/L		02/27/23 07:16	03/02/23 15:29	1
Bromacil	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Butachlor	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Butylbenzylphthalate	ND		0.99	ug/L		02/27/23 07:16	03/02/23 15:29	1
Chlorobenzilate	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Chloroneb	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Chlorothalonil (Draconil, Bravo)	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Chlorpyrifos	ND		0.049	ug/L		02/27/23 07:16	03/02/23 15:29	1
Chrysene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
delta-BHC	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Di(2-ethylhexyl)adipate	ND		0.59	ug/L		02/27/23 07:16	03/02/23 15:29	1
Dibenz(a,h)anthracene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Diclorvos (DDVP)	ND		0.049	ug/L		02/27/23 07:16	03/02/23 15:29	1
Dieldrin	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Diethylphthalate	ND		0.99	ug/L		02/27/23 07:16	03/02/23 15:29	1
Dimethylphthalate	ND		0.99	ug/L		02/27/23 07:16	03/02/23 15:29	1
Di-n-octyl phthalate	ND		2.0	ug/L		02/27/23 07:16	03/02/23 15:29	1
Di-n-butyl phthalate	ND		2.0	ug/L		02/27/23 07:16	03/02/23 15:29	1
Endosulfan I (Alpha)	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Endosulfan II (Beta)	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Endosulfan sulfate	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Endrin	ND		0.0099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Endrin aldehyde	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
EPTC	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Fluoranthene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Fluorene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1

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QC Sample Results

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

Job ID: 380-37893-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 810-49444/1-A
Matrix: Water
Analysis Batch: 49915

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49444

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-Chlordane	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Heptachlor	ND		0.040	ug/L		02/27/23 07:16	03/02/23 15:29	1
Heptachlor epoxide (isomer B)	ND		0.020	ug/L		02/27/23 07:16	03/02/23 15:29	1
Hexachlorocyclopentadiene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Hexachlorobenzene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Indeno[1,2,3-cd]pyrene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Isophorone	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
gamma-BHC (Lindane)	ND		0.020	ug/L		02/27/23 07:16	03/02/23 15:29	1
Malathion	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Methoxychlor	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Metolachlor	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Metribuzin	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Molinate	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Naphthalene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Parathion	ND		0.49	ug/L		02/27/23 07:16	03/02/23 15:29	1
Phenanthrene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Propachlor	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Pyrene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Simazine	ND		0.069	ug/L		02/27/23 07:16	03/02/23 15:29	1
Terbacil	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Thiobencarb	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Total Permethrin (mixed isomers)	ND		0.20	ug/L		02/27/23 07:16	03/02/23 15:29	1
trans-Nonachlor	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Trifluralin	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Pendimethalin (Penoxaline)	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
Terbutylazine	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
1-Methylnaphthalene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1
2-Methylnaphthalene	ND		0.099	ug/L		02/27/23 07:16	03/02/23 15:29	1

<i>Tentatively Identified Compound</i>	MB Est. Result	MB Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
<i>Decane, 2,3,5-trimethyl-</i>	2.86	T J N	ug/L		3.67	62238-11-3	02/27/23 07:16	03/02/23 15:29	1
<i>Benzenesulfonamide, N,4-dimethyl-</i>	0.786	T J N	ug/L		7.49	640-61-9	02/27/23 07:16	03/02/23 15:29	1
<i>Unknown</i>	0.522	T J	ug/L		9.94	N/A	02/27/23 07:16	03/02/23 15:29	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>2-Nitro-m-xylene</i>	104		70 - 130	02/27/23 07:16	03/02/23 15:29	1
<i>Triphenylphosphate</i>	95		70 - 130	02/27/23 07:16	03/02/23 15:29	1
<i>Perylene-d12</i>	86		70 - 130	02/27/23 07:16	03/02/23 15:29	1

Lab Sample ID: LCS 810-49455/2-A
Matrix: Water
Analysis Batch: 49915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49455

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,4'-DDD	1.98	1.66		ug/L		84	70 - 130
2,4'-DDE	1.98	1.64		ug/L		83	70 - 130
2,4'-DDT	1.98	1.86		ug/L		94	70 - 130
2,4-Dinitrotoluene	1.98	1.51		ug/L		76	70 - 130

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QC Sample Results

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

Job ID: 380-37893-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 810-49455/2-A
Matrix: Water
Analysis Batch: 49915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49455

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,6-Dinitrotoluene	1.98	1.53		ug/L		77	70 - 130
4,4'-DDD	1.98	1.92		ug/L		97	70 - 130
4,4'-DDE	1.98	1.57		ug/L		80	70 - 130
4,4'-DDT	1.98	1.84		ug/L		93	70 - 130
Acenaphthene	1.98	1.82		ug/L		92	70 - 130
Acenaphthylene	1.98	1.76		ug/L		89	70 - 130
Acetochlor	1.98	2.05		ug/L		104	70 - 130
Alachlor	1.98	2.04		ug/L		103	70 - 130
alpha-BHC	1.98	1.91		ug/L		96	70 - 130
alpha-Chlordane	1.98	1.73		ug/L		88	70 - 130
Anthracene	1.98	1.60		ug/L		81	70 - 130
Atrazine	1.98	2.03		ug/L		102	70 - 130
Benz(a)anthracene	1.98	1.78		ug/L		90	70 - 130
Benzo[a]pyrene	1.98	1.65		ug/L		84	70 - 130
Benzo[b]fluoranthene	1.98	1.78		ug/L		90	70 - 130
Benzo[g,h,i]perylene	1.98	1.64		ug/L		83	70 - 130
Benzo[k]fluoranthene	1.98	1.66		ug/L		84	70 - 130
beta-BHC	1.98	1.98		ug/L		100	70 - 130
Bis(2-ethylhexyl) phthalate	1.98	1.84		ug/L		93	70 - 130
Bromacil	1.98	2.39		ug/L		121	70 - 130
Butachlor	1.98	1.74		ug/L		88	70 - 130
Butylbenzylphthalate	1.98	2.00		ug/L		101	70 - 130
Chlorobenzilate	1.98	1.92		ug/L		97	70 - 130
Chloroneb	1.98	1.97		ug/L		100	70 - 130
Chlorothalonil (Draconil, Bravo)	1.98	2.16		ug/L		109	70 - 130
Chlorpyrifos	1.98	2.36		ug/L		119	70 - 130
Chrysene	1.98	1.96		ug/L		99	70 - 130
delta-BHC	1.98	2.09		ug/L		106	70 - 130
Di(2-ethylhexyl)adipate	1.98	1.84		ug/L		93	70 - 130
Dibenz(a,h)anthracene	1.98	1.55		ug/L		78	70 - 130
Diclorvos (DDVP)	1.98	1.87		ug/L		95	70 - 130
Dieldrin	1.98	1.57		ug/L		79	70 - 130
Diethylphthalate	1.98	1.83		ug/L		93	70 - 130
Dimethylphthalate	1.98	1.80		ug/L		91	70 - 130
Di-n-octyl phthalate	1.98	1.78	J	ug/L		90	60 - 122
Di-n-butyl phthalate	1.98	2.23		ug/L		113	70 - 130
Endosulfan I (Alpha)	1.98	1.69		ug/L		86	70 - 130
Endosulfan II (Beta)	1.98	1.83		ug/L		93	70 - 130
Endosulfan sulfate	1.98	1.95		ug/L		98	70 - 130
Endrin	1.98	1.75		ug/L		88	70 - 130
Endrin aldehyde	1.98	1.74		ug/L		88	64 - 125
EPTC	1.98	1.89		ug/L		95	70 - 130
Fluoranthene	1.98	1.66		ug/L		84	70 - 130
Fluorene	1.98	1.82		ug/L		92	70 - 130
gamma-Chlordane	1.98	1.61		ug/L		81	70 - 130
Heptachlor	1.98	1.91		ug/L		96	70 - 130
Heptachlor epoxide (isomer B)	1.98	1.65		ug/L		83	70 - 130
Hexachlorocyclopentadiene	1.98	1.58		ug/L		80	70 - 130
Hexachlorobenzene	1.98	1.82		ug/L		92	70 - 130

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QC Sample Results

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

Job ID: 380-37893-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 810-49455/2-A
Matrix: Water
Analysis Batch: 49915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49455

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Indeno[1,2,3-cd]pyrene	1.98	1.56		ug/L		79	70 - 130
Isophorone	1.98	1.93		ug/L		98	70 - 130
gamma-BHC (Lindane)	1.98	1.98		ug/L		100	70 - 130
Malathion	1.98	2.45		ug/L		124	80 - 134
Methoxychlor	1.98	1.82		ug/L		92	70 - 130
Metolachlor	1.98	2.50		ug/L		126	70 - 130
Metribuzin	1.98	2.03		ug/L		103	70 - 130
Molinate	1.98	1.87		ug/L		94	70 - 130
Naphthalene	1.98	1.98		ug/L		100	70 - 130
Parathion	1.98	2.41		ug/L		122	80 - 134
Phenanthrene	1.98	1.82		ug/L		92	70 - 130
Propachlor	1.98	1.87		ug/L		94	70 - 130
Pyrene	1.98	1.66		ug/L		84	70 - 130
Simazine	1.98	1.90		ug/L		96	70 - 130
Terbacil	1.98	2.02		ug/L		102	70 - 130
Thiobencarb	1.98	2.45		ug/L		124	70 - 130
trans-Nonachlor	1.98	1.67		ug/L		84	70 - 130
Trifluralin	1.98	1.79		ug/L		91	70 - 130
Pendimethalin (Penoxaline)	1.98	1.76		ug/L		89	65 - 122
Terbutylazine	1.98	2.01		ug/L		102	70 - 130
1-Methylnaphthalene	1.98	1.85		ug/L		93	70 - 130
2-Methylnaphthalene	1.98	1.75		ug/L		89	70 - 130
cis-Permethrin	1.98	1.93		ug/L		97	70 - 130
trans-Permethrin	1.98	1.90		ug/L		96	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Nitro-m-xylene	106		70 - 130
Triphenylphosphate	104		70 - 130
Perylene-d12	99		70 - 130

Lab Sample ID: LLCS 810-49616/23-A
Matrix: Water
Analysis Batch: 49915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49616

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Alachlor	0.0978	0.0789	J	ug/L		81	50 - 150
Atrazine	0.0978	0.0909	J	ug/L		93	50 - 150
Benzo[a]pyrene	0.0196	0.0168	J	ug/L		86	50 - 150
Bis(2-ethylhexyl) phthalate	0.587	0.499	J	ug/L		85	50 - 150
Butachlor	0.0978	0.0597	J	ug/L		61	50 - 150
Di(2-ethylhexyl)adipate	0.587	0.420	J	ug/L		72	50 - 150
Dieldrin	0.0196	ND		ug/L		77	50 - 150
Endrin	0.00978	ND		ug/L		55	50 - 150
Heptachlor	0.00978	0.00961	J	ug/L		98	50 - 150
Heptachlor epoxide (isomer B)	0.00978	0.00911	J	ug/L		93	50 - 150
Hexachlorocyclopentadiene	0.0978	0.0768	J	ug/L		79	50 - 150
Hexachlorobenzene	0.0978	0.0763	J	ug/L		78	50 - 150
gamma-BHC (Lindane)	0.0196	0.0169	J	ug/L		86	50 - 150

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-37893-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LLCS 810-49616/23-A
Matrix: Water
Analysis Batch: 49915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49616

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Methoxychlor	0.0978	0.0549	J	ug/L		56	50 - 150
Metolachlor	0.0978	0.0859	J	ug/L		88	50 - 150
Metribuzin	0.0978	0.0905	J	ug/L		92	50 - 150
Propachlor	0.0978	0.0760	J	ug/L		78	50 - 150
Simazine	0.0685	0.0559	J	ug/L		82	50 - 150

Surrogate	LLCS %Recovery	LLCS Qualifier	Limits
2-Nitro-m-xylene	94		70 - 130
Triphenylphosphate	83		70 - 130
Perylene-d12	78		70 - 130

Lab Sample ID: 810-53874-B-1-A MS
Matrix: Water
Analysis Batch: 49915

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 49616

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
2,4'-DDD			1.98	1.41	*3	ug/L			
2,4'-DDE			1.98	1.74	*3	ug/L			
2,4'-DDT			1.98	2.19	*3	ug/L			
2,4-Dinitrotoluene			1.98	ND	*3	ug/L			
2,6-Dinitrotoluene			1.98	0.284	*3	ug/L			
4,4'-DDD			1.98	1.47	*3	ug/L			
4,4'-DDE			1.98	2.29	*3	ug/L			
4,4'-DDT			1.98	1.78	*3	ug/L			
Acenaphthene			1.98	2.44	*3	ug/L			
Acenaphthylene			1.98	1.15	*3	ug/L			
Acetochlor			1.98	0.457	*3	ug/L			
Alachlor	ND	F1 *-	1.98	3.10	*3 F1	ug/L		157	70 - 130
alpha-BHC			1.98	0.296	*3	ug/L			
alpha-Chlordane			1.98	1.08	*3	ug/L			
Anthracene			1.98	2.03	*3	ug/L			
Atrazine	ND	F1 *-	1.98	0.234	*3 F1	ug/L		12	70 - 130
Benz(a)anthracene			1.98	2.01	*3	ug/L			
Benzo[a]pyrene	ND		1.98	2.05	*3	ug/L		103	70 - 130
Benzo[b]fluoranthene			1.98	2.10	*3	ug/L			
Benzo[g,h,i]perylene			1.98	1.77	*3	ug/L			
Benzo[k]fluoranthene			1.98	2.10	*3	ug/L			
beta-BHC			1.98	0.172	*3	ug/L			
Bis(2-ethylhexyl) phthalate	ND	*-	1.98	1.88	*3	ug/L		95	70 - 130
Bromacil			1.98	0.475	*3	ug/L			
Butachlor			1.98	0.306	*3	ug/L			
Butylbenzylphthalate			1.98	ND	*3	ug/L			
Chlorobenzilate			1.98	0.349	*3	ug/L			
Chloroneb			1.98	2.28	*3	ug/L			
Chlorothalonil (Draconil, Bravo)			1.98	0.185	*3	ug/L			
Chlorpyrifos			1.98	1.96	*3	ug/L			
Chrysene			1.98	2.19	*3	ug/L			
delta-BHC			1.98	0.358	*3	ug/L			

QC Sample Results

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

Job ID: 380-37893-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 810-53874-B-1-A MS
Matrix: Water
Analysis Batch: 49915

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 49616

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec Limits
	Result	Qualifier	Added	Result	Qualifier				
Di(2-ethylhexyl)adipate	ND		1.98	1.97	*3	ug/L		99	70 - 130
Dibenz(a,h)anthracene			1.98	1.70	*3	ug/L			
Diclorvos (DDVP)			1.98	0.607	*3	ug/L			
Dieldrin			1.98	0.636	*3	ug/L			
Diethylphthalate			1.98	1.16	*3	ug/L			
Dimethylphthalate			1.98	ND	*3	ug/L			
Di-n-octyl phthalate			1.98	ND	*3	ug/L			
Di-n-butyl phthalate			1.98	2.27	*3	ug/L			
Endosulfan I (Alpha)			1.98	0.613	*3	ug/L			
Endosulfan II (Beta)			1.98	0.521	*3	ug/L			
Endosulfan sulfate			1.98	0.368	*3	ug/L			
Endrin	ND	F1	1.98	0.570	*3 F1	ug/L		29	70 - 130
Endrin aldehyde			1.98	0.212	*3	ug/L			
EPTC			1.98	1.25	*3	ug/L			
Fluoranthene			1.98	1.04	*3	ug/L			
Fluorene			1.98	2.99	*3	ug/L			
gamma-Chlordane			1.98	1.10	*3	ug/L			
Heptachlor	ND	F1	1.98	3.03	*3 F1	ug/L		153	70 - 130
Heptachlor epoxide (isomer B)	ND	F1 *-	1.98	0.464	*3 F1	ug/L		23	70 - 130
Hexachlorocyclopentadiene	ND	F1 *+	1.98	3.28	*3 F1	ug/L		166	70 - 130
Hexachlorobenzene	ND	F1 *+	1.98	3.63	*3 F1	ug/L		183	70 - 130
Indeno[1,2,3-cd]pyrene			1.98	1.65	*3	ug/L			
Isophorone			1.98	0.934	*3	ug/L			
gamma-BHC (Lindane)	ND	F1 *-	1.98	0.287	*3 F1	ug/L		14	70 - 130
Malathion			1.98	0.944	*3	ug/L			
Methoxychlor	ND	F1	1.98	0.759	*3 F1	ug/L		38	70 - 130
Metolachlor			1.98	1.31	*3	ug/L			
Metribuzin			1.98	0.297	*3	ug/L			
Molinate			1.98	1.14	*3	ug/L			
Naphthalene			1.98	0.925	*3	ug/L			
Parathion			1.98	1.64	*3	ug/L			
Phenanthrene			1.98	1.89	*3	ug/L			
Propachlor			1.98	0.658	*3	ug/L			
Pyrene			1.98	1.26	*3	ug/L			
Simazine	ND	F1 *-	1.98	0.216	*3 F1	ug/L		11	70 - 130
Terbacil			1.98	3.17	*3	ug/L			
Thiobencarb			1.98	1.16	*3	ug/L			
trans-Nonachlor			1.98	1.51	*3	ug/L			
Trifluralin			1.98	4.05	*3	ug/L			
Pendimethalin (Penoxaline)			1.98	0.729	*3	ug/L			
Terbutylazine			1.98	0.347	*3	ug/L			
1-Methylnaphthalene			1.98	2.10	*3	ug/L			
2-Methylnaphthalene			1.98	1.71	*3	ug/L			
cis-Permethrin			1.98	1.86	*3	ug/L			
trans-Permethrin			1.98	1.77	*3	ug/L			

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
2-Nitro-m-xylene	15	*3 S1-	70 - 130

QC Sample Results

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

Job ID: 380-37893-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 810-53874-B-1-A MS
Matrix: Water
Analysis Batch: 49915

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 49616

Surrogate	%Recovery	MS MS Qualifier	Limits
Triphenylphosphate	25	*3 S1-	70 - 130
Perylene-d12	88	*3	70 - 130

Lab Sample ID: 810-54050-B-1-A DU
Matrix: Water
Analysis Batch: 49915

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 49616

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
2,4'-DDD	ND		ND		ug/L		NC	30
2,4'-DDE	ND		ND		ug/L		NC	30
2,4'-DDT	ND		ND		ug/L		NC	30
2,4-Dinitrotoluene	ND	*-	ND	*-	ug/L		NC	20
2,6-Dinitrotoluene	ND	*-	ND	*-	ug/L		NC	30
4,4'-DDD	ND		ND		ug/L		NC	17
4,4'-DDE	ND		ND		ug/L		NC	19
4,4'-DDT	ND		ND		ug/L		NC	19
Acenaphthene	ND		ND		ug/L		NC	31
Acenaphthylene	ND	*-	ND	*-	ug/L		NC	34
Acetochlor	ND	*-	ND	*-	ug/L		NC	30
Alachlor	ND	*-	ND	*-	ug/L		NC	15
alpha-BHC	ND	*-	ND	*-	ug/L		NC	30
alpha-Chlordane	ND		ND		ug/L		NC	15
Anthracene	ND		ND		ug/L		NC	52
Atrazine	ND	*-	ND	*-	ug/L		NC	17
Benz(a)anthracene	ND		ND		ug/L		NC	14
Benzo[a]pyrene	ND		ND		ug/L		NC	26
Benzo[b]fluoranthene	ND		ND		ug/L		NC	20
Benzo[g,h,i]perylene	ND		ND		ug/L		NC	14
Benzo[k]fluoranthene	ND		ND		ug/L		NC	20
beta-BHC	ND	*-	ND	*-	ug/L		NC	30
Bis(2-ethylhexyl) phthalate	ND	*-	ND	*-	ug/L		NC	18
Bromacil	ND	*-	ND	*-	ug/L		NC	20
Butachlor	ND		ND		ug/L		NC	15
Butylbenzylphthalate	ND		ND		ug/L		NC	23
Chlorobenzilate	ND	*-	ND	*-	ug/L		NC	30
Chloroneb	ND		ND		ug/L		NC	30
Chlorothalonil (Draconil, Bravo)	ND	*-	ND	*-	ug/L		NC	15
Chlorpyrifos	ND		ND		ug/L		NC	30
Chrysene	ND	*+	ND	*+	ug/L		NC	12
delta-BHC	ND	*-	ND	*-	ug/L		NC	30
Di(2-ethylhexyl)adipate	ND		ND		ug/L		NC	16
Dibenz(a,h)anthracene	ND	*-	ND	*-	ug/L		NC	19
Diclorvos (DDVP)	ND	*-	ND	*-	ug/L		NC	30
Dieldrin	ND		ND		ug/L		NC	19
Diethylphthalate	ND	*-	ND	*-	ug/L		NC	21
Dimethylphthalate	ND	*-	ND	*-	ug/L		NC	20
Di-n-octyl phthalate	ND	*-	ND	*-	ug/L		NC	20
Di-n-butyl phthalate	ND		ND		ug/L		NC	20

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QC Sample Results

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

Job ID: 380-37893-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 810-54050-B-1-A DU
Matrix: Water
Analysis Batch: 49915

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 49616

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Endosulfan I (Alpha)	ND		ND		ug/L		NC	30
Endosulfan II (Beta)	ND		ND		ug/L		NC	30
Endosulfan sulfate	ND	*-	ND	*-	ug/L		NC	30
Endrin	ND		ND		ug/L		NC	18
Endrin aldehyde	ND	*-	ND	*-	ug/L		NC	30
EPTC	ND		ND		ug/L		NC	18
Fluoranthene	ND		ND		ug/L		NC	13
Fluorene	ND	*+	ND	*+	ug/L		NC	25
gamma-Chlordane	ND		ND		ug/L		NC	16
Heptachlor	ND		ND		ug/L		NC	15
Heptachlor epoxide (isomer B)	ND	*-	ND	*-	ug/L		NC	14
Hexachlorocyclopentadiene	ND	*+	ND	*+	ug/L		NC	29
Hexachlorobenzene	ND	*+	ND	*+	ug/L		NC	14
Indeno[1,2,3-cd]pyrene	ND		ND		ug/L		NC	25
Isophorone	ND	*-	ND	*-	ug/L		NC	44
gamma-BHC (Lindane)	ND	*-	ND	*-	ug/L		NC	13
Malathion	ND	*-	ND	*-	ug/L		NC	20
Methoxychlor	ND		ND		ug/L		NC	14
Metolachlor	ND	*-	ND	*-	ug/L		NC	14
Metribuzin	ND	*-	ND	*-	ug/L		NC	24
Molinate	ND	*-	ND	*-	ug/L		NC	16
Naphthalene	ND	*-	ND	*-	ug/L		NC	46
Parathion	ND		ND		ug/L		NC	20
Phenanthrene	ND		ND		ug/L		NC	14
Propachlor	ND	*-	ND	*-	ug/L		NC	12
Pyrene	ND		ND		ug/L		NC	15
Simazine	ND	*-	ND	*-	ug/L		NC	21
Terbacil	ND	*-	ND	*-	ug/L		NC	22
Thiobencarb	ND		ND		ug/L		NC	11
Total Permethrin (mixed isomers)	ND		ND		ug/L		NC	
trans-Nonachlor	ND		ND		ug/L		NC	17
Trifluralin	ND	*+	ND	*+	ug/L		NC	19
Pendimethalin (Penoxaline)	ND		ND		ug/L		NC	30
Terbutylazine	ND	*-	ND	*-	ug/L		NC	30
1-Methylnaphthalene	ND	B	ND	B	ug/L		NC	20
2-Methylnaphthalene	ND		ND		ug/L		NC	20
cis-Permethrin	ND		ND		ug/L		NC	30
trans-Permethrin	ND		ND		ug/L		NC	30

Surrogate	DU DU		Limits
	%Recovery	Qualifier	
2-Nitro-m-xylene	84		70 - 130
Triphenylphosphate	102		70 - 130
Perylene-d12	93		70 - 130

QC Sample Results

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

Job ID: 380-37893-1

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

Lab Sample ID: MBL 810-50731/1-A
Matrix: Water
Analysis Batch: 50912

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 50731

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluorodecanoic acid (PFDA)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluorononanoic acid (PFNA)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluorooctanoic acid (PFOA)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluorobutanoic acid (PFBA)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0	ng/L		03/08/23 06:36	03/09/23 22:47	1

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	88		50 - 200	03/08/23 06:36	03/09/23 22:47	1
13C6 PFDA	93		50 - 200	03/08/23 06:36	03/09/23 22:47	1
13C5 PFHxA	94		50 - 200	03/08/23 06:36	03/09/23 22:47	1
13C4 PFHpA	93		50 - 200	03/08/23 06:36	03/09/23 22:47	1
13C8 PFOA	95		50 - 200	03/08/23 06:36	03/09/23 22:47	1
13C9 PFNA	93		50 - 200	03/08/23 06:36	03/09/23 22:47	1
13C7 PFUnA	92		50 - 200	03/08/23 06:36	03/09/23 22:47	1
13C2 PFDoA	90		50 - 200	03/08/23 06:36	03/09/23 22:47	1
13C4 PFBA	94		50 - 200	03/08/23 06:36	03/09/23 22:47	1
13C5 PFPeA	93		50 - 200	03/08/23 06:36	03/09/23 22:47	1
13C3 PFBS	93		50 - 200	03/08/23 06:36	03/09/23 22:47	1
13C3 PFHxS	92		50 - 200	03/08/23 06:36	03/09/23 22:47	1

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QC Sample Results

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

Job ID: 380-37893-1

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

Lab Sample ID: MBL 810-50731/1-A
Matrix: Water
Analysis Batch: 50912

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 50731

Isotope Dilution	MBL MBL		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C8 PFOS	92		50 - 200	03/08/23 06:36	03/09/23 22:47	1
13C2-4:2-FTS	92		50 - 200	03/08/23 06:36	03/09/23 22:47	1
13C2-6:2-FTS	91		50 - 200	03/08/23 06:36	03/09/23 22:47	1
13C2-8:2-FTS	92		50 - 200	03/08/23 06:36	03/09/23 22:47	1

Lab Sample ID: LCS 810-50731/3-A
Matrix: Water
Analysis Batch: 50912

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 50731

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec
							Limits
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	189	190		ng/L		100	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	187	193		ng/L		104	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	189	192		ng/L		101	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	200	191		ng/L		96	70 - 130
Perfluorobutanesulfonic acid (PFBS)	178	181		ng/L		102	70 - 130
Perfluorodecanoic acid (PFDA)	200	201		ng/L		100	70 - 130
Perfluorododecanoic acid (PFDoA)	200	203		ng/L		101	70 - 130
Perfluoroheptanoic acid (PFHpA)	200	201		ng/L		100	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	183	187		ng/L		103	70 - 130
Perfluorohexanoic acid (PFHxA)	200	201		ng/L		101	70 - 130
Perfluorononanoic acid (PFNA)	200	198		ng/L		99	70 - 130
Perfluorooctanesulfonic acid (PFOS)	186	194		ng/L		104	70 - 130
Perfluorooctanoic acid (PFOA)	200	206		ng/L		103	70 - 130
Perfluoroundecanoic acid (PFUnA)	200	200		ng/L		100	70 - 130
Perfluorobutanoic acid (PFBA)	200	202		ng/L		101	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	192	201		ng/L		105	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	188	200		ng/L		107	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	190	197		ng/L		103	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	200	207		ng/L		104	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	178	185		ng/L		104	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	200	190		ng/L		95	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	200	191		ng/L		96	70 - 130
Perfluoropentanoic acid (PFPeA)	200	196		ng/L		98	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	191	191		ng/L		100	70 - 130

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-37893-1

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

Lab Sample ID: LCS 810-50731/3-A
Matrix: Water
Analysis Batch: 50912

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 50731

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanesulfonic acid (PFPeS)	188	195		ng/L		104	70 - 130
LCS LCS							
Isotope Dilution	%Recovery	Qualifier	Limits				
13C3 HFPO-DA	114		50 - 200				
13C6 PFDA	94		50 - 200				
13C5 PFHxA	98		50 - 200				
13C4 PFHpA	98		50 - 200				
13C8 PFOA	97		50 - 200				
13C9 PFNA	97		50 - 200				
13C7 PFUnA	91		50 - 200				
13C2 PFDoA	90		50 - 200				
13C4 PFBA	97		50 - 200				
13C5 PFPeA	96		50 - 200				
13C3 PFBS	97		50 - 200				
13C3 PFHxS	96		50 - 200				
13C8 PFOS	94		50 - 200				
13C2-4:2-FTS	100		50 - 200				
13C2-6:2-FTS	104		50 - 200				
13C2-8:2-FTS	101		50 - 200				

Lab Sample ID: LLCS 810-50731/2-A
Matrix: Water
Analysis Batch: 50912

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 50731

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.89	1.79	J	ng/L		95	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	1.87	1.82	J	ng/L		97	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.89	1.87	J	ng/L		99	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	1.74	J	ng/L		87	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.78	1.52	J	ng/L		85	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	1.94	J	ng/L		97	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.04		ng/L		102	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	1.92	J	ng/L		96	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.83	1.76	J	ng/L		96	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	1.94	J	ng/L		97	50 - 150
Perfluorononanoic acid (PFNA)	2.00	1.93	J	ng/L		96	50 - 150
Perfluorooctanesulfonic acid (PFOS)	1.86	1.91	J	ng/L		103	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.21		ng/L		111	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	1.96	J	ng/L		98	50 - 150
Perfluorobutanoic acid (PFBA)	2.00	2.01		ng/L		101	50 - 150

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-37893-1

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

Lab Sample ID: LLCS 810-50731/2-A
Matrix: Water
Analysis Batch: 50912

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 50731

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	1.92	2.16		ng/L		112	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	1.88	2.04		ng/L		109	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	1.90	2.19		ng/L		115	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.00	2.16		ng/L		108	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	1.78	1.61	J	ng/L		91	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	1.90	J	ng/L		95	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	2.00	1.85	J	ng/L		93	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	2.01		ng/L		101	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	1.91	1.88	J	ng/L		98	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	1.88	1.83	J	ng/L		97	50 - 150

Isotope Dilution	LLCS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	85		50 - 200
13C6 PFDA	86		50 - 200
13C5 PFHxA	89		50 - 200
13C4 PFHpA	87		50 - 200
13C8 PFOA	88		50 - 200
13C9 PFNA	88		50 - 200
13C7 PFUnA	85		50 - 200
13C2 PFDoA	83		50 - 200
13C4 PFBA	89		50 - 200
13C5 PFPeA	91		50 - 200
13C3 PFBS	92		50 - 200
13C3 PFHxS	87		50 - 200
13C8 PFOS	85		50 - 200
13C2-4:2-FTS	85		50 - 200
13C2-6:2-FTS	84		50 - 200
13C2-8:2-FTS	86		50 - 200

Lab Sample ID: 810-53787-AT-1-A LMS
Matrix: Water
Analysis Batch: 50912

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 50731

Analyte	Sample Result	Sample Qualifier	Spike Added	LMS Result	LMS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		1.79	1.78	J	ng/L		99	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		1.77	1.74	J	ng/L		98	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.79	1.70	J	ng/L		95	50 - 150

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QC Sample Results

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

Job ID: 380-37893-1

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

Lab Sample ID: 810-53787-AT-1-A LMS
Matrix: Water
Analysis Batch: 50912

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 50731

Analyte	Sample Result	Sample Qualifier	Spike Added	LMS Result	LMS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide	ND		1.89	1.90		ng/L		100	50 - 150
Dimer Acid (HFPO-DA/GenX)									
Perfluorobutanesulfonic acid (PFBS)	ND		1.68	1.65	J	ng/L		98	50 - 150
Perfluorodecanoic acid (PFDA)	ND		1.89	2.02		ng/L		106	50 - 150
Perfluorododecanoic acid (PFDoA)	ND		1.89	2.05		ng/L		108	50 - 150
Perfluoroheptanoic acid (PFHpA)	ND		1.89	1.86	J	ng/L		98	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	ND		1.73	1.72	J	ng/L		100	50 - 150
Perfluorohexanoic acid (PFHxA)	ND		1.89	3.01		ng/L		105	50 - 150
Perfluorononanoic acid (PFNA)	ND		1.89	1.94		ng/L		102	50 - 150
Perfluorooctanesulfonic acid (PFOS)	ND		1.76	1.93		ng/L		110	50 - 150
Perfluorooctanoic acid (PFOA)	ND		1.89	2.10		ng/L		111	50 - 150
Perfluoroundecanoic acid (PFUnA)	ND		1.89	2.06		ng/L		109	50 - 150
Perfluorobutanoic acid (PFBA)	5.8		1.89	7.91		ng/L		112	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.82	2.07		ng/L		114	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.78	1.97		ng/L		111	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		1.80	1.97		ng/L		109	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.89	1.86	J	ng/L		98	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.69	1.57	J	ng/L		93	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.89	1.79	J	ng/L		95	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.89	1.76	J	ng/L		93	50 - 150
Perfluoropentanoic acid (PFPeA)	4.4		1.89	6.22		ng/L		96	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.81	1.81	J	ng/L		100	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	ND		1.78	1.85	J	ng/L		104	50 - 150

Isotope Dilution	LMS LMS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	82		50 - 200
13C6 PFDA	73		50 - 200
13C5 PFHxA	89		50 - 200
13C4 PFHpA	85		50 - 200
13C8 PFOA	80		50 - 200
13C9 PFNA	77		50 - 200
13C7 PFUnA	73		50 - 200
13C2 PFDoA	76		50 - 200
13C4 PFBA	95		50 - 200
13C5 PFPeA	90		50 - 200
13C3 PFBS	102		50 - 200
13C3 PFHxS	97		50 - 200
13C8 PFOS	91		50 - 200

QC Sample Results

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

Job ID: 380-37893-1

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

Lab Sample ID: 810-53787-AT-1-A LMS
Matrix: Water
Analysis Batch: 50912

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 50731

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C2-4:2-FTS	97		50 - 200
13C2-6:2-FTS	102		50 - 200
13C2-8:2-FTS	95		50 - 200

Lab Sample ID: 380-37960-C-1-A DU
Matrix: Water
Analysis Batch: 50912

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 50731

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		ND		ng/L		NC	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		ND		ng/L		NC	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		ND		ng/L		NC	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		ND		ng/L		NC	30
Perfluorobutanesulfonic acid (PFBS)	ND		ND		ng/L		NC	30
Perfluorodecanoic acid (PFDA)	ND		ND		ng/L		NC	30
Perfluorododecanoic acid (PFDoA)	ND		ND		ng/L		NC	30
Perfluoroheptanoic acid (PFHpA)	ND		ND		ng/L		NC	30
Perfluorohexanesulfonic acid (PFHxS)	6.5		6.92		ng/L		7	30
Perfluorohexanoic acid (PFHxA)	ND		ND		ng/L		NC	30
Perfluorononanoic acid (PFNA)	ND		ND		ng/L		NC	30
Perfluorooctanesulfonic acid (PFOS)	8.4		9.15		ng/L		9	30
Perfluorooctanoic acid (PFOA)	4.2		4.50		ng/L		6	30
Perfluoroundecanoic acid (PFUnA)	ND		ND		ng/L		NC	30
Perfluorobutanoic acid (PFBA)	ND		ND		ng/L		NC	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		ND		ng/L		NC	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		ND		ng/L		NC	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		ND		ng/L		NC	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		ND		ng/L		NC	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		ND		ng/L		NC	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		ND		ng/L		NC	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		ND		ng/L		NC	30
Perfluoropentanoic acid (PFPeA)	ND		ND		ng/L		NC	30
Perfluoroheptanesulfonic acid (PFHpS)	ND		ND		ng/L		NC	30
Perfluoropentanesulfonic acid (PFPeS)	ND		ND		ng/L		NC	30

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QC Sample Results

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

Job ID: 380-37893-1

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

<i>Isotope Dilution</i>	<i>DU DU</i>	<i>Qualifier</i>	<i>Limits</i>
<i>%Recovery</i>			
13C3 HFPO-DA	100		50 - 200
13C6 PFDA	91		50 - 200
13C5 PFHxA	94		50 - 200
13C4 PFHpA	94		50 - 200
13C8 PFOA	95		50 - 200
13C9 PFNA	96		50 - 200
13C7 PFUnA	90		50 - 200
13C2 PFDoA	89		50 - 200
13C4 PFBA	96		50 - 200
13C5 PFPeA	93		50 - 200
13C3 PFBS	100		50 - 200
13C3 PFHxS	97		50 - 200
13C8 PFOS	95		50 - 200
13C2-4:2-FTS	90		50 - 200
13C2-6:2-FTS	95		50 - 200
13C2-8:2-FTS	96		50 - 200

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

Lab Sample ID: MBL 810-49449/1-A
Matrix: Water
Analysis Batch: 49543

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49449

<i>Analyte</i>	<i>MBL</i>	<i>MBL</i>	<i>RL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>Result</i>	<i>Qualifier</i>						
11-Chloroeicosfluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
Perfluorodecanoic acid (PFDA)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
Perfluorononanoic acid (PFNA)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
Perfluorooctanoic acid (PFOA)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
Perfluorotetradecanoic acid (PFTA)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
Perfluorotridecanoic acid (PFTrDA)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
N-ethylperfluorooctanesulfonamidoac etic acid (NEtFOSAA)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
N-methylperfluorooctanesulfonamidoa cetic acid (NMeFOSAA)	ND		2.0	ng/L		02/27/23 08:28	02/28/23 10:14	1
<i>Surrogate</i>	<i>MBL</i>	<i>MBL</i>	<i>Limits</i>			<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>						
13C2 PFHxA	90		70 - 130			02/27/23 08:28	02/28/23 10:14	1
13C2 PFDA	88		70 - 130			02/27/23 08:28	02/28/23 10:14	1
d5-NEtFOSAA	87		70 - 130			02/27/23 08:28	02/28/23 10:14	1

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QC Sample Results

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

Job ID: 380-37893-1

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

Lab Sample ID: MBL 810-49449/1-A
Matrix: Water
Analysis Batch: 49543

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49449

<i>Surrogate</i>	<i>MBL</i>	<i>MBL</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	84	Qualifier	70 - 130	02/27/23 08:28	02/28/23 10:14	1

Lab Sample ID: LCS 810-49449/3-A
Matrix: Water
Analysis Batch: 49543

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49449

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	200	171		ng/L		86	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	200	182		ng/L		91	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	200	190		ng/L		95	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	200	159		ng/L		80	70 - 130
Perfluorobutanesulfonic acid (PFBS)	200	148		ng/L		74	70 - 130
Perfluorodecanoic acid (PFDA)	200	191		ng/L		95	70 - 130
Perfluorododecanoic acid (PFDoA)	200	177		ng/L		88	70 - 130
Perfluoroheptanoic acid (PFHpA)	200	189		ng/L		95	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	200	182		ng/L		91	70 - 130
Perfluorohexanoic acid (PFHxA)	200	169		ng/L		84	70 - 130
Perfluorononanoic acid (PFNA)	200	186		ng/L		93	70 - 130
Perfluorooctanesulfonic acid (PFOS)	200	185		ng/L		93	70 - 130
Perfluorooctanoic acid (PFOA)	200	187		ng/L		93	70 - 130
Perfluoroundecanoic acid (PFUnA)	200	183		ng/L		92	70 - 130
Perfluorotetradecanoic acid (PFTA)	200	165		ng/L		82	70 - 130
Perfluorotridecanoic acid (PFTTrDA)	200	166		ng/L		83	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	200	179		ng/L		89	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	200	184		ng/L		92	70 - 130

<i>Surrogate</i>	<i>LCS</i>	<i>LCS</i>	<i>Limits</i>
13C2 PFHxA	93	Qualifier	70 - 130
13C2 PFDA	97		70 - 130
d5-NEtFOSAA	96		70 - 130
13C3 HFPO-DA	96		70 - 130

QC Sample Results

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

Job ID: 380-37893-1

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

Lab Sample ID: LLCS 810-49449/2-A
Matrix: Water
Analysis Batch: 49543

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49449

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	2.00	2.08		ng/L		104	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	2.00	2.18		ng/L		109	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.00	2.18		ng/L		109	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	1.82	J	ng/L		91	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.00	1.86	J	ng/L		93	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.13		ng/L		107	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.20		ng/L		110	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.31		ng/L		116	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.00	2.26		ng/L		113	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.00		ng/L		100	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.23		ng/L		112	50 - 150
Perfluorooctanesulfonic acid (PFOS)	2.00	2.34		ng/L		117	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.29		ng/L		114	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.24		ng/L		112	50 - 150
Perfluorotetradecanoic acid (PFTA)	2.00	1.88	J	ng/L		94	50 - 150
Perfluorotridecanoic acid (PFTTrDA)	2.00	2.06		ng/L		103	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	2.34		ng/L		117	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.14		ng/L		107	50 - 150

Surrogate	LLCS %Recovery	LLCS Qualifier	LLCS Limits
13C2 PFHxA	97		70 - 130
13C2 PFDA	109		70 - 130
d5-NEtFOSAA	103		70 - 130
13C3 HFPO-DA	85		70 - 130

Lab Sample ID: 810-53656-O-1-A LMS
Matrix: Water
Analysis Batch: 49543

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 49449

Analyte	Sample Result	Sample Qualifier	Spike Added	LMS Result	LMS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.00	1.93	J	ng/L		97	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		2.00	2.06		ng/L		103	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.00	2.07		ng/L		104	50 - 150

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QC Sample Results

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

Job ID: 380-37893-1

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

Lab Sample ID: 810-53656-O-1-A LMS
Matrix: Water
Analysis Batch: 49543

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 49449

Analyte	Sample Result	Sample Qualifier	Spike Added	LMS Result	LMS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.00	2.13		ng/L		107	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.4		2.00	4.16		ng/L		90	50 - 150
Perfluorodecanoic acid (PFDA)	ND		2.00	2.40		ng/L		120	50 - 150
Perfluorododecanoic acid (PFDoA)	ND		2.00	2.24		ng/L		112	50 - 150
Perfluoroheptanoic acid (PFHpA)	ND		2.00	3.75		ng/L		106	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	ND		2.00	2.95		ng/L		102	50 - 150
Perfluorohexanoic acid (PFHxA)	16		2.00	17.8	4	ng/L		104	50 - 150
Perfluorononanoic acid (PFNA)	ND		2.00	2.54		ng/L		127	50 - 150
Perfluorooctanesulfonic acid (PFOS)	ND		2.00	2.85		ng/L		100	50 - 150
Perfluorooctanoic acid (PFOA)	4.5		2.00	6.77		ng/L		112	50 - 150
Perfluoroundecanoic acid (PFUnA)	ND		2.00	1.94	J	ng/L		97	50 - 150
Perfluorotetradecanoic acid (PFTA)	ND		2.00	1.95	J	ng/L		98	50 - 150
Perfluorotridecanoic acid (PFTTrDA)	ND		2.00	2.31		ng/L		116	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.00	2.10		ng/L		105	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.00	2.17		ng/L		109	50 - 150
Surrogate		LMS %Recovery		LMS Qualifier		Limits			
13C2 PFHxA		93				70 - 130			
13C2 PFDA		97				70 - 130			
d5-NEtFOSAA		97				70 - 130			
13C3 HFPO-DA		95				70 - 130			

Lab Sample ID: 810-53647-O-1-A DU
Matrix: Water
Analysis Batch: 49543

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 49449

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		ND		ng/L		NC	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		ND		ng/L		NC	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		ND		ng/L		NC	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		ND		ng/L		NC	30
Perfluorobutanesulfonic acid (PFBS)	ND		ND		ng/L		NC	30
Perfluorodecanoic acid (PFDA)	ND		ND		ng/L		NC	30
Perfluorododecanoic acid (PFDoA)	ND		ND		ng/L		NC	30
Perfluoroheptanoic acid (PFHpA)	ND		ND		ng/L		NC	30

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-37893-1

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

Lab Sample ID: 810-53647-O-1-A DU
Matrix: Water
Analysis Batch: 49543

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 49449

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Perfluorohexanesulfonic acid (PFHxS)	ND		ND		ng/L		NC	30
Perfluorohexanoic acid (PFHxA)	13		13.6		ng/L		1	30
Perfluorononanoic acid (PFNA)	ND		ND		ng/L		NC	30
Perfluorooctanesulfonic acid (PFOS)	ND		ND		ng/L		NC	30
Perfluorooctanoic acid (PFOA)	2.7		2.69		ng/L		0.3	30
Perfluoroundecanoic acid (PFUnA)	ND		ND		ng/L		NC	30
Perfluorotetradecanoic acid (PFTA)	ND		ND		ng/L		NC	30
Perfluorotridecanoic acid (PFTrDA)	ND		ND		ng/L		NC	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		ND		ng/L		NC	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		ND		ng/L		NC	30

Surrogate	%Recovery	DU Qualifier	DU Limits
13C2 PFHxA	96		70 - 130
13C2 PFDA	99		70 - 130
d5-NEtFOSAA	93		70 - 130
13C3 HFPO-DA	84		70 - 130

Method: 625 PAH Physis LL (EAL) + TICs - EPA 625 Base/Neutral and Acid Organics i

Lab Sample ID: 104252-B1
Matrix: BlankMatrix
Analysis Batch: O-40132

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: O-40132_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Acenaphthene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Acenaphthylene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Anthracene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Biphenyl	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Chrysene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Dibenzothiophene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-37893-1

Method: 625 PAH Physis LL (EAL) + TICs - EPA 625 Base/Neutral and Acid Organics i (Continued)

Lab Sample ID: 104252-B1
Matrix: BlankMatrix
Analysis Batch: O-40132

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: O-40132_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Disalicylidenepranediamine	ND		0.1	0.05	µg/L		02/16/23 00:00	02/26/23 01:49	1
Fluoranthene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Fluorene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Naphthalene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Perylene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Phenanthrene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1
Pyrene	ND		0.005	0.001	µg/L		02/16/23 00:00	02/26/23 01:49	1

Surrogate	Blank %Recovery	Blank Qualifier	Limits	Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	88		27 - 133	02/16/23 00:00	02/26/23 01:49	1
(d10-Phenanthrene)	93		43 - 129	02/16/23 00:00	02/26/23 01:49	1
(d12-Chrysene)	96		52 - 144	02/16/23 00:00	02/26/23 01:49	1
(d12-Perylene)	93		36 - 161	02/16/23 00:00	02/26/23 01:49	1
(d8-Naphthalene)	86		25 - 125	02/16/23 00:00	02/26/23 01:49	1

Lab Sample ID: 104252-BS1
Matrix: BlankMatrix
Analysis Batch: O-40132

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: O-40132_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1-Methylnaphthalene	0.5	0.504		µg/L		101	31 - 128
1-Methylphenanthrene	0.5	0.515		µg/L		103	66 - 127
2,3,5-Trimethylnaphthalene	0.5	0.528		µg/L		106	55 - 122
2,6-Dimethylnaphthalene	0.5	0.52		µg/L		104	48 - 120
2-Methylnaphthalene	0.5	0.512		µg/L		102	47 - 130
Acenaphthene	0.5	0.525		µg/L		105	53 - 131
Acenaphthylene	0.5	0.515		µg/L		103	43 - 140
Anthracene	0.5	0.519		µg/L		104	58 - 135
Benz[a]anthracene	0.5	0.502		µg/L		100	55 - 145
Benzo[a]pyrene	0.5	0.51		µg/L		102	51 - 143
Benzo[b]fluoranthene	0.5	0.549		µg/L		110	46 - 165
Benzo[e]pyrene	0.5	0.542		µg/L		108	42 - 152
Benzo[g,h,i]perylene	1	0.913		µg/L		91	63 - 133
Benzo[k]fluoranthene	0.5	0.526		µg/L		105	56 - 145
Biphenyl	0.5	0.524		µg/L		105	56 - 119
Chrysene	0.5	0.497		µg/L		99	56 - 141
Dibenz[a,h]anthracene	1	0.986		µg/L		99	55 - 150
Dibenzo[a,l]pyrene	0.5	0.488		µg/L		98	50 - 150
Dibenzothiophene	0.5	0.532		µg/L		106	46 - 126
Disalicylidenepranediamine	50	41.2		µg/L		82	50 - 150
Fluoranthene	0.5	0.502		µg/L		100	60 - 146
Fluorene	0.5	0.523		µg/L		105	58 - 131
Indeno[1,2,3-cd]pyrene	1	0.898		µg/L		90	50 - 151
Naphthalene	0.5	0.5		µg/L		100	41 - 126
Perylene	0.5	0.51		µg/L		102	48 - 141
Phenanthrene	0.5	0.522		µg/L		104	67 - 127
Pyrene	0.5	0.495		µg/L		99	54 - 156

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-37893-1

Method: 625 PAH Physis LL (EAL) + TICs - EPA 625 Base/Neutral and Acid Organics i (Continued)

Lab Sample ID: 104252-BS1
Matrix: BlankMatrix
Analysis Batch: O-40132

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: O-40132_P

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
(d10-Acenaphthene)	104		27 - 133
(d10-Phenanthrene)	106		43 - 129
(d12-Chrysene)	105		52 - 144
(d12-Perylene)	108		36 - 161
(d8-Naphthalene)	96		25 - 125

Lab Sample ID: 104252-BS2
Matrix: BlankMatrix
Analysis Batch: O-40132

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: O-40132_P

Analyte	Spike Added	LCS DUP Result	LCS DUP Qualifier	Unit	D	%Rec	%Rec		RPD	
							Limits	RPD	Limit	
1-Methylnaphthalene	0.5	0.478		µg/L		96	31 - 128	5	30	
1-Methylphenanthrene	0.5	0.524		µg/L		105	66 - 127	2	30	
2,3,5-Trimethylnaphthalene	0.5	0.52		µg/L		104	55 - 122	2	30	
2,6-Dimethylnaphthalene	0.5	0.495		µg/L		99	48 - 120	5	30	
2-Methylnaphthalene	0.5	0.484		µg/L		97	47 - 130	5	30	
Acenaphthene	0.5	0.512		µg/L		102	53 - 131	3	30	
Acenaphthylene	0.5	0.506		µg/L		101	43 - 140	2	30	
Anthracene	0.5	0.508		µg/L		102	58 - 135	2	30	
Benz[a]anthracene	0.5	0.515		µg/L		103	55 - 145	3	30	
Benzo[a]pyrene	0.5	0.504		µg/L		101	51 - 143	1	30	
Benzo[b]fluoranthene	0.5	0.546		µg/L		109	46 - 165	1	30	
Benzo[e]pyrene	0.5	0.537		µg/L		107	42 - 152	1	30	
Benzo[g,h,i]perylene	1	0.914		µg/L		91	63 - 133	0	30	
Benzo[k]fluoranthene	0.5	0.525		µg/L		105	56 - 145	0	30	
Biphenyl	0.5	0.502		µg/L		100	56 - 119	5	30	
Chrysene	0.5	0.523		µg/L		105	56 - 141	6	30	
Dibenz[a,h]anthracene	1	0.969		µg/L		97	55 - 150	2	30	
Dibenzo[a,l]pyrene	0.5	0.421		µg/L		84	50 - 150	15	30	
Dibenzothiophene	0.5	0.534		µg/L		107	46 - 126	1	30	
Disalicylidenepropanediamine	50	41.4		µg/L		83	50 - 150	1	30	
Fluoranthene	0.5	0.514		µg/L		103	60 - 146	3	30	
Fluorene	0.5	0.518		µg/L		104	58 - 131	1	30	
Indeno[1,2,3-cd]pyrene	1	0.881		µg/L		88	50 - 151	2	30	
Naphthalene	0.5	0.46		µg/L		92	41 - 126	8	30	
Perylene	0.5	0.509		µg/L		102	48 - 141	0	30	
Phenanthrene	0.5	0.527		µg/L		105	67 - 127	1	30	
Pyrene	0.5	0.513		µg/L		103	54 - 156	4	30	

Surrogate	LCS DUP LCS DUP		Limits
	%Recovery	Qualifier	
(d10-Acenaphthene)	98		27 - 133
(d10-Phenanthrene)	106		43 - 129
(d12-Chrysene)	108		52 - 144
(d12-Perylene)	106		36 - 161
(d8-Naphthalene)	88		25 - 125

QC Sample Results

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

Job ID: 380-37893-1

Method: 8015 Gas (Purgeable) LL (EAL) - SW846 8015B Gasoline Range Organics

Lab Sample ID: 23VG39B12B
Matrix: WATER
Analysis Batch: 23VG39B12

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GASOLINE	ND	U	0.020		mg/L			02/17/23 12:29	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
BROMOFLUOROBENZENE								02/17/23 12:29	1

Lab Sample ID: 23VG39B12L
Matrix: WATER
Analysis Batch: 23VG39B12

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
GASOLINE	0.500	0.452		mg/L		90	60 - 130
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
BROMOFLUOROBENZENE	118		70 - 130				

Method: 8015 LL DRO/MRO/JP5/JP8 - 8015 - TPH DRO/ORO

Lab Sample ID: 23DSB031WB
Matrix: WATER
Analysis Batch: 23DSB031W

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DIESEL	ND	U	0.025		mg/L			02/20/23 12:26	1
JP5	ND	U	0.050		mg/L			02/20/23 12:26	1
JP8	ND	U	0.050		mg/L			02/20/23 12:26	1
MOTOR OIL	ND	U	0.050		mg/L			02/20/23 12:26	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
BROMOBENZENE								02/20/23 12:26	1
HEXACOSANE								02/20/23 12:26	1

Lab Sample ID: 23DSB031WL
Matrix: WATER
Analysis Batch: 23DSB031W

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
DIESEL	2.50	2.53		mg/L		101	50 - 130
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
BROMOBENZENE	108		60 - 130				
HEXACOSANE	99		60 - 130				

Lab Sample ID: 23J5B031WL
Matrix: WATER
Analysis Batch: 23DSB031W

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
JP5	2.50	1.71		mg/L		68	30 - 160

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QC Sample Results

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

Job ID: 380-37893-1

Method: 8015 LL DRO/MRO/JP5/JP8 - 8015 - TPH DRO/ORO (Continued)

<i>Surrogate</i>	<i>LCS</i> <i>%Recovery</i>	<i>LCS</i> <i>Qualifier</i>	<i>Limits</i>
BROMOBENZENE	96		60 - 130
HEXACOSANE	94		60 - 130

Lab Sample ID: 23J8B031WL
Matrix: WATER
Analysis Batch: 23DSB031W

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

<i>Analyte</i>	<i>Spike</i> <i>Added</i>	<i>LCS</i> <i>Result</i>	<i>LCS</i> <i>Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec</i> <i>Limits</i>
JP8	2.50	2.27		mg/L		91	30 - 160

<i>Surrogate</i>	<i>LCS</i> <i>%Recovery</i>	<i>LCS</i> <i>Qualifier</i>	<i>Limits</i>
BROMOBENZENE	109		60 - 130
HEXACOSANE	106		60 - 130

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QC Association Summary

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

Job ID: 380-37893-1

GC/MS Semi VOA

Prep Batch: 49444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 810-49444/1-A	Method Blank	Total/NA	Water	525.2	

Prep Batch: 49455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 810-49455/2-A	Lab Control Sample	Total/NA	Water	525.2	

Prep Batch: 49616

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-37893-1	MOANALUA WELLS (331-223-TP202)	Total/NA	Drinking Water	525.2	
LLCS 810-49616/23-A	Lab Control Sample	Total/NA	Water	525.2	
810-53874-B-1-A MS	Matrix Spike	Total/NA	Water	525.2	
810-54050-B-1-A DU	Duplicate	Total/NA	Water	525.2	

Analysis Batch: 49915

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-37893-1	MOANALUA WELLS (331-223-TP202)	Total/NA	Drinking Water	525.2	49616
MB 810-49444/1-A	Method Blank	Total/NA	Water	525.2	49444
LCS 810-49455/2-A	Lab Control Sample	Total/NA	Water	525.2	49455
LLCS 810-49616/23-A	Lab Control Sample	Total/NA	Water	525.2	49616
810-53874-B-1-A MS	Matrix Spike	Total/NA	Water	525.2	49616
810-54050-B-1-A DU	Duplicate	Total/NA	Water	525.2	49616

LCMS

Prep Batch: 49449

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-37893-1	MOANALUA WELLS (331-223-TP202)	Total/NA	Drinking Water	537.1 DW	
MBL 810-49449/1-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 810-49449/3-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LLCS 810-49449/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	
810-53656-O-1-A LMS	Matrix Spike	Total/NA	Water	537.1 DW	
810-53647-O-1-A DU	Duplicate	Total/NA	Water	537.1 DW	

Analysis Batch: 49543

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-37893-1	MOANALUA WELLS (331-223-TP202)	Total/NA	Drinking Water	537.1	49449
MBL 810-49449/1-A	Method Blank	Total/NA	Water	537.1	49449
LCS 810-49449/3-A	Lab Control Sample	Total/NA	Water	537.1	49449
LLCS 810-49449/2-A	Lab Control Sample	Total/NA	Water	537.1	49449
810-53656-O-1-A LMS	Matrix Spike	Total/NA	Water	537.1	49449
810-53647-O-1-A DU	Duplicate	Total/NA	Water	537.1	49449

Prep Batch: 50731

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-37893-1	MOANALUA WELLS (331-223-TP202)	Total/NA	Drinking Water	533	
MBL 810-50731/1-A	Method Blank	Total/NA	Water	533	
LCS 810-50731/3-A	Lab Control Sample	Total/NA	Water	533	
LLCS 810-50731/2-A	Lab Control Sample	Total/NA	Water	533	
810-53787-AT-1-A LMS	Matrix Spike	Total/NA	Water	533	
380-37960-C-1-A DU	Duplicate	Total/NA	Water	533	

QC Association Summary

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

Job ID: 380-37893-1

LCMS

Analysis Batch: 50912

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-37893-1	MOANALUA WELLS (331-223-TP202)	Total/NA	Drinking Water	533	50731
MBL 810-50731/1-A	Method Blank	Total/NA	Water	533	50731
LCS 810-50731/3-A	Lab Control Sample	Total/NA	Water	533	50731
LLCS 810-50731/2-A	Lab Control Sample	Total/NA	Water	533	50731
810-53787-AT-1-A LMS	Matrix Spike	Total/NA	Water	533	50731
380-37960-C-1-A DU	Duplicate	Total/NA	Water	533	50731

Subcontract

Analysis Batch: O-40132

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-37893-1	MOANALUA WELLS (331-223-TP202)	Total/NA	Drinking Water	625 PAH Physis LL (EAL) + TICs	O-40132_P
104252-B1	Method Blank	Total/NA	BlankMatrix	625 PAH Physis LL (EAL) + TICs	O-40132_P
104252-BS1	Lab Control Sample	Total/NA	BlankMatrix	625 PAH Physis LL (EAL) + TICs	O-40132_P
104252-BS2	Lab Control Sample Dup	Total/NA	BlankMatrix	625 PAH Physis LL (EAL) + TICs	O-40132_P

Analysis Batch: 23DSB031W

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-37893-1	MOANALUA WELLS (331-223-TP202)	Total/NA	Drinking Water	8015 LL DRO/MRO/JP5/J P8	
23DSB031WB	Method Blank	Total/NA	WATER	8015 LL DRO/MRO/JP5/J P8	
23DSB031WL	Lab Control Sample	Total/NA	WATER	8015 LL DRO/MRO/JP5/J P8	
23J5B031WL	Lab Control Sample	Total/NA	WATER	8015 LL DRO/MRO/JP5/J P8	
23J8B031WL	Lab Control Sample	Total/NA	WATER	8015 LL DRO/MRO/JP5/J P8	

Analysis Batch: 23VG39B12

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-37893-1	MOANALUA WELLS (331-223-TP202)	Total/NA	Drinking Water	8015 Gas (Purgeable) LL (EAL)	
380-37893-2	TB:MOANALUA WELLS (331-223-TP202)	Total/NA	Water	8015 Gas (Purgeable) LL (EAL)	
23VG39B12B	Method Blank	Total/NA	WATER	8015 Gas (Purgeable) LL (EAL)	
23VG39B12L	Lab Control Sample	Total/NA	WATER	8015 Gas (Purgeable) LL (EAL)	

Prep Batch: O-40132_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-37893-1	MOANALUA WELLS (331-223-TP202)	Total/NA	Drinking Water	EPA_625	

Eurofins Eaton Analytical Pomona

QC Association Summary

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

Job ID: 380-37893-1

Subcontract (Continued)

Prep Batch: O-40132_P (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
104252-B1	Method Blank	Total/NA	BlankMatrix	EPA_625	
104252-BS1	Lab Control Sample	Total/NA	BlankMatrix	EPA_625	
104252-BS2	Lab Control Sample Dup	Total/NA	BlankMatrix	EPA_625	

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Lab Chronicle

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

Job ID: 380-37893-1

Client Sample ID: MOANALUA WELLS (331-223-TP202)

Lab Sample ID: 380-37893-1

Date Collected: 02/14/23 10:08

Matrix: Drinking Water

Date Received: 02/15/23 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	525.2			49616	CK	EA SB	02/28/23 09:00
Total/NA	Analysis	525.2		1	49915	CG	EA SB	03/02/23 06:39
Total/NA	Prep	533			50731	NR	EA SB	03/08/23 06:36
Total/NA	Analysis	533		1	50912	CM	EA SB	03/09/23 23:27
Total/NA	Prep	537.1 DW			49449	AD	EA SB	02/27/23 08:28
Total/NA	Analysis	537.1		1	49543	MH	EA SB	02/28/23 12:57
Total/NA	Prep	EPA_625		1	O-40132_P			02/16/23 00:00
Total/NA	Analysis	625 PAH Physis LL (EAL) + TICs		1	O-40132	YC		02/26/23 06:57
Total/NA	Analysis	8015 Gas (Purgeable) LL (EAL)		1	23VG39B12	SCerva		02/17/23 23:18
Total/NA	Analysis	8015 LL DRO/MRO/JP5/JP8		1	23DSB031W	SDees		02/20/23 16:46

Client Sample ID: TB:MOANALUA WELLS (331-223-TP202)

Lab Sample ID: 380-37893-2

Date Collected: 02/14/23 10:08

Matrix: Water

Date Received: 02/15/23 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015 Gas (Purgeable) LL (EAL)		1	23VG39B12	SCerva		02/17/23 23:54

Laboratory References:

= Physis Environmental Laboratories, 1904 Wright Circle, Anaheim, CA 92806

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

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

Job ID: 380-37893-1

Laboratory: Eurofins Eaton Analytical South Bend

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	ISO/IEC 17025	5794.01	07-31-24
Alabama	State	40700	06-30-23
Alaska	State	IN00035	06-30-23
Arizona	State	AZ0432	07-26-23
Arkansas (DW)	State	EPA IN00035	06-30-23
California	State	2920	06-30-23
Colorado	State	IN00035	02-29-24
Connecticut	State	PH-0132	03-31-22 *
Delaware (DW)	State	IN00035	06-30-23
Florida	NELAP	E87775	06-30-23
Georgia (DW)	State	929	06-30-23
Hawaii	State	IN035	06-30-23
Idaho (DW)	State	IN00035	12-31-23
IL Dept. of Public Health (Micro)	State	17767	06-30-23
Illinois	NELAP	200001	09-30-23
Indiana	State	C-71-01	12-31-25
Indiana (Micro)	State	M-76-07	12-31-25
Iowa	State	IA Lab #098	11-01-23
Kansas	NELAP	E-10233	10-31-23
Kentucky (DW)	State	KY90056	12-31-22 *
Louisiana (DW)	State	LA014	12-31-23
Maine	State	IN00035	05-01-23
Maryland	State	209	03-31-23
Massachusetts	State	M-IN035	06-30-23
MI - RadChem Recognition	State	9926	06-30-23
Michigan	State	9926	03-31-23
Minnesota	NELAP	1989807	12-31-23
Mississippi	State	IN00035	06-30-22 *
Missouri	State	880	09-30-24
Montana (DW)	State	CERT0026	01-02-24
Nebraska	State	NE-OS-05-04	06-30-23
Nevada	State	IN000352021-2	07-31-23
New Hampshire	NELAP	2124	11-05-23
New Jersey	NELAP	IN598	06-30-23
New Mexico	State	IN00035	06-30-23
New York	NELAP	11398	03-29-23
North Carolina (DW)	State	18700	07-31-23
North Dakota	State	R-035	06-30-23
Ohio	State	87775	06-30-23
Oklahoma	NELAP	D9508	08-31-23
Oregon	NELAP	4156	09-16-23
Pennsylvania	NELAP	68-00466	04-30-23
Puerto Rico	State	IN00035	03-12-23
Rhode Island	State	LAO00343	12-30-23
South Carolina	State	95005001	06-30-23
South Dakota (DW)	State	IN00035	06-30-23
Tennessee	State	TN02973	06-30-23
Texas	NELAP	T104704187-22-16	12-31-23
Texas	TCEQ Water Supply	TX207	06-30-23
USEPA Reg X SDWA	US Federal Programs	IN00035	08-20-22 *

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

Eurofins Eaton Analytical Pomona

Accreditation/Certification Summary

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

Job ID: 380-37893-1

Laboratory: Eurofins Eaton Analytical South Bend (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
USEPA UCMR 5	US Federal Programs	IN00035	12-31-25
Utah	NELAP	IN00035	07-31-23
Vermont	State	VT-8775	11-15-23
Virginia	NELAP	460275	03-14-23
Washington	State	C837	01-01-24
West Virginia (DW)	State	9927 C	12-31-23
Wisconsin	State	999766900	08-31-23
Wisconsin (Micro)	State	10121	12-31-22 *
Wyoming	State	8TMS-L	06-30-23

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

Method Summary

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

Job ID: 380-37893-1

Method	Method Description	Protocol	Laboratory
525.2	Semivolatile Organic Compounds (GC/MS)	EPA	EA SB
533	Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water	EPA	EA SB
537.1	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA SB
625	EPA 625 Base/Neutral and Acid Organics i	EPA	
8015	8015 - TPH DRO/ORO	EPA	
8015B	SW846 8015B Gasoline Range Organics	SW846	
525.2	Extraction of Semivolatile Compounds	EPA	EA SB
533	Extraction of Perfluorinated and Polyfluorinated Alkyl Acids	EPA	EA SB
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

= Physis Environmental Laboratories, 1904 Wright Circle, Anaheim, CA 92806

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

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

Job ID: 380-37893-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	PWSID Number
380-37893-1	MOANALUA WELLS (331-223-TP202)	Drinking Water	02/14/23 10:08	02/15/23 10:30	HI0000331
380-37893-2	TB:MOANALUA WELLS (331-223-TP202)	Water	02/14/23 10:08	02/15/23 10:30	

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3051 Fujita Street
 Torrance, CA 90505
 Tel: (310)-618-8889

Date: 03-09-2023
 EMAX Batch No.: 23B195

Attn: Jackie Contreras

Eurofins Eaton Analytical
 750 Royal Oaks Dr., Suite 100
 Monrovia, CA 91016-3629

Subject: Laboratory Report
 Project: 380-37893

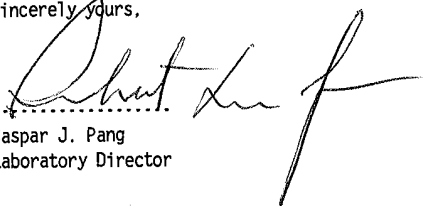
Enclosed is the Laboratory report for samples received on 02/16/23.
 The data reported relate only to samples listed below :

Sample ID	Control #	Col Date	Matrix	Analysis
380-37893-1	B195-01	02/14/23	WATER	TPH GASOLINE TPH
380-37893-2	B195-02	02/14/23	WATER	TPH GASOLINE

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,



Caspar J. Pang
 Laboratory Director

This report is confidential and intended solely for the use of the individual or entity to whom it is addressed. This report shall not be reproduced except in full or without the written approval of EMAX.

EMAX certifies that results included in this report meets all TNI & DOD requirements unless noted in the Case Narrative.

NELAP Accredited Certificate Number CA002912022-22
 ANAB Accredited DoD ELAP and ISO/IEC 17025 Certificate Number L2278 Testing
 California ELAP Accredited Certificate Number 2672

Chain of Custody Record



23B195

Client Information (Sub Contract Lab)			Lab PIV: Arada, Rachelle	Carrier Tracking No(s): 380-40103.1						
Client Contact: Shipping/Receiving			E-Mail: Rachelle.Arada@et.eurolfins.com	Page: Page 1 of 1						
Company: EMAX Laboratories Inc			Accreditations Required (See note): State - Hawaii	Job #: 380-37893-1						
Address: 3051 Fujita Street, Torrance CA, 90505			Due Date Requested: 3/1/2023	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) Other:						
PO #: _____			Analysis Requested							
WO #: _____										
Project #: 38001111										
SSOW#: _____										
Site: Honolulu BWS Sites										
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=water/oil, BT=Trisub, AL=Al)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SB (8015 Gas (Purgeable) LL (EAL) / 8015 Gas (Purgeable) LL (EAL))	SUB (8015 LL DROM/RO/P5/JPR) / 8015 LL DROM/RO/P5/JPR	Total Number of Containers	Special Instructions/Note:
MOANALUA WELLS (331-223-TP202) (380-37893-1)	2/14/23	10:08 Hawaiian	Water	Water	X	X	X	X	6	See Attached Instructions
TB:MOANALUA WELLS (331-223-TP202) (380-37893-2)	2/14/23	10:08 Hawaiian	Water	Water	X	X	X	X	2	See Attached Instructions
<p>Note: Since laboratory accreditations are subject to change, Eurofins Eaton Analytical, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/retest/matrix being analyzed, the samples must be shipped back to the Eurofins Eaton Analytical, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Eaton Analytical, LLC attention immediately. If all requested accreditations are current to date, return the Signed Chain of Custody attesting to said compliance to Eurofins Eaton Analytical, LLC.</p>										
<p>Possible Hazard Identification <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/QC Requirements:</p>										
<p>Deliverable Requested: I, II, III, IV, Other (specify) _____ Primary Deliverable Rank: 2 Empty Kit Relinquished by: _____ Date: _____ Relinquished by: G. RETNER Date/Time: 02/16/2023 13:19 Company: EEA Relinquished by: _____ Date/Time: 2/16/23 2:30 Company: PCS Relinquished by: _____ Date/Time: _____ Company: _____ Custody Seals Intact: _____ Custody Seal No.: _____ Cooler Temperature(s) °C and Other Remarks: 1.3/1.1 C/F - 0.2</p>										



Type of Delivery <input type="checkbox"/> Fedex <input type="checkbox"/> UPS <input type="checkbox"/> GSO <input checked="" type="checkbox"/> Others <u>all around</u>	Airbill / Tracking Number	ECN <u>23B195</u>
<input type="checkbox"/> EMAX Courier <input type="checkbox"/> Client Delivery		Recipient <u>Ecet Cecilia Chavez</u> Date <u>52 Nov 23 2/16/23</u> Time <u>1420</u>

COC INSPECTION

<input checked="" type="checkbox"/> Client Name	<input checked="" type="checkbox"/> Client PM/FC	<input type="checkbox"/> Sampler Name	<input checked="" type="checkbox"/> Sampling Date/Time	<input checked="" type="checkbox"/> Sample ID	<input checked="" type="checkbox"/> Matrix
<input type="checkbox"/> Address	<input checked="" type="checkbox"/> Tel # / Fax #	<input checked="" type="checkbox"/> Courier Signature	<input checked="" type="checkbox"/> Analysis Required	<input type="checkbox"/> Preservative (if any)	<input checked="" type="checkbox"/> TAT
Safety Issues (if any)	<input type="checkbox"/> High concentrations expected	<input type="checkbox"/> From Superfund Site	<input type="checkbox"/> Rad screening required		

Note: _____

PACKAGING INSPECTION

Container	<input checked="" type="checkbox"/> Cooler	<input type="checkbox"/> Box	<input type="checkbox"/> Other
Condition <u>correction</u>	<input type="checkbox"/> Custody Seal	<input type="checkbox"/> Intact	<input type="checkbox"/> Damaged
Packaging <u>factor: -0.2</u>	<input checked="" type="checkbox"/> Bubble Pack	<input type="checkbox"/> Styrofoam	<input type="checkbox"/> Popcorn
Temperatures	<input checked="" type="checkbox"/> Cooler 1 <u>13/11</u> °C	<input type="checkbox"/> Cooler 2 _____ °C	<input type="checkbox"/> Cooler 3 _____ °C
(Cool, ≤6 °C but not frozen)	<input type="checkbox"/> Cooler 6 _____ °C	<input type="checkbox"/> Cooler 7 _____ °C	<input type="checkbox"/> Cooler 8 _____ °C
Thermometer: <u>A - S/N 221052760</u>	<u>B - S/N 210760237</u>	<u>C - S/N _____</u>	<u>D - S/N _____</u>

Comments: Temperature is out of range. PM was informed IMMEDIATELY.

Note: _____

DISCREPANCIES

LabSampleID	LabSampleContainerID	Code	ClientSample Label ID / Information	Corrective Action
2	7.8	D17	Time 1: 10:08 Date 1: 2/14/23	R1 ↓
			Time 2: 10:13 Date 2: 2/19/23	
<i>[Large handwritten scribble]</i>				

pH holding time requirement for water samples is 15 mins. Water samples for pH analysis are received beyond 15 minutes from sampling time. NB 2/23/23

NOTES/OBSERVATIONS: Sample 1 containers 5, 6 analysis is cut off

SAMPLE MATRIX IS DRINKING WATER? YES NO

- LEGEND:**
- | | | |
|---|---|---|
| <p>Code Description- Sample Management</p> <ul style="list-style-type: none"> D1 Analysis is not indicated in _____ D2 Analysis mismatch COC vs label D3 Sample ID mismatch COC vs label D4 Sample ID is not indicated in _____ D5 Container -[improper] [leaking] [broken] D6 Date/Time is not indicated in _____ D7 Date/Time mismatch COC vs label D8 Sample listed in COC is not received D9 Sample received is not listed in COC D10 No initial/date on corrections in COC/label D11 Container count mismatch COC vs received D12 Container size mismatch COC vs received | <p>Code Description-Sample Management</p> <ul style="list-style-type: none"> D13 Out of Holding Time D14 Bubble is >6mm D15 No trip blank in cooler D16 Preservation not indicated in _____ D17 Preservation mismatch COC vs label D18 Insufficient chemical preservative D19 Insufficient Sample D20 No filtration info for dissolved analysis D21 No sample for moisture determination D22 <u>2 dates ; times</u> D23 _____ D24 _____ | <p><input type="checkbox"/> Continue to next page.</p> <p>Code Description-Sample Management</p> <ul style="list-style-type: none"> R1 Proceed as indicated in <input checked="" type="checkbox"/> COC <input type="checkbox"/> Label R2 Refer to attached instruction R3 Cancel the analysis R4 Use vial with smallest bubble first R5 Log-in with latest sampling date and time+1 min R6 Adjust pH as necessary R7 Filter and preserved as necessary R8 _____ R9 _____ R10 _____ R11 _____ R12 _____ |
|---|---|---|

REVIEWS:

Sample Labeling <u>SHOW IN</u>	SRF <u>Cecilia</u>	PM <u>NB</u>
Date <u>2/16/23</u>	Date <u>2/16/23</u>	Date <u>2/23/23</u>

REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range or estimated value.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

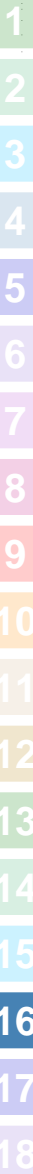
LABORATORY REPORT FOR

EUROFINS EATON ANALYTICAL

380-37893

METHOD 5030B/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

SDG#: 23B195



CASE NARRATIVE

Client : EUROFINS EATON ANALYTICAL

Project: 380-37893

SDG : 23B195

METHOD 5030B/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

A total of two(2) water samples were received on 02/16/23 to be analyzed for Total Petroleum Hydrocarbons by Purge and Trap in accordance with Method 5030B/8015B and project specific requirements.

Holding Time

Samples were analyzed within the prescribed holding time.

Calibration

Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using a secondary source (ICV). Continuing calibration (CCV) verifications were carried out on a frequency specified by the project. All calibration requirements were within acceptance criteria. Refer to calibration summary forms of ICAL, ICV and CCV for details. MRL was analyzed as required by the project. Refer to MRL summary form for details.

Method Blank

Method blank was prepared and analyzed at the frequency required by the project. For this SDG, one(1) method blank was analyzed. VG39B12B - result was compliant to project requirement. Refer to sample result summary form for details.

Lab Control Sample

Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of LCS/LCD was analyzed. VG39B12L/VG39B12C were within LCS limits. Refer to LCS summary form for details.

Matrix QC Sample

Matrix spike sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of MS/MSD was analyzed. Gasoline was within MS QC limits in B194-01M/B194-01S. Refer to Matrix QC summary form for details.

Surrogate

Surrogate was added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis

Samples were analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

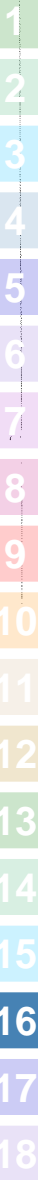
LAB CHRONICLE
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

SDG NO. : 23B195
Instrument ID : GCT039

Client : EUROFINS EATON ANALYTICAL
Project : 380-37893

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis Date/Time	Extraction Date/Time	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	VG39B12B	1	NA	02/17/2312:29	02/17/2312:29	EB17005A	EB17004A	23VG39B12	Method Blank
LCS1W	VG39B12L	1	NA	02/17/2313:05	02/17/2313:05	EB17006A	EB17004A	23VG39B12	Lab Control Sample (LCS)
LCD1W	VG39B12C	1	NA	02/17/2313:41	02/17/2313:41	EB17007A	EB17004A	23VG39B12	LCS Duplicate
380-37893-1	B195-01	1	NA	02/17/2323:18	02/17/2323:18	EB17023A	EB17014A	23VG39B12	Field Sample
380-37893-2	B195-02	1	NA	02/17/2323:54	02/17/2323:54	EB17024A	EB17014A	23VG39B12	Field Sample

FN - Filename
% Moist - Percent Moisture



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SAMPLE RESULTS

METHOD 5030B/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client : EUROFINS EATON ANALYTICAL	Date Collected: 02/14/23 10:08
Project : 380-37893	Date Received: 02/16/23
Batch No. : 23B195	Date Extracted: 02/17/23 23:18
Sample ID : 380-37893-1	Date Analyzed: 02/17/23 23:18
Lab Samp ID: B195-01	Dilution Factor: 1
Lab File ID: EB17023A	Matrix: WATER
Ext Btch ID: 23VG39B12	% Moisture: NA
Calib. Ref.: EB17014A	Instrument ID: 39

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
GASOLINE	ND	0.020	0.010

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromofluorobenzene	0.0327	0.0400	82	60-140

Notes:

Parameter H-C Range
Gasoline C6-C10

Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount : 5ml	Final Volume : 5ml
Prepared by : SCerva	Analyzed by : SCerva

METHOD 5030B/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client : EUROFINS EATON ANALYTICAL	Date Collected: 02/14/23 10:08
Project : 380-37893	Date Received: 02/16/23
Batch No. : 23B195	Date Extracted: 02/17/23 23:54
Sample ID : 380-37893-2	Date Analyzed: 02/17/23 23:54
Lab Samp ID: B195-02	Dilution Factor: 1
Lab File ID: EB17024A	Matrix: WATER
Ext Btch ID: 23VG39B12	% Moisture: NA
Calib. Ref.: EB17014A	Instrument ID: 39

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
GASOLINE	ND	0.020	0.010

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromofluorobenzene	0.0332	0.0400	83	60-140

Notes:

Parameter H-C Range
Gasoline C6-C10

Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount : 5ml	Final Volume : 5ml
Prepared by : SCerva	Analyzed by : SCerva

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QC SUMMARIES

METHOD 5030B/8015B
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

Client	: EUROFINS EATON ANALYTICAL	Date Collected: 02/17/23 12:29
Project	: 380-37893	Date Received: 02/17/23
Batch No.	: 23B195	Date Extracted: 02/17/23 12:29
Sample ID	: MBLK1W	Date Analyzed: 02/17/23 12:29
Lab Samp ID:	VG39B12B	Dilution Factor: 1
Lab File ID:	EB17005A	Matrix: WATER
Ext Btch ID:	23VG39B12	% Moisture: NA
Calib. Ref.:	EB17004A	Instrument ID: 39

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
GASOLINE	ND	0.020	0.010

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromofluorobenzene	0.0334	0.0400	83	60-140

Notes:

Parameter H-C Range
Gasoline C6-C10
Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount : 5ml	Final Volume : 5ml
Prepared by : SCerva	Analyzed by : SCerva

EMAX QUALITY CONTROL DATA
LAB CONTROL SAMPLE ANALYSIS

CLIENT : EUROFINS EATON ANALYTICAL
PROJECT : 380-37893
BATCH NO. : 23B195
METHOD : 5030B/8015B

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR:	1	1	1
SAMPLE ID	: MBLK1W	LCS1W	LCD1W
LAB SAMPLE ID	: VG39B12B	VG39B12L	VG39B12C
LAB FILE ID	: EB17005A	EB17006A	EB17007A
DATE PREPARED	: 02/17/23 12:29	02/17/23 13:05	02/17/23 13:41
DATE ANALYZED	: 02/17/23 12:29	02/17/23 13:05	02/17/23 13:41
PREP BATCH	: 23VG39B12	23VG39B12	23VG39B12
CALIBRATION REF:	EB17004A	EB17004A	EB17004A

ACCESSION:

PARAMETERS	MBResult (mg/L)	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
Gasoline	ND	0.500	0.452	90	0.500	0.459	92	2	60-130	30

SURROGATE PARAMETER	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	QCLimit (%)
Bromofluorobenzene	0.0400	0.0470	118	0.0400	0.0438	110	70-130

MB: Method Blank sample LCS: Lab Control Sample LCD: Lab Control Sample Duplicate

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

CLIENT : EUROFINS EATON ANALYTICAL
PROJECT : 380-37894
BATCH NO. : 23B194
METHOD : 5030B/8015B

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR:	1	1	1
SAMPLE ID	: 380-37894-1	380-37894-1MS	380-37894-1MSD
LAB SAMPLE ID	: B194-01	B194-01M	B194-01S
LAB FILE ID	: EB17011A	EB17012A	EB17013A
DATE PREPARED	: 02/17/23 16:05	02/17/23 16:41	02/17/23 17:17
DATE ANALYZED	: 02/17/23 16:05	02/17/23 16:41	02/17/23 17:17
PREP BATCH	: 23VG39B12	23VG39B12	23VG39B12
CALIBRATION REF:	EB17004A	EB17004A	EB17004A

ACCESSION:

PARAMETERS	PSResult (mg/L)	SpikeAmt (mg/L)	MSResult (mg/L)	MSRec (%)	SpikeAmt (mg/L)	MSDResult (mg/L)	MSDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
Gasoline	ND	0.500	0.440	88	0.500	0.439	88	0	50-130	30

SURROGATE PARAMETER	SpikeAmt (mg/L)	MSResult (mg/L)	MSRec (%)	SpikeAmt (mg/L)	MSDResult (mg/L)	MSDRec (%)	QCLimit (%)
Bromofluorobenzene	0.0400	0.0423	106	0.0400	0.0409	102	60-140

PS: Parent Sample MS: Matrix Spike MSD: Matrix Spike Duplicate

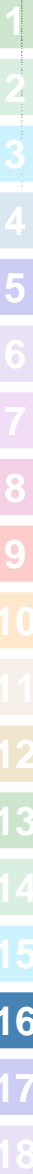
LABORATORY REPORT FOR

EUROFINS EATON ANALYTICAL

380-37893

METHOD 3520C/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

SDG#: 23B195



CASE NARRATIVE

Client : EUROFINS EATON ANALYTICAL

Project: 380-37893

SDG : 23B195

METHOD 3520C/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

One(1) water sample was received on 02/16/23 to be analyzed for Total Petroleum Hydrocarbons by Extraction in accordance with Method 3520C/8015B and project specific requirements.

Holding Time

The sample was analyzed within the prescribed holding time.

Calibration

Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using a secondary source (ICV). Continuing calibration (CCV) verifications were carried out on a frequency specified by the project. All calibration requirements were within acceptance criteria. Refer to calibration summary forms of ICAL, ICV and CCV for details. MRL was analyzed as required by the project. Refer to MRL summary form for details.

Method Blank

Method blank was prepared and analyzed at the frequency required by the project. For this SDG, one(1) method blank was analyzed. DSB031WB - result was compliant to project requirement. Refer to sample result summary form for details.

Lab Control Sample

Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of LCS/LCD was analyzed. DSB031WL/DSB031WC were within LCS limits. Refer to LCS summary form for details.

Matrix QC Sample

No matrix QC sample was provided on this SDG.

Surrogate

Surrogates were added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis

The sample was analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

CASE NARRATIVE

Client : EUROFINS EATON ANALYTICAL

Project: 380-37893

SDG : 23B195

METHOD 3520C/8015B
PETROLEUM HYDROCARBONS BY EXTRACTION

One(1) water sample was received on 02/16/23 to be analyzed for Petroleum Hydrocarbons by Extraction in accordance with Method 3520C/8015B and project specific requirements.

Holding Time

The sample was analyzed within the prescribed holding time.

Calibration

Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using a secondary source (ICV). Continuing calibration (CCV) verifications were carried out on a frequency specified by the project. All calibration requirements were within acceptance criteria. Refer to calibration summary forms of ICAL, ICV and CCV for details. MRL was analyzed as required by the project. Refer to MRL summary form for details.

Method Blank

Method blank was prepared and analyzed at the frequency required by the project. For this SDG, one(1) method blank was analyzed. DSB031WB - result was compliant to project requirement. Refer to sample result summary form for details.

Lab Control Sample

Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of LCS/LCD was analyzed. J5B031WL/J5B031WC were within LCS limits. Refer to LCS summary form for details.

Matrix QC Sample

No matrix QC sample was provided on this SDG.

Surrogate

Surrogates were added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis

The sample was analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

CASE NARRATIVE

Client : EUROFINS EATON ANALYTICAL

Project: 380-37893

SDG : 23B195

METHOD 3520C/8015B
PETROLEUM HYDROCARBONS BY EXTRACTION

One(1) water sample was received on 02/16/23 to be analyzed for Petroleum Hydrocarbons by Extraction in accordance with Method 3520C/8015B and project specific requirements.

Holding Time

The sample was analyzed within the prescribed holding time.

Calibration

Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using a secondary source (ICV). Continuing calibration (CCV) verifications were carried out on a frequency specified by the project. All calibration requirements were within acceptance criteria. Refer to calibration summary forms of ICAL, ICV and CCV for details. MRL was analyzed as required by the project. Refer to MRL summary form for details.

Method Blank

Method blank was prepared and analyzed at the frequency required by the project. For this SDG, one(1) method blank was analyzed. DSB031WB - result was compliant to project requirement. Refer to sample result summary form for details.

Lab Control Sample

Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of LCS/LCD was analyzed. J8B031WL/J8B031WC were within LCS limits. Refer to LCS summary form for details.

Matrix QC Sample

No matrix QC sample was provided on this SDG.

Surrogate

Surrogates were added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis

The sample was analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

LAB CHRONICLE
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

SDG NO. : 23B195
Instrument ID : D5

Client : EUROFINS EATON ANALYTICAL
Project : 380-37893

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis Date/Time	Extraction Date/Time	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
WATER									
MBLK1W	DSB031WB	1	NA	02/20/2312:26	02/17/2313:15	LB20010A	LB20004A	23DSB031W	Method Blank
LCS1W	DSB031WL	1	NA	02/20/2312:44	02/17/2313:15	LB20011A	LB20004A	23DSB031W	Lab Control Sample (LCS)
LCD1W	DSB031WC	1	NA	02/20/2313:03	02/17/2313:15	LB20012A	LB20004A	23DSB031W	LCS Duplicate
380-37893-1	B195-01	1	NA	02/20/2316:46	02/17/2313:15	LB20024A	LB20004A	23DSB031W	Field Sample

FN - Filename
% Moist - Percent Moisture



LAB CHRONICLE
PETROLEUM HYDROCARBONS BY EXTRACTION

Client : EUOFINS EATON ANALYTICAL
 Project : 380-37893
 Laboratory Sample ID : DSB031WB
 SDG NO. : 23B195
 Instrument ID : D5

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis Date/Time	Extraction Date/Time	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
	DSB031WB	1	NA	02/20/2312:26	02/17/2313:15	LB20010A	LB20005A	23DSB031W	Method Blank
	J5B031WL	1	NA	02/20/2313:22	02/17/2313:15	LB20013A	LB20005A	23DSB031W	Lab Control Sample (LCS)
	J5B031WC	1	NA	02/20/2313:40	02/17/2313:15	LB20014A	LB20005A	23DSB031W	LCS Duplicate
380-37893-1	B195-01	1	NA	02/20/2316:46	02/17/2313:15	LB20024A	LB20005A	23DSB031W	Field Sample

FN - Filename
 % Moist - Percent Moisture



LAB CHRONICLE
PETROLEUM HYDROCARBONS BY EXTRACTION

Client : EUROFINS EATON ANALYTICAL
 Project : 380-37893
 Laboratory Sample ID : DSB031WB
 SDG NO. : 23B195
 Instrument ID : D5

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis Date/Time	Extraction Date/Time	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
	DSB031WB	1	NA	02/20/2312:26	02/17/2313:15	LB20010A	LB20006A	23DSB031W	Method Blank
	J88031WL	1	NA	02/20/2313:59	02/17/2313:15	LB20015A	LB20006A	23DSB031W	Lab Control Sample (LCS)
	J88031WC	1	NA	02/20/2314:17	02/17/2313:15	LB20016A	LB20006A	23DSB031W	LCS Duplicate
380-37893-1	B195-01	1	NA	02/20/2316:46	02/17/2313:15	LB20024A	LB20006A	23DSB031W	Field Sample

FN - Filename
 % Moist - Percent Moisture



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SAMPLE RESULTS

METHOD 3520C/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	02/14/23 10:08
Project	: 380-37893	Date Received:	02/16/23
Batch No.	: 23B195	Date Extracted:	02/17/23 13:15
Sample ID	: 380-37893-1	Date Analyzed:	02/20/23 16:46
Lab Samp ID:	23B195-01	Dilution Factor:	1
Lab File ID:	LB20024A	Matrix:	WATER
Ext Btch ID:	23DSB031W	% Moisture:	NA
Calib. Ref.:	LB20004A	Instrument ID:	D5

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
Diesel	ND	0.030	0.015
Motor Oil	ND	0.059	0.030

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromobenzene	0.507	0.595	85	60-130
Hexacosane	0.138	0.149	93	60-130

Notes:

Parameter H-C Range
Diesel C10-C24
Motor Oil C24-C36

Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount : 840ml Final Volume : 5ml
Prepared by : P0reto Analyzed by : SDeeso

METHOD 3520C/8015B
 PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	02/14/23 10:08
Project	: 380-37893	Date Received:	02/16/23
Batch No.	: 23B195	Date Extracted:	02/17/23 13:15
Sample ID	: 380-37893-1	Date Analyzed:	02/20/23 16:46
Lab Samp ID:	23B195-01	Dilution Factor:	1
Lab File ID:	LB20024A	Matrix:	WATER
Ext Btch ID:	23DSB031W	% Moisture:	NA
Calib. Ref.:	LB20005A	Instrument ID:	D5

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
JP5	ND	0.059	0.030

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromobenzene	0.507	0.595	85	60-130
Hexacosane	0.138	0.149	93	60-130

Notes:

RL : Reporting Limit

Parameter H-C Range

JP5 C8-C18

Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount : 840ml

Final Volume : 5ml

Prepared by : P0reto

Analyzed by : SDeeso

METHOD 3520C/8015B
 PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	02/14/23 10:08
Project	: 380-37893	Date Received:	02/16/23
Batch No.	: 23B195	Date Extracted:	02/17/23 13:15
Sample ID	: 380-37893-1	Date Analyzed:	02/20/23 16:46
Lab Samp ID:	23B195-01	Dilution Factor:	1
Lab File ID:	LB20024A	Matrix:	WATER
Ext Btch ID:	23DSB031W	% Moisture:	NA
Calib. Ref.:	LB20006A	Instrument ID:	D5

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
JP8	ND	0.059	0.030

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromobenzene	0.507	0.595	85	60-130
Hexacosane	0.138	0.149	93	60-130

Notes:

RL : Reporting Limit

Parameter H-C Range

JP8 C8-C18

Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount : 840ml

Final Volume : 5ml

Prepared by : P0reto

Analyzed by : SDeeso

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QC SUMMARIES

METHOD 3520C/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : EUROFINS EATON ANALYTICAL	Date Collected: 02/17/23 13:15
Project : 380-37893	Date Received: 02/17/23
Batch No. : 23B195	Date Extracted: 02/17/23 13:15
Sample ID : MBLK1W	Date Analyzed: 02/20/23 12:26
Lab Samp ID: DSB031WB	Dilution Factor: 1
Lab File ID: LB20010A	Matrix: WATER
Ext Btch ID: 23DSB031W	% Moisture: NA
Calib. Ref.: LB20004A	Instrument ID: D5

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
Diesel	ND	0.025	0.012
Motor Oil	ND	0.050	0.025

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromobenzene	0.437	0.500	87	60-130
Hexacosane	0.114	0.125	91	60-130

Notes:

Parameter	H-C Range
Diesel	C10-C24
Motor Oil	C24-C36

Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount : 1000ml	Final Volume : 5ml
Prepared by : P0reto	Analyzed by : SDeeso

EMAX QUALITY CONTROL DATA
LAB CONTROL SAMPLE ANALYSIS

CLIENT : EUROFINS EATON ANALYTICAL
PROJECT : 380-37893
BATCH NO. : 23B195
METHOD : 3520C/8015B

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR:	1	1	1
SAMPLE ID	: MBLK1W	LCS1W	LCD1W
LAB SAMPLE ID	: DSB031WB	DSB031WL	DSB031WC
LAB FILE ID	: LB20010A	LB20011A	LB20012A
DATE PREPARED	: 02/17/23 13:15	02/17/23 13:15	02/17/23 13:15
DATE ANALYZED	: 02/20/23 12:26	02/20/23 12:44	02/20/23 13:03
PREP BATCH	: 23DSB031W	23DSB031W	23DSB031W
CALIBRATION REF:	LB20004A	LB20004A	LB20004A

ACCESSION:

PARAMETERS	MBResult (mg/L)	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
Diesel	ND	2.50	2.53	101	2.50	2.74	110	8	50-130	30

SURROGATE PARAMETERS	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	QCLimit (%)
Bromobenzene	0.500	0.542	108	0.500	0.432	86	60-130
Hexacosane	0.125	0.124	99	0.125	0.131	105	60-130

MB: Method Blank sample LCS: Lab Control Sample LCD: Lab Control Sample Duplicate

METHOD 3520C/8015B
 PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	02/17/23 13:15
Project	: 380-37893	Date Received:	02/17/23
Batch No.	: 23B195	Date Extracted:	02/17/23 13:15
Sample ID	: MBLK1W	Date Analyzed:	02/20/23 12:26
Lab Samp ID:	DSB031WB	Dilution Factor:	1
Lab File ID:	LB20010A	Matrix:	WATER
Ext Btch ID:	23DSB031W	% Moisture:	NA
Calib. Ref.:	LB20005A	Instrument ID:	D5

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
JP5	ND	0.050	0.025

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromobenzene	0.437	0.500	87	60-130
Hexacosane	0.114	0.125	91	60-130

Notes:

RL : Reporting Limit

Parameter H-C Range

JP5 C8-C18

Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount : 1000ml

Final Volume : 5ml

Prepared by : P0reto

Analyzed by : SDeeso

EMAX QUALITY CONTROL DATA
LAB CONTROL SAMPLE ANALYSIS

CLIENT : EUROFINS EATON ANALYTICAL
PROJECT : 380-37893
BATCH NO. : 23B195
METHOD : 3520C/8015B

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR:	1	1	1
SAMPLE ID	: MBLK1W	LCS1W	LCD1W
LAB SAMPLE ID	: DSB031WB	J5B031WL	J5B031WC
LAB FILE ID	: LB20010A	LB20013A	LB20014A
DATE PREPARED	: 02/17/23 13:15	02/17/23 13:15	02/17/23 13:15
DATE ANALYZED	: 02/20/23 12:26	02/20/23 13:22	02/20/23 13:40
PREP BATCH	: 23DSB031W	23DSB031W	23DSB031W
CALIBRATION REF:	LB20005A	LB20005A	LB20005A

ACCESSION:

PARAMETERS	MBResult (mg/L)	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
JP5	ND	2.50	1.71	68	2.50	1.81	72	6	30-160	30

SURROGATE PARAMETERS	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	QCLimit (%)
Bromobenzene	0.500	0.482	96	0.500	0.505	101	60-130
Hexacosane	0.125	0.118	94	0.125	0.126	101	60-130

MB: Method Blank sample LCS: Lab Control Sample LCD: Lab Control Sample Duplicate

METHOD 3520C/8015B
 PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	02/17/23 13:15
Project	: 380-37893	Date Received:	02/17/23
Batch No.	: 23B195	Date Extracted:	02/17/23 13:15
Sample ID	: MBLK1W	Date Analyzed:	02/20/23 12:26
Lab Samp ID:	DSB031WB	Dilution Factor:	1
Lab File ID:	LB20010A	Matrix:	WATER
Ext Btch ID:	23DSB031W	% Moisture:	NA
Calib. Ref.:	LB20006A	Instrument ID:	D5

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
JP8	ND	0.050	0.025

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromobenzene	0.437	0.500	87	60-130
Hexacosane	0.114	0.125	91	60-130

Notes:

RL : Reporting Limit

Parameter H-C Range

JP8 C8-C18

Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount : 1000ml

Final Volume : 5ml

Prepared by : P0reto

Analyzed by : SDeeso

EMAX QUALITY CONTROL DATA
LAB CONTROL SAMPLE ANALYSIS

CLIENT : EUROFINS EATON ANALYTICAL
PROJECT : 380-37893
BATCH NO. : 23B195
METHOD : 3520C/8015B

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR:	1	1	1
SAMPLE ID	: MBLK1W	LCS1W	LCD1W
LAB SAMPLE ID	: DSB031WB	J8B031WL	J8B031WC
LAB FILE ID	: LB20010A	LB20015A	LB20016A
DATE PREPARED	: 02/17/23 13:15	02/17/23 13:15	02/17/23 13:15
DATE ANALYZED	: 02/20/23 12:26	02/20/23 13:59	02/20/23 14:17
PREP BATCH	: 23DSB031W	23DSB031W	23DSB031W
CALIBRATION REF:	LB20006A	LB20006A	LB20006A

ACCESSION:

PARAMETERS	MBResult (mg/L)	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
JP8	ND	2.50	2.27	91	2.50	1.86	74	20	30-160	30

SURROGATE PARAMETERS	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	QCLimit (%)
Bromobenzene	0.500	0.543	109	0.500	0.537	107	60-130
Hexacosane	0.125	0.133	106	0.125	0.121	97	60-130

MB: Method Blank sample LCS: Lab Control Sample LCD: Lab Control Sample Duplicate

February 27, 2023

Rachelle Arada
Eurofins Eaton Analytical
750 Royal Oaks Drive
Suite 100
Monrovia, CA 91016-

Project Name: RED-HILL Project # 380001111 Job # 380-37893-1
Physis Project ID: 1407003-377

Dear Rachelle,

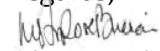
Enclosed are the analytical results for the sample submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 2/16/2023. A total of 1 sample was received for analysis in accordance with the attached chain of custody (COC). Per the COC, the sample was analyzed for:

Organics
Polynuclear Aromatic Hydrocarbons by EPA 625.1
Disalicylidenepropanediamine by EPA 625.1
Dibenzo [a,l] Pyrene w/ PAHs by EPA 625.1

Analytical results in this report apply only to samples submitted to PHYSIS in accordance with the COC and are intended to be considered in their entirety.

Please feel free to contact me at any time with any questions. PHYSIS appreciates the opportunity to provide you with our analytical and support services.

Regards,


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PROJECT SAMPLE LIST

Eurofins Eaton Analytical

PHYSIS Project ID: 1407003-377

RED-HILL Project # 380001111 Job # 380-37893-1

Total Samples: 1

PHYSIS ID	Sample ID	Description	Date	Time	Matrix	Sample Type
104253	MOANALUA WELLS	331-223-TP202 (380-37893-1)	2/14/2023	10:08	Samplewater	Not Specified

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ABBREVIATIONS and ACRONYMS

QM	Quality Manual
QA	Quality Assurance
QC	Quality Control
MDL	method detection limit
RL	reporting limit
R1	project sample
R2	project sample replicate
MS1	matrix spike
MS2	matrix spike replicate
B1	procedural blank
B2	procedural blank replicate
BS1	blank spike
BS2	blank spike replicate
LCS1	laboratory control spike
LCS2	laboratory control spike replicate
LCM1	laboratory control material
LCM2	laboratory control material replicate
CRM1	certified reference material
CRM2	certified reference material replicate
RPD	relative percent difference
LMW	low molecular weight
HMW	high molecular weight

QUALITY ASSURANCE SUMMARY

LABORATORY BATCH: Physis' QM defines a laboratory batch as a group of 20 or fewer project samples of similar matrix, processed together under the same conditions and with the same reagents. QC samples are associated with each batch and were used to assess the validity of the sample analyses.

PROCEDURAL BLANK: Laboratory contamination introduced during method use is assessed through the preparation and analysis of procedural blanks is provided at a minimum frequency of one per batch.

ACCURACY: Accuracy of analytical measurements is the degree of closeness based on percent recovery calculations between measured values and the actual or true value and includes a combination of reproducibility error and systematic bias due to sampling and analytical operations. Accuracy of the project data was indicated by analysis of MS, BS, LCS, LCM, CRM, and/or surrogate spikes on a minimum frequency of one per batch. Physis' QM requires that 95% of the target compounds greater than 10 times the MDL be within the specified acceptance limits.

PRECISION: Precision is the agreement among a set of replicate measurements without assumption of knowledge of the true value and is based on RPD calculations between repeated values. Precision of the project data was determined by analysis of replicate MS₁/MS₂, BS₁/BS₂, LCS₁/LCS₂, LCM₁/LCM₂, CRM₁/CRM₂, surrogate spikes and/or replicate project sample analysis (R₁/R₂) on a minimum frequency of one per batch. Physis' QM requires that for 95% of the compounds greater than 10 times the MDL, the percent RPD should be within the specified acceptance range.

BLANK SPIKES: BS is the introduction of a known concentration of analyte into the procedural blank. BS demonstrates performance of the preparation and analytical methods on a clean matrix void of potential matrix related interferences. The BS is performed in laboratory deionized water, making these recoveries a better indicator of the efficiency of the laboratory method per se.

MATRIX SPIKES: MS is the introduction of a known concentration of analyte into a sample. MS samples demonstrate the effect a particular project sample matrix has on the accuracy of a measurement. Individually, MS samples also indicate the bias of analytical measurements due to chemical interferences inherent in the in the specific project sample spiked. Intrinsic target analyte concentration in the specific project sample can also significantly impact MS recovery.

CERTIFIED REFERENCE MATERIALS: CRMs are materials of various matrices for which analytical information has been determined and certified by a recognized authority. These are used to provide a quantitative assessment of the accuracy of an analytical method. CRMs provide evidence that the laboratory preparation and analysis produces results that are comparable to those obtained by an independent organization.

LABORATORY CONTROL MATERIAL: LCM is provided because a suitable natural seawater CRM is not available and can be used to indicate accuracy of the method. Physis' internal LCM is seawater collected at ~800 meters in the Southern California San Pedro Basin and can be used as a reference for background concentrations in clean, natural seawater for comparison to project samples.

LABORATORY CONTROL SPIKES: LCS is the introduction of a known concentration of analyte into Physis' LCM. LCS samples were employed to assess the effect the seawater matrix has on the accuracy of a measurement. LCS also indicate the bias of this method due to chemical interferences inherent in the in the seawater matrix. Intrinsic LCM concentration can also significantly impact LCS recovery.

SURROGATES: A surrogate is a pure analyte unlikely to be found in any project sample, behaves similarly to

the target analyte and most often used with organic analytical procedures. Surrogates are added in known concentration to all samples and are measured to indicate overall efficiency of the method including processing and analyses.

HOLDING TIME: Method recommended holding times are the length of time a project sample can be stored under specific conditions after collection and prior to analysis without significantly affecting the analyte's concentration. Holding times can be extended if preservation techniques are employed to reduce biodegradation, volatilization, oxidation, sorption, precipitation, and other physical and chemical processes.

SAMPLE STORAGE/RETENTION: In order to maintain chemical integrity prior to analysis, all samples submitted to Physis are refrigerated (liquids) or frozen (solids) upon receipt unless otherwise recommended by applicable methods. Solid samples are retained for 1 year from collection while liquid samples are retained until method recommended holding times elapse.

TOTAL/DISSOLVED FRACTION: In some instances, the results for the dissolved fraction may be higher than the total fraction for a particular analyte (e.g. trace metals). This is typically caused by the analytical variation for each result and indicates that the target analyte is primarily in the dissolved phase, within the sample.

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PHYSIS QUALIFIER CODES

CODE	DEFINITION
#	see Case Narrative
ND	analyte not detected at or above the MDL
B	analyte was detected in the procedural blank greater than 10 times the MDL
E	analyte concentration exceeds the upper limit of the linear calibration range, reported value is estimated
H	sample received and/or analyzed past the recommended holding time
J	analyte was detected at a concentration below the RL and above the MDL, reported value is estimated
N	insufficient sample, analysis could not be performed
M	analyte was outside the specified accuracy and/or precision acceptance limits due to matrix interference. The associated B/BS were within limits, therefore the sample data was reported without further clarification
SH	analyte concentration in the project sample exceeded the spike concentration, therefore accuracy and/or precision acceptance limits do not apply
SL	analyte results were lower than 10 times the MDL, therefore accuracy and/or precision acceptance limits do not apply
NH	project sample was heterogeneous and sample homogeneity could not be readily achieved using routine laboratory practices, therefore accuracy and/or precision acceptance limits do not apply
Q	analyte was outside the specified QAPP acceptance limits for precision and/or accuracy but within Physis derived acceptance limits, therefore the sample data was reported without further clarification
R	Physis' QM allows for 5% of the target compounds greater than 10 times the MDL to be outside the specified acceptance limits for precision and/or accuracy. This is often due to random error and does not indicate any significant problems with the analysis of these project samples

CASE NARRATIVE

QUALIFIER NOTES

In addition to the use of analyte specific Physis Qualifier Codes where applicable, the following were also noted.

ND

MDL is listed due to report format restrictions; it is not used in reporting. Analytical results reported are ND at the RL.

ANALYTICAL REPORT

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Base/Neutral Extractable Compounds

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
Sample ID: 104253-R1	MOANALUA WELLS	331-223-TP202	Matrix: Samplewater				Sampled:	14-Feb-23 10:08	Received:	16-Feb-23	
Disalicylidenepropanediamine	EPA 625.1	µg/L	ND	1	0.05	0.1	Total		O-40132	16-Feb-23	26-Feb-23



Polynuclear Aromatic Hydrocarbons

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed	
Sample ID: 104253-R1	MOANALUA WELLS 331-223-TP202 Matrix: Samplewater						Sampled:	14-Feb-23 10:08	Received:	16-Feb-23		
(d10-Acenaphthene)	EPA 625.1	% Recovery	85	1			Total		O-40132	16-Feb-23	26-Feb-23	
(d10-Phenanthrene)	EPA 625.1	% Recovery	96	1			Total		O-40132	16-Feb-23	26-Feb-23	
(d12-Chrysene)	EPA 625.1	% Recovery	100	1			Total		O-40132	16-Feb-23	26-Feb-23	
(d12-Perylene)	EPA 625.1	% Recovery	92	1			Total		O-40132	16-Feb-23	26-Feb-23	
(d8-Naphthalene)	EPA 625.1	% Recovery	77	1			Total		O-40132	16-Feb-23	26-Feb-23	
1-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
1-Methylphenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
2,3,5-Trimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
2,6-Dimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
2-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
Acenaphthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
Acenaphthylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
Anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
Benz[a]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
Benzo[a]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
Benzo[b]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
Benzo[e]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
Benzo[g,h,i]perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
Benzo[k]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
Biphenyl	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
Chrysene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
Dibenz[a,h]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
Dibenzo[a,l]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	
Dibenzothiophene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23	

Polynuclear Aromatic Hydrocarbons

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
Fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23
Fluorene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23
Indeno[1,2,3-cd]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23
Naphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23
Perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23
Phenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23
Pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-40132	16-Feb-23	26-Feb-23



QUALITY CONTROL REPORT

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Base/Neutral Extractable Compounds

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE SOURCE		ACCURACY		PRECISION		QA CODEc
							LEVEL	RESULT	%	LIMITS	%	LIMITS	
Sample ID: 104252-B1		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:		Received:			
		Method: EPA 625.1			Batch ID: O-40132			Prepared: 16-Feb-23		Analyzed: 26-Feb-23			
Disalicylidenepropanediamin	Total	ND	1	0.05	0.1	µg/L							
Sample ID: 104252-BS1		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:		Received:			
		Method: EPA 625.1			Batch ID: O-40132			Prepared: 16-Feb-23		Analyzed: 26-Feb-23			
Disalicylidenepropanediamin	Total	41.2	1	0.05	0.1	µg/L	50	0	82	50 - 150%	PASS		
Sample ID: 104252-BS2		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:		Received:			
		Method: EPA 625.1			Batch ID: O-40132			Prepared: 16-Feb-23		Analyzed: 26-Feb-23			
Disalicylidenepropanediamin	Total	41.4	1	0.05	0.1	µg/L	50	0	83	50 - 150%	PASS	1	30 PASS

Polynuclear Aromatic Hydrocarbons

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY	PRECISION	QA CODE	
							LEVEL	RESULT	% LIMITS	% LIMITS		
Sample ID: 104252-B1		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:		Received:		
		Method: EPA 625.1			Batch ID: O-40132			Prepared: 16-Feb-23		Analyzed: 26-Feb-23		
(d10-Acenaphthene)	Total	88	1			µg/L	% Recovery	100	88	27 - 133%	PASS	
(d10-Phenanthrene)	Total	93	1			µg/L	% Recovery	100	93	43 - 129%	PASS	
(d12-Chrysene)	Total	96	1			µg/L	% Recovery	100	96	52 - 144%	PASS	
(d12-Perylene)	Total	93	1			µg/L	% Recovery	100	93	36 - 161%	PASS	
(d8-Naphthalene)	Total	86	1			µg/L	% Recovery	100	86	25 - 125%	PASS	
1-Methylnaphthalene	Total	ND	1	0.001	0.005	µg/L						
1-Methylphenanthrene	Total	ND	1	0.001	0.005	µg/L						
2,3,5-Trimethylnaphthalene	Total	ND	1	0.001	0.005	µg/L						
2,6-Dimethylnaphthalene	Total	ND	1	0.001	0.005	µg/L						
2-Methylnaphthalene	Total	ND	1	0.001	0.005	µg/L						
Acenaphthene	Total	ND	1	0.001	0.005	µg/L						
Acenaphthylene	Total	ND	1	0.001	0.005	µg/L						
Anthracene	Total	ND	1	0.001	0.005	µg/L						
Benz[a]anthracene	Total	ND	1	0.001	0.005	µg/L						
Benzo[a]pyrene	Total	ND	1	0.001	0.005	µg/L						
Benzo[b]fluoranthene	Total	ND	1	0.001	0.005	µg/L						
Benzo[e]pyrene	Total	ND	1	0.001	0.005	µg/L						
Benzo[g,h,i]perylene	Total	ND	1	0.001	0.005	µg/L						
Benzo[k]fluoranthene	Total	ND	1	0.001	0.005	µg/L						
Biphenyl	Total	ND	1	0.001	0.005	µg/L						
Chrysene	Total	ND	1	0.001	0.005	µg/L						
Dibenz[a,h]anthracene	Total	ND	1	0.001	0.005	µg/L						
Dibenzo[a,l]pyrene	Total	ND	1	0.001	0.005	µg/L						
Dibenzothiophene	Total	ND	1	0.001	0.005	µg/L						

Polynuclear Aromatic Hydrocarbons

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION		QA CODEc
							LEVEL	RESULT	%	LIMITS	%	LIMITS	
Fluoranthene	Total	ND	1	0.001	0.005	µg/L							
Fluorene	Total	ND	1	0.001	0.005	µg/L							
Indeno[1,2,3-cd]pyrene	Total	ND	1	0.001	0.005	µg/L							
Naphthalene	Total	ND	1	0.001	0.005	µg/L							
Perylene	Total	ND	1	0.001	0.005	µg/L							
Phenanthrene	Total	ND	1	0.001	0.005	µg/L							
Pyrene	Total	ND	1	0.001	0.005	µg/L							



Polynuclear Aromatic Hydrocarbons

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION	QA CODE
							LEVEL	RESULT	%	LIMITS	%	LIMITS
Sample ID: 104252-BS1		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:		Received:		
Method: EPA 625.1		Batch ID: O-40132			Prepared: 16-Feb-23		Analyzed: 26-Feb-23					
(d10-Acenaphthene)	Total	104	1			% Recovery	100	0	104	27 - 133%	PASS	
(d10-Phenanthrene)	Total	106	1			% Recovery	100	0	106	43 - 129%	PASS	
(d12-Chrysene)	Total	105	1			% Recovery	100	0	105	52 - 144%	PASS	
(d12-Perylene)	Total	108	1			% Recovery	100	0	108	36 - 161%	PASS	
(d8-Naphthalene)	Total	96	1			% Recovery	100	0	96	25 - 125%	PASS	
1-Methylnaphthalene	Total	0.504	1	0.001	0.005	µg/L	0.5	0	101	31 - 128%	PASS	
1-Methylphenanthrene	Total	0.515	1	0.001	0.005	µg/L	0.5	0	103	66 - 127%	PASS	
2,3,5-Trimethylnaphthalene	Total	0.528	1	0.001	0.005	µg/L	0.5	0	106	55 - 122%	PASS	
2,6-Dimethylnaphthalene	Total	0.52	1	0.001	0.005	µg/L	0.5	0	104	48 - 120%	PASS	
2-Methylnaphthalene	Total	0.512	1	0.001	0.005	µg/L	0.5	0	102	47 - 130%	PASS	
Acenaphthene	Total	0.525	1	0.001	0.005	µg/L	0.5	0	105	53 - 131%	PASS	
Acenaphthylene	Total	0.515	1	0.001	0.005	µg/L	0.5	0	103	43 - 140%	PASS	
Anthracene	Total	0.519	1	0.001	0.005	µg/L	0.5	0	104	58 - 135%	PASS	
Benz[a]anthracene	Total	0.502	1	0.001	0.005	µg/L	0.5	0	100	55 - 145%	PASS	
Benzo[a]pyrene	Total	0.51	1	0.001	0.005	µg/L	0.5	0	102	51 - 143%	PASS	
Benzo[b]fluoranthene	Total	0.549	1	0.001	0.005	µg/L	0.5	0	110	46 - 165%	PASS	
Benzo[e]pyrene	Total	0.542	1	0.001	0.005	µg/L	0.5	0	108	42 - 152%	PASS	
Benzo[g,h,i]perylene	Total	0.913	1	0.001	0.005	µg/L	1	0	91	63 - 133%	PASS	
Benzo[k]fluoranthene	Total	0.526	1	0.001	0.005	µg/L	0.5	0	105	56 - 145%	PASS	
Biphenyl	Total	0.524	1	0.001	0.005	µg/L	0.5	0	105	56 - 119%	PASS	
Chrysene	Total	0.497	1	0.001	0.005	µg/L	0.5	0	99	56 - 141%	PASS	
Dibenz[a,h]anthracene	Total	0.986	1	0.001	0.005	µg/L	1	0	99	55 - 150%	PASS	
Dibenzo[a,l]pyrene	Total	0.488	1	0.001	0.005	µg/L	0.5	0	98	50 - 150%	PASS	
Dibenzothiophene	Total	0.532	1	0.001	0.005	µg/L	0.5	0	106	46 - 126%	PASS	

Polynuclear Aromatic Hydrocarbons

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION		QA CODE _c
							LEVEL	RESULT	%	LIMITS	%	LIMITS	
Fluoranthene	Total	0.502	1	0.001	0.005	µg/L	0.5	0	100	60 - 146%	PASS		
Fluorene	Total	0.523	1	0.001	0.005	µg/L	0.5	0	105	58 - 131%	PASS		
Indeno[1,2,3-cd]pyrene	Total	0.898	1	0.001	0.005	µg/L	1	0	90	50 - 151%	PASS		
Naphthalene	Total	0.5	1	0.001	0.005	µg/L	0.5	0	100	41 - 126%	PASS		
Perylene	Total	0.51	1	0.001	0.005	µg/L	0.5	0	102	48 - 141%	PASS		
Phenanthrene	Total	0.522	1	0.001	0.005	µg/L	0.5	0	104	67 - 127%	PASS		
Pyrene	Total	0.495	1	0.001	0.005	µg/L	0.5	0	99	54 - 156%	PASS		

Polynuclear Aromatic Hydrocarbons

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION		QA CODEc		
							LEVEL	RESULT	%	LIMITS	%	LIMITS			
Sample ID: 104252-BS2		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:			Received:				
		Method: EPA 625.1			Batch ID: O-40132			Prepared: 16-Feb-23			Analyzed: 26-Feb-23				
(d10-Acenaphthene)	Total	98	1				% Recovery	100	0	98	27 - 133%	PASS	6	30	PASS
(d10-Phenanthrene)	Total	106	1				% Recovery	100	0	106	43 - 129%	PASS	0	30	PASS
(d12-Chrysene)	Total	108	1				% Recovery	100	0	108	52 - 144%	PASS	3	30	PASS
(d12-Perylene)	Total	106	1				% Recovery	100	0	106	36 - 161%	PASS	2	30	PASS
(d8-Naphthalene)	Total	88	1				% Recovery	100	0	88	25 - 125%	PASS	9	30	PASS
1-Methylnaphthalene	Total	0.478	1	0.001	0.005	µg/L		0.5	0	96	31 - 128%	PASS	5	30	PASS
1-Methylphenanthrene	Total	0.524	1	0.001	0.005	µg/L		0.5	0	105	66 - 127%	PASS	2	30	PASS
2,3,5-Trimethylnaphthalene	Total	0.52	1	0.001	0.005	µg/L		0.5	0	104	55 - 122%	PASS	2	30	PASS
2,6-Dimethylnaphthalene	Total	0.495	1	0.001	0.005	µg/L		0.5	0	99	48 - 120%	PASS	5	30	PASS
2-Methylnaphthalene	Total	0.484	1	0.001	0.005	µg/L		0.5	0	97	47 - 130%	PASS	5	30	PASS
Acenaphthene	Total	0.512	1	0.001	0.005	µg/L		0.5	0	102	53 - 131%	PASS	3	30	PASS
Acenaphthylene	Total	0.506	1	0.001	0.005	µg/L		0.5	0	101	43 - 140%	PASS	2	30	PASS
Anthracene	Total	0.508	1	0.001	0.005	µg/L		0.5	0	102	58 - 135%	PASS	2	30	PASS
Benz[a]anthracene	Total	0.515	1	0.001	0.005	µg/L		0.5	0	103	55 - 145%	PASS	3	30	PASS
Benzo[a]pyrene	Total	0.504	1	0.001	0.005	µg/L		0.5	0	101	51 - 143%	PASS	1	30	PASS
Benzo[b]fluoranthene	Total	0.546	1	0.001	0.005	µg/L		0.5	0	109	46 - 165%	PASS	1	30	PASS
Benzo[e]pyrene	Total	0.537	1	0.001	0.005	µg/L		0.5	0	107	42 - 152%	PASS	1	30	PASS
Benzo[g,h,i]perylene	Total	0.914	1	0.001	0.005	µg/L		1	0	91	63 - 133%	PASS	0	30	PASS
Benzo[k]fluoranthene	Total	0.525	1	0.001	0.005	µg/L		0.5	0	105	56 - 145%	PASS	0	30	PASS
Biphenyl	Total	0.502	1	0.001	0.005	µg/L		0.5	0	100	56 - 119%	PASS	5	30	PASS
Chrysene	Total	0.523	1	0.001	0.005	µg/L		0.5	0	105	56 - 141%	PASS	6	30	PASS
Dibenz[a,h]anthracene	Total	0.969	1	0.001	0.005	µg/L		1	0	97	55 - 150%	PASS	2	30	PASS
Dibenzo[a,l]pyrene	Total	0.421	1	0.001	0.005	µg/L		0.5	0	84	50 - 150%	PASS	15	30	PASS
Dibenzothiophene	Total	0.534	1	0.001	0.005	µg/L		0.5	0	107	46 - 126%	PASS	1	30	PASS

Polynuclear Aromatic Hydrocarbons

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION		QA CODE _c	
							LEVEL	RESULT	%	LIMITS	%	LIMITS		
Fluoranthene	Total	0.514	1	0.001	0.005	µg/L	0.5	0	103	60 - 146%	PASS	3	30	PASS
Fluorene	Total	0.518	1	0.001	0.005	µg/L	0.5	0	104	58 - 131%	PASS	1	30	PASS
Indeno[1,2,3-cd]pyrene	Total	0.881	1	0.001	0.005	µg/L	1	0	88	50 - 151%	PASS	2	30	PASS
Naphthalene	Total	0.46	1	0.001	0.005	µg/L	0.5	0	92	41 - 126%	PASS	8	30	PASS
Perylene	Total	0.509	1	0.001	0.005	µg/L	0.5	0	102	48 - 141%	PASS	0	30	PASS
Phenanthrene	Total	0.527	1	0.001	0.005	µg/L	0.5	0	105	67 - 127%	PASS	1	30	PASS
Pyrene	Total	0.513	1	0.001	0.005	µg/L	0.5	0	103	54 - 156%	PASS	4	30	PASS

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PHYSIS
TENTATIVELY
IDENTIFIED COMPOUNDS
ENVIRONMENTAL LABORATORIES, INC.
Innovative Solutions for Nature

Sample ID: 104253

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
36.0259	5.6406	1111	Anthracene-D10-	1517-22-2	94
10.8500	3.0705	605	Oxalic acid, cyclohexyl pentyl ester	1000309-30-6	90
10.4773	1.9936	393	Hydroperoxide, 1-ethylbutyl	24254-56-6	81
10.6024	1.1481	226	2-Methylbutanoic anhydride	1468-39-9	84
11.2000	0.8597	169	3,3-Diethoxy-1-propyne	10160-87-9	89
11.2387	0.6695	132	Oxalic acid, cyclohexyl pentyl ester	1000309-30-6	91

Concentration estimated using the response for Anthracene-d10

Sample ID: Lab Blank B1_40132

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
36.0231	6.2928	1111	Anthracene-D10-	1517-22-2	95
10.8453	3.1724	560	Oxalic acid, cyclohexyl propyl ester	1000309-30-3	90
10.4734	1.1962	211	Hydroperoxide, 1-ethylbutyl	24254-56-6	81
10.5965	0.8530	151	5-Oxotetrahydrofuran-2-carboxylic acid	4344-84-7	85
11.1936	0.7173	127	Oxalic acid, cyclohexyl isobutyl ester	1000309-30-4	92

Concentration estimated using the response for Anthracene-d10

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CHAIN OF CUSTODY

TERRA ENVIRONMENTAL LABORATORIES, INC. AURA

Innovative Solutions for Nature

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Project Iteration ID: 1407003-377
 Client Name: Eurofins Eaton Analytical
 Project Name: RED-HILL Project # 380001111
 Job # 380-37893-1
 COC Page Number: 2 of 2
 Bottle Label Color: NA

Sample Receipt Summary

Receiving Info

- Initials Received By: CN
- Date Received: 2/16/2023
- Time Received: 17:25
- Client Name: EUROFINS
- Courier Information: (Please circle)
 - Client
 - UPS
 - Area Fast
 - DRS
 - FedEx
 - GSO/GLS
 - Ontrac
 - PAMS
 - PHYSIS Driver:
 - Start Time: _____
 - End Time: _____
 - Total Mileage: _____
 - Number of Pickups: _____
- Container Information: (Please put the # of containers or circle none)
 - Cooler
 - Styrofoam Cooler
 - Boxes
 - None
 - Carboy(s)
 - Carboy Trash Can(s)
 - Carboy Cap(s)
 - Other _____
- What type of ice was used: (Please circle any that apply)
 - Wet Ice
 - Blue Ice
 - Dry Ice
 - Water
 - None
- Randomly Selected Samples Temperature (°C): 2.5
 Used I/R Thermometer # 1

Inspection Info

- Initials Inspected By: RGH

Sample Integrity Upon Receipt:

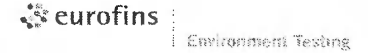
- COC(s) included and completely filled out..... Yes / No
- All sample containers arrived intact..... Yes / No
- All samples listed on COC(s) are present..... Yes / No
- Information on containers consistent with information on COC(s)..... Yes / No
- Correct containers and volume for all analyses indicated..... Yes / No
- All samples received within method holding time..... Yes / No
- Correct preservation used for all analyses indicated..... Yes / No
- Name of sampler included on COC(s)..... Yes / No

Notes:

Monrovia, CA (Suite 100)

750 Royal Oaks Drive Suite 100
 Monrovia, CA 91016
 Phone: 626-386-1100

Chain of Custody Record



Client Information		Sampler: BAILEY		Lab PM: Arada, Rachele		Carrier Tracking No(s):		COC No: 380-9774-2757.1			
Client Contact: Dr. Ron Fenstermacher		Phone: 808-748-5840		E-Mail: Rachele.Arada@et.eurofinsus.com		State of Origin:		Page: Page 1 of 3			
Company: City & County of Honolulu		PWSID:		Analysis Requested						Job #:	
Address: 630 South Beretania Street Chemistry Lab		Due Date Requested:								Preservation Codes:	
City: Honolulu		TAT Requested (days):		Field Filtered Sample (Yes or No) Perform #S/MSD (Yes or No) 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) 525plus Plus TICs SUBCONTRACT - 8015 Gas (Purgeable) LL (EAL) 537.1_DW_PREC - 537.1 Full List 533 - All Analytes		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No		Total Number of containers		A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Y - Trizma Z - other (specify)	
State, Zip: HI, 96843		Project #: 38001111									
Phone: 808-748-5091(Tel)		SSOW#:									
Email: RFENSTEMACHER@hbws.org		PO #: C20525101 exp 05312023									
Project Name: RED-HILL/HBWS Sites Event Desc: RUSH Weekly Red Hill		WO #:									
Site: Hawaii											
Sample Identification		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=wasteloil, BT=Tissue, A=Air)		Special Instructions/Note:	
MOANALUA WELLS											
AIEA GULCH WELLS PUMP 2											
AIEA WELLS PUMPS 1&2 (260)											
HALAWA WELLS UNITS 1&2											
MOANALUA WELLS		02/14/2023		1008		G		Water			
AIEA GULCH WELLS PUMP 2											
AIEA WELLS PUMPS 1&2 (260)											
HALAWA WELLS UNITS 1&2											
MOANALUA WELLS											
AIEA GULCH WELLS PUMP 2											
AIEA WELLS PUMPS 1&2 (260)											
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
<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						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Deliverable Requested: I, II, III, IV, Other (specify)						Special Instructions/QC Requirements: #1- 7713 0553 7389 #2- 7713 0553 7893 #3- 7713 0553 8374 #4- 7713 0552 7919					
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:					
Relinquished by: BAILEY		Date/Time: 02/14/2023 1400		Company: HBWS		Received by: G. RETNER		Date/Time: 02/15/2023 10:30		Company: EEA	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: #1-(950A) 3.6°-3.5° #3-(752A) 5.8°-5.7° #2-(750A) 1.6°-1.5° #4-(750A) 3.0°-2.9°		GELICE-FROZEN					



Monrovia, CA (Suite 100)

750 Royal Oaks Drive Suite 100
 Monrovia, CA 91016
 Phone: 626-386-1100

Chain of Custody Record



Environmental Testing

Client Information		Sampler: BAILEY		Lab PM: Arada, Rachele		Carrier Tracking No(s):		COC No: 380-9774-2757.2					
Client Contact: Dr. Ron Fenstemacher		Phone: 808-748-5840		E-Mail: Rachele.Arada@et.eurofinsus.com		State of Origin:		Page: Page 2 of 3					
Company: City & County of Honolulu		PWSID:		Analysis Requested						Job #:			
Address: 630 South Beretania Street Chemistry Lab		Due Date Requested:		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) SUBCONTRACT - 625 PAH Physics LL (EAL) + TICs SUBCONTRACT - 8015 Gas (Purgeable) LL (EAL) SUBCONTRACT - 8015 Diesel LL (EAL) and Motor Oil 525.2_PREC - (MOD) 525plus Plus TICs SUBCONTRACT - 8015 Gas (Purgeable) LL (EAL) 537.1_DW_PREC - 537.1 Full List 533 - All Analytes						Preservation Codes:			
City: Honolulu		TAT Requested (days):								A - HCL		M - Hexane	
State, Zip: HI, 96843		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No								B - NaOH		N - None	
Phone: 808-748-5091(Tel)		PO #:								C - Zn Acetate		O - AsNaO2	
Email: RFENSTEMACHER@hbws.org		WO #:								D - Nitric Acid		P - Na2O4S	
Project Name: RED-HILL/HBWS Sites Event Desc: RUSH Weekly Red Hill		Project #: 38001111								E - NaHSO4		Q - Na2SO3	
Site: Hawaii		SSOW#:		F - MeOH		R - Na2S2O3							
				G - Amchlor		S - H2SO4							
				H - Ascorbic Acid		T - TSP Dodecahydrate							
				I - Ice		U - Acetone							
				J - DI Water		V - MCAA							
				K - EDTA		W - pH 4-5							
				L - EDA		Y - Trizma							
				Other:		Z - other (specify)							
Sample Identification		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)		Total Number of containers		Special Instructions/Note:	
						Preservation Code:		X X		R		R	
HALAWA WELLS UNITS 1&2						Water							
MOANALUA WELLS						Water							
AIEA GULCH WELLS PUMP 2						Water							
AIEA WELLS PUMPS 1&2 (260)						Water							
HALAWA WELLS UNITS 1&2						Water							
TB MOANALUA WELLS		02/14/2023		1008		Water							
TB AIEA GULCH WELLS PUMP2						Water							
TB AIEA WELLS PUMPS 1&2 (260)						Water							
TB HALAWA WELLS UNITS 1&2						Water							
MOANALUA WELLS						Water							
AIEA GULCH WELLS PUMP 2						Water							
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)							
<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						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months							
Deliverable Requested: I, II, III, IV, Other (specify)						Special Instructions/QC Requirements: #1- 7713 0553 7389 #2- 7713 0553 7893 #3- 7713 0553 8374 #4- 7713 0553 7919							
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:		FEDEX					
Relinquished by: BAILEY		Date/Time: 02/14/2023 1400		Company: HBWS		Received by: G. REITNER		Date/Time: 02/15/2023 10:30		Company: EEA			
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:			
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:			
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: #1- (750A) 3.6°-3.5° #3- (952A) 5.8°-5.9° #2- (750A) 1.6°-1.5° #4- (750A) 3.0°-2.9° GEL ICE-FROZEN									

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Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-37893-1

Login Number: 37893
List Number: 1
Creator: Ngo, Theodore

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	

Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-37893-1

Login Number: 37893
List Number: 2
Creator: DePriest, Kellie

List Source: Eurofins Eaton Analytical South Bend
List Creation: 02/18/23 11:49 AM

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	False	Client provided containers