

ANALYTICAL REPORT

PREPARED FOR

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Public Service Bldg. Room 310
Honolulu, Hawaii 96843

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JOB DESCRIPTION

RED-HILL

JOB NUMBER

380-57432-2

Eurofins Eaton Analytical Pomona

Job Notes

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

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

Compliance Statement

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

Authorization



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Definitions/Glossary

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

Job ID: 380-57432-2

Qualifiers

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)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

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

Job ID: 380-57432-2

Job ID: 380-57432-2

Laboratory: Eurofins Eaton Analytical Pomona

Narrative

Job Narrative 380-57432-2

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

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

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

Receipt

The samples were received on 8/3/2023 9:20 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.1°C

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. The subcontract report is appended in its entirety.

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. The subcontract report is appended in its entirety.

Detection Summary

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

Job ID: 380-57432-2

Client Sample ID: MOANALUA WELLS

Lab Sample ID: 380-57432-1

No Detections.

Client Sample ID: TB MOANALUA WELLS

Lab Sample ID: 380-57432-2

No Detections.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

This Detection Summary does not include radiochemical test results.

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Client Sample Results

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

Job ID: 380-57432-2

Client Sample ID: MOANALUA WELLS

Lab Sample ID: 380-57432-1

Date Collected: 08/01/23 12:00

Matrix: Drinking Water

Date Received: 08/03/23 09:20

Method: 625 PAH Physys 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		08/07/23 00:00	09/06/23 08:57	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Acenaphthene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Acenaphthylene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Anthracene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Biphenyl	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Chrysene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Dibenzothiophene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		08/07/23 00:00	09/06/23 08:57	1
Fluoranthene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Fluorene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Naphthalene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Perylene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Phenanthrene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1
Pyrene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 08:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	93		27 - 133	08/07/23 00:00	09/06/23 08:57	1
(d10-Phenanthrene)	99		43 - 129	08/07/23 00:00	09/06/23 08:57	1
(d12-Chrysene)	93		52 - 144	08/07/23 00:00	09/06/23 08:57	1
(d12-Perylene)	100		36 - 161	08/07/23 00:00	09/06/23 08:57	1
(d8-Naphthalene)	82		25 - 125	08/07/23 00:00	09/06/23 08:57	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	0.02		mg/L			08/09/23 03:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
BROMOFLUOROBENZENE	95		60 - 140		08/09/23 03:11	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	0.028		mg/L			08/16/23 20:31	1
JP5	ND	U	0.055		mg/L			08/16/23 20:31	1
JP8	ND	U	0.055		mg/L			08/16/23 20:31	1
MOTOR OIL	ND	U	0.055		mg/L			08/16/23 20:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
BROMOBENZENE	68		60 - 130		08/16/23 20:31	1

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Client Sample Results

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

Job ID: 380-57432-2

Client Sample ID: MOANALUA WELLS

Lab Sample ID: 380-57432-1

Date Collected: 08/01/23 12:00

Matrix: Drinking Water

Date Received: 08/03/23 09:20

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
HEXACOSANE	90		60 - 130		08/16/23 20:31	1

Client Sample ID: TB MOANALUA WELLS

Lab Sample ID: 380-57432-2

Date Collected: 08/01/23 12:00

Matrix: Water

Date Received: 08/03/23 09:20

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	0.02		mg/L			08/09/23 05:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
BROMOFLUOROBENZENE	88		60 - 140		08/09/23 05:04	1

Surrogate Summary

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

Job ID: 380-57432-2

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)
109316-B1	Method Blank	104	105	101	96	109
109316-BS1	Lab Control Sample	103	104	102	95	110
109316-BS2	Lab Control Sample Dup	109	104	101	104	109

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)
380-57432-1	MOANALUA WELLS	93	99	93	82	100

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)
380-57432-1	MOANALUA WELLS	95

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 (60-140)
380-57432-2	TB MOANALUA WELLS	88

Surrogate Legend

BFB = BROMOFLUOROBENZENE

Surrogate Summary

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

Job ID: 380-57432-2

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)
23H049-01M	Matrix Spike	115
23H049-01S	Matrix Spike Duplicate	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
23VGH7H03B	Method Blank	

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 (70-130)
23VGH7H03C	LCD	117
23VGH7H03L	Lab Control Sample	108

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)
380-57432-1	MOANALUA WELLS	68	90

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
23DSH017WB	Method Blank		

Surrogate Legend

BB = BROMOBENZENE

HEXACOSANE = HEXACOSANE

Surrogate Summary

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

Job ID: 380-57432-2

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	Percent Surrogate Recovery (Acceptance Limits)	
		BB (60-130)	HEXACOSANE (60-130)
23DSH017WC	LCD	80	100
23DSH017WL	Lab Control Sample	83	106
23J5H017WC	LCD	80	97
23J5H017WL	Lab Control Sample	83	90
23J8H017WC	LCD	99	92
23J8H017WL	Lab Control Sample	98	91

Surrogate Legend

BB = BROMOBENZENE

HEXACOSANE = HEXACOSANE

QC Sample Results

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

Job ID: 380-57432-2

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

Lab Sample ID: 109316-B1
Matrix: BlankMatrix
Analysis Batch: O-42030

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: O-42030_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Acenaphthene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Acenaphthylene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Anthracene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Biphenyl	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Chrysene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Dibenzothiophene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		08/07/23 00:00	09/06/23 02:16	1
Fluoranthene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Fluorene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Naphthalene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Perylene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Phenanthrene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1
Pyrene	ND		0.005	0.001	µg/L		08/07/23 00:00	09/06/23 02:16	1

Surrogate	Blank %Recovery	Blank Qualifier	Limits	Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	104		27 - 133	08/07/23 00:00	09/06/23 02:16	1
(d10-Phenanthrene)	105		43 - 129	08/07/23 00:00	09/06/23 02:16	1
(d12-Chrysene)	101		52 - 144	08/07/23 00:00	09/06/23 02:16	1
(d12-Perylene)	109		36 - 161	08/07/23 00:00	09/06/23 02:16	1
(d8-Naphthalene)	96		25 - 125	08/07/23 00:00	09/06/23 02:16	1

Lab Sample ID: 109316-BS1
Matrix: BlankMatrix
Analysis Batch: O-42030

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: O-42030_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1-Methylnaphthalene	0.5	0.483		µg/L		97	31 - 128
1-Methylphenanthrene	0.5	0.519		µg/L		104	66 - 127
2,3,5-Trimethylnaphthalene	0.5	0.522		µg/L		104	55 - 122
2,6-Dimethylnaphthalene	0.5	0.507		µg/L		101	48 - 120
2-Methylnaphthalene	0.5	0.492		µg/L		98	47 - 130
Acenaphthene	0.5	0.504		µg/L		101	53 - 131
Acenaphthylene	0.5	0.533		µg/L		107	43 - 140
Anthracene	0.5	0.509		µg/L		102	58 - 135

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-57432-2

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

Lab Sample ID: 109316-BS1
Matrix: BlankMatrix
Analysis Batch: O-42030

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: O-42030_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benz[a]anthracene	0.5	0.455		µg/L		91	55 - 145
Benzo[a]pyrene	0.5	0.538		µg/L		108	51 - 143
Benzo[b]fluoranthene	0.5	0.499		µg/L		100	46 - 165
Benzo[e]pyrene	0.5	0.514		µg/L		103	42 - 152
Benzo[g,h,i]perylene	0.5	0.52		µg/L		104	63 - 133
Benzo[k]fluoranthene	0.5	0.512		µg/L		102	56 - 145
Biphenyl	0.5	0.503		µg/L		101	56 - 119
Chrysene	0.5	0.488		µg/L		98	56 - 141
Dibenz[a,h]anthracene	0.5	0.525		µg/L		105	55 - 150
Dibenzo[a,l]pyrene	0.5	0.413		µg/L		83	50 - 150
Dibenzothiophene	0.5	0.498		µg/L		100	46 - 126
Disalicylidenepropanediamine	50	54.4		µg/L		109	50 - 150
Fluoranthene	0.5	0.501		µg/L		100	60 - 146
Fluorene	0.5	0.529		µg/L		106	58 - 131
Indeno[1,2,3-cd]pyrene	0.5	0.503		µg/L		101	50 - 151
Naphthalene	0.5	0.472		µg/L		94	41 - 126
Perylene	0.5	0.525		µg/L		105	48 - 141
Phenanthrene	0.5	0.502		µg/L		100	67 - 127
Pyrene	0.5	0.51		µg/L		102	54 - 156

Surrogate	LCS %Recovery	LCS Qualifier	Limits
(d10-Acenaphthene)	103		27 - 133
(d10-Phenanthrene)	104		43 - 129
(d12-Chrysene)	102		52 - 144
(d12-Perylene)	110		36 - 161
(d8-Naphthalene)	95		25 - 125

Lab Sample ID: 109316-BS2
Matrix: BlankMatrix
Analysis Batch: O-42030

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: O-42030_P

Analyte	Spike Added	LCS DUP Result	LCS DUP Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1-Methylnaphthalene	0.5	0.52		µg/L		104	31 - 128	7	30
1-Methylphenanthrene	0.5	0.495		µg/L		99	66 - 127	5	30
2,3,5-Trimethylnaphthalene	0.5	0.525		µg/L		105	55 - 122	1	30
2,6-Dimethylnaphthalene	0.5	0.527		µg/L		105	48 - 120	4	30
2-Methylnaphthalene	0.5	0.523		µg/L		105	47 - 130	7	30
Acenaphthene	0.5	0.524		µg/L		105	53 - 131	4	30
Acenaphthylene	0.5	0.54		µg/L		108	43 - 140	1	30
Anthracene	0.5	0.509		µg/L		102	58 - 135	0	30
Benz[a]anthracene	0.5	0.425		µg/L		85	55 - 145	7	30
Benzo[a]pyrene	0.5	0.515		µg/L		103	51 - 143	5	30
Benzo[b]fluoranthene	0.5	0.487		µg/L		97	46 - 165	3	30
Benzo[e]pyrene	0.5	0.505		µg/L		101	42 - 152	2	30
Benzo[g,h,i]perylene	0.5	0.512		µg/L		102	63 - 133	2	30
Benzo[k]fluoranthene	0.5	0.483		µg/L		97	56 - 145	5	30
Biphenyl	0.5	0.528		µg/L		106	56 - 119	5	30
Chrysene	0.5	0.475		µg/L		95	56 - 141	3	30

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-57432-2

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

Lab Sample ID: 109316-BS2
Matrix: BlankMatrix
Analysis Batch: O-42030

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: O-42030_P

Analyte	Spike Added	LCS DUP Result	LCS DUP Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Dibenz[a,h]anthracene	0.5	0.507		µg/L		101	55 - 150	4	30
Dibenzo[a,l]pyrene	0.5	0.384		µg/L		77	50 - 150	8	30
Dibenzothiophene	0.5	0.499		µg/L		100	46 - 126	0	30
Disalicylidenepropanediamine	50	52		µg/L		104	50 - 150	5	30
Fluoranthene	0.5	0.479		µg/L		96	60 - 146	4	30
Fluorene	0.5	0.527		µg/L		105	58 - 131	1	30
Indeno[1,2,3-cd]pyrene	0.5	0.485		µg/L		97	50 - 151	4	30
Naphthalene	0.5	0.502		µg/L		100	41 - 126	6	30
Perylene	0.5	0.509		µg/L		102	48 - 141	3	30
Phenanthrene	0.5	0.502		µg/L		100	67 - 127	0	30
Pyrene	0.5	0.484		µg/L		97	54 - 156	5	30

Surrogate	LCS DUP %Recovery	LCS DUP Qualifier	Limits
(d10-Acenaphthene)	109		27 - 133
(d10-Phenanthrene)	104		43 - 129
(d12-Chrysene)	101		52 - 144
(d12-Perylene)	109		36 - 161
(d8-Naphthalene)	104		25 - 125

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

Lab Sample ID: 23VGH7H03B
Matrix: WATER
Analysis Batch: 23VGH7H03

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	0.02		mg/L			08/09/23 01:19	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
BROMOFLUOROBENZENE					08/09/23 01:19	1

Lab Sample ID: 23VGH7H03L
Matrix: WATER
Analysis Batch: 23VGH7H03

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
GASOLINE	0.5	0.427		mg/L		85	60 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
BROMOFLUOROBENZENE	108		70 - 130

Lab Sample ID: 23H049-01M
Matrix: WATER
Analysis Batch: 23VGH7H03

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
GASOLINE	ND		0.5	0.441		mg/L		88	50 - 130

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-57432-2

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

Lab Sample ID: 23H049-01M
Matrix: WATER
Analysis Batch: 23VGH7H03

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

	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
BROMOFLUOROBENZENE	115		60 - 140

Lab Sample ID: 23H049-01S
Matrix: WATER
Analysis Batch: 23VGH7H03

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
GASOLINE	ND		0.5	0.441		mg/L		88	50 - 130	0	30

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
BROMOFLUOROBENZENE	118		60 - 140

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

Lab Sample ID: 23DSH017WB
Matrix: WATER
Analysis Batch: 23DSH017W

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			08/16/23 18:21	1
JP5	ND	U	0.05		mg/L			08/16/23 18:21	1
JP8	ND	U	0.05		mg/L			08/16/23 18:21	1
MOTOR OIL	ND	U	0.05		mg/L			08/16/23 18:21	1

	MB	MB			
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed
BROMOBENZENE					08/16/23 18:21
HEXACOSANE					08/16/23 18:21

Lab Sample ID: 23DSH017WL
Matrix: WATER
Analysis Batch: 23DSH017W

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
DIESEL	2.5	2.73		mg/L		109	50 - 130

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
BROMOBENZENE	83		60 - 130
HEXACOSANE	106		60 - 130

Lab Sample ID: 23J5H017WL
Matrix: WATER
Analysis Batch: 23DSH017W

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
JP5	2.5	2.15		mg/L		86	30 - 160

QC Sample Results

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

Job ID: 380-57432-2

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

Lab Sample ID: 23J5H017WL
Matrix: WATER
Analysis Batch: 23DSH017W

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

<i>Surrogate</i>	<i>LCS</i> <i>%Recovery</i>	<i>LCS</i> <i>Qualifier</i>	<i>Limits</i>
BROMOBENZENE	83		60 - 130
HEXACOSANE	90		60 - 130

Lab Sample ID: 23J8H017WL
Matrix: WATER
Analysis Batch: 23DSH017W

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	2.5	2.68		mg/L		107	30 - 160

<i>Surrogate</i>	<i>LCS</i> <i>%Recovery</i>	<i>LCS</i> <i>Qualifier</i>	<i>Limits</i>
BROMOBENZENE	98		60 - 130
HEXACOSANE	91		60 - 130

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QC Association Summary

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

Job ID: 380-57432-2

Subcontract

Analysis Batch: O-42030

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-57432-1	MOANALUA WELLS	Total/NA	Drinking Water	625 PAH Physis LL (EAL) + TICs	O-42030_P
109316-B1	Method Blank	Total/NA	BlankMatrix	625 PAH Physis LL (EAL) + TICs	O-42030_P
109316-BS1	Lab Control Sample	Total/NA	BlankMatrix	625 PAH Physis LL (EAL) + TICs	O-42030_P
109316-BS2	Lab Control Sample Dup	Total/NA	BlankMatrix	625 PAH Physis LL (EAL) + TICs	O-42030_P

Analysis Batch: 23DSH017W

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-57432-1	MOANALUA WELLS	Total/NA	Drinking Water	8015 LL DRO/MRO/JP5/J P8	
23DSH017WB	Method Blank	Total/NA	WATER	8015 LL DRO/MRO/JP5/J P8	
23DSH017WL	Lab Control Sample	Total/NA	WATER	8015 LL DRO/MRO/JP5/J P8	
23J5H017WL	Lab Control Sample	Total/NA	WATER	8015 LL DRO/MRO/JP5/J P8	
23J8H017WL	Lab Control Sample	Total/NA	WATER	8015 LL DRO/MRO/JP5/J P8	

Analysis Batch: 23VGH7H03

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-57432-1	MOANALUA WELLS	Total/NA	Drinking Water	8015 Gas (Purgeable) LL (EAL)	
380-57432-2	TB MOANALUA WELLS	Total/NA	Water	8015 Gas (Purgeable) LL (EAL)	
23VGH7H03B	Method Blank	Total/NA	WATER	8015 Gas (Purgeable) LL (EAL)	
23VGH7H03L	Lab Control Sample	Total/NA	WATER	8015 Gas (Purgeable) LL (EAL)	
23H049-01M	Matrix Spike	Total/NA	WATER	8015 Gas (Purgeable) LL (EAL)	
23H049-01S	Matrix Spike Duplicate	Total/NA	WATER	8015 Gas (Purgeable) LL (EAL)	

Prep Batch: O-42030_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-57432-1	MOANALUA WELLS	Total/NA	Drinking Water	EPA_625	
109316-B1	Method Blank	Total/NA	BlankMatrix	EPA_625	
109316-BS1	Lab Control Sample	Total/NA	BlankMatrix	EPA_625	
109316-BS2	Lab Control Sample Dup	Total/NA	BlankMatrix	EPA_625	

Lab Chronicle

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

Job ID: 380-57432-2

Client Sample ID: MOANALUA WELLS

Lab Sample ID: 380-57432-1

Date Collected: 08/01/23 12:00

Matrix: Drinking Water

Date Received: 08/03/23 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	EPA_625		1	O-42030_P			08/07/23 00:00
Total/NA	Analysis	625 PAH Physis LL (EAL) + TICs		1	O-42030	YC		09/06/23 08:57
Total/NA	Analysis	8015 Gas (Purgeable) LL (EAL)		1	23VGH7H03	SCerva		08/09/23 03:11
Total/NA	Analysis	8015 LL DRO/MRO/JP5/JP8		1	23DSH017W	SDees		08/16/23 20:31

Client Sample ID: TB MOANALUA WELLS

Lab Sample ID: 380-57432-2

Date Collected: 08/01/23 12:00

Matrix: Water

Date Received: 08/03/23 09:20

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	23VGH7H03	SCerva		08/09/23 05:04

Laboratory References:

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



Method Summary

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

Job ID: 380-57432-2

Method	Method Description	Protocol	Laboratory
625	EPA 625 Base/Neutral and Acid Organics i	EPA	
8015	8015 - TPH DRO/ORO	EPA	
8015B	SW846 8015B Gasoline Range Organics	SW846	

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



Sample Summary

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

Job ID: 380-57432-2

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Collected</u>	<u>Received</u>
380-57432-1	MOANALUA WELLS	Drinking Water	08/01/23 12:00	08/03/23 09:20
380-57432-2	TB MOANALUA WELLS	Water	08/01/23 12:00	08/03/23 09:20

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

Date: 09-05-2023
EMAX Batch No.: 23H049

Attn: Jackie Contreras

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

Subject: Laboratory Report
Project: 380-57432

Enclosed is the Laboratory report for samples received on 08/04/23.
The data reported relate only to samples listed below :

Sample ID	Control #	Col Date	Matrix	Analysis
380-57432-1	H049-01	08/01/23	WATER	TPH GASOLINE TPH
380-57432-2	H049-02	08/01/23	WATER	TPH GASOLINE
380-57432-1MS	H049-01M	08/01/23	WATER	TPH GASOLINE
380-57432-1MSD	H049-01S	08/01/23	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 CA002912022-24
ANAB Accredited DoD ELAP and ISO/IEC 17025 Certificate Number L2278 Testing
California ELAP Accredited Certificate Number 2672

941 Corporate Center Drive
Pomona, CA 91768-2642
Phone: 626-386-1100

Chain of Custody Record



23H049



Environment Testing

Client Information (Sub Contract Lab)

Client Contact: Arzda, Rachelle
Phone: Rachelle.Arzda@eurofins.com
E-Mail: Rachelle.Arzda@eurofins.com
Accelerations Required (See note): State - Hawaii

Company: EMAX Laboratories Inc
Address: 3051 Fujita Street, Torrance, CA, 90505
City: Torrance
State Zip: CA, 90505
Phone: PO #:
Email: W/O #:
Project Name: RED-HILL
Project #: 38001111
Site: Honolulu BWS Sites
SSOV#: GSCOV#:

Sampler: Arzda, Rachelle
Lab P/N: Arzda, Rachelle
Carrier Tracking No(s):
State of Origin: Hawaii
COC No: 380-67971.1
Page: 380-67971.1
Page 1 of 1
Job #: 380-57432-1

Due Date Requested: 8/17/2023
TAT Requested (days):
Analysis Requested:
Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDTA
M - Hexane
N - None
O - AsNaO2
P - Na2CO3
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4.5
Y - Trizma
Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=solid, O=organic, BT=trace, AA=)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Number of containers	Special Instructions/Note:
1 MOANALUA WELLS (380-57432-1)	8/1/23	12:00		Water			X	6	See Attached Instructions
2 TB MOANALUA WELLS (380-57432-2)	8/1/23	12:00		Water			X	2	See Attached Instructions

Note: Since laboratory accreditations are subject to change, Eurofins Eaton Analytical, LLC places the ownership of method, analyze & 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/retests/methods 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 Eurofins Eaton Analytical, LLC.

Possible Hazard Identification

Unconfirmed

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Special Instructions/QC Requirements:

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For _____ Months

Empty Kit Relinquished by: _____ Date: _____

Relinquished by: *Xan* Date/Time: 8/14/23 10:11 Company: EMAX

Relinquished by: _____ Date/Time: _____ Company: _____

Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: _____ Custody Seal No.: _____

Cooler Temperature(s) °C and Other Remarks:



Type of Delivery <input type="checkbox"/> Fedex <input type="checkbox"/> UPS <input checked="" type="checkbox"/> GSO <input type="checkbox"/> Others <input type="checkbox"/> EMAX Courier <input checked="" type="checkbox"/> Client Delivery	Airbill / Tracking Number	ECN <u>23H049</u> Recipient <u>Jhown Zamora</u> Date <u>08/04/23</u> Time <u>10:11</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 checked="" type="checkbox"/> Address	<input type="checkbox"/> Tel # / Fax #	<input 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	<input type="checkbox"/> Custody Seal	<input type="checkbox"/> Intact	<input type="checkbox"/> Damaged
Packaging	<input checked="" type="checkbox"/> Bubble Pack	<input type="checkbox"/> Styrofoam	<input type="checkbox"/> Popcorn
Temperatures (Cool, ≤6 °C but not frozen)	<input checked="" type="checkbox"/> Cooler 1 <u>1.2/1.1</u> °C	<input type="checkbox"/> Cooler 2 _____ °C	<input type="checkbox"/> Cooler 3 _____ °C
	<input type="checkbox"/> Cooler 6 _____ °C	<input type="checkbox"/> Cooler 7 _____ °C	<input type="checkbox"/> Cooler 8 _____ °C
Thermometer:	A - S/N <u>221952168</u>	B - S/N <u>221925319</u>	C - S/N _____

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

DISCREPANCIES

LabSampleID	LabSampleContainerID	Code	ClientSample Label ID / Information	Corrective Action
2	7,8	D7	second date reads: 7/16/23	PH
2	7	D14		PH

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

NOTES/OBSERVATIONS:
 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 _____ <input checked="" type="checkbox"/> 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 <input checked="" type="checkbox"/> 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 _____ 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 Nandeen Nacana SRF [Signature]
 Date 08/04/23 Date 8/4/23
 REPORT ID: 23H049 Page 23 of 80
 Date 8/8/23 Page 3 of 33
 Date 11/20/2023

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

380-57432

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

SDG#: 23H049

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CASE NARRATIVE

Client : EUROFINS EATON ANALYTICAL

Project: 380-57432

SDG : 23H049

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

A total of two(2) water samples were received on 08/04/23 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. VGH7H03B - 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. VGH7H03L/VGH7H03C 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 H049-01M/H049-01S. 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

Client : EUROFINS EATON ANALYTICAL
Project : 380-57432

SDG NO. : 23H049
Instrument ID : H7

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	VGH7H03B	1	NA	08/09/2301:19	08/09/2301:19	AH08017A	AH08016A	23VGH7H03	Method Blank
LCS1W	VGH7H03L	1	NA	08/09/2301:56	08/09/2301:56	AH08018A	AH08016A	23VGH7H03	Lab Control Sample (LCS)
LCD1W	VGH7H03C	1	NA	08/09/2302:34	08/09/2302:34	AH08019A	AH08016A	23VGH7H03	LCS Duplicate
380-57432-1	H049-01	1	NA	08/09/2303:11	08/09/2303:11	AH08020A	AH08016A	23VGH7H03	Field Sample
380-57432-1MS	H049-01M	1	NA	08/09/2303:49	08/09/2303:49	AH08021A	AH08016A	23VGH7H03	Matrix Spike Sample (MS)
380-57432-1MSD	H049-01S	1	NA	08/09/2304:26	08/09/2304:26	AH08022A	AH08016A	23VGH7H03	MS Duplicate (MSD)
380-57432-2	H049-02	1	NA	08/09/2305:04	08/09/2305:04	AH08023A	AH08016A	23VGH7H03	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: 08/01/23 12:00
Project : 380-57432 Date Received: 08/04/23
Batch No. : 23H049 Date Extracted: 08/09/23 03:11
Sample ID : 380-57432-1 Date Analyzed: 08/09/23 03:11
Lab Samp ID: H049-01 Dilution Factor: 1
Lab File ID: AH08020A Matrix: WATER
Ext Btch ID: 23VGH7H03 % Moisture: NA
Calib. Ref.: AH08016A Instrument ID: H7

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	0.0379	0.0400	95	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: 08/01/23 12:00
Project     : 380-57432                   Date Received: 08/04/23
Batch No.   : 23H049                       Date Extracted: 08/09/23 05:04
Sample ID   : 380-57432-2                 Date Analyzed: 08/09/23 05:04
Lab Samp ID: H049-02                       Dilution Factor: 1
Lab File ID: AH08023A                       Matrix: WATER
Ext Btch ID: 23VGH7H03                     % Moisture: NA
Calib. Ref.: AH08016A                     Instrument ID: H7
=====

```

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	0.0353	0.0400	88	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: 08/09/23 01:19
Project : 380-57432	Date Received: 08/09/23
Batch No. : 23H049	Date Extracted: 08/09/23 01:19
Sample ID : MBLK1W	Date Analyzed: 08/09/23 01:19
Lab Samp ID: VGH7H03B	Dilution Factor: 1
Lab File ID: AH08017A	Matrix: WATER
Ext Btch ID: 23VGH7H03	% Moisture: NA
Calib. Ref.: AH08016A	Instrument ID: H7

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)	
GASOLINE	ND	0.020	0.010	
SURROGATE PARAMETERS				
SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromofluorobenzene	0.0367	0.0400	92	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 : 380-57432
BATCH NO. : 23H049
METHOD : 5030B/8015B

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR:	1	1	
SAMPLE ID	: MBLK1W	LCS1W	LCD1W
LAB SAMPLE ID	: VGH7H03B	VGH7H03L	VGH7H03C
LAB FILE ID	: AH08017A	AH08018A	AH08019A
DATE PREPARED	: 08/09/23 01:19	08/09/23 01:56	08/09/23 02:34
DATE ANALYZED	: 08/09/23 01:19	08/09/23 01:56	08/09/23 02:34
PREP BATCH	: 23VGH7H03	23VGH7H03	23VGH7H03
CALIBRATION REF:	AH08016A	AH08016A	AH08016A

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	0.427	85	0.500	0.467	93	9	60-130	30

SURROGATE PARAMETER	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	QCLimit (%)
Bromofluorobenzene	0.0400	0.0431	108	0.0400	0.0466	117	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 : 380-57432
BATCH NO. : 23H049
METHOD : 5030B/8015B

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR:	1	1	1
SAMPLE ID	: 380-57432-1	380-57432-1MS	380-57432-1MSD
LAB SAMPLE ID	: H049-01	H049-01M	H049-01S
LAB FILE ID	: AH08020A	AH08021A	AH08022A
DATE PREPARED	: 08/09/23 03:11	08/09/23 03:49	08/09/23 04:26
DATE ANALYZED	: 08/09/23 03:11	08/09/23 03:49	08/09/23 04:26
PREP BATCH	: 23VGH7H03	23VGH7H03	23VGH7H03
CALIBRATION REF:	AH08016A	AH08016A	AH08016A

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	0.441	88	0.500	0.441	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	0.0459	115	0.0400	0.0470	118	60-140

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

LABORATORY REPORT FOR

EUROFINS EATON ANALYTICAL

380-57432

METHOD 3520C/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

SDG#: 23H049

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CASE NARRATIVE

Client : EUROFINS EATON ANALYTICAL

Project: 380-57432

SDG : 23H049

METHOD 3520C/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

One(1) water sample was received on 08/04/23 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. DSH017WB - 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. DSH017WL/DSH017WC 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: 380-57432

SDG : 23H049

METHOD 3520C/8015B
PETROLEUM HYDROCARBONS BY EXTRACTION

One(1) water sample was received on 08/04/23 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. DSH017WB - 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. J5H017WL/J5H017WC 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: 380-57432

SDG : 23H049

METHOD 3520C/8015B
PETROLEUM HYDROCARBONS BY EXTRACTION

One(1) water sample was received on 08/04/23 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. DSH017WB - 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. J8H017WL/J8H017WC 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

Client : EUROFINS EATON ANALYTICAL
Project : 380-57432

SDG NO. : 23H049
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
MBLKIW	DSH017MB	1	NA	08/16/2318:21	08/14/2310:30	LH16016A	LH16009A	23DSH017M	Method Blank
LCSIW	DSH017WL	1	NA	08/16/2318:40	08/14/2310:30	LH16017A	LH16009A	23DSH017M	Lab Control Sample (LCS)
LCDIW	DSH017WC	1	NA	08/16/2318:58	08/14/2310:30	LH16018A	LH16009A	23DSH017M	LCS Duplicate
380-57432-1	H049-01	1	NA	08/16/2320:31	08/14/2310:30	LH16023A	LH16009A	23DSH017M	Field Sample

FN - Filename
% Moist - Percent Moisture

LAB CHRONICLE
PETROLEUM HYDROCARBONS BY EXTRACTION

Client : EUROFINS EATON ANALYTICAL
Project : 380-57432

SDG NO. : 23H049
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
					WATER				
MBLK1W	DSH017WB	1	NA	08/16/2318:21	08/14/2310:30	LH16016A	LH16010A	23DSH017W	Method Blank
LCS1W	J5H017WL	1	NA	08/16/2319:17	08/14/2310:30	LH16019A	LH16010A	23DSH017W	Lab Control Sample (LCS)
LCD1W	J5H017WC	1	NA	08/16/2319:36	08/14/2310:30	LH16020A	LH16010A	23DSH017W	LCS Duplicate
380-57432-1	H049-01	1	NA	08/16/2320:31	08/14/2310:30	LH16023A	LH16010A	23DSH017W	Field Sample

FN - Filename
% Moist - Percent Moisture

LAB CHRONICLE
PETROLEUM HYDROCARBONS BY EXTRACTION

Client : EUROFINS EATON ANALYTICAL
Project : 380-57432

SDG NO. : 23H049
Instrument ID : D5

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	DSH017WB	1	NA	08/16/2318:21	08/14/2310:30	LH16016A	LH16011A	23DSH017W	Method Blank
LCS1W	J8H017WL	1	NA	08/16/2319:54	08/14/2310:30	LH16021A	LH16011A	23DSH017W	Lab Control Sample (LCS)
LCD1W	J8H017WC	1	NA	08/16/2320:13	08/14/2310:30	LH16022A	LH16011A	23DSH017W	LCS Duplicate
380-57432-1	H049-01	1	NA	08/16/2320:31	08/14/2310:30	LH16023A	LH16011A	23DSH017W	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: 08/01/23 12:00
Project : 380-57432	Date Received: 08/04/23
Batch No. : 23H049	Date Extracted: 08/14/23 10:30
Sample ID : 380-57432-1	Date Analyzed: 08/16/23 20:31
Lab Samp ID: 23H049-01	Dilution Factor: 1
Lab File ID: LH16023A	Matrix: WATER
Ext Btch ID: 23DSH017W	% Moisture: NA
Calib. Ref.: LH16009A	Instrument ID: D5

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)	
Diesel	ND	0.028	0.014	
Motor Oil	ND	0.055	0.028	
SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromobenzene	0.376	0.550	68	60-130
Hexacosane	0.123	0.138	90	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 : 910ml	Final Volume : 5ml
Prepared by : RGalan	Analyzed by : SDeeso

METHOD 3520C/8015B
 PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	08/01/23 12:00
Project	: 380-57432	Date Received:	08/04/23
Batch No.	: 23H049	Date Extracted:	08/14/23 10:30
Sample ID	: 380-57432-1	Date Analyzed:	08/16/23 20:31
Lab Samp ID:	23H049-01	Dilution Factor:	1
Lab File ID:	LH16023A	Matrix:	WATER
Ext Btch ID:	23DSH017W	% Moisture:	NA
Calib. Ref.:	LH16010A	Instrument ID:	D5

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)	
JP5	ND	0.055	0.028	
SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromobenzene	0.376	0.550	68	60-130
Hexacosane	0.123	0.138	90	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 : 910ml

Final Volume : 5ml

Prepared by : RGalán

Analyzed by : SDeeso

METHOD 3520C/8015B
 PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	08/01/23 12:00
Project	: 380-57432	Date Received:	08/04/23
Batch No.	: 23H049	Date Extracted:	08/14/23 10:30
Sample ID	: 380-57432-1	Date Analyzed:	08/16/23 20:31
Lab Samp ID:	23H049-01	Dilution Factor:	1
Lab File ID:	LH16023A	Matrix:	WATER
Ext Btch ID:	23DSH017W	% Moisture:	NA
Calib. Ref.:	LH16011A	Instrument ID:	D5

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)	
JP8	ND	0.055	0.028	
SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromobenzene	0.376	0.550	68	60-130
Hexacosane	0.123	0.138	90	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 : 910ml

Final Volume : 5ml

Prepared by : RGalan

Analyzed by : SDeeso

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QC SUMMARIES

METHOD 3520C/8015B
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : EUROFINS EATON ANALYTICAL	Date Collected: 08/14/23 10:30
Project : 380-57432	Date Received: 08/14/23
Batch No. : 23H049	Date Extracted: 08/14/23 10:30
Sample ID : MBLK1W	Date Analyzed: 08/16/23 18:21
Lab Samp ID: DSH017WB	Dilution Factor: 1
Lab File ID: LH16016A	Matrix: WATER
Ext Btch ID: 23DSH017W	% Moisture: NA
Calib. Ref.: LH16009A	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	0.379	0.500	76	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 : RGalan	Analyzed by : SDeeso

EMAX QUALITY CONTROL DATA
LAB CONTROL SAMPLE ANALYSIS

CLIENT : EUROFINS EATON ANALYTICAL
PROJECT : 380-57432
BATCH NO. : 23H049
METHOD : 3520C/8015B

MATRIX : WATER % MOISTURE:NA
DILUTION FACTOR: 1 1
SAMPLE ID : MBLK1W LCS1W LCD1W
LAB SAMPLE ID : DSH017WB DSH017WL DSH017WC
LAB FILE ID : LH16016A LH16017A LH16018A
DATE PREPARED : 08/14/23 10:30 08/14/23 10:30 08/14/23 10:30
DATE ANALYZED : 08/16/23 18:21 08/16/23 18:40 08/16/23 18:58
PREP BATCH : 23DSH017W 23DSH017W 23DSH017W
CALIBRATION REF: LH16009A LH16009A LH16009A

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	2.73	109	2.50	2.76	110	1	50-130	30

SURROGATE PARAMETERS	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	QCLimit (%)
Bromobenzene	0.500	0.414	83	0.500	0.398	80	60-130
Hexacosane	0.125	0.133	106	0.125	0.125	100	60-130

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

METHOD 3520C/8015B
 PETROLEUM HYDROCARBONS BY EXTRACTION

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Client      : EUROFINS EATON ANALYTICAL   Date Collected: 08/14/23 10:30
Project    : 380-57432                   Date Received: 08/14/23
Batch No.  : 23H049                       Date Extracted: 08/14/23 10:30
Sample ID  : MBLK1W                       Date Analyzed: 08/16/23 18:21
Lab Samp ID: DSH017WB                     Dilution Factor: 1
Lab File ID: LH16016A                     Matrix: WATER
Ext Btch ID: 23DSH017W                   % Moisture: NA
Calib. Ref.: LH16010A                    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	0.379	0.500	76	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 : RGalan

Analyzed by : SDeeso

EMAX QUALITY CONTROL DATA
LAB CONTROL SAMPLE ANALYSIS

CLIENT : EUROFINS EATON ANALYTICAL
PROJECT : 380-57432
BATCH NO. : 23H049
METHOD : 3520C/8015B

MATRIX : WATER % MOISTURE:NA
DILUTION FACTOR: 1 1
SAMPLE ID : MBLK1W LCS1W LCD1W
LAB SAMPLE ID : DSH017WB J5H017WL J5H017WC
LAB FILE ID : LH16016A LH16019A LH16020A
DATE PREPARED : 08/14/23 10:30 08/14/23 10:30 08/14/23 10:30
DATE ANALYZED : 08/16/23 18:21 08/16/23 19:17 08/16/23 19:36
PREP BATCH : 23DSH017W 23DSH017W 23DSH017W
CALIBRATION REF: LH16010A LH16010A LH16010A

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	2.15	86	2.50	2.06	82	4	30-160	30

SURROGATE PARAMETERS	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	QCLimit (%)
Bromobenzene	0.500	0.416	83	0.500	0.402	80	60-130
Hexacosane	0.125	0.113	90	0.125	0.121	97	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:	08/14/23 10:30
Project	: 380-57432	Date Received:	08/14/23
Batch No.	: 23H049	Date Extracted:	08/14/23 10:30
Sample ID	: MBLK1W	Date Analyzed:	08/16/23 18:21
Lab Samp ID:	DSH017WB	Dilution Factor:	1
Lab File ID:	LH16016A	Matrix:	WATER
Ext Btch ID:	23DSH017W	% Moisture:	NA
Calib. Ref.:	LH16011A	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	0.379	0.500	76	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 : RGalán Analyzed by : SDeeso

EMAX QUALITY CONTROL DATA
LAB CONTROL SAMPLE ANALYSIS

CLIENT : EUROFINS EATON ANALYTICAL
PROJECT : 380-57432
BATCH NO. : 23H049
METHOD : 3520C/8015B

MATRIX : WATER % MOISTURE:NA
DILUTION FACTOR: 1 1
SAMPLE ID : MBLK1W LCS1W LCD1W
LAB SAMPLE ID : DSH017WB J8H017WL J8H017WC
LAB FILE ID : LH16016A LH16021A LH16022A
DATE PREPARED : 08/14/23 10:30 08/14/23 10:30 08/14/23 10:30
DATE ANALYZED : 08/16/23 18:21 08/16/23 19:54 08/16/23 20:13
PREP BATCH : 23DSH017W 23DSH017W 23DSH017W
CALIBRATION REF: LH16011A LH16011A LH16011A

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	2.68	107	2.50	2.60	104	3	30-160	30

SURROGATE PARAMETERS	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	QCLimit (%)
Bromobenzene	0.500	0.492	98	0.500	0.495	99	60-130
Hexacosane	0.125	0.114	91	0.125	0.115	92	60-130

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

September 07, 2023

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

Project Name: RED-HILL Project # 38001111 Job # 380-57432-1
Physis Project ID: 1407003-430

Dear Rachelle,

Enclosed are the analytical results for the sample submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 8/4/2023. 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,



Misty Mercier
714 602-5320
Extension 202
mistymercier@physislabs.com

PROJECT SAMPLE LIST

Eurofins Eaton Analytical

PHYSIS Project ID: 1407003-430

RED-HILL Project # 38001111 Job # 380-57432-1

Total Samples: 1

PHYSIS ID	Sample ID	Description	Date	Time	Matrix	Sample Type
109317	MOANALUA WELLS	380-57432-1	8/1/2023	12:00	Samplewater	Not Specified



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.

BIANALYTICALS

REPORT

TERRA AURA
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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: 109317-R1	MOANALUA WELLS 380-57432-1		Matrix: Samplewater				Sampled: 01-Aug-23 12:00			Received: 04-Aug-23	
Disalicylidenepropanediamine	EPA 625.1	µg/L	ND	1	0.05	0.1	Total		O-42030	07-Aug-23	06-Sep-23



Polynuclear Aromatic Hydrocarbons

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
Sample ID: 109317-R1			MOANALUA WELLS 380-57432-1			Matrix: Samplewater			Sampled: 01-Aug-23 12:00		Received: 04-Aug-23
(d10-Acenaphthene)	EPA 625.1	% Recovery	93	1			Total		O-42030	07-Aug-23	06-Sep-23
(d10-Phenanthrene)	EPA 625.1	% Recovery	99	1			Total		O-42030	07-Aug-23	06-Sep-23
(d12-Chrysene)	EPA 625.1	% Recovery	93	1			Total		O-42030	07-Aug-23	06-Sep-23
(d12-Perylene)	EPA 625.1	% Recovery	100	1			Total		O-42030	07-Aug-23	06-Sep-23
(d8-Naphthalene)	EPA 625.1	% Recovery	82	1			Total		O-42030	07-Aug-23	06-Sep-23
1-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
1-Methylphenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
2,3,5-Trimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
2,6-Dimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
2-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Acenaphthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Acenaphthylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Benz[a]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Benzo[a]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Benzo[b]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Benzo[e]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Benzo[g,h,i]perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Benzo[k]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Biphenyl	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Chrysene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
D benz[a,h]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
D benzo[a,l]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
D benzothiophene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-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-42030	07-Aug-23	06-Sep-23
Fluorene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Indeno[1,2,3-cd]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Naphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Phenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-23
Pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42030	07-Aug-23	06-Sep-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: 109316-B1		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:		Received:			
		Method: EPA 625.1			Batch ID: O-42030			Prepared: 07-Aug-23		Analyzed: 06-Sep-23			
Disalicylideneprapanediamin	Total	ND	1	0.05	0.1	µg/L							
Sample ID: 109316-BS1		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:		Received:			
		Method: EPA 625.1			Batch ID: O-42030			Prepared: 07-Aug-23		Analyzed: 06-Sep-23			
Disalicylideneprapanediamin	Total	54.4	1	0.05	0.1	µg/L	50	0	109	50 - 150%	PASS		
Sample ID: 109316-BS2		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:		Received:			
		Method: EPA 625.1			Batch ID: O-42030			Prepared: 07-Aug-23		Analyzed: 06-Sep-23			
Disalicylideneprapanediamin	Total	52	1	0.05	0.1	µg/L	50	0	104	50 - 150%	PASS	5	30 PASS

Polynuclear Aromatic Hydrocarbons

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY	PRECISION	QA CODEc
							LEVEL	RESULT	%	LIMITS	%
Sample ID: 109316-B1		QAQC Procedural Blank			Matrix: BlankMatrix		Sampled:		Received:		
		Method: EPA 625.1			Batch ID: O-42030		Prepared: 07-Aug-23		Analyzed: 06-Sep-23		
(d10-Acenaphthene)	Total	104	1				% Recovery	100	104	27 - 133%	PASS
(d10-Phenanthrene)	Total	105	1				% Recovery	100	105	43 - 129%	PASS
(d12-Chrysene)	Total	101	1				% Recovery	100	101	52 - 144%	PASS
(d12-Perylene)	Total	109	1				% Recovery	100	109	36 - 161%	PASS
(d8-Naphthalene)	Total	96	1				% Recovery	100	96	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: 109316-BS1		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:		Received:		
Method: EPA 625.1		Batch ID: O-42030			Prepared: 07-Aug-23		Analyzed: 06-Sep-23					
(d10-Acenaphthene)	Total	103	1			% Recovery	100	0	103	27 - 133%	PASS	
(d10-Phenanthrene)	Total	104	1			% Recovery	100	0	104	43 - 129%	PASS	
(d12-Chrysene)	Total	102	1			% Recovery	100	0	102	52 - 144%	PASS	
(d12-Perylene)	Total	110	1			% Recovery	100	0	110	36 - 161%	PASS	
(d8-Naphthalene)	Total	95	1			% Recovery	100	0	95	25 - 125%	PASS	
1-Methylnaphthalene	Total	0.483	1	0.001	0.005	µg/L	0.5	0	97	31 - 128%	PASS	
1-Methylphenanthrene	Total	0.519	1	0.001	0.005	µg/L	0.5	0	104	66 - 127%	PASS	
2,3,5-Trimethylnaphthalene	Total	0.522	1	0.001	0.005	µg/L	0.5	0	104	55 - 122%	PASS	
2,6-Dimethylnaphthalene	Total	0.507	1	0.001	0.005	µg/L	0.5	0	101	48 - 120%	PASS	
2-Methylnaphthalene	Total	0.492	1	0.001	0.005	µg/L	0.5	0	98	47 - 130%	PASS	
Acenaphthene	Total	0.504	1	0.001	0.005	µg/L	0.5	0	101	53 - 131%	PASS	
Acenaphthylene	Total	0.533	1	0.001	0.005	µg/L	0.5	0	107	43 - 140%	PASS	
Anthracene	Total	0.509	1	0.001	0.005	µg/L	0.5	0	102	58 - 135%	PASS	
Benz[a]anthracene	Total	0.455	1	0.001	0.005	µg/L	0.5	0	91	55 - 145%	PASS	
Benzo[a]pyrene	Total	0.538	1	0.001	0.005	µg/L	0.5	0	108	51 - 143%	PASS	
Benzo[b]fluoranthene	Total	0.499	1	0.001	0.005	µg/L	0.5	0	100	46 - 165%	PASS	
Benzo[e]pyrene	Total	0.514	1	0.001	0.005	µg/L	0.5	0	103	42 - 152%	PASS	
Benzo[g,h,i]perylene	Total	0.52	1	0.001	0.005	µg/L	0.5	0	104	63 - 133%	PASS	
Benzo[k]fluoranthene	Total	0.512	1	0.001	0.005	µg/L	0.5	0	102	56 - 145%	PASS	
Biphenyl	Total	0.503	1	0.001	0.005	µg/L	0.5	0	101	56 - 119%	PASS	
Chrysene	Total	0.488	1	0.001	0.005	µg/L	0.5	0	98	56 - 141%	PASS	
Dibenz[a,h]anthracene	Total	0.525	1	0.001	0.005	µg/L	0.5	0	105	55 - 150%	PASS	
Dibenzo[a,l]pyrene	Total	0.413	1	0.001	0.005	µg/L	0.5	0	83	50 - 150%	PASS	
Dibenzothiophene	Total	0.498	1	0.001	0.005	µg/L	0.5	0	100	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	0.501	1	0.001	0.005	µg/L	0.5	0	100	60 - 146%	PASS		
Fluorene	Total	0.529	1	0.001	0.005	µg/L	0.5	0	106	58 - 131%	PASS		
Indeno[1,2,3-cd]pyrene	Total	0.503	1	0.001	0.005	µg/L	0.5	0	101	50 - 151%	PASS		
Naphthalene	Total	0.472	1	0.001	0.005	µg/L	0.5	0	94	41 - 126%	PASS		
Perylene	Total	0.525	1	0.001	0.005	µg/L	0.5	0	105	48 - 141%	PASS		
Phenanthrene	Total	0.502	1	0.001	0.005	µg/L	0.5	0	100	67 - 127%	PASS		
Pyrene	Total	0.51	1	0.001	0.005	µg/L	0.5	0	102	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: 109316-BS2		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:			Received:			
Method: EPA 625.1		Batch ID: O-42030			Prepared: 07-Aug-23			Analyzed: 06-Sep-23						
(d10-Acenaphthene)	Total	109	1			% Recovery	100	0	109	27 - 133%	PASS	6	30	PASS
(d10-Phenanthrene)	Total	104	1			% Recovery	100	0	104	43 - 129%	PASS	0	30	PASS
(d12-Chrysene)	Total	101	1			% Recovery	100	0	101	52 - 144%	PASS	1	30	PASS
(d12-Perylene)	Total	109	1			% Recovery	100	0	109	36 - 161%	PASS	1	30	PASS
(d8-Naphthalene)	Total	104	1			% Recovery	100	0	104	25 - 125%	PASS	9	30	PASS
1-Methylnaphthalene	Total	0.52	1	0.001	0.005	µg/L	0.5	0	104	31 - 128%	PASS	7	30	PASS
1-Methylphenanthrene	Total	0.495	1	0.001	0.005	µg/L	0.5	0	99	66 - 127%	PASS	5	30	PASS
2,3,5-Trimethylnaphthalene	Total	0.525	1	0.001	0.005	µg/L	0.5	0	105	55 - 122%	PASS	1	30	PASS
2,6-Dimethylnaphthalene	Total	0.527	1	0.001	0.005	µg/L	0.5	0	105	48 - 120%	PASS	4	30	PASS
2-Methylnaphthalene	Total	0.523	1	0.001	0.005	µg/L	0.5	0	105	47 - 130%	PASS	7	30	PASS
Acenaphthene	Total	0.524	1	0.001	0.005	µg/L	0.5	0	105	53 - 131%	PASS	4	30	PASS
Acenaphthylene	Total	0.54	1	0.001	0.005	µg/L	0.5	0	108	43 - 140%	PASS	1	30	PASS
Anthracene	Total	0.509	1	0.001	0.005	µg/L	0.5	0	102	58 - 135%	PASS	0	30	PASS
Benz[a]anthracene	Total	0.425	1	0.001	0.005	µg/L	0.5	0	85	55 - 145%	PASS	7	30	PASS
Benzo[a]pyrene	Total	0.515	1	0.001	0.005	µg/L	0.5	0	103	51 - 143%	PASS	5	30	PASS
Benzo[b]fluoranthene	Total	0.487	1	0.001	0.005	µg/L	0.5	0	97	46 - 165%	PASS	3	30	PASS
Benzo[e]pyrene	Total	0.505	1	0.001	0.005	µg/L	0.5	0	101	42 - 152%	PASS	2	30	PASS
Benzo[g,h,i]perylene	Total	0.512	1	0.001	0.005	µg/L	0.5	0	102	63 - 133%	PASS	2	30	PASS
Benzo[k]fluoranthene	Total	0.483	1	0.001	0.005	µg/L	0.5	0	97	56 - 145%	PASS	5	30	PASS
Biphenyl	Total	0.528	1	0.001	0.005	µg/L	0.5	0	106	56 - 119%	PASS	5	30	PASS
Chrysene	Total	0.475	1	0.001	0.005	µg/L	0.5	0	95	56 - 141%	PASS	3	30	PASS
Dibenz[a,h]anthracene	Total	0.507	1	0.001	0.005	µg/L	0.5	0	101	55 - 150%	PASS	4	30	PASS
Dibenzo[a,l]pyrene	Total	0.384	1	0.001	0.005	µg/L	0.5	0	77	50 - 150%	PASS	8	30	PASS
Dibenzothiophene	Total	0.499	1	0.001	0.005	µg/L	0.5	0	100	46 - 126%	PASS	0	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	0.479	1	0.001	0.005	µg/L	0.5	0	96	60 - 146%	PASS	4	30	PASS
Fluorene	Total	0.527	1	0.001	0.005	µg/L	0.5	0	105	58 - 131%	PASS	1	30	PASS
Indeno[1,2,3-cd]pyrene	Total	0.485	1	0.001	0.005	µg/L	0.5	0	97	50 - 151%	PASS	4	30	PASS
Naphthalene	Total	0.502	1	0.001	0.005	µg/L	0.5	0	100	41 - 126%	PASS	6	30	PASS
Perylene	Total	0.509	1	0.001	0.005	µg/L	0.5	0	102	48 - 141%	PASS	3	30	PASS
Phenanthrene	Total	0.502	1	0.001	0.005	µg/L	0.5	0	100	67 - 127%	PASS	0	30	PASS
Pyrene	Total	0.484	1	0.001	0.005	µg/L	0.5	0	97	54 - 156%	PASS	5	30	PASS

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PHYSIS

TENTATIVELY

IDENTIFIED COMPOUNDS

ENVIRONMENTAL LABORATORIES, INC.

Innovative Solutions for Nature

Sample ID: 109317

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
34.0470	6.6980	1111	Anthracene-D10-	1719-06-8	95
10.2490	1.8530	307	1,5-Heptadien-4-one, 3,3,6-trimethyl-	546-49-6	89

Concentration estimated using the response for Anthracene-d10

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Sample ID: Lab Blank B1_42030

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
34.0478	5.4189	1111	Anthracene-D10-	1719-06-8	95
10.2503	1.7825	365	1,5-Heptadien-4-one, 3,3,6-trimethyl-	546-49-6	90

Concentration estimated using the response for Anthracene-d10

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PERFORMANCE CHAIN OF CUSTODY

TERRA ENVIRONMENTAL LABORATORIES, INC.
AURA

Innovative Solutions for Nature

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941 Corporate Center Drive
 Pomona, CA 91768-2642
 Phone: 626-386-1100



Client Information (Sub Contract Lab)
 Client Contact: _____ Phone: _____ Lab P.N.: Arada, Rachelle
 Shipping/Receiving: _____ E-Mail: Rachelle.Arada@et.eurofins.com
 Company: Physis Environmental Laboratories
 Address: 1904 Wright Circle, _____ State of Origin: Hawaii
 City: Anahelm
 State: CA, 92806
 Phone: _____ PO #: _____
 Email: _____ WO #: _____
 Project Name: RED-HILL Project #: 38001111
 Site: Honolulu BWS Sites SSOV#: _____

Sampler: _____
 Date Requested: 8/17/2023
 TAT Requested (days): _____
 Job #: 380-57432-1
 Page: Page 1 of 1
 Preservation Codes:
 A - HCL
 B - NaOH
 C - Zn Acetate
 D - Nitric Acid
 E - NaHSO4
 F - MeOH
 G - Amchlor
 H - Acetic Acid
 I - Ice
 J - DI Water
 K - EDTA
 L - EDTA
 M - Hexane
 N - None
 O - As2O3
 P - Na2OAS
 Q - Na2SO3
 R - Na2S2O3
 S - H2SO4
 T - TSP Dodecahydrate
 U - Acetone
 V - MCA
 W - pH 4.5
 Y - Trizma
 Z - other (specify)

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grat)	Matrix (Water, Organic, Inorganic, etc.)	Preservation Code	Field Filtered Sample (Yes or No)		Analysis Requested	Total Number of containers	Special Instructions/Note
						Perform MS/MSD (Yes or No)	SUB (625 PAH Physis LL (EAL) + TICs) / 625 PAH Physis LL (EAL) + TICs			
MOANALUA WELLS (380-57432-1)	8/1/23	12:00		Water			X		2	See Attached Instructions

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/estimator 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.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) _____ Primary Deliverable Rank: 2
 Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: *Xan* Date/Time: 8/14/23 1111 Company: *ESAT*
 Relinquished by: _____ Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Received by: *Maryam Nana*
 Custody Seals Intact: Yes No Custody Seal No.: _____
 Cooler Temperature(s) °C and Other Remarks: _____



Project Iteration ID: 1407003-430
 Client Name: Eurofins Eaton Analytical
 Project Name: RED-HILL Project # 38001111 Job # 380-57432-1
 COC Page Number: 2 of 2
 Bottle Label Color: NA

Sample Receipt Summary

Receiving Info

- Initials Received By: MN
- Date Received: 8/4/23
- Time Received: 11 11
- 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): 2.4 Used I/R Thermometer # 1-2

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		Lab PM		Carrier Tracking No(s)		COC No	
Client Contact: Dr. Ron Fenstermacher		Arada, Rachelle		State of Origin		380-27941-2757.2	
Company: City & County of Honolulu		E-Mail Rachelle.Arada@et.euronisus.com		Page		Page 2 of 2	
Address 630 South Beretania Street, Chemistry Lab		PWSID		Job #			
City Honolulu		Due Date Requested:		Analysis Requested		Preservation Codes:	
State, Zip HI, 96843		TAT Requested (days):		1		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Phone 808-748-5091 (tel)		Compliance Project: Δ No		2		M - Hexane N - None O - AsNaO2 P - Na2OAS Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4.5 Y - Trizma Z - other (specify)	
Email rfenstermacher@hbws.org		PO # C20525101 exp 05312023		3		Total Number of containers	
Project Name RED-HILL/HBWS sites Event Desc RUSH Weekly Red Hill		WO #		4		Special Instructions/Note:	
Site		Project # 38001111		5		Pump 2	
		SSOW#		6			
		Sample Date		7			
		Sample Time		8			
		Sample Type (C=comp, G=grab)		9			
		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)		10			
		Preservation Code:		11			
		MOANALUA WELLS		12			
		AIEA GULCH WELLS PUMP2		13			
		AIEA WELLS PUMPS 1&2 (260)		14			
		HALAWA WELLS UNITS 1&2		15			
		FB MOANALUA WELLS					
		FB AIEA GULCH WELLS PUMP2					
		FB AIEA WELLS PUMPS 1&2 (260)					
		FB HALAWA WELLS UNITS 1&2					
		Possible Hazard Identification					
		Deliverable Requested 1, II, III, IV, Other (specify)					
		Empty Kit Relinquished by					
		Relinquished by					
		Relinquished by					
		Relinquished by					
		Custody Seals Intact:					
		Custody Seal No.:					



Chain of Custody Record



Client Information		Lab PM		Carrier Tracking No(s)		COC No					
Client Contact: Dr. Ron Fenstermacher		Arada, Rachelle		Arada, Rachelle		380-27941-2757.2					
Company: City & County of Honolulu		E-Mail Rachelle.Arada@et.eurofins.com		State of Origin		Page: Page 2 of 2					
Address 630 South Beretania Street; Chemistry Lab		Due Date Requested:		Job #							
City: Honolulu		TAT Requested (days):		Analysis Requested SUBCONTRACT - 625 PAH Physis LL (EAL) + TICs SUBCONTRACT - 8015 Gas (Purgable) LL (EAL) SUBCONTRACT - 8915 Diesel LL (EAL) and Motor Oil SUBCONTRACT - (MOD) 525plus PLUS TICs 537.1 DW_PREC - 537.1 Full List 533 - All Analytes Total Number of Containers <input checked="" type="checkbox"/>							
State, Zip HI, 96843		Compliance Project: Δ No									
Phone 808-748-5091 (tel)		PO #: C20525101 exp 05312023									
Email rfenstermacher@hbws.org		WO #:									
Project Name RED-HILL/HBWS sites Event Desc. RUSH Weekly Red Hill		Project # 38001111		Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SC3 R - NaHSO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify) Other: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA							
Site		SSON#									
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)					Matrix (W=water, S=solid, O=wastewater, BT=Tissue, A=Air)	Special Instructions/Note: Pump 2		
MOANALUA WELLS	8/1/2023	1200	G					Water			
AIEA GULCH WELLS PUMP2								Water			
AIEA WELLS PUMPS 1&2 (260)								Water			
HALAWA WELLS UNITS 1&2								Water			
FB MOANALUA WELLS	8/1/2023							Water			
FB AIEA GULCH WELLS PUMP2								Water			
FB AIEA WELLS PUMPS 1&2 (260)								Water			
FB HALAWA WELLS UNITS 1&2								Water			
Possible Hazard Identification		Date		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"/> Unknown <input type="checkbox"/> Radiological		8/1/2023		Return To Client <input type="checkbox"/>		Archive For _____ Months					
Deliverable Requested: I, II, III, IV, Other (specify)		Time:		Special Instructions/QC Requirements							
Empty Kit Relinquished by		Date		Method of Shipment: FED EX 7729 3024 7856							
Relinquished by <i>Bry Nishit</i>		8/1/2023 1245		Received by <i>G REITNER</i>		Date/Time 08/03/2023 09:20					
Relinquished by				Received by		Date/Time					
Relinquished by				Received by		Date/Time					
Custody Seals Intact: Δ Yes Δ No		Custody Seal No		Cooler Temperature(s) °C and Other Remarks: (751A) 5.3 °C 0.2 °C 5.1 °C GFCI FROZEN							

Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-57432-2

Login Number: 57432
List Number: 1
Creator: Elyas, Matthew

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	

