

ANALYTICAL REPORT

PREPARED FOR

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JOB DESCRIPTION

RED-HILL [SUBCONTRACT]
625, 8015
RUSH Weekly Red Hill

JOB NUMBER

380-85842-2

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 [SUBCONTRACT]

Job ID: 380-85842-2
SDG: 625, 8015

Glossary

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

Case Narrative

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

Job ID: 380-85842-2

Job ID: 380-85842-2

Eurofins Eaton Analytical Pomona

Job Narrative 380-85842-2

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 3/6/2024 10:33 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9°C, 2.5°C and 2.7°C.

Subcontract Work

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.

Gasoline Range Organics

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

GC Semi VOA

Method 8015B_DRO_LL_CS: A portion of the following samples were used for analysis, rather than testing the entire sample amount in the original container, the samples were prepared using an exact volume as opposed to the volume received: MOANALUA WELLS (380-85842-1), AIEA GULCH WELLS PUMP 2 (380-85842-2), AIEA WELLS PUMPS 1&2 (260) P2 (380-85842-3) and HALAWA WELLS UNITS 1 & 2 P1 (380-85842-4). As such, the required solvent rinse of the original container could not be performed.

Method 8015B_DRO_LL_CS: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 570-418596. The laboratory control sample (LCS) was performed in duplicate (LCSD) to provide precision data for this batch.

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

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Detection Summary

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

Job ID: 380-85842-2
SDG: 625, 8015

Client Sample ID: MOANALUA WELLS **Lab Sample ID: 380-85842-1**
PWSID Number: HI0000331

No Detections.

Client Sample ID: AIEA GULCH WELLS PUMP 2 **Lab Sample ID: 380-85842-2**
PWSID Number: HI0000331

No Detections.

Client Sample ID: AIEA WELLS PUMPS 1&2 (260) P2 **Lab Sample ID: 380-85842-3**
PWSID Number: HI0000331

No Detections.

Client Sample ID: HALAWA WELLS UNITS 1 & 2 P1 **Lab Sample ID: 380-85842-4**
PWSID Number: HI0000331

No Detections.

Client Sample ID: TB: MOANALUA WELLS **Lab Sample ID: 380-85842-5**

No Detections.

Client Sample ID: TB: AIEA GULCH WELLS PUMP 2 **Lab Sample ID: 380-85842-6**

No Detections.

Client Sample ID: TB: AIEA WELLS PUMPS 1&2 (260) P2 **Lab Sample ID: 380-85842-7**

No Detections.

Client Sample ID: TB: HALAWA WELLS UNITS 1 & 2 P1 **Lab Sample ID: 380-85842-8**

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Eaton Analytical Pomona

Client Sample Results

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

Job ID: 380-85842-2
 SDG: 625, 8015

Client Sample ID: MOANALUA WELLS

Lab Sample ID: 380-85842-1

Date Collected: 03/04/24 09:30

Matrix: Drinking Water

Date Received: 03/06/24 10:33

PWSID Number: HI0000331

Method: SW846 8015B GRO LL - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C10)	<10		10	ug/L			03/13/24 22:56	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	71		38 - 134				03/13/24 22:56	1

Method: SW846 8015B - Diesel Range Organics (DRO) (GC) Low Level

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C10-C24)	<25		25	ug/L		03/09/24 18:57	03/24/24 11:56	1
Motor Oil Range Organics [C24-C36]	<25		25	ug/L		03/09/24 18:57	03/24/24 11:56	1
C8-C18	<25		25	ug/L		03/09/24 18:57	03/24/24 11:56	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
n-Octacosane (Surr)	108		60 - 130			03/09/24 18:57	03/24/24 11:56	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Acenaphthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Acenaphthylene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Anthracene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Biphenyl	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Chrysene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Dibenzothiophene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		03/11/24 00:00	03/30/24 00:40	1
Fluoranthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Fluorene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Naphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Perylene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Phenanthrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 00:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	69		27 - 133				03/11/24 00:00	03/30/24 00:40	1
(d10-Phenanthrene)	76		43 - 129				03/11/24 00:00	03/30/24 00:40	1
(d12-Chrysene)	70		52 - 144				03/11/24 00:00	03/30/24 00:40	1
(d12-Perylene)	83		36 - 161				03/11/24 00:00	03/30/24 00:40	1
(d8-Naphthalene)	55		25 - 125				03/11/24 00:00	03/30/24 00:40	1

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Client Sample Results

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

Job ID: 380-85842-2
SDG: 625, 8015

Client Sample ID: AIEA GULCH WELLS PUMP 2

Lab Sample ID: 380-85842-2

Date Collected: 03/04/24 10:26

Matrix: Drinking Water

Date Received: 03/06/24 10:33

PWSID Number: HI0000331

Method: SW846 8015B GRO LL - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C10)	<10		10	ug/L			03/13/24 23:22	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	68		38 - 134				03/13/24 23:22	1

Method: SW846 8015B - Diesel Range Organics (DRO) (GC) Low Level

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C10-C24)	<25		25	ug/L		03/09/24 18:57	03/24/24 12:17	1
Motor Oil Range Organics [C24-C36]	<25		25	ug/L		03/09/24 18:57	03/24/24 12:17	1
C8-C18	<25		25	ug/L		03/09/24 18:57	03/24/24 12:17	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
n-Octacosane (Surr)	105		60 - 130			03/09/24 18:57	03/24/24 12:17	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Acenaphthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Acenaphthylene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Anthracene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Biphenyl	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Chrysene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Dibenzothiophene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		03/11/24 00:00	03/30/24 02:29	1
Fluoranthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Fluorene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Naphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Perylene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Phenanthrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 02:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	82		27 - 133				03/11/24 00:00	03/30/24 02:29	1
(d10-Phenanthrene)	82		43 - 129				03/11/24 00:00	03/30/24 02:29	1
(d12-Chrysene)	75		52 - 144				03/11/24 00:00	03/30/24 02:29	1
(d12-Perylene)	88		36 - 161				03/11/24 00:00	03/30/24 02:29	1
(d8-Naphthalene)	67		25 - 125				03/11/24 00:00	03/30/24 02:29	1

Eurofins Eaton Analytical Pomona

Client Sample Results

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

Job ID: 380-85842-2
 SDG: 625, 8015

Client Sample ID: AIEA WELLS PUMPS 1&2 (260) P2

Lab Sample ID: 380-85842-3

Date Collected: 03/04/24 10:58

Matrix: Drinking Water

Date Received: 03/06/24 10:33

PWSID Number: HI0000331

Method: SW846 8015B GRO LL - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C10)	<10		10	ug/L			03/13/24 23:48	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	74		38 - 134				03/13/24 23:48	1

Method: SW846 8015B - Diesel Range Organics (DRO) (GC) Low Level

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C10-C24)	<25		25	ug/L		03/09/24 18:57	03/24/24 12:37	1
Motor Oil Range Organics [C24-C36]	<25		25	ug/L		03/09/24 18:57	03/24/24 12:37	1
C8-C18	<25		25	ug/L		03/09/24 18:57	03/24/24 12:37	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
n-Octacosane (Surr)	115		60 - 130			03/09/24 18:57	03/24/24 12:37	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Acenaphthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Acenaphthylene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Anthracene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Biphenyl	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Chrysene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Dibenzothiophene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		03/11/24 00:00	03/30/24 04:18	1
Fluoranthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Fluorene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Naphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Perylene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Phenanthrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 04:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	78		27 - 133				03/11/24 00:00	03/30/24 04:18	1
(d10-Phenanthrene)	82		43 - 129				03/11/24 00:00	03/30/24 04:18	1
(d12-Chrysene)	76		52 - 144				03/11/24 00:00	03/30/24 04:18	1
(d12-Perylene)	88		36 - 161				03/11/24 00:00	03/30/24 04:18	1
(d8-Naphthalene)	61		25 - 125				03/11/24 00:00	03/30/24 04:18	1

Eurofins Eaton Analytical Pomona

Client Sample Results

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

Job ID: 380-85842-2
SDG: 625, 8015

Client Sample ID: HALAWA WELLS UNITS 1 & 2 P1

Lab Sample ID: 380-85842-4

Date Collected: 03/04/24 09:54

Matrix: Drinking Water

Date Received: 03/06/24 10:33

PWSID Number: HI0000331

Method: SW846 8015B GRO LL - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C10)	<10		10	ug/L			03/14/24 00:15	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	69		38 - 134				03/14/24 00:15	1

Method: SW846 8015B - Diesel Range Organics (DRO) (GC) Low Level

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C10-C24)	<25		25	ug/L		03/09/24 18:57	03/24/24 12:58	1
Motor Oil Range Organics [C24-C36]	<25		25	ug/L		03/09/24 18:57	03/24/24 12:58	1
C8-C18	<25		25	ug/L		03/09/24 18:57	03/24/24 12:58	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
n-Octacosane (Surr)	106		60 - 130			03/09/24 18:57	03/24/24 12:58	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Acenaphthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Acenaphthylene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Anthracene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Biphenyl	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Chrysene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Dibenzothiophene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		03/11/24 00:00	03/30/24 06:06	1
Fluoranthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Fluorene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Naphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Perylene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Phenanthrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/30/24 06:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	96		27 - 133				03/11/24 00:00	03/30/24 06:06	1
(d10-Phenanthrene)	90		43 - 129				03/11/24 00:00	03/30/24 06:06	1
(d12-Chrysene)	75		52 - 144				03/11/24 00:00	03/30/24 06:06	1
(d12-Perylene)	88		36 - 161				03/11/24 00:00	03/30/24 06:06	1
(d8-Naphthalene)	82		25 - 125				03/11/24 00:00	03/30/24 06:06	1

Eurofins Eaton Analytical Pomona

Client Sample Results

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

Job ID: 380-85842-2
 SDG: 625, 8015

Client Sample ID: TB: MOANALUA WELLS

Lab Sample ID: 380-85842-5

Date Collected: 03/04/24 09:30

Matrix: Water

Date Received: 03/06/24 10:33

Method: SW846 8015B GRO LL - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C10)	<10		10	ug/L			03/13/24 20:04	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	84		38 - 134				03/13/24 20:04	1

Client Sample ID: TB: AIEA GULCH WELLS PUMP 2

Lab Sample ID: 380-85842-6

Date Collected: 03/04/24 10:26

Matrix: Water

Date Received: 03/06/24 10:33

Method: SW846 8015B GRO LL - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C10)	<10		10	ug/L			03/13/24 20:30	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	70		38 - 134				03/13/24 20:30	1

Client Sample ID: TB: AIEA WELLS PUMPS 1&2 (260) P2

Lab Sample ID: 380-85842-7

Date Collected: 03/04/24 10:58

Matrix: Water

Date Received: 03/06/24 10:33

Method: SW846 8015B GRO LL - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C10)	<10		10	ug/L			03/13/24 22:04	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	74		38 - 134				03/13/24 22:04	1

Client Sample ID: TB: HALAWA WELLS UNITS 1 & 2 P1

Lab Sample ID: 380-85842-8

Date Collected: 03/04/24 09:54

Matrix: Water

Date Received: 03/06/24 10:33

Method: SW846 8015B GRO LL - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C10)	<10		10	ug/L			03/13/24 22:30	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	81		38 - 134				03/13/24 22:30	1

Surrogate Summary

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

Job ID: 380-85842-2
 SDG: 625, 8015

Method: 8015B GRO LL - Gasoline Range Organics - (GC)

Matrix: Drinking Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB1 (38-134)
380-85842-1	MOANALUA WELLS	71
380-85842-2	AIEA GULCH WELLS PUMP 2	68
380-85842-3	AIEA WELLS PUMPS 1&2 (260) P2	74
380-85842-4	HALAWA WELLS UNITS 1 & 2 P1	69

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

Method: 8015B GRO LL - Gasoline Range Organics - (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB1 (38-134)
380-85842-5	TB: MOANALUA WELLS	84
380-85842-6	TB: AIEA GULCH WELLS PUMF 2	70
380-85842-7	TB: AIEA WELLS PUMPS 1&2 (260) P2	74
380-85842-8	TB: HALAWA WELLS UNITS 1 & 2 P1	81
380-86345-F-1 MSD	Matrix Spike Duplicate	102
380-86345-H-1 MS	Matrix Spike	83
LCS 570-419666/5	Lab Control Sample	75
LCSD 570-419666/6	Lab Control Sample Dup	79
MB 570-419666/7	Method Blank	67
MRL 570-419666/4	Lab Control Sample	71

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

Method: 8015B - Diesel Range Organics (DRO) (GC) Low Level

Matrix: Drinking Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OTCSN1 (60-130)
380-85842-1	MOANALUA WELLS	108
380-85842-2	AIEA GULCH WELLS PUMP 2	105
380-85842-3	AIEA WELLS PUMPS 1&2 (260) P2	115
380-85842-4	HALAWA WELLS UNITS 1 & 2 P1	106

Surrogate Legend

OTCSN = n-Octacosane (Surr)

Surrogate Summary

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

Job ID: 380-85842-2
 SDG: 625, 8015

Method: 8015B - Diesel Range Organics (DRO) (GC) Low Level

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OTCSN1 (60-130)
LCS 570-418596/2-A	Lab Control Sample	103
LCSD 570-418596/3-A	Lab Control Sample Dup	115
MB 570-418596/1-A	Method Blank	120
MRL 570-418596/4-A	Lab Control Sample	109

Surrogate Legend

OTCSN = n-Octacosane (Surr)

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

Matrix: BlankMatrix

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

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)
116506-B1	Method Blank	85	89	64	70	88
116506-BS1	Lab Control Sample	86	92	72	64	92
116506-BS2	Lab Control Sample Dup	85	90	69	68	89

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

Percent Surrogate Recovery (Acceptance Limits)

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)
380-85842-1	MOANALUA WELLS	69	76	70	55	83
380-85842-2	AIEA GULCH WELLS PUMP 2	82	82	75	67	88
380-85842-3	AIEA WELLS PUMPS 1&2 (260) P2	78	82	76	61	88
380-85842-4	HALAWA WELLS UNITS 1 & 2 P1	96	90	75	82	88

Surrogate Legend

(d10-Acenaphthene) = (d10-Acenaphthene)

(d10-Phenanthrene) = (d10-Phenanthrene)

CRY = (d12-Chrysene)

NPT = (d8-Naphthalene)

PRY = (d12-Perylene)

QC Sample Results

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

Job ID: 380-85842-2
 SDG: 625, 8015

Method: 8015B GRO LL - Gasoline Range Organics - (GC)

Lab Sample ID: MB 570-419666/7
Matrix: Water
Analysis Batch: 419666

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

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
GRO (C6-C10)	<10		10	ug/L			03/13/24 12:58	1	
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	67		38 - 134					03/13/24 12:58	1

Lab Sample ID: LCS 570-419666/5
Matrix: Water
Analysis Batch: 419666

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (C4-C13)	400	397		ug/L		99	78 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
4-Bromofluorobenzene (Surr)	75		38 - 134				

Lab Sample ID: LCSD 570-419666/6
Matrix: Water
Analysis Batch: 419666

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Gasoline Range Organics (C4-C13)	400	416		ug/L		104	78 - 120	5	10
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits						
4-Bromofluorobenzene (Surr)	79		38 - 134						

Lab Sample ID: MRL 570-419666/4
Matrix: Water
Analysis Batch: 419666

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Gasoline Range Organics (C4-C13)	10.0	11.0		ug/L		110	50 - 150
Surrogate	MRL %Recovery	MRL Qualifier	Limits				
4-Bromofluorobenzene (Surr)	71		38 - 134				

Lab Sample ID: 380-86345-F-1 MSD
Matrix: Water
Analysis Batch: 419666

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	Limit
Gasoline Range Organics (C4-C13)	<10		400	383		ug/L		96	68 - 122	6	18
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
4-Bromofluorobenzene (Surr)	102		38 - 134								

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-85842-2
 SDG: 625, 8015

Method: 8015B GRO LL - Gasoline Range Organics - (GC)

Lab Sample ID: 380-86345-H-1 MS
Matrix: Water
Analysis Batch: 419666

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 Range Organics (C4-C13)	<10		400	361		ug/L		90	68 - 122
Surrogate	%Recovery	MS MS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	83		38 - 134						

Method: 8015B - Diesel Range Organics (DRO) (GC) Low Level

Lab Sample ID: MB 570-418596/1-A
Matrix: Water
Analysis Batch: 423500

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418596

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C10-C24)	<25		25	ug/L		03/09/24 18:57	03/24/24 10:53	1
Motor Oil Range Organics [C24-C36]	<25		25	ug/L		03/09/24 18:57	03/24/24 10:53	1
C8-C18	<25		25	ug/L		03/09/24 18:57	03/24/24 10:53	1
Surrogate	%Recovery	MB MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
n-Octacosane (Surr)	120		60 - 130			03/09/24 18:57	03/24/24 10:53	1

Lab Sample ID: LCS 570-418596/2-A
Matrix: Water
Analysis Batch: 423500

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418596

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
C10-C28	1600	1620		ug/L		101	56 - 127
Surrogate	%Recovery	LCS LCS Qualifier	Limits				
n-Octacosane (Surr)	103		60 - 130				

Lab Sample ID: LCSD 570-418596/3-A
Matrix: Water
Analysis Batch: 423500

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 418596

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
C10-C28	1600	1820		ug/L		113	56 - 127	11	23
Surrogate	%Recovery	LCSD LCSD Qualifier	Limits						
n-Octacosane (Surr)	115		60 - 130						

Lab Sample ID: MRL 570-418596/4-A
Matrix: Water
Analysis Batch: 423500

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418596

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
C10-C28	0.0200	0.0283		mg/L		142	50 - 150

QC Sample Results

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

Job ID: 380-85842-2
 SDG: 625, 8015

Method: 8015B - Diesel Range Organics (DRO) (GC) Low Level (Continued)

Lab Sample ID: MRL 570-418596/4-A
Matrix: Water
Analysis Batch: 423500

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418596

<i>Surrogate</i>	<i>MRL</i>	<i>MRL</i>	<i>Limits</i>
<i>%Recovery</i>	<i>Qualifier</i>		
<i>n-Octacosane (Surr)</i>	109		60 - 130

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

Lab Sample ID: 116506-B1
Matrix: BlankMatrix
Analysis Batch: O-44144

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: O-44144_P

<i>Analyte</i>	<i>Blank</i>	<i>Blank</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>Result</i>	<i>Qualifier</i>							
1-Methylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Acenaphthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Acenaphthylene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Anthracene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Biphenyl	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Chrysene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Dibenzothiophene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		03/11/24 00:00	03/29/24 19:11	1
Fluoranthene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Fluorene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Naphthalene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Perylene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Phenanthrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1
Pyrene	ND		0.005	0.001	µg/L		03/11/24 00:00	03/29/24 19:11	1

<i>Surrogate</i>	<i>Blank</i>	<i>Blank</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>				
<i>(d10-Acenaphthene)</i>	85		27 - 133	03/11/24 00:00	03/29/24 19:11	1
<i>(d10-Phenanthrene)</i>	89		43 - 129	03/11/24 00:00	03/29/24 19:11	1
<i>(d12-Chrysene)</i>	64		52 - 144	03/11/24 00:00	03/29/24 19:11	1
<i>(d12-Perylene)</i>	88		36 - 161	03/11/24 00:00	03/29/24 19:11	1
<i>(d8-Naphthalene)</i>	70		25 - 125	03/11/24 00:00	03/29/24 19:11	1

QC Sample Results

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

Job ID: 380-85842-2
 SDG: 625, 8015

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

Lab Sample ID: 116506-BS1
Matrix: BlankMatrix
Analysis Batch: O-44144

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: O-44144_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1-Methylnaphthalene	0.5	0.399		µg/L		80	31 - 128
1-Methylphenanthrene	0.5	0.56		µg/L		112	66 - 127
2,3,5-Trimethylnaphthalene	0.5	0.508		µg/L		102	55 - 122
2,6-Dimethylnaphthalene	0.5	0.453		µg/L		91	48 - 120
2-Methylnaphthalene	0.5	0.401		µg/L		80	47 - 130
Acenaphthene	0.5	0.472		µg/L		94	53 - 131
Acenaphthylene	0.5	0.518		µg/L		104	43 - 140
Anthracene	0.5	0.515		µg/L		103	58 - 135
Benz[a]anthracene	0.5	0.646		µg/L		129	55 - 145
Benzo[a]pyrene	0.5	0.531		µg/L		106	51 - 143
Benzo[b]fluoranthene	0.5	0.754		µg/L		151	46 - 165
Benzo[e]pyrene	0.5	0.448		µg/L		90	42 - 152
Benzo[g,h,i]perylene	0.5	0.531		µg/L		106	63 - 133
Benzo[k]fluoranthene	0.5	0.707		µg/L		141	56 - 145
Biphenyl	0.5	0.425		µg/L		85	56 - 119
Chrysene	0.5	0.623		µg/L		125	56 - 141
Dibenz[a,h]anthracene	0.5	0.748		µg/L		150	55 - 150
Dibenzo[a,l]pyrene	0.5	0.633		µg/L		127	50 - 150
Dibenzothiophene	0.5	0.499		µg/L		100	46 - 126
Disalicylidenepropanediamine	50	43.8		µg/L		88	50 - 150
Fluoranthene	0.5	0.564		µg/L		113	60 - 146
Fluorene	0.5	0.493		µg/L		99	58 - 131
Indeno[1,2,3-cd]pyrene	0.5	0.655		µg/L		131	50 - 151
Naphthalene	0.5	0.348		µg/L		70	41 - 126
Perylene	0.5	0.493		µg/L		99	48 - 141
Phenanthrene	0.5	0.491		µg/L		98	67 - 127
Pyrene	0.5	0.567		µg/L		113	54 - 156

Surrogate	LCS %Recovery	LCS Qualifier	Limits
(d10-Acenaphthene)	86		27 - 133
(d10-Phenanthrene)	92		43 - 129
(d12-Chrysene)	72		52 - 144
(d12-Perylene)	92		36 - 161
(d8-Naphthalene)	64		25 - 125

Lab Sample ID: 116506-BS2
Matrix: BlankMatrix
Analysis Batch: O-44144

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: O-44144_P

Analyte	Spike Added	LCS DUP Result	LCS DUP Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1-Methylnaphthalene	0.5	0.402		µg/L		80	31 - 128	0	30
1-Methylphenanthrene	0.5	0.543		µg/L		109	66 - 127	3	30
2,3,5-Trimethylnaphthalene	0.5	0.505		µg/L		101	55 - 122	1	30
2,6-Dimethylnaphthalene	0.5	0.455		µg/L		91	48 - 120	0	30
2-Methylnaphthalene	0.5	0.401		µg/L		80	47 - 130	0	30
Acenaphthene	0.5	0.468		µg/L		94	53 - 131	0	30
Acenaphthylene	0.5	0.501		µg/L		100	43 - 140	4	30
Anthracene	0.5	0.515		µg/L		103	58 - 135	0	30

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-85842-2
 SDG: 625, 8015

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

Lab Sample ID: 116506-BS2
Matrix: BlankMatrix
Analysis Batch: O-44144

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: O-44144_P

Analyte	Spike Added	LCS DUP Result	LCS DUP Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Benz[a]anthracene	0.5	0.617		µg/L		123	55 - 145	5	30	
Benzo[a]pyrene	0.5	0.547		µg/L		109	51 - 143	3	30	
Benzo[b]fluoranthene	0.5	0.755		µg/L		151	46 - 165	0	30	
Benzo[e]pyrene	0.5	0.427		µg/L		85	42 - 152	6	30	
Benzo[g,h,i]perylene	0.5	0.52		µg/L		104	63 - 133	2	30	
Benzo[k]fluoranthene	0.5	0.722		µg/L		144	56 - 145	2	30	
Biphenyl	0.5	0.432		µg/L		86	56 - 119	1	30	
Chrysene	0.5	0.63		µg/L		126	56 - 141	1	30	
Dibenz[a,h]anthracene	0.5	0.751		µg/L		150	55 - 150	0	30	
Dibenzo[a,l]pyrene	0.5	0.702		µg/L		140	50 - 150	10	30	
Dibenzothiophene	0.5	0.486		µg/L		97	46 - 126	3	30	
Disalicylidenepropanediamine	50	37.4		µg/L		75	50 - 150	16	30	
Fluoranthene	0.5	0.542		µg/L		108	60 - 146	5	30	
Fluorene	0.5	0.494		µg/L		99	58 - 131	0	30	
Indeno[1,2,3-cd]pyrene	0.5	0.661		µg/L		132	50 - 151	1	30	
Naphthalene	0.5	0.367		µg/L		73	41 - 126	4	30	
Perylene	0.5	0.48		µg/L		96	48 - 141	3	30	
Phenanthrene	0.5	0.483		µg/L		97	67 - 127	1	30	
Pyrene	0.5	0.557		µg/L		111	54 - 156	2	30	

Surrogate	LCS DUP		Limits
	%Recovery	Qualifier	
(d10-Acenaphthene)	85		27 - 133
(d10-Phenanthrene)	90		43 - 129
(d12-Chrysene)	69		52 - 144
(d12-Perylene)	89		36 - 161
(d8-Naphthalene)	68		25 - 125

QC Association Summary

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

Job ID: 380-85842-2
 SDG: 625, 8015

GC VOA

Analysis Batch: 419666

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-85842-1	MOANALUA WELLS	Total/NA	Drinking Water	8015B GRO LL	
380-85842-2	AIEA GULCH WELLS PUMP 2	Total/NA	Drinking Water	8015B GRO LL	
380-85842-3	AIEA WELLS PUMPS 1&2 (260) P2	Total/NA	Drinking Water	8015B GRO LL	
380-85842-4	HALAWA WELLS UNITS 1 & 2 P1	Total/NA	Drinking Water	8015B GRO LL	
380-85842-5	TB: MOANALUA WELLS	Total/NA	Water	8015B GRO LL	
380-85842-6	TB: AIEA GULCH WELLS PUMP 2	Total/NA	Water	8015B GRO LL	
380-85842-7	TB: AIEA WELLS PUMPS 1&2 (260) P2	Total/NA	Water	8015B GRO LL	
380-85842-8	TB: HALAWA WELLS UNITS 1 & 2 P1	Total/NA	Water	8015B GRO LL	
MB 570-419666/7	Method Blank	Total/NA	Water	8015B GRO LL	
LCS 570-419666/5	Lab Control Sample	Total/NA	Water	8015B GRO LL	
LCSD 570-419666/6	Lab Control Sample Dup	Total/NA	Water	8015B GRO LL	
MRL 570-419666/4	Lab Control Sample	Total/NA	Water	8015B GRO LL	
380-86345-F-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B GRO LL	
380-86345-H-1 MS	Matrix Spike	Total/NA	Water	8015B GRO LL	

GC Semi VOA

Prep Batch: 418596

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-85842-1	MOANALUA WELLS	Total/NA	Drinking Water	3510C	
380-85842-2	AIEA GULCH WELLS PUMP 2	Total/NA	Drinking Water	3510C	
380-85842-3	AIEA WELLS PUMPS 1&2 (260) P2	Total/NA	Drinking Water	3510C	
380-85842-4	HALAWA WELLS UNITS 1 & 2 P1	Total/NA	Drinking Water	3510C	
MB 570-418596/1-A	Method Blank	Total/NA	Water	3510C	
LCS 570-418596/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 570-418596/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	
MRL 570-418596/4-A	Lab Control Sample	Total/NA	Water	3510C	

Analysis Batch: 423500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-85842-1	MOANALUA WELLS	Total/NA	Drinking Water	8015B	418596
380-85842-2	AIEA GULCH WELLS PUMP 2	Total/NA	Drinking Water	8015B	418596
380-85842-3	AIEA WELLS PUMPS 1&2 (260) P2	Total/NA	Drinking Water	8015B	418596
380-85842-4	HALAWA WELLS UNITS 1 & 2 P1	Total/NA	Drinking Water	8015B	418596
MB 570-418596/1-A	Method Blank	Total/NA	Water	8015B	418596
LCS 570-418596/2-A	Lab Control Sample	Total/NA	Water	8015B	418596
LCSD 570-418596/3-A	Lab Control Sample Dup	Total/NA	Water	8015B	418596
MRL 570-418596/4-A	Lab Control Sample	Total/NA	Water	8015B	418596

Subcontract

Analysis Batch: O-44144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-85842-1	MOANALUA WELLS	Total/NA	Drinking Water	625 PAH Physis LL (EAL) + TICs	O-44144_P
380-85842-2	AIEA GULCH WELLS PUMP 2	Total/NA	Drinking Water	625 PAH Physis LL (EAL) + TICs	O-44144_P
380-85842-3	AIEA WELLS PUMPS 1&2 (260) P2	Total/NA	Drinking Water	625 PAH Physis LL (EAL) + TICs	O-44144_P
380-85842-4	HALAWA WELLS UNITS 1 & 2 P1	Total/NA	Drinking Water	625 PAH Physis LL (EAL) + TICs	O-44144_P
116506-B1	Method Blank	Total/NA	BlankMatrix	625 PAH Physis LL (EAL) + TICs	O-44144_P

Eurofins Eaton Analytical Pomona

QC Association Summary

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

Job ID: 380-85842-2
 SDG: 625, 8015

Subcontract (Continued)

Analysis Batch: O-44144 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
116506-BS1	Lab Control Sample	Total/NA	BlankMatrix	625 PAH Physis LL (EAL) + TICs	O-44144_P
116506-BS2	Lab Control Sample Dup	Total/NA	BlankMatrix	625 PAH Physis LL (EAL) + TICs	O-44144_P

Prep Batch: O-44144_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-85842-1	MOANALUA WELLS	Total/NA	Drinking Water	EPA_625	
380-85842-2	AIEA GULCH WELLS PUMP 2	Total/NA	Drinking Water	EPA_625	
380-85842-3	AIEA WELLS PUMPS 1&2 (260) P2	Total/NA	Drinking Water	EPA_625	
380-85842-4	HALAWA WELLS UNITS 1 & 2 P1	Total/NA	Drinking Water	EPA_625	
116506-B1	Method Blank	Total/NA	BlankMatrix	EPA_625	
116506-BS1	Lab Control Sample	Total/NA	BlankMatrix	EPA_625	
116506-BS2	Lab Control Sample Dup	Total/NA	BlankMatrix	EPA_625	



Lab Chronicle

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

Job ID: 380-85842-2
 SDG: 625, 8015

Client Sample ID: MOANALUA WELLS

Lab Sample ID: 380-85842-1

Date Collected: 03/04/24 09:30

Matrix: Drinking Water

Date Received: 03/06/24 10:33

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	419666	A9VE	EET CAL 4	03/13/24 22:56
Total/NA	Prep	3510C			418596	JC	EET CAL 4	03/09/24 18:57
Total/NA	Analysis	8015B		1	423500	E5RH	EET CAL 4	03/24/24 11:56
Total/NA	Prep	EPA_625		1	O-44144_P			03/11/24 00:00
Total/NA	Analysis	625 PAH Physis LL (EAL) + TICs		1	O-44144	YC		03/30/24 00:40

Client Sample ID: AIEA GULCH WELLS PUMP 2

Lab Sample ID: 380-85842-2

Date Collected: 03/04/24 10:26

Matrix: Drinking Water

Date Received: 03/06/24 10:33

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	419666	A9VE	EET CAL 4	03/13/24 23:22
Total/NA	Prep	3510C			418596	JC	EET CAL 4	03/09/24 18:57
Total/NA	Analysis	8015B		1	423500	E5RH	EET CAL 4	03/24/24 12:17
Total/NA	Prep	EPA_625		1	O-44144_P			03/11/24 00:00
Total/NA	Analysis	625 PAH Physis LL (EAL) + TICs		1	O-44144	YC		03/30/24 02:29

Client Sample ID: AIEA WELLS PUMPS 1&2 (260) P2

Lab Sample ID: 380-85842-3

Date Collected: 03/04/24 10:58

Matrix: Drinking Water

Date Received: 03/06/24 10:33

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	419666	A9VE	EET CAL 4	03/13/24 23:48
Total/NA	Prep	3510C			418596	JC	EET CAL 4	03/09/24 18:57
Total/NA	Analysis	8015B		1	423500	E5RH	EET CAL 4	03/24/24 12:37
Total/NA	Prep	EPA_625		1	O-44144_P			03/11/24 00:00
Total/NA	Analysis	625 PAH Physis LL (EAL) + TICs		1	O-44144	YC		03/30/24 04:18

Client Sample ID: HALAWA WELLS UNITS 1 & 2 P1

Lab Sample ID: 380-85842-4

Date Collected: 03/04/24 09:54

Matrix: Drinking Water

Date Received: 03/06/24 10:33

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	419666	A9VE	EET CAL 4	03/14/24 00:15
Total/NA	Prep	3510C			418596	JC	EET CAL 4	03/09/24 18:57
Total/NA	Analysis	8015B		1	423500	E5RH	EET CAL 4	03/24/24 12:58
Total/NA	Prep	EPA_625		1	O-44144_P			03/11/24 00:00
Total/NA	Analysis	625 PAH Physis LL (EAL) + TICs		1	O-44144	YC		03/30/24 06:06

Lab Chronicle

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

Job ID: 380-85842-2
SDG: 625, 8015

Client Sample ID: TB: MOANALUA WELLS

Lab Sample ID: 380-85842-5

Date Collected: 03/04/24 09:30

Matrix: Water

Date Received: 03/06/24 10:33

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	419666	A9VE	EET CAL 4	03/13/24 20:04

Client Sample ID: TB: AIEA GULCH WELLS PUMP 2

Lab Sample ID: 380-85842-6

Date Collected: 03/04/24 10:26

Matrix: Water

Date Received: 03/06/24 10:33

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	419666	A9VE	EET CAL 4	03/13/24 20:30

Client Sample ID: TB: AIEA WELLS PUMPS 1&2 (260) P2

Lab Sample ID: 380-85842-7

Date Collected: 03/04/24 10:58

Matrix: Water

Date Received: 03/06/24 10:33

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	419666	A9VE	EET CAL 4	03/13/24 22:04

Client Sample ID: TB: HALAWA WELLS UNITS 1 & 2 P1

Lab Sample ID: 380-85842-8

Date Collected: 03/04/24 09:54

Matrix: Water

Date Received: 03/06/24 10:33

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	419666	A9VE	EET CAL 4	03/13/24 22:30

Laboratory References:

= Physis Environmental Laboratories, 1904 Wright Circle, Anaheim, CA 92806
EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

Accreditation/Certification Summary

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

Job ID: 380-85842-2
SDG: 625, 8015

Laboratory: Eurofins Calscience

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

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0830	11-16-24
California	Los Angeles County Sanitation Districts	10109	08-01-24
California	State	3082	07-31-24
Kansas	NELAP	E-10420	08-01-24
Nevada	State	CA00111	07-31-24
Oregon	NELAP	4175	02-03-25
USDA	US Federal Programs	P330-22-00059	06-08-26
Washington	State	C916-18	10-11-24

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Method Summary

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

Job ID: 380-85842-2
SDG: 625, 8015

Method	Method Description	Protocol	Laboratory
8015B GRO LL	Gasoline Range Organics - (GC)	SW846	EET CAL 4
8015B	Diesel Range Organics (DRO) (GC) Low Level	SW846	EET CAL 4
625	EPA 625 Base/Neutral and Acid Organics i	EPA	
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	EET CAL 4
5030C	Purge and Trap	SW846	EET CAL 4

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

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494



Sample Summary

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

Job ID: 380-85842-2
 SDG: 625, 8015

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	PWSID Number
380-85842-1	MOANALUA WELLS	Drinking Water	03/04/24 09:30	03/06/24 10:33	HI0000331
380-85842-2	AIEA GULCH WELLS PUMP 2	Drinking Water	03/04/24 10:26	03/06/24 10:33	HI0000331
380-85842-3	AIEA WELLS PUMPS 1&2 (260) P2	Drinking Water	03/04/24 10:58	03/06/24 10:33	HI0000331
380-85842-4	HALAWA WELLS UNITS 1 & 2 P1	Drinking Water	03/04/24 09:54	03/06/24 10:33	HI0000331
380-85842-5	TB: MOANALUA WELLS	Water	03/04/24 09:30	03/06/24 10:33	
380-85842-6	TB: AIEA GULCH WELLS PUMP 2	Water	03/04/24 10:26	03/06/24 10:33	
380-85842-7	TB: AIEA WELLS PUMPS 1&2 (260) P2	Water	03/04/24 10:58	03/06/24 10:33	
380-85842-8	TB: HALAWA WELLS UNITS 1 & 2 P1	Water	03/04/24 09:54	03/06/24 10:33	

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April 06, 2024

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

Project Name: RED-HILL Project # 38001111 Job # 380-85842-1
Physis Project ID: 1407003-490

Dear Rachelle,

Enclosed are the analytical results for samples submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 3/7/2024. A total of 4 samples were received for analysis in accordance with the attached chain of custody (COC). Per the COC, the samples were analyzed for:

Organics
Polynuclear Aromatic Hydrocarbons by EPA 625.1
Disalicylideneopropanediamine 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,
Rachel Hansen
Rachel Hansen
714 602-5320
Extension 203
rachelhansen@physislabs.com

PROJECT SAMPLE LIST

Eurofins Eaton Analytical

PHYSIS Project ID: 1407003-490

RED-HILL Project # 38001111 Job # 380-85842-1

Total Samples: 4

PHYSIS ID	Sample ID	Description	Date	Time	Matrix	Sample Type
116507	MOANALUA WELLS	380-85842-1	3/4/2024	9:30	Samplewater	Not Specified
116508	AIEA GULCH WELLS PUMP 2	380-85842-2	3/4/2024	10:26	Samplewater	Not Specified
116509	AIEA WELLS PUMPS 1&2 (260) P2	380-85842-3	3/4/2024	10:58	Samplewater	Not Specified
116510	HALAWA WELLS UNITS 1 & 2 P1	380-85842-4	3/4/2024	9:54	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.

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
ENVIRONMENTAL LABORATORIES, INC.

Innovative Solutions for Nature

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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: 116507-R1 MOANALUA WELLS 380-85842-1 Matrix: Samplewater											
Disalicylideneprapanediamine	EPA 625.1	µg/L	ND	1	0.05	0.1	Total		O-44144	11-Mar-24	30-Mar-24
Sample ID: 116508-R1 AIEA GULCH WELLS PUMP 2 380-8 Matrix: Samplewater											
Disalicylideneprapanediamine	EPA 625.1	µg/L	ND	1	0.05	0.1	Total		O-44144	11-Mar-24	30-Mar-24
Sample ID: 116509-R1 AIEA WELLS PUMPS 1&2 (260) P2 3 Matrix: Samplewater											
Disalicylideneprapanediamine	EPA 625.1	µg/L	ND	1	0.05	0.1	Total		O-44144	11-Mar-24	30-Mar-24
Sample ID: 116510-R1 HALAWA WELLS UNITS 1 & 2 P1 38 Matrix: Samplewater											
Disalicylideneprapanediamine	EPA 625.1	µg/L	ND	1	0.05	0.1	Total		O-44144	11-Mar-24	30-Mar-24

Polynuclear Aromatic Hydrocarbons

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
Sample ID: 116507-R1	MOANALUA WELLS 380-85842-1	Matrix: Samplewater					Sampled: 04-Mar-24 9:30			Received: 07-Mar-24	
(d10-Acenaphthene)	EPA 625.1	% Recovery	69	1			Total		O-44144	11-Mar-24	30-Mar-24
(d10-Phenanthrene)	EPA 625.1	% Recovery	76	1			Total		O-44144	11-Mar-24	30-Mar-24
(d12-Chrysene)	EPA 625.1	% Recovery	70	1			Total		O-44144	11-Mar-24	30-Mar-24
(d12-Perylene)	EPA 625.1	% Recovery	83	1			Total		O-44144	11-Mar-24	30-Mar-24
(d8-Naphthalene)	EPA 625.1	% Recovery	55	1			Total		O-44144	11-Mar-24	30-Mar-24
1-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
1-Methylphenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
2,3,5-Trimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
2,6-Dimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
2-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Acenaphthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Acenaphthylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benz[a]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[a]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[b]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[e]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[g,h,i]perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[k]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Biphenyl	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Chrysene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Dibenz[a,h]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Dibenzo[a,l]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Dibenzothiophene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24

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-44144	11-Mar-24	30-Mar-24
Fluorene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Indeno[1,2,3-cd]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Naphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Phenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24



Polynuclear Aromatic Hydrocarbons

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
Sample ID: 116508-R1	AIEA GULCH WELLS PUMP 2 380-8 Matrix: Samplewater						Sampled: 04-Mar-24 10:26		Received: 07-Mar-24		
(d10-Acenaphthene)	EPA 625.1	% Recovery	82	1			Total		O-44144	11-Mar-24	30-Mar-24
(d10-Phenanthrene)	EPA 625.1	% Recovery	82	1			Total		O-44144	11-Mar-24	30-Mar-24
(d12-Chrysene)	EPA 625.1	% Recovery	75	1			Total		O-44144	11-Mar-24	30-Mar-24
(d12-Perylene)	EPA 625.1	% Recovery	88	1			Total		O-44144	11-Mar-24	30-Mar-24
(d8-Naphthalene)	EPA 625.1	% Recovery	67	1			Total		O-44144	11-Mar-24	30-Mar-24
1-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
1-Methylphenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
2,3,5-Trimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
2,6-Dimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
2-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Acenaphthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Acenaphthylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benz[a]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[a]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[b]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[e]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[g,h,i]perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[k]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Biphenyl	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Chrysene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Dibenz[a,h]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Dibenzo[a,l]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Dibenzothiophene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24

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-44144	11-Mar-24	30-Mar-24
Fluorene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Indeno[1,2,3-cd]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Naphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Phenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24

Polynuclear Aromatic Hydrocarbons

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
Sample ID: 116509-R1	AIEA WELLS PUMPS 1&2 (260) P2 3 Matrix: Samplewater						Sampled: 04-Mar-24 10:58		Received: 07-Mar-24		
(d10-Acenaphthene)	EPA 625.1	% Recovery	78	1			Total		O-44144	11-Mar-24	30-Mar-24
(d10-Phenanthrene)	EPA 625.1	% Recovery	82	1			Total		O-44144	11-Mar-24	30-Mar-24
(d12-Chrysene)	EPA 625.1	% Recovery	76	1			Total		O-44144	11-Mar-24	30-Mar-24
(d12-Perylene)	EPA 625.1	% Recovery	88	1			Total		O-44144	11-Mar-24	30-Mar-24
(d8-Naphthalene)	EPA 625.1	% Recovery	61	1			Total		O-44144	11-Mar-24	30-Mar-24
1-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
1-Methylphenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
2,3,5-Trimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
2,6-Dimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
2-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Acenaphthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Acenaphthylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benz[a]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[a]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[b]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[e]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[g,h,i]perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[k]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Biphenyl	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Chrysene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Dibenz[a,h]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Dibenzo[a,l]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Dibenzothiophene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24

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-44144	11-Mar-24	30-Mar-24
Fluorene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Indeno[1,2,3-cd]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Naphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Phenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24



Polynuclear Aromatic Hydrocarbons

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
Sample ID: 116510-R1	HALAWA WELLS UNITS 1 & 2 P1 38 Matrix: Samplewater						Sampled: 04-Mar-24 9:54		Received: 07-Mar-24		
(d10-Acenaphthene)	EPA 625.1	% Recovery	96	1			Total		O-44144	11-Mar-24	30-Mar-24
(d10-Phenanthrene)	EPA 625.1	% Recovery	90	1			Total		O-44144	11-Mar-24	30-Mar-24
(d12-Chrysene)	EPA 625.1	% Recovery	75	1			Total		O-44144	11-Mar-24	30-Mar-24
(d12-Perylene)	EPA 625.1	% Recovery	88	1			Total		O-44144	11-Mar-24	30-Mar-24
(d8-Naphthalene)	EPA 625.1	% Recovery	82	1			Total		O-44144	11-Mar-24	30-Mar-24
1-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
1-Methylphenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
2,3,5-Trimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
2,6-Dimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
2-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Acenaphthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Acenaphthylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benz[a]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[a]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[b]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[e]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[g,h,i]perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Benzo[k]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Biphenyl	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Chrysene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Dibenz[a,h]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Dibenzo[a,l]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Dibenzothiophene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24

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-44144	11-Mar-24	30-Mar-24
Fluorene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Indeno[1,2,3-cd]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Naphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Phenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24
Pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44144	11-Mar-24	30-Mar-24



QUALITY CONTROL REPORT

TERRA ENVIRONMENTAL LABORATORIES, INC. AURA

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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: 116506-B1		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:		Received:			
		Method: EPA 625.1			Batch ID: O-44144			Prepared: 11-Mar-24		Analyzed: 29-Mar-24			
Disalicylideneprapanediamin	Total	ND	1	0.05	0.1	µg/L							
Sample ID: 116506-BS1		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:		Received:			
		Method: EPA 625.1			Batch ID: O-44144			Prepared: 11-Mar-24		Analyzed: 29-Mar-24			
Disalicylideneprapanediamin	Total	43.8	1	0.05	0.1	µg/L	50	0	88	50 - 150%	PASS		
Sample ID: 116506-BS2		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:		Received:			
		Method: EPA 625.1			Batch ID: O-44144			Prepared: 11-Mar-24		Analyzed: 29-Mar-24			
Disalicylideneprapanediamin	Total	37.4	1	0.05	0.1	µg/L	50	0	75	50 - 150%	PASS	16	30 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: 116506-B1		QAQC Procedural Blank			Matrix: BlankMatrix		Sampled:		Received:		
		Method: EPA 625.1			Batch ID: O-44144		Prepared: 11-Mar-24		Analyzed: 29-Mar-24		
(d10-Acenaphthene)	Total	85	1			% Recovery	100	85	27 - 133%	PASS	
(d10-Phenanthrene)	Total	89	1			% Recovery	100	89	43 - 129%	PASS	
(d12-Chrysene)	Total	64	1			% Recovery	100	64	52 - 144%	PASS	
(d12-Perylene)	Total	88	1			% Recovery	100	88	36 - 161%	PASS	
(d8-Naphthalene)	Total	70	1			% Recovery	100	70	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

Polynuclear Aromatic Hydrocarbons

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION		QA CODEc
							LEVEL	RESULT	%	LIMITS	%	LIMITS	
Dibenzothiophene	Total	ND	1	0.001	0.005	µg/L							
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 CODEc	
							LEVEL	RESULT	%	LIMITS	%	LIMITS
Sample ID: 116506-BS1		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:		Received:		
Method: EPA 625.1		Batch ID: O-44144			Prepared: 11-Mar-24		Analyzed: 29-Mar-24					
(d10-Acenaphthene)	Total	86	1			% Recovery	100	0	86	27 - 133%	PASS	
(d10-Phenanthrene)	Total	92	1			% Recovery	100	0	92	43 - 129%	PASS	
(d12-Chrysene)	Total	72	1			% Recovery	100	0	72	52 - 144%	PASS	
(d12-Perylene)	Total	92	1			% Recovery	100	0	92	36 - 161%	PASS	
(d8-Naphthalene)	Total	64	1			% Recovery	100	0	64	25 - 125%	PASS	
1-Methylnaphthalene	Total	0.399	1	0.001	0.005	µg/L	0.5	0	80	31 - 128%	PASS	
1-Methylphenanthrene	Total	0.56	1	0.001	0.005	µg/L	0.5	0	112	66 - 127%	PASS	
2,3,5-Trimethylnaphthalene	Total	0.508	1	0.001	0.005	µg/L	0.5	0	102	55 - 122%	PASS	
2,6-Dimethylnaphthalene	Total	0.453	1	0.001	0.005	µg/L	0.5	0	91	48 - 120%	PASS	
2-Methylnaphthalene	Total	0.401	1	0.001	0.005	µg/L	0.5	0	80	47 - 130%	PASS	
Acenaphthene	Total	0.472	1	0.001	0.005	µg/L	0.5	0	94	53 - 131%	PASS	
Acenaphthylene	Total	0.518	1	0.001	0.005	µg/L	0.5	0	104	43 - 140%	PASS	
Anthracene	Total	0.515	1	0.001	0.005	µg/L	0.5	0	103	58 - 135%	PASS	
Benz[a]anthracene	Total	0.646	1	0.001	0.005	µg/L	0.5	0	129	55 - 145%	PASS	
Benzo[a]pyrene	Total	0.531	1	0.001	0.005	µg/L	0.5	0	106	51 - 143%	PASS	
Benzo[b]fluoranthene	Total	0.754	1	0.001	0.005	µg/L	0.5	0	151	46 - 165%	PASS	
Benzo[e]pyrene	Total	0.448	1	0.001	0.005	µg/L	0.5	0	90	42 - 152%	PASS	
Benzo[g,h,i]perylene	Total	0.531	1	0.001	0.005	µg/L	0.5	0	106	63 - 133%	PASS	
Benzo[k]fluoranthene	Total	0.707	1	0.001	0.005	µg/L	0.5	0	141	56 - 145%	PASS	
Biphenyl	Total	0.425	1	0.001	0.005	µg/L	0.5	0	85	56 - 119%	PASS	
Chrysene	Total	0.623	1	0.001	0.005	µg/L	0.5	0	125	56 - 141%	PASS	
Dibenz[a,h]anthracene	Total	0.748	1	0.001	0.005	µg/L	0.5	0	150	55 - 150%	PASS	
Dibenzo[a,i]pyrene	Total	0.633	1	0.001	0.005	µg/L	0.5	0	127	50 - 150%	PASS	

Polynuclear Aromatic Hydrocarbons

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION		QA CODEc
							LEVEL	RESULT	%	LIMITS	%	LIMITS	
Dibenzothiophene	Total	0.499	1	0.001	0.005	µg/L	0.5	0	100	46 - 126%	PASS		
Fluoranthene	Total	0.564	1	0.001	0.005	µg/L	0.5	0	113	60 - 146%	PASS		
Fluorene	Total	0.493	1	0.001	0.005	µg/L	0.5	0	99	58 - 131%	PASS		
Indeno[1,2,3-cd]pyrene	Total	0.655	1	0.001	0.005	µg/L	0.5	0	131	50 - 151%	PASS		
Naphthalene	Total	0.348	1	0.001	0.005	µg/L	0.5	0	70	41 - 126%	PASS		
Perylene	Total	0.493	1	0.001	0.005	µg/L	0.5	0	99	48 - 141%	PASS		
Phenanthrene	Total	0.491	1	0.001	0.005	µg/L	0.5	0	98	67 - 127%	PASS		
Pyrene	Total	0.567	1	0.001	0.005	µg/L	0.5	0	113	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: 116506-BS2		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:			Received:			
Method: EPA 625.1		Batch ID: O-44144			Prepared: 11-Mar-24			Analyzed: 29-Mar-24						
(d10-Acenaphthene)	Total	85	1			% Recovery	100	0	85	27 - 133%	PASS	1	30	PASS
(d10-Phenanthrene)	Total	90	1			% Recovery	100	0	90	43 - 129%	PASS	2	30	PASS
(d12-Chrysene)	Total	69	1			% Recovery	100	0	69	52 - 144%	PASS	4	30	PASS
(d12-Perylene)	Total	89	1			% Recovery	100	0	89	36 - 161%	PASS	3	30	PASS
(d8-Naphthalene)	Total	68	1			% Recovery	100	0	68	25 - 125%	PASS	6	30	PASS
1-Methylnaphthalene	Total	0.402	1	0.001	0.005	µg/L	0.5	0	80	31 - 128%	PASS	0	30	PASS
1-Methylphenanthrene	Total	0.543	1	0.001	0.005	µg/L	0.5	0	109	66 - 127%	PASS	3	30	PASS
2,3,5-Trimethylnaphthalene	Total	0.505	1	0.001	0.005	µg/L	0.5	0	101	55 - 122%	PASS	1	30	PASS
2,6-Dimethylnaphthalene	Total	0.455	1	0.001	0.005	µg/L	0.5	0	91	48 - 120%	PASS	0	30	PASS
2-Methylnaphthalene	Total	0.401	1	0.001	0.005	µg/L	0.5	0	80	47 - 130%	PASS	0	30	PASS
Acenaphthene	Total	0.468	1	0.001	0.005	µg/L	0.5	0	94	53 - 131%	PASS	0	30	PASS
Acenaphthylene	Total	0.501	1	0.001	0.005	µg/L	0.5	0	100	43 - 140%	PASS	4	30	PASS
Anthracene	Total	0.515	1	0.001	0.005	µg/L	0.5	0	103	58 - 135%	PASS	0	30	PASS
Benz[a]anthracene	Total	0.617	1	0.001	0.005	µg/L	0.5	0	123	55 - 145%	PASS	5	30	PASS
Benzo[a]pyrene	Total	0.547	1	0.001	0.005	µg/L	0.5	0	109	51 - 143%	PASS	3	30	PASS
Benzo[b]fluoranthene	Total	0.755	1	0.001	0.005	µg/L	0.5	0	151	46 - 165%	PASS	0	30	PASS
Benzo[e]pyrene	Total	0.427	1	0.001	0.005	µg/L	0.5	0	85	42 - 152%	PASS	6	30	PASS
Benzo[g,h,i]perylene	Total	0.52	1	0.001	0.005	µg/L	0.5	0	104	63 - 133%	PASS	2	30	PASS
Benzo[k]fluoranthene	Total	0.722	1	0.001	0.005	µg/L	0.5	0	144	56 - 145%	PASS	2	30	PASS
Biphenyl	Total	0.432	1	0.001	0.005	µg/L	0.5	0	86	56 - 119%	PASS	1	30	PASS
Chrysene	Total	0.63	1	0.001	0.005	µg/L	0.5	0	126	56 - 141%	PASS	1	30	PASS
Dibenz[a,h]anthracene	Total	0.751	1	0.001	0.005	µg/L	0.5	0	150	55 - 150%	PASS	0	30	PASS
Dibenzo[a,l]pyrene	Total	0.702	1	0.001	0.005	µg/L	0.5	0	140	50 - 150%	PASS	10	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		
Dibenzothiophene	Total	0.486	1	0.001	0.005	µg/L	0.5	0	97	46 - 126%	PASS	3	30	PASS
Fluoranthene	Total	0.542	1	0.001	0.005	µg/L	0.5	0	108	60 - 146%	PASS	5	30	PASS
Fluorene	Total	0.494	1	0.001	0.005	µg/L	0.5	0	99	58 - 131%	PASS	0	30	PASS
Indeno[1,2,3-cd]pyrene	Total	0.661	1	0.001	0.005	µg/L	0.5	0	132	50 - 151%	PASS	1	30	PASS
Naphthalene	Total	0.367	1	0.001	0.005	µg/L	0.5	0	73	41 - 126%	PASS	4	30	PASS
Perylene	Total	0.48	1	0.001	0.005	µg/L	0.5	0	96	48 - 141%	PASS	3	30	PASS
Phenanthrene	Total	0.483	1	0.001	0.005	µg/L	0.5	0	97	67 - 127%	PASS	1	30	PASS
Pyrene	Total	0.557	1	0.001	0.005	µg/L	0.5	0	111	54 - 156%	PASS	2	30	PASS

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PHYSIS

TENTATIVELY IDENTIFIED COMPOUNDS

ENVIRONMENTAL LABORATORIES, INC.

Innovative Solutions for Nature

Sample ID: 116509

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
35.4767	2.6611	1111	Anthracene-D10-	1517-22-2	97
10.8458	5.9873	2500	Cyclobutanecarboxylic acid, 2-propenyl ester	1000282-60-3	87
14.2995	1.7827	744	Cyclooctane, (1-methylpropyl)-	16538-89-9	88
14.7440	1.6817	702	Cyclohexane, octyl-	1795-15-9	95
10.4730	1.6121	673	Hydroperoxide, 1-ethylbutyl	24254-56-6	87
13.3194	1.5396	643	Undecane, 4,4-dimethyl-	17312-68-4	87
12.2865	1.0536	440	2-(Chloromethyl)tetrahydropyran	18420-41-2	85
15.3078	0.8131	339	Cyclopentane, 1-methyl-2-(2-propenyl)-, trans-	50746-53-7	87
16.1495	0.7862	328	3-Isopropyl-5-methylhexan-2-one	1000202-22-7	87
16.1495	0.7843	327	3-n-Propyl-2,4-pentanedione	1540-35-8	87
11.2307	0.7196	300	1-Butene, 2,3,3-trimethyl-	594-56-9	93
13.5680	0.6982	292	Decane, 5,6-dimethyl-	1636-43-7	98
18.0304	0.6568	274	3-Methyl-2-butenic acid, 2-tetradecyl ester	1000279-25-5	82
12.9944	0.5421	226	Octane, 4,5-diethyl-	1636-41-5	86
10.0972	0.3700	154	Propanoic acid, 2-methyl-, anhydride	97-72-3	84
10.0789	0.3543	148	Ethane, 1,1,2,2-tetrachloro-	79-34-5	94
15.0864	0.3020	126	Hexane, 1-(isopropylidencyclopropyl)-	24524-53-6	87
15.0865	0.3002	125	1,11-Dodecadiene	5876-87-9	87
32.6199	0.2791	117	Benzoic acid, 2-ethylhexyl ester	5444-75-7	97
10.2890	0.2428	101	3,3-Dimethyl-2,4-pentane dione	3142-58-3	88
11.5639	0.2136	89	3-Hexanone	589-38-8	90

Concentration estimated using the response for Anthracene-d10

Sample ID: Lab Blank B1_44144

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
35.4879	2.5232	1111	Anthracene-D10-	1719-06-8	97
10.0582	4.4631	1965	Ethane, 1,1,2,2-tetrachloro-	79-34-5	99
12.2994	2.5213	1110	2-(Chloromethyl)tetrahydropyran	18420-41-2	86
12.9874	1.9900	876	2,6-Octadiene, 2,4-dimethyl-	63843-03-8	85
12.0369	1.8109	797	2H-Pyran-2-methanol, tetrahydro-	100-72-1	83
13.3191	0.8033	354	Octane, 4,5-diethyl-	1636-41-5	81
10.4625	0.7996	352	Hydroperoxide, 1-ethylbutyl	24254-56-6	89
12.9303	0.5990	264	Cycloheptane, 1,4-dichloro-, cis-	32718-95-9	83
36.3208	0.5428	239	Benzene, 1,1'-[1,2-ethanediylbis(oxy)]bis-	104-66-5	99
14.3275	0.5276	232	Cyclohexane, (1,2-dimethylbutyl)-	61142-37-8	91
11.1901	0.4885	215	Oxalic acid, cyclohexyl isobutyl ester	1000309-30-4	91
11.1901	0.4656	205	Cyclopropane, 1,1,2,3-tetramethyl-	74752-93-5	90
10.0905	0.4138	182	Propanoic acid, 2-methyl-, anhydride	97-72-3	85
11.2266	0.3468	153	1-Butene, 2,3,3-trimethyl-	594-56-9	88
27.9593	0.3054	134	Diethyl Phthalate	84-66-2	99
13.3312	0.2753	121	3-Buten-2-one, 3-methyl-	814-78-8	85
29.5704	0.2631	116	Benzophenone	119-61-9	99
14.3006	0.2159	95	1,2,4-Triazol-1-ylacetic acid	28711-29-7	85

Concentration estimated using the response for Anthracene-d10

Sample ID: 116510

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
35.4782	2.5474	1111	Anthracene-D10-	1719-06-8	98
10.8453	5.4247	2366	Cyclobutanecarboxylic acid, 2-propenyl ester	1000282-60-3	87
12.2886	1.8408	803	2-(Chloromethyl)tetrahydropyran	18420-41-2	85
12.9762	1.6423	716	2,6-Octadiene, 2,4-dimethyl-	63843-03-8	84
14.3147	1.4345	626	Cyclohexane, (1,2-dimethylbutyl)-	61142-37-8	92
10.4720	1.3424	586	Hydroperoxide, 1-ethylbutyl	24254-56-6	88
13.3074	1.3383	584	Octane, 4,5-diethyl-	1636-41-5	81
10.0750	1.1388	497	Ethane, 1,1,2,2-tetrachloro-	79-34-5	98
11.1916	0.7154	312	1,5-Heptadien-4-one, 3,3,6-trimethyl-	546-49-6	91
11.2303	0.6169	269	1-Butene, 2,3,3-trimethyl-	594-56-9	88
16.1505	0.6008	262	3-n-Propyl-2,4-pentanedione	1540-35-8	87
16.5422	0.5499	240	3-Isopropyl-5-methylhexan-2-one	1000202-22-7	85
18.0322	0.5311	232	3-Methyl-2-butenic acid, 2-tetradecyl ester	1000279-25-5	81
12.9172	0.5084	222	Dicyclopropylmethanol, chlorodifluoroacetate	1000376-25-1	81
13.5700	0.4846	211	Decane, 5,6-dimethyl-	1636-43-7	98
12.9893	0.4637	202	Undecane, 4,4-dimethyl-	17312-68-4	87
13.9458	0.4481	195	Cyclopentane, 1,2,3,4,5-pentamethyl-	1000152-79-7	81
63.5240	0.3463	151	Heneicosane	629-94-7	96
10.6758	0.3380	147	1-Decanol, 2-ethyl-	21078-65-9	86
13.3068	0.3349	146	2-Propenal	107-02-8	88
66.4201	0.2957	129	Heptacosane	593-49-7	95
10.0955	0.2814	123	Pentane, 2-bromo-	107-81-3	86
32.6174	0.2735	119	Benzoic acid, 2-ethylhexyl ester	5444-75-7	97
15.5392	0.2633	115	Hexane, 1-(isopropylidencyclopropyl)-	24524-53-6	83

Concentration estimated using the response for Anthracene-d10

Sample ID: 116507

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
35.4819	2.4518	1111	Anthracene-D10-	1517-22-2	97
12.2890	2.2215	1007	2-(Chloromethyl)tetrahydropyran	18420-41-2	85
13.3076	2.0096	911	Octane, 4,5-diethyl-	1636-41-5	93
12.9770	1.9991	906	2,6-Octadiene, 2,4-dimethyl-	63843-03-8	86
14.7467	1.6414	744	Cyclohexane, octyl-	1795-15-9	95
11.2317	1.1791	534	3,3-Diethoxy-1-propyne	10160-87-9	86
10.0767	1.1584	525	Ethane, 1,1,2,2-tetrachloro-	79-34-5	99
10.4731	1.1363	515	Hydroperoxide, 1-ethylbutyl	24254-56-6	85
16.1553	0.9126	414	3-n-Propyl-5-methylhexan-2-one	1000202-22-8	87
18.0347	0.8622	391	3-Methyl-2-butenoic acid, 2-tetradecyl ester	1000279-25-5	81
16.5440	0.8445	383	3-Isopropyl-5-methylhexan-2-one	1000202-22-7	85
12.8896	0.7788	353	4H-1,2,4-Triazole, 4-methyl-	10570-40-8	84
15.3112	0.6897	313	Cyclopentane, 1-methyl-2-(2-propenyl)-, trans-	50746-53-7	87
13.5711	0.6606	299	Decane, 5,6-dimethyl-	1636-43-7	98
14.2987	0.4703	213	CH3NHCH2CN	5616-32-0	84
12.9197	0.4273	194	Cycloheptane, 1,4-dichloro-, cis-	32718-95-9	82
16.2229	0.3621	164	3,7-Decadiene, 2,9-dimethyl-	74630-13-0	87
15.5417	0.3388	154	Hexane, 1-(isopropylidenecyclopropyl)-	24524-53-6	83
27.9523	0.3021	137	Diethyl Phthalate	84-66-2	99
17.6282	0.2890	131	2-Penten-1-ol, 2-methyl-	1610-29-3	81
63.5275	0.2565	116	Heneicosane	629-94-7	96
15.0932	0.2562	116	4-Tetradecyne	60212-33-1	87
11.5671	0.2457	111	3-Hexanone	589-38-8	91
10.2894	0.2393	108	3-Ethyl-2-nonanone	1000374-11-1	88
32.6223	0.2179	99	Benzoic acid, 2-ethylhexyl ester	5444-75-7	97
11.8377	0.2056	93	2-Heptanone, 4,6-dimethyl-	19549-80-5	90

Concentration estimated using the response for Anthracene-d10

Sample ID: 116508

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
35.4813	2.9299	1111	Anthracene-D10-	1719-06-8	98
10.8446	4.6336	1757	Oxalic acid, cyclohexyl pentyl ester	1000309-30-6	87
12.2916	2.3635	896	2-(Chloromethyl)tetrahydropyran	18420-41-2	85
12.9793	1.9389	735	2,6-Octadiene, 2,4-dimethyl-	63843-03-8	85
10.0740	1.8573	704	Ethane, 1,1,2,2-tetrachloro-	79-34-5	97
13.3105	1.5895	603	Octane, 4,5-diethyl-	1636-41-5	89
10.4726	1.0914	414	Hydroperoxide, 1-ethylbutyl	24254-56-6	88
11.2324	1.0112	383	1,5-Heptadien-4-one, 3,3,6-trimethyl-	546-49-6	85
16.1591	0.6857	260	3-n-Propyl-2,4-pentanedione	1540-35-8	86
16.5451	0.5728	217	3-Isopropyl-5-methylhexan-2-one	1000202-22-7	85
12.9223	0.5228	198	Cycloheptane, 1,4-dichloro-, cis-	32718-95-9	83
15.3127	0.4972	189	Cyclopentane, 1-methyl-2-(2-propenyl)-, trans-	50746-53-7	87
18.0354	0.4939	187	3-Methyl-2-butenic acid, 2-tetradecyl ester	1000279-25-5	81
13.5725	0.4348	165	Decane, 5,6-dimethyl-	1636-43-7	98
14.3005	0.3560	135	1-Penten-3-one, 2,4-dimethyl-	3212-68-8	83
10.0959	0.3195	121	Propanoic acid, 2-methyl-, anhydride	97-72-3	84
11.1924	0.3049	116	Acetamide, N-2-propenyl-	692-33-1	85
15.5426	0.2582	98	Hexane, 1-(isopropylidenecyclopropyl)-	24524-53-6	81
32.6201	0.2461	93	Benzoic acid, 2-ethylhexyl ester	5444-75-7	97
14.8268	0.2229	85	Cyclohexane, (4-methylpentyl)-	61142-20-9	86

Concentration estimated using the response for Anthracene-d10

PERFORMANCE CHAIN OF CUSTODY

TERRA ENVIRONMENTAL LABORATORIES, INC. AURA

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

Chain of Custody Record



Environment Testing

Client Information (Sub Contract Lab)
 Client Contact: **Arada, Rachelle** Lab Pk: **Arada, Rachelle**
 Shipping/Receiving: **Rachelle.Arada@et.eurolfins.com** E-Mail: **Rachelle.Arada@et.eurolfins.com**
 Company: **Physis Environmental Laboratories** State of Origin: **Hawaii**
 Address: **1904 Wright Circle,** Due Date Requested: **3/25/2024** Accreditations Required (See note): **State - Hawaii**
 City: **Anaheim** TAT Requested (days): **MO#**
 State, Zip: **CA, 92806** PO #: **MO#**
 Phone: **PO#**
 Email: **MO#**
 Project Name: **RED-HILL** Project #: **38001111**
 Site: **Honolulu BWS Sites** SSCOW#: **SSCOW#**

Analysis Requested
 Perform MS/MSD (Yes or No)
 SUB (625 PAH Physis LL (EAL) + TICs) 625 PAH Physis LL (EAL) + TICs
 Field Filtered Sample (Yes or No)
 Total Number of containers: **2**
 Special Instructions/Note: **See Attached Instructions**

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (G=Comp, G=grab)	Matrix (Waste, Spill, Overhaul, Brit/Thru, Asst)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Carrier Tracking No(s)	COC No:
MOANALUA WELLS (380-85842-1)	3/4/24	09:30	Water	Water		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	380-111972.1	380-111972.1
AIEA GULCH WELLS PUMP 2 (380-85842-2)	3/4/24	10:28	Water	Water		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Page 1 of 1	Page 1 of 1
AIEA WELLS PUMPS 1&2 (280) P2 (380-85842-3)	3/4/24	10:58	Water	Water		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Job #:	Job #:
HALAWA WELLS UNITS 1 & 2 P1 (380-85842-4)	3/4/24	08:54	Water	Water		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Preservation Codes:	Preservation Codes:

Preservation Codes:
 A - HCL
 B - NaOH
 C - Zn Acetate
 D - Nitric Acid
 E - NH4SCN
 F - MeOH
 G - Amnolite
 H - Acetic Acid
 I - Ice
 J - DI Water
 K - EDTA
 L - EDTA
 M - Hexane
 N - None
 O - AsHAO2
 P - Na2CO3
 Q - Na2SO3
 R - Na2S2O3
 S - H2SO4
 T - TSP Dodecahydrate
 U - Acetone
 V - MCA
 W - pH 4.5
 Y - Trizma
 Z - other (specify)
 Other: _____

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (G=Comp, G=grab)	Matrix (Waste, Spill, Overhaul, Brit/Thru, Asst)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Carrier Tracking No(s)	COC No:
MOANALUA WELLS (380-85842-1)	3/4/24	09:30	Water	Water		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	380-111972.1	380-111972.1
AIEA GULCH WELLS PUMP 2 (380-85842-2)	3/4/24	10:28	Water	Water		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Page 1 of 1	Page 1 of 1
AIEA WELLS PUMPS 1&2 (280) P2 (380-85842-3)	3/4/24	10:58	Water	Water		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Job #:	Job #:
HALAWA WELLS UNITS 1 & 2 P1 (380-85842-4)	3/4/24	08:54	Water	Water		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Preservation Codes:	Preservation Codes:

Special Instructions/Note:
 See Attached Instructions
 See Attached Instructions
 See Attached Instructions
 See Attached Instructions

Possible Hazard Identification
 Deliverable Requested: I, II, III, IV, Other (specify) **Primary Deliverable Rank: 2**
 Unconfirmed
 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: **Company** **Date:** **Time:** **Method of Shipment:**
 Relinquished by: **Company** **Date/Time:** **Received by:** **Date/Time:**
 Relinquished by: **Company** **Date/Time:** **Received by:** **Date/Time:**

Relinquished by: **Company** **Date/Time:** **Received by:** **Date/Time:**
 Relinquished by: **Company** **Date/Time:** **Received by:** **Date/Time:**
 Custody Seals Intact: **Δ Yes Δ No** Custody Seal No.: **Cooler Temperature(s) °C and Other Remarks:**



Project Iteration ID: 1407003-490
 Client Name: Eurofins Eaton Analytical
 Project Name: RED-HILL Project # 38001111 Job # 380-85842-1
 COC Page Number: 2 of 2
 Bottle Label Color: NA

Sample Receipt Summary

Receiving Info

- Initials Received By: CB
- Date Received: 3/7/24
- Time Received: 1134
- 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): 1.8 Used I/R Thermometer # _____

Inspection Info

- Initials Inspected By: CK

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:

Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-85842-2

SDG Number: 625, 8015

Login Number: 85842

List Source: Eurofins Eaton Analytical Pomona

List Number: 1

Creator: Elyas, Matthew

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



Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-85842-2

SDG Number: 625, 8015

Login Number: 85842

List Number: 2

Creator: Khana, Piyush

List Source: Eurofins Calscience

List Creation: 03/07/24 03:17 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
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	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

