

# ANALYTICAL REPORT

## PREPARED FOR

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Honolulu, Hawaii 96843

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## JOB DESCRIPTION

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

## JOB NUMBER

380-81885-2

# 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: 380-81885-2  
 SDG: 625, 8015

## Qualifiers

### GC Semi VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
S1+	Surrogate recovery exceeds control limits, high biased.

## 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: 380-81885-2

**Job ID: 380-81885-2**

**Eurofins Eaton Analytical Pomona**

## Job Narrative 380-81885-2

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 2/7/2024 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.4°C and 1.5°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: Reanalysis of the following sample was performed outside of the analytical holding time: AIEA WELLS PUMPS 1&2 (260) P2 (380-81885-3). The client was contacted regarding this issue, and the laboratory was instructed to cancel analysis.

Method 8015B\_DRO\_LL\_CS: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 570-409489. The laboratory control sample (LCS) was performed in duplicate (LCSD) to provide precision data for this batch.

Method 8015B\_DRO\_LL\_CS: Surrogate recovery for the following sample was outside the upper control limit: MOANALUA WELLS (380-81885-1). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Method 8015B\_DRO\_LL\_CS: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for preparation batch 570-409489 and analytical batch 570-412489 recovered outside control limits for the following analytes: C10-C28. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

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: 380-81885-2  
SDG: 625, 8015

**Client Sample ID: MOANALUA WELLS**  
**PWSID Number: HI0000331**

**Lab Sample ID: 380-81885-1**

No Detections.

**Client Sample ID: AIEA GULCH WELLS PUMP 2**  
**PWSID Number: HI0000331**

**Lab Sample ID: 380-81885-2**

No Detections.

**Client Sample ID: AIEA WELLS PUMPS 1&2 (260) P2**  
**PWSID Number: HI0000331**

**Lab Sample ID: 380-81885-3**

No Detections.

**Client Sample ID: HALAWA WELLS UNITS 1 & 2 P1**  
**PWSID Number: HI0000331**

**Lab Sample ID: 380-81885-4**

No Detections.

**Client Sample ID: TB MOANALUA WELLS**

**Lab Sample ID: 380-81885-5**

No Detections.

**Client Sample ID: TB AIEA GULCH WELLS PUMP 2**

**Lab Sample ID: 380-81885-6**

No Detections.

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

**Lab Sample ID: 380-81885-7**

No Detections.

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

**Lab Sample ID: 380-81885-8**

No Detections.

This Detection Summary does not include radiochemical test results.

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# Client Sample Results

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

Job ID: 380-81885-2  
 SDG: 625, 8015

## Client Sample ID: MOANALUA WELLS

## Lab Sample ID: 380-81885-1

Date Collected: 02/05/24 09:47

Matrix: Drinking Water

Date Received: 02/07/24 10:00

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			02/09/24 15:10	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		38 - 134				02/09/24 15:10	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)	<27		27	ug/L		02/10/24 08:50	02/20/24 22:36	1
Motor Oil Range Organics [C24-C36]	<27		27	ug/L		02/10/24 08:50	02/20/24 22:36	1
C8-C18	<27		27	ug/L		02/10/24 08:50	02/20/24 22:36	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
n-Octacosane (Surr)	134	S1+	60 - 130			02/10/24 08:50	02/20/24 22:36	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Acenaphthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Acenaphthylene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Anthracene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Biphenyl	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Chrysene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Dibenzothiophene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		02/12/24 00:00	03/22/24 02:10	1
Fluoranthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Fluorene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Naphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Perylene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Phenanthrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 02:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	57		27 - 133				02/12/24 00:00	03/22/24 02:10	1
(d10-Phenanthrene)	64		43 - 129				02/12/24 00:00	03/22/24 02:10	1
(d12-Chrysene)	85		52 - 144				02/12/24 00:00	03/22/24 02:10	1
(d12-Perylene)	85		36 - 161				02/12/24 00:00	03/22/24 02:10	1
(d8-Naphthalene)	52		25 - 125				02/12/24 00:00	03/22/24 02:10	1

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# Client Sample Results

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

Job ID: 380-81885-2  
SDG: 625, 8015

**Client Sample ID: AIEA GULCH WELLS PUMP 2**

**Lab Sample ID: 380-81885-2**

Date Collected: 02/05/24 10:49

Matrix: Drinking Water

Date Received: 02/07/24 10:00

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			02/09/24 15:36	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		38 - 134				02/09/24 15:36	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)	<27		27	ug/L		02/10/24 08:50	02/20/24 22:57	1
Motor Oil Range Organics [C24-C36]	<27		27	ug/L		02/10/24 08:50	02/20/24 22:57	1
C8-C18	<27		27	ug/L		02/10/24 08:50	02/20/24 22:57	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
n-Octacosane (Surr)	123		60 - 130			02/10/24 08:50	02/20/24 22:57	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Acenaphthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Acenaphthylene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Anthracene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Biphenyl	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Chrysene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Dibenzothiophene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		02/12/24 00:00	03/22/24 03:59	1
Fluoranthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Fluorene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Naphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Perylene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Phenanthrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 03:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	55		27 - 133				02/12/24 00:00	03/22/24 03:59	1
(d10-Phenanthrene)	65		43 - 129				02/12/24 00:00	03/22/24 03:59	1
(d12-Chrysene)	89		52 - 144				02/12/24 00:00	03/22/24 03:59	1
(d12-Perylene)	96		36 - 161				02/12/24 00:00	03/22/24 03:59	1
(d8-Naphthalene)	51		25 - 125				02/12/24 00:00	03/22/24 03:59	1

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# Client Sample Results

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

Job ID: 380-81885-2  
SDG: 625, 8015

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

**Lab Sample ID: 380-81885-3**

Date Collected: 02/05/24 11:22

Matrix: Drinking Water

Date Received: 02/07/24 10:00

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			02/09/24 16:02	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		38 - 134				02/09/24 16:02	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Acenaphthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Acenaphthylene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Anthracene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Biphenyl	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Chrysene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Dibenzothiophene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		02/12/24 00:00	03/22/24 05:48	1
Fluoranthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Fluorene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Naphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Perylene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Phenanthrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 05:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	62		27 - 133				02/12/24 00:00	03/22/24 05:48	1
(d10-Phenanthrene)	66		43 - 129				02/12/24 00:00	03/22/24 05:48	1
(d12-Chrysene)	94		52 - 144				02/12/24 00:00	03/22/24 05:48	1
(d12-Perylene)	96		36 - 161				02/12/24 00:00	03/22/24 05:48	1
(d8-Naphthalene)	59		25 - 125				02/12/24 00:00	03/22/24 05:48	1

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

**Lab Sample ID: 380-81885-4**

Date Collected: 02/05/24 10:15

Matrix: Drinking Water

Date Received: 02/07/24 10:00

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			02/09/24 16:28	1

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# Client Sample Results

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

Job ID: 380-81885-2  
 SDG: 625, 8015

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

**Lab Sample ID: 380-81885-4**

Date Collected: 02/05/24 10:15

Matrix: Drinking Water

Date Received: 02/07/24 10:00

PWSID Number: HI0000331

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	64		38 - 134		02/09/24 16:28	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)	<26		26	ug/L		02/10/24 08:50	02/20/24 23:39	1
Motor Oil Range Organics [C24-C36]	<26		26	ug/L		02/10/24 08:50	02/20/24 23:39	1
C8-C18	<26		26	ug/L		02/10/24 08:50	02/20/24 23:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane (Surr)	123		60 - 130	02/10/24 08:50	02/20/24 23:39	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Acenaphthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Acenaphthylene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Anthracene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Biphenyl	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Chrysene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Dibenzothiophene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		02/12/24 00:00	03/22/24 07:37	1
Fluoranthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Fluorene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Naphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Perylene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Phenanthrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1
Pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/22/24 07:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	81		27 - 133	02/12/24 00:00	03/22/24 07:37	1
(d10-Phenanthrene)	86		43 - 129	02/12/24 00:00	03/22/24 07:37	1
(d12-Chrysene)	100		52 - 144	02/12/24 00:00	03/22/24 07:37	1
(d12-Perylene)	103		36 - 161	02/12/24 00:00	03/22/24 07:37	1
(d8-Naphthalene)	73		25 - 125	02/12/24 00:00	03/22/24 07:37	1

# Client Sample Results

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

Job ID: 380-81885-2  
 SDG: 625, 8015

## Client Sample ID: TB MOANALUA WELLS

Lab Sample ID: 380-81885-5

Date Collected: 02/05/24 09:47

Matrix: Water

Date Received: 02/07/24 10:00

### 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			02/09/24 13:26	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	60		38 - 134				02/09/24 13:26	1

## Client Sample ID: TB AIEA GULCH WELLS PUMP 2

Lab Sample ID: 380-81885-6

Date Collected: 02/05/24 10:49

Matrix: Water

Date Received: 02/07/24 10:00

### 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			02/09/24 13:52	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	93		38 - 134				02/09/24 13:52	1

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

Lab Sample ID: 380-81885-7

Date Collected: 02/05/24 11:22

Matrix: Water

Date Received: 02/07/24 10:00

### 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			02/09/24 14:18	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		38 - 134				02/09/24 14:18	1

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

Lab Sample ID: 380-81885-8

Date Collected: 02/05/24 10:15

Matrix: Water

Date Received: 02/07/24 10:00

### 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			02/09/24 14:44	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	82		38 - 134				02/09/24 14:44	1

# Surrogate Summary

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

Job ID: 380-81885-2  
 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)
380-81885-1	MOANALUA WELLS	88
380-81885-1 MS	MOANALUA WELLS	95
380-81885-1 MSD	MOANALUA WELLS	101
380-81885-2	AIEA GULCH WELLS PUMP 2	87
380-81885-3	AIEA WELLS PUMPS 1&2 (260) P2	90
380-81885-4	HALAWA WELLS UNITS 1 & 2 P1	64

#### 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)
380-81885-5	TB MOANALUA WELLS	60
380-81885-6	TB AIEA GULCH WELLS PUMP 2	93
380-81885-7	TB AIEA WELLS PUMPS 1&2 (260) P2	89
380-81885-8	TB HALAWA WELLS UNITS 1 & 2 P1	82
LCS 570-409194/4	Lab Control Sample	91
LCSD 570-409194/5	Lab Control Sample Dup	95
MB 570-409194/6	Method Blank	87
MRL 570-409194/3	Lab Control Sample	94

#### 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)
380-81885-1	MOANALUA WELLS	134 S1+
380-81885-2	AIEA GULCH WELLS PUMP 2	123
380-81885-4	HALAWA WELLS UNITS 1 & 2 P1	123

#### Surrogate Legend

OTCSN = n-Octacosane (Surr)

## 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 570-409489/2-A	Lab Control Sample	130

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# Surrogate Summary

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

Job ID: 380-81885-2  
 SDG: 625, 8015

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

Matrix: Water

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OTCSN1 (60-130)
LCSD 570-409489/3-A	Lab Control Sample Dup	128
MB 570-409489/1-A	Method Blank	133 S1+
MRL 570-409489/4-A	Lab Control Sample	123

#### 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)
115818-B1	Method Blank	89	92	97	82	97
115818-BS1	Lab Control Sample	79	92	83	79	92
115818-BS2	Lab Control Sample Dup	84	89	86	79	92

#### 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)
380-81885-1	MOANALUA WELLS	57	64	85	52	85
380-81885-2	AIEA GULCH WELLS PUMP 2	55	65	89	51	96
380-81885-3	AIEA WELLS PUMPS 1&2 (260) P2	62	66	94	59	96
380-81885-4	HALAWA WELLS UNITS 1 & 2 P1	81	86	100	73	103

#### 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: 380-81885-2  
 SDG: 625, 8015

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

**Lab Sample ID: MB 570-409194/6**  
**Matrix: Water**  
**Analysis Batch: 409194**

**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			02/09/24 12:36	1
Surrogate	MB %Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		38 - 134				02/09/24 12:36	1

**Lab Sample ID: LCS 570-409194/4**  
**Matrix: Water**  
**Analysis Batch: 409194**

**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	356		ug/L		89	78 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
4-Bromofluorobenzene (Surr)	91		38 - 134				

**Lab Sample ID: LCSD 570-409194/5**  
**Matrix: Water**  
**Analysis Batch: 409194**

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (C4-C13)	400	370		ug/L		93	78 - 120	4	10
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits						
4-Bromofluorobenzene (Surr)	95		38 - 134						

**Lab Sample ID: MRL 570-409194/3**  
**Matrix: Water**  
**Analysis Batch: 409194**

**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	11.6		ug/L		116	50 - 150
Surrogate	MRL %Recovery	MRL Qualifier	Limits				
4-Bromofluorobenzene (Surr)	94		38 - 134				

**Lab Sample ID: 380-81885-1 MS**  
**Matrix: Drinking Water**  
**Analysis Batch: 409194**

**Client Sample ID: MOANALUA WELLS**  
**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	364		ug/L		91	68 - 122
Surrogate	MS %Recovery	MS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	95		38 - 134						

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# QC Sample Results

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

Job ID: 380-81885-2  
 SDG: 625, 8015

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

**Lab Sample ID: 380-81885-1 MSD**  
**Matrix: Drinking Water**  
**Analysis Batch: 409194**

**Client Sample ID: MOANALUA WELLS**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (C4-C13)	<10		400	375		ug/L		94	68 - 122	3	18
<b>Surrogate</b>	<b>%Recovery</b>	<b>MSD Qualifier</b>	<b>MSD Limits</b>								
4-Bromofluorobenzene (Surr)	101		38 - 134								

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

**Lab Sample ID: MB 570-409489/1-A**  
**Matrix: Water**  
**Analysis Batch: 412489**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 409489**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics (C10-C24)	<25		25	ug/L		02/10/24 08:50	02/20/24 20:29	1
Motor Oil Range Organics [C24-C36]	<25		25	ug/L		02/10/24 08:50	02/20/24 20:29	1
C8-C18	<25		25	ug/L		02/10/24 08:50	02/20/24 20:29	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>MB Qualifier</b>	<b>MB Limits</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>		
n-Octacosane (Surr)	133	S1+	60 - 130	02/10/24 08:50	02/20/24 20:29	1		

**Lab Sample ID: LCS 570-409489/2-A**  
**Matrix: Water**  
**Analysis Batch: 412489**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 409489**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
C10-C28	1600	2320	*+	ug/L		145	56 - 127
<b>Surrogate</b>	<b>%Recovery</b>	<b>LCS Qualifier</b>	<b>LCS Limits</b>				
n-Octacosane (Surr)	130		60 - 130				

**Lab Sample ID: LCSD 570-409489/3-A**  
**Matrix: Water**  
**Analysis Batch: 412489**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 409489**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
C10-C28	1600	1820	*1	ug/L		114	56 - 127	24	23
<b>Surrogate</b>	<b>%Recovery</b>	<b>LCSD Qualifier</b>	<b>LCSD Limits</b>						
n-Octacosane (Surr)	128		60 - 130						

**Lab Sample ID: MRL 570-409489/4-A**  
**Matrix: Water**  
**Analysis Batch: 412489**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 409489**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
C10-C28	0.0200	<0.020		mg/L		71	50 - 150

# QC Sample Results

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

Job ID: 380-81885-2  
 SDG: 625, 8015

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

Lab Sample ID: MRL 570-409489/4-A  
 Matrix: Water  
 Analysis Batch: 412489

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA  
 Prep Batch: 409489

Surrogate	%Recovery	MRL MRL Qualifier	Limits
<i>n</i> -Octacosane (Surr)	123		60 - 130

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

Lab Sample ID: 115818-B1  
 Matrix: BlankMatrix  
 Analysis Batch: O-44120

Client Sample ID: Method Blank  
 Prep Type: Total/NA  
 Prep Batch: O-44120\_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Acenaphthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Acenaphthylene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Anthracene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Biphenyl	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Chrysene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Dibenzothiophene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		02/12/24 00:00	03/21/24 20:44	1
Fluoranthene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Fluorene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Naphthalene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Perylene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Phenanthrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1
Pyrene	ND		0.005	0.001	µg/L		02/12/24 00:00	03/21/24 20:44	1

Surrogate	%Recovery	Blank Blank Qualifier	Limits	Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	89		27 - 133	02/12/24 00:00	03/21/24 20:44	1
(d10-Phenanthrene)	92		43 - 129	02/12/24 00:00	03/21/24 20:44	1
(d12-Chrysene)	97		52 - 144	02/12/24 00:00	03/21/24 20:44	1
(d12-Perylene)	97		36 - 161	02/12/24 00:00	03/21/24 20:44	1
(d8-Naphthalene)	82		25 - 125	02/12/24 00:00	03/21/24 20:44	1



# QC Sample Results

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

Job ID: 380-81885-2  
 SDG: 625, 8015

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

**Lab Sample ID: 115818-BS1**  
**Matrix: BlankMatrix**  
**Analysis Batch: O-44120**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: O-44120\_P**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1-Methylnaphthalene	0.5	0.437		µg/L		87	31 - 128
1-Methylphenanthrene	0.5	0.493		µg/L		99	66 - 127
2,3,5-Trimethylnaphthalene	0.5	0.438		µg/L		88	55 - 122
2,6-Dimethylnaphthalene	0.5	0.43		µg/L		86	48 - 120
2-Methylnaphthalene	0.5	0.433		µg/L		87	47 - 130
Acenaphthene	0.5	0.411		µg/L		82	53 - 131
Acenaphthylene	0.5	0.454		µg/L		91	43 - 140
Anthracene	0.5	0.501		µg/L		100	58 - 135
Benz[a]anthracene	0.5	0.488		µg/L		98	55 - 145
Benzo[a]pyrene	0.5	0.5		µg/L		100	51 - 143
Benzo[b]fluoranthene	0.5	0.591		µg/L		118	46 - 165
Benzo[e]pyrene	0.5	0.44		µg/L		88	42 - 152
Benzo[g,h,i]perylene	0.5	0.499		µg/L		100	63 - 133
Benzo[k]fluoranthene	0.5	0.585		µg/L		117	56 - 145
Biphenyl	0.5	0.446		µg/L		89	56 - 119
Chrysene	0.5	0.576		µg/L		115	56 - 141
Dibenz[a,h]anthracene	0.5	0.526		µg/L		105	55 - 150
Dibenzo[a,l]pyrene	0.5	0.397		µg/L		79	50 - 150
Dibenzothiophene	0.5	0.483		µg/L		97	46 - 126
Disalicylidenepropanediamine	50	45.4		µg/L		91	50 - 150
Fluoranthene	0.5	0.507		µg/L		101	60 - 146
Fluorene	0.5	0.449		µg/L		90	58 - 131
Indeno[1,2,3-cd]pyrene	0.5	0.494		µg/L		99	50 - 151
Naphthalene	0.5	0.43		µg/L		86	41 - 126
Perylene	0.5	0.497		µg/L		99	48 - 141
Phenanthrene	0.5	0.49		µg/L		98	67 - 127
Pyrene	0.5	0.518		µg/L		104	54 - 156

Surrogate	LCS %Recovery	LCS Qualifier	LCS Limits
(d10-Acenaphthene)	79		27 - 133
(d10-Phenanthrene)	92		43 - 129
(d12-Chrysene)	83		52 - 144
(d12-Perylene)	92		36 - 161
(d8-Naphthalene)	79		25 - 125

**Lab Sample ID: 115818-BS2**  
**Matrix: BlankMatrix**  
**Analysis Batch: O-44120**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: O-44120\_P**

Analyte	Spike Added	LCS DUP Result	LCS DUP Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1-Methylnaphthalene	0.5	0.442		µg/L		88	31 - 128	1	30
1-Methylphenanthrene	0.5	0.47		µg/L		94	66 - 127	5	30
2,3,5-Trimethylnaphthalene	0.5	0.459		µg/L		92	55 - 122	4	30
2,6-Dimethylnaphthalene	0.5	0.453		µg/L		91	48 - 120	6	30
2-Methylnaphthalene	0.5	0.443		µg/L		89	47 - 130	2	30
Acenaphthene	0.5	0.457		µg/L		91	53 - 131	10	30
Acenaphthylene	0.5	0.503		µg/L		101	43 - 140	10	30
Anthracene	0.5	0.489		µg/L		98	58 - 135	2	30

Eurofins Eaton Analytical Pomona

# QC Sample Results

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

Job ID: 380-81885-2  
 SDG: 625, 8015

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

**Lab Sample ID: 115818-BS2**  
**Matrix: BlankMatrix**  
**Analysis Batch: O-44120**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: O-44120\_P**

Analyte	Spike Added	LCS DUP Result	LCS DUP Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Benz[a]anthracene	0.5	0.432		µg/L		86	55 - 145	13	30	
Benzo[a]pyrene	0.5	0.536		µg/L		107	51 - 143	7	30	
Benzo[b]fluoranthene	0.5	0.508		µg/L		102	46 - 165	15	30	
Benzo[e]pyrene	0.5	0.435		µg/L		87	42 - 152	1	30	
Benzo[g,h,i]perylene	0.5	0.492		µg/L		98	63 - 133	2	30	
Benzo[k]fluoranthene	0.5	0.509		µg/L		102	56 - 145	14	30	
Biphenyl	0.5	0.459		µg/L		92	56 - 119	3	30	
Chrysene	0.5	0.516		µg/L		103	56 - 141	11	30	
Dibenz[a,h]anthracene	0.5	0.537		µg/L		107	55 - 150	2	30	
Dibenzo[a,l]pyrene	0.5	0.388		µg/L		78	50 - 150	1	30	
Dibenzothiophene	0.5	0.47		µg/L		94	46 - 126	3	30	
Disalicylidenepropanediamine	50	49.8		µg/L		100	50 - 150	9	30	
Fluoranthene	0.5	0.476		µg/L		95	60 - 146	6	30	
Fluorene	0.5	0.472		µg/L		94	58 - 131	4	30	
Indeno[1,2,3-cd]pyrene	0.5	0.497		µg/L		99	50 - 151	0	30	
Naphthalene	0.5	0.43		µg/L		86	41 - 126	0	30	
Perylene	0.5	0.497		µg/L		99	48 - 141	0	30	
Phenanthrene	0.5	0.478		µg/L		96	67 - 127	2	30	
Pyrene	0.5	0.478		µg/L		96	54 - 156	8	30	

Surrogate	LCS DUP		Limits
	%Recovery	Qualifier	
(d10-Acenaphthene)	84		27 - 133
(d10-Phenanthrene)	89		43 - 129
(d12-Chrysene)	86		52 - 144
(d12-Perylene)	92		36 - 161
(d8-Naphthalene)	79		25 - 125

# QC Association Summary

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

Job ID: 380-81885-2  
 SDG: 625, 8015

## GC VOA

### Analysis Batch: 409194

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-81885-1	MOANALUA WELLS	Total/NA	Drinking Water	8015B GRO LL	
380-81885-2	AIEA GULCH WELLS PUMP 2	Total/NA	Drinking Water	8015B GRO LL	
380-81885-3	AIEA WELLS PUMPS 1&2 (260) P2	Total/NA	Drinking Water	8015B GRO LL	
380-81885-4	HALAWA WELLS UNITS 1 & 2 P1	Total/NA	Drinking Water	8015B GRO LL	
380-81885-5	TB MOANALUA WELLS	Total/NA	Water	8015B GRO LL	
380-81885-6	TB AIEA GULCH WELLS PUMP 2	Total/NA	Water	8015B GRO LL	
380-81885-7	TB AIEA WELLS PUMPS 1&2 (260) P2	Total/NA	Water	8015B GRO LL	
380-81885-8	TB HALAWA WELLS UNITS 1 & 2 P1	Total/NA	Water	8015B GRO LL	
MB 570-409194/6	Method Blank	Total/NA	Water	8015B GRO LL	
LCS 570-409194/4	Lab Control Sample	Total/NA	Water	8015B GRO LL	
LCSD 570-409194/5	Lab Control Sample Dup	Total/NA	Water	8015B GRO LL	
MRL 570-409194/3	Lab Control Sample	Total/NA	Water	8015B GRO LL	
380-81885-1 MS	MOANALUA WELLS	Total/NA	Drinking Water	8015B GRO LL	
380-81885-1 MSD	MOANALUA WELLS	Total/NA	Drinking Water	8015B GRO LL	

## GC Semi VOA

### Prep Batch: 409489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-81885-1	MOANALUA WELLS	Total/NA	Drinking Water	3510C	
380-81885-2	AIEA GULCH WELLS PUMP 2	Total/NA	Drinking Water	3510C	
380-81885-4	HALAWA WELLS UNITS 1 & 2 P1	Total/NA	Drinking Water	3510C	
MB 570-409489/1-A	Method Blank	Total/NA	Water	3510C	
LCS 570-409489/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 570-409489/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	
MRL 570-409489/4-A	Lab Control Sample	Total/NA	Water	3510C	

### Analysis Batch: 412489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-81885-1	MOANALUA WELLS	Total/NA	Drinking Water	8015B	409489
380-81885-2	AIEA GULCH WELLS PUMP 2	Total/NA	Drinking Water	8015B	409489
380-81885-4	HALAWA WELLS UNITS 1 & 2 P1	Total/NA	Drinking Water	8015B	409489
MB 570-409489/1-A	Method Blank	Total/NA	Water	8015B	409489
LCS 570-409489/2-A	Lab Control Sample	Total/NA	Water	8015B	409489
LCSD 570-409489/3-A	Lab Control Sample Dup	Total/NA	Water	8015B	409489
MRL 570-409489/4-A	Lab Control Sample	Total/NA	Water	8015B	409489

## Subcontract

### Analysis Batch: O-44120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-81885-1	MOANALUA WELLS	Total/NA	Drinking Water	625 PAH Physis LL (EAL) + TICs	O-44120_P
380-81885-2	AIEA GULCH WELLS PUMP 2	Total/NA	Drinking Water	625 PAH Physis LL (EAL) + TICs	O-44120_P
380-81885-3	AIEA WELLS PUMPS 1&2 (260) P2	Total/NA	Drinking Water	625 PAH Physis LL (EAL) + TICs	O-44120_P
380-81885-4	HALAWA WELLS UNITS 1 & 2 P1	Total/NA	Drinking Water	625 PAH Physis LL (EAL) + TICs	O-44120_P
115818-B1	Method Blank	Total/NA	BlankMatrix	625 PAH Physis LL (EAL) + TICs	O-44120_P
115818-BS1	Lab Control Sample	Total/NA	BlankMatrix	625 PAH Physis LL (EAL) + TICs	O-44120_P

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# QC Association Summary

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

Job ID: 380-81885-2  
SDG: 625, 8015

## Subcontract (Continued)

### Analysis Batch: O-44120 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
115818-BS2	Lab Control Sample Dup	Total/NA	BlankMatrix	625 PAH Physis LL (EAL) + TICs	O-44120_P

### Prep Batch: O-44120\_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-81885-1	MOANALUA WELLS	Total/NA	Drinking Water	EPA_625	
380-81885-2	AIEA GULCH WELLS PUMP 2	Total/NA	Drinking Water	EPA_625	
380-81885-3	AIEA WELLS PUMPS 1&2 (260) P2	Total/NA	Drinking Water	EPA_625	
380-81885-4	HALAWA WELLS UNITS 1 & 2 P1	Total/NA	Drinking Water	EPA_625	
115818-B1	Method Blank	Total/NA	BlankMatrix	EPA_625	
115818-BS1	Lab Control Sample	Total/NA	BlankMatrix	EPA_625	
115818-BS2	Lab Control Sample Dup	Total/NA	BlankMatrix	EPA_625	

# Lab Chronicle

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

Job ID: 380-81885-2  
 SDG: 625, 8015

## Client Sample ID: MOANALUA WELLS

Lab Sample ID: 380-81885-1

Date Collected: 02/05/24 09:47

Matrix: Drinking Water

Date Received: 02/07/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	409194	A9VE	EET CAL 4	02/09/24 15:10
Total/NA	Prep	3510C			409489	JC	EET CAL 4	02/10/24 08:50
Total/NA	Analysis	8015B		1	412489	SP9M	EET CAL 4	02/20/24 22:36
Total/NA	Prep	EPA_625		1	O-44120_P			02/12/24 00:00
Total/NA	Analysis	625 PAH Physis LL (EAL) + TICs		1	O-44120	YC		03/22/24 02:10

## Client Sample ID: AIEA GULCH WELLS PUMP 2

Lab Sample ID: 380-81885-2

Date Collected: 02/05/24 10:49

Matrix: Drinking Water

Date Received: 02/07/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	409194	A9VE	EET CAL 4	02/09/24 15:36
Total/NA	Prep	3510C			409489	JC	EET CAL 4	02/10/24 08:50
Total/NA	Analysis	8015B		1	412489	SP9M	EET CAL 4	02/20/24 22:57
Total/NA	Prep	EPA_625		1	O-44120_P			02/12/24 00:00
Total/NA	Analysis	625 PAH Physis LL (EAL) + TICs		1	O-44120	YC		03/22/24 03:59

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

Lab Sample ID: 380-81885-3

Date Collected: 02/05/24 11:22

Matrix: Drinking Water

Date Received: 02/07/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	409194	A9VE	EET CAL 4	02/09/24 16:02
Total/NA	Prep	EPA_625		1	O-44120_P			02/12/24 00:00
Total/NA	Analysis	625 PAH Physis LL (EAL) + TICs		1	O-44120	YC		03/22/24 05:48

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

Lab Sample ID: 380-81885-4

Date Collected: 02/05/24 10:15

Matrix: Drinking Water

Date Received: 02/07/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	409194	A9VE	EET CAL 4	02/09/24 16:28
Total/NA	Prep	3510C			409489	JC	EET CAL 4	02/10/24 08:50
Total/NA	Analysis	8015B		1	412489	SP9M	EET CAL 4	02/20/24 23:39
Total/NA	Prep	EPA_625		1	O-44120_P			02/12/24 00:00
Total/NA	Analysis	625 PAH Physis LL (EAL) + TICs		1	O-44120	YC		03/22/24 07:37

## Client Sample ID: TB MOANALUA WELLS

Lab Sample ID: 380-81885-5

Date Collected: 02/05/24 09:47

Matrix: Water

Date Received: 02/07/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	409194	A9VE	EET CAL 4	02/09/24 13:26

Eurofins Eaton Analytical Pomona

# Lab Chronicle

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

Job ID: 380-81885-2  
SDG: 625, 8015

## Client Sample ID: TB AIEA GULCH WELLS PUMP 2

Lab Sample ID: 380-81885-6

Date Collected: 02/05/24 10:49

Matrix: Water

Date Received: 02/07/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	409194	A9VE	EET CAL 4	02/09/24 13:52

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

Lab Sample ID: 380-81885-7

Date Collected: 02/05/24 11:22

Matrix: Water

Date Received: 02/07/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	409194	A9VE	EET CAL 4	02/09/24 14:18

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

Lab Sample ID: 380-81885-8

Date Collected: 02/05/24 10:15

Matrix: Water

Date Received: 02/07/24 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015B GRO LL		1	409194	A9VE	EET CAL 4	02/09/24 14:44

### 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: 380-81885-2  
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: 380-81885-2  
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: 380-81885-2  
SDG: 625, 8015

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	PWSID Number
380-81885-1	MOANALUA WELLS	Drinking Water	02/05/24 09:47	02/07/24 10:00	HI0000331
380-81885-2	AIEA GULCH WELLS PUMP 2	Drinking Water	02/05/24 10:49	02/07/24 10:00	HI0000331
380-81885-3	AIEA WELLS PUMPS 1&2 (260) P2	Drinking Water	02/05/24 11:22	02/07/24 10:00	HI0000331
380-81885-4	HALAWA WELLS UNITS 1 & 2 P1	Drinking Water	02/05/24 10:15	02/07/24 10:00	HI0000331
380-81885-5	TB MOANALUA WELLS	Water	02/05/24 09:47	02/07/24 10:00	
380-81885-6	TB AIEA GULCH WELLS PUMP 2	Water	02/05/24 10:49	02/07/24 10:00	
380-81885-7	TB AIEA WELLS PUMPS 1&2 (260) P2	Water	02/05/24 11:22	02/07/24 10:00	
380-81885-8	TB HALAWA WELLS UNITS 1 & 2 P1	Water	02/05/24 10:15	02/07/24 10:00	

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March 23, 2024

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

Project Name: RED-HILL Project # 38001111 Job # 380-81885-1  
Physis Project ID: 1407003-486

Dear Rachelle,

Enclosed are the analytical results for samples submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 2/8/2024. 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
Disalicylidenepropanediamine by EPA 625.1
Dibenzo [a,l] Pyrene w/ PAHs by EPA 625.1

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

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

Regards,

Rachel Hansen  
714 602-5320  
Extension 203  
rachelhansen@physislabs.com

## PROJECT SAMPLE LIST

Eurofins Eaton Analytical

PHYSIS Project ID: 1407003-486

RED-HILL Project # 38001111 Job # 380-81885-1

Total Samples: 4

PHYSIS ID	Sample ID	Description	Date	Time	Matrix	Sample Type
115819	MOANALUA WELLS	380-81885-1	2/5/2024	9:47	Samplewater	Not Specified
115820	AIEA GULCH WELLS PUMP 2	380-81885-2	2/5/2024	10:49	Samplewater	Not Specified
115821	AIEA WELLS PUMPS 1&2 (260) P2	380-81885-3	2/5/2024	11:22	Samplewater	Not Specified
115822	HALAWA WELLS UNITS 1 & 2 P1	380-81885-4	2/5/2024	10:15	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 MS<sub>1</sub>/MS<sub>2</sub>, BS<sub>1</sub>/BS<sub>2</sub>, LCS<sub>1</sub>/LCS<sub>2</sub>, LCM<sub>1</sub>/LCM<sub>2</sub>, CRM<sub>1</sub>/CRM<sub>2</sub>, surrogate spikes and/or replicate project sample analysis (R<sub>1</sub>/R<sub>2</sub>) 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

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## 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.



# ANALYTICALS

# 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
<b>Sample ID: 115819-R1</b>	<b>MOANALUA WELLS 380-81885-1</b>		<b>Matrix: Samplewater</b>					<b>Sampled: 05-Feb-24 9:47</b>		<b>Received: 08-Feb-24</b>	
Disalicylideneprapanediamine	EPA 625.1	µg/L	ND	1	0.05	0.1	Total		O-44120	12-Feb-24	22-Mar-24
<b>Sample ID: 115820-R1</b>	<b>AIEA GULCH WELLS PUMP 2 380-81</b>		<b>Matrix: Samplewater</b>					<b>Sampled: 05-Feb-24 10:49</b>		<b>Received: 08-Feb-24</b>	
Disalicylideneprapanediamine	EPA 625.1	µg/L	ND	1	0.05	0.1	Total		O-44120	12-Feb-24	22-Mar-24
<b>Sample ID: 115821-R1</b>	<b>AIEA WELLS PUMPS 1&amp;2 (260) P2 3</b>		<b>Matrix: Samplewater</b>					<b>Sampled: 05-Feb-24 11:22</b>		<b>Received: 08-Feb-24</b>	
Disalicylideneprapanediamine	EPA 625.1	µg/L	ND	1	0.05	0.1	Total		O-44120	12-Feb-24	22-Mar-24
<b>Sample ID: 115822-R1</b>	<b>HALAWA WELLS UNITS 1 &amp; 2 P1 38</b>		<b>Matrix: Samplewater</b>					<b>Sampled: 05-Feb-24 10:15</b>		<b>Received: 08-Feb-24</b>	
Disalicylideneprapanediamine	EPA 625.1	µg/L	ND	1	0.05	0.1	Total		O-44120	12-Feb-24	22-Mar-24

## Polynuclear Aromatic Hydrocarbons

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
<b>Sample ID: 115819-R1</b>	<b>MOANALUA WELLS 380-81885-1</b>	<b>Matrix: Samplewater</b>					<b>Sampled: 05-Feb-24 9:47</b>			<b>Received: 08-Feb-24</b>	
(d10-Acenaphthene)	EPA 625.1	% Recovery	57	1			Total		O-44120	12-Feb-24	22-Mar-24
(d10-Phenanthrene)	EPA 625.1	% Recovery	64	1			Total		O-44120	12-Feb-24	22-Mar-24
(d12-Chrysene)	EPA 625.1	% Recovery	85	1			Total		O-44120	12-Feb-24	22-Mar-24
(d12-Perylene)	EPA 625.1	% Recovery	85	1			Total		O-44120	12-Feb-24	22-Mar-24
(d8-Naphthalene)	EPA 625.1	% Recovery	52	1			Total		O-44120	12-Feb-24	22-Mar-24
1-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
1-Methylphenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
2,3,5-Trimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
2,6-Dimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
2-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Acenaphthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Acenaphthylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benz[a]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benzo[a]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benzo[b]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benzo[e]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benzo[g,h,i]perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benzo[k]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Biphenyl	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Chrysene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Dibenz[a,h]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Dibenzo[a,l]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Dibenzothiophene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-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-44120	12-Feb-24	22-Mar-24
Fluorene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Indeno[1,2,3-cd]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Naphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Phenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24

## Polynuclear Aromatic Hydrocarbons

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed	
<b>Sample ID: 115820-R1</b>	<b>AIEA GULCH WELLS PUMP 2 380-81 Matrix: Samplewater</b>						<b>Sampled:</b>	<b>05-Feb-24 10:49</b>	<b>Received:</b>	<b>08-Feb-24</b>		
(d10-Acenaphthene)	EPA 625.1	% Recovery	55	1			Total		O-44120	12-Feb-24	22-Mar-24	
(d10-Phenanthrene)	EPA 625.1	% Recovery	65	1			Total		O-44120	12-Feb-24	22-Mar-24	
(d12-Chrysene)	EPA 625.1	% Recovery	89	1			Total		O-44120	12-Feb-24	22-Mar-24	
(d12-Perylene)	EPA 625.1	% Recovery	96	1			Total		O-44120	12-Feb-24	22-Mar-24	
(d8-Naphthalene)	EPA 625.1	% Recovery	51	1			Total		O-44120	12-Feb-24	22-Mar-24	
1-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
1-Methylphenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
2,3,5-Trimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
2,6-Dimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
2-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
Acenaphthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
Acenaphthylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
Anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
Benz[a]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
Benzo[a]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
Benzo[b]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
Benzo[e]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
Benzo[g,h,i]perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
Benzo[k]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
Biphenyl	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
Chrysene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
Dibenz[a,h]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
Dibenzo[a,l]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24	
Dibenzothiophene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-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-44120	12-Feb-24	22-Mar-24
Fluorene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Indeno[1,2,3-cd]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Naphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Phenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24



## Polynuclear Aromatic Hydrocarbons

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
<b>Sample ID: 115821-R1</b>	<b>AIEA WELLS PUMPS 1&amp;2 (260) P2 3 Matrix: Samplewater</b>						<b>Sampled:</b>	<b>05-Feb-24 11:22</b>	<b>Received:</b>	<b>08-Feb-24</b>	
(d10-Acenaphthene)	EPA 625.1	% Recovery	62	1			Total		O-44120	12-Feb-24	22-Mar-24
(d10-Phenanthrene)	EPA 625.1	% Recovery	66	1			Total		O-44120	12-Feb-24	22-Mar-24
(d12-Chrysene)	EPA 625.1	% Recovery	94	1			Total		O-44120	12-Feb-24	22-Mar-24
(d12-Perylene)	EPA 625.1	% Recovery	96	1			Total		O-44120	12-Feb-24	22-Mar-24
(d8-Naphthalene)	EPA 625.1	% Recovery	59	1			Total		O-44120	12-Feb-24	22-Mar-24
1-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
1-Methylphenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
2,3,5-Trimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
2,6-Dimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
2-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Acenaphthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Acenaphthylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benz[a]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benzo[a]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benzo[b]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benzo[e]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benzo[g,h,i]perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benzo[k]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Biphenyl	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Chrysene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Dibenz[a,h]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Dibenzo[a,l]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Dibenzothiophene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-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-44120	12-Feb-24	22-Mar-24
Fluorene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Indeno[1,2,3-cd]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Naphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Phenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24





## Polynuclear Aromatic Hydrocarbons

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
<b>Sample ID: 115822-R1</b>	<b>HALAWA WELLS UNITS 1 &amp; 2 P1 38</b>	<b>Matrix: Samplewater</b>					<b>Sampled: 05-Feb-24 10:15</b>			<b>Received: 08-Feb-24</b>	
(d10-Acenaphthene)	EPA 625.1	% Recovery	81	1			Total		O-44120	12-Feb-24	22-Mar-24
(d10-Phenanthrene)	EPA 625.1	% Recovery	86	1			Total		O-44120	12-Feb-24	22-Mar-24
(d12-Chrysene)	EPA 625.1	% Recovery	100	1			Total		O-44120	12-Feb-24	22-Mar-24
(d12-Perylene)	EPA 625.1	% Recovery	103	1			Total		O-44120	12-Feb-24	22-Mar-24
(d8-Naphthalene)	EPA 625.1	% Recovery	73	1			Total		O-44120	12-Feb-24	22-Mar-24
1-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
1-Methylphenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
2,3,5-Trimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
2,6-Dimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
2-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Acenaphthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Acenaphthylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benz[a]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benzo[a]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benzo[b]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benzo[e]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benzo[g,h,i]perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Benzo[k]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Biphenyl	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Chrysene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Dibenz[a,h]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Dibenzo[a,l]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Dibenzothiophene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-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-44120	12-Feb-24	22-Mar-24
Fluorene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Indeno[1,2,3-cd]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Naphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Phenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24
Pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-44120	12-Feb-24	22-Mar-24



# QUALITY CONTROL REPORT

TERRA CONSULTING AURA ENVIRONMENTAL LABORATORIES, INC.

*Innovative Solutions for Nature*

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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			
<b>Sample ID: 115818-B1</b>		<b>QAQC Procedural Blank</b>				<b>Matrix: BlankMatrix</b>			<b>Sampled:</b>			<b>Received:</b>			
		Method: EPA 625.1				Batch ID: O-44120			Prepared: 12-Feb-24			Analyzed: 21-Mar-24			
Disalicylideneprapanediamin	Total	ND	1	0.05	0.1	µg/L									
<b>Sample ID: 115818-BS1</b>		<b>QAQC Procedural Blank</b>				<b>Matrix: BlankMatrix</b>			<b>Sampled:</b>			<b>Received:</b>			
		Method: EPA 625.1				Batch ID: O-44120			Prepared: 12-Feb-24			Analyzed: 21-Mar-24			
Disalicylideneprapanediamin	Total	45.4	1	0.05	0.1	µg/L	50	0	91	50 - 150%	PASS				
<b>Sample ID: 115818-BS2</b>		<b>QAQC Procedural Blank</b>				<b>Matrix: BlankMatrix</b>			<b>Sampled:</b>			<b>Received:</b>			
		Method: EPA 625.1				Batch ID: O-44120			Prepared: 12-Feb-24			Analyzed: 22-Mar-24			
Disalicylideneprapanediamin	Total	49.8	1	0.05	0.1	µg/L	50	0	100	50 - 150%	PASS	9	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	
<b>Sample ID: 115818-B1</b>		<b>QAQC Procedural Blank</b>			<b>Matrix: BlankMatrix</b>		<b>Sampled:</b>		<b>Received:</b>		
		Method: EPA 625.1				Batch ID: O-44120	Prepared: 12-Feb-24		Analyzed: 21-Mar-24		
(d10-Acenaphthene)	Total	89	1			% Recovery	100	89	27 - 133%	PASS	
(d10-Phenanthrene)	Total	92	1			% Recovery	100	92	43 - 129%	PASS	
(d12-Chrysene)	Total	97	1			% Recovery	100	97	52 - 144%	PASS	
(d12-Perylene)	Total	97	1			% Recovery	100	97	36 - 161%	PASS	
(d8-Naphthalene)	Total	82	1			% Recovery	100	82	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
<b>Sample ID: 115818-BS1</b>		<b>QAQC Procedural Blank</b>			<b>Matrix: BlankMatrix</b>			<b>Sampled:</b>		<b>Received:</b>		
Method: EPA 625.1		Batch ID: O-44120			Prepared: 12-Feb-24		Analyzed: 21-Mar-24					
(d10-Acenaphthene)	Total	79	1			% Recovery	100	0	79	27 - 133%	PASS	
(d10-Phenanthrene)	Total	92	1			% Recovery	100	0	92	43 - 129%	PASS	
(d12-Chrysene)	Total	83	1			% Recovery	100	0	83	52 - 144%	PASS	
(d12-Perylene)	Total	92	1			% Recovery	100	0	92	36 - 161%	PASS	
(d8-Naphthalene)	Total	79	1			% Recovery	100	0	79	25 - 125%	PASS	
1-Methylnaphthalene	Total	0.437	1	0.001	0.005	µg/L	0.5	0	87	31 - 128%	PASS	
1-Methylphenanthrene	Total	0.493	1	0.001	0.005	µg/L	0.5	0	99	66 - 127%	PASS	
2,3,5-Trimethylnaphthalene	Total	0.438	1	0.001	0.005	µg/L	0.5	0	88	55 - 122%	PASS	
2,6-Dimethylnaphthalene	Total	0.43	1	0.001	0.005	µg/L	0.5	0	86	48 - 120%	PASS	
2-Methylnaphthalene	Total	0.433	1	0.001	0.005	µg/L	0.5	0	87	47 - 130%	PASS	
Acenaphthene	Total	0.411	1	0.001	0.005	µg/L	0.5	0	82	53 - 131%	PASS	
Acenaphthylene	Total	0.454	1	0.001	0.005	µg/L	0.5	0	91	43 - 140%	PASS	
Anthracene	Total	0.501	1	0.001	0.005	µg/L	0.5	0	100	58 - 135%	PASS	
Benz[a]anthracene	Total	0.488	1	0.001	0.005	µg/L	0.5	0	98	55 - 145%	PASS	
Benzo[a]pyrene	Total	0.5	1	0.001	0.005	µg/L	0.5	0	100	51 - 143%	PASS	
Benzo[b]fluoranthene	Total	0.591	1	0.001	0.005	µg/L	0.5	0	118	46 - 165%	PASS	
Benzo[e]pyrene	Total	0.44	1	0.001	0.005	µg/L	0.5	0	88	42 - 152%	PASS	
Benzo[g,h,i]perylene	Total	0.499	1	0.001	0.005	µg/L	0.5	0	100	63 - 133%	PASS	
Benzo[k]fluoranthene	Total	0.585	1	0.001	0.005	µg/L	0.5	0	117	56 - 145%	PASS	
Biphenyl	Total	0.446	1	0.001	0.005	µg/L	0.5	0	89	56 - 119%	PASS	
Chrysene	Total	0.576	1	0.001	0.005	µg/L	0.5	0	115	56 - 141%	PASS	
Dibenz[a,h]anthracene	Total	0.526	1	0.001	0.005	µg/L	0.5	0	105	55 - 150%	PASS	
Dibenzo[a,l]pyrene	Total	0.397	1	0.001	0.005	µg/L	0.5	0	79	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	0.483	1	0.001	0.005	µg/L	0.5	0	97	46 - 126%	PASS		
Fluoranthene	Total	0.507	1	0.001	0.005	µg/L	0.5	0	101	60 - 146%	PASS		
Fluorene	Total	0.449	1	0.001	0.005	µg/L	0.5	0	90	58 - 131%	PASS		
Indeno[1,2,3-cd]pyrene	Total	0.494	1	0.001	0.005	µg/L	0.5	0	99	50 - 151%	PASS		
Naphthalene	Total	0.43	1	0.001	0.005	µg/L	0.5	0	86	41 - 126%	PASS		
Perylene	Total	0.497	1	0.001	0.005	µg/L	0.5	0	99	48 - 141%	PASS		
Phenanthrene	Total	0.49	1	0.001	0.005	µg/L	0.5	0	98	67 - 127%	PASS		
Pyrene	Total	0.518	1	0.001	0.005	µg/L	0.5	0	104	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		
<b>Sample ID: 115818-BS2</b>		<b>QAQC Procedural Blank</b>			<b>Matrix: BlankMatrix</b>			<b>Sampled:</b>			<b>Received:</b>			
		Method: EPA 625.1			Batch ID: O-44120			Prepared: 12-Feb-24			Analyzed: 22-Mar-24			
(d10-Acenaphthene)	Total	84	1			% Recovery	100	0	84	27 - 133%	PASS	6	30	PASS
(d10-Phenanthrene)	Total	89	1			% Recovery	100	0	89	43 - 129%	PASS	3	30	PASS
(d12-Chrysene)	Total	86	1			% Recovery	100	0	86	52 - 144%	PASS	4	30	PASS
(d12-Perylene)	Total	92	1			% Recovery	100	0	92	36 - 161%	PASS	0	30	PASS
(d8-Naphthalene)	Total	79	1			% Recovery	100	0	79	25 - 125%	PASS	0	30	PASS
1-Methylnaphthalene	Total	0.442	1	0.001	0.005	µg/L	0.5	0	88	31 - 128%	PASS	1	30	PASS
1-Methylphenanthrene	Total	0.47	1	0.001	0.005	µg/L	0.5	0	94	66 - 127%	PASS	5	30	PASS
2,3,5-Trimethylnaphthalene	Total	0.459	1	0.001	0.005	µg/L	0.5	0	92	55 - 122%	PASS	4	30	PASS
2,6-Dimethylnaphthalene	Total	0.453	1	0.001	0.005	µg/L	0.5	0	91	48 - 120%	PASS	6	30	PASS
2-Methylnaphthalene	Total	0.443	1	0.001	0.005	µg/L	0.5	0	89	47 - 130%	PASS	2	30	PASS
Acenaphthene	Total	0.457	1	0.001	0.005	µg/L	0.5	0	91	53 - 131%	PASS	10	30	PASS
Acenaphthylene	Total	0.503	1	0.001	0.005	µg/L	0.5	0	101	43 - 140%	PASS	10	30	PASS
Anthracene	Total	0.489	1	0.001	0.005	µg/L	0.5	0	98	58 - 135%	PASS	2	30	PASS
Benz[a]anthracene	Total	0.432	1	0.001	0.005	µg/L	0.5	0	86	55 - 145%	PASS	13	30	PASS
Benzo[a]pyrene	Total	0.536	1	0.001	0.005	µg/L	0.5	0	107	51 - 143%	PASS	7	30	PASS
Benzo[b]fluoranthene	Total	0.508	1	0.001	0.005	µg/L	0.5	0	102	46 - 165%	PASS	15	30	PASS
Benzo[e]pyrene	Total	0.435	1	0.001	0.005	µg/L	0.5	0	87	42 - 152%	PASS	1	30	PASS
Benzo[g,h,i]perylene	Total	0.492	1	0.001	0.005	µg/L	0.5	0	98	63 - 133%	PASS	2	30	PASS
Benzo[k]fluoranthene	Total	0.509	1	0.001	0.005	µg/L	0.5	0	102	56 - 145%	PASS	14	30	PASS
Biphenyl	Total	0.459	1	0.001	0.005	µg/L	0.5	0	92	56 - 119%	PASS	3	30	PASS
Chrysene	Total	0.516	1	0.001	0.005	µg/L	0.5	0	103	56 - 141%	PASS	11	30	PASS
Dibenz[a,h]anthracene	Total	0.537	1	0.001	0.005	µg/L	0.5	0	107	55 - 150%	PASS	2	30	PASS
Dibenzo[a,l]pyrene	Total	0.388	1	0.001	0.005	µg/L	0.5	0	78	50 - 150%	PASS	1	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		
Dibenzothiophene	Total	0.47	1	0.001	0.005	µg/L	0.5	0	94	46 - 126%	PASS	3	30	PASS
Fluoranthene	Total	0.476	1	0.001	0.005	µg/L	0.5	0	95	60 - 146%	PASS	6	30	PASS
Fluorene	Total	0.472	1	0.001	0.005	µg/L	0.5	0	94	58 - 131%	PASS	4	30	PASS
Indeno[1,2,3-cd]pyrene	Total	0.497	1	0.001	0.005	µg/L	0.5	0	99	50 - 151%	PASS	0	30	PASS
Naphthalene	Total	0.43	1	0.001	0.005	µg/L	0.5	0	86	41 - 126%	PASS	0	30	PASS
Perylene	Total	0.497	1	0.001	0.005	µg/L	0.5	0	99	48 - 141%	PASS	0	30	PASS
Phenanthrene	Total	0.478	1	0.001	0.005	µg/L	0.5	0	96	67 - 127%	PASS	2	30	PASS
Pyrene	Total	0.478	1	0.001	0.005	µg/L	0.5	0	96	54 - 156%	PASS	8	30	PASS

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

Sample ID: 115820

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
35.9642	4.5517	1111	Anthracene-D10-	1719-06-8	97
10.8574	2.2547	550	Cyclobutanecarboxylic acid, 2-propenyl ester	1000282-60-3	82
10.8574	2.2216	542	Oxalic acid, cyclohexyl pentyl ester	1000309-30-6	82
10.6131	1.5640	382	Hydroperoxide, 1-methylpentyl	24254-55-5	90
10.0897	1.0151	248	Ethane, 1,1,2,2-tetrachloro-	79-34-5	86
12.3152	0.9681	236	2-(Chloromethyl)tetrahydropyran	18420-41-2	86
12.0520	0.9489	232	2H-Pyran-2-methanol, tetrahydro-	100-72-1	80
11.2110	0.7780	190	Cyclopropane, 1,1,2,3-tetramethyl-	74752-93-5	92
13.0048	0.7513	183	1-Pentyn-3-ol, 3-ethyl-	1601750	83
13.3388	0.6817	166	Octane, 4,5-diethyl-	1636-41-5	91
12.9446	0.5271	129	2,6-Octadiene, 2,4-dimethyl-	63843-03-8	83
12.9446	0.5257	128	Cyclohexane, (2-nitro-2-propenyl)-	80255-17-0	84
25.3591	0.4480	109	Benzoic acid, 4-ethoxy-, ethyl ester	23676-09-7	98

Concentration estimated using the response for Anthracene-d10

Sample ID: 115821

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
35.9617	4.2278	1111	Anthracene-D10-	1719-06-8	97
10.8578	2.6210	689	Cyclobutanecarboxylic acid, 2-propenyl ester	1000282-60-3	83
10.4886	2.1893	575	Hydroperoxide, 1-ethylbutyl	24254-56-6	93
11.2098	1.0524	277	Cyclopropane, 1,1,2,3-tetramethyl-	74752-93-5	91
13.0053	0.8910	234	6,6-Dimethyl-1,3-heptadien-5-ol	81912-03-0	84
12.0483	0.8312	218	2H-Pyran-2-methanol, tetrahydro-	100-72-1	81
12.3114	0.8209	216	2-(Chloromethyl)tetrahydropyran	18420-41-2	87
13.3395	0.7568	199	Octane, 4,5-diethyl-	1636-41-5	92
12.0492	0.7058	185	4-Ethyl-4-methyl-1-hexene	90674-67-2	83
10.0950	0.6210	163	Ethane, 1,1,2,2-tetrachloro-	79-34-5	94
32.6890	0.5643	148	Benzoic acid, 2-ethylhexyl ester	5444-75-7	97
14.3295	0.5472	144	Cyclohexane, (1,2-dimethylbutyl)-	61142-37-8	90
25.3598	0.4890	129	Benzoic acid, 4-ethoxy-, ethyl ester	23676-09-7	98

Concentration estimated using the response for Anthracene-d10

Sample ID: 115822

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
35.5445	4.7224	1111	Anthracene-D10-	1719-06-8	98
10.8577	2.3829	561	Cyclobutanecarboxylic acid, 2-propenyl ester	1000282-60-3	83
10.4893	2.1989	517	Hydroperoxide, 1-ethylbutyl	24254-56-6	93
11.2099	1.0892	256	Cyclopropane, 1,1,2,3-tetramethyl-	74752-93-5	92
12.3120	0.6924	163	2-(Chloromethyl)tetrahydropyran	18420-41-2	86
13.0037	0.6721	158	6,6-Dimethyl-1,3-heptadien-5-ol	81912-03-0	83
13.3371	0.6220	146	Octane, 4,5-diethyl-	1636-41-5	92
12.0484	0.5879	138	4-Ethyl-4-methyl-1-hexene	90674-67-2	84
10.0954	0.5340	126	Ethane, 1,1,2,2-tetrachloro-	79-34-5	87
14.3472	0.4220	99	Cyclohexane, (1,2-dimethylbutyl)-	61142-37-8	91
10.2179	0.4185	98	1-Propene, 3-(ethenyloxy)-	3917-15-5	85
32.6884	0.4156	98	Benzoic acid, 2-ethylhexyl ester	5444-75-7	97

Concentration estimated using the response for Anthracene-d10

Sample ID: B1\_44120

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
35.5436	3.9551	1111	Anthracene-D10-	1719-06-8	98
10.8577	1.8651	524	Cyclobutanecarboxylic acid, 2-propenyl ester	1000282-60-3	83
10.4891	1.5870	446	Hydroperoxide, 1-ethylbutyl	24254-56-6	93
11.2092	0.7683	216	1-Butene, 2,3,3-trimethyl-	594-56-9	88
11.2457	0.6262	176	Cyclopropane, 1,1,2,3-tetramethyl-	74752-93-5	91
13.3391	0.5340	150	Octane, 4,5-diethyl-	1636-41-5	95
14.3380	0.4293	121	Cyclohexane, (1,2-dimethylbutyl)-	61142-37-8	91
13.0000	0.3536	99	6,6-Dimethyl-1,3-heptadien-5-ol	81912-03-0	83
12.3096	0.3422	96	2-(Chloromethyl)tetrahydropyran	18420-41-2	86

Concentration estimated using the response for Anthracene-d10

Sample ID: 115819

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
35.9602	5.0155	1111	Anthracene-D10	1517-22-2	96
10.8577	2.6283	582	Cyclobutanecarboxylic acid, 2-propenyl ester	1000282-60-3	83
10.4882	1.9766	438	Hydroperoxide, 1-ethylbutyl	24254-56-6	93
13.7763	1.1335	251	1,3-Dioxolane	646-06-0	82
11.2102	0.8909	197	Cyclopropane, 1,1,2,3-tetramethyl-	74752-93-5	91
12.3107	0.7361	163	2-(Chloromethyl)tetrahydropyran	18420-41-2	87
13.3380	0.6625	147	Octane, 4,5-diethyl-	1636-41-5	92
12.0478	0.6331	140	2H-Pyran-2-methanol, tetrahydro-	100-72-1	81
10.0945	0.5342	118	Ethane, 1,1,2,2-tetrachloro-	79-34-5	97

Concentration estimated using the response for Anthracene-d10



# PERFORMANCE CHAIN OF CUSTODY

TERRA ENVIRONMENTAL LABORATORIES, INC. AURA

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**Client Information (Sub Contract Lab)**

Client Contact: **Arada, Rachelle**  
 Shipping/Receiving: **Rachelle.Arada@eurofins.com**  
 Company: **Physis Environmental Laboratories**  
 Address: **1904 Wright Circle,**  
 City: **Anaheim**  
 State: **CA**, Zip: **92806**  
 Phone: **92806**  
 Email: **WO #:**  
 Project Name: **RED-HILL**  
 Project #: **38001111**  
 Site: **Honolulu BWS Sites**

Lab PM: **Arada, Rachelle**  
 E-Mail: **Rachelle.Arada@eurofins.com**  
 State of Origin: **Hawaii**  
 Accreditations Required (See note): **State - Hawaii**

Carrier Tracking No(s): **380-105689\_1**  
 COC No.: **380-105689\_1**  
 Page: **Page 1 of 1**  
 Job #: **380-81885-1**

**Analysis Requested**

Due Date Requested: **2/26/2024**  
 TAT Requested (days):

PO #:  
 WO #:  
 Project #:  
 SSSOW#:

**Field Filtered Sample (Yes or No)**  
 **Perform MS/MSD (Yes or No)**  
 SUB (625 PAH Physis LL (EAL) + TICs) / 625 PAH Physis LL (EAL) + TICs

**Preservation Codes:**  
 A - HCL  
 B - NaOH  
 C - Zn Acetate  
 D - Nitric Acid  
 E - NaHSO4  
 F - MeOH  
 G - Anchlor  
 H - Ascorbic Acid  
 I - Ice  
 J - DI Water  
 K - EDTA  
 L - EDA  
 M - Hexane  
 N - None  
 O - AsNaO2  
 P - Na2CO3  
 Q - Na2SO3  
 R - NaHSO3  
 S - H2SO4  
 T - TSP Dodecahydrate  
 U - Acetone  
 V - MCAA  
 W - pH 4-5  
 Y - Triana  
 Z - Other (specify)

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Soil, Overstain, BT=Tran, Anal)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Number of containers	Special Instructions/Note:
MOANALUA WELLS (380-81885-1)	2/5/24	09:47	Water	Water	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2	See Attached Instructions
AIEA GULCH WELLS PUMP 2 (380-81885-2)	2/5/24	10:49	Water	Water	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2	See Attached Instructions
AIEA WELLS PUMPS 1&2 (260) P2 (380-81885-3)	2/5/24	11:22	Water	Water	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2	See Attached Instructions
HALAWA WELLS UNITS 1 & 2 P1 (380-81885-4)	2/5/24	10:15	Water	Water	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2	See Attached Instructions

**Possible Hazard Identification**  
 Unconfirmed  
 Deliverable Requested: I, II, III, IV, Other (specify) **Primary Deliverable Rank: 2**

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**  
 Return To Client  
 Disposal By Lab  
 Archive For **Months**

**Empty Kit Relinquished by:** **Date:** **Time:** **Method of Shipment:**

Relinquished by: **X** **Date/Time:** **2/8/24 1001** **Company:** **EWIS**

Relinquished by: **X** **Date/Time:** **2/8/24 1001** **Company:** **EWIS**

Relinquished by: **X** **Date/Time:** **2/8/24 1001** **Company:** **EWIS**

Custody Seals Intact: **Δ Yes Δ No** **Custody Seal No.:** **Cooler Temperature(s) °C and Other Remarks:**



Project Iteration ID: 1407003-486  
 Client Name: Eurofins Eaton Analytical  
 Project Name: RED-HILL Project # 38001111 Job # 380-81885-1  
 COC Page Number: 2 of 2  
 Bottle Label Color: NA

## Sample Receipt Summary

### Receiving Info

- Initials Received By: AT
- Date Received: 2/8/24
- Time Received: 10:01
- Client Name: Eurofins
- Courier Information: (Please circle)
  - Client
  - UPS
  - Area Fast
  - DRS
  - FedEx
  - GSO/GLS
  - Ontrac
  - PAMS
  - PHYSIS Driver:
    - Start Time: \_\_\_\_\_
    - End Time: \_\_\_\_\_
    - Total Mileage: \_\_\_\_\_
    - Number of Pickups: \_\_\_\_\_
- Container Information: (Please put the # of containers or circle none)
  - Cooler
  - Styrofoam Cooler
  - Boxes
  - None
  - Carboy(s)
  - Carboy Trash Can(s)
  - Carboy Cap(s)
  - Other \_\_\_\_\_
- What type of ice was used: (Please circle any that apply)
  - Wet Ice
  - Blue Ice
  - Dry Ice
  - Water
  - None
- Randomly Selected Samples Temperature (°C): 2.1  
 Used I/R Thermometer # 1-2

### Inspection Info

- Initials Inspected By: CR

### Sample Integrity Upon Receipt:

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

Notes:

**Monrovia, CA (Suite 100)**  
 750 Royal Oaks Drive Suite 100  
 Monrovia, CA 91016  
 Phone (626) 386-1100

### Chain of Custody Record

eurofins

<b>Client Information</b> Client Contact: Dr. Ron Fenstermacher City & County of Honolulu Address: 830 South Beretania Street, Chemistry Lab City: Honolulu State/Zip: HI, 96843 Phone: 808-748-5091 (tel) Email: rfenstermacher@hbws.org Project Name: RED-HILL/HBWS sites Event Desc RUSH Weekly Red Hill Site:		Lab PM: Arada, Rachelle State of Origin:		Carrier Tracking No(s): 380-27984-2757 2 Page: Page 1 of 1 Job #:	
Due Date Requested: TAT Requested (days): Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No PO #: C20525101 exp 05312023 WO #:		Analysis Requested			
Sample Date: 5-Feb-2024 Sample Time: 0947 Sample Type (C=Comp, G=grab): G Preservation Code:		Field Filtered Sample (Yes or No): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Perform MS/MSD (Yes or No): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No SUBCONTRACT - 625 PAH Physis LL (EAL) + TICS 8015B_GRO_LL - (MOD) GRO 8015B_DRO_LL_CS - HNL Ranges C10-C24/C24-C36/C8-C18 525 2_PREC - (MOD) 525plus PLUS TICS 537 1_DW_PREC - 537 1 Full List 533 - All Analytes		Total Number of Containers:	
Sample Identification: MOANALUA WELLS AIEA GULCH WELLS PUMP2 AIEA WELLS PUMPS 1&2 (260)P2 HALAWA WELLS UNITS 1&2 P1		Matrix (W=water, S=solid, O=wastewater, BT=Tissue, A=Air): Water Water Water Water		Special Instructions/Note: chlorinated chlorinated 1 OUT OF 2 APPROVED SAMPLES - 02/07/2024 1 OUT OF 2 APPROVED SAMPLES - 02/07/2024	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
Deliverable Requested I II III IV Other (specify)		Special Instructions/QC Requirements			
Empty Kit Relinquished by: bailey Relinquished by: bailey Relinquished by:		Date: 06 Feb 2024 1400 Date/Time:		Date/Time: 02/07/2024 10:00 Date/Time:	
Custody Seals Intact: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Method of Shipment: FEDEx Date/Time: 02/07/2024 10:00 Company: EEAP Company:			
Custody Seal No:		Cololer Temperature(s) °C and Other Remarks: (75)A (1) 15.0-15.0-15.0 (2) 15.0-15.0-15.0 GEL-FEELER			



## Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-81885-2

SDG Number: 625, 8015

**Login Number: 81885**

**List Number: 1**

**Creator: Elyas, Matthew**

**List Source: Eurofins Eaton Analytical Pomona**

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	False	Refer to NCM for affected items (only TBs were broken).
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: 380-81885-2

SDG Number: 625, 8015

**Login Number: 81885**

**List Number: 2**

**Creator: Khana, Piyush**

**List Source: Eurofins Calscience**

**List Creation: 02/08/24 12:41 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is < /= 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	1.2
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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

