

ANALYTICAL REPORT

PREPARED FOR

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City & County of Honolulu
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Public Service Bldg. Room 310
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JOB DESCRIPTION

HRS-340E - RED-HILL - INTERA

JOB NUMBER

380-59908-1

Eurofins Eaton Analytical Pomona

Job Notes

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

Compliance Statement

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

Authorization



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Definitions/Glossary

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-59908-1

Glossary

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

Case Narrative

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-59908-1

Job ID: 380-59908-1

Laboratory: Eurofins Eaton Analytical Pomona

Narrative

Job Narrative
380-59908-1

Comments

No additional comments.

Receipt

The sample was received on 7/27/2023 9:20 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.2° C.

Subcontract non-Sister

See attached subcontract report.

Subcontract Work

Method 625 - PAH Only: This method was subcontracted to Physis Environmental Laboratories. The subcontract laboratory certification is different from that of the facility issuing the final report.

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Detection Summary

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-59908-1

Client Sample ID: BWS2253-J1-AQ

Lab Sample ID: 380-59908-1

No Detections.

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This Detection Summary does not include radiochemical test results.

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Client Sample Results

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-59908-1

Client Sample ID: BWS2253-J1-AQ

Lab Sample ID: 380-59908-1

Date Collected: 07/26/23 10:30

Matrix: Water

Date Received: 07/27/23 09:20

Method: 625 - PAH Only - 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		07/28/23 00:00	08/13/23 12:00	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Acenaphthene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Acenaphthylene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Anthracene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Biphenyl	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Chrysene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Dibenzothiophene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		07/28/23 00:00	08/13/23 12:00	1
Fluoranthene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Fluorene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Naphthalene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Perylene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Phenanthrene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1
Pyrene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 12:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	93		27 - 133	07/28/23 00:00	08/13/23 12:00	1
(d10-Phenanthrene)	76		43 - 129	07/28/23 00:00	08/13/23 12:00	1
(d12-Chrysene)	76		52 - 144	07/28/23 00:00	08/13/23 12:00	1
(d12-Perylene)	62		36 - 161	07/28/23 00:00	08/13/23 12:00	1
(d8-Naphthalene)	67		25 - 125	07/28/23 00:00	08/13/23 12:00	1

Surrogate Summary

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-59908-1

Method: 625 - PAH Only - 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	Acenaphtl (27-133)	Phenanth (43-129)	CRY (52-144)	NPT (25-125)	PRY (36-161)
108639-B1	Method Blank	90	82	119	80	97
108639-BS1	Lab Control Sample	84	71	66	64	69
108639-BS2	Lab Control Sample Dup	83	76	62	67	70

Surrogate Legend

(d10-Acenaphthene) = (d10-Acenaphthene)

(d10-Phenanthrene) = (d10-Phenanthrene)

CRY = (d12-Chrysene)

NPT = (d8-Naphthalene)

PRY = (d12-Perylene)

Method: 625 - PAH Only - EPA 625 Base/Neutral and Acid Organics i

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Acenaphtl (27-133)	Phenanth (43-129)	CRY (52-144)	NPT (25-125)	PRY (36-161)
380-59908-1	BWS2253-J1-AQ	93	76	76	67	62

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: HRS-340E - RED-HILL - INTERA

Job ID: 380-59908-1

Method: 625 - PAH Only - EPA 625 Base/Neutral and Acid Organics I

Lab Sample ID: 108639-B1
Matrix: BlankMatrix
Analysis Batch: O-42010

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: O-42010_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Acenaphthene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Acenaphthylene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Anthracene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Biphenyl	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Chrysene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Dibenzothiophene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		07/28/23 00:00	08/13/23 06:34	1
Fluoranthene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Fluorene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Naphthalene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Perylene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Phenanthrene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1
Pyrene	ND		0.005	0.001	µg/L		07/28/23 00:00	08/13/23 06:34	1

Surrogate	Blank %Recovery	Blank Qualifier	Limits	Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	90		27 - 133	07/28/23 00:00	08/13/23 06:34	1
(d10-Phenanthrene)	82		43 - 129	07/28/23 00:00	08/13/23 06:34	1
(d12-Chrysene)	119		52 - 144	07/28/23 00:00	08/13/23 06:34	1
(d12-Perylene)	97		36 - 161	07/28/23 00:00	08/13/23 06:34	1
(d8-Naphthalene)	80		25 - 125	07/28/23 00:00	08/13/23 06:34	1

Lab Sample ID: 108639-BS1
Matrix: BlankMatrix
Analysis Batch: O-42010

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: O-42010_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1-Methylnaphthalene	0.5	0.561		µg/L		112	31 - 128
1-Methylphenanthrene	0.5	0.508		µg/L		102	66 - 127
2,3,5-Trimethylnaphthalene	0.5	0.513		µg/L		103	55 - 122
2,6-Dimethylnaphthalene	0.5	0.435		µg/L		87	48 - 120
2-Methylnaphthalene	0.5	0.552		µg/L		110	47 - 130
Acenaphthene	0.5	0.441		µg/L		88	53 - 131
Acenaphthylene	0.5	0.618		µg/L		124	43 - 140
Anthracene	0.5	0.529		µg/L		106	58 - 135

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QC Sample Results

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-59908-1

Method: 625 - PAH Only - EPA 625 Base/Neutral and Acid Organics i (Continued)

Lab Sample ID: 108639-BS1
Matrix: BlankMatrix
Analysis Batch: O-42010

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: O-42010_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benz[a]anthracene	0.5	0.453		µg/L		91	55 - 145
Benzo[a]pyrene	0.5	0.505		µg/L		101	51 - 143
Benzo[b]fluoranthene	0.5	0.575		µg/L		115	46 - 165
Benzo[e]pyrene	0.5	0.588		µg/L		118	42 - 152
Benzo[g,h,i]perylene	0.5	0.465		µg/L		93	63 - 133
Benzo[k]fluoranthene	0.5	0.557		µg/L		111	56 - 145
Biphenyl	1	0.678		µg/L		68	56 - 119
Chrysene	0.5	0.425		µg/L		85	56 - 141
Dibenz[a,h]anthracene	0.5	0.513		µg/L		103	55 - 150
Dibenzo[a,l]pyrene	0.5	0.567		µg/L		113	50 - 150
Dibenzothiophene	0.5	0.524		µg/L		105	46 - 126
Disalicylidenepropanediamine	50	34.7		µg/L		69	50 - 150
Fluoranthene	0.5	0.563		µg/L		113	60 - 146
Fluorene	0.5	0.503		µg/L		101	58 - 131
Indeno[1,2,3-cd]pyrene	0.5	0.506		µg/L		101	50 - 151
Naphthalene	0.5	0.432		µg/L		86	41 - 126
Perylene	0.5	0.429		µg/L		86	48 - 141
Phenanthrene	0.5	0.492		µg/L		98	67 - 127
Pyrene	0.5	0.532		µg/L		106	54 - 156

Surrogate	LCS %Recovery	LCS Qualifier	Limits
(d10-Acenaphthene)	84		27 - 133
(d10-Phenanthrene)	71		43 - 129
(d12-Chrysene)	66		52 - 144
(d12-Perylene)	69		36 - 161
(d8-Naphthalene)	64		25 - 125

Lab Sample ID: 108639-BS2
Matrix: BlankMatrix
Analysis Batch: O-42010

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: O-42010_P

Analyte	Spike Added	LCS DUP Result	LCS DUP Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1-Methylnaphthalene	0.5	0.565		µg/L		113	31 - 128	1	30
1-Methylphenanthrene	0.5	0.55		µg/L		110	66 - 127	8	30
2,3,5-Trimethylnaphthalene	0.5	0.482		µg/L		96	55 - 122	7	30
2,6-Dimethylnaphthalene	0.5	0.469		µg/L		94	48 - 120	8	30
2-Methylnaphthalene	0.5	0.548		µg/L		110	47 - 130	0	30
Acenaphthene	0.5	0.437		µg/L		87	53 - 131	1	30
Acenaphthylene	0.5	0.543		µg/L		109	43 - 140	13	30
Anthracene	0.5	0.476		µg/L		95	58 - 135	11	30
Benz[a]anthracene	0.5	0.484		µg/L		97	55 - 145	6	30
Benzo[a]pyrene	0.5	0.406		µg/L		81	51 - 143	22	30
Benzo[b]fluoranthene	0.5	0.57		µg/L		114	46 - 165	1	30
Benzo[e]pyrene	0.5	0.49		µg/L		98	42 - 152	19	30
Benzo[g,h,i]perylene	0.5	0.462		µg/L		92	63 - 133	1	30
Benzo[k]fluoranthene	0.5	0.521		µg/L		104	56 - 145	7	30
Biphenyl	1	0.678		µg/L		68	56 - 119	0	30
Chrysene	0.5	0.418		µg/L		84	56 - 141	1	30

Eurofins Eaton Analytical Pomona

QC Sample Results

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-59908-1

Method: 625 - PAH Only - EPA 625 Base/Neutral and Acid Organics i (Continued)

Lab Sample ID: 108639-BS2
Matrix: BlankMatrix
Analysis Batch: O-42010

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: O-42010_P

Analyte	Spike Added	LCS DUP Result	LCS DUP Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Dibenz[a,h]anthracene	0.5	0.411		µg/L		82	55 - 150	23	30	
Dibenzo[a,i]pyrene	0.5	0.417		µg/L		83	50 - 150	31	30	
Dibenzothiophene	0.5	0.482		µg/L		96	46 - 126	9	30	
Disalicylidenepropanediamine	50	34.2		µg/L		68	50 - 150	1	30	
Fluoranthene	0.5	0.513		µg/L		103	60 - 146	9	30	
Fluorene	0.5	0.402		µg/L		80	58 - 131	23	30	
Indeno[1,2,3-cd]pyrene	0.5	0.434		µg/L		87	50 - 151	15	30	
Naphthalene	0.5	0.452		µg/L		90	41 - 126	5	30	
Perylene	0.5	0.428		µg/L		86	48 - 141	0	30	
Phenanthrene	0.5	0.447		µg/L		89	67 - 127	10	30	
Pyrene	0.5	0.609		µg/L		122	54 - 156	14	30	

Surrogate	LCS DUP		Limits
	%Recovery	Qualifier	
(d10-Acenaphthene)	83		27 - 133
(d10-Phenanthrene)	76		43 - 129
(d12-Chrysene)	62		52 - 144
(d12-Perylene)	70		36 - 161
(d8-Naphthalene)	67		25 - 125

QC Association Summary

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-59908-1

Subcontract

Analysis Batch: O-42010

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-59908-1	BWS2253-J1-AQ	Total/NA	Water	625 - PAH Only	O-42010_P
108639-B1	Method Blank	Total/NA	BlankMatrix	625 - PAH Only	O-42010_P
108639-BS1	Lab Control Sample	Total/NA	BlankMatrix	625 - PAH Only	O-42010_P
108639-BS2	Lab Control Sample Dup	Total/NA	BlankMatrix	625 - PAH Only	O-42010_P

Prep Batch: O-42010_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-59908-1	BWS2253-J1-AQ	Total/NA	Water	EPA_625	
108639-B1	Method Blank	Total/NA	BlankMatrix	EPA_625	
108639-BS1	Lab Control Sample	Total/NA	BlankMatrix	EPA_625	
108639-BS2	Lab Control Sample Dup	Total/NA	BlankMatrix	EPA_625	

Lab Chronicle

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-59908-1

Client Sample ID: BWS2253-J1-AQ

Lab Sample ID: 380-59908-1

Date Collected: 07/26/23 10:30

Matrix: Water

Date Received: 07/27/23 09:20

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Analyst</u>	<u>Lab</u>	<u>Prepared or Analyzed</u>
Total/NA	Prep	EPA_625		1	O-42010_P			07/28/23 00:00
Total/NA	Analysis	625 - PAH Only		1	O-42010	YC		08/13/23 12:00

Laboratory References:

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



Method Summary

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-59908-1

Method	Method Description	Protocol	Laboratory
625	EPA 625 Base/Neutral and Acid Organics i	EPA	

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

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Sample Summary

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-59908-1

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Collected</u>	<u>Received</u>
380-59908-1	BWS2253-J1-AQ	Water	07/26/23 10:30	07/27/23 09:20

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August 14, 2023

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

Project Name: HRS-340E - RED-HILL - INTERA Project # 38002227 Job #
Physis Project ID: 1407003-427

Dear Rachelle,

Enclosed are the analytical results for the sample submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 7/27/2023. A total of 1 sample was received for analysis in accordance with the attached chain of custody (COC). Per the COC, the sample was analyzed for:

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

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

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

Regards,


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

PROJECT SAMPLE LIST

Eurofins Eaton Analytical

PHYSIS Project ID: 1407003-427

HRS-340E - RED-HILL - INTERA Project # 38002227 Job #

Total Samples: 1

PHYSIS ID	Sample ID	Description	Date	Time	Matrix	Sample Type
108640	BWS2253-J1-AQ		7/26/2023	10:30	Samplewater	Not Specified

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ABBREVIATIONS and ACRONYMS

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

QUALITY ASSURANCE SUMMARY

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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PHYSIS QUALIFIER CODES

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

CASE NARRATIVE

QUALIFIER NOTES

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

ND

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

ANALYTICALS

REPORT

TERRA AURA
ENVIRONMENTAL LABORATORIES, INC.

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Base/Neutral Extractable Compounds

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
Sample ID: 108640-R1	BWS2253-J1-AQ		Matrix: Samplewater				Sampled:	26-Jul-23 10:30		Received:	27-Jul-23
Disalicylidenepranediamine	EPA 625.1	µg/L	ND	1	0.05	0.1	Total		O-42010	28-Jul-23	13-Aug-23



Polynuclear Aromatic Hydrocarbons

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
Sample ID: 108640-R1	BWS2253-J1-AQ		Matrix: Samplewater				Sampled:	26-Jul-23 10:30		Received:	27-Jul-23
(d10-Acenaphthene)	EPA 625.1	% Recovery	93	1			Total		O-42010	28-Jul-23	13-Aug-23
(d10-Phenanthrene)	EPA 625.1	% Recovery	76	1			Total		O-42010	28-Jul-23	13-Aug-23
(d12-Chrysene)	EPA 625.1	% Recovery	76	1			Total		O-42010	28-Jul-23	13-Aug-23
(d12-Perylene)	EPA 625.1	% Recovery	62	1			Total		O-42010	28-Jul-23	13-Aug-23
(d8-Naphthalene)	EPA 625.1	% Recovery	67	1			Total		O-42010	28-Jul-23	13-Aug-23
1-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
1-Methylphenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
2,3,5-Trimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
2,6-Dimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
2-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Acenaphthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Acenaphthylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Benz[a]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Benzo[a]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Benzo[b]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Benzo[e]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Benzo[g,h,i]perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Benzo[k]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Biphenyl	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Chrysene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Dibenz[a,h]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Dibenzo[a,l]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Dibenzothiophene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23

Polynuclear Aromatic Hydrocarbons

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
Fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Fluorene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Indeno[1,2,3-cd]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Naphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Phenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23
Pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-42010	28-Jul-23	13-Aug-23



QUALITY CONTROL REPORT

TERRA ENVIRONMENTAL LABORATORIES, INC. AURA

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Base/Neutral Extractable Compounds

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE		SOURCE		ACCURACY		PRECISION		QA CODEc
							LEVEL	RESULT	%	LIMITS	%	LIMITS			
Sample ID: 108639-B1		QAQC Procedural Blank				Matrix: BlankMatrix			Sampled:			Received:			
		Method: EPA 625.1				Batch ID: O-42010			Prepared: 28-Jul-23			Analyzed: 13-Aug-23			
Disalicylidenepropanediamin	Total	ND	1	0.05	0.1	µg/L									
Sample ID: 108639-BS1		QAQC Procedural Blank				Matrix: BlankMatrix			Sampled:			Received:			
		Method: EPA 625.1				Batch ID: O-42010			Prepared: 28-Jul-23			Analyzed: 13-Aug-23			
Disalicylidenepropanediamin	Total	34.7	1	0.05	0.1	µg/L	50	0	69	50 - 150%	PASS				
Sample ID: 108639-BS2		QAQC Procedural Blank				Matrix: BlankMatrix			Sampled:			Received:			
		Method: EPA 625.1				Batch ID: O-42010			Prepared: 28-Jul-23			Analyzed: 13-Aug-23			
Disalicylidenepropanediamin	Total	34.2	1	0.05	0.1	µg/L	50	0	68	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	

Sample ID: 108639-B1		QAQC Procedural Blank			Matrix: BlankMatrix		Sampled:			Received:		
		Method: EPA 625.1			Batch ID: O-42010		Prepared: 28-Jul-23			Analyzed: 13-Aug-23		
(d10-Acenaphthene)	Total	90	1			% Recovery	100	90	27 - 133%	PASS		
(d10-Phenanthrene)	Total	82	1			% Recovery	100	82	43 - 129%	PASS		
(d12-Chrysene)	Total	119	1			% Recovery	100	119	52 - 144%	PASS		
(d12-Perylene)	Total	97	1			% Recovery	100	97	36 - 161%	PASS		
(d8-Naphthalene)	Total	80	1			% Recovery	100	80	25 - 125%	PASS		
1-Methylnaphthalene	Total	ND	1	0.001	0.005						µg/L	
1-Methylphenanthrene	Total	ND	1	0.001	0.005						µg/L	
2,3,5-Trimethylnaphthalene	Total	ND	1	0.001	0.005						µg/L	
2,6-Dimethylnaphthalene	Total	ND	1	0.001	0.005						µg/L	
2-Methylnaphthalene	Total	ND	1	0.001	0.005						µg/L	
Acenaphthene	Total	ND	1	0.001	0.005						µg/L	
Acenaphthylene	Total	ND	1	0.001	0.005						µg/L	
Anthracene	Total	ND	1	0.001	0.005						µg/L	
Benz[a]anthracene	Total	ND	1	0.001	0.005						µg/L	
Benzo[a]pyrene	Total	ND	1	0.001	0.005						µg/L	
Benzo[b]fluoranthene	Total	ND	1	0.001	0.005						µg/L	
Benzo[e]pyrene	Total	ND	1	0.001	0.005						µg/L	
Benzo[g,h,i]perylene	Total	ND	1	0.001	0.005						µg/L	
Benzo[k]fluoranthene	Total	ND	1	0.001	0.005						µg/L	
Biphenyl	Total	ND	1	0.001	0.005						µg/L	
Chrysene	Total	ND	1	0.001	0.005						µg/L	
Dibenz[a,h]anthracene	Total	ND	1	0.001	0.005						µg/L	
Dibenzo[a,l]pyrene	Total	ND	1	0.001	0.005						µg/L	
Dibenzothiophene	Total	ND	1	0.001	0.005						µg/L	

Polynuclear Aromatic Hydrocarbons

QUALITY CONTROL REPORT

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



Polynuclear Aromatic Hydrocarbons

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY	PRECISION	QA CODEc	
							LEVEL	RESULT	%	LIMITS	%	LIMITS
Sample ID: 108639-BS1		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:		Received:		
Method: EPA 625.1		Batch ID: O-42010			Prepared: 28-Jul-23		Analyzed: 13-Aug-23					
(d10-Acenaphthene)	Total	84	1			% Recovery	100	0	84	27 - 133%	PASS	
(d10-Phenanthrene)	Total	71	1			% Recovery	100	0	71	43 - 129%	PASS	
(d12-Chrysene)	Total	66	1			% Recovery	100	0	66	52 - 144%	PASS	
(d12-Perylene)	Total	69	1			% Recovery	100	0	69	36 - 161%	PASS	
(d8-Naphthalene)	Total	64	1			% Recovery	100	0	64	25 - 125%	PASS	
1-Methylnaphthalene	Total	0.561	1	0.001	0.005	µg/L	0.5	0	112	31 - 128%	PASS	
1-Methylphenanthrene	Total	0.508	1	0.001	0.005	µg/L	0.5	0	102	66 - 127%	PASS	
2,3,5-Trimethylnaphthalene	Total	0.513	1	0.001	0.005	µg/L	0.5	0	103	55 - 122%	PASS	
2,6-Dimethylnaphthalene	Total	0.435	1	0.001	0.005	µg/L	0.5	0	87	48 - 120%	PASS	
2-Methylnaphthalene	Total	0.552	1	0.001	0.005	µg/L	0.5	0	110	47 - 130%	PASS	
Acenaphthene	Total	0.441	1	0.001	0.005	µg/L	0.5	0	88	53 - 131%	PASS	
Acenaphthylene	Total	0.618	1	0.001	0.005	µg/L	0.5	0	124	43 - 140%	PASS	
Anthracene	Total	0.529	1	0.001	0.005	µg/L	0.5	0	106	58 - 135%	PASS	
Benz[a]anthracene	Total	0.453	1	0.001	0.005	µg/L	0.5	0	91	55 - 145%	PASS	
Benzo[a]pyrene	Total	0.505	1	0.001	0.005	µg/L	0.5	0	101	51 - 143%	PASS	
Benzo[b]fluoranthene	Total	0.575	1	0.001	0.005	µg/L	0.5	0	115	46 - 165%	PASS	
Benzo[e]pyrene	Total	0.588	1	0.001	0.005	µg/L	0.5	0	118	42 - 152%	PASS	
Benzo[g,h,i]perylene	Total	0.465	1	0.001	0.005	µg/L	0.5	0	93	63 - 133%	PASS	
Benzo[k]fluoranthene	Total	0.557	1	0.001	0.005	µg/L	0.5	0	111	56 - 145%	PASS	
Biphenyl	Total	0.678	1	0.001	0.005	µg/L	1	0	68	56 - 119%	PASS	
Chrysene	Total	0.425	1	0.001	0.005	µg/L	0.5	0	85	56 - 141%	PASS	
Dibenz[a,h]anthracene	Total	0.513	1	0.001	0.005	µg/L	0.5	0	103	55 - 150%	PASS	
Dibenzo[a,l]pyrene	Total	0.567	1	0.001	0.005	µg/L	0.5	0	113	50 - 150%	PASS	
Dibenzothiophene	Total	0.524	1	0.001	0.005	µg/L	0.5	0	105	46 - 126%	PASS	

Polynuclear Aromatic Hydrocarbons

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION		QA CODE _c
							LEVEL	RESULT	%	LIMITS	%	LIMITS	
Fluoranthene	Total	0.563	1	0.001	0.005	µg/L	0.5	0	113	60 - 146%	PASS		
Fluorene	Total	0.503	1	0.001	0.005	µg/L	0.5	0	101	58 - 131%	PASS		
Indeno[1,2,3-cd]pyrene	Total	0.506	1	0.001	0.005	µg/L	0.5	0	101	50 - 151%	PASS		
Naphthalene	Total	0.432	1	0.001	0.005	µg/L	0.5	0	86	41 - 126%	PASS		
Perylene	Total	0.429	1	0.001	0.005	µg/L	0.5	0	86	48 - 141%	PASS		
Phenanthrene	Total	0.492	1	0.001	0.005	µg/L	0.5	0	98	67 - 127%	PASS		
Pyrene	Total	0.532	1	0.001	0.005	µg/L	0.5	0	106	54 - 156%	PASS		

Polynuclear Aromatic Hydrocarbons

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION		QA CODE	
							LEVEL	RESULT	%	LIMITS	%	LIMITS		
Sample ID: 108639-BS2		QAQC Procedural Blank			Matrix: BlankMatrix			Sampled:			Received:			
Method: EPA 625.1		Batch ID: O-42010			Prepared: 28-Jul-23			Analyzed: 13-Aug-23						
(d10-Acenaphthene)	Total	83	1			% Recovery	100	0	83	27 - 133%	PASS	1	30	PASS
(d10-Phenanthrene)	Total	76	1			% Recovery	100	0	76	43 - 129%	PASS	7	30	PASS
(d12-Chrysene)	Total	62	1			% Recovery	100	0	62	52 - 144%	PASS	6	30	PASS
(d12-Perylene)	Total	70	1			% Recovery	100	0	70	36 - 161%	PASS	1	30	PASS
(d8-Naphthalene)	Total	67	1			% Recovery	100	0	67	25 - 125%	PASS	5	30	PASS
1-Methylnaphthalene	Total	0.565	1	0.001	0.005	µg/L	0.5	0	113	31 - 128%	PASS	1	30	PASS
1-Methylphenanthrene	Total	0.55	1	0.001	0.005	µg/L	0.5	0	110	66 - 127%	PASS	8	30	PASS
2,3,5-Trimethylnaphthalene	Total	0.482	1	0.001	0.005	µg/L	0.5	0	96	55 - 122%	PASS	7	30	PASS
2,6-Dimethylnaphthalene	Total	0.469	1	0.001	0.005	µg/L	0.5	0	94	48 - 120%	PASS	8	30	PASS
2-Methylnaphthalene	Total	0.548	1	0.001	0.005	µg/L	0.5	0	110	47 - 130%	PASS	0	30	PASS
Acenaphthene	Total	0.437	1	0.001	0.005	µg/L	0.5	0	87	53 - 131%	PASS	1	30	PASS
Acenaphthylene	Total	0.543	1	0.001	0.005	µg/L	0.5	0	109	43 - 140%	PASS	13	30	PASS
Anthracene	Total	0.476	1	0.001	0.005	µg/L	0.5	0	95	58 - 135%	PASS	11	30	PASS
Benz[a]anthracene	Total	0.484	1	0.001	0.005	µg/L	0.5	0	97	55 - 145%	PASS	6	30	PASS
Benzo[a]pyrene	Total	0.406	1	0.001	0.005	µg/L	0.5	0	81	51 - 143%	PASS	22	30	PASS
Benzo[b]fluoranthene	Total	0.57	1	0.001	0.005	µg/L	0.5	0	114	46 - 165%	PASS	1	30	PASS
Benzo[e]pyrene	Total	0.49	1	0.001	0.005	µg/L	0.5	0	98	42 - 152%	PASS	19	30	PASS
Benzo[g,h,i]perylene	Total	0.462	1	0.001	0.005	µg/L	0.5	0	92	63 - 133%	PASS	1	30	PASS
Benzo[k]fluoranthene	Total	0.521	1	0.001	0.005	µg/L	0.5	0	104	56 - 145%	PASS	7	30	PASS
Biphenyl	Total	0.678	1	0.001	0.005	µg/L	1	0	68	56 - 119%	PASS	0	30	PASS
Chrysene	Total	0.418	1	0.001	0.005	µg/L	0.5	0	84	56 - 141%	PASS	1	30	PASS
Dibenz[a,h]anthracene	Total	0.411	1	0.001	0.005	µg/L	0.5	0	82	55 - 150%	PASS	23	30	PASS
Dibenzo[a,l]pyrene	Total	0.417	1	0.001	0.005	µg/L	0.5	0	83	50 - 150%	PASS	31	30	FAIL R
Dibenzothiophene	Total	0.482	1	0.001	0.005	µg/L	0.5	0	96	46 - 126%	PASS	9	30	PASS

Polynuclear Aromatic Hydrocarbons

QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION		QA CODE _c	
							LEVEL	RESULT	%	LIMITS	%	LIMITS		
Fluoranthene	Total	0.513	1	0.001	0.005	µg/L	0.5	0	103	60 - 146%	PASS	9	30	PASS
Fluorene	Total	0.402	1	0.001	0.005	µg/L	0.5	0	80	58 - 131%	PASS	23	30	PASS
Indeno[1,2,3-cd]pyrene	Total	0.434	1	0.001	0.005	µg/L	0.5	0	87	50 - 151%	PASS	15	30	PASS
Naphthalene	Total	0.452	1	0.001	0.005	µg/L	0.5	0	90	41 - 126%	PASS	5	30	PASS
Perylene	Total	0.428	1	0.001	0.005	µg/L	0.5	0	86	48 - 141%	PASS	0	30	PASS
Phenanthrene	Total	0.447	1	0.001	0.005	µg/L	0.5	0	89	67 - 127%	PASS	10	30	PASS
Pyrene	Total	0.609	1	0.001	0.005	µg/L	0.5	0	122	54 - 156%	PASS	14	30	PASS

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PHYSIS

TENTATIVELY IDENTIFIED COMPOUNDS

ENVIRONMENTAL LABORATORIES, INC.

Innovative Solutions for Nature

Sample ID: 108640

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
34.3515	1.5359	1111	Anthracene-D10	1517-22-2	89
12.4616	15.9645	11549	Ethanol, 2-(hexyloxy)-	112-25-4	96
10.3682	2.2603	1635	Cyclohexane, nitro-	1122-60-7	89
10.0237	0.9766	707	Hydroperoxide, 1-ethylbutyl	24254-56-6	89
13.1178	0.7046	510	1,3-Dioxolane	646-06-0	86
15.2251	0.6369	461	Benzothiazole	95-16-9	85
11.1884	0.6249	452	1-Hexanol, 2-ethyl-	104-76-7	88
10.3260	0.3400	246	Benzaldehyde	100-52-7	91
10.7411	0.1602	116	Oxalic acid, cyclohexyl propyl ester	1000309-30-3	81

Concentration estimated using the response for Anthracene-d10

Sample ID: Lab Blank B1_42010

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
34.7709	1.5585	1111	Anthracene-D10	1517-22-2	84
10.3686	2.5554	1822	Cyclohexane, nitro-	1122-60-7	90
10.0240	0.9764	696	Hydroperoxide, 1-ethylbutyl	24254-56-6	87
10.1437	0.8716	621	Hydroperoxide, 1-methylpentyl	24254-55-5	88

Concentration estimated using the response for Anthracene-d10

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PERFORMANCE CHAIN OF CUSTODY

TERRA ENVIRONMENTAL LABORATORIES, INC. AURA

Innovative Solutions for Nature

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Chain of Custody Record



Client Information		Lab PM:		Carrier Tracking No(s):		COC No:									
Client Contact: Mr. Ervin Kawata City & County of Honolulu		Arada, Rachelle E-Mail: Rachelle.Arada@et.eurofins.us		FEDEX State of Origin: HAWAII		Page 1 of 1 Job #									
Phone: (858) 295 0730 PWSID:		Due Date Requested: TAT Requested (days): 5 DAY-DAYD Compliance Project: Δ Yes X No PO #: C20525101 exp 05312023 WO #:		Analysis Requested SUBCONTRACT - 8015 Gas SUBCONTRACT - TPH 8015 det Fuel 8 SUBCONTRACT - TPH 8015 det Fuel 8 SUBCONTRACT - TPH 8015 det Fuel 8 SUBCONTRACT - TPH 8015 det Fuel 8 SUBCONTRACT - 625 - PAH Only + TICs Perform MS/MSD (Yes or No)		Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA Y - Trizma Z - other (specify) Other:									
Sample Identification		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=soil, O=wastewater, BT=BIOSAMPLE, AC=ACID)		Field Filtered Sample (Yes or No)		Total Number of containers		Special Instructions/Note: x = testing comes from another container.	
BWS2253-J1-AQ		7/26/23	1030	G		Water				X		20			
BMS2253-J1-IB				G		Water						2		Subcontract Notes: 625 PAH - Physis 8015 TPH D+M - EMAX 8015 Gas - EMAX PFAS 537.1 & 533 - EEA POM PFAS 1633 - EEA SAC Bill and Report to EEA - Pamona	
BWS2253-J1-FB				G		Water						2			

Possible Hazard Identification
 Non-Hazard
 Flammable
 Skin Irritant
 Poison B
 Unknown
 Radiological
 Deliverable Requested: I, II, III, IV, Other (specify)

Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: Eva Kaka Date: 7/26/23 1330
 Relinquished by: _____ Date: _____
 Relinquished by: _____ Date: _____

Method of Shipment: _____
 Received by: [Signature] Date/Time: 7/27/23 920
 Received by: _____ Date/Time: _____
 Received by: _____ Date/Time: _____

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

Special Instructions/QC Requirements:

Cooler Temperature(s) °C and Other Remarks:

Custody Seal No.: _____
 Δ Yes Δ No



Shipping Order Form - Bottle Order



Environment Testing



Eurofins Eaton Analytical Pomona
941 Corporate Center Drive
Pomona, CA 91768-2642
Phone (626) 386-1100

Shipping Order ID: 36893

Ship Via: FedEx

Due On: 7/5/2023 11:59:00PM

Ship To Information

Project Manager: Rachelle Arada
Tel: (626) 386-1106 Em: Rachelle.Arada@et.eurofinsus.com
Company Name: INTERA Inc
Attention: Kevin Gooding/Eva Kakone
Address 1: 74 Kihapai Steet
Address 2:
Address 3:
City: Kailua
State: HI
Zip: 96734
Phone #: (858) 205-0730
Project Ref: INTERA - Red-Hill-Incident

Notes to Bottle/Shipping Department

INCLUDE CUSTODY SEALS
WET ICE KIT, no gel ice needed.
Label the cooler under the left hand handle with the ID of the samples that are in the cooler (Print extra set of labels to use for this)
Send only medium to large coolers
Pack small orders by sample ID in a single cooler separated by sample ID, either Bagged or dividers, as needed.

Shipping Method: Pack by sample set (affixed TALS labels)

- Ready to Fill
- Preprinted COC
- Number of COC Copies
- Seals on Bottle
- Seals on Coolers
- Priority
- Return Shipment Labels
- Prepaid Return
- Eurofins Eaton Analytical Pomona
- Short Hold Times
- Temperature Control
- Rush

Please notify your PM immediately if an error is found in shipment. When returning samples, please return all provided QC samples.

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Please notify your PM immediately if an error is found in shipment. When returning samples, please return all provided QC samples.

Shipping Order ID: 36893

Page 2 of 3

Printed on 7/3/2023 4:36:33AM

Bottle Order Information

Bottle Order: INTERA - Site J (PHYSIS-625)
 Bottle Order #: 7748
 Request From Client: 6/26/2023
 Date Order Posted: 3/22/2023 2:57:23PM
 Order Status: Ready To Process
 Prepared By: Michelle Do
 Deliver By Date: 7/5/2023 11:59:00PM
 Lab Project Number: 38000861
 PWSID:

Order Completion Information

Creator: Michelle Do
 Filled by:
 Sent Date:
 Sent Via:
 Tracking #:

Seis	Bottles/Set	Qty	Bottle Type Description	Preservative	Method	Matrix	Sample Type	Comments	Lot #
1	4	4	Amber Glass 1 liter - unpreserved	None	SUBCONTRACT - 625 PAH Physis LL (EAL) + TICs	Water	Normal	625 PAH	

Total Bottle Summary	
Bottle Type Description	Bottle Count
Amber Glass 1 liter - unpreserved	4
Total Bottles: 4	

Notes to Field Staff: Health and Safety Notes: Preservative Comment



Scan QR code for field
 sampler instructions

Relinquished By	Company	Date	Time	Received By	Company	Seal #
Relinquished By	Company	Date	Time	Received By	Company	Seal #

Please notify your PM immediately if an error is found in shipment. When returning samples, please return all provided QC samples.

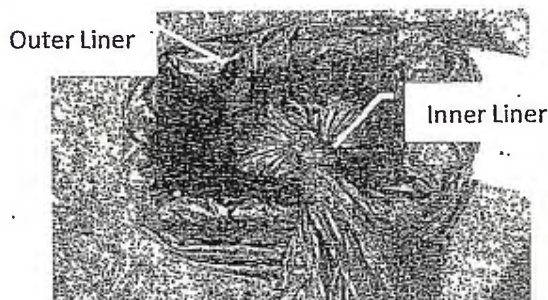
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eurofins Labor analytical	Wet Ice Packing Instructions	Sampling Instruction No. 34 Revision Date: 09/10/2014 Page 1 of 1
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Wet Ice Packing Instructions

Courier delivery service (i.e. FEDEX or UPS) will NOT transport LEAKING Coolers. It is very important that the wet ice is all contained in sealed bags.

- 1) After sampling, insert sample containers back into original bubble wrap, Ziploc style bags, or other inserts.
- 2) Your kits should include 2 large heavy-weight plastic bags.
- 3) Place the first large bag in the interior of the cooler. This bag will be your "*outer liner*." No water or ice should be placed outside this bag.
- 4) Pour in some wet ice in a single layer to cover the bottom of the outer liner.
- 5) Add a second large bag to the cooler so that it fits inside the *outer liner*. The second bag will be your "*inner liner*."
- 6) Place bagged samples inside the inner liner.
- 7) Tie a knot at the top of the inner bag around the sample containers.
- 8) Pour ice onto and around the inner liner to fill up any empty spaces on the outside of the inner liner until the cooler is full. The ice should fill up about 30-50% of the content of cooler. Make sure that there are enough loose ends to tie the outer liner in a knot
- 9) Tie a knot at the top of the outer liner in a manner that ensures there will be no leakage.
- 10) Place completed Chain of Custody and Kit Order in a Ziploc bag and place them in the cooler on top of the outer liner.
- 11) Ensure contents will not move too much when cooler is closed.
- 12) Secure shut the cooler with packing tape before you ship it out.



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

Chain of Custody Record



Environment Testing

Client Information		Sampler:	Lab PM:	Carrier Tracking No.(#):	COC No:
Client Contact:		Phone:	E-Mail:	State of Origin:	Page:
Company:		PWSID:	Analysis Requested		
Address:		Due Date Requested:	Preservation Codes:		
City:		TAT Requested (days):	A - HCL M - Hexane N - None O - AsH ₂ O ₂ P - Na2SO ₄ Q - Na2SO ₃ R - Na2SO ₃ S - H2SO ₄ T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Tizma Z - other (specify)		
State, Zip:		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No	B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO ₄ F - MeOH G - Anhydrous H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:		
Phone:		PO #:	Total Number of Containers		
Email:		WO #:	Matrix (Wet/dry, pass/fail, operational)		
Project Name:		Project #:	Field Filtered Sample (Yes or No)		
Site:		SSOW#:	Sample Type (C=comp, G=grab)		
Sample Identification		Sample Date	Sample Time	Sample Matrix	Special Instructions/Notes:
Possible Hazard Identification		Date:		Time:	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
Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Solid Irritant <input type="checkbox"/> Polson B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Date:		Time:	
Deliverable Requested: I, II, III, IV, Other (specify)		Date:		Time:	
Empty Kit Relinquished by:		Date:		Time:	Method of Shipment
Relinquished by:		Date:		Time:	Company
Relinquished by:		Date:		Time:	Company
Relinquished by:		Date:		Time:	Company
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	





Project Iteration ID: 1407003-427
 Client Name: Eurofins Eaton Analytical
 Project Name: HRS-340E - RED-HILL - INTERA
 Project # 38002227 Job #
 COC Page Number: 7 of 7
 Bottle Label Color: NA

Sample Receipt Summary

Receiving Info

1. Initials Received By: RGH
2. Date Received: 7/27/23
3. Time Received: 9:20
4. Client Name: Eurofins Eaton
5. Courier Information: (Please circle)
 - Client
 - UPS
 - Area Fast
 - DRS
 - FedEx
 - GSO/GLS
 - Ontrac
 - PAMS
 - PHYSIS Driver:
 - i. Start Time: _____
 - ii. End Time: _____
 - iii. Total Mileage: _____
 - iv. Number of Pickups: _____
6. 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 _____
7. What type of ice was used: (Please circle any that apply)
 - Wet Ice
 - Blue Ice
 - Dry Ice
 - Water
 - None
8. Randomly Selected Samples Temperature (°C): 4.2
 Used I/R Thermometer # 1-2

Inspection Info

1. Initials Inspected By: RGH

Sample Integrity Upon Receipt:

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

Notes:



Project Iteration ID: 1407003-427
 Client Name: Eurofins Eaton Analytical
 Project Name: HRS-340E - RED-HILL - INTERA
 Project # 38002227 Job #
 COC Page Number: 7 of 7
 Bottle Label Color: NA

Sample Receipt Summary

Receiving Info

1. Initials Received By: RGH
2. Date Received: 7/27/23
3. Time Received: 9:20
4. Client Name: Eurofins Eaton
5. Courier Information: (Please circle)
 - Client
 - UPS
 - Area Fast
 - DRS
 - FedEx
 - GSO/GLS
 - Ontrac
 - PAMS
 - PHYSIS Driver:
 - i. Start Time: _____
 - ii. End Time: _____
 - iii. Total Mileage: _____
 - iv. Number of Pickups: _____
6. Container Information: (Please put the # of containers or circle none)
 - 1 Cooler
 - ___ Styrofoam Cooler
 - ___ Boxes
 - None
 - ___ Carboy(s)
 - ___ Carboy Trash Can(s)
 - ___ Carboy Cap(s)
 - Other _____
7. What type of ice was used: (Please circle any that apply)
 - Wet Ice
 - Blue Ice
 - Dry Ice
 - Water
 - None
8. Randomly Selected Samples Temperature (°C): 4.2 Used I/R Thermometer # 1-2

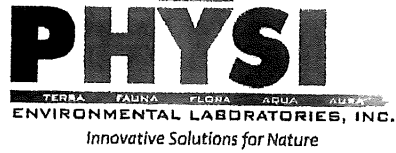
Inspection Info

1. Initials Inspected By: RGH

Sample Integrity Upon Receipt:

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

Notes:



Project Iteration ID: 1407003-427
 Client Name: Eurofins Eaton Analytical
 Project Name: HRS-340E - RED-HILL - INTERA
 Project # 38002227 Job #
 COC Page Number: 7 of 7
 Bottle Label Color: NA

Sample Receipt Summary

Receiving Info

1. Initials Received By: RGH
2. Date Received: 7/27/23
3. Time Received: 9:20
4. Client Name: Eurofins Eaton
5. Courier Information: (Please circle)
 - Client
 - UPS
 - Area Fast
 - DRS
 - FedEx
 - GSO/GLS
 - Ontrac
 - PAMS
 - PHYSIS Driver:
 - i. Start Time: _____
 - ii. End Time: _____
 - iii. Total Mileage: _____
 - iv. Number of Pickups: _____
6. Container Information: (Please put the # of containers or circle none)
 - 1 Cooler
 - ___ Styrofoam Cooler
 - ___ Boxes
 - None
 - ___ Carboy(s)
 - ___ Carboy Trash Can(s)
 - ___ Carboy Cap(s)
 - Other _____
7. What type of ice was used: (Please circle any that apply)
 - Wet Ice
 - Blue Ice
 - Dry Ice
 - Water
 - None
8. Randomly Selected Samples Temperature (°C): 4.2 Used I/R Thermometer # 1-2

Inspection Info

1. Initials Inspected By: RGH

Sample Integrity Upon Receipt:

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

Notes:

Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-59908-1

Login Number: 59908

List Source: Eurofins Eaton Analytical Pomona

List Number: 1

Creator: Do, Michelle

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