June 2023 Results

Test Method	Analyte	CAS No.	NPDES Permit Requirement	NPDES Effluent Limit (Freshwater)	DW DSRP Action Level	Units	Field Blank	Trip Blank	NPDES Effluent Grab	NPDES Effluent Grab	Influent Grab	Influent Grab
						Location	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft
						Receiving Water Body	–	–	Halawa Stream	Halawa Stream	Halawa Stream	Halawa Stream
						Field Observations	–	–	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.
						Sample ID	RHS-FB-TRAIN-02-060223-N	RHS-TB-TRAIN-02-060223-N	RHS-EF-TRAIN-02-060223-N	RHS-EF-TRAIN-02-060223-(01)-N	RHS-IF-TRAIN-02-060223-N	RHS-IF-TRAIN-02-060223-(01)-N
						Sample Date	6/2/23	6/2/23	6/2/23	6/2/23	6/2/23	6/2/23
						Sample Time	9:40	9:42	9:45	9:45	10:05	10:05
						Type	Field Blank	Trip Blank	Normal	FD	Normal	FD
						Lab	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins
						SDG	127892-3	127892-4	127892-5	127892-1	127892-6	127892-2
Test Method	Analyte	CAS No.	NPDES Permit Requirement	NPDES Effluent Limit (Freshwater)	DW DSRP Action Level	Units	Result	Result	Result	Result	Result	Result
8260	TPH-g (C6-C12)	Gas	X	Report	500	µg/L	–	31 U	31 U	31 U	31 U	31 U
8015	TPH-d (C9-C25)	Diesel	X	Report	500	µg/L	91 U	–	90 U	91 U	91 U	90 U
8015	TPH-o (C24-C40)	Oil		–	500	µg/L	180 U	–	180 U	180 U	180 U	180 U
–	Total TPH [3]	–		–	500	µg/L	180 U	–	180 U	180 U	180 U	180 U
8260	Benzene	71-43-2	X	1800	71	µg/L	–	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
8260	Ethylbenzene	100-41-4	X	11000	7.3	µg/L	–	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
8260	Toluene	108-88-3	X	5800	9.8	µg/L	–	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U
8260	m,p-Xylene	179601-23-1		–	–	µg/L	–	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U
8260	o-Xylene	95-47-6		–	–	µg/L	–	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U
8260	Xylenes, Total [4]	1330-20-7	X	Report	13	µg/L	–	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U
6010	Total lead	7439-92-1	X	29	–	µg/L	–	–	2.7 U	2.7 U	–	–
936M	Organic lead [1]	78-00-2/	X	Report	–	µg/L	–	–	0.81 U	0.81 U	–	–
EPA 821 /	Whole effluent toxicity	–	X	Pass [2]	–	–	–	–	–	–	–	–
–	Residual chlorine	7782-50-5		–	–	mg/L	–	–	–	–	–	–
8270	1-methylnaphthalene	90-12-0		–	2.1	µg/L	–	–	0.033 U	0.033 U	–	–
8270	2-methylnaphthalene	91-57-6		–	4.7	µg/L	–	–	0.039 U	0.039 U	–	–
8270	Naphthalene	91-20-3		–	12	µg/L	–	–	0.16 U	0.16 U	–	–
Field	Flow	–	X	Report	–	gal/ day	–	–	1497600	1497600	4363200	4363200
Field	pH	–	X	5.5-8.0	–	std unit	–	–	7.24	7.24	7.61	7.61
Field	Dissolved oxygen	–		Not required	Report	mg/L	–	–				
Field	Temperature	–		–	Report	degC	–	–	24.1	24.1	23.4	23.4
Field	Conductivity	–		–	Report	µS/cm	–	–	550	550	550	550
Field	Turbidity	–		–	Report	NTU	–	–	0.33	0.33	0.23	0.23

	Field Blank	Trip Blank	NPDES Effluent Grab	Influent Grab	Field Blank	Trip Blank
Location	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft
Receiving Water Body	–	–	Halawa Stream	Halawa Stream	–	–
Field Observations	–	–	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.	–	–
Sample ID	RHS-FB-TRAIN-03-060623-N	RHS-TB-TRAIN-03-060623-N	RHS-EF-TRAIN-03-060623-N	RHS-IF-TRAIN-03-060623-N	RHS-FB-TRAIN-01-060923-N	RHS-TB-TRAIN-01-060923-N
Sample Date	6/6/23	6/6/23	6/6/23	6/6/23	6/9/23	6/9/23
Sample Time	9:40	9:35	9:45	9:55	9:35	9:30
Type	Field Blank	Trip Blank	Normal	Normal	Field Blank	Trip Blank
Lab	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins
SDG	128027-1	128027-2	128027-3	128027-4	128169-1	128169-2
Analyte	Result	Result	Result	Result	Result	Result
TPH-g (C6-C12)	–	31 U	31 U	31 U	–	31 U
TPH-d (C9-C25)	93 U	–	93 U	92 U	92 U	–
TPH-o (C24-C40)	190 U	–	190 U	180 U	180 U	–
Total TPH [3]	190 U	–	190 U	180 U	180 U	–
Benzene	–	0.24 U	0.24 U	0.24 U	–	0.24 U
Ethylbenzene	–	0.50 U	0.50 U	0.50 U	–	0.50 U
Toluene	–	0.39 U	0.39 U	0.39 U	–	0.39 U
m,p-Xylene	–	0.53 U	0.53 U	0.53 U	–	0.53 U
o-Xylene	–	0.39 U	0.39 U	0.39 U	–	0.39 U
Xylenes, Total [4]	–	0.53 U	0.53 U	0.53 U	–	0.53 U
Total lead	–	–	2.7 U	–	–	–
Organic lead [1]	–	–	0.81 U	–	–	–
Whole effluent toxicity	–	–	–	–	–	–
Residual chlorine	–	–	–	–	–	–
1-methylnaphthalene	–	–	0.034 U	–	–	–
2-methylnaphthalene	–	–	0.040 U	–	–	–
Naphthalene	–	–	0.17 U	–	–	–
Flow	–	–	1497600	4363200	–	–
pH	–	–	7.20	7.60	–	–
Dissolved oxygen	–	–			–	–
Temperature	–	–	24.8	25.3	–	–
Conductivity	–	–	550	580	–	–
Turbidity	–	–	0.17	0.35	–	–

	NPDES Effluent Grab	Influent Grab	NPDES Effluent Composite	NPDES Effluent Composite	Field Blank	Trip Blank
Location	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft
Receiving Water Body	Halawa Stream	Halawa Stream	Halawa Stream	Halawa Stream	–	–
Field Observations	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.	–	–
Sample ID	RHS-EF-TRAIN-01-060923-N	RHS-IF-TRAIN-01-060923-N	RHS-EF-TRAIN-03-061323-N; RHS-EF-TRAIN-03-061623-N (renewal)	RHS-EF-TRAIN-03-061323-(01)-N; RHS-EF-TRAIN-03-061623-(01)-N (renewal)	RHS-FB-TRAIN-02-061323-N	RHS-TB-TRAIN-02-061323-N
Sample Date	6/9/23	6/9/23	6/13/23 to 6/17/23	6/13/23 to 6/17/23	6/13/23	6/13/23
Sample Time	9:40	10:00	09:10 to 06:10	09:10 to 06:10	9:25	9:20
Type	Normal	Normal	Normal	FD	Field Blank	Trip Blank
Lab	Eurofins	Eurofins	BioAquatics	BioAquatics	Eurofins	Eurofins
SDG	128169-3	128169-4	87719	87720	128281-1	128281-2
Analyte	Result	Result	Result	Result	Result	Result
TPH-g (C6-C12)	31 U	31 U	–	–	–	31 U
TPH-d (C9-C25)	91 U	92 U	–	–	92 U	–
TPH-o (C24-C40)	180 U	180 U	–	–	180 U	–
Total TPH [3]	180 U	180 U	–	–	180 U	–
Benzene	0.24 U	0.24 U	–	–	–	0.24 U
Ethylbenzene	0.50 U	0.50 U	–	–	–	0.50 U
Toluene	0.39 U	0.39 U	–	–	–	0.39 U
m,p-Xylene	0.53 U	0.53 U	–	–	–	0.53 U
o-Xylene	0.39 U	0.39 U	–	–	–	0.39 U
Xylenes, Total [4]	0.53 U	0.53 U	–	–	–	0.53 U
Total lead	2.7 U	–	–	–	–	–
Organic lead [1]	0.81 U	–	–	–	–	–
Whole effluent toxicity	–	–	Pass	Pass	–	–
Residual chlorine	–	–	< 0.1	< 0.1	–	–
1-methylnaphthalene	0.033 U	–	–	–	–	–
2-methylnaphthalene	0.039 U	–	–	–	–	–
Naphthalene	0.16 U	–	–	–	–	–
Flow	1440000	4334400	–	–	–	–
pH	7.01	7.42	–	–	–	–
Dissolved oxygen			–	–	–	–
Temperature	25.4	22.9	–	–	–	–
Conductivity	340	560	–	–	–	–
Turbidity	0.70	1.14	–	–	–	–

	NPDES Effluent Grab	Influent Grab	Field Blank	Trip Blank	NPDES Effluent Grab	Influent Grab
Location	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft
Receiving Water Body	Halawa Stream	Halawa Stream	–	–	Halawa Stream	Halawa Stream
Field Observations	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.	–	–	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.
Sample ID	RHS-EF-TRAIN-02-061323-N	RHS-IF-TRAIN-02-061323-N	RHS-FB-TRAIN-03-061623-N	RHS-TB-TRAIN-03-061623-N	RHS-EF-TRAIN-03-061623-N	RHS-IF-TRAIN-03-061623-N
Sample Date	6/13/23	6/13/23	6/16/23	6/16/23	6/16/23	6/16/23
Sample Time	9:30	9:35	8:55	8:50	9:10	9:15
Type	Normal	Normal	Field Blank	Trip Blank	Normal	Normal
Lab	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins
SDG	128281-3	128281-4	128467-1	128467-2	128467-3	128467-4
Analyte	Result	Result	Result	Result	Result	Result
TPH-g (C6-C12)	31 U	31 U	–	31 U	31 U	31 U
TPH-d (C9-C25)	92 U	94 U	97 U	–	94 U	95 U
TPH-o (C24-C40)	180 U	190 U	190 U	–	190 U	190 U
Total TPH [3]	180 U	190 U	190 U	–	190 U	190 U
Benzene	0.24 U	0.24 U	–	0.24 U	0.24 U	0.24 U
Ethylbenzene	0.50 U	0.50 U	–	0.50 U	0.50 U	0.50 U
Toluene	0.39 U	0.39 U	–	0.39 U	0.39 U	0.39 U
m,p-Xylene	0.53 U	0.53 U	–	0.53 U	0.53 U	0.53 U
o-Xylene	0.39 U	0.39 U	–	0.39 U	0.39 U	0.39 U
Xylenes, Total [4]	0.53 U	0.53 U	–	0.53 U	0.53 U	0.53 U
Total lead	**3.0** J	–	–	–	2.7 U	–
Organic lead [1]	0.81 U	–	–	–	0.81 U	–
Whole effluent toxicity	–	–	–	–	–	–
Residual chlorine	–	–	–	–	–	–
1-methylnaphthalene	0.034 U	–	–	–	**1.1**	–
2-methylnaphthalene	0.040 U	–	–	–	**0.074** J	–
Naphthalene	0.17 U	–	–	–	**0.28** J	–
Flow	1411200	4276800	–	–	1468800	4291200
pH	7.03	7.22	–	–	7.01	7.16
Dissolved oxygen			–	–		
Temperature	24.6	26.8	–	–	26.5	24.6
Conductivity	550	630	–	–	810	620
Turbidity	0.39	5.64	–	–	0.00	0.39

	Field Blank	Trip Blank	NPDES Effluent Grab	Influent Grab	Field Blank	Trip Blank	NPDES Effluent Grab	Influent Grab
Location	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft
Receiving Water Body	–	–	Halawa Stream	Halawa Stream	–	–	Halawa Stream	Halawa Stream
Field Observations	–	–	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.	–	–	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.
Sample ID	RHS-FB-TRAIN-01-062023-N	RHS-TB-TRAIN-01-062023-N	RHS-EF-TRAIN-01-062023-N	RHS-IF-TRAIN-01-062023-N	RHS-FB-TRAIN-02-062823-N	RHS-TB-TRAIN-02-062823-N	RHS-EF-TRAIN-02-062823-N	RHS-IF-TRAIN-02-062823-N
Sample Date	6/20/23	6/20/23	6/20/23	6/20/23	6/28/23	6/28/23	6/28/23	6/28/23
Sample Time	8:40	8:35	9:20	9:50	9:40	9:45	9:50	10:15
Type	Field Blank	Trip Blank	Normal	Normal	Field Blank	Trip Blank	Normal	Normal
Lab	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins
SDG	128565-1	128565-2	128565-3	128565-4	128944-1	128944-2	128944-3	128944-4
Analyte	Result	Result	Result	Result	Result	Result	Result	Result
TPH-g (C6-C12)	–	31 U	31 U	31 U	–	31 U	31 U	31 U
TPH-d (C9-C25)	91 U	–	91 U	91 U	90 U	–	91 U	91 U
TPH-o (C24-C40)	180 U	–	180 U	180 U	180 U	–	180 U	180 U
Total TPH [3]	180 U	–	180 U	180 U	180 U	–	180 U	180 U
Benzene	–	0.24 U	0.24 U	0.24 U	–	0.24 U	0.24 U	0.24 U
Ethylbenzene	–	0.50 U	0.50 U	0.50 U	–	0.50 U	0.50 U	0.50 U
Toluene	–	0.39 U	0.39 U	0.39 U	–	0.39 U	0.39 U	0.39 U
m,p-Xylene	–	0.53 U	0.53 U	0.53 U	–	0.53 U	0.53 U	0.53 U
o-Xylene	–	0.39 U	0.39 U	0.39 U	–	0.39 U	0.39 U	0.39 U
Xylenes, Total [4]	–	0.53 U	0.53 U	0.53 U	–	0.53 U	0.53 U	0.53 U
Total lead	–	–	2.7 U	–	–	–	2.7 U	–
Organic lead [1]	–	–	0.81 U	–	–	–	0.81 U	–
Whole effluent toxicity	–	–	–	–	–	–	–	–
Residual chlorine	–	–	–	–	–	–	–	–
1-methylnaphthalene	–	–	0.033 U	–	–	–	0.033 U	–
2-methylnaphthalene	–	–	0.039 U	–	–	–	0.039 U	–
Naphthalene	–	–	0.16 U	–	–	–	0.16 U	–
Flow	–	–	1425600	4262400	–	–	1468800	4276800
pH	–	–	6.86	7.21	–	–	7.00	7.52
Dissolved oxygen	–	–			–	–		
Temperature	–	–	26.6	26.7	–	–	22.9	23.0
Conductivity	–	–	640	660	–	–	530	540
Turbidity	–	–	0.25	0.32	–	–	0.15	0.2

June 2023 NPDES DMR Summary [5]

Analyte	NPDES Effluent Limit (Freshwater)	Units	Min	Average	Max
TPH-g (C6-C12)	Report	mg/L	0.031 U	0.031 U	0.031 U
TPH-d (C9-C25)	Report	mg/L	0.09 U	0.092 U	0.094 U
TPH-o (C24-C40)					
Total TPH [3]					
Benzene	1.8	mg/L	0.00024 U	0.00024 U	0.00024 U
Ethylbenzene	11	mg/L	0.0005 U	0.0005 U	0.0005 U
Toluene	5.8	mg/L	0.00039 U	0.00039 U	0.00039 U
m,p-Xylene					
o-Xylene					
Xylenes, Total [4]	Report	mg/L	0.00053 U	0.00053 U	0.00053 U
Total lead	0.029	mg/L	0.0027 U	**0.0027429** J	**0.0030** J
Organic lead [1]	Report	mg/L	0.00081 U	0.00081 U	0.00081 U
Whole effluent toxicity	Pass [2]	–	Pass	Pass	Pass
Residual chlorine					
1-methylnaphthalene					
2-methylnaphthalene					
Naphthalene					
Flow	Report	gal/ day		1458514.3	1497600
pH	5.5-8.0	std unit	6.86	7.05	7.24
Dissolved oxygen	Not required	mg/L	#REF!	#REF!	#REF!
Temperature					
Conductivity					
Turbidity					

Blue highlighted cells = NPDES permit requirements

Notes:

1 - tetraethyl lead/tetramethyl lead

2 - Reported as "pass" or "fail" in accordance with HAR 11-55, Appendix D, Section 7.

3 - Total TPH is the manual calculation of the total detected concentrations of TPH-g, TPH-d, and TPH-o. If all values are non-detect, the total value is the highest limit of detection of TPH-g, TPH-d, and TPH-o.

4 - Total xylenes is the manual calculation of the total detected concentrations of m,p-Xylene and o-Xylene. If all values are non-detect, the total value is the highest limit of detection of m,p-Xylene and o-Xylene.

5 - The mg/L units in the DMR Summary reflect the effluent limitation units specified in the NPDES permit. Average values were calculated using detected concentrations and limits of detection for non-detected analytes. When there is a duplicate, the higher concentration between the parent sample and the duplicate sample is used to calculate average values.

Bold text indicates indicates a detected concentration above the laboratory limit of detection.

Bold and italicized text indicates detection exceeds the NPDES permit limitation or the Drinking Water Distribution System Recovery Plan screening criteria.

— = not analyzed or not applicable

CAS = Chemical Abstracts Service

B = compound was found in the blank and sample

J = estimated value

U = nondetect value

*+ = LCS and/or LCSD is outside acceptance limits, high biased

*- = LCS and/or LCSD is outside acceptance limits, low biased

*1 = LCS/LCSD RPD exceeds control limits

H = sample was prepped or analyzed beyond the specified hold time

µg/L = microgram per liter (same as parts per billion)

mg/L = milligram per liter

µS/cm = microsiemens per centimeter

NTU = nephelometric turbidity unit

NPDES Red Hill Shaft GAC Discharge Field Sampling Data Sheet – Grab

Observer Name(s): Angelo Genabe, Tyler Nishikawa Company: AECOM Date: 6/2/23 Time: 0830

Location: Red Hill Shaft 5 MGD GAC Coordinates (latitude and longitude): 21.370777, -157.907716

Observer 1 Signature: Digitally signed by Genabe, Angelo Date: 2023.07.13 17:37:01 -10'00' Date: 7/13/23

Observer 2 Signature: Nishikawa, Tyler Digitally signed by Nishikawa, Tyler Date: 2023.07.14 08:46:41 -10'00' Date: 7/14/23

WEATHER CONDITIONS:

Now	☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) 60 % cloud cover ☐ clear/sunny
	Ambient Air Temperature (°F): 76 Humidity (%): 72 Wind (mph): 11
Past 24 Hours	☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) 50 % cloud cover ☒ clear/sunny
Heavy rain in past 7 days?	☐ yes ☒ no
Notes:	

SAMPLE INFORMATION / WATER QUALITY:

NPDES Effluent Grab Sample ID: RHS-EF-TRAIN-02-060223-N, RHS-EF-TRAIN-02-060223-(01)-N Sample Date/Time: 6/2/23, 0945

Influent Grab Sample ID: RHS-IF-TRAIN-02-060223-N, RHS-IF-TRAIN-02-060223-(01)-N Sample Date/Time: 6/2/23, 1005

Water Quality Equipment (Make, Model S/N): AquaTROLL 600; SN: 689918

MiniRAE PID; SN: 592-601269

Previous grab sample Date: 5/30/23 GAC Train #: 01 Previous grab duplicate (monthly freq.) Date: 5/1/23 GAC Train #: 02

Previous WET sample Date: 5/1/23-5/6/23 Previous WET duplicate (quarterly freq.) Date: 3/6/26-3/10/23

NPDES Effluent Grab Sample (Lag Tank) – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260), BTEX (8260), total lead (6010B), organic lead (939M)											
GAC Train #	Date	Time	pH (S.U.)	Cond. (mS/cm)	Temp. (ºC)	Turb. (NTU)	Flow (gpm)	Odor[a]	Oils[b]	Appear. [c]	Headsp. (ppm)
02	6/2/23	0945	7.24	0.550	24.1	0.33	1040	N	N	C	0.0
Influent Grab Sample – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260)											
__	6/2/23	1005	7.61	0.550	23.4	0.23	3030	N	N	C	0.0

[a] Odor codes: normal/none (N), petroleum (P), fishy (F), sewage (S), and chemical (C). Note in table if not listed.
[b] Surface oil codes: none (N), slick (S), sheen (SH), globs (G), and flecks (F). Note in table if not listed.
[c] Water appearance codes: clear (C), opaque (O), slightly cloudy (SC), and cloudy (CL). Note in table if not listed.

Notes: _____

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_____

_____

_____

GAC Train	GAC Units / Serial Numbers	Flushing Status – on or off at time of sample collection
01	01 (lead) / 2570, 02 (lag) / 2571	ON
02	03 (lead) / 2567, 04 (lag) / 2568	ON
03	05 (lead) / 2529, 06 (lag) / 2572	ON
04	07 (lead) / 26330, 08 (lag) / 26327	OFF

NPDES Red Hill Shaft GAC Discharge Field Sampling Data Sheet – Grab

Observer Name(s): Max Ulloa, Jacklyn Vo Company: AECOM Date: 06/06/23 Time: 0830

Location: Red Hill Shaft 5 MGD GAC Coordinates (latitude and longitude): 21.370777, -157.907716

Observer 1 Signature: Digitally signed by Jacklyn Vo Date: 2023.07.14 13:26:18 -10'00' Date: 7/14/23

Observer 2 Signature: Digitally signed by UlloaMartinez, Max Date: 2023.07.17 04:25:29 -10'00' Date: 7/17/23

WEATHER CONDITIONS:

Now	☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) 60 % cloud cover ☐ clear/sunny
	Ambient Air Temperature (°F): 75° Humidity (%): 74% Wind (mph): 8 SW
Past 24 Hours	☐ storm (heavy rain) ☐ rain (steady rain) ☒ showers (intermittent) ____ % cloud cover ☒ clear/sunny
Heavy rain in past 7 days?	☐ yes ☒ no
Notes:	

SAMPLE INFORMATION / WATER QUALITY:

NPDES Effluent Grab Sample ID: RHS-EF-TRAIN-03-060623-N Sample Date/Time: 06/06/23, 0945

Influent Grab Sample ID: RHS-IF-TRAIN-03-060623-N Sample Date/Time: 06/06/23, 0955

Water Quality Equipment (Make, Model S/N): AquaTROLL 600; SN: 689918

MiniRAE PID; SN: 592-925438

Previous grab sample Date: 6/2/23 GAC Train #: 02 Previous grab duplicate (monthly freq.) Date: 6/2/23 GAC Train #: 02

Previous WET sample Date: 5/1/23-5/6/23 Previous WET duplicate (quarterly freq.) Date: 3/6/26-3/10/23

NPDES Effluent Grab Sample (Lag Tank) – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260), BTEX (8260), total lead (6010B), organic lead (939M)											
GAC Train #	Date	Time	pH (S.U.)	Cond. (mS/cm)	Temp. (°C)	Turb. (NTU)	Flow (gpm)	Odor[a]	Oils[b]	Appear. [c]	Headsp. (ppm)
01	06/06/23	0945	7.20	0.550	24.8	0.17	1,040	N	N	C	0.0
Influent Grab Sample – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260)											
_	06/06/23	0955	7.60	0.580	25.3	0.35	3,030	N	N	C	0.0

[a] Odor codes: normal/none (N), petroleum (P), fishy (F), sewage (S), and chemical (C). Note in table if not listed.
[b] Surface oil codes: none (N), slick (S), sheen (SH), globs (G), and flecks (F). Note in table if not listed.
[c] Water appearance codes: clear (C), opaque (O), slightly cloudy (SC), and cloudy (CL). Note in table if not listed.

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GAC Train	GAC Units / Serial Numbers	Flushing Status – on or off at time of sample collection
01	01 (lead) / 2570, 02 (lag) / 2571	ON
02	03 (lead) / 2567, 04 (lag) / 2568	ON
03	05 (lead) / 2529, 06 (lag) / 2572	ON
04	07 (lead) / 26330, 08 (lag) / 26327	OFF

NPDES Red Hill Shaft GAC Discharge Field Sampling Data Sheet – Grab

Observer Name(s): Max Ulloa, Jacklyn Vo Company: AECOM Date: 6/9/23 Time: 0800

Location: Red Hill Shaft 5 MGD GAC Coordinates (latitude and longitude): 21.370777, -157.907716

Observer 1 Signature: Digitally signed by UlloaMartinez, Max Date: 2023.06.12 15:26:00 -10'00' Date: 06/12/23

Observer 2 Signature: Digitally signed by Jacklyn Vo Date: 2023.07.14 13:26:05 -10'00' Date: 7/14/23

WEATHER CONDITIONS:

Now	☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) 80 % cloud cover ☐ clear/sunny
	Ambient Air Temperature (°F): 76 Humidity (%): 76 Wind (mph): 12 due W
Past 24 Hours	☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) ____ % cloud cover ☒ clear/sunny
Heavy rain in past 7 days?	☐ yes ☒ no
Notes:	

SAMPLE INFORMATION / WATER QUALITY:

NPDES Effluent Grab Sample ID: RHS-EF-TRAIN-01-060923-N Sample Date/Time: 6/9/23, 0940

Influent Grab Sample ID: RHS-IF-TRAIN-01-060923-N Sample Date/Time: 6/9/23, 1000

Water Quality Equipment (Make, Model S/N): AquaTROLL 600; SN: 859267

MiniRAE PID; SN: 592-600848

Previous grab sample Date: 6/6/23 GAC Train #: 03 Previous grab duplicate (monthly freq.) Date: 6/2/23 GAC Train #: 02

Previous WET sample Date: 5/1/23-5/6/23 Previous WET duplicate (quarterly freq.) Date: 3/6/23-3/10/23

NPDES Effluent Grab Sample (Lag Tank) – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260), BTEX (8260), total lead (6010B), organic lead (939M)											
GAC Train #	Date	Time	pH (S.U.)	Cond. (mS/cm)	Temp. (ºC)	Turb. (NTU)	Flow (gpm)	Odor[a]	Oils[b]	Appear. [c]	Headsp. (ppm)
01	6/9/23	0940	7.01	0.340	25.4	0.70	1000	N	N	C	0.0
Influent Grab Sample – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260)											
__	6/9/23	1000	7.42	0.560	22.9	1.14	3010	N	N	C	0.0

[a] Odor codes: normal/none (N), petroleum (P), fishy (F), sewage (S), and chemical (C). Note in table if not listed.
[b] Surface oil codes: none (N), slick (S), sheen (SH), globs (G), and flecks (F). Note in table if not listed.
[c] Water appearance codes: clear (C), opaque (O), slightly cloudy (SC), and cloudy (CL). Note in table if not listed.

Notes: _____

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GAC Train	GAC Units / Serial Numbers	Flushing Status – on or off at time of sample collection
01	01 (lead) / 2570, 02 (lag) / 2571	ON
02	03 (lead) / 2567, 04 (lag) / 2568	ON
03	05 (lead) / 2529, 06 (lag) / 2572	ON
04	07 (lead) / 26330, 08 (lag) / 26327	OFF

NPDES Red Hill Shaft GAC Discharge Field Sampling Data Sheet – Grab

Observer Name(s): Christina Hardtle, Jacklyn Vo Company: AECOM Date: 06/13/23 Time: 0900

Location: Red Hill Shaft 5 MGD GAC Coordinates (latitude and longitude): 21.370777, -157.907716

Observer 1 Signature: Digitally signed by Hardtle, Christina Date: 2023.07.14 10:10:25 -10'00' Date: 07/14/23

Observer 2 Signature: Digitally signed by Jacklyn Vo Date: 2023.07.14 13:25:46 -10'00' Date: 7/14/23

WEATHER CONDITIONS:

Now	☐ storm (heavy rain) ☐ rain (steady rain) ☒ showers (intermittent) 40 % cloud cover ☐ clear/sunny
	Ambient Air Temperature (°F): 74 Humidity (%): 87 Wind (mph): 12
Past 24 Hours	☐ storm (heavy rain) ☒ rain (steady rain) ☐ showers (intermittent) ____ % cloud cover ☐ clear/sunny
Heavy rain in past 7 days?	☒ yes ☐ no
Notes:	

SAMPLE INFORMATION / WATER QUALITY:

NPDES Effluent Grab Sample ID: RHS-EF-TRAIN-02-061323-N Sample Date/Time: 06/13/23, 0930

Influent Grab Sample ID: RHS-IF-TRAIN-02-061323-N Sample Date/Time: 06/13/23, 0935

Water Quality Equipment (Make, Model S/N): AquaTROLL 600; SN: 1017813

MiniRAE PID; SN: 592-904800

Previous grab sample Date: 6/9/23 GAC Train #: 01 Previous grab duplicate (monthly freq.) Date: 6/2/23 GAC Train #: 02

Previous WET sample Date: 5/1/23-5/6/23 Previous WET duplicate (quarterly freq.) Date: 3/6/26-3/10/23

NPDES Effluent Grab Sample (Lag Tank) – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260), BTEX (8260), total lead (6010B), organic lead (939M)											
GAC Train #	Date	Time	pH (S.U.)	Cond. (mS/cm)	Temp. (°C)	Turb. (NTU)	Flow (gpm)	Odor[a]	Oils[b]	Appear. [c]	Headsp. (ppm)
02	6/13/23	0930	7.03	0.550	24.6	0.39	980	N	N	C	0.0
Influent Grab Sample – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260)											
__	6/13/23	0935	7.22	0.630	26.8	5.64	2970	N	N	C	0.0

[a] Odor codes: normal/none (N), petroleum (P), fishy (F), sewage (S), and chemical (C). Note in table if not listed.
[b] Surface oil codes: none (N), slick (S), sheen (SH), globs (G), and flecks (F). Note in table if not listed.
[c] Water appearance codes: clear (C), opaque (O), slightly cloudy (SC), and cloudy (CL). Note in table if not listed.

Notes: _____

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GAC Train	GAC Units / Serial Numbers	Flushing Status – on or off at time of sample collection
01	01 (lead) / 2570, 02 (lag) / 2571	ON
02	03 (lead) / 2567, 04 (lag) / 2568	ON
03	05 (lead) / 2529, 06 (lag) / 2572	ON
04	07 (lead) / 26330, 08 (lag) / 26327	ON (turned off at 0950)

NPDES Red Hill Shaft GAC Discharge Field Sampling Data Sheet – Composite

Observer Name(s): Christina Hardtle, Angelo Genabe Company: AECOM Date: 6/13/23 Time: 0900

Location: Red Hill Shaft 5 MGD GAC Coordinates (latitude and longitude): 21.370777, -157.907716

WEATHER CONDITIONS:

Now	☐ storm (heavy rain) ☐ rain (steady rain) ☒ showers (intermittent) 40 % cloud cover ☐ clear/sunny
	Ambient Air Temperature (°F): 74 Humidity (%): 87 Wind (mph): 12
Past 24 Hours	☐ storm (heavy rain) ☒ rain (steady rain) ☒ showers (intermittent) ____ % cloud cover ☐ clear/sunny
Heavy rain in past 7 days?	☒ yes ☐ no
Notes:	

SAMPLE INFORMATION / WATER QUALITY:

WET Sample ID: RHS-EF-TRAIN-03-061323-N, RHS-EF-TRAIN-03-061323-(01)-N Sample Date/Time: 6/13/23 - 6/14/23 0910-0610

Lab Analysis Parameters: Whole effluent toxicity (WET) (821/R-02-013), residual chlorine

☒ Day 1 Initial Sample

☐ Day 3 Renewal Sample

☐ Day 5 Renewal Sample

Previous WET sample: Date: 5/1/23-5/6/23 GAC Train #: 02

Previous WET duplicate (quarterly freq.) Date: 3/6/23 - 3/10/23 GAC Train #: 03

GAC Train	GAC Units / Serial Numbers	Aliquot Collection Time							
		Aliquot 1	Aliquot 2	Aliquot 3	Aliquot 4	Aliquot 5	Aliquot 6	Aliquot 7	Aliquot 8
01	01 (lead) / 2570, 02 (lag) / 2571								
02	03 (lead) / 2567, 04 (lag) / 2568								
03	05 (lead) / 2529, 06 (lag) / 2572	0910	1210	1510	1810	2110	0010	0310	0610
04	07 (lead) / 26330, 08 (lag) / 26327								
Train Effluent Flow Rate (gpm):		990	1040	1030	1040	1040	1030	1030	1040
Influent Flow Rate (gpm):		2970	2960	2970	2960	2820	2830	3120	2880

Notes: Each Aliquot was 2L primary and 2L dup to account for only having 2 sampling days this week instead of 3 days due to the pump shut off schedule.

Observer 1 Signature: Digitally signed by Genabe, Angelo Date: 2023.07.13 17:37:54 -10'00' Date: 7/13/23

Observer 2 Signature: Digitally signed by Hardtle, Christina Date: 2023.07.14 10:15:23 -10'00' Date: 714/23

NPDES Red Hill Shaft GAC Discharge Field Sampling Data Sheet – Composite

Observer Name(s): Christina Hardtle, Angelo Genabe Company: AECOM Date: 6/16/23 Time: 0830

Location: Red Hill Shaft 5 MGD GAC Coordinates (latitude and longitude): 21.370777, -157.907716

WEATHER CONDITIONS:

Now	☐ storm (heavy rain) ☐ rain (steady rain) ☒ showers (intermittent) 20 % cloud cover ☐ clear/sunny
	Ambient Air Temperature (°F): 82 Humidity (%): 81 Wind (mph): 10
Past 24 Hours	☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) 40 % cloud cover ☐ clear/sunny
Heavy rain in past 7 days?	☒ yes ☐ no
Notes:	

SAMPLE INFORMATION / WATER QUALITY:

WET Sample ID: RHS-EF-TRAIN-03-061623-N, RHS-EF-TRAIN-03-061623-(01)-N Sample Date/Time: 6/16/23 - 6/17/23 0910-0610

Lab Analysis Parameters: Whole effluent toxicity (WET) (821/R-02-013), residual chlorine

☐ Day 1 Initial Sample

☒ Day 4 Renewal Sample

Previous WET sample: Date: 5/1/23-5/6/23 GAC Train #: 02

Previous WET duplicate (quarterly freq.) Date: 3/6/23 - 3/10/23 GAC Train #: 03

GAC Train	GAC Units / Serial Numbers	Aliquot Collection Time							
		Aliquot 1	Aliquot 2	Aliquot 3	Aliquot 4	Aliquot 5	Aliquot 6	Aliquot 7	Aliquot 8
01	01 (lead) / 2570, 02 (lag) / 2571								
02	03 (lead) / 2567, 04 (lag) / 2568								
03	05 (lead) / 2529, 06 (lag) / 2572	0910	1210	1510	1810	2110	0010	0310	0610
04	07 (lead) / 26330, 08 (lag) / 26327								
Train Effluent Flow Rate (gpm):		1020	1040	1040	1040	1040	1050	1040	1040
Influent Flow Rate (gpm):		2980	2940	3200	2990	2900	2920	2910	2950

Notes: Only Day 1 initial sample and Day 4 renewal sample were collected because of the pump-shut off schedule this month. Regular Day 1, 3 and 5 sampling will resume next month. To account for only having 2 sampling days, Day 1 samples were doubled.

Observer 1 Signature: Digitally signed by Genabe, Angelo Date: 2023.07.13 17:38:32 -10'00' Date: 7/13/23

Observer 2 Signature: Digitally signed by Hardtle, Christina Date: 2023.07.14 10:12:49 -10'00' Date: 7/14/23

NPDES Red Hill Shaft GAC Discharge Field Sampling Data Sheet – Grab

Observer Name(s): Christina Hardtle, Jacklyn Vo Company: AECOM Date: 06/16/23 Time: 0830

Location: Red Hill Shaft 5 MGD GAC Coordinates (latitude and longitude): 21.370777, -157.907716

Observer 1 Signature: Digitally signed by Hardtle, Christina Date: 2023.07.14 10:17:26 -10'00' Date: 7/14/23

Observer 2 Signature: Digitally signed by Jacklyn Vo Date: 2023.07.14 13:25:22 -10'00' Date: 7/14/23

WEATHER CONDITIONS:

Now	☐ storm (heavy rain) ☐ rain (steady rain) ☒ showers (intermittent) 20 % cloud cover ☐ clear/sunny
	Ambient Air Temperature (°F): 82 Humidity (%): 81 Wind (mph): 10
Past 24 Hours	☐ storm (heavy rain) ☐ rain (steady rain) ☒ showers (intermittent) 40 % cloud cover ☐ clear/sunny
Heavy rain in past 7 days?	☒ yes ☐ no
Notes:	

SAMPLE INFORMATION / WATER QUALITY:

NPDES Effluent Grab Sample ID: RHS-EF-TRAIN-03-061623-N Sample Date/Time: 06/16/23, 0910

Influent Grab Sample ID: RHS-IF-TRAIN-03-061623-N Sample Date/Time: 06/16/23, 0915

Water Quality Equipment (Make, Model S/N): AquaTROLL 600; SN: 920481

MiniRAE PID; SN: 592-600848

Previous grab sample Date: 6/9/23 GAC Train #: 02 Previous grab duplicate (monthly freq.) Date: 6/2/23 GAC Train #: 02

Previous WET sample Date: 5/1/23-5/6/23 Previous WET duplicate (quarterly freq.) Date: 3/6/26-3/10/23

NPDES Effluent Grab Sample (Lag Tank) – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260), BTEX (8260), total lead (6010B), organic lead (939M)											
GAC Train #	Date	Time	pH (S.U.)	Cond. (mS/cm)	Temp. (°C)	Turb. (NTU)	Flow (gpm)	Odor[a]	Oils[b]	Appear. [c]	Headsp. (ppm)
02	6/16/23	0910	7.01	0.810	26.5	0.00	1020	N	N	C	0.0
Influent Grab Sample – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260)											
_	6/16/23	0915	7.16	0.620	24.6	0.39	2980	N	N	C	0.0

[a] Odor codes: normal/none (N), petroleum (P), fishy (F), sewage (S), and chemical (C). Note in table if not listed.
[b] Surface oil codes: none (N), slick (S), sheen (SH), globs (G), and flecks (F). Note in table if not listed.
[c] Water appearance codes: clear (C), opaque (O), slightly cloudy (SC), and cloudy (CL). Note in table if not listed.

Notes: Pump start time at 0904

GAC Train	GAC Units / Serial Numbers	Flushing Status – on or off at time of sample collection
01	01 (lead) / 2570, 02 (lag) / 2571	ON
02	03 (lead) / 2567, 04 (lag) / 2568	ON
03	05 (lead) / 2529, 06 (lag) / 2572	ON
04	07 (lead) / 26330, 08 (lag) / 26327	ON (turned off at 0915

NPDES Red Hill Shaft GAC Discharge Field Sampling Data Sheet – Grab

Observer Name(s): Max Ulloa, Christina Hardtle Company: AECOM Date: 6/20/23 Time: 0820

Location: Red Hill Shaft 5 MGD GAC Coordinates (latitude and longitude): 21.370777, -157.907716

Observer 1 Signature: Digitally signed by UlloaMartinez, Max Date: 2023.06.12 15:26:00 -10'00' Date: 06/21/23

Observer 2 Signature: Digitally signed by Hardtle, Christina Date: 2023.07.14 10:19:14 -10'00' Date: 7/14/23

WEATHER CONDITIONS:

Now	☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) 30 % cloud cover ☒ clear/sunny
	Ambient Air Temperature (°F): 82 Humidity (%): 82 Wind (mph): 5 due W
Past 24 Hours	☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) 25 % cloud cover ☒ clear/sunny
Heavy rain in past 7 days?	☐ yes ☒ no
Notes:	

SAMPLE INFORMATION / WATER QUALITY:

NPDES Effluent Grab Sample ID: RHS-EF-TRAIN-01-062023-N Sample Date/Time: 6/20/23; 0920

Influent Grab Sample ID: RHS-IF-TRAIN-01-062023-N Sample Date/Time: 6/20/23, 0950

Water Quality Equipment (Make, Model S/N): AquaTROLL 600; SN: 920481

MiniRAE PID; SN: 592-904800

Previous grab sample Date: 6/16/23 GAC Train #: 03 Previous grab duplicate (monthly freq.) Date: 6/2/23 GAC Train #: 02

Previous WET sample Date: 6/12/23-6/16/23 Previous WET duplicate (quarterly freq.) Date: 3/12/23-3/16/23

NPDES Effluent Grab Sample (Lag Tank) – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260), BTEX (8260), total lead (6010B), organic lead (939M)											
GAC Train #	Date	Time	pH (S.U.)	Cond. (mS/cm)	Temp. (ºC)	Turb. (NTU)	Flow (gpm)	Odor[a]	Oils[b]	Appear. [c]	Headsp. (ppm)
01	6/20/23	0920	6.86	0.640	26.6	0.25	990	N	N	C	0.0
Influent Grab Sample – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260)											
_	6/20/23	0950	7.21	0.660	26.7	0.32	2960	N	N	C	0.0

[a] Odor codes: normal/none (N), petroleum (P), fishy (F), sewage (S), and chemical (C). Note in table if not listed.
[b] Surface oil codes: none (N), slick (S), sheen (SH), globs (G), and flecks (F). Note in table if not listed.
[c] Water appearance codes: clear (C), opaque (O), slightly cloudy (SC), and cloudy (CL). Note in table if not listed.

Notes: Pump turned on at 0904. All trains ON until 0912 when Train 04 was turned OFF

GAC Train	GAC Units / Serial Numbers	Flushing Status – on or off at time of sample collection
01	01 (lead) / 2570, 02 (lag) / 2571	ON
02	03 (lead) / 2567, 04 (lag) / 2568	ON
03	05 (lead) / 2529, 06 (lag) / 2572	ON
04	07 (lead) / 26330, 08 (lag) / 26327	OFF at 0912

NPDES Red Hill Shaft GAC Discharge Field Sampling Data Sheet – Grab

Observer Name(s): Max Ulloa, Tyler Nishikawa Company: AECOM Date: 6/28/23 Time: 0930

Location: Red Hill Shaft 5 MGD GAC Coordinates (latitude and longitude): 21.370777, -157.907716

Observer 1 Signature: Digitally signed by UlloaMartinez, Max Date: 2023.07.17 04:26:05 -10'00' Date: 7/17/23

Observer 2 Signature: Nishikawa, Tyler Digitally signed by Nishikawa, Tyler Date: 2023.07.14 08:47:24 -10'00' Date: 7/14/23

WEATHER CONDITIONS:

Now	☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) _____% cloud cover ☒ clear/sunny
	Ambient Air Temperature (°F): 83 Humidity (%): 73 Wind (mph): 13 SW
Past 24 Hours	☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) _____% cloud cover ☒ clear/sunny
Heavy rain in past 7 days?	☐ yes ☒ no
Notes:	

SAMPLE INFORMATION / WATER QUALITY:

NPDES Effluent Grab Sample ID: RHS-EF-TRAIN-02-062823-N Sample Date/Time: 6/28/23; 0950

Influent Grab Sample ID: RHS-IF-TRAIN-02-062823-N Sample Date/Time: 6/28/23; 1015

Water Quality Equipment (Make, Model S/N): AquaTROLL 600; SN: 825426

MiniRAE PID; SN: 592-601248

Previous grab sample Date: 6/20/23 GAC Train #: 01 Previous grab duplicate (monthly freq.) Date: 6/2/23 GAC Train #: 02

Previous WET sample Date: 6/12/23-6/17/23 Previous WET duplicate (quarterly freq.) Date: 6/12/23-6/17/23

NPDES Effluent Grab Sample (Lag Tank) – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260), BTEX (8260), total lead (6010B), organic lead (939M)											
GAC Train #	Date	Time	pH (S.U.)	Cond. (mS/cm)	Temp. (°C)	Turb. (NTU)	Flow (gpm)	Odor[a]	Oils[b]	Appear. [c]	Headsp. (ppm)
02	6/28/23	0950	7.00	0.530	22.9	0.15	1020	N	N	C	0.0
Influent Grab Sample – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260)											
__	6/28/23	1015	7.52	0.540	23.0	0.20	2970	N	N	C	0.0

[a] Odor codes: normal/none (N), petroleum (P), fishy (F), sewage (S), and chemical (C). Note in table if not listed.
[b] Surface oil codes: none (N), slick (S), sheen (SH), globs (G), and flecks (F). Note in table if not listed.
[c] Water appearance codes: clear (C), opaque (O), slightly cloudy (SC), and cloudy (CL). Note in table if not listed.

Notes: _____

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GAC Train	GAC Units / Serial Numbers	Flushing Status – on or off at time of sample collection
01	01 (lead) / 2570, 02 (lag) / 2571	ON
02	03 (lead) / 2567, 04 (lag) / 2568	ON
03	05 (lead) / 2529, 06 (lag) / 2572	ON
04	07 (lead) / 26330, 08 (lag) / 26327	OFF

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kathryn Repine
AECOM
1001 Bishop Street
Honolulu, Hawaii 96813

Generated 6/15/2023 2:45:47 PM

JOB DESCRIPTION

Red Hill NPDES CV22F0106

JOB NUMBER

580-127892-1

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424

See page two for job notes and contact information.

my EOL

Eurofins Seattle

Job Notes

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Authorization

M. Elaine Walker

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Authorized for release by
Marie Walker, Senior Project Manager
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(253)248-4972

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Job ID: 580-127892-1

Laboratory: Eurofins Seattle

Narrative

CASE NARRATIVE

Client: AECOM
Project: Red Hill NPDES CV22F0106
Report Number: 580-127892-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
Six samples were received on 6/3/2023 9:35 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 1.4º C and 4.4º C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

GASOLINE RANGE ORGANICS (GRO)
Samples RHS-EF-TRAIN-02-060223-(01)-N (580-127892-1), RHS-IF-TRAIN-02-060223-(01)-N (580-127892-2), RHS-TB-TRAIN-02-060223-N (580-127892-4), RHS-EF-TRAIN-02-060223-N (580-127892-5) and RHS-IF-TRAIN-02-060223-N (580-127892-6) were analyzed for gasoline range organics (GRO) in accordance with CA_LUFT_GRO. The samples were analyzed on 06/05/2023 and 06/07/2023.

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

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples RHS-EF-TRAIN-02-060223-(01)-N (580-127892-1), RHS-IF-TRAIN-02-060223-(01)-N (580-127892-2), RHS-TB-TRAIN-02-060223-N (580-127892-4), RHS-EF-TRAIN-02-060223-N (580-127892-5) and RHS-IF-TRAIN-02-060223-N (580-127892-6) were analyzed for volatile organic compounds (GC-MS) in accordance with 8260C. The samples were analyzed on 06/05/2023.

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

SEMIVOLATILE ORGANIC COMPOUNDS - SELECTED ION MODE (SIM)
Samples RHS-EF-TRAIN-02-060223-(01)-N (580-127892-1) and RHS-EF-TRAIN-02-060223-N (580-127892-5) were analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with 8270E SIM. The samples were prepared on 06/06/2023 and 06/12/2023 and analyzed on 06/08/2023 and 06/12/2023.

2-methylnaphthalene-d10 failed the surrogate recovery criteria low for samples RHS-EF-TRAIN-02-060223-(01)-N (580-127892-1) and RHS-EF-TRAIN-02-060223-N (580-127892-5). The samples were re-extracted outside of preparation holding time. Both sets of data have

Job ID: 580-127892-1 (Continued)

Laboratory: Eurofins Seattle (Continued)

been reported:

The continuing calibration verification (CCV) associated with batch 580-428228 recovered above the upper control limit for 2,4,6-Tribromophenol. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The associated samples are impacted: (CCVIS 580-428228/3), (LCS 580-427999/2-A), (LCSD 580-427999/3-A) and (MB 580-427999/1-A).

The following samples were diluted to bring the concentration of target analytes within the calibration range: (LCS 580-427999/2-A) and (LCSD 580-427999/3-A). Elevated reporting limits (RLs) are provided.

The continuing calibration verification (CCV) associated with batch 580-428574 recovered above the upper control limit for 2,4,6-Tribromophenol. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The associated samples are impacted: RHS-EF-TRAIN-02-060223-(01)-N (580-127892-1), RHS-EF-TRAIN-02-060223-N (580-127892-5), (CCVC 580-428574/41) and (CCVIS 580-428574/3).

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

DIESEL AND EXTENDED RANGE ORGANICS

Samples RHS-EF-TRAIN-02-060223-(01)-N (580-127892-1), RHS-IF-TRAIN-02-060223-(01)-N (580-127892-2), RHS-FB-TRAIN-02-060223-N (580-127892-3), RHS-EF-TRAIN-02-060223-N (580-127892-5) and RHS-IF-TRAIN-02-060223-N (580-127892-6) were analyzed for diesel and extended range organics in accordance with 8015D. The samples were prepared on 06/06/2023 and analyzed on 06/07/2023.

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

METALS (ICP)

Samples RHS-EF-TRAIN-02-060223-(01)-N (580-127892-1) and RHS-EF-TRAIN-02-060223-N (580-127892-5) were analyzed for Metals (ICP) in accordance with 6010D. The samples were prepared on 06/06/2023 and analyzed on 06/07/2023.

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

ORGANIC LEAD

Samples RHS-EF-TRAIN-02-060223-(01)-N (580-127892-1) and RHS-EF-TRAIN-02-060223-N (580-127892-5) were analyzed for Organic Lead in accordance with 939M. The samples were prepared on 06/11/2023 and analyzed on 06/12/2023.

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

Definitions/Glossary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-127892-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC/MS Semi VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
S1-	Surrogate recovery exceeds control limits, low biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-127892-1

Client Sample ID: RHS-EF-TRAIN-02-060223-(01)-N

Lab Sample ID: 580-127892-1

Date Collected: 06/02/23 09:45
Matrix: Water
Date Received: 06/03/23 09:35

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/05/23 10:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*78 - 120*		*06/05/23 10:20*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/05/23 10:20	1
Toluene	0.39	U	1.0	0.39	ug/L			06/05/23 10:20	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/05/23 10:20	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/05/23 10:20	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/05/23 10:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*80 - 120*		*06/05/23 10:20*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*		*06/05/23 10:20*	*1*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*06/05/23 10:20*	*1*
Dibromofluoromethane (Surr)	*107*		*80 - 120*		*06/05/23 10:20*	*1*

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		06/06/23 09:29	06/08/23 00:46	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		06/06/23 09:29	06/08/23 00:46	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		06/06/23 09:29	06/08/23 00:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*86*		*29 - 144*	*06/06/23 09:29*	*06/08/23 00:46*	*1*
Terphenyl-d14	*78*		*29 - 150*	*06/06/23 09:29*	*06/08/23 00:46*	*1*
2-methylnaphthalene-d10	*34*	*S1-*	*35 - 120*	*06/06/23 09:29*	*06/08/23 00:46*	*1*
Fluoranthene-d10 (Surr)	*61*		*49 - 129*	*06/06/23 09:29*	*06/08/23 00:46*	*1*

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U H	0.50	0.16	ug/L		06/12/23 09:28	06/12/23 15:16	1
2-Methylnaphthalene	0.039	U H	0.20	0.039	ug/L		06/12/23 09:28	06/12/23 15:16	1
1-Methylnaphthalene	0.033	U H	0.10	0.033	ug/L		06/12/23 09:28	06/12/23 15:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*106*		*29 - 144*	*06/12/23 09:28*	*06/12/23 15:16*	*1*
Terphenyl-d14	*91*		*29 - 150*	*06/12/23 09:28*	*06/12/23 15:16*	*1*
2-methylnaphthalene-d10	*41*		*35 - 120*	*06/12/23 09:28*	*06/12/23 15:16*	*1*
Fluoranthene-d10 (Surr)	*75*		*49 - 129*	*06/12/23 09:28*	*06/12/23 15:16*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		06/06/23 09:25	06/07/23 00:44	1
C24-C40	180	U	200	180	ug/L		06/06/23 09:25	06/07/23 00:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*63*		*53 - 120*	*06/06/23 09:25*	*06/07/23 00:44*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-127892-1

Client Sample ID: RHS-EF-TRAIN-02-060223-(01)-N

Lab Sample ID: 580-127892-1

Date Collected: 06/02/23 09:45
Matrix: Water
Date Received: 06/03/23 09:35

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7	U	30	2.7	ug/L		06/06/23 16:24	06/07/23 16:00	1

Method: CADHS 939-M - Organic Lead (GFAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		06/11/23 16:10	06/12/23 20:30	1

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-127892-1

Client Sample ID: RHS-IF-TRAIN-02-060223-(01)-N

Lab Sample ID: 580-127892-2

Date Collected: 06/02/23 10:05
Date Received: 06/03/23 09:35

Matrix: Water

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/05/23 10:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*78 - 120*		*06/05/23 10:44*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/05/23 10:44	1
Toluene	0.39	U	1.0	0.39	ug/L			06/05/23 10:44	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/05/23 10:44	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/05/23 10:44	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/05/23 10:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/05/23 10:44*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*80 - 120*		*06/05/23 10:44*	*1*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*		*06/05/23 10:44*	*1*
Dibromofluoromethane (Surr)	*107*		*80 - 120*		*06/05/23 10:44*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	90	U	110	90	ug/L		06/06/23 09:25	06/07/23 01:03	1
C24-C40	180	U	200	180	ug/L		06/06/23 09:25	06/07/23 01:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*67*		*53 - 120*	*06/06/23 09:25*	*06/07/23 01:03*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-127892-1

Client Sample ID: RHS-FB-TRAIN-02-060223-N

Lab Sample ID: 580-127892-3

Date Collected: 06/02/23 09:40
Date Received: 06/03/23 09:35

Matrix: Water

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		06/06/23 09:25	06/07/23 01:22	1
C24-C40	180	U	200	180	ug/L		06/06/23 09:25	06/07/23 01:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*66*		*53 - 120*	*06/06/23 09:25*	*06/07/23 01:22*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-127892-1

Client Sample ID: RHS-TB-TRAIN-02-060223-N

Lab Sample ID: 580-127892-4

Date Collected: 06/02/23 09:42
Matrix: Water
Date Received: 06/03/23 09:35

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/05/23 06:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*78 - 120*		*06/05/23 06:20*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/05/23 06:20	1
Toluene	0.39	U	1.0	0.39	ug/L			06/05/23 06:20	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/05/23 06:20	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/05/23 06:20	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/05/23 06:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/05/23 06:20*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*80 - 120*		*06/05/23 06:20*	*1*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*06/05/23 06:20*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*		*06/05/23 06:20*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-127892-1

Client Sample ID: RHS-EF-TRAIN-02-060223-N

Lab Sample ID: 580-127892-5
Date Collected: 06/02/23 09:45
Matrix: Water
Date Received: 06/03/23 09:35

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/07/23 17:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*78 - 120*		*06/07/23 17:43*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/05/23 20:11	1
Toluene	0.39	U	1.0	0.39	ug/L			06/05/23 20:11	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/05/23 20:11	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/05/23 20:11	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/05/23 20:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*80 - 120*		*06/05/23 20:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*80 - 120*		*06/05/23 20:11*	*1*
4-Bromofluorobenzene (Surr)	*90*		*80 - 120*		*06/05/23 20:11*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*06/05/23 20:11*	*1*

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		06/06/23 09:29	06/08/23 01:05	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		06/06/23 09:29	06/08/23 01:05	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		06/06/23 09:29	06/08/23 01:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*96*		*29 - 144*	*06/06/23 09:29*	*06/08/23 01:05*	*1*
Terphenyl-d14	*83*		*29 - 150*	*06/06/23 09:29*	*06/08/23 01:05*	*1*
2-methylnaphthalene-d10	*33*	*S1-*	*35 - 120*	*06/06/23 09:29*	*06/08/23 01:05*	*1*
Fluoranthene-d10 (Surr)	*67*		*49 - 129*	*06/06/23 09:29*	*06/08/23 01:05*	*1*

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U H	0.51	0.16	ug/L		06/12/23 09:28	06/12/23 15:36	1
2-Methylnaphthalene	0.039	U H	0.20	0.039	ug/L		06/12/23 09:28	06/12/23 15:36	1
1-Methylnaphthalene	0.033	U H	0.10	0.033	ug/L		06/12/23 09:28	06/12/23 15:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*102*		*29 - 144*	*06/12/23 09:28*	*06/12/23 15:36*	*1*
Terphenyl-d14	*92*		*29 - 150*	*06/12/23 09:28*	*06/12/23 15:36*	*1*
2-methylnaphthalene-d10	*49*		*35 - 120*	*06/12/23 09:28*	*06/12/23 15:36*	*1*
Fluoranthene-d10 (Surr)	*75*		*49 - 129*	*06/12/23 09:28*	*06/12/23 15:36*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	90	U	110	90	ug/L		06/06/23 09:25	06/07/23 01:41	1
C24-C40	180	U	200	180	ug/L		06/06/23 09:25	06/07/23 01:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*70*		*53 - 120*	*06/06/23 09:25*	*06/07/23 01:41*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-127892-1

Client Sample ID: RHS-EF-TRAIN-02-060223-N

Lab Sample ID: 580-127892-5

Date Collected: 06/02/23 09:45
Matrix: Water
Date Received: 06/03/23 09:35

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7	U	30	2.7	ug/L		06/06/23 16:24	06/07/23 16:19	1

Method: CADHS 939-M - Organic Lead (GFAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		06/11/23 16:10	06/12/23 20:53	1

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-127892-1

Client Sample ID: RHS-IF-TRAIN-02-060223-N

Lab Sample ID: 580-127892-6
Date Collected: 06/02/23 10:05
Matrix: Water
Date Received: 06/03/23 09:35

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/07/23 20:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*78 - 120*		*06/07/23 20:54*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/05/23 20:59	1
Toluene	0.39	U	1.0	0.39	ug/L			06/05/23 20:59	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/05/23 20:59	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/05/23 20:59	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/05/23 20:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*80 - 120*		*06/05/23 20:59*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*80 - 120*		*06/05/23 20:59*	*1*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*		*06/05/23 20:59*	*1*
Dibromofluoromethane (Surr)	*108*		*80 - 120*		*06/05/23 20:59*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		06/06/23 09:25	06/07/23 02:00	1
C24-C40	180	U	200	180	ug/L		06/06/23 09:25	06/07/23 02:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*64*		*53 - 120*	*06/06/23 09:25*	*06/07/23 02:00*	*1*

QC Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-127892-1

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-427880/6
Matrix: Water
Analysis Batch: 427880

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/05/23 02:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*78 - 120*		*06/05/23 02:45*	*1*

Lab Sample ID: LCS 580-427880/9
Matrix: Water
Analysis Batch: 427880

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 (C6-C12)	1000	890		ug/L		89	75 - 127

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*106*		*78 - 120*

Lab Sample ID: LCSD 580-427880/10
Matrix: Water
Analysis Batch: 427880

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 (C6-C12)	1000	878		ug/L		88	75 - 127	1	13

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*108*		*78 - 120*

Lab Sample ID: MB 580-428185/5
Matrix: Water
Analysis Batch: 428185

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/07/23 16:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*78 - 120*		*06/07/23 16:31*	*1*

Lab Sample ID: LCS 580-428185/6
Matrix: Water
Analysis Batch: 428185

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 (C6-C12)	1000	907		ug/L		91	75 - 127

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*107*		*78 - 120*

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-428185/7
Matrix: Water
Analysis Batch: 428185

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 (C6-C12)			1000	895		ug/L		90	75 - 127	1	13

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*106*		*78 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-427877/6
Matrix: Water
Analysis Batch: 427877

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/05/23 02:45	1
Toluene	0.39	U	1.0	0.39	ug/L			06/05/23 02:45	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/05/23 02:45	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/05/23 02:45	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/05/23 02:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*80 - 120*		*06/05/23 02:45*	*1*
1,2-Dichloroethane-d4 (Surr)	*91*		*80 - 120*		*06/05/23 02:45*	*1*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*		*06/05/23 02:45*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*		*06/05/23 02:45*	*1*

Lab Sample ID: LCS 580-427877/7
Matrix: Water
Analysis Batch: 427877

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			10.0	10.3		ug/L		103	80 - 122		
Toluene			10.0	10.5		ug/L		105	80 - 120		
Ethylbenzene			10.0	10.5		ug/L		105	80 - 120		
m-Xylene & p-Xylene			10.0	10.5		ug/L		105	80 - 120		
o-Xylene			10.0	10.5		ug/L		105	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*104*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*89*		*80 - 120*
4-Bromofluorobenzene (Surr)	*106*		*80 - 120*
Dibromofluoromethane (Surr)	*98*		*80 - 120*

Lab Sample ID: LCSD 580-427877/8
Matrix: Water
Analysis Batch: 427877

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
Benzene			10.0	10.1		ug/L		101	80 - 122	1	14

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-427877/8
Matrix: Water
Analysis Batch: 427877

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
Toluene			10.0	10.3		ug/L		103	80 - 120	1	13
Ethylbenzene			10.0	10.5		ug/L		105	80 - 120	0	14
m-Xylene & p-Xylene			10.0	10.3		ug/L		103	80 - 120	1	14
o-Xylene			10.0	10.6		ug/L		106	80 - 120	1	16

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*107*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*83*		*80 - 120*
4-Bromofluorobenzene (Surr)	*105*		*80 - 120*
Dibromofluoromethane (Surr)	*96*		*80 - 120*

Lab Sample ID: MB 580-427937/6
Matrix: Water
Analysis Batch: 427937

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/05/23 16:35	1
Toluene	0.39	U	1.0	0.39	ug/L			06/05/23 16:35	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/05/23 16:35	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/05/23 16:35	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/05/23 16:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/05/23 16:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*		*06/05/23 16:35*	*1*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*		*06/05/23 16:35*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*06/05/23 16:35*	*1*

Lab Sample ID: LCS 580-427937/7
Matrix: Water
Analysis Batch: 427937

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			10.0	10.5		ug/L		105	80 - 122		
Toluene			10.0	10.5		ug/L		105	80 - 120		
Ethylbenzene			10.0	10.5		ug/L		105	80 - 120		
m-Xylene & p-Xylene			10.0	10.5		ug/L		105	80 - 120		
o-Xylene			10.0	10.5		ug/L		105	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*95*		*80 - 120*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*
Dibromofluoromethane (Surr)	*97*		*80 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-427937/8
Matrix: Water
Analysis Batch: 427937

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
Benzene			10.0	10.4		ug/L		104	80 - 122	1	14
Toluene			10.0	10.3		ug/L		103	80 - 120	2	13
Ethylbenzene			10.0	10.1		ug/L		101	80 - 120	4	14
m-Xylene & p-Xylene			10.0	10.3		ug/L		103	80 - 120	2	14
o-Xylene			10.0	10.1		ug/L		101	80 - 120	3	16

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*94*		*80 - 120*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*
Dibromofluoromethane (Surr)	*98*		*80 - 120*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-427999/1-A
Matrix: Water
Analysis Batch: 428228

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 427999

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		06/06/23 09:29	06/07/23 20:14	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		06/06/23 09:29	06/07/23 20:14	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		06/06/23 09:29	06/07/23 20:14	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*100*		*29 - 144*	*06/06/23 09:29*	*06/07/23 20:14*	*1*
Terphenyl-d14	*86*		*29 - 150*	*06/06/23 09:29*	*06/07/23 20:14*	*1*
2-methylnaphthalene-d10	*46*		*35 - 120*	*06/06/23 09:29*	*06/07/23 20:14*	*1*
Fluoranthene-d10 (Surr)	*70*		*49 - 129*	*06/06/23 09:29*	*06/07/23 20:14*	*1*

Lab Sample ID: LCS 580-427999/2-A
Matrix: Water
Analysis Batch: 428228

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 427999

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Naphthalene			40.0	18.2		ug/L		45	34 - 120		
2-Methylnaphthalene			40.0	19.2		ug/L		48	33 - 120		
1-Methylnaphthalene			40.0	19.3		ug/L		48	29 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*104*		*29 - 144*
Terphenyl-d14	*84*		*29 - 150*
2-methylnaphthalene-d10	*43*		*35 - 120*
Fluoranthene-d10 (Surr)	*68*		*49 - 129*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCSD 580-427999/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 428228 — **Prep Batch: 427999**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Naphthalene			40.0	17.6		ug/L		44	34 - 120	3	35
2-Methylnaphthalene			40.0	18.6		ug/L		47	33 - 120	3	35
1-Methylnaphthalene			40.0	18.6		ug/L		46	29 - 120	4	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*104*		*29 - 144*
Terphenyl-d14	*84*		*29 - 150*
2-methylnaphthalene-d10	*42*		*35 - 120*
Fluoranthene-d10 (Surr)	*69*		*49 - 129*

Lab Sample ID: MB 580-428541/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 428574 — **Prep Batch: 428541**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		06/12/23 09:28	06/12/23 14:17	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		06/12/23 09:28	06/12/23 14:17	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		06/12/23 09:28	06/12/23 14:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*106*		*29 - 144*	*06/12/23 09:28*	*06/12/23 14:17*	*1*
Terphenyl-d14	*96*		*29 - 150*	*06/12/23 09:28*	*06/12/23 14:17*	*1*
2-methylnaphthalene-d10	*43*		*35 - 120*	*06/12/23 09:28*	*06/12/23 14:17*	*1*
Fluoranthene-d10 (Surr)	*78*		*49 - 129*	*06/12/23 09:28*	*06/12/23 14:17*	*1*

Lab Sample ID: LCS 580-428541/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 428574 — **Prep Batch: 428541**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Naphthalene			8.00	5.14		ug/L		64	34 - 120		
2-Methylnaphthalene			8.00	5.11		ug/L		64	33 - 120		
1-Methylnaphthalene			8.00	5.31		ug/L		66	29 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*117*		*29 - 144*
Terphenyl-d14	*94*		*29 - 150*
2-methylnaphthalene-d10	*53*		*35 - 120*
Fluoranthene-d10 (Surr)	*77*		*49 - 129*

Lab Sample ID: LCSD 580-428541/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 428574 — **Prep Batch: 428541**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Naphthalene			8.00	5.00		ug/L		62	34 - 120	3	35
2-Methylnaphthalene			8.00	4.83		ug/L		60	33 - 120	6	35
1-Methylnaphthalene			8.00	4.99		ug/L		62	29 - 120	6	35

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2,4,6-Tribromophenol	118		29 - 144
Terphenyl-d14	97		29 - 150
2-methylnaphthalene-d10	47		35 - 120
Fluoranthene-d10 (Surr)	80		49 - 129

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 580-427998/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 428062 — **Prep Batch: 427998**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	90	U	110	90	ug/L		06/06/23 09:25	06/06/23 23:47	1
C24-C40	180	U	200	180	ug/L		06/06/23 09:25	06/06/23 23:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	62		53 - 120	06/06/23 09:25	06/06/23 23:47	1

Lab Sample ID: LCS 580-427998/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 428062 — **Prep Batch: 427998**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
C9-C25	4000	3230		ug/L		81	55 - 134
C24-C40	4000	3420		ug/L		85	36 - 143

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	92		53 - 120

Lab Sample ID: LCSD 580-427998/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 428062 — **Prep Batch: 427998**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
C9-C25	4000	3270		ug/L		82	55 - 134	1	26
C24-C40	4000	3610		ug/L		90	36 - 143	5	24

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-Terphenyl	97		53 - 120

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 580-428082/24-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 428262 — **Prep Batch: 428082**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7	U	30	2.7	ug/L		06/06/23 16:24	06/07/23 15:51	1

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: LCS 580-428082/25-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 428262 — **Prep Batch: 428082**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Lead	1000	984		ug/L		98	80 - 120

Lab Sample ID: LCSD 580-428082/26-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 428262 — **Prep Batch: 428082**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead	1000	1000		ug/L		100	80 - 120	2	20

Lab Sample ID: 580-127892-1 MS — **Client Sample ID: RHS-EF-TRAIN-02-060223-(01)-N**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 428262 — **Prep Batch: 428082**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Lead	2.7	U	1000	987		ug/L		99	80 - 120

Lab Sample ID: 580-127892-1 MSD — **Client Sample ID: RHS-EF-TRAIN-02-060223-(01)-N**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 428262 — **Prep Batch: 428082**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead	2.7	U	1000	979		ug/L		98	80 - 120	1	20

Lab Sample ID: 580-127892-1 DU — **Client Sample ID: RHS-EF-TRAIN-02-060223-(01)-N**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 428262 — **Prep Batch: 428082**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Lead	2.7	U	2.7	U	ug/L		NC	20

Method: 939-M - Organic Lead (GFAA)

Lab Sample ID: MB 280-615662/1-B — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 615813 — **Prep Batch: 615662**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		06/11/23 16:10	06/12/23 20:15	1

Lab Sample ID: LCS 280-615662/2-B — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 615813 — **Prep Batch: 615662**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Lead, Total Organic	15.0	14.4		ug/L		96	80 - 120

Method: 939-M - Organic Lead (GFAA) (Continued)

Lab Sample ID: 580-127892-1 MS **Client Sample ID: RHS-EF-TRAIN-02-060223-(01)-N**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 615813 **Prep Batch: 615662**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead, Total Organic	0.81	U	15.0	15.1		ug/L		101	80 - 120		

Lab Sample ID: 580-127892-1 MSD **Client Sample ID: RHS-EF-TRAIN-02-060223-(01)-N**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 615813 **Prep Batch: 615662**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead, Total Organic	0.81	U	15.0	15.4		ug/L		103	80 - 120	2	20

Lab Chronicle

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-127892-1

Client Sample ID: RHS-EF-TRAIN-02-060223-(01)-N — Lab Sample ID: 580-127892-1

Date Collected: 06/02/23 09:45 — **Matrix: Water**
Date Received: 06/03/23 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	427880	JBT	EET SEA	06/05/23 10:20
Total/NA	Analysis	8260D		1	427877	JBT	EET SEA	06/05/23 10:20
Total/NA	Prep	3510C			427999	SL	EET SEA	06/06/23 09:29
Total/NA	Analysis	8270E SIM		1	428228	T1L	EET SEA	06/08/23 00:46
Total/NA	Prep	3510C	RE		428541	SL	EET SEA	06/12/23 09:28
Total/NA	Analysis	8270E SIM	RE	1	428574	T1L	EET SEA	06/12/23 15:16
Total/NA	Prep	3510C			427998	SL	EET SEA	06/06/23 09:25
Total/NA	Analysis	8015D		1	428062	KLW	EET SEA	06/07/23 00:44
Total Recoverable	Prep	3005A			428082	JLS	EET SEA	06/06/23 16:24
Total Recoverable	Analysis	6010D		1	428262	JLS	EET SEA	06/07/23 16:00
Total/NA	Prep	939M			615662	LRD	EET DEN	06/11/23 16:10
Total/NA	Prep	939M			615663	LRD	EET DEN	06/11/23 17:15
Total/NA	Analysis	939-M		1	615813	LRD	EET DEN	06/12/23 20:30

Client Sample ID: RHS-IF-TRAIN-02-060223-(01)-N — Lab Sample ID: 580-127892-2

Date Collected: 06/02/23 10:05 — **Matrix: Water**
Date Received: 06/03/23 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	427880	JBT	EET SEA	06/05/23 10:44
Total/NA	Analysis	8260D		1	427877	JBT	EET SEA	06/05/23 10:44
Total/NA	Prep	3510C			427998	SL	EET SEA	06/06/23 09:25
Total/NA	Analysis	8015D		1	428062	KLW	EET SEA	06/07/23 01:03

Client Sample ID: RHS-FB-TRAIN-02-060223-N — Lab Sample ID: 580-127892-3

Date Collected: 06/02/23 09:40 — **Matrix: Water**
Date Received: 06/03/23 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			427998	SL	EET SEA	06/06/23 09:25
Total/NA	Analysis	8015D		1	428062	KLW	EET SEA	06/07/23 01:22

Client Sample ID: RHS-TB-TRAIN-02-060223-N — Lab Sample ID: 580-127892-4

Date Collected: 06/02/23 09:42 — **Matrix: Water**
Date Received: 06/03/23 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	427880	JBT	EET SEA	06/05/23 06:20
Total/NA	Analysis	8260D		1	427877	JBT	EET SEA	06/05/23 06:20

Lab Chronicle

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-127892-1

Client Sample ID: RHS-EF-TRAIN-02-060223-N

Lab Sample ID: 580-127892-5
Date Collected: 06/02/23 09:45
Matrix: Water
Date Received: 06/03/23 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	428185	JBT	EET SEA	06/07/23 17:43
Total/NA	Analysis	8260D		1	427937	JBT	EET SEA	06/05/23 20:11
Total/NA	Prep	3510C			427999	SL	EET SEA	06/06/23 09:29
Total/NA	Analysis	8270E SIM		1	428228	T1L	EET SEA	06/08/23 01:05
Total/NA	Prep	3510C	RE		428541	SL	EET SEA	06/12/23 09:28
Total/NA	Analysis	8270E SIM	RE	1	428574	T1L	EET SEA	06/12/23 15:36
Total/NA	Prep	3510C			427998	SL	EET SEA	06/06/23 09:25
Total/NA	Analysis	8015D		1	428062	KLW	EET SEA	06/07/23 01:41
Total Recoverable	Prep	3005A			428082	JLS	EET SEA	06/06/23 16:24
Total Recoverable	Analysis	6010D		1	428262	JLS	EET SEA	06/07/23 16:19
Total/NA	Prep	939M			615662	LRD	EET DEN	06/11/23 16:10
Total/NA	Prep	939M			615663	LRD	EET DEN	06/11/23 17:15
Total/NA	Analysis	939-M		1	615813	LRD	EET DEN	06/12/23 20:53

Client Sample ID: RHS-IF-TRAIN-02-060223-N

Lab Sample ID: 580-127892-6
Date Collected: 06/02/23 10:05
Matrix: Water
Date Received: 06/03/23 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	428185	JBT	EET SEA	06/07/23 20:54
Total/NA	Analysis	8260D		1	427937	JBT	EET SEA	06/05/23 20:59
Total/NA	Prep	3510C			427998	SL	EET SEA	06/06/23 09:25
Total/NA	Analysis	8015D		1	428062	KLW	EET SEA	06/07/23 02:00

Laboratory References:

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-127892-1

Laboratory: Eurofins Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-19-25

Laboratory: Eurofins Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
939-M	939M	Water	Lead, Total Organic

Sample Summary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-127892-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-127892-1	RHS-EF-TRAIN-02-060223-(01)-N	Water	06/02/23 09:45	06/03/23 09:35
580-127892-2	RHS-IF-TRAIN-02-060223-(01)-N	Water	06/02/23 10:05	06/03/23 09:35
580-127892-3	RHS-FB-TRAIN-02-060223-N	Water	06/02/23 09:40	06/03/23 09:35
580-127892-4	RHS-TB-TRAIN-02-060223-N	Water	06/02/23 09:42	06/03/23 09:35
580-127892-5	RHS-EF-TRAIN-02-060223-N	Water	06/02/23 09:45	06/03/23 09:35
580-127892-6	RHS-IF-TRAIN-02-060223-N	Water	06/02/23 10:05	06/03/23 09:35

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: AECOM	Lab PM: Elaine Walker	Carrier Tracking No(s): FedEx	COC No: 20230602NPDES-SEA-02
Client Contact: Alethea Ramos (alternate: Margie Pascua)	Phone:	E-Mail: M.Elaine.Walker@EurofinsET.com	State of Origin: Hawaii	Page: Page 1 of 1
Company: AECOM	PWSID:			Job #:
Address: 1001 Bishop St. Suite 1600	Due Date Requested: see subcontract			
City: Honolulu	TAT Requested (days): 7 days			
State, Zip: Hawaii 96813	Compliance Project: Δ Yes Δ No			
Phone: 808-521-3051 (direct: 808-529-7283) (alternate: 808-356-5373)	PO #:			
Email: alethea.ramos@aecom.com (alternate: margie.pascua@aecom.com)	WO #:			
Project Name: CV22F0106	Project #: 60674414.01.30.01			
Site: RHSF	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	VOCs (BTEX) by 3050/8260 and TPH-g by 8260	TPH-d:r/o by 8015	PAHs (naphthalene, 1-methylnaphthalene, 2-methylnaphthalene) by 8270SIM	Organic Lead by 939M	Total organic lead by 6010B	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	D		
RHS-EF-TRAIN-02-060223-(01)-N	6/2/23	0945	G	W	N	N	3	2	2	2	1		
RHS-IF-TRAIN-02-060223-(01)-N	↓	1005	G	W	N	N	3	2					

AG 6/2/23

AG 6/2/23

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if sa
☐ Return To Client ☐ Disposal By La

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

Prelim data (Level 1or2)=see TAT above. DoD Stage 4 report standard TAT. AECOM EQuIS EDD.

Special Instructions/QC Requirements: DOD QS

580-127892 Chain of Custody

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

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Angelo Gonzalez	6/2/23 1035	AECOM	1035	6/2/23 1035	AECOM
	6/2/23 1333	AECOM		6/3/23 0935	EFGS
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: A3= 4.4/4.4

1/2

Ver: 01/16/2019 6/15/2023

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424

Chain of Custody Record

eurofins Environment Testing America

Client Information	Sampler: AECOM	Lab PM: Elaine Walker	Carrier Tracking No(s): FedEx	COC No: 20230607NPDES-SEA-01
Client Contact: Alethea Ramos (alternate: Margie Pascua)	Phone:	E-Mail: M.Elaine.Walker@EurofinsET.com	State of Origin: Hawaii	Page: Page 1 of 1
Company: AECOM	PWSID:			Job #:
Address: 1001 Bishop St. Suite 1600	Due Date Requested: see subcontract			
City: Honolulu	TAT Requested (days): 7 days			
State, Zip: Hawaii 96813	Compliance Project: Δ Yes Δ No			
Phone: 808-521-3051 (direct: 808-529-7283) (alternate: 808-356-5373)	PO #:			
Email: alethea.ramos@aecom.com (alternate: margie.pascua@aecom.com)	WO #:			
Project Name: CV22F0106	Project #: 60674414.01.30.01			
Site: RHSF	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	VOCs (BTEX) by 3050/8260 and TPH-g by 8260	TPH-dr/o by 8015	PAHs (naphthalene, 1-methylnaphthalene, 2-methylnaphthalene) by 8270SIM	Organic Lead by 939M	Total organic lead by 6010B	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	D		
RHS-FB-TRAIN-02-060223-N	6/2/23	0940	FB	W	N	N		2					
RHS-TB-TRAIN-02-060223-N		0942	TB		N	N	2						
RHS-EF-TRAIN-02-060223-N		0945	G		N	N	3	2	2	2	1		
RHS-LF-TRAIN-02-060223-N		1005	G		N	N	3	2					
				pG			6/2/23						

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

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

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

Prelim data (Level 1or2)=see TAT above. DoD Stage 4 report standard TAT. AECOM EQuIS EDD.

Special Instructions/QC Requirements: DOD QSM project.

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

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Angelo Gerbee	6/2/23, 1035	AECOM	[illegible]	6/2/23 1035	AECOM
[illegible]	6/2/23 1350	AECOM	[illegible]	6/3/23 0935	ET SE
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: A32 1.4/1.4

2/2

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-127892-1

Login Number: 127892
List Number: 1
Creator: Presley, Kim A

List Source: Eurofins Seattle

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.	True	
Sample custody seals, if present, are intact.	True	
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	
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?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
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	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-127892-1

Login Number: 127892
List Number: 2
Creator: Rystrom, Joshua R

List Source: Eurofins Denver
List Creation: 06/06/23 01:26 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
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	
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	
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.	N/A	
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	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kathryn Repine
AECOM
1001 Bishop Street
Honolulu, Hawaii 96813

Generated 6/13/2023 1:28:33 PM

JOB DESCRIPTION

Red Hill NPDES CV22F0106

JOB NUMBER

580-128027-1

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424

See page two for job notes and contact information.

my EOL

Eurofins Seattle

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 will 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 Environment Testing Northwest, LLC Project Manager.

Authorization

M. Elaine Walker

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Authorized for release by
Marie Walker, Senior Project Manager
M.Elaine.Walker@et.eurofinsus.com
(253)248-4972

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Job ID: 580-128027-1

Laboratory: Eurofins Seattle

Narrative

CASE NARRATIVE

Client: AECOM
Project: Red Hill NPDES CV22F0106
Report Number: 580-128027-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
Four samples were received on 6/7/2023 9:20 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.1º C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

GASOLINE RANGE ORGANICS (GRO)
Samples RHS-TB-TRAIN-03-060623-N (580-128027-2), RHS-EF-TRAIN-03-060623-N (580-128027-3) and RHS-IF-TRAIN-03-060623-N (580-128027-4) were analyzed for gasoline range organics (GRO) in accordance with CA_LUFT_GRO. The samples were analyzed on 06/10/2023.

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

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples RHS-TB-TRAIN-03-060623-N (580-128027-2), RHS-EF-TRAIN-03-060623-N (580-128027-3) and RHS-IF-TRAIN-03-060623-N (580-128027-4) were analyzed for volatile organic compounds (GC-MS) in accordance with 8260C. The samples were analyzed on 06/10/2023.

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

SEMIVOLATILE ORGANIC COMPOUNDS - SELECTED ION MODE (SIM)
Sample RHS-EF-TRAIN-03-060623-N (580-128027-3) was analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with 8270E SIM. The sample was prepared on 06/08/2023 and analyzed on 06/09/2023.

The continuing calibration verification (CCV) associated with batch 580-428487 recovered above the upper control limit for 2,4,6-Tribromophenol. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: RHS-EF-TRAIN-03-060623-N (580-128027-3) and (CCVIS 580-428487/3).

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

Job ID: 580-128027-1 (Continued)

Laboratory: Eurofins Seattle (Continued)

DIESEL AND EXTENDED RANGE ORGANICS

Samples RHS-FB-TRAIN-03-060623-N (580-128027-1), RHS-EF-TRAIN-03-060623-N (580-128027-3) and RHS-IF-TRAIN-03-060623-N (580-128027-4) were analyzed for diesel and extended range organics in accordance with 8015D. The samples were prepared and analyzed on 06/08/2023.

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

METALS (ICP)

Sample RHS-EF-TRAIN-03-060623-N (580-128027-3) was analyzed for Metals (ICP) in accordance with 6010D. The sample was prepared on 06/08/2023 and analyzed on 06/09/2023.

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

ORGANIC LEAD

Sample RHS-EF-TRAIN-03-060623-N (580-128027-3) was analyzed for Organic Lead in accordance with 939M. The sample was prepared on 06/11/2023 and analyzed on 06/12/2023.

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

Definitions/Glossary

Client: AECOM
Job ID: 580-128027-1
Project/Site: Red Hill NPDES CV22F0106

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC/MS Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128027-1

Client Sample ID: RHS-FB-TRAIN-03-060623-N

Lab Sample ID: 580-128027-1

Date Collected: 06/06/23 09:40
Date Received: 06/07/23 09:20

Matrix: Water

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	93	U	110	93	ug/L		06/08/23 08:55	06/08/23 22:48	1
C24-C40	190	U	210	190	ug/L		06/08/23 08:55	06/08/23 22:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*65*		*53 - 120*	*06/08/23 08:55*	*06/08/23 22:48*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128027-1

Client Sample ID: RHS-TB-TRAIN-03-060623-N

Lab Sample ID: 580-128027-2
Date Collected: 06/06/23 09:35
Matrix: Water
Date Received: 06/07/23 09:20

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/10/23 08:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*78 - 120*		*06/10/23 08:27*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/10/23 08:27	1
Toluene	0.39	U	1.0	0.39	ug/L			06/10/23 08:27	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/10/23 08:27	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/10/23 08:27	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/10/23 08:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*80 - 120*		*06/10/23 08:27*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*80 - 120*		*06/10/23 08:27*	*1*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*06/10/23 08:27*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*06/10/23 08:27*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128027-1

Client Sample ID: RHS-EF-TRAIN-03-060623-N

Lab Sample ID: 580-128027-3

Date Collected: 06/06/23 09:45
Matrix: Water
Date Received: 06/07/23 09:20

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/10/23 08:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*78 - 120*		*06/10/23 08:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/10/23 08:51	1
Toluene	0.39	U	1.0	0.39	ug/L			06/10/23 08:51	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/10/23 08:51	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/10/23 08:51	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/10/23 08:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*80 - 120*		*06/10/23 08:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*80 - 120*		*06/10/23 08:51*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*06/10/23 08:51*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*06/10/23 08:51*	*1*

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.17	U	0.51	0.17	ug/L		06/08/23 08:50	06/09/23 21:34	1
2-Methylnaphthalene	0.040	U	0.20	0.040	ug/L		06/08/23 08:50	06/09/23 21:34	1
1-Methylnaphthalene	0.034	U	0.10	0.034	ug/L		06/08/23 08:50	06/09/23 21:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*106*		*29 - 144*	*06/08/23 08:50*	*06/09/23 21:34*	*1*
Terphenyl-d14	*89*		*29 - 150*	*06/08/23 08:50*	*06/09/23 21:34*	*1*
2-methylnaphthalene-d10	*53*		*35 - 120*	*06/08/23 08:50*	*06/09/23 21:34*	*1*
Fluoranthene-d10 (Surr)	*72*		*49 - 129*	*06/08/23 08:50*	*06/09/23 21:34*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	93	U	110	93	ug/L		06/08/23 08:55	06/08/23 23:07	1
C24-C40	190	U	210	190	ug/L		06/08/23 08:55	06/08/23 23:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*71*		*53 - 120*	*06/08/23 08:55*	*06/08/23 23:07*	*1*

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7	U	30	2.7	ug/L		06/08/23 17:02	06/09/23 19:45	1

Method: CADHS 939-M - Organic Lead (GFAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		06/11/23 16:10	06/12/23 21:01	1

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128027-1

Client Sample ID: RHS-IF-TRAIN-03-060623-N

Lab Sample ID: 580-128027-4

Date Collected: 06/06/23 09:55
Matrix: Water
Date Received: 06/07/23 09:20

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/10/23 09:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*78 - 120*		*06/10/23 09:15*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/10/23 09:15	1
Toluene	0.39	U	1.0	0.39	ug/L			06/10/23 09:15	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/10/23 09:15	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/10/23 09:15	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/10/23 09:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/10/23 09:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*80 - 120*		*06/10/23 09:15*	*1*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*06/10/23 09:15*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*06/10/23 09:15*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	92	U	110	92	ug/L		06/08/23 08:55	06/08/23 23:26	1
C24-C40	180	U	210	180	ug/L		06/08/23 08:55	06/08/23 23:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*69*		*53 - 120*	*06/08/23 08:55*	*06/08/23 23:26*	*1*

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-428469/6
Matrix: Water
Analysis Batch: 428469

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/10/23 05:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*78 - 120*		*06/10/23 05:39*	*1*

Lab Sample ID: LCS 580-428469/9
Matrix: Water
Analysis Batch: 428469

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 (C6-C12)			1000	953		ug/L		95	75 - 127		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*78 - 120*

Lab Sample ID: LCSD 580-428469/10
Matrix: Water
Analysis Batch: 428469

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 (C6-C12)			1000	951		ug/L		95	75 - 127	0	13

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*78 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-428472/6
Matrix: Water
Analysis Batch: 428472

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/10/23 05:39	1
Toluene	0.39	U	1.0	0.39	ug/L			06/10/23 05:39	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/10/23 05:39	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/10/23 05:39	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/10/23 05:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/10/23 05:39*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*80 - 120*		*06/10/23 05:39*	*1*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*06/10/23 05:39*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*		*06/10/23 05:39*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-428472/7
Matrix: Water
Analysis Batch: 428472

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	10.0	10.1		ug/L		101	80 - 122
Toluene	10.0	9.93		ug/L		99	80 - 120
Ethylbenzene	10.0	10.2		ug/L		102	80 - 120
m-Xylene & p-Xylene	10.0	10.1		ug/L		101	80 - 120
o-Xylene	10.0	10.3		ug/L		103	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*90*		*80 - 120*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*
Dibromofluoromethane (Surr)	*98*		*80 - 120*

Lab Sample ID: LCSD 580-428472/8
Matrix: Water
Analysis Batch: 428472

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
Benzene	10.0	9.99		ug/L		100	80 - 122	2	14
Toluene	10.0	10.1		ug/L		101	80 - 120	1	13
Ethylbenzene	10.0	10.3		ug/L		103	80 - 120	2	14
m-Xylene & p-Xylene	10.0	10.2		ug/L		102	80 - 120	1	14
o-Xylene	10.0	10.4		ug/L		104	80 - 120	1	16

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*106*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*86*		*80 - 120*
4-Bromofluorobenzene (Surr)	*106*		*80 - 120*
Dibromofluoromethane (Surr)	*95*		*80 - 120*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-428240/1-A
Matrix: Water
Analysis Batch: 428487

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 428240

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		06/08/23 08:50	06/09/23 19:17	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		06/08/23 08:50	06/09/23 19:17	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		06/08/23 08:50	06/09/23 19:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*96*		*29 - 144*	*06/08/23 08:50*	*06/09/23 19:17*	*1*
Terphenyl-d14	*93*		*29 - 150*	*06/08/23 08:50*	*06/09/23 19:17*	*1*
2-methylnaphthalene-d10	*53*		*35 - 120*	*06/08/23 08:50*	*06/09/23 19:17*	*1*
Fluoranthene-d10 (Surr)	*75*		*49 - 129*	*06/08/23 08:50*	*06/09/23 19:17*	*1*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 580-428240/2-A
Matrix: Water
Analysis Batch: 428487

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 428240

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Naphthalene	8.00	5.47		ug/L		68	34 - 120
2-Methylnaphthalene	8.00	5.45		ug/L		68	33 - 120
1-Methylnaphthalene	8.00	5.61		ug/L		70	29 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*119*		*29 - 144*
Terphenyl-d14	*92*		*29 - 150*
2-methylnaphthalene-d10	*57*		*35 - 120*
Fluoranthene-d10 (Surr)	*75*		*49 - 129*

Lab Sample ID: LCSD 580-428240/3-A
Matrix: Water
Analysis Batch: 428487

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 428240

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Naphthalene	8.00	5.71		ug/L		71	34 - 120	4	35
2-Methylnaphthalene	8.00	5.71		ug/L		71	33 - 120	5	35
1-Methylnaphthalene	8.00	5.88		ug/L		73	29 - 120	5	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*131*		*29 - 144*
Terphenyl-d14	*100*		*29 - 150*
2-methylnaphthalene-d10	*62*		*35 - 120*
Fluoranthene-d10 (Surr)	*82*		*49 - 129*

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 580-428241/1-A
Matrix: Water
Analysis Batch: 428295

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 428241

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	90	U	110	90	ug/L		06/08/23 08:55	06/08/23 21:51	1
C24-C40	180	U	200	180	ug/L		06/08/23 08:55	06/08/23 21:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*61*		*53 - 120*	*06/08/23 08:55*	*06/08/23 21:51*	*1*

Lab Sample ID: LCS 580-428241/2-A
Matrix: Water
Analysis Batch: 428295

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 428241

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
C9-C25	4000	3350		ug/L		84	55 - 134
C24-C40	4000	3570		ug/L		89	36 - 143

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 580-428241/2-A
Matrix: Water
Analysis Batch: 428295

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 428241

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	92		53 - 120

Lab Sample ID: LCSD 580-428241/3-A
Matrix: Water
Analysis Batch: 428295

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 428241

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
C9-C25			4000	3380		ug/L		84	55 - 134	1	26
C24-C40			4000	3740		ug/L		94	36 - 143	5	24

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-Terphenyl	93		53 - 120

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 580-428352/15-A
Matrix: Water
Analysis Batch: 428563

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 428352

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7	U	30	2.7	ug/L		06/08/23 17:03	06/09/23 19:36	1

Lab Sample ID: LCS 580-428352/16-A
Matrix: Water
Analysis Batch: 428563

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 428352

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead			1000	990		ug/L		99	80 - 120		

Lab Sample ID: LCSD 580-428352/17-A
Matrix: Water
Analysis Batch: 428563

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 428352

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead			1000	971		ug/L		97	80 - 120	2	20

Lab Sample ID: 580-128027-3 MS
Matrix: Water
Analysis Batch: 428563

Client Sample ID: RHS-EF-TRAIN-03-060623-N
Prep Type: Total Recoverable
Prep Batch: 428352

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead	2.7	U	1000	993		ug/L		99	80 - 120		

Lab Sample ID: 580-128027-3 MSD
Matrix: Water
Analysis Batch: 428563

Client Sample ID: RHS-EF-TRAIN-03-060623-N
Prep Type: Total Recoverable
Prep Batch: 428352

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead	2.7	U	1000	1010		ug/L		101	80 - 120	2	20

QC Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128027-1

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: 580-128027-3 DU
Matrix: Water
Analysis Batch: 428563

Client Sample ID: RHS-EF-TRAIN-03-060623-N
Prep Type: Total Recoverable
Prep Batch: 428352

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Lead	2.7	U		2.7	U	ug/L				NC	20

Method: 939-M - Organic Lead (GFAA)

Lab Sample ID: MB 280-615662/1-B
Matrix: Water
Analysis Batch: 615813

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 615662

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		06/11/23 16:10	06/12/23 20:15	1

Lab Sample ID: LCS 280-615662/2-B
Matrix: Water
Analysis Batch: 615813

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 615662

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead, Total Organic			15.0	14.4		ug/L		96	80 - 120		

Lab Chronicle

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128027-1

Client Sample ID: RHS-FB-TRAIN-03-060623-N — Lab Sample ID: 580-128027-1

Date Collected: 06/06/23 09:40 — **Matrix: Water**
Date Received: 06/07/23 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			428241	SL	EET SEA	06/08/23 08:55
Total/NA	Analysis	8015D		1	428295	KLW	EET SEA	06/08/23 22:48

Client Sample ID: RHS-TB-TRAIN-03-060623-N — Lab Sample ID: 580-128027-2

Date Collected: 06/06/23 09:35 — **Matrix: Water**
Date Received: 06/07/23 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	428469	JBT	EET SEA	06/10/23 08:27
Total/NA	Analysis	8260D		1	428472	JBT	EET SEA	06/10/23 08:27

Client Sample ID: RHS-EF-TRAIN-03-060623-N — Lab Sample ID: 580-128027-3

Date Collected: 06/06/23 09:45 — **Matrix: Water**
Date Received: 06/07/23 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	428469	JBT	EET SEA	06/10/23 08:51
Total/NA	Analysis	8260D		1	428472	JBT	EET SEA	06/10/23 08:51
Total/NA	Prep	3510C			428240	SL	EET SEA	06/08/23 08:50
Total/NA	Analysis	8270E SIM		1	428487	T1L	EET SEA	06/09/23 21:34
Total/NA	Prep	3510C			428241	SL	EET SEA	06/08/23 08:55
Total/NA	Analysis	8015D		1	428295	KLW	EET SEA	06/08/23 23:07
Total Recoverable	Prep	3005A			428352	TMH	EET SEA	06/08/23 17:02
Total Recoverable	Analysis	6010D		1	428563	JLS	EET SEA	06/09/23 19:45
Total/NA	Prep	939M			615662	LRD	EET DEN	06/11/23 16:10
Total/NA	Prep	939M			615663	LRD	EET DEN	06/11/23 17:15
Total/NA	Analysis	939-M		1	615813	LRD	EET DEN	06/12/23 21:01

Client Sample ID: RHS-IF-TRAIN-03-060623-N — Lab Sample ID: 580-128027-4

Date Collected: 06/06/23 09:55 — **Matrix: Water**
Date Received: 06/07/23 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	428469	JBT	EET SEA	06/10/23 09:15
Total/NA	Analysis	8260D		1	428472	JBT	EET SEA	06/10/23 09:15
Total/NA	Prep	3510C			428241	SL	EET SEA	06/08/23 08:55
Total/NA	Analysis	8015D		1	428295	KLW	EET SEA	06/08/23 23:26

Laboratory References:

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128027-1

Laboratory: Eurofins Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-19-25

Laboratory: Eurofins Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
939-M	939M	Water	Lead, Total Organic

Sample Summary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128027-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-128027-1	RHS-FB-TRAIN-03-060623-N	Water	06/06/23 09:40	06/07/23 09:20
580-128027-2	RHS-TB-TRAIN-03-060623-N	Water	06/06/23 09:35	06/07/23 09:20
580-128027-3	RHS-EF-TRAIN-03-060623-N	Water	06/06/23 09:45	06/07/23 09:20
580-128027-4	RHS-IF-TRAIN-03-060623-N	Water	06/06/23 09:55	06/07/23 09:20

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424

Chain of Custody Record

eurofins Environment Testing America

Client Information	Sampler: AECOM	Lab PM: Elaine Walker	Carrier Tracking No(s): FedEx	COC No: 20230606 NPDES -SEA-01
Client Contact: Alethea Ramos (alternate: Margie Pascua)	Phone:	E-Mail: M.Elaine.Walker@EurofinsET.com	State of Origin: Hawaii	Page: Page 1 of 1
Company: AECOM	PWSID:			Job #:
Address: 1001 Bishop St. Suite 1600	Due Date Requested: see subcontract			
City: Honolulu	TAT Requested (days): 7 days			
State, Zip: Hawaii 96813	Compliance Project: Δ Yes Δ No			
Phone: 808-521-3051 (direct: 808-529-7283) (alternate: 808-356-5373)	PO #:			
Email: alethea.ramos@aecom.com (alternate: margie.pascua@aecom.com)	WO #:			
Project Name: CV22F0106	Project #: 60674414.01.30.01			
Site: RHSF	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	VOCs (BTEX) by 3050/8260 and TPH-g by 8260	TPH-dr/o by 8015	PAHs (naphthalene, 1-methylnaphthalene, 2-methylnaphthalene) by 8270SIM	Organic Lead by 939M	Total organic lead by 6010B	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	D		
RHS-FB-TRAIN-03-060623-N	6/6/23	0940	FB	W	N	N		2					
RHS-TB-TRAIN-03-060623-N		0935	TB		N	N	2						
RHS-CF-TRAIN-03-060623-N		0945	G		N	N	3	2	2	2	1		
RHS-IF-TRAIN-03-060623-N		0955	G		N	N	3	2					

MU 6/6/23

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if s.
☐ Return To Client ☐ Disposal By La

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

Prelim data (Level 1or2)=see TAT above. DoD Stage 4 report standard TAT. AECOM EQuIS EDD.

Special Instructions/QC Requirements: DOD QSI

580-128027 Chain of Custody

Empty Kit Relinquished by:	Date:	Time:	Method of

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	06/06/23 1130	AECOM		6/6/23 1130	AECOM
	6/6/23 1330	AECOM		6/7/23 0920	ECT Sea

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

A3 3.1/3.2 1/1

Ver: 01/16/2019 6/13/2023

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-128027-1

Login Number: 128027
List Number: 1
Creator: Presley, Kim A

List Source: Eurofins Seattle

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.	True	
Sample custody seals, if present, are intact.	True	
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	
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?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
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").	False	Narrative to indicate if headspace container used for analysis.
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-128027-1

Login Number: 128027
List Number: 2
Creator: Rystrom, Joshua R

List Source: Eurofins Denver
List Creation: 06/09/23 06:30 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
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	
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	
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.	N/A	
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	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kathryn Repine
AECOM
1001 Bishop Street
Honolulu, Hawaii 96813

Generated 6/28/2023 10:27:41 AM

JOB DESCRIPTION

Red Hill NPDES CV22F0106

JOB NUMBER

580-128168-1

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424

See page two for job notes and contact information.

my EOL

Eurofins Seattle

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 will 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 Environment Testing Northwest, LLC Project Manager.

Authorization

M. Elaine Walker

Generated
6/28/2023 10:27:41 AM

Authorized for release by
Marie Walker, Senior Project Manager
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(253)248-4972

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Job ID: 580-128168-1

Laboratory: Eurofins Seattle

Narrative

CASE NARRATIVE

Client: AECOM
Project: Red Hill NPDES CV22F0106
Report Number: 580-128168-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
Four samples were received on 6/10/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.0º C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

GASOLINE RANGE ORGANICS (GRO)
Samples RHS-TB-TRAIN-01-060923-N (580-128168-2), RHS-EF-TRAIN-01-060923-N (580-128168-3) and RHS-IF-TRAIN-01-060923-N (580-128168-4) were analyzed for gasoline range organics (GRO) in accordance with CA_LUFT_GRO. The samples were analyzed on 06/11/2023.

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

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples RHS-TB-TRAIN-01-060923-N (580-128168-2), RHS-EF-TRAIN-01-060923-N (580-128168-3) and RHS-IF-TRAIN-01-060923-N (580-128168-4) were analyzed for volatile organic compounds (GC-MS) in accordance with 8260C. The samples were analyzed on 06/11/2023.

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

SEMIVOLATILE ORGANIC COMPOUNDS - SELECTED ION MODE (SIM)
Sample RHS-EF-TRAIN-01-060923-N (580-128168-3) was analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with 8270E SIM. The sample was prepared on 06/13/2023, 06/16/2023 and 06/22/2023 and analyzed on 06/13/2023, 06/20/2023 and 06/23/2023.

The following sample was re-extracted outside of preparation holding time due to failure of quality control parameters in the initial extraction: RHS-EF-TRAIN-01-060923-N (580-128168-3). All data sets have been reported.

The laboratory control sample (LCS) and the laboratory control sample duplicate (LCSD) for preparation batch 580-428676 and analytical

Job ID: 580-128168-1 (Continued)

Laboratory: Eurofins Seattle (Continued)

batch 580-428727 recovered outside control limits for the following analyte: Naphthalene. (LCS 580-428676/2-B) and (LCSD 580-428676/3-B). In addition, 3 of the 4 surrogates were recovered low. Sample RHS-EF-TRAIN-01-060923-N (580-128168-3) was sent back for re-extraction and all sets of data have been reported.

2,4,6-Tribromophenol Surrogate is outside control limits high in CCVs. This surrogate is not associated to target analytes. RHS-EF-TRAIN-01-060923-N (580-128168-3) and (CCVIS 580-429708/3)

The laboratory control sample (LCS) and the laboratory control sample duplicate (LCSD) for preparation batch 580-429044 and analytical batch 580-429440 recovered outside control limits for the following analytes: Naphthalene and 2-Methylnaphthalene. (LCS 580-429044/2-A) and (LCSD 580-429044/3-A). Sample RHS-EF-TRAIN-01-060923-N (580-128168-3) was sent back for re-extraction a second time and all sets of data have been reported.

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

DIESEL AND EXTENDED RANGE ORGANICS

Samples RHS-FB-TRAIN-01-060923-N (580-128168-1), RHS-EF-TRAIN-01-060923-N (580-128168-3) and RHS-IF-TRAIN-01-060923-N (580-128168-4) were analyzed for diesel and extended range organics in accordance with 8015D. The sample was prepared and analyzed on 06/13/2023.

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

METALS (ICP)

Sample RHS-EF-TRAIN-01-060923-N (580-128168-3) was analyzed for Metals (ICP) in accordance with 6010D. The sample was prepared on 06/12/2023 and analyzed on 06/13/2023.

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

ORGANIC LEAD

Sample RHS-EF-TRAIN-01-060923-N (580-128168-3) was analyzed for Organic Lead in accordance with 939M. The sample was prepared and analyzed on 06/15/2023.

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

Definitions/Glossary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128168-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC/MS Semi VOA

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
S1-	Surrogate recovery exceeds control limits, low biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128168-1

Client Sample ID: RHS-FB-TRAIN-01-060923-N

Lab Sample ID: 580-128168-1

Date Collected: 06/09/23 09:35
Date Received: 06/10/23 09:40

Matrix: Water

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	92	U	110	92	ug/L		06/13/23 08:36	06/13/23 20:36	1
C24-C40	180	U	200	180	ug/L		06/13/23 08:36	06/13/23 20:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*61*		*53 - 120*	*06/13/23 08:36*	*06/13/23 20:36*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128168-1

Client Sample ID: RHS-TB-TRAIN-01-060923-N

Lab Sample ID: 580-128168-2
Date Collected: 06/09/23 09:30
Matrix: Water
Date Received: 06/10/23 09:40

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/11/23 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*78 - 120*		*06/11/23 18:16*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/11/23 18:16	1
Toluene	0.39	U	1.0	0.39	ug/L			06/11/23 18:16	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/11/23 18:16	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/11/23 18:16	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/11/23 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*06/11/23 18:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*80 - 120*		*06/11/23 18:16*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*06/11/23 18:16*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*		*06/11/23 18:16*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128168-1

Client Sample ID: RHS-EF-TRAIN-01-060923-N

Lab Sample ID: 580-128168-3

Date Collected: 06/09/23 09:40
Date Received: 06/10/23 09:40

Matrix: Water

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/11/23 19:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*78 - 120*		*06/11/23 19:53*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/11/23 19:53	1
Toluene	0.39	U	1.0	0.39	ug/L			06/11/23 19:53	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/11/23 19:53	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/11/23 19:53	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/11/23 19:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*06/11/23 19:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*		*06/11/23 19:53*	*1*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*		*06/11/23 19:53*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*		*06/11/23 19:53*	*1*

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.15	U *-	0.47	0.15	ug/L		06/13/23 09:57	06/13/23 18:54	1
2-Methylnaphthalene	0.037	U	0.19	0.037	ug/L		06/13/23 09:57	06/13/23 18:54	1
1-Methylnaphthalene	0.031	U	0.094	0.031	ug/L		06/13/23 09:57	06/13/23 18:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*24*	*S1-*	*29 - 144*	*06/13/23 09:57*	*06/13/23 18:54*	*1*
Terphenyl-d14	*41*		*29 - 150*	*06/13/23 09:57*	*06/13/23 18:54*	*1*
2-methylnaphthalene-d10	*26*	*S1-*	*35 - 120*	*06/13/23 09:57*	*06/13/23 18:54*	*1*
Fluoranthene-d10 (Surr)	*37*	*S1-*	*49 - 129*	*06/13/23 09:57*	*06/13/23 18:54*	*1*

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U *-	0.50	0.16	ug/L		06/16/23 08:25	06/20/23 22:24	1
2-Methylnaphthalene	0.039	U *-	0.20	0.039	ug/L		06/16/23 08:25	06/20/23 22:24	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		06/16/23 08:25	06/20/23 22:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*53*		*29 - 144*	*06/16/23 08:25*	*06/20/23 22:24*	*1*
Terphenyl-d14	*78*		*29 - 150*	*06/16/23 08:25*	*06/20/23 22:24*	*1*
2-methylnaphthalene-d10	*52*		*35 - 120*	*06/16/23 08:25*	*06/20/23 22:24*	*1*
Fluoranthene-d10 (Surr)	*68*		*49 - 129*	*06/16/23 08:25*	*06/20/23 22:24*	*1*

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - RE2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U H	0.50	0.16	ug/L		06/22/23 09:22	06/23/23 20:25	1
2-Methylnaphthalene	0.039	U H	0.20	0.039	ug/L		06/22/23 09:22	06/23/23 20:25	1
1-Methylnaphthalene	0.033	U H	0.10	0.033	ug/L		06/22/23 09:22	06/23/23 20:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*89*		*29 - 144*	*06/22/23 09:22*	*06/23/23 20:25*	*1*
Terphenyl-d14	*104*		*29 - 150*	*06/22/23 09:22*	*06/23/23 20:25*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128168-1

Client Sample ID: RHS-EF-TRAIN-01-060923-N

Lab Sample ID: 580-128168-3
Date Collected: 06/09/23 09:40
Matrix: Water
Date Received: 06/10/23 09:40

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - RE2 (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-methylnaphthalene-d10	*51*		*35 - 120*	*06/22/23 09:22*	*06/23/23 20:25*	*1*
Fluoranthene-d10 (Surr)	*83*		*49 - 129*	*06/22/23 09:22*	*06/23/23 20:25*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		06/13/23 08:36	06/13/23 20:56	1
C24-C40	180	U	200	180	ug/L		06/13/23 08:36	06/13/23 20:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*66*		*53 - 120*	*06/13/23 08:36*	*06/13/23 20:56*	*1*

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7	U	30	2.7	ug/L		06/12/23 18:15	06/13/23 21:14	1

Method: CADHS 939-M - Organic Lead (GFAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		06/15/23 16:00	06/15/23 19:24	1

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128168-1

Client Sample ID: RHS-IF-TRAIN-01-060923-N

Lab Sample ID: 580-128168-4

Date Collected: 06/09/23 10:00
Matrix: Water
Date Received: 06/10/23 09:40

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/11/23 19:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*78 - 120*		*06/11/23 19:29*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/11/23 19:29	1
Toluene	0.39	U	1.0	0.39	ug/L			06/11/23 19:29	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/11/23 19:29	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/11/23 19:29	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/11/23 19:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*06/11/23 19:29*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 120*		*06/11/23 19:29*	*1*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*06/11/23 19:29*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*06/11/23 19:29*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	92	U	110	92	ug/L		06/13/23 08:36	06/13/23 21:17	1
C24-C40	180	U	200	180	ug/L		06/13/23 08:36	06/13/23 21:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*69*		*53 - 120*	*06/13/23 08:36*	*06/13/23 21:17*	*1*

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-428523/6
Matrix: Water
Analysis Batch: 428523

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/11/23 16:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*78 - 120*		*06/11/23 16:15*	*1*

Lab Sample ID: LCS 580-428523/9
Matrix: Water
Analysis Batch: 428523

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 (C6-C12)	1000	985		ug/L		98	75 - 127

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*78 - 120*

Lab Sample ID: LCSD 580-428523/10
Matrix: Water
Analysis Batch: 428523

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 (C6-C12)	1000	986		ug/L		99	75 - 127	0	13

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*78 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-428527/6
Matrix: Water
Analysis Batch: 428527

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/11/23 16:15	1
Toluene	0.39	U	1.0	0.39	ug/L			06/11/23 16:15	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/11/23 16:15	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/11/23 16:15	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/11/23 16:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/11/23 16:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*		*06/11/23 16:15*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*06/11/23 16:15*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*		*06/11/23 16:15*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-428527/7
Matrix: Water
Analysis Batch: 428527

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	10.0	9.75		ug/L		97	80 - 122
Toluene	10.0	9.66		ug/L		97	80 - 120
Ethylbenzene	10.0	9.86		ug/L		99	80 - 120
m-Xylene & p-Xylene	10.0	9.47		ug/L		95	80 - 120
o-Xylene	10.0	9.64		ug/L		96	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*97*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 120*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*
Dibromofluoromethane (Surr)	*102*		*80 - 120*

Lab Sample ID: LCSD 580-428527/8
Matrix: Water
Analysis Batch: 428527

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
Benzene	10.0	9.70		ug/L		97	80 - 122	0	14
Toluene	10.0	9.51		ug/L		95	80 - 120	1	13
Ethylbenzene	10.0	9.66		ug/L		97	80 - 120	2	14
m-Xylene & p-Xylene	10.0	9.44		ug/L		94	80 - 120	0	14
o-Xylene	10.0	9.57		ug/L		96	80 - 120	1	16

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*96*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 120*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*80 - 120*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-428676/1-B
Matrix: Water
Analysis Batch: 428727

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 428676

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		06/13/23 09:57	06/13/23 17:40	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		06/13/23 09:57	06/13/23 17:40	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		06/13/23 09:57	06/13/23 17:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*55*		*29 - 144*	*06/13/23 09:57*	*06/13/23 17:40*	*1*
Terphenyl-d14	*73*		*29 - 150*	*06/13/23 09:57*	*06/13/23 17:40*	*1*
2-methylnaphthalene-d10	*44*		*35 - 120*	*06/13/23 09:57*	*06/13/23 17:40*	*1*
Fluoranthene-d10 (Surr)	*67*		*49 - 129*	*06/13/23 09:57*	*06/13/23 17:40*	*1*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 580-428676/2-B
Matrix: Water
Analysis Batch: 428727

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 428676

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Naphthalene	8.00	2.60	*-	ug/L		33	34 - 120
2-Methylnaphthalene	8.00	2.67		ug/L		33	33 - 120
1-Methylnaphthalene	8.00	2.78		ug/L		35	29 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*79*		*29 - 144*
Terphenyl-d14	*82*		*29 - 150*
2-methylnaphthalene-d10	*53*		*35 - 120*
Fluoranthene-d10 (Surr)	*76*		*49 - 129*

Lab Sample ID: LCSD 580-428676/3-B
Matrix: Water
Analysis Batch: 428727

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 428676

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Naphthalene	8.00	2.60	*-	ug/L		32	34 - 120	0	35
2-Methylnaphthalene	8.00	2.67		ug/L		33	33 - 120	0	35
1-Methylnaphthalene	8.00	2.76		ug/L		35	29 - 120	1	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*81*		*29 - 144*
Terphenyl-d14	*83*		*29 - 150*
2-methylnaphthalene-d10	*57*		*35 - 120*
Fluoranthene-d10 (Surr)	*78*		*49 - 129*

Lab Sample ID: MB 580-429044/1-A
Matrix: Water
Analysis Batch: 429440

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 429044

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		06/16/23 08:25	06/20/23 19:34	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		06/16/23 08:25	06/20/23 19:34	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		06/16/23 08:25	06/20/23 19:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*59*		*29 - 144*	*06/16/23 08:25*	*06/20/23 19:34*	*1*
Terphenyl-d14	*85*		*29 - 150*	*06/16/23 08:25*	*06/20/23 19:34*	*1*
2-methylnaphthalene-d10	*57*		*35 - 120*	*06/16/23 08:25*	*06/20/23 19:34*	*1*
Fluoranthene-d10 (Surr)	*77*		*49 - 129*	*06/16/23 08:25*	*06/20/23 19:34*	*1*

Lab Sample ID: LCS 580-429044/2-A
Matrix: Water
Analysis Batch: 429440

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 429044

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Naphthalene	16.0	4.56	*-	ug/L		29	34 - 120
2-Methylnaphthalene	16.0	4.74	*-	ug/L		30	33 - 120
1-Methylnaphthalene	16.0	4.89		ug/L		31	29 - 120

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	83		29 - 144
Terphenyl-d14	84		29 - 150
2-methylnaphthalene-d10	58		35 - 120
Fluoranthene-d10 (Surr)	76		49 - 129

Lab Sample ID: LCSD 580-429044/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429440 — **Prep Batch: 429044**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Naphthalene			16.0	4.88	*-	ug/L		31	34 - 120	7	35
2-Methylnaphthalene			16.0	5.05	*-	ug/L		32	33 - 120	6	35
1-Methylnaphthalene			16.0	5.18		ug/L		32	29 - 120	6	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2,4,6-Tribromophenol	88		29 - 144
Terphenyl-d14	89		29 - 150
2-methylnaphthalene-d10	65		35 - 120
Fluoranthene-d10 (Surr)	82		49 - 129

Lab Sample ID: MB 580-429590/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429708 — **Prep Batch: 429590**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		06/22/23 09:22	06/23/23 19:28	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		06/22/23 09:22	06/23/23 19:28	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		06/22/23 09:22	06/23/23 19:28	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	89		29 - 144	06/22/23 09:22	06/23/23 19:28	1
Terphenyl-d14	96		29 - 150	06/22/23 09:22	06/23/23 19:28	1
2-methylnaphthalene-d10	53		35 - 120	06/22/23 09:22	06/23/23 19:28	1
Fluoranthene-d10 (Surr)	78		49 - 129	06/22/23 09:22	06/23/23 19:28	1

Lab Sample ID: LCS 580-429590/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429708 — **Prep Batch: 429590**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Naphthalene			8.00	4.79		ug/L		60	34 - 120		
2-Methylnaphthalene			8.00	4.86		ug/L		61	33 - 120		
1-Methylnaphthalene			8.00	5.01		ug/L		63	29 - 120		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	102		29 - 144
Terphenyl-d14	99		29 - 150
2-methylnaphthalene-d10	60		35 - 120
Fluoranthene-d10 (Surr)	80		49 - 129

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCSD 580-429590/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429708 — **Prep Batch: 429590**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Naphthalene			8.00	4.27		ug/L		53	34 - 120	12	35
2-Methylnaphthalene			8.00	4.18		ug/L		52	33 - 120	15	35
1-Methylnaphthalene			8.00	4.35		ug/L		54	29 - 120	14	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*102*		*29 - 144*
Terphenyl-d14	*104*		*29 - 150*
2-methylnaphthalene-d10	*58*		*35 - 120*
Fluoranthene-d10 (Surr)	*85*		*49 - 129*

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 580-428660/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 428769 — **Prep Batch: 428660**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	90	U	110	90	ug/L		06/13/23 08:36	06/13/23 19:36	1
C24-C40	180	U	200	180	ug/L		06/13/23 08:36	06/13/23 19:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*66*		*53 - 120*	*06/13/23 08:36*	*06/13/23 19:36*	*1*

Lab Sample ID: LCS 580-428660/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 428769 — **Prep Batch: 428660**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
C9-C25			4000	3160		ug/L		79	55 - 134		
C24-C40			4000	3660		ug/L		92	36 - 143		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*85*		*53 - 120*

Lab Sample ID: LCSD 580-428660/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 428769 — **Prep Batch: 428660**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
C9-C25			4000	3290		ug/L		82	55 - 134	4	26
C24-C40			4000	3810		ug/L		95	36 - 143	4	24

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*84*		*53 - 120*

QC Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128168-1

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 580-428656/24-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 428816 — **Prep Batch: 428656**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7	U	30	2.7	ug/L		06/12/23 18:15	06/13/23 21:04	1

Lab Sample ID: LCS 580-428656/25-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 428816 — **Prep Batch: 428656**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead			1000	983		ug/L		98	80 - 120		

Lab Sample ID: LCSD 580-428656/26-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 428816 — **Prep Batch: 428656**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead			1000	1010		ug/L		101	80 - 120	2	20

Lab Sample ID: 580-128168-3 MS — **Client Sample ID: RHS-EF-TRAIN-01-060923-N**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 428816 — **Prep Batch: 428656**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead	2.7	U	1000	1030		ug/L		103	80 - 120		

Lab Sample ID: 580-128168-3 MSD — **Client Sample ID: RHS-EF-TRAIN-01-060923-N**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 428816 — **Prep Batch: 428656**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead	2.7	U	1000	1010		ug/L		101	80 - 120	1	20

Lab Sample ID: 580-128168-3 DU — **Client Sample ID: RHS-EF-TRAIN-01-060923-N**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 428816 — **Prep Batch: 428656**

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Lead	2.7	U		2.7	U	ug/L				NC	20

Method: 939-M - Organic Lead (GFAA)

Lab Sample ID: MB 280-616338/1-B — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 616352 — **Prep Batch: 616338**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		06/15/23 16:00	06/15/23 19:09	1

QC Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128168-1

Method: 939-M - Organic Lead (GFAA) (Continued)

Lab Sample ID: LCS 280-616338/2-B — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 616352 — **Prep Batch: 616338**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead, Total Organic			15.0	14.8		ug/L		99	80 - 120		

Lab Sample ID: 580-128168-3 MS — **Client Sample ID: RHS-EF-TRAIN-01-060923-N**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 616352 — **Prep Batch: 616338**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead, Total Organic	0.81	U	15.0	14.4		ug/L		96	80 - 120		

Lab Sample ID: 580-128168-3 MSD — **Client Sample ID: RHS-EF-TRAIN-01-060923-N**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 616352 — **Prep Batch: 616338**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead, Total Organic	0.81	U	15.0	15.2		ug/L		101	80 - 120	5	20

Lab Chronicle

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128168-1

Client Sample ID: RHS-FB-TRAIN-01-060923-N — Lab Sample ID: 580-128168-1

Date Collected: 06/09/23 09:35 — **Matrix: Water**
Date Received: 06/10/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			428660	SL	EET SEA	06/13/23 08:36
Total/NA	Analysis	8015D		1	428769	KLW	EET SEA	06/13/23 20:36

Client Sample ID: RHS-TB-TRAIN-01-060923-N — Lab Sample ID: 580-128168-2

Date Collected: 06/09/23 09:30 — **Matrix: Water**
Date Received: 06/10/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	428523	JBT	EET SEA	06/11/23 18:16
Total/NA	Analysis	8260D		1	428527	JBT	EET SEA	06/11/23 18:16

Client Sample ID: RHS-EF-TRAIN-01-060923-N — Lab Sample ID: 580-128168-3

Date Collected: 06/09/23 09:40 — **Matrix: Water**
Date Received: 06/10/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	428523	JBT	EET SEA	06/11/23 19:53
Total/NA	Analysis	8260D		1	428527	JBT	EET SEA	06/11/23 19:53
Total/NA	Prep	3510C			428676	SL	EET SEA	06/13/23 09:57
Total/NA	Analysis	8270E SIM		1	428727	SR	EET SEA	06/13/23 18:54
Total/NA	Prep	3510C	RE		429044	SL	EET SEA	06/16/23 08:25
Total/NA	Analysis	8270E SIM	RE	1	429440	SR	EET SEA	06/20/23 22:24
Total/NA	Prep	3510C	RE2		429590	SL	EET SEA	06/22/23 09:22
Total/NA	Analysis	8270E SIM	RE2	1	429708	SR	EET SEA	06/23/23 20:25
Total/NA	Prep	3510C			428660	SL	EET SEA	06/13/23 08:36
Total/NA	Analysis	8015D		1	428769	KLW	EET SEA	06/13/23 20:56
Total Recoverable	Prep	3005A			428656	TMH	EET SEA	06/12/23 18:15
Total Recoverable	Analysis	6010D		1	428816	JLS	EET SEA	06/13/23 21:14
Total/NA	Prep	939M			616338	LRD	EET DEN	06/15/23 16:00
Total/NA	Prep	939M			616339	LRD	EET DEN	06/15/23 16:45
Total/NA	Analysis	939-M		1	616352	LRD	EET DEN	06/15/23 19:24

Client Sample ID: RHS-IF-TRAIN-01-060923-N — Lab Sample ID: 580-128168-4

Date Collected: 06/09/23 10:00 — **Matrix: Water**
Date Received: 06/10/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	428523	JBT	EET SEA	06/11/23 19:29
Total/NA	Analysis	8260D		1	428527	JBT	EET SEA	06/11/23 19:29
Total/NA	Prep	3510C			428660	SL	EET SEA	06/13/23 08:36
Total/NA	Analysis	8015D		1	428769	KLW	EET SEA	06/13/23 21:17

Laboratory References:

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128168-1

Laboratory: Eurofins Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-19-25

Laboratory: Eurofins Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
939-M	939M	Water	Lead, Total Organic

Sample Summary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128168-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-128168-1	RHS-FB-TRAIN-01-060923-N	Water	06/09/23 09:35	06/10/23 09:40
580-128168-2	RHS-TB-TRAIN-01-060923-N	Water	06/09/23 09:30	06/10/23 09:40
580-128168-3	RHS-EF-TRAIN-01-060923-N	Water	06/09/23 09:40	06/10/23 09:40
580-128168-4	RHS-IF-TRAIN-01-060923-N	Water	06/09/23 10:00	06/10/23 09:40

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424

Chain of Custody Record

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Client Information	Sampler: AECOM	Lab PM: Elaine Walker	Carrier Tracking No(s): FedEx	COC No: 20230609 NPDES - SEA - 01
Client Contact: Alethea Ramos (alternate: Margie Pascua)	Phone: 4084380688	E-Mail: M.Elaine.Walker@EurofinsET.com	State of Origin: Hawaii	Page: Page 1 of 1
Company: AECOM	PWSID:			Job #:
Address: 1001 Bishop St. Suite 1600	Due Date Requested: see subcontract			
City: Honolulu	TAT Requested (days): 7 days			
State, Zip: Hawaii 96813	Compliance Project: Δ Yes Δ No			
Phone: 808-521-3051 (direct: 808-529-7283) (alternate: 808-356-5373)	PO #:			
Email: alethea.ramos@aecom.com (alternate: margie.pascua@aecom.com)	WO #:			
Project Name: CV22F0106	Project #: 60674414.01.30.01			
Site: RHSF	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	VOCs (BTEX) by 3050/8260 and TPH-g by 8260	TPH-d/r/o by 8015	PAHs (naphthalene, 1-methylnaphthalene, 2-methylnaphthalene) by 8270SIM	Organic Lead by 939M	Total organic lead by 6010B							Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	D								
RHS-FB-TRAIN-01-060923-N	6/9/23	0935	FB	W	N	N		2										2	
RHS-TB-TRAIN-01-060923-N	↓	0930	TB	↓	N	N	2											2	
RHS-EF-TRAIN-01-060923-N		0940	G		N	N	3	2	2	2	1							10	
RHS-IF-TRAIN-01-060923-N	↓	1000	G	↓	N	N	3	2										5	

Mar 6/9/23

Mar 6/9/23

Mar 6/9/23

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if sa
☐ Return To Client ☐ Disposal By Lab

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

Prelim data (Level 1or2)=see TAT above. DoD Stage 4 report standard TAT. AECOM EQuIS EDD.

Special Instructions/QC Requirements: DOD QSM

530-128168 Chain of Custody

Empty Kit Relinquished by:	Date:	Time:	Method of S

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Mar	6/9/23 1055	AECOM	Ellie Shimatsu	6/9/23 1055	AECOM
Ellie Shimatsu	6/9/23 1205	AECOM	[illegible]	6/10/23 0940	FETN

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: IR9 2.0/2.3 1/1

Ver: 01/16/2019 6/28/2023

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-128168-1

Login Number: 128168
List Number: 1
Creator: Presley, Kim A

List Source: Eurofins Seattle

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.	True	
Sample custody seals, if present, are intact.	True	
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	
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?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
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").	False	Narrative to indicate if headspace container used for analysis.
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-128168-1

Login Number: 128168
List Number: 2
Creator: Cannon, Charles D

List Source: Eurofins Denver
List Creation: 06/13/23 04:07 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
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	
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	
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.	N/A	
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	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kathryn Repine
AECOM
1001 Bishop Street
Honolulu, Hawaii 96813

Generated 6/26/2023 9:38:30 AM

JOB DESCRIPTION

Red Hill NPDES CV22F0106

JOB NUMBER

580-128281-1

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424

See page two for job notes and contact information.

my EOL

Eurofins Seattle

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 will 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 Environment Testing Northwest, LLC Project Manager.

Authorization

M. Elaine Walker

Generated
6/26/2023 9:38:30 AM

Authorized for release by
Marie Walker, Senior Project Manager
M.Elaine.Walker@et.eurofinsus.com
(253)248-4972

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Job ID: 580-128281-1

Laboratory: Eurofins Seattle

Narrative

CASE NARRATIVE

Client: AECOM
Project: Red Hill NPDES CV22F0106
Report Number: 580-128281-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
Four samples were received on 6/14/2023 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6º C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

GASOLINE RANGE ORGANICS (GRO)
Samples RHS-TB-TRAIN-02-061323-N (580-128281-2), RHS-EF-TRAIN-02-061323-N (580-128281-3) and RHS-IF-TRAIN-02-061323-N (580-128281-4) were analyzed for gasoline range organics (GRO) in accordance with CA_LUFT_GRO. The samples were analyzed on 06/14/2023.

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

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples RHS-TB-TRAIN-02-061323-N (580-128281-2), RHS-EF-TRAIN-02-061323-N (580-128281-3) and RHS-IF-TRAIN-02-061323-N (580-128281-4) were analyzed for volatile organic compounds (GC-MS) in accordance with 8260C. The samples were analyzed on 06/14/2023.

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

SEMIVOLATILE ORGANIC COMPOUNDS - SELECTED ION MODE (SIM)
Sample RHS-EF-TRAIN-02-061323-N (580-128281-3) was analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with 8270E SIM. The sample was prepared on 06/15/2023 and analyzed on 06/16/2023.

The 2,4,6-Tribromophenol Surrogate is outside control limits high in CCVs. This surrogate is not associated to target analytes. (CCVC 580-429092/16) and (CCVIS 580-429092/3)

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

Job ID: 580-128281-1 (Continued)

Laboratory: Eurofins Seattle (Continued)

DIESEL AND EXTENDED RANGE ORGANICS

Samples RHS-FB-TRAIN-02-061323-N (580-128281-1), RHS-EF-TRAIN-02-061323-N (580-128281-3) and RHS-IF-TRAIN-02-061323-N (580-128281-4) were analyzed for diesel and extended range organics in accordance with 8015D. The sample was prepared and analyzed on 06/15/2023.

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

METALS (ICP)

Sample RHS-EF-TRAIN-02-061323-N (580-128281-3) was analyzed for Metals (ICP) in accordance with 6010D. The sample was prepared on 06/14/2023 and analyzed on 06/15/2023.

Lead was detected in method blank MB 580-428884/23-A at a level that was above the method detection limit but below the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

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

ORGANIC LEAD

Sample RHS-EF-TRAIN-02-061323-N (580-128281-3) was analyzed for Organic Lead in accordance with 939M. The sample was prepared and analyzed on 06/15/2023.

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

Definitions/Glossary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128281-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC/MS Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128281-1

Client Sample ID: RHS-FB-TRAIN-02-061323-N

Lab Sample ID: 580-128281-1

Date Collected: 06/13/23 09:20
Matrix: Water
Date Received: 06/14/23 09:40

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	92	U	110	92	ug/L		06/15/23 08:53	06/15/23 20:51	1
C24-C40	180	U	210	180	ug/L		06/15/23 08:53	06/15/23 20:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*60*		*53 - 120*	*06/15/23 08:53*	*06/15/23 20:51*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128281-1

Client Sample ID: RHS-TB-TRAIN-02-061323-N

Lab Sample ID: 580-128281-2
Date Collected: 06/13/23 09:25
Matrix: Water
Date Received: 06/14/23 09:40

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/14/23 16:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*78 - 120*		*06/14/23 16:47*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/14/23 16:47	1
Toluene	0.39	U	1.0	0.39	ug/L			06/14/23 16:47	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/14/23 16:47	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/14/23 16:47	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/14/23 16:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/14/23 16:47*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*80 - 120*		*06/14/23 16:47*	*1*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*06/14/23 16:47*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*06/14/23 16:47*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128281-1

Client Sample ID: RHS-EF-TRAIN-02-061323-N

Lab Sample ID: 580-128281-3

Date Collected: 06/13/23 09:30
Matrix: Water
Date Received: 06/14/23 09:40

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/14/23 17:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*78 - 120*		*06/14/23 17:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/14/23 17:11	1
Toluene	0.39	U	1.0	0.39	ug/L			06/14/23 17:11	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/14/23 17:11	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/14/23 17:11	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/14/23 17:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*06/14/23 17:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 120*		*06/14/23 17:11*	*1*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*		*06/14/23 17:11*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*06/14/23 17:11*	*1*

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.17	U	0.51	0.17	ug/L		06/15/23 09:07	06/16/23 17:24	1
2-Methylnaphthalene	0.040	U	0.20	0.040	ug/L		06/15/23 09:07	06/16/23 17:24	1
1-Methylnaphthalene	0.034	U	0.10	0.034	ug/L		06/15/23 09:07	06/16/23 17:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*80*		*29 - 144*	*06/15/23 09:07*	*06/16/23 17:24*	*1*
Terphenyl-d14	*72*		*29 - 150*	*06/15/23 09:07*	*06/16/23 17:24*	*1*
2-methylnaphthalene-d10	*41*		*35 - 120*	*06/15/23 09:07*	*06/16/23 17:24*	*1*
Fluoranthene-d10 (Surr)	*61*		*49 - 129*	*06/15/23 09:07*	*06/16/23 17:24*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	92	U	110	92	ug/L		06/15/23 08:53	06/15/23 21:11	1
C24-C40	180	U	200	180	ug/L		06/15/23 08:53	06/15/23 21:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*55*		*53 - 120*	*06/15/23 08:53*	*06/15/23 21:11*	*1*

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**3.0**	**J B**	30	2.7	ug/L		06/14/23 16:33	06/15/23 21:03	1

Method: CADHS 939-M - Organic Lead (GFAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		06/15/23 16:00	06/15/23 20:01	1

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128281-1

Client Sample ID: RHS-IF-TRAIN-02-061323-N

Lab Sample ID: 580-128281-4

Date Collected: 06/13/23 09:35
Matrix: Water
Date Received: 06/14/23 09:40

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/14/23 17:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*78 - 120*		*06/14/23 17:35*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/14/23 17:35	1
Toluene	0.39	U	1.0	0.39	ug/L			06/14/23 17:35	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/14/23 17:35	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/14/23 17:35	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/14/23 17:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*06/14/23 17:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*80 - 120*		*06/14/23 17:35*	*1*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*06/14/23 17:35*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*06/14/23 17:35*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	94	U	110	94	ug/L		06/15/23 08:53	06/15/23 21:31	1
C24-C40	190	U	210	190	ug/L		06/15/23 08:53	06/15/23 21:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*62*		*53 - 120*	*06/15/23 08:53*	*06/15/23 21:31*	*1*

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-428843/6
Matrix: Water
Analysis Batch: 428843

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/14/23 14:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*78 - 120*		*06/14/23 14:47*	*1*

Lab Sample ID: LCS 580-428843/9
Matrix: Water
Analysis Batch: 428843

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 (C6-C12)	1000	960		ug/L		96	75 - 127

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*78 - 120*

Lab Sample ID: LCSD 580-428843/10
Matrix: Water
Analysis Batch: 428843

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 (C6-C12)	1000	954		ug/L		95	75 - 127	1	13

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*78 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-428846/6
Matrix: Water
Analysis Batch: 428846

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/14/23 14:47	1
Toluene	0.39	U	1.0	0.39	ug/L			06/14/23 14:47	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/14/23 14:47	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/14/23 14:47	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/14/23 14:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/14/23 14:47*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 120*		*06/14/23 14:47*	*1*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*		*06/14/23 14:47*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*06/14/23 14:47*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-428846/7
Matrix: Water
Analysis Batch: 428846

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	10.0	9.75		ug/L		98	80 - 122
Toluene	10.0	9.48		ug/L		95	80 - 120
Ethylbenzene	10.0	9.64		ug/L		96	80 - 120
m-Xylene & p-Xylene	10.0	9.69		ug/L		97	80 - 120
o-Xylene	10.0	9.90		ug/L		99	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*99*		*80 - 120*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*
Dibromofluoromethane (Surr)	*95*		*80 - 120*

Lab Sample ID: LCSD 580-428846/8
Matrix: Water
Analysis Batch: 428846

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
Benzene	10.0	9.30		ug/L		93	80 - 122	5	14
Toluene	10.0	9.21		ug/L		92	80 - 120	3	13
Ethylbenzene	10.0	9.15		ug/L		91	80 - 120	5	14
m-Xylene & p-Xylene	10.0	9.26		ug/L		93	80 - 120	4	14
o-Xylene	10.0	9.30		ug/L		93	80 - 120	6	16

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*98*		*80 - 120*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*
Dibromofluoromethane (Surr)	*93*		*80 - 120*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-428918/1-A
Matrix: Water
Analysis Batch: 429092

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 428918

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		06/15/23 09:07	06/16/23 14:28	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		06/15/23 09:07	06/16/23 14:28	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		06/15/23 09:07	06/16/23 14:28	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*99*		*29 - 144*	*06/15/23 09:07*	*06/16/23 14:28*	*1*
Terphenyl-d14	*84*		*29 - 150*	*06/15/23 09:07*	*06/16/23 14:28*	*1*
2-methylnaphthalene-d10	*51*		*35 - 120*	*06/15/23 09:07*	*06/16/23 14:28*	*1*
Fluoranthene-d10 (Surr)	*70*		*49 - 129*	*06/15/23 09:07*	*06/16/23 14:28*	*1*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 580-428918/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429092 — **Prep Batch: 428918**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Naphthalene			8.00	6.47		ug/L		81	34 - 120		
2-Methylnaphthalene			8.00	6.49		ug/L		81	33 - 120		
1-Methylnaphthalene			8.00	6.68		ug/L		83	29 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*116*		*29 - 144*
Terphenyl-d14	*83*		*29 - 150*
2-methylnaphthalene-d10	*53*		*35 - 120*
Fluoranthene-d10 (Surr)	*70*		*49 - 129*

Lab Sample ID: LCSD 580-428918/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429092 — **Prep Batch: 428918**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Naphthalene			8.00	5.69		ug/L		71	34 - 120	13	35
2-Methylnaphthalene			8.00	5.86		ug/L		73	33 - 120	10	35
1-Methylnaphthalene			8.00	6.02		ug/L		75	29 - 120	10	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*111*		*29 - 144*
Terphenyl-d14	*81*		*29 - 150*
2-methylnaphthalene-d10	*50*		*35 - 120*
Fluoranthene-d10 (Surr)	*69*		*49 - 129*

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 580-428915/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 428992 — **Prep Batch: 428915**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	90	U	110	90	ug/L		06/15/23 08:53	06/15/23 19:50	1
C24-C40	180	U	200	180	ug/L		06/15/23 08:53	06/15/23 19:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*62*		*53 - 120*	*06/15/23 08:53*	*06/15/23 19:50*	*1*

Lab Sample ID: LCS 580-428915/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 428992 — **Prep Batch: 428915**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
C9-C25			4000	3010		ug/L		75	55 - 134		
C24-C40			4000	3560		ug/L		89	36 - 143		

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 580-428915/2-A
Matrix: Water
Analysis Batch: 428992

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 428915

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*78*		*53 - 120*

Lab Sample ID: LCSD 580-428915/3-A
Matrix: Water
Analysis Batch: 428992

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 428915

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
C9-C25			4000	2970		ug/L		74	55 - 134	2	26
C24-C40			4000	3580		ug/L		90	36 - 143	1	24

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*81*		*53 - 120*

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 580-428884/23-A
Matrix: Water
Analysis Batch: 429061

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 428884

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.80	J	30	2.7	ug/L		06/14/23 16:33	06/15/23 19:34	1

Lab Sample ID: LCS 580-428884/24-A
Matrix: Water
Analysis Batch: 429061

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 428884

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead			1000	943		ug/L		94	80 - 120		

Lab Sample ID: LCSD 580-428884/25-A
Matrix: Water
Analysis Batch: 429061

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 428884

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead			1000	953		ug/L		95	80 - 120	1	20

Method: 939-M - Organic Lead (GFAA)

Lab Sample ID: MB 280-616338/1-B
Matrix: Water
Analysis Batch: 616352

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 616338

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		06/15/23 16:00	06/15/23 19:09	1

Method: 939-M - Organic Lead (GFAA) (Continued)

Lab Sample ID: LCS 280-616338/2-B
Matrix: Water
Analysis Batch: 616352

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 616338

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead, Total Organic			15.0	14.8		ug/L		99	80 - 120		

Lab Chronicle

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128281-1

Client Sample ID: RHS-FB-TRAIN-02-061323-N — Lab Sample ID: 580-128281-1

Date Collected: 06/13/23 09:20 — **Matrix: Water**
Date Received: 06/14/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			428915	SL	EET SEA	06/15/23 08:53
Total/NA	Analysis	8015D		1	428992	KLW	EET SEA	06/15/23 20:51

Client Sample ID: RHS-TB-TRAIN-02-061323-N — Lab Sample ID: 580-128281-2

Date Collected: 06/13/23 09:25 — **Matrix: Water**
Date Received: 06/14/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	428843	JBT	EET SEA	06/14/23 16:47
Total/NA	Analysis	8260D		1	428846	JBT	EET SEA	06/14/23 16:47

Client Sample ID: RHS-EF-TRAIN-02-061323-N — Lab Sample ID: 580-128281-3

Date Collected: 06/13/23 09:30 — **Matrix: Water**
Date Received: 06/14/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	428843	JBT	EET SEA	06/14/23 17:11
Total/NA	Analysis	8260D		1	428846	JBT	EET SEA	06/14/23 17:11
Total/NA	Prep	3510C			428918	SL	EET SEA	06/15/23 09:07
Total/NA	Analysis	8270E SIM		1	429092	SR	EET SEA	06/16/23 17:24
Total/NA	Prep	3510C			428915	SL	EET SEA	06/15/23 08:53
Total/NA	Analysis	8015D		1	428992	KLW	EET SEA	06/15/23 21:11
Total Recoverable	Prep	3005A			428884	JLS	EET SEA	06/14/23 16:33
Total Recoverable	Analysis	6010D		1	429061	JLS	EET SEA	06/15/23 21:03
Total/NA	Prep	939M			616338	LRD	EET DEN	06/15/23 16:00
Total/NA	Prep	939M			616339	LRD	EET DEN	06/15/23 16:45
Total/NA	Analysis	939-M		1	616352	LRD	EET DEN	06/15/23 20:01

Client Sample ID: RHS-IF-TRAIN-02-061323-N — Lab Sample ID: 580-128281-4

Date Collected: 06/13/23 09:35 — **Matrix: Water**
Date Received: 06/14/23 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	428843	JBT	EET SEA	06/14/23 17:35
Total/NA	Analysis	8260D		1	428846	JBT	EET SEA	06/14/23 17:35
Total/NA	Prep	3510C			428915	SL	EET SEA	06/15/23 08:53
Total/NA	Analysis	8015D		1	428992	KLW	EET SEA	06/15/23 21:31

Laboratory References:

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128281-1

Laboratory: Eurofins Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-19-25

Laboratory: Eurofins Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
939-M	939M	Water	Lead, Total Organic

Sample Summary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128281-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-128281-1	RHS-FB-TRAIN-02-061323-N	Water	06/13/23 09:20	06/14/23 09:40
580-128281-2	RHS-TB-TRAIN-02-061323-N	Water	06/13/23 09:25	06/14/23 09:40
580-128281-3	RHS-EF-TRAIN-02-061323-N	Water	06/13/23 09:30	06/14/23 09:40
580-128281-4	RHS-IF-TRAIN-02-061323-N	Water	06/13/23 09:35	06/14/23 09:40

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424

Chain of Custody Record

eurofins Environment Testing America

Sampler: AECOM Christine Hardtke	Lab PM: Elaine Walker	Carrier Tracking No(s): FedEx	COC No: 20230613 NPDES -SEA-01
Phone: 292-259-5993	E-Mail: M.Elaine.Walker@EurofinsET.com	State of Origin: Hawaii	Page: Page 1 of 1
			Job #:

Client Information

Client Contact: Alethea Ramos (alternate: Margie Pascua)
Company: AECOM
Address: 1001 Bishop St. Suite 1600
City: Honolulu
State, Zip: Hawaii 96813
Phone: 808-521-3051 (direct: 808-529-7283) (alternate: 808-356-5373)
Email: alethea.ramos@aecom.com (alternate: margie.pascua@aecom.com)
Project Name: CV22F0106
Site: RHSF

PWSID:
Due Date Requested: see subcontract
TAT Requested (days): 7 days
Compliance Project: Δ Yes Δ No
PO #:
WO #:
Project #: 60674414.01.30.01
SSOW#:

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	VOCs (BTEX) by 3050/8260 and TPH-g by 8260	TPH-d/r/o by 8015	PAHs (naphthalene, 1-methylnaphthalene, 2-methylnaphthalene) by 8270SIM	Organic Lead by 939M	Total organic lead by 6010B	Total Number of containers
			Preservation Code:				A	N	N	N	D	
RHS-FB-TRDN-02-061323-N	6/13/23	0920	FB	W	N	N		2				
RHS-TB-TRDN-02-061323-N		0925	TB		N	N	2					
RHS-EF-TRDN-02-061323-N		0930	G		N	N	3	2	2	2	1	
RHS-IF-TRDN-02-061323-N		0935	G		N	N	3	2				

Bubbles Present in RHS_TB VOAs RHS IF VOC (BTEX)

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Special Instructions/Note:

580-128281 Chain of Custody

Possible Hazard Identification
Non-Hazard, Flammable, Skin Irritant, Poison B, Unknown, Radiological

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

Deliverable Requested: I, II, III, IV, Other (specify)
Prelim data (Level 1or2)=see TAT above. DoD Stage 4 report standard TAT. AECOM EQuIS EDD.

Special Instructions/QC Requirements: DOD QSM project.

Method of Shipment:

Empty Kit Relinquished by:	Date:	Time:			
Relinquished by: Christine Hardtke	Date/Time: 6/13/23 1115	Company: AECOM	Received by:	Date/Time: 6/13/23 1115	Company: AECOM
Relinquished by:	Date/Time: 6/13/23 1330	Company: AECOM	Received by:	Date/Time: 6/14/23 0940	Company: EFTN
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: 4.3 1.6/1.6

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-128281-1

Login Number: 128281
List Number: 1
Creator: Groves, Elizabeth

List Source: Eurofins Seattle

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.	True	
Sample custody seals, if present, are intact.	True	
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	
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?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
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").	False	Headspace larger than 1/4" in one or more vials, one vial with accpt. headspace
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-128281-1

Login Number: 128281
List Number: 2
Creator: Held, Wesley

List Source: Eurofins Denver
List Creation: 06/15/23 01:11 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	
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	
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.	N/A	
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kathryn Repine
AECOM
1001 Bishop Street
Honolulu, Hawaii 96813

Generated 6/26/2023 10:07:06 AM

JOB DESCRIPTION

Red Hill NPDES CV22F0106

JOB NUMBER

580-128467-1

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424

See page two for job notes and contact information.

my EOL

Eurofins Seattle

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 will 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 Environment Testing Northwest, LLC Project Manager.

Authorization

M. Elaine Walker

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6/26/2023 10:07:06 AM

Authorized for release by
Marie Walker, Senior Project Manager
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(253)248-4972

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Job ID: 580-128467-1

Laboratory: Eurofins Seattle

Narrative

CASE NARRATIVE

Client: AECOM
Project: Red Hill NPDES CV22F0106
Report Number: 580-128467-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
Four samples were received on 6/17/2023 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.3º C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

GASOLINE RANGE ORGANICS (GRO)
Samples RHS-TB-TRAIN-03-061623-N (580-128467-2), RHS-EF-TRAIN-03-061623-N (580-128467-3) and RHS-IF-TRAIN-03-061623-N (580-128467-4) were analyzed for gasoline range organics (GRO) in accordance with CA_LUFT_GRO. The samples were analyzed on 06/20/2023.

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

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples RHS-TB-TRAIN-03-061623-N (580-128467-2), RHS-EF-TRAIN-03-061623-N (580-128467-3) and RHS-IF-TRAIN-03-061623-N (580-128467-4) were analyzed for volatile organic compounds (GC-MS) in accordance with 8260C. The samples were analyzed on 06/20/2023.

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

SEMIVOLATILE ORGANIC COMPOUNDS - SELECTED ION MODE (SIM)
Sample RHS-EF-TRAIN-03-061623-N (580-128467-3) was analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with 8270E SIM. The sample was prepared on 06/20/2023 and analyzed on 06/22/2023.

The 2,4,6-Tribromophenol surrogate is outside control limits high in CCVs. This surrogate is not associated to target analytes. RHS-EF-TRAIN-03-061623-N (580-128467-3) and (CCVIS 580-429612/3).

The laboratory control sample duplicate (LCSD) for preparation batch 580-429348 and analytical batch 580-429612 recovered outside control limits for the following analyte: 2,4,6-Tribromophenol. This analyte was biased high in the LCSD and is not associated to any

Job ID: 580-128467-1 (Continued)

Laboratory: Eurofins Seattle (Continued)

target analytes; therefore, the data have been reported.

The following sample has confirmed J flag hits for Naphthalene and 2-Methylnaphthalene: RHS-EF-TRAIN-03-061623-N (580-128467-3).

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

DIESEL AND EXTENDED RANGE ORGANICS

Samples RHS-FB-TRAIN-03-061623-N (580-128467-1), RHS-EF-TRAIN-03-061623-N (580-128467-3) and RHS-IF-TRAIN-03-061623-N (580-128467-4) were analyzed for diesel and extended range organics in accordance with 8015D. The sample was prepared on 06/20/2023 and analyzed on 06/21/2023.

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

METALS (ICP)

Sample RHS-EF-TRAIN-03-061623-N (580-128467-3) was analyzed for Metals (ICP) in accordance with 6010D. The sample was prepared on 06/19/2023 and analyzed on 06/20/2023.

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

ORGANIC LEAD

Sample RHS-EF-TRAIN-03-061623-N (580-128467-3) was analyzed for Organic Lead in accordance with 939M. The sample was prepared on 06/23/2023 and analyzed on 06/24/2023.

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

Definitions/Glossary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128467-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1+	Surrogate recovery exceeds control limits, high biased.
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128467-1

Client Sample ID: RHS-FB-TRAIN-03-061623-N

Lab Sample ID: 580-128467-1

Date Collected: 06/16/23 08:55
Date Received: 06/17/23 09:45

Matrix: Water

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	97	U	120	97	ug/L		06/20/23 09:18	06/21/23 14:06	1
C24-C40	190	U	220	190	ug/L		06/20/23 09:18	06/21/23 14:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*66*		*53 - 120*	*06/20/23 09:18*	*06/21/23 14:06*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128467-1

Client Sample ID: RHS-TB-TRAIN-03-061623-N

Lab Sample ID: 580-128467-2

Date Collected: 06/16/23 08:50
Matrix: Water
Date Received: 06/17/23 09:45

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/20/23 07:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*78 - 120*		*06/20/23 07:07*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/20/23 07:07	1
Toluene	0.39	U	1.0	0.39	ug/L			06/20/23 07:07	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/20/23 07:07	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/20/23 07:07	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/20/23 07:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*80 - 120*		*06/20/23 07:07*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*80 - 120*		*06/20/23 07:07*	*1*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*06/20/23 07:07*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*06/20/23 07:07*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128467-1

Client Sample ID: RHS-EF-TRAIN-03-061623-N

Lab Sample ID: 580-128467-3

Date Collected: 06/16/23 09:10
Matrix: Water
Date Received: 06/17/23 09:45

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/20/23 07:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*78 - 120*		*06/20/23 07:31*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/20/23 07:31	1
Toluene	0.39	U	1.0	0.39	ug/L			06/20/23 07:31	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/20/23 07:31	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/20/23 07:31	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/20/23 07:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/20/23 07:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*80 - 120*		*06/20/23 07:31*	*1*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*06/20/23 07:31*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*06/20/23 07:31*	*1*

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**0.20**	**J**	0.53	0.17	ug/L		06/20/23 09:13	06/22/23 17:10	1
2-Methylnaphthalene	**0.074**	**J**	0.21	0.042	ug/L		06/20/23 09:13	06/22/23 17:10	1
1-Methylnaphthalene	**1.1**		0.11	0.035	ug/L		06/20/23 09:13	06/22/23 17:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*133*		*29 - 144*	*06/20/23 09:13*	*06/22/23 17:10*	*1*
Terphenyl-d14	*110*		*29 - 150*	*06/20/23 09:13*	*06/22/23 17:10*	*1*
2-methylnaphthalene-d10	*60*		*35 - 120*	*06/20/23 09:13*	*06/22/23 17:10*	*1*
Fluoranthene-d10 (Surr)	*89*		*49 - 129*	*06/20/23 09:13*	*06/22/23 17:10*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	94	U	110	94	ug/L		06/20/23 09:18	06/21/23 14:27	1
C24-C40	190	U	210	190	ug/L		06/20/23 09:18	06/21/23 14:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*67*		*53 - 120*	*06/20/23 09:18*	*06/21/23 14:27*	*1*

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7	U	30	2.7	ug/L		06/19/23 13:43	06/20/23 18:47	1

Method: CADHS 939-M - Organic Lead (GFAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		06/23/23 16:00	06/24/23 09:38	1

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128467-1

Client Sample ID: RHS-IF-TRAIN-03-061623-N

Lab Sample ID: 580-128467-4

Date Collected: 06/16/23 09:15
Date Received: 06/17/23 09:45

Matrix: Water

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/20/23 07:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*78 - 120*		*06/20/23 07:55*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/20/23 07:55	1
Toluene	0.39	U	1.0	0.39	ug/L			06/20/23 07:55	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/20/23 07:55	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/20/23 07:55	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/20/23 07:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/20/23 07:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*80 - 120*		*06/20/23 07:55*	*1*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*06/20/23 07:55*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*06/20/23 07:55*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	95	U	120	95	ug/L		06/20/23 09:18	06/21/23 14:47	1
C24-C40	190	U	210	190	ug/L		06/20/23 09:18	06/21/23 14:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*62*		*53 - 120*	*06/20/23 09:18*	*06/21/23 14:47*	*1*

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-429333/6
Matrix: Water
Analysis Batch: 429333

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/20/23 05:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*78 - 120*		*06/20/23 05:07*	*1*

Lab Sample ID: LCS 580-429333/9
Matrix: Water
Analysis Batch: 429333

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 (C6-C12)	1000	955		ug/L		95	75 - 127

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*78 - 120*

Lab Sample ID: LCSD 580-429333/10
Matrix: Water
Analysis Batch: 429333

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 (C6-C12)	1000	943		ug/L		94	75 - 127	1	13

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*78 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-429336/6
Matrix: Water
Analysis Batch: 429336

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/20/23 05:07	1
Toluene	0.39	U	1.0	0.39	ug/L			06/20/23 05:07	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/20/23 05:07	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/20/23 05:07	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/20/23 05:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*06/20/23 05:07*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*80 - 120*		*06/20/23 05:07*	*1*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*		*06/20/23 05:07*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*06/20/23 05:07*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-429336/7
Matrix: Water
Analysis Batch: 429336

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	10.0	9.70		ug/L		97	80 - 122
Toluene	10.0	9.82		ug/L		98	80 - 120
Ethylbenzene	10.0	10.1		ug/L		101	80 - 120
m-Xylene & p-Xylene	10.0	9.87		ug/L		99	80 - 120
o-Xylene	10.0	10.1		ug/L		101	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*95*		*80 - 120*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*
Dibromofluoromethane (Surr)	*97*		*80 - 120*

Lab Sample ID: LCSD 580-429336/8
Matrix: Water
Analysis Batch: 429336

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
Benzene	10.0	9.80		ug/L		98	80 - 122	1	14
Toluene	10.0	9.72		ug/L		97	80 - 120	1	13
Ethylbenzene	10.0	9.76		ug/L		98	80 - 120	3	14
m-Xylene & p-Xylene	10.0	9.67		ug/L		97	80 - 120	2	14
o-Xylene	10.0	9.77		ug/L		98	80 - 120	4	16

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*
Dibromofluoromethane (Surr)	*96*		*80 - 120*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-429348/1-A
Matrix: Water
Analysis Batch: 429612

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 429348

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		06/20/23 09:13	06/22/23 13:54	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		06/20/23 09:13	06/22/23 13:54	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		06/20/23 09:13	06/22/23 13:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*108*		*29 - 144*	*06/20/23 09:13*	*06/22/23 13:54*	*1*
Terphenyl-d14	*93*		*29 - 150*	*06/20/23 09:13*	*06/22/23 13:54*	*1*
2-methylnaphthalene-d10	*58*		*35 - 120*	*06/20/23 09:13*	*06/22/23 13:54*	*1*
Fluoranthene-d10 (Surr)	*76*		*49 - 129*	*06/20/23 09:13*	*06/22/23 13:54*	*1*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 580-429348/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429612 — **Prep Batch: 429348**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Naphthalene	8.00	5.59		ug/L		70	34 - 120
2-Methylnaphthalene	8.00	5.64		ug/L		71	33 - 120
1-Methylnaphthalene	8.00	5.73		ug/L		72	29 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*134*		*29 - 144*
Terphenyl-d14	*102*		*29 - 150*
2-methylnaphthalene-d10	*68*		*35 - 120*
Fluoranthene-d10 (Surr)	*82*		*49 - 129*

Lab Sample ID: LCSD 580-429348/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429612 — **Prep Batch: 429348**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Naphthalene	8.00	5.94		ug/L		74	34 - 120	6	35
2-Methylnaphthalene	8.00	6.01		ug/L		75	33 - 120	6	35
1-Methylnaphthalene	8.00	6.08		ug/L		76	29 - 120	6	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*145*	*S1+*	*29 - 144*
Terphenyl-d14	*107*		*29 - 150*
2-methylnaphthalene-d10	*73*		*35 - 120*
Fluoranthene-d10 (Surr)	*86*		*49 - 129*

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 580-429349/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429481 — **Prep Batch: 429349**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	90	U	110	90	ug/L		06/20/23 09:18	06/21/23 13:06	1
C24-C40	180	U	200	180	ug/L		06/20/23 09:18	06/21/23 13:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*58*		*53 - 120*	*06/20/23 09:18*	*06/21/23 13:06*	*1*

Lab Sample ID: LCS 580-429349/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429481 — **Prep Batch: 429349**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
C9-C25	4000	2740		ug/L		68	55 - 134
C24-C40	4000	3040		ug/L		76	36 - 143

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 580-429349/2-A
Matrix: Water
Analysis Batch: 429481

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 429349

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*77*		*53 - 120*

Lab Sample ID: LCSD 580-429349/3-A
Matrix: Water
Analysis Batch: 429481

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 429349

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
C9-C25			4000	2940		ug/L		74	55 - 134	7	26
C24-C40			4000	3260		ug/L		81	36 - 143	7	24

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*78*		*53 - 120*

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 580-429298/24-A
Matrix: Water
Analysis Batch: 429490

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 429298

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7	U	30	2.7	ug/L		06/19/23 13:43	06/20/23 18:38	1

Lab Sample ID: LCS 580-429298/25-A
Matrix: Water
Analysis Batch: 429490

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 429298

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead			1000	1010		ug/L		101	80 - 120		

Lab Sample ID: LCSD 580-429298/26-A
Matrix: Water
Analysis Batch: 429490

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 429298

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead			1000	977		ug/L		98	80 - 120	3	20

Method: 939-M - Organic Lead (GFAA)

Lab Sample ID: MB 280-617337/1-B
Matrix: Water
Analysis Batch: 617342

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 617337

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		06/23/23 16:00	06/24/23 09:23	1

QC Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128467-1

Method: 939-M - Organic Lead (GFAA) (Continued)

Lab Sample ID: LCS 280-617337/2-B — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 617342 — **Prep Batch: 617337**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead, Total Organic			15.0	13.7		ug/L		91	80 - 120		

Lab Sample ID: 580-128467-3 MS — **Client Sample ID: RHS-EF-TRAIN-03-061623-N**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 617342 — **Prep Batch: 617337**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead, Total Organic	0.81	U	15.0	14.6		ug/L		98	80 - 120		

Lab Sample ID: 580-128467-3 MSD — **Client Sample ID: RHS-EF-TRAIN-03-061623-N**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 617342 — **Prep Batch: 617337**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead, Total Organic	0.81	U	15.0	15.7		ug/L		104	80 - 120	7	20

Lab Chronicle

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128467-1

Client Sample ID: RHS-FB-TRAIN-03-061623-N — Lab Sample ID: 580-128467-1

Date Collected: 06/16/23 08:55 — **Matrix: Water**
Date Received: 06/17/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			429349	SL	EET SEA	06/20/23 09:18
Total/NA	Analysis	8015D		1	429481	KLW	EET SEA	06/21/23 14:06

Client Sample ID: RHS-TB-TRAIN-03-061623-N — Lab Sample ID: 580-128467-2

Date Collected: 06/16/23 08:50 — **Matrix: Water**
Date Received: 06/17/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	429333	JBT	EET SEA	06/20/23 07:07
Total/NA	Analysis	8260D		1	429336	JBT	EET SEA	06/20/23 07:07

Client Sample ID: RHS-EF-TRAIN-03-061623-N — Lab Sample ID: 580-128467-3

Date Collected: 06/16/23 09:10 — **Matrix: Water**
Date Received: 06/17/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	429333	JBT	EET SEA	06/20/23 07:31
Total/NA	Analysis	8260D		1	429336	JBT	EET SEA	06/20/23 07:31
Total/NA	Prep	3510C			429348	SL	EET SEA	06/20/23 09:13
Total/NA	Analysis	8270E SIM		1	429612	SR	EET SEA	06/22/23 17:10
Total/NA	Prep	3510C			429349	SL	EET SEA	06/20/23 09:18
Total/NA	Analysis	8015D		1	429481	KLW	EET SEA	06/21/23 14:27
Total Recoverable	Prep	3005A			429298	JLS	EET SEA	06/19/23 13:43
Total Recoverable	Analysis	6010D		1	429490	JLS	EET SEA	06/20/23 18:47
Total/NA	Prep	939M			617337	LRD	EET DEN	06/23/23 16:00
Total/NA	Prep	939M			617338	LRD	EET DEN	06/23/23 23:27
Total/NA	Analysis	939-M		1	617342	LRD	EET DEN	06/24/23 09:38

Client Sample ID: RHS-IF-TRAIN-03-061623-N — Lab Sample ID: 580-128467-4

Date Collected: 06/16/23 09:15 — **Matrix: Water**
Date Received: 06/17/23 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	429333	JBT	EET SEA	06/20/23 07:55
Total/NA	Analysis	8260D		1	429336	JBT	EET SEA	06/20/23 07:55
Total/NA	Prep	3510C			429349	SL	EET SEA	06/20/23 09:18
Total/NA	Analysis	8015D		1	429481	KLW	EET SEA	06/21/23 14:47

Laboratory References:

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128467-1

Laboratory: Eurofins Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-19-25

Laboratory: Eurofins Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
939-M	939M	Water	Lead, Total Organic

Sample Summary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128467-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-128467-1	RHS-FB-TRAIN-03-061623-N	Water	06/16/23 08:55	06/17/23 09:45
580-128467-2	RHS-TB-TRAIN-03-061623-N	Water	06/16/23 08:50	06/17/23 09:45
580-128467-3	RHS-EF-TRAIN-03-061623-N	Water	06/16/23 09:10	06/17/23 09:45
580-128467-4	RHS-IF-TRAIN-03-061623-N	Water	06/16/23 09:15	06/17/23 09:45

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: AECOM CHRISTINA HARDLE	Lab PM: Elaine Walker	Carrier Tracking No(s): FedEx	COC No:
Client Contact: Alethea Ramos (alternate: Margie Pascua)	Phone: 252-259-5993	E-Mail: M.Elaine.Walker@EurofinsET.com	State of Origin: Hawaii	Page: Page 1 of 1
Company: AECOM	PWSID:			Job #:
Address: 1001 Bishop St. Suite 1600	Due Date Requested: see subcontract			
City: Honolulu	TAT Requested (days): 7 days			
State, Zip: Hawaii 96813	Compliance Project: Δ Yes Δ No			
Phone: 808-521-3051 (direct: 808-529-7283) (alternate: 808-356-5373)	PO #:			
Email: alethea.ramos@aecom.com (alternate: margie.pascua@aecom.com)	WO #:			
Project Name: CV22F0106	Project #: 60674414.01.30.01			
Site: RHSF	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	VOCs (BTEX) by 3050/8260 and TPH-g by 8260	TPH-dir/o by 8015	PAHs (naphthalene, 1-methylnaphthalene, 2-methylnaphthalene) by 8270SIM	Organic Lead by 939M	Total organic lead by 6010B								Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	D									
RHS-FB-TRAIN-03-061623-N	6/16/23	0855	FB	W	N	N		2												
RHS-TB-TRAIN-03-061623-N		0850	TB		N	N	2													
RHS-EF-TRAIN-03-061623-N		0910	G		N	N	3	2	2	2	1									
RHS-IF-TRAIN-03-061623-N		0915	G		N	N	3	2												

6/16/23

580-128467 Chain of Custody

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

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

Deliverable Requested: I, II, III, IV, Other (specify) — Prelim data (Level 1or2)=see TAT above. DoD Stage 4 report standard TAT. AECOM EQuIS EDD.

Special Instructions/QC Requirements: DOD QSM project.

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
CHRISTINA HARDLE	6/16/23 1040	AECOM		6/16/23 1040	AECOM
	6/16/23 1300	AECOM		6/17/23 0945	FETA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No — Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: IR9 2.3/2.6 Gel/ESat

Ver: 01/16/2019

6/26/2023

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-128467-1

Login Number: 128467
List Number: 1
Creator: Groves, Elizabeth

List Source: Eurofins Seattle

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.	True	
Sample custody seals, if present, are intact.	True	
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	
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?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
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").	False	Headspace larger than 1/4" in one or more vials, one vial with accpt. headspace
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-128467-1

Login Number: 128467
List Number: 2
Creator: Naylis, Patrick J

List Source: Eurofins Denver
List Creation: 06/20/23 11:49 AM

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	
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	
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.	N/A	
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Kathryn Repine
AECOM
1001 Bishop Street
Honolulu, Hawaii 96813

Generated 6/29/2023 4:21:24 PM

JOB DESCRIPTION

Red Hill NPDES CV22F0106

JOB NUMBER

580-128565-1

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424

See page two for job notes and contact information.

my EOL

Eurofins Seattle

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 will 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 Environment Testing Northwest, LLC Project Manager.

Authorization

M. Elaine Walker

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6/29/2023 4:21:24 PM

Authorized for release by
Marie Walker, Senior Project Manager
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(253)248-4972

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Job ID: 580-128565-1

Laboratory: Eurofins Seattle

Narrative

CASE NARRATIVE

Client: AECOM
Project: Red Hill NPDES CV22F0106
Report Number: 580-128565-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
Four samples were received on 6/21/2023 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.3º C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

GASOLINE RANGE ORGANICS (GRO)
Samples RHS-TB-TRAIN-01-062023-N (580-128565-2), RHS-EF-TRAIN-01-062023-N (580-128565-3) and RHS-IF-TRAIN-01-062023-N (580-128565-4) were analyzed for gasoline range organics (GRO) in accordance with CA_LUFT_GRO. The samples were analyzed on 06/21/2023.

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

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples RHS-TB-TRAIN-01-062023-N (580-128565-2), RHS-EF-TRAIN-01-062023-N (580-128565-3) and RHS-IF-TRAIN-01-062023-N (580-128565-4) were analyzed for volatile organic compounds (GC-MS) in accordance with 8260C. The samples were analyzed on 06/21/2023.

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

SEMIVOLATILE ORGANIC COMPOUNDS - SELECTED ION MODE (SIM)
Sample RHS-EF-TRAIN-01-062023-N (580-128565-3) was analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with 8270E SIM. The sample was prepared on 06/22/2023 and analyzed on 06/23/2023.

The 2,4,6-Tribromophenol surrogate is outside control limits high in CCV. This surrogate is not associated to target analytes.
RHS-EF-TRAIN-01-062023-N (580-128565-3) and (CCVIS 580-429708/3)

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

Job ID: 580-128565-1 (Continued)

Laboratory: Eurofins Seattle (Continued)

DIESEL AND EXTENDED RANGE ORGANICS

Samples RHS-FB-TRAIN-01-062023-N (580-128565-1), RHS-EF-TRAIN-01-062023-N (580-128565-3) and RHS-IF-TRAIN-01-062023-N (580-128565-4) were analyzed for diesel and extended range organics in accordance with 8015D. The samples were prepared and analyzed on 06/22/2023.

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

METALS (ICP)

Sample RHS-EF-TRAIN-01-062023-N (580-128565-3) was analyzed for Metals (ICP) in accordance with 6010D. The sample was prepared on 06/21/2023 and analyzed on 06/22/2023.

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

ORGANIC LEAD

Sample RHS-EF-TRAIN-01-062023-N (580-128565-3) was analyzed for Organic Lead in accordance with 939M. The sample was prepared and analyzed on 06/26/2023.

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

Definitions/Glossary

Client: AECOM
Job ID: 580-128565-1
Project/Site: Red Hill NPDES CV22F0106

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC/MS Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128565-1

Client Sample ID: RHS-FB-TRAIN-01-062023-N

Lab Sample ID: 580-128565-1

Date Collected: 06/20/23 08:40
Date Received: 06/21/23 09:30

Matrix: Water

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		06/22/23 09:06	06/22/23 22:15	1
C24-C40	180	U	200	180	ug/L		06/22/23 09:06	06/22/23 22:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*83*		*53 - 120*	*06/22/23 09:06*	*06/22/23 22:15*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128565-1

Client Sample ID: RHS-TB-TRAIN-01-062023-N

Lab Sample ID: 580-128565-2

Date Collected: 06/20/23 08:35
Date Received: 06/21/23 09:30

Matrix: Water

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/21/23 16:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*78 - 120*		*06/21/23 16:21*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/21/23 16:21	1
Toluene	0.39	U	1.0	0.39	ug/L			06/21/23 16:21	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/21/23 16:21	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/21/23 16:21	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/21/23 16:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*80 - 120*		*06/21/23 16:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*80 - 120*		*06/21/23 16:21*	*1*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*		*06/21/23 16:21*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*06/21/23 16:21*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128565-1

Client Sample ID: RHS-EF-TRAIN-01-062023-N

Lab Sample ID: 580-128565-3
Date Collected: 06/20/23 09:20
Matrix: Water
Date Received: 06/21/23 09:30

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/21/23 17:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*78 - 120*		*06/21/23 17:57*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/21/23 17:57	1
Toluene	0.39	U	1.0	0.39	ug/L			06/21/23 17:57	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/21/23 17:57	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/21/23 17:57	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/21/23 17:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*80 - 120*		*06/21/23 17:57*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*80 - 120*		*06/21/23 17:57*	*1*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*06/21/23 17:57*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*06/21/23 17:57*	*1*

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		06/22/23 09:22	06/23/23 20:44	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		06/22/23 09:22	06/23/23 20:44	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		06/22/23 09:22	06/23/23 20:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*87*		*29 - 144*	*06/22/23 09:22*	*06/23/23 20:44*	*1*
Terphenyl-d14	*98*		*29 - 150*	*06/22/23 09:22*	*06/23/23 20:44*	*1*
2-methylnaphthalene-d10	*51*		*35 - 120*	*06/22/23 09:22*	*06/23/23 20:44*	*1*
Fluoranthene-d10 (Surr)	*80*		*49 - 129*	*06/22/23 09:22*	*06/23/23 20:44*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		06/22/23 09:06	06/22/23 22:34	1
C24-C40	180	U	200	180	ug/L		06/22/23 09:06	06/22/23 22:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*75*		*53 - 120*	*06/22/23 09:06*	*06/22/23 22:34*	*1*

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7	U	30	2.7	ug/L		06/21/23 17:44	06/22/23 21:02	1

Method: CADHS 939-M - Organic Lead (GFAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		06/26/23 16:00	06/26/23 23:09	1

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128565-1

Client Sample ID: RHS-IF-TRAIN-01-062023-N

Lab Sample ID: 580-128565-4
Date Collected: 06/20/23 09:50
Matrix: Water
Date Received: 06/21/23 09:30

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/21/23 18:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*78 - 120*		*06/21/23 18:45*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/21/23 18:45	1
Toluene	0.39	U	1.0	0.39	ug/L			06/21/23 18:45	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/21/23 18:45	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/21/23 18:45	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/21/23 18:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/21/23 18:45*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 120*		*06/21/23 18:45*	*1*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*06/21/23 18:45*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*06/21/23 18:45*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		06/22/23 09:06	06/22/23 22:53	1
C24-C40	180	U	200	180	ug/L		06/22/23 09:06	06/22/23 22:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*80*		*53 - 120*	*06/22/23 09:06*	*06/22/23 22:53*	*1*

QC Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128565-1

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-429506/6
Matrix: Water
Analysis Batch: 429506

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/21/23 14:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*78 - 120*		*06/21/23 14:21*	*1*

Lab Sample ID: LCS 580-429506/9
Matrix: Water
Analysis Batch: 429506

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 (C6-C12)			1000	942		ug/L		94	75 - 127		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*78 - 120*

Lab Sample ID: LCSD 580-429506/10
Matrix: Water
Analysis Batch: 429506

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 (C6-C12)			1000	924		ug/L		92	75 - 127	2	13

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*78 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-429509/6
Matrix: Water
Analysis Batch: 429509

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/21/23 14:21	1
Toluene	0.39	U	1.0	0.39	ug/L			06/21/23 14:21	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/21/23 14:21	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/21/23 14:21	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/21/23 14:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/21/23 14:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 120*		*06/21/23 14:21*	*1*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*06/21/23 14:21*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*06/21/23 14:21*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-429509/7
Matrix: Water
Analysis Batch: 429509

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	10.0	9.99		ug/L		100	80 - 122
Toluene	10.0	9.83		ug/L		98	80 - 120
Ethylbenzene	10.0	10.0		ug/L		100	80 - 120
m-Xylene & p-Xylene	10.0	10.0		ug/L		100	80 - 120
o-Xylene	10.0	10.1		ug/L		101	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*99*		*80 - 120*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*
Dibromofluoromethane (Surr)	*96*		*80 - 120*

Lab Sample ID: LCSD 580-429509/8
Matrix: Water
Analysis Batch: 429509

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
Benzene	10.0	9.56		ug/L		96	80 - 122	4	14
Toluene	10.0	9.59		ug/L		96	80 - 120	2	13
Ethylbenzene	10.0	9.73		ug/L		97	80 - 120	3	14
m-Xylene & p-Xylene	10.0	9.60		ug/L		96	80 - 120	4	14
o-Xylene	10.0	9.82		ug/L		98	80 - 120	3	16

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*
Dibromofluoromethane (Surr)	*98*		*80 - 120*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-429590/1-A
Matrix: Water
Analysis Batch: 429708

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 429590

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		06/22/23 09:22	06/23/23 19:28	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		06/22/23 09:22	06/23/23 19:28	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		06/22/23 09:22	06/23/23 19:28	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*89*		*29 - 144*	*06/22/23 09:22*	*06/23/23 19:28*	*1*
Terphenyl-d14	*96*		*29 - 150*	*06/22/23 09:22*	*06/23/23 19:28*	*1*
2-methylnaphthalene-d10	*53*		*35 - 120*	*06/22/23 09:22*	*06/23/23 19:28*	*1*
Fluoranthene-d10 (Surr)	*78*		*49 - 129*	*06/22/23 09:22*	*06/23/23 19:28*	*1*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 580-429590/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429708 — **Prep Batch: 429590**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Naphthalene	8.00	4.79		ug/L		60	34 - 120
2-Methylnaphthalene	8.00	4.86		ug/L		61	33 - 120
1-Methylnaphthalene	8.00	5.01		ug/L		63	29 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*102*		*29 - 144*
Terphenyl-d14	*99*		*29 - 150*
2-methylnaphthalene-d10	*60*		*35 - 120*
Fluoranthene-d10 (Surr)	*80*		*49 - 129*

Lab Sample ID: LCSD 580-429590/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429708 — **Prep Batch: 429590**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Naphthalene	8.00	4.27		ug/L		53	34 - 120	12	35
2-Methylnaphthalene	8.00	4.18		ug/L		52	33 - 120	15	35
1-Methylnaphthalene	8.00	4.35		ug/L		54	29 - 120	14	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*102*		*29 - 144*
Terphenyl-d14	*104*		*29 - 150*
2-methylnaphthalene-d10	*58*		*35 - 120*
Fluoranthene-d10 (Surr)	*85*		*49 - 129*

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 580-429584/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429678 — **Prep Batch: 429584**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	90	U	110	90	ug/L		06/22/23 09:06	06/22/23 19:24	1
C24-C40	180	U	200	180	ug/L		06/22/23 09:06	06/22/23 19:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*75*		*53 - 120*	*06/22/23 09:06*	*06/22/23 19:24*	*1*

Lab Sample ID: LCS 580-429584/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 429678 — **Prep Batch: 429584**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
C9-C25	4000	3270		ug/L		82	55 - 134
C24-C40	4000	3610		ug/L		90	36 - 143

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 580-429584/2-A
Matrix: Water
Analysis Batch: 429678

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 429584

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*86*		*53 - 120*

Lab Sample ID: LCSD 580-429584/3-A
Matrix: Water
Analysis Batch: 429678

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 429584

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
C9-C25			4000	3060		ug/L		77	55 - 134	7	26
C24-C40			4000	3460		ug/L		86	36 - 143	4	24

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*78*		*53 - 120*

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 580-429571/26-A
Matrix: Water
Analysis Batch: 429756

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 429571

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7	U	30	2.7	ug/L		06/21/23 17:44	06/22/23 19:19	1

Lab Sample ID: LCS 580-429571/27-A
Matrix: Water
Analysis Batch: 429756

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 429571

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead			1000	1040		ug/L		104	80 - 120		

Lab Sample ID: LCSD 580-429571/28-A
Matrix: Water
Analysis Batch: 429756

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 429571

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead			1000	1030		ug/L		103	80 - 120	1	20

Method: 939-M - Organic Lead (GFAA)

Lab Sample ID: MB 280-617513/1-B
Matrix: Water
Analysis Batch: 617519

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 617513

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		06/26/23 16:00	06/26/23 22:53	1

QC Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128565-1

Method: 939-M - Organic Lead (GFAA) (Continued)

Lab Sample ID: LCS 280-617513/2-B — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 617519 — **Prep Batch: 617513**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead, Total Organic			15.0	15.7		ug/L		105	80 - 120		

Lab Sample ID: 580-128565-3 MS — **Client Sample ID: RHS-EF-TRAIN-01-062023-N**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 617519 — **Prep Batch: 617513**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead, Total Organic	0.81	U	15.0	15.8		ug/L		105	80 - 120		

Lab Sample ID: 580-128565-3 MSD — **Client Sample ID: RHS-EF-TRAIN-01-062023-N**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 617519 — **Prep Batch: 617513**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead, Total Organic	0.81	U	15.0	16.1		ug/L		107	80 - 120	2	20

Lab Chronicle

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128565-1

Client Sample ID: RHS-FB-TRAIN-01-062023-N — Lab Sample ID: 580-128565-1

Date Collected: 06/20/23 08:40 — **Matrix: Water**
Date Received: 06/21/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			429584	SL	EET SEA	06/22/23 09:06
Total/NA	Analysis	8015D		1	429678	KLW	EET SEA	06/22/23 22:15

Client Sample ID: RHS-TB-TRAIN-01-062023-N — Lab Sample ID: 580-128565-2

Date Collected: 06/20/23 08:35 — **Matrix: Water**
Date Received: 06/21/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	429506	JBT	EET SEA	06/21/23 16:21
Total/NA	Analysis	8260D		1	429509	JBT	EET SEA	06/21/23 16:21

Client Sample ID: RHS-EF-TRAIN-01-062023-N — Lab Sample ID: 580-128565-3

Date Collected: 06/20/23 09:20 — **Matrix: Water**
Date Received: 06/21/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	429506	JBT	EET SEA	06/21/23 17:57
Total/NA	Analysis	8260D		1	429509	JBT	EET SEA	06/21/23 17:57
Total/NA	Prep	3510C			429590	SL	EET SEA	06/22/23 09:22
Total/NA	Analysis	8270E SIM		1	429708	SR	EET SEA	06/23/23 20:44
Total/NA	Prep	3510C			429584	SL	EET SEA	06/22/23 09:06
Total/NA	Analysis	8015D		1	429678	KLW	EET SEA	06/22/23 22:34
Total Recoverable	Prep	3005A			429571	TMH	EET SEA	06/21/23 17:44
Total Recoverable	Analysis	6010D		1	429756	JLS	EET SEA	06/22/23 21:02
Total/NA	Prep	939M			617513	LRD	EET DEN	06/26/23 16:00
Total/NA	Prep	939M			617514	LRD	EET DEN	06/26/23 17:00
Total/NA	Analysis	939-M		1	617519	LRD	EET DEN	06/26/23 23:09

Client Sample ID: RHS-IF-TRAIN-01-062023-N — Lab Sample ID: 580-128565-4

Date Collected: 06/20/23 09:50 — **Matrix: Water**
Date Received: 06/21/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	429506	JBT	EET SEA	06/21/23 18:45
Total/NA	Analysis	8260D		1	429509	JBT	EET SEA	06/21/23 18:45
Total/NA	Prep	3510C			429584	SL	EET SEA	06/22/23 09:06
Total/NA	Analysis	8015D		1	429678	KLW	EET SEA	06/22/23 22:53

Laboratory References:

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128565-1

Laboratory: Eurofins Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-19-25

Laboratory: Eurofins Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
939-M	939M	Water	Lead, Total Organic

Sample Summary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128565-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-128565-1	RHS-FB-TRAIN-01-062023-N	Water	06/20/23 08:40	06/21/23 09:30
580-128565-2	RHS-TB-TRAIN-01-062023-N	Water	06/20/23 08:35	06/21/23 09:30
580-128565-3	RHS-EF-TRAIN-01-062023-N	Water	06/20/23 09:20	06/21/23 09:30
580-128565-4	RHS-IF-TRAIN-01-062023-N	Water	06/20/23 09:50	06/21/23 09:30

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424

20230620 NPDES-SEA-01

Chain of Custody Record

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Client Information	Sampler: AECOM	Lab PM: Elaine Walker	Carrier Tracking No(s): FedEx	COC No: 20230620NPDES-SEA-01
Client Contact: Alethea Ramos (alternate: Margie Pascua)	Phone:	E-Mail: M.Elaine.Walker@EurofinsET.com	State of Origin: Hawaii	Page: Page 1 of 1
Company: AECOM	PWSID:			Job #:
Address: 1001 Bishop St. Suite 1600	Due Date Requested: see subcontract			
City: Honolulu	TAT Requested (days): 7 days			
State, Zip: Hawaii 96813	Compliance Project: Δ Yes Δ No			
Phone: 808-521-3051 (direct: 808-529-7283) (alternate: 808-356-5373)	PO #:			
Email: alethea.ramos@aecom.com (alternate: margie.pascua@aecom.com)	WO #:			
Project Name: CV22F0106	Project #: 60674414.01.30.01			
Site: RHSF	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	VOCs (BTEX) by 3050/8260 and TPH-g by 8260	TPH-d/r/o by 8015	PAHs (naphthalene, 1-methylnaphthalene, 2-methylnaphthalene) by 8270SIM	Organic Lead by 939M	Total organic lead by 6010B	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	D		
RHS-FB-TRAIN-01-062023-N	06/20/23	0946	FB	W	N	N		2					
RHS-TB-TRAIN-01-062023-N	↓	0935	TB	↓	N	N	2						
RHS-EF-TRAIN-01-062023-N	↓	0920	G	↓	N	N	3	2	2	2	1		
RHS-IF-TRAIN-01-062023-N	↓	0950	G	↓	N	N	3	2					

6/20/23

580-128565 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

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

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

Prelim data (Level 1or2)=see TAT above. DoD Stage 4 report standard TAT. AECOM EQuIS EDD.

Special Instructions/QC Requirements: DOD QSM project.

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	6/20/23 1100	AECOM		6/20/23 1100	AECOM
	6/20/23 1300	AECOM		6/21/23 0930	EFTN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 3.3/3.3 Gel

Ver: 01/16/2019 6/29/2023

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-128565-1

Login Number: 128565
List Number: 1
Creator: Groves, Elizabeth

List Source: Eurofins Seattle

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.	True	
Sample custody seals, if present, are intact.	True	
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	
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?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
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	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-128565-1

Login Number: 128565
List Number: 2
Creator: Rystrom, Joshua R

List Source: Eurofins Denver
List Creation: 06/24/23 02:04 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
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	
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	
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.	N/A	
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	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Kathryn Repine
AECOM
1001 Bishop Street
Honolulu, Hawaii 96813

Generated 7/11/2023 12:14:27 PM

JOB DESCRIPTION

Red Hill NPDES CV22F0106

JOB NUMBER

580-128944-1

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424

See page two for job notes and contact information.

my EOL

Eurofins Seattle

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 will 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 Environment Testing Northwest, LLC Project Manager.

Authorization

M. Elaine Walker

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Authorized for release by
Marie Walker, Senior Project Manager
M.Elaine.Walker@et.eurofinsus.com
(253)248-4972

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Job ID: 580-128944-1

Laboratory: Eurofins Seattle

Narrative

CASE NARRATIVE

Client: AECOM
Project: Red Hill NPDES CV22F0106
Report Number: 580-128944-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
Four samples were received on 6/29/2023 9:25 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8º C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

GASOLINE RANGE ORGANICS (GRO)
Samples RHS-TB-TRAIN-02-062823-N (580-128944-2), RHS-EF-TRAIN-02-062823-N (580-128944-3) and RHS-IF-TRAIN-02-062823-N (580-128944-4) were analyzed for gasoline range organics (GRO) in accordance with CA_LUFT_GRO. The samples were analyzed on 06/30/2023.

Gasoline Range Organics (C6-C12) was detected in method blank MB 580-430445/7 at a level that was above the method detection limit but below the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. This target analyte concentration was less than half the reporting limit (1/2RL); therefore, reanalysis of the samples was not performed.

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

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples RHS-TB-TRAIN-02-062823-N (580-128944-2), RHS-EF-TRAIN-02-062823-N (580-128944-3) and RHS-IF-TRAIN-02-062823-N (580-128944-4) were analyzed for volatile organic compounds (GC-MS) in accordance with 8260C. The samples were analyzed on 06/30/2023.

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

SEMIVOLATILE ORGANIC COMPOUNDS - SELECTED ION MODE (SIM)
Sample RHS-EF-TRAIN-02-062823-N (580-128944-3) was analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with 8270E SIM. The sample was prepared on 06/30/2023 and analyzed on 07/01/2023.

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

Job ID: 580-128944-1 (Continued)

Laboratory: Eurofins Seattle (Continued)

DIESEL AND EXTENDED RANGE ORGANICS

Samples RHS-FB-TRAIN-02-062823-N (580-128944-1), RHS-EF-TRAIN-02-062823-N (580-128944-3) and RHS-IF-TRAIN-02-062823-N (580-128944-4) were analyzed for diesel and extended range organics in accordance with 8015D. The samples were prepared and analyzed on 06/30/2023.

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

METALS (ICP)

Sample RHS-EF-TRAIN-02-062823-N (580-128944-3) was analyzed for Metals (ICP) in accordance with 6010D. The sample was prepared on 06/29/2023 and analyzed on 06/30/2023.

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

ORGANIC LEAD

Sample RHS-EF-TRAIN-02-062823-N (580-128944-3) was analyzed for Organic Lead in accordance with 939M. The sample was prepared and analyzed on 07/03/2023.

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

Definitions/Glossary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128944-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

GC/MS Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128944-1

Client Sample ID: RHS-FB-TRAIN-02-062823-N

Lab Sample ID: 580-128944-1

Date Collected: 06/28/23 09:40
Date Received: 06/29/23 09:25

Matrix: Water

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	90	U	110	90	ug/L		06/30/23 08:46	06/30/23 19:27	1
C24-C40	180	U	200	180	ug/L		06/30/23 08:46	06/30/23 19:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*73*		*53 - 120*	*06/30/23 08:46*	*06/30/23 19:27*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128944-1

Client Sample ID: RHS-TB-TRAIN-02-062823-N

Lab Sample ID: 580-128944-2

Date Collected: 06/28/23 09:45
Matrix: Water
Date Received: 06/29/23 09:25

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/30/23 17:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*78 - 120*		*06/30/23 17:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/30/23 17:11	1
Toluene	0.39	U	1.0	0.39	ug/L			06/30/23 17:11	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/30/23 17:11	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/30/23 17:11	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/30/23 17:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*80 - 120*		*06/30/23 17:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 120*		*06/30/23 17:11*	*1*
4-Bromofluorobenzene (Surr)	*91*		*80 - 120*		*06/30/23 17:11*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 120*		*06/30/23 17:11*	*1*

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128944-1

Client Sample ID: RHS-EF-TRAIN-02-062823-N

Lab Sample ID: 580-128944-3

Date Collected: 06/28/23 09:50
Matrix: Water
Date Received: 06/29/23 09:25

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/30/23 19:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*78 - 120*		*06/30/23 19:11*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/30/23 19:11	1
Toluene	0.39	U	1.0	0.39	ug/L			06/30/23 19:11	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/30/23 19:11	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/30/23 19:11	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/30/23 19:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*80 - 120*		*06/30/23 19:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 120*		*06/30/23 19:11*	*1*
4-Bromofluorobenzene (Surr)	*87*		*80 - 120*		*06/30/23 19:11*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*06/30/23 19:11*	*1*

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		06/30/23 08:51	07/01/23 02:40	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		06/30/23 08:51	07/01/23 02:40	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		06/30/23 08:51	07/01/23 02:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*63*		*29 - 144*	*06/30/23 08:51*	*07/01/23 02:40*	*1*
Terphenyl-d14	*79*		*29 - 150*	*06/30/23 08:51*	*07/01/23 02:40*	*1*
2-methylnaphthalene-d10	*39*		*35 - 120*	*06/30/23 08:51*	*07/01/23 02:40*	*1*
Fluoranthene-d10 (Surr)	*79*		*49 - 129*	*06/30/23 08:51*	*07/01/23 02:40*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		06/30/23 08:46	06/30/23 19:46	1
C24-C40	180	U	200	180	ug/L		06/30/23 08:46	06/30/23 19:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*68*		*53 - 120*	*06/30/23 08:46*	*06/30/23 19:46*	*1*

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7	U	30	2.7	ug/L		06/29/23 17:25	06/30/23 23:24	1

Method: CADHS 939-M - Organic Lead (GFAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		07/03/23 14:45	07/03/23 22:18	1

Client Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128944-1

Client Sample ID: RHS-IF-TRAIN-02-062823-N

Lab Sample ID: 580-128944-4

Date Collected: 06/28/23 10:15
Matrix: Water
Date Received: 06/29/23 09:25

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			06/30/23 19:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*78 - 120*		*06/30/23 19:34*	*1*

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/30/23 19:34	1
Toluene	0.39	U	1.0	0.39	ug/L			06/30/23 19:34	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/30/23 19:34	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/30/23 19:34	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/30/23 19:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*80 - 120*		*06/30/23 19:34*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 120*		*06/30/23 19:34*	*1*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*		*06/30/23 19:34*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*06/30/23 19:34*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		06/30/23 08:46	06/30/23 20:05	1
C24-C40	180	U	200	180	ug/L		06/30/23 08:46	06/30/23 20:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*77*		*53 - 120*	*06/30/23 08:46*	*06/30/23 20:05*	*1*

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-430445/7
Matrix: Water
Analysis Batch: 430445

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	36.9	J	100	31	ug/L			06/30/23 14:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*78 - 120*		*06/30/23 14:23*	*1*

Lab Sample ID: LCS 580-430445/10
Matrix: Water
Analysis Batch: 430445

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 (C6-C12)	1000	936		ug/L		94	75 - 127

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*78 - 120*

Lab Sample ID: LCSD 580-430445/11
Matrix: Water
Analysis Batch: 430445

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 (C6-C12)	1000	864		ug/L		86	75 - 127	8	13

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*78 - 120*

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-430448/7
Matrix: Water
Analysis Batch: 430448

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			06/30/23 14:23	1
Toluene	0.39	U	1.0	0.39	ug/L			06/30/23 14:23	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			06/30/23 14:23	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			06/30/23 14:23	1
o-Xylene	0.39	U	1.0	0.39	ug/L			06/30/23 14:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*80 - 120*		*06/30/23 14:23*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 120*		*06/30/23 14:23*	*1*
4-Bromofluorobenzene (Surr)	*91*		*80 - 120*		*06/30/23 14:23*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*06/30/23 14:23*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-430448/8
Matrix: Water
Analysis Batch: 430448

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	10.0	9.62		ug/L		96	80 - 122
Toluene	10.0	9.46		ug/L		95	80 - 120
Ethylbenzene	10.0	9.11		ug/L		91	80 - 120
m-Xylene & p-Xylene	10.0	8.98		ug/L		90	80 - 120
o-Xylene	10.0	8.76		ug/L		88	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*104*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 120*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Dibromofluoromethane (Surr)	*97*		*80 - 120*

Lab Sample ID: LCSD 580-430448/9
Matrix: Water
Analysis Batch: 430448

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
Benzene	10.0	9.68		ug/L		97	80 - 122	1	14
Toluene	10.0	9.60		ug/L		96	80 - 120	1	13
Ethylbenzene	10.0	9.43		ug/L		94	80 - 120	3	14
m-Xylene & p-Xylene	10.0	9.29		ug/L		93	80 - 120	3	14
o-Xylene	10.0	9.34		ug/L		93	80 - 120	6	16

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*111*		*80 - 120*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Dibromofluoromethane (Surr)	*99*		*80 - 120*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-430402/1-A
Matrix: Water
Analysis Batch: 430496

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 430402

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		06/30/23 08:51	06/30/23 17:27	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		06/30/23 08:51	06/30/23 17:27	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		06/30/23 08:51	06/30/23 17:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*71*		*29 - 144*	*06/30/23 08:51*	*06/30/23 17:27*	*1*
Terphenyl-d14	*85*		*29 - 150*	*06/30/23 08:51*	*06/30/23 17:27*	*1*
2-methylnaphthalene-d10	*65*		*35 - 120*	*06/30/23 08:51*	*06/30/23 17:27*	*1*
Fluoranthene-d10 (Surr)	*86*		*49 - 129*	*06/30/23 08:51*	*06/30/23 17:27*	*1*

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 580-430402/2-A
Matrix: Water
Analysis Batch: 430496

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 430402

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Naphthalene			8.00	4.65		ug/L		58	34 - 120		
2-Methylnaphthalene			8.00	4.48		ug/L		56	33 - 120		
1-Methylnaphthalene			8.00	4.96		ug/L		62	29 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*80*		*29 - 144*
Terphenyl-d14	*89*		*29 - 150*
2-methylnaphthalene-d10	*66*		*35 - 120*
Fluoranthene-d10 (Surr)	*89*		*49 - 129*

Lab Sample ID: LCSD 580-430402/3-A
Matrix: Water
Analysis Batch: 430496

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 430402

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Naphthalene			8.00	4.41		ug/L		55	34 - 120	5	35
2-Methylnaphthalene			8.00	4.20		ug/L		53	33 - 120	6	35
1-Methylnaphthalene			8.00	4.75		ug/L		59	29 - 120	4	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*76*		*29 - 144*
Terphenyl-d14	*79*		*29 - 150*
2-methylnaphthalene-d10	*60*		*35 - 120*
Fluoranthene-d10 (Surr)	*82*		*49 - 129*

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 580-430401/1-A
Matrix: Water
Analysis Batch: 430492

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 430401

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	90	U	110	90	ug/L		06/30/23 08:46	06/30/23 18:30	1
C24-C40	180	U	200	180	ug/L		06/30/23 08:46	06/30/23 18:30	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*85*		*53 - 120*	*06/30/23 08:46*	*06/30/23 18:30*	*1*

Lab Sample ID: LCS 580-430401/2-A
Matrix: Water
Analysis Batch: 430492

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 430401

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
C9-C25			4000	3130		ug/L		78	55 - 134		
C24-C40			4000	3400		ug/L		85	36 - 143		

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 580-430401/2-A
Matrix: Water
Analysis Batch: 430492

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 430401

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	81		53 - 120

Lab Sample ID: LCSD 580-430401/3-A
Matrix: Water
Analysis Batch: 430492

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 430401

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
C9-C25			4000	3210		ug/L		80	55 - 134	2	26
C24-C40			4000	3440		ug/L		86	36 - 143	1	24

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-Terphenyl	80		53 - 120

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 580-430377/12-A
Matrix: Water
Analysis Batch: 430580

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 430377

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7	U	30	2.7	ug/L		06/29/23 17:25	06/30/23 23:14	1

Lab Sample ID: LCS 580-430377/13-A
Matrix: Water
Analysis Batch: 430580

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 430377

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead			1000	944		ug/L		94	80 - 120		

Lab Sample ID: LCSD 580-430377/14-A
Matrix: Water
Analysis Batch: 430580

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 430377

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead			1000	963		ug/L		96	80 - 120	2	20

Lab Sample ID: 580-128944-3 MS
Matrix: Water
Analysis Batch: 430580

Client Sample ID: RHS-EF-TRAIN-02-062823-N
Prep Type: Total Recoverable
Prep Batch: 430377

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead	2.7	U	1000	951		ug/L		95	80 - 120		

Lab Sample ID: 580-128944-3 MSD
Matrix: Water
Analysis Batch: 430580

Client Sample ID: RHS-EF-TRAIN-02-062823-N
Prep Type: Total Recoverable
Prep Batch: 430377

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead	2.7	U	1000	935		ug/L		94	80 - 120	2	20

QC Sample Results

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128944-1

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: 580-128944-3 DU — **Client Sample ID: RHS-EF-TRAIN-02-062823-N**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 430580 — **Prep Batch: 430377**

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Lead	2.7	U		2.7	U	ug/L				NC	20

Method: 939-M - Organic Lead (GFAA)

Lab Sample ID: MB 280-618364/1-B — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 618527 — **Prep Batch: 618364**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		07/03/23 14:45	07/03/23 21:47	1

Lab Sample ID: LCS 280-618364/2-B — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 618527 — **Prep Batch: 618364**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead, Total Organic			15.0	15.2		ug/L		101	80 - 120		

Lab Sample ID: 580-128944-3 MS — **Client Sample ID: RHS-EF-TRAIN-02-062823-N**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 618527 — **Prep Batch: 618364**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead, Total Organic	0.81	U	15.0	15.1		ug/L		101	80 - 120		

Lab Sample ID: 580-128944-3 MSD — **Client Sample ID: RHS-EF-TRAIN-02-062823-N**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 618527 — **Prep Batch: 618364**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lead, Total Organic	0.81	U	15.0	15.4		ug/L		103	80 - 120	2	20

Lab Chronicle

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128944-1

Client Sample ID: RHS-FB-TRAIN-02-062823-N — Lab Sample ID: 580-128944-1

Date Collected: 06/28/23 09:40 — **Matrix: Water**
Date Received: 06/29/23 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			430401	SL	EET SEA	06/30/23 08:46
Total/NA	Analysis	8015D		1	430492	KLW	EET SEA	06/30/23 19:27

Client Sample ID: RHS-TB-TRAIN-02-062823-N — Lab Sample ID: 580-128944-2

Date Collected: 06/28/23 09:45 — **Matrix: Water**
Date Received: 06/29/23 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	430445	JBT	EET SEA	06/30/23 17:11
Total/NA	Analysis	8260D		1	430448	JBT	EET SEA	06/30/23 17:11

Client Sample ID: RHS-EF-TRAIN-02-062823-N — Lab Sample ID: 580-128944-3

Date Collected: 06/28/23 09:50 — **Matrix: Water**
Date Received: 06/29/23 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	430445	JBT	EET SEA	06/30/23 19:11
Total/NA	Analysis	8260D		1	430448	JBT	EET SEA	06/30/23 19:11
Total/NA	Prep	3510C			430402	SL	EET SEA	06/30/23 08:51
Total/NA	Analysis	8270E SIM		1	430496	T1L	EET SEA	07/01/23 02:40
Total/NA	Prep	3510C			430401	SL	EET SEA	06/30/23 08:46
Total/NA	Analysis	8015D		1	430492	KLW	EET SEA	06/30/23 19:46
Total Recoverable	Prep	3005A			430377	JLS	EET SEA	06/29/23 17:25
Total Recoverable	Analysis	6010D		1	430580	JLS	EET SEA	06/30/23 23:24
Total/NA	Prep	939M			618364	LRD	EET DEN	07/03/23 14:45
Total/NA	Prep	939M			618366	LRD	EET DEN	07/03/23 15:45
Total/NA	Analysis	939-M		1	618527	LRD	EET DEN	07/03/23 22:18

Client Sample ID: RHS-IF-TRAIN-02-062823-N — Lab Sample ID: 580-128944-4

Date Collected: 06/28/23 10:15 — **Matrix: Water**
Date Received: 06/29/23 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	430445	JBT	EET SEA	06/30/23 19:34
Total/NA	Analysis	8260D		1	430448	JBT	EET SEA	06/30/23 19:34
Total/NA	Prep	3510C			430401	SL	EET SEA	06/30/23 08:46
Total/NA	Analysis	8015D		1	430492	KLW	EET SEA	06/30/23 20:05

Laboratory References:

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128944-1

Laboratory: Eurofins Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-19-25

Laboratory: Eurofins Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
939-M	939M	Water	Lead, Total Organic

Sample Summary

Client: AECOM
Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-128944-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-128944-1	RHS-FB-TRAIN-02-062823-N	Water	06/28/23 09:40	06/29/23 09:25
580-128944-2	RHS-TB-TRAIN-02-062823-N	Water	06/28/23 09:45	06/29/23 09:25
580-128944-3	RHS-EF-TRAIN-02-062823-N	Water	06/28/23 09:50	06/29/23 09:25
580-128944-4	RHS-IF-TRAIN-02-062823-N	Water	06/28/23 10:15	06/29/23 09:25

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: AECOM	Lab PM: Elaine Walker	Carrier Tracking No(s): FedEx	COC No: 20230628NPDES-SEA-01
Client Contact: Alethea Ramos (alternate: Margie Pascua)	Phone:	E-Mail: M.Elaine.Walker@EurofinsET.com	State of Origin: Hawaii	Page: Page 1 of 1
Company: AECOM	PWSID:			Job #:
Address: 1001 Bishop St. Suite 1600	Due Date Requested: see subcontract			
City: Honolulu	TAT Requested (days): 7 days			
State, Zip: Hawaii 96813	Compliance Project: Δ Yes Δ No			
Phone: 808-521-3051 (direct: 808-529-7283) (alternate: 808-356-5373)	PO #:			
Email: alethea.ramos@aecom.com (alternate: margie.pascua@aecom.com)	WO #:			
Project Name: CV22F0106	Project #: 60674414.01.30.01			
Site: RHSF	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	VOCs (BTEX) by 3050/8260 and TPH-g by 8260	TPH-d/r/o by 8015	PAHs (naphthalene, 1-methylnaphthalene, 2-methylnaphthalene) by 8270SIM	Organic Lead by 939M	Total organic lead by 6010B	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	D		
RHS-FB-TRAIN-02-062823-N	6/28/23	0940	FB	W	N	N		2					
RHS-TB-TRAIN-02-062823-N	↓	0945	TB	W	N	N	2						
RHS-EF-TRAIN-02-062823-N		0950	G	W	N	N	3	2	2	2	1		
RHS-IF-TRAIN-02-062823-N	↓	1015	G	W	N	N	3	2					

MU 6/28/23

580-128944 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

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

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

Prelim data (Level 1or2)=see TAT above. DoD Stage 4 report standard TAT. AECOM EQuIS EDD.

Special Instructions/QC Requirements: DOD QSM project.

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	6/28/23 1100	AECOM	[signature]	6/28/23 1100	AECOM
[signature]	6/28/23 1250	AECOM	[signature]	6/29/23 0925	ET
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 4.3 2.8/2.8 Gel

Ver: 01/16/2019 7/11/2023

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-128944-1

Login Number: 128944
List Number: 1
Creator: Groves, Elizabeth

List Source: Eurofins Seattle

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.	True	
Sample custody seals, if present, are intact.	True	
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	
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?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
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	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-128944-1

Login Number: 128944
List Number: 2
Creator: Naylis, Patrick J

List Source: Eurofins Denver
List Creation: 06/30/23 03:42 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
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	
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	
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.	N/A	
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Bio-Aquatic Testing, Inc.

TCEQ TNI Accredited

AECOM
US Navy
OUTFALL RHS-EF-TRAIN-03-061323-N

Chronic Biomonitoring Report

87719

Pimephales promelas

June 15, 2023

Approved by Joshua Reed

Bio-Aquatic Testing, Inc. • 2501 Mayes Rd. Ste. 100 • Carrollton, Texas • 75006

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Unless otherwise noted in the body of the report, all data reported in this document are in compliance with NELAC standards and apply only to the samples referenced within. This report document may not be edited or reproduced in part or in full by any other entity, unless Bio-Aquatic Testing, Inc. issues written approval.

***HAND-WRITTEN RAW DATA TABLES ARE AVAILABLE UPON REQUEST**

BIO-AQUATIC TESTING, INC.
2501 Mayes Road, Suite 100
Carrollton, Texas 75006
Tel: (972) 242-7750
Fax: (972) 242-7749

TOXICITY TEST REPORT - Chronic

Client:	AECOM	Sample:	RHS-EF-TRAIN-03-061323-N
Facility:	US Navy	Laboratory Number:	87719
Permit No.		Date:	June 15, 2023

Pimephales promelas **passed** survival and growth testing requirements.

SAMPLE COLLECTION:

Composite effluent samples from AECOM, US Navy, were transported to Bio-Aquatic Testing via Air Cargo. Samples were received on June 15, 2023 and June 19, 2023. Effluent samples were collected from Outfall RHS-EF-TRAIN-03-061323-N by facility personnel.

The effluent samples were analyzed for total residual chlorine using the Hanna Ion Specific Meter #711 and contained <0.10 mg/L and <0.10 mg/L respectively. Effluent and laboratory dilution water pH, temperature, and dissolved oxygen data were collected daily.

TEST PROCEDURES:
Pimephales promelas

EPA METHOD: 1000

The seven-day Chronic *Pimephales promelas* survival and growth test was initiated at 15:47 hours on June 15, 2023. Five effluent concentrations of 12.5%, 25%, 50%, 75% and 100% were prepared utilizing synthetic water as dilution water. The test was set up with 450mL plastic cups containing 250mL of test solution as test chambers. Forty organisms less than 24 hours old were used in each concentration. Each concentration consisted of five replicate chambers containing eight laboratory-cultured larvae. A control of five replicate cups of eight organisms each in synthetic water was conducted concurrently with the test. There was 100% survival in the control. The test was renewed daily with fresh solutions. Organisms in each test chamber were fed less than 24-hour old brine shrimp two times per day. At the end of the test all organisms were sacrificed, dried, and weighed. Data on surviving organisms and water quality were collected daily. The test ended at 09:00 hours on June 22, 2023. Survival and growth (weight) were statistically (p=0.05) analyzed according to EPA procedures to determine the Lowest Observable Effect Concentration (LOEC) and the No Observable Effect Concentration (NOEC).

SURVIVAL:

Pimephales promelas

Pimephales promelas survival data failed Shapiro Wilk's test for normality at the 0.01 (0.900) alpha level after the arc sine (square root (Y)) transformation. Bartlett's test for homogeneity is sensitive to non-normal data and should not be performed if data fails Shapiro Wilk's test. The non-parametric Steel's Many-One Rank test performed on *Pimephales promelas* survival data demonstrated no statistically significant differences between the control and any of the effluent concentrations tested.

LOEC: Not Calculable (Q)
NOEC: 100% Effluent

GROWTH:

Pimephales promelas

Pimephales promelas growth data were normally distributed at the alpha level of 0.01 (0.900) using Shapiro Wilk's test for normality. Growth data were homogeneous using Bartlett's test at the alpha level of 0.01 (15.09) without data transformations. Using ANOVA and Dunnett's test on *Pimephales promelas* growth data demonstrated no statistically significant differences between the control and any of the effluent concentrations tested.

LOEC: Not Calculable (Q)
NOEC: 100% Effluent

BIO-AQUATIC TESTING, INC.
TOXICITY TEST

Chronic *Pimephales promelas*

Client: AECOM US Navy

Permit Number:

Sample Type: Composite **Outfall Name:** RHS-EF-TRAIN-03

Receiving Water Name:

Test Start Time: 15:47 Test End Time: 09:00

Lab ID: 87719

Test Temperature (oC): 25 ± 1

Photo Period: 16 Hours Light
8 Hours Dark

Begin Date: 6/15/2023

End Date: 6/22/2023

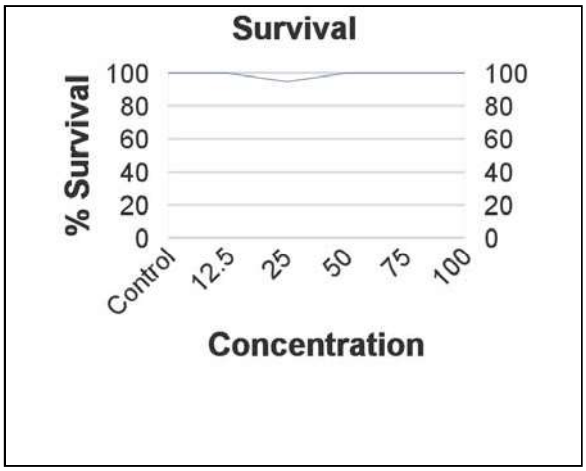
SURVIVAL

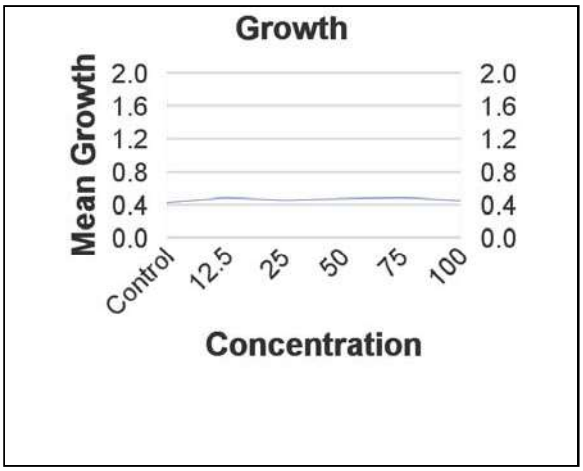
Effluent Con.		Number of Alive 6/15	6/16	6/17	6/18	6/19	6/20	6/21	6/22	Avg% Surv.
Control	A	8	8	8	8	8	8	8	8	100.0%
	B	8	8	8	8	8	8	8	8	
	C	8	8	8	8	8	8	8	8	
	D	8	8	8	8	8	8	8	8	
	E	8	8	8	8	8	8	8	8	
12.5	A	8	8	8	8	8	8	8	8	100.0%
	B	8	8	8	8	8	8	8	8	
	C	8	8	8	8	8	8	8	8	
	D	8	8	8	8	8	8	8	8	
	E	8	8	8	8	8	8	8	8	
25	A	8	8	8	8	8	8	8	8	95.0%
	B	8	8	8	8	8	8	7	7	
	C	8	8	8	8	8	8	8	8	
	D	8	8	7	7	7	7	7	7	
	E	8	8	8	8	8	8	8	8	
50	A	8	8	8	8	8	8	8	8	100.0%
	B	8	8	8	8	8	8	8	8	
	C	8	8	8	8	8	8	8	8	
	D	8	8	8	8	8	8	8	8	
	E	8	8	8	8	8	8	8	8	

BIO-AQUATIC TESTING, INC.

Effluent Con.		Number Of Alive								Avg% Surv.
		6/15	6/16	6/17	6/18	6/19	6/20	6/21	6/22	
75	A	8	8	8	8	8	8	8	8	100.0%
	B	8	8	8	8	8	8	8	8	
	C	8	8	8	8	8	8	8	8	
	D	8	8	8	8	8	8	8	8	
	E	8	8	8	8	8	8	8	8	
100	A	8	8	8	8	8	8	8	8	100.0%
	B	8	8	8	8	8	8	8	8	
	C	8	8	8	8	8	8	8	8	
	D	8	8	8	8	8	8	8	8	
	E	8	8	8	8	8	8	8	8	
	A									
	B									
	C									
	D									
	E									
	A									
	B									
	C									
	D									
	E									

Concentration Response Relationships





BIO-AQUATIC TESTING, INC.

Chronic Pimephales promelas SURVIVAL Lab ID: **87719**

Client: **AECOM** Facility **US Navy** Outfall: RHS-EF- Sample Type Composite

TEST INSTRUCTIONS: Chronic Fathead Only

Culture No. : PO-23-165A Photo Period: 16hr light, 8hr dark **RANDOMIZATION:** **SC-5** 1

Dilution:		Control					12.5					25					50				
	DATE/TIME/ TECHNICIAN	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
0Hr	6/15/23 JC 1547	8	—	—	—		8	—	—	—		8	—	—	—		8	—	—	—	
24Hr	6/16/23 0810 MM	8	—	—	—		8	—	—	—		8	—	—	—		8	—	—	—	
48Hr	6/17/23 1031 AR	8	—	—	—		8	—	—	—		8	—	—	7	8	8	—	—	—	
72Hr	6-18-23 1009 JC	8	—	—	—		8	—	—	—		8	—	—	7	8	8	—	—	—	
96Hr	6-19-23 1356 AR	8	—	—	—		8	—	—	—		8	—	—	7	8	8	—	—	—	
5 days	6-20-23 1111 JC	8	—	—	—		8	—	—	—		8	—	—	7	8	8	—	—	—	
6 days	6-21-23 SDT 1150	8	—	—	—		8	—	—	—		8	7	8	7	8	8	—	—	—	
7 days	6-22-23 SDT 0900	8	—	—	—		8	—	—	—		8	7	8	7	8	8	—	—	—	

Dilution:	75					100														
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
0Hr	8	—	—	—		8	—	—	—											
24Hr	8	—	—	—		8	—	—	—											
48Hr	8	—	—	—		8	—	—	—											
72Hr	8	—	—	—		8	—	—	—											
96Hr	8	—	—	—		8	—	—	—											
5 days	8	—	—	—		8	—	—	—											
6 days	8	—	—	—		8	—	—	—											
7 days	8	—	—	—		8	—	—	—											

Lined through spaces preceded by a number represent the same number. Lined spaces without a preceding number indicate unused or not applicable sp

BIO-AQUATIC TESTING, INC.

Chronic Pimephales promelas SURVIVAL Lab ID: **87719**

Client: **AECOM** Facility **US Navy** Outfall: RHS-EF- Sample Type Composite

TEST INSTRUCTIONS: Chronic Fathead Only

Test Temperatures

	0Hr	24Hr		48Hr		72Hr		96Hr		5 days		6 days		7 days
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Control	25.3	24.7	25.7	25.3	25.0	25.2	25.1	24.9	24.8	24.9	24.5	25.3	24.8	25.3
12.5														
25														
50														
75														
100														
TIME/DATE TECH	6-15-23 ~~6/14/23~~ 1547 JC	6/16/23 0910 MM		6/17/23 1031 AR		6-18-23 1039 JC		6-19-23 1356 AR		6-20-23 JC		6-21-23 EOT 1150		6-22-23 SDT 0900
IR GUN ID #	020	020		024		020		024		020		IR-024		IR-024

Lined through spaces preceded by a number represent the same number. Lined spaces without a preceding number indicate unused or not applicable spaces.

1st Organism **BIO-AQUATIC TESTING, INC.** **TOXICITY TEST**

Chronic *Pimephales promelas*

Client: AECOM US Navy **Lab ID:** 87719

Permit Number:

Sample Type: Composite **Outfall Name:** RHS-EF-TRAIN-03

Receiving Water Name:

Synthetic

	ON	SN	Wt.	Avg.	SN Avg.
A	8	8	2.666	0.333	0.333
B	8	8	3.087	0.386	0.386
C	8	8	4.243	0.530	0.530
D	8	8	3.425	0.428	0.428
E	8	8	3.805	0.476	0.476

Mean	C.V. %
0.431	17.79

SN Mean	SN C.V. %
0.431	17.8

12.5

	ON	Wt.	Avg.
A	8	3.407	0.426
B	8	3.715	0.464
C	8	5.332	0.667
D	8	3.370	0.421
E	8	3.644	0.456

Mean	C.V. %
0.487	21.00

25

	ON	Wt.	Avg.
A	8	3.263	0.408
B	8	3.720	0.465
C	8	3.922	0.490
D	8	3.521	0.440
E	8	3.872	0.484

Mean	C.V. %
0.457	7.41

50

	ON	Wt.	Avg.
A	8	3.790	0.474
B	8	3.925	0.491
C	8	3.737	0.467
D	8	4.042	0.505
E	8	3.523	0.440

Mean	C.V. %
0.475	5.17

75

	ON	Wt.	Avg.
A	8	4.089	0.511
B	8	3.776	0.472
C	8	3.537	0.442
D	8	4.269	0.534
E	8	3.892	0.487

Mean	C.V. %
0.489	7.21

100

	ON	Wt.	Avg.
A	8	3.588	0.449
B	8	2.781	0.348
C	8	4.040	0.505
D	8	3.549	0.444
E	8	4.149	0.519

Mean	C.V. %
0.453	14.91

	ON	Wt.	Avg.
A			
B			
C			
D			
E			

Mean	C.V. %

	ON	Wt.	Avg.
A			
B			
C			
D			
E			

Mean	C.V. %

* = spilled cup

Note: ON stands for original number per replicate, while SN refers to the number surviving after test completion.

BIO-AQUATIC TESTING, INC.

Chronic Pimephales promelas TOXICITY TEST

Client: AECOM Lab ID: **87719**

Facility: US Navy Balance: Radwag BAL-007

Begin Date: 6/15/2023 End Date: 6/22/2023 Organism: Pimephales promelas

Analyst: CH Date/Time placed in Oven: 06/22/23 1530

Weigh Date: 06/24/23 Date/Time removed from Oven: 06/23/23 1530

Control

	Qty.	Wt.
A	8	2.6666
B		3.087
C		4.243
D		3.425
E		3.805

12.5 %

	Qty.	Wt.
A	8	3.407
B		3.715
C		5.332
D		3.370
E		3.644

25 %

	Qty.	Wt.
A	8	3.263
B	7	3.720
C	8	3.922
D	7	3.521
E	8	3.872

50 %

	Qty.	Wt.
A	8	3.790
B		3.925
C		3.737
D		4.042
E		3.523

75 %

	Qty.	Wt.
A	8	4.089
B		3.776
C		3.537
D		4.269
E		3.892

100 %

	Qty.	Wt.
A	8	3.558
B		2.781
C		4.040
D		3.549
E		4.149

	Qty.	Wt.
A		
B		
C		
D		
E		

	Qty.	Wt.
A		
B		
C		
D		
E		

	Qty.	Wt.
A		
B		
C		
D		
E		

Lined through spaces preceded by a number represent the same number. Lined spaces without a preceding number indicate unused or not applicable spaces.

APPENDIX A

STATISTICS SUMMARY

Both the lethal and sub-lethal endpoints were statistically calculated according to their respective EPA guidelines. The Chronic Freshwater organisms were calculated according to EPA-821-R-02-013, October 2002 Fourth Edition. The Chronic Marine and Estuarine organisms were calculated according to EPA-821-R-02-014, October 2002 Third Edition. The Acute Freshwater and Marine organisms were calculated according to EPA-821-R-02-012, October 2002 Fifth Edition. The fertilization organisms were calculated according to EPA-600-R-95-136 or EPA-600-R-12-022, dependent upon the species. Listed below are the basic principles of these guidelines. If you would like a copy of the raw statistical calculations for your test then please contact us.

The chronic and acute *Pimephales promelas* and *Menidia beryllina* survival data is analyzed using Shapiro Wilks Test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts (parametric). If the data fails Shapiro Wilks Test or Bartlett's Test then Steels Many One Test (non-parametric) is used. The chronic *Pimephales promelas* and *Menidia beryllina* growth data is analyzed using Shapiro Wilks Test and Bartlett's Test. If the data passes one of these tests then the data is run through ANOVA and Dunnetts. If the data fails Shipiro Wilks Test and Bartlett's Test then Steels Many One Test is used. Point estimation may also be used.

The chronic *Mysidopsis bahia* survival data is analyzed using Chi-square test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts. If the data fails Chi-square test or Bartlett's Test then Steels Many One Test is used. *Mysidopsis bahia* growth data is analyzed using Chi-square test and Bartlett's Test. If the data passes one of these tests then the data is run through ANOVA and Dunnetts. If the data fails Chi-square test and Bartlett's Test then Steels Many One Test is used. Point estimation may also be used.

The acute *Mysidopsis bahia* survival data is analyzed using Shapiro Wilks Test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts. If the data fails Shipiro Wilks Test or Bartlett's Test then Steels Many One Test is used. Point estimation may also be used.

The chronic *Ceriodaphnia dubia* survival data are analyzed using the Fisher's Exact Test. The chronic *Ceriodaphnia dubia* reproduction and are analyzed using the Chi-square test and Bartlett Test. If the data passes one of these tests then the data is run through ANOVA and Dunnetts. If the data fails Chi-square test and Bartlett's Test then Steels Many One Test is used. Point estimation may also be used.

The acute *Daphnia pulex* and *Ceriodaphnia dubia* survival data is analyzed using Shapiro Wilks Test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts. If the data fails Shapiro Wilks Test or Bartlett's Test then Steels Many One Test is used. Point estimation may also be used.

The fertilization data is analyzed using Shapiro Wilks Test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts. If the data fails Shapiro Wilks Test or Bartlett's Test then Steels Many One Test is used. Point estimation or TST methodology may also be used.

```
fathead survival
File: 87719.pps       Transform: NO TRANSFORMATION

Shapiro - Wilk's test for normality
-------------------------------------------------------------------------------

D =    1.200

W =    0.559

Critical W (P = 0.05) (n = 30) = 0.927
Critical W (P = 0.01) (n = 30) = 0.900
-------------------------------------------------------------------------------

Data FAIL normality test. Try another transformation.

Warning -  The first three homogeneity tests are sensitive to non-normal
           data and should not be performed.



fathead survival
File: 87719.pps       Transform: NO TRANSFORMATION

Hartley's test for homogeneity of variance
Bartlett's test for homogeneity of variance
-------------------------------------------------------------------------------

These two tests can not be performed because at least one group has
zero variance.

Data FAIL to meet homogeneity of variance assumption.
Additional transformations are useless.

-------------------------------------------------------------------------------




fathead survival
File: 87719.pps        Transform: NO TRANSFORMATION

          STEEL'S MANY-ONE RANK TEST       -       Ho:Control<Treatment
-----------------------------------------------------------------------------
                              TRANSFORMED    RANK     CRIT.
GROUP    IDENTIFICATION          MEAN         SUM     VALUE     df    SIG
----- --------------------    -----------   -------   ------   -----  ---
  1                control       8.000
  2                   12.5       8.000       27.50     16.00    5.00
  3                     25       7.600       22.50     16.00    5.00
```

4	50	8.000	27.50	16.00	5.00
5	75	8.000	27.50	16.00	5.00
6	100	8.000	27.50	16.00	5.00

Critical values use k = 5, are 1 tailed, and alpha = 0.05

fathead growth
File: 87719.ppg Transform: NO TRANSFORMATION

Shapiro - Wilk's test for normality

D = 0.096

W = 0.952

Critical W (P = 0.05) (n = 30) = 0.927
Critical W (P = 0.01) (n = 30) = 0.900

Data PASS normality test at P=0.01 level. Continue analysis.

fathead growth
File: 87719.ppg Transform: NO TRANSFORMATION

Bartlett's test for homogeneity of variance
Calculated B1 statistic = 10.19

Table Chi-square value = 15.09 (alpha = 0.01, df = 5)
Table Chi-square value = 11.07 (alpha = 0.05, df = 5)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

fathead growth
File: 87719.ppg Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.013	0.003	0.646

Within (Error)	24	0.096	0.004
Total	29	0.109	

Critical F value = 2.62 (0.05,5,24)
Since F < Critical F FAIL TO REJECT Ho: All equal

fathead growth
File: 87719.ppg Transform: NO TRANSFORMATION

DUNNETT'S TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	0.431	0.431		
2	12.5	0.487	0.487	-1.407	
3	25	0.457	0.457	-0.671	
4	50	0.475	0.475	-1.122	
5	75	0.489	0.489	-1.467	
6	100	0.452	0.452	-0.541	

Dunnett table value = 2.36 (1 Tailed Value, P=0.05, df=24,5)

fathead growth
File: 87719.ppg Transform: NO TRANSFORMATION

DUNNETT'S TEST - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	5			
2	12.5	5	0.094	21.9	-0.056
3	25	5	0.094	21.9	-0.027
4	50	5	0.094	21.9	-0.045
5	75	5	0.094	21.9	-0.059
6	100	5	0.094	21.9	-0.022

Bio-Aquatic Testing, Inc.

FRESH WATER TEST SETUP FORM

Client: AECOM

Permit

Facility: US Navy

Lab Number 87719

Outfall Name: RHS-EF-TRAIN-03-061323-N

Number of samples 2

Dilution Water: Synthetic Lab

Receiving Water Name:

Dechlorinate Sample: No

Sx #	Rcvd Date	Rcvd Time	Sampling Dates		Sampling Times	
			Begin Date	End Date	Start	End
1	06/15/23	15:00	06/13/23	06/14/23	09:10	21:10
2	06/19/23	13:00	06/16/23	06/17/23	09:10	06:10

Type of Test(s)

Pimephales promelas	Chronic

Dilution Water

Sample #	Hardness As mg/L $CaCO_3$	Alkalinity as mg/L $CaCO_3$
1	114	52
2	114	52

Start Sx #	1	Date:	6/15/2023
Renew Sx #	1	Date:	6/16/2023
Renew Sx #	1	Date:	6/17/2023
Renew Sx #	1	Date:	6/18/2023
Renew Sx #	2	Date:	6/19/2023
Renew Sx #	2	Date:	6/20/2023
Renew Sx #	2	Date:	6/21/2023

Test Start Date: 6/15/2023

Test End Date: 6/22/2023

Pimephales Test Set Up: 5 Reps & 8 Organisms per Rep

Test Set Up:

Concentrations: 12.5 25 50 75 100

Test Chemistry on these dilutions: 12.5 25 50 75 100

Samples received by:
- ○ Express Delivery
- ○ UPS Next Day
- ● via Air Cargo
- ○ DHL
- ○ Federal Express
- ○ the Client
- ○ Bio-Aquatic personnel

Other:

BIO-AQUATIC TESTING, INC.

Hardness, Alkalinity, Residual Chlorine, Specific Conductivity, and Salinity Analysis Data

Client: AECOM
Facility: US Navy
Dilution Water(s): Synthetic Lab

Lab ID: 87719
Outfall: RHS-EF-TRAIN-03
Test Date: June 15, 2023

EFFLUENT PARAMETERS

Effluent Sample #	Received		Residual Cl_2 (mg/L)	DeChlor (ml/L)[1]	Ammonia (mg/L)	Analyst Initials	Temp. Received
	Date	Time					
1	6/15/23	15:00	<0.10	N/A	<0.25	JR	2.3
2	6/19/23	13:00	<0.10	N/A	<0.25	DT	3.6

[1]**Dechlorination Reagent:** 0.025 N Sodium Thiosulfate

Effluent Sample #	pH	DO (mg/L)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Conductivity (umhos/cm)	Analyst Initials
1	7.4	9.1	170	70	568	JR
2	8.0	8.2	168	67	783	DT

DAILY RENEWAL CONDUCTIVITY**

Date		Sample #	Values are at Highest Dilution		Analyst
			Specific Conductivity as umhos/cm	Salinity (ppt)	
6/15	Lab H2O		476	0.3	MM
6/16	Lab H2O		455	0.3	AR
6/17	Lab H2O		490	0.3	JC
6/18	Lab H2O		453	0.3	JC
6/19	Lab H2O		385	0.2	CG
6/20	Lab H2O		379	0.2	TM
6/21	Lab H2O		362	0.2	AR
6/15	OUTFALL*	1	586	0.3	MM
6/16	OUTFALL*	1	575	0.3	AR
6/17	OUTFALL*	1	684	0.4	JC
6/18	OUTFALL*	1	661	0.4	JC
6/19	OUTFALL*	2	572	0.3	CG
6/20	OUTFALL*	2	589	0.3	TM
6/21	OUTFALL*	2	557	0.3	AR

**Conductivity is taken on the highest remaining effluent concentration used for test renewal, not necessarily 100%

Analysis Methods: Chlorine: Hanna Colorimeter #HI711, Ammonia: Hanna Colorimeter #HI733, Hardness: Hanna Photometer #HI96735, Alkalinity: Hanna Colorimeter #HI775, pH, DO, Conductivity: Thermo Versa Star Benchtop Meter

BIO-AQUATIC TESTING, INC.

pH, Dissolved Oxygen

Chronic **Pimephales promelas**

Client: AECOM

Lab ID: 87719

Facility: US Navy

Dilution Water(s): Synthetic Lab

Outfall: RHS-EF-TRAIN-03-061323-N

Test Begin Date: June 15, 2023

NR indicates that the test is non-renewal.

					Concentration							
ANALYST	DATE	TIME	SX#	UNIT	Control	12.5	25	50	75	100		
MM	6/15	Start	1	pH	8.1	7.9	7.8	7.7	7.7	7.7		
		25 ± 1		DO (mg/L)	7.8	7.8	7.8	7.8	7.8	7.7		
AR	6/16	24 Hr	1	pH	7.5	7.6	7.6	7.6	7.6	7.6		
		25 ± 1		DO (mg/L)	8.6	8.3	8.3	8.1	8.1	8.0		
		Renew	1	pH	7.7	7.8	7.8	7.7	7.7	7.6		
				DO (mg/L)	7.6	7.6	7.6	7.8	7.8	8.3		
JC	6/17	48 Hr	1	pH	7.6	7.5	7.5	7.4	7.4	7.5		
		25 ± 1		DO (mg/L)	7.1	7.1	7.1	7.1	7.1	6.7		
		Renew	1	pH	7.7	7.8	7.8	7.8	7.8	7.7		
				DO (mg/L)	7.2	7.5	7.5	8.0	8.0	8.3		
JC	6/18	72 Hr	1	pH	7.8	7.7	7.7	7.7	7.7	7.7		
		25 ± 1		DO (mg/L)	7.9	7.7	7.7	7.5	7.5	7.5		
		Renew	1	pH	7.9	7.9	7.9	7.9	7.9	7.8		
				DO (mg/L)	7.7	7.9	7.9	8.0	8.0	8.2		
CG	6/19	96 Hr	1	pH	8.1	8.0	8.0	7.9	7.9	7.7		
		25 ± 1		DO (mg/L)	7.2	7.0	7.0	6.9	6.6	6.5		
		Renew	2	pH	7.8	7.9	7.9	7.8	7.8	7.7		
				DO (mg/L)	6.5	7.1	7.1	7.4	7.4	7.6		
TM	6/20	120 Hr	2	pH	7.6	7.5	7.5	7.5	7.5	7.6		
		25 ± 1		DO (mg/L)	7.0	7.1	7.1	7.2	7.2	7.5		
		Renew	2	pH	7.8	7.9	7.9	7.8	7.8	7.7		
				DO (mg/L)	7.5	7.9	7.9	8.1	8.1	8.3		
MM	6/21	144 Hr	2	pH	7.8	7.9	7.8	7.7	7.6	7.6		
		25 ± 1		DO (mg/L)	7.7	7.8	7.8	7.7	7.7	7.7		
		Renew	2	pH	7.8	7.8	7.8	7.7	7.7	7.7		
				DO (mg/L)	7.7	7.7	7.9	8.1	8.2	8.4		
AR	6/22	168 Hr	2	pH	7.5	7.5	7.5	7.5	7.5	7.7		
		25 ± 1		DO (mg/L)	8.0	7.9	7.9	7.8	7.8	7.7		

Appendix B

Pimephales promelas

BIO-AQUATIC TESTING, INC.

Carrollton, TX

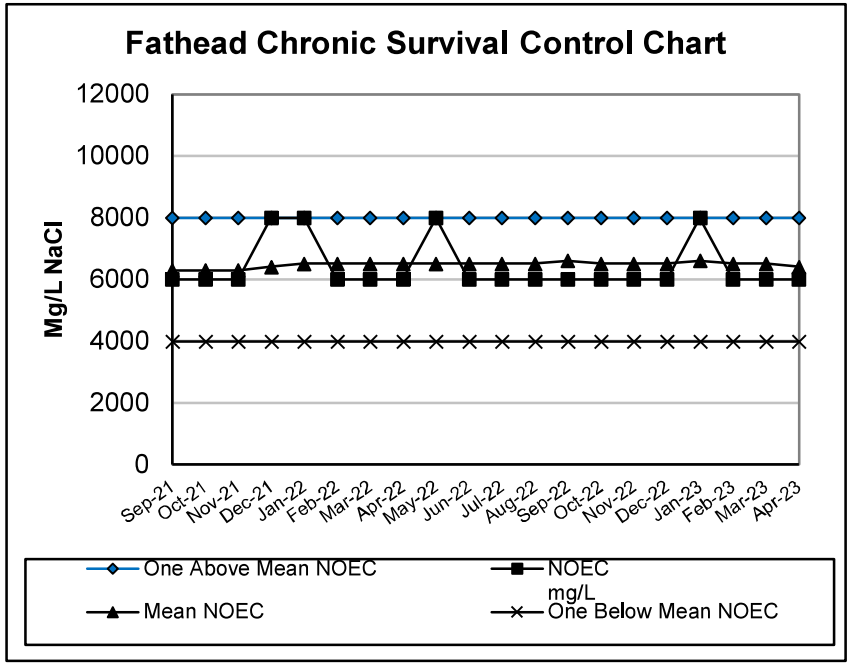
REFERENCE TOXICANTS

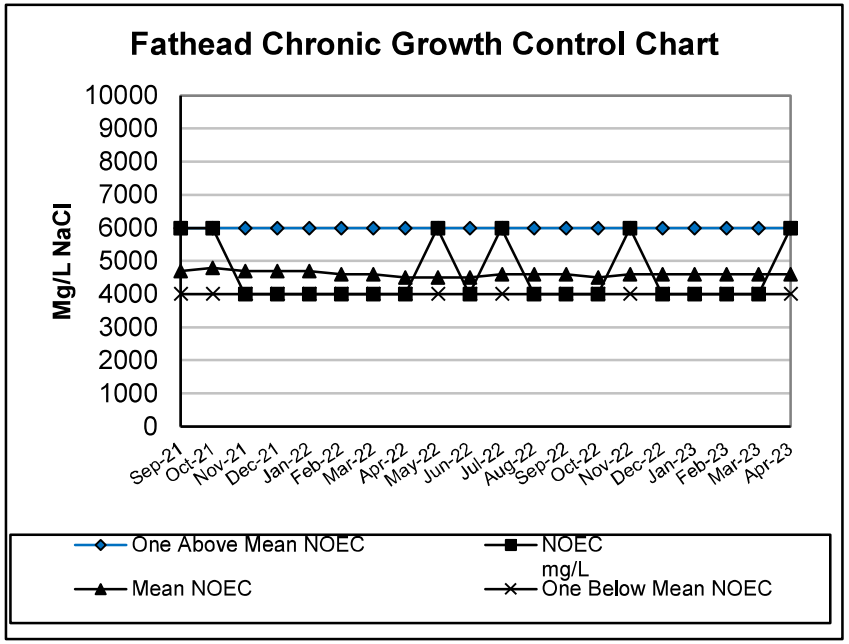
Bio-Aquatic Testing conducts reference toxicant testing monthly for organisms cultured in-house. For studies requiring purchased organisms, reference toxicant testing is performed simultaneously. Reference toxicant testing validates data and measures organism consistency. Only reagent grade chemicals are used of the following choices: sodium laurel sulfate (SLS), copper sulfate, copper chloride, potassium chloride, and sodium chloride. Organism responses are tracked with control charts for each reference toxicant/organism combination. The data are examined for sensitivity trends and to determine if results are within EPA described limits.

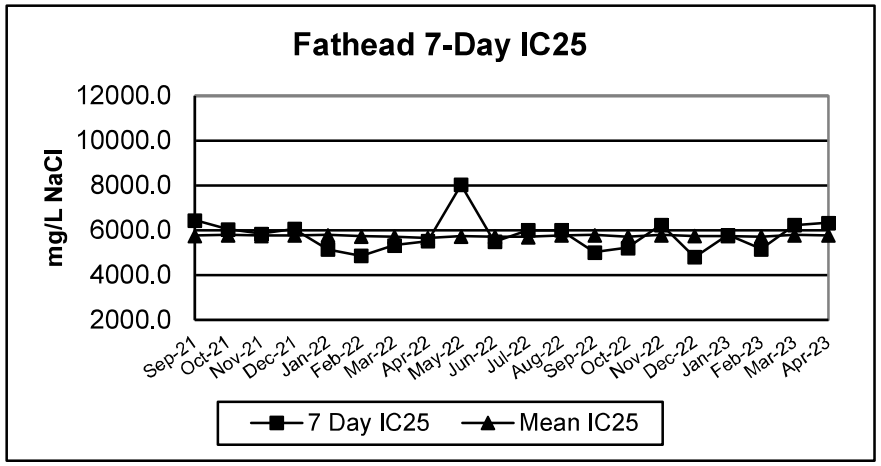
CHRONIC REFERENCE TOXICANT TEST RESULTS

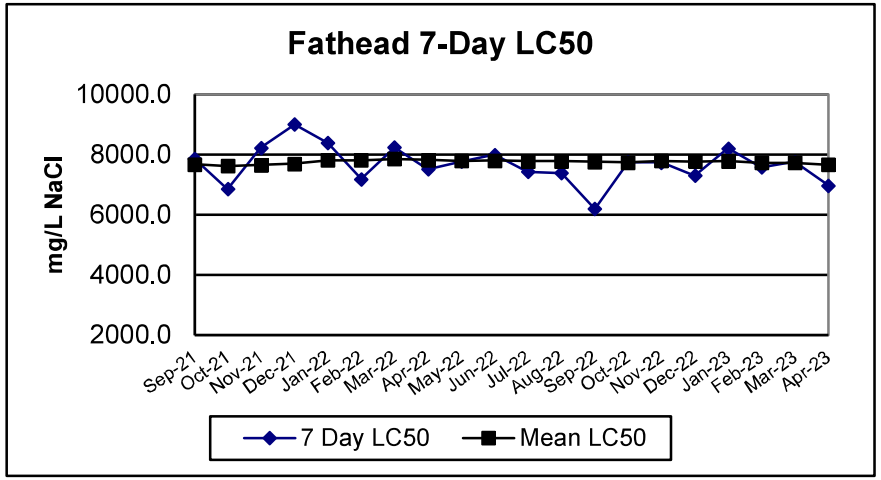
DILUTION WATER:	Standard Synthetic Freshwater						
CHEMICAL:	Sodium Chloride						
DURATION:	7 Days						
TEST NUMBER:	378						
PROJECT NUMBER:	86825						
START DATE:	4/26/2023						
START TIME:	17:25						
TOTAL NUMBER EXPOSED:	40 organisms per concentration						
CONCENTRATIONS (mg/L):	CON	2000	4000	6000	8000	10000	12000
NUMBER DEAD PER CONCENTRATION:	3	0	0	7	31	40	40
TEST METHODS:	As listed in EPA-821-R-02-013						
STATISTICAL METHODS:	SURVIVAL: Steel's Many-One Rank Test GROWTH: ANOVA-Dunnetts w/Bonf. Adj.						
NOEC FOR SURVIVAL:	6000 mg/L						
LOEC FOR SURVIVAL:	8000 mg/L						
NOEC FOR GROWTH:	6000 mg/L						
LOEC FOR GROWTH:	8000 mg/L						

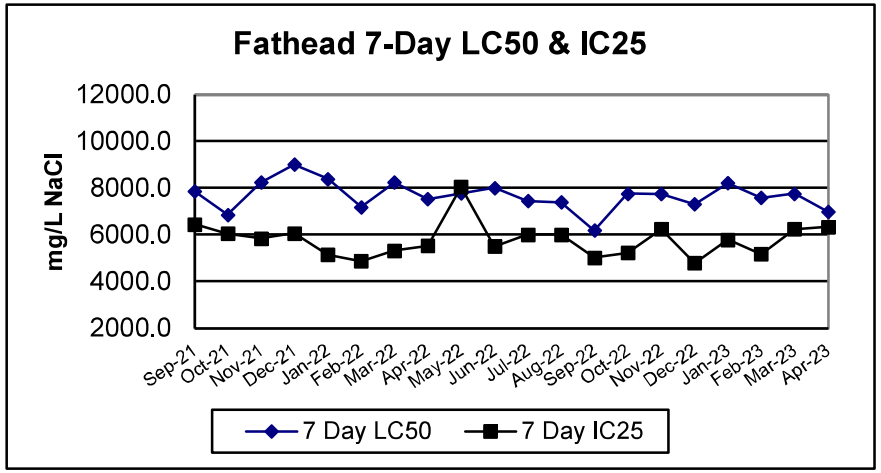
PMSD: 25.6


Fathead Chronic Survival Control Chart
Mg/L NaCl
12000
10000
8000
6000
4000
2000
0
Sep-21 Oct-21 Nov-21 Dec-21 Jan-22 Feb-22 Mar-22 Apr-22 May-22 Jun-22 Jul-22 Aug-22 Sep-22 Oct-22 Nov-22 Dec-22 Jan-23 Feb-23 Mar-23 Apr-23
One Above Mean NOEC
NOEC mg/L
Mean NOEC
One Below Mean NOEC


Fathead Chronic Growth Control Chart
Mg/L NaCl
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Sep-21 Oct-21 Nov-21 Dec-21 Jan-22 Feb-22 Mar-22 Apr-22 May-22 Jun-22 Jul-22 Aug-22 Sep-22 Oct-22 Nov-22 Dec-22 Jan-23 Feb-23 Mar-23 Apr-23
One Above Mean NOEC
NOEC mg/L
Mean NOEC
One Below Mean NOEC


Fathead 7-Day IC25
mg/L NaCl
12000.0
10000.0
8000.0
6000.0
4000.0
2000.0
Sep-21 Oct-21 Nov-21 Dec-21 Jan-22 Feb-22 Mar-22 Apr-22 May-22 Jun-22 Jul-22 Aug-22 Sep-22 Oct-22 Nov-22 Dec-22 Jan-23 Feb-23 Mar-23 Apr-23
7 Day IC25
Mean IC25


Fathead 7-Day LC50
mg/L NaCl
10000.0
8000.0
6000.0
4000.0
2000.0
Sep-21 Oct-21 Nov-21 Dec-21 Jan-22 Feb-22 Mar-22 Apr-22 May-22 Jun-22 Jul-22 Aug-22 Sep-22 Oct-22 Nov-22 Dec-22 Jan-23 Feb-23 Mar-23 Apr-23
7 Day LC50
Mean LC50


Fathead 7-Day LC50 & IC25
mg/L NaCl
12000.0
10000.0
8000.0
6000.0
4000.0
2000.0
Sep-21 Oct-21 Nov-21 Dec-21 Jan-22 Feb-22 Mar-22 Apr-22 May-22 Jun-22 Jul-22 Aug-22 Sep-22 Oct-22 Nov-22 Dec-22 Jan-23 Feb-23 Mar-23 Apr-23
7 Day LC50
7 Day IC25

APPENDIX C

LITERATURE REFERENCES

U.S.E.P.A., 2002. Short-Term Methods For Estimating The Chronic Toxicity Of Effluents And Receiving Water To Freshwater Organisms (Fifth Edition) U.S. Environmental Protection Agency, Office of Water, Washington D.C., EPA-821-R-02-012.

U.S.E.P.A., 2002. Short-Term Methods For Estimating The Chronic Toxicity Of Effluents and Receiving Water To Marine And Estuarine Organisms (Third Edition) U.S. Environmental Protection Agency, Office of Water, Washington D.C., EPA-821-R-02-014.

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CHAIN-OF-CUSTODY SHEETS

Appendix D

BIO-AQUATIC TESTING, INC.
2501 MAYES RD., STE. 100
CARROLLTON, TX 75006
PH: 972-242-7750 FAX: 972-242-7749

CHAIN OF CUSTODY

☐ Bio Only: No Sample Left

Lab Id : 87719

Please Review & Complete Sections A, B, C, & D.

Sample No: ____ - ____

Revision 2 Effective Date 9/25/2017

Check Sample No. : ✓ First, ____ Second, or ____ Third.

P.O. No:

Client: AECOM

Facility: US Navy - RH Shaft

Permit No:

Outfall:

Client Contact: Ann Bridge ann.bridge@aecom.com

Client Phone: 916-414-5864

A. REVIEW SCHEDULED TEST(s):

Chronic	Pimephales promelas

Concentration: 12.5 25 50 75 100

To Ship the 1st Sample on:

(For TX) Setup separate 24hr Acute Test? No

B. Use area below to make changes, if the Scheduled Test(s) in "A" are incorrect:

Freshwater Species					Saltwater Species	
C. dubia (water flea)	*D. pulex (water flea)*	*D. magna (water flea)*	*P. promelas (minnow)*	*Selenastrum (green algae)*	*M. beryllina (minnow)*	*Mysidopsis (shrimp)*
☐Chronic	☐Chronic	☐Chronic	☑Chronic	☐96 Hour	☐Chronic	☐Chronic
☐96 Hour	☐96 Hour	☐96 Hour	☐96 Hour	☐48 Hour	☐96 Hour	☐96 Hour
☐48 Hour	☐48 Hour	☐48 Hour	☐48 Hour	☐24 Hour	☐48 Hour	☐48 Hour
☐24 Hour	☐24 Hour	☐24 Hour	☐24 Hour		☐24 Hour	☐24 Hour

Notes: Chronic Fathead

Normal

C.

Sample ID or Location: (Outfall No. or Name)	Sample Type: E = Effluent, RS = Rec. Stream, S = Sediment	Sample Date From	Sample Date To	Sample Time (military) From	Sample Time (military) To	Grab or Composite	Sampled By: (Sign and Print Name)	Number Of Containers Shipped
1 ~~RHS-EF-TRAN-US-OUTBS-W~~	E	6/13/23	6/14/23	0910	2110	composite	CHRISTINA HARDTLE	16
2								
3								

D.

	Relinquished By:	Date	Time	Received By:	Date	Time
1	Christina Hardtle	6/13/23	1900	Angelo Geraldo	6/13/23	1900
2	Angelo Geraldo	6/14/23	1900	[illegible]	6/14/23	0700
3	[illegible]	6/14/23	1300	[illegible]	6-15-23	1500

Bio-Aquatic Sample Login

BAT sample personnel: ● Yes ● No

Dechlorinate Sample: ○ Yes ● No

Dilution Water: ○ Receiving Stream ● Synthetic Lab

Date: 6-15-23	Time: 1500	By: [illegible]	Temperature: 2.3 (C) IR#: [illegible]
Chlorine: <0.1 mg/l	Ammonia: <0.25 mg/l	Int. Sal\Cond: 568 ppt/uS	Adj. Salinity ppt
pH: 7.4	Hardness: 170 mg/l LR	Other	
DO: 9.1 mg/l	Alkalinity: 70 mg/l	Condition: Good	

BIO-AQUATIC TESTING, INC.
2501 MAYES RD., STE. 100
CARROLLTON, TX 75006
PH: 972-242-7750 FAX: 972-242-7749

CHAIN OF CUSTODY

☐ Bio Only: No Sample Left

Lab Id : 87719

Please Review & Complete Sections A, B, C, & D.

Sample No: ____ - ____

Revision 2 Effective Date 9/25/2017

Check Sample No. : ____ First, ✓ Second, or ____ Third.

P.O. No:

Client: AECOM

Facility: US Navy - RH Shaft

Permit No:

Outfall:

Client Contact: Ann Bridge ann.bridge@aecom.com

Client Phone: 916-414-5861

A. REVIEW SCHEDULED TEST(s):

Chronic	Pimephales promelas

Concentration: 12.5 25 50 75 100

(For TX) Setup separate 24hr Acute Test? No

To Ship the 1st Sample on:

B. Use area below to make changes, if the Scheduled Test(s) in "A" are incorrect:

Freshwater Species					Saltwater Species	
C. dubia (water flea)	*D. pulex (water flea)*	*D. magna (water flea)*	*P. promelas (minnow)*	*Selenastrum (green algae)*	*M. beryllina (minnow)*	*Mysidopsis (shrimp)*
☐Chronic	☐Chronic	☐Chronic	☑Chronic	☐96 Hour	☐Chronic	☐Chronic
☐96 Hour	☐96 Hour	☐96 Hour	☐96 Hour	☐48 Hour	☐96 Hour	☐96 Hour
☐48 Hour	☐48 Hour	☐48 Hour	☐48 Hour	☐24 Hour	☐48 Hour	☐48 Hour
☐24 Hour	☐24 Hour	☐24 Hour	☐24 Hour		☐24 Hour	☐24 Hour

Notes: Chronic Fathead

C.

Sample ID or Location: (Outfall No. or Name)	Sample Type: E = Effluent, RS = Rec. Stream, S = Sediment	Sample Date From	Sample Date To	Sample Time (military) From	Sample Time (military) To	Grab or Composite	Sampled By: (Sign and Print Name)	Number Of Containers Shipped
1 RHS-EF-TRAN-US-OUTFALL	E	6/16/23	6/17/23	0910	0610	composite	CHRISTINA HARDTLE	8
2								
3								

D.

	Relinquished By:	Date	Time	Received By:	Date	Time
1	CHRISTINA HARDTLE	6/16/23	1845	Angelo Caraka	6/16/23	1845
2	Angelo Caraka	6/17/23	0645	[illegible]	6/17/23	0645
3	[illegible]	6/17/23	1230	DT	6-19-23	1300

Bio-Aquatic Sample Login

BAT sample personnel: ● Yes ○ No

Dechlorinate Sample: ○ Yes ● No

Dilution Water: ○ Receiving Stream ● Synthetic Lab

Date: 6-19-23 Time: 1300 By: DT Temperature: 3.6 (C) IR#: 002

Chlorine: <0.1 mg/l	Ammonia: <0.25 mg/l	Int. Sal\Cond: 783 ppt/uS	Adj. Salinity ppt
pH: 8.0	Hardness: 168 mg/l	Other	
DO: 5.2 mg/l	Alkalinity: 67 mg/l	Condition: good	

REGULATORY AGENCY TABLES

Appendix E

Table 1 (Sheet 1 of 2)

BIOMONITORING REPORT

Pimephales promelas SURVIVAL AND GROWTH TEST

Permittee: AECOM - US Navy

Permit No.:

Outfall No.: RHS-EF-TRAIN-03-061323-N

		Date/Time		Date/Time
Dates and times	FROM:	6/13/2023 @ 09:10	TO:	6/14/2023 @ 21:10
Composites were collected:	FROM:	6/16/2023 @ 09:10	TO:	6/17/2023 @ 06:10
	FROM:	@	TO:	@

Test Initiation: Time: 15:47 Date: 6/15/2023

Dilution Water Used: [ ] Receiving Water [X] Synthetic Dilution Water

DATA TABLE FOR GROWTH OF *Pimephales promelas*

Effluent Concentration	Average Dry Weight in milligrams (mg) per replicate					Mean Dry Weight (mg)	CV % [1]
	A	B	C	D	E		
0%	0.333	0.386	0.530	0.428	0.476	0.431	17.8
12.5 %	0.426	0.464	0.667	0.421	0.456	0.487	21.0
25 %	0.408	0.465	0.490	0.440	0.484	0.457	7.4
50 %	0.474	0.491	0.467	0.505	0.440	0.475	5.2
75 %	0.511	0.472	0.442	0.534	0.487	0.489	7.2
100 %	0.449	0.348	0.505	0.444	0.519	0.453	14.9
PMSD	Acceptable Range 30 or less					21.9 %	

DATA TABLE FOR SURVIVAL OF *Pimephales promelas*

Effluent Concentration	Percent Survival per replicate					Average % Survival			CV % [1]
	A	B	C	D	E	24 Hours	48 Hours	7-Day	
0%	100	100	100	100	100	100	100	100	0.0
12.5 %	100	100	100	100	100	100	100	100	0.0
25 %	100	87.5	100	87.5	100	100	97.5	95	7.2
50 %	100	100	100	100	100	100	100	100	0.0
75 %	100	100	100	100	100	100	100	100	0.0
100 %	100	100	100	100	100	100	100	100	0.0

[1] Coefficient of Variation = (standard deviation/mean) x 100)

?= cannot be calculated due to 100% mortality or lab exception

Table 1 (Sheet 2 of 2)

BIOMONITORING REPORT

Pimephales promelas SURVIVAL AND GROWTH TEST

Permittee: AECOM - US Navy

Permit No.:

Outfall No.: RHS-EF-TRAIN-03-061323-N

1. DUNNETT'S PROCEDURE OR STEEL'S MANY-ONE RANK TEST OR WILCOXON RANK SUM TEST (with Bonferroni adjustment as appropriate for Sub-Lethality)

Is the mean dry weight at 7 days significantly less (p=0.05) than the control's mean dry weight for the % effluent corresponding to significant non-lethal effects?

CRITICAL DILUTION (100 %) : _____ YES ____X____ NO

If no is checked enter a '0' for Parameter TLP6C, otherwise enter a '1'.

2. DUNNETT'S PROCEDURE OR STEEL'S MANY-ONE RANK TEST OR WILCOXON RANK SUM TEST (as appropriate for Lethality)

Is the survival at 7 days significantly less (p=0.05) than the control's survival for % effluent corresponding to lethality?

CRITICAL DILUTION (100 %) : _____ YES ____X____ NO

If no is checked enter a '0' for Parameter TWP6C, otherwise enter a '1'.

3. Enter the percent effluent corresponding to each NOEC/LOEC below:

a. NOEC Survival = 100 % Effluent (Parameter TOP6C)

b. LOEC Survival = Q* % Effluent (Parameter TXP6C)

c. NOEC Growth = 100 % Effluent (Parameter TPP6C)

d. LOEC Growth = Q* % Effluent (Parameter TYP6C)

Q* refers to a value that is not calculable

Bio-Aquatic Testing, Inc.

TCEQ TNI ACCREDITED

Report Revision Form

Report Revision Number 0 **for Lab ID** 87719 **was revised on** 07/14/2023.

The revision was issued for the following reason(s):

- [x] **Typo in the report document or tables**
- [ ] **Missing sheets or tables**
- [ ] **Hard data was not scanned in as required by the client**
- [ ] **Missing specially requested forms or data for the client**
- [x] **Other (Please Specify):**

Updated Outfall name

FORM 10.6 Revision 1 *Effective: 08/07/2018*

Bio-Aquatic Testing, Inc.

TCEQ TNI Accredited

AECOM
US Navy
OUTFALL RHS-EF-TRAIN-03-061323-(01)-N

Chronic Biomonitoring Report

87720

Pimephales promelas

June 15, 2023

Approved by Joshua Reed

Bio-Aquatic Testing, Inc. • 2501 Mayes Rd. Ste. 100 • Carrollton, Texas • 75006

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REFERENCE TOXICANTS	Appendix B
LITERATURE REFERENCES	Appendix C
CHAIN-OF-CUSTODY SHEETS	Appendix D
REGULATORY AGENCY TABLES	Appendix E

Unless otherwise noted in the body of the report, all data reported in this document are in compliance with NELAC standards and apply only to the samples referenced within. This report document may not be edited or reproduced in part or in full by any other entity, unless Bio-Aquatic Testing, Inc. issues written approval.

***HAND-WRITTEN RAW DATA TABLES ARE AVAILABLE UPON REQUEST**

BIO-AQUATIC TESTING, INC.
2501 Mayes Road, Suite 100
Carrollton, Texas 75006
Tel: (972) 242-7750
Fax: (972) 242-7749

TOXICITY TEST REPORT - Chronic

Client:	AECOM	Sample:	RHS-EF-TRAIN-03-061323-(01)-N
Facility:	US Navy	Laboratory Number:	87720
Permit No.		Date:	June 15, 2023

Pimephales promelas **passed** survival and growth testing requirements.

SAMPLE COLLECTION:

Composite effluent samples from AECOM, US Navy, were transported to Bio-Aquatic Testing via Air Cargo. Samples were received on June 15, 2023 and June 19, 2023. Effluent samples were collected from Outfall RHS-EF-TRAIN-03-061323-(01)-N by facility personnel.

The effluent samples were analyzed for total residual chlorine using the Hanna Ion Specific Meter #711 and contained <0.10 mg/L and <0.10 mg/L respectively. Effluent and laboratory dilution water pH, temperature, and dissolved oxygen data were collected daily.

TEST PROCEDURES:
Pimephales promelas

EPA METHOD: 1000

The seven-day Chronic *Pimephales promelas* survival and growth test was initiated at 16:29 hours on June 15, 2023. Five effluent concentrations of 12.5%, 25%, 50%, 75% and 100% were prepared utilizing synthetic water as dilution water. The test was set up with 450mL plastic cups containing 250mL of test solution as test chambers. Forty organisms less than 24 hours old were used in each concentration. Each concentration consisted of five replicate chambers containing eight laboratory-cultured larvae. A control of five replicate cups of eight organisms each in synthetic water was conducted concurrently with the test. There was 100% survival in the control. The test was renewed daily with fresh solutions. Organisms in each test chamber were fed less than 24-hour old brine shrimp two times per day. At the end of the test all organisms were sacrificed, dried, and weighed. Data on surviving organisms and water quality were collected daily. The test ended at 09:28 hours on June 22, 2023. Survival and growth (weight) were statistically (p=0.05) analyzed according to EPA procedures to determine the Lowest Observable Effect Concentration (LOEC) and the No Observable Effect Concentration (NOEC).

SURVIVAL:

Pimephales promelas

Pimephales promelas survival data failed Shapiro Wilk's test for normality at the 0.01 (0.900) alpha level after the arc sine (square root (Y)) transformation. Bartlett's test for homogeneity is sensitive to non-normal data and should not be performed if data fail Shapiro Wilk's test. The non-parametric Steel's Many-One Rank test performed on *Pimephales promelas* survival data demonstrated no statistically significant differences between the control and any of the effluent concentrations tested.

LOEC: Not Calculable (Q)
NOEC: 100% Effluent

GROWTH:

Pimephales promelas

Pimephales promelas growth data were normally distributed at the alpha level of 0.01 (0.900) using Shapiro Wilk's test for normality. Growth data were homogeneous using Bartlett's test at the alpha level of 0.01 (15.09) without data transformations. Using ANOVA and Dunnett's test on *Pimephales promelas* growth data demonstrated no statistically significant differences between the control and any of the effluent concentrations tested.

LOEC: Not Calculable (Q)
NOEC: 100% Effluent

BIO-AQUATIC TESTING, INC.
TOXICITY TEST

Chronic *Pimephales promelas*

Client: AECOM US Navy

Permit Number:

Sample Type: Composite **Outfall Name:** RHS-EF-TRAIN-03

Receiving Water Name:

Test Start Time: 16:29 Test End Time: 09:28

Lab ID: 87720

Test Temperature (oC): 25 ± 1

Photo Period: 16 Hours Light
8 Hours Dark

Begin Date: 6/15/2023

End Date: 6/22/2023

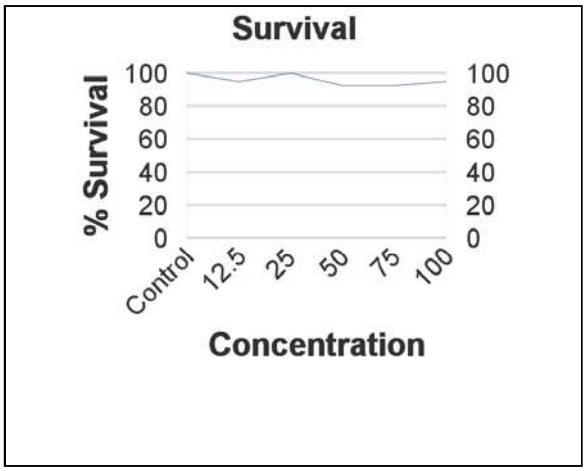
SURVIVAL

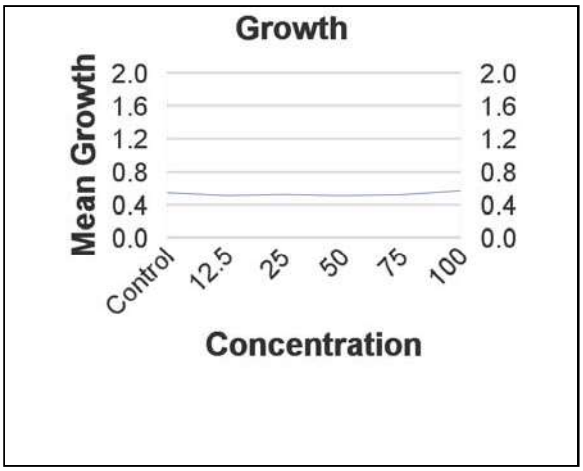
Effluent Con.		Number of Alive 6/15	6/16	6/17	6/18	6/19	6/20	6/21	6/22	Avg% Surv.
Control	A	8	8	8	8	8	8	8	8	100.0%
	B	8	8	8	8	8	8	8	8	
	C	8	8	8	8	8	8	8	8	
	D	8	8	8	8	8	8	8	8	
	E	8	8	8	8	8	8	8	8	
12.5	A	8	8	8	8	8	8	8	8	95.0%
	B	8	8	8	8	7	7	7	7	
	C	8	8	8	8	8	8	8	8	
	D	8	8	8	8	8	8	8	8	
	E	8	8	7	7	7	7	7	7	
25	A	8	8	8	8	8	8	8	8	100.0%
	B	8	8	8	8	8	8	8	8	
	C	8	8	8	8	8	8	8	8	
	D	8	8	8	8	8	8	8	8	
	E	8	8	8	8	8	8	8	8	
50	A	8	8	8	8	8	8	8	7	92.5%
	B	8	8	8	8	8	8	7	7	
	C	8	8	8	8	8	8	8	7	
	D	8	8	8	8	8	8	8	8	
	E	8	8	8	8	8	8	8	8	

BIO-AQUATIC TESTING, INC.

Effluent Con.		Number Of Alive								Avg% Surv.
		6/15	6/16	6/17	6/18	6/19	6/20	6/21	6/22	
75	A	8	8	8	8	8	8	8	7	92.5%
	B	8	8	8	8	8	8	8	8	
	C	8	8	8	8	8	8	8	8	
	D	8	8	8	8	8	8	8	7	
	E	8	8	8	8	8	8	7	7	
100	A	8	8	8	8	8	8	8	8	95.0%
	B	8	8	8	8	8	8	8	8	
	C	8	8	8	8	8	8	8	8	
	D	8	8	8	8	8	8	8	8	
	E	8	8	8	8	6	6	6	6	
	A									
	B									
	C									
	D									
	E									
	A									
	B									
	C									
	D									
	E									

Concentration Response Relationships





BIO-AQUATIC TESTING, INC.

Chronic Pimephales promelas SURVIVAL Lab ID: **87720**

Client: **AECOM** Facility **US Navy** Outfall: RHS-EF- Sample Type Composite

TEST INSTRUCTIONS: Chronic Fathead Only

Culture No.: P0-23-165A Photo Period: 16hr light, 8hr dark **RANDOMIZATION:** **SC-5** **2**

Dilution: Control

	DATE/TIME/ TECHNICIAN	A	B	C	D	E
0Hr	6-15-23 1629 JC	8	—	—	—	
24Hr	6-16-23 SDT 0746	8	—	—	—	
48Hr	6-17-23 SDT 1010	8	—	—	—	
72Hr	6-18-23 839 JC	8	—	—	—	
96Hr	6-19-23 1138 AR	8	—	—	—	
5 days	6-20-23 1400 JC	8	—	—	—	
6 days	6-21-23 1139 JC	8	—	—	—	
7 days	6-22-23 928 JC	8	—	—	—	

Dilution: 12.5

	A	B	C	D	E
0Hr	8	—	—	—	
24Hr	8	—	—	—	
48Hr	8	—	—	—	7₁
72Hr	8	—	—	—	7
96Hr	8	7₁	8	8	7
5 days	8	7	8	8	7
6 days	8	7	8	8	7
7 days	8	7	8	8	7

Dilution: 25

	A	B	C	D	E
0Hr	8	—	—	—	
24Hr	8	—	—	—	
48Hr	8	—	—	—	
72Hr	8	—	—	—	
96Hr	8	—	—	—	
5 days	8	—	—	—	
6 days	8	—	—	—	
7 days	8	—	—	—	

Dilution: 50

	A	B	C	D	E
0Hr	8	—	—	—	
24Hr	8	—	—	—	
48Hr	8	—	—	—	—
72Hr	8	—	—	—	
96Hr	8	—	—	—	
5 days	8	—	—	—	
6 days	8	7₁	8	—	
7 days	7₁	7	7₁	8	8

Dilution: 75

	A	B	C	D	E
0Hr	8	—	—	—	
24Hr	8	—	—	—	—
48Hr	8	—	—	—	—
72Hr	8	—	—	—	
96Hr	8	—	—	—	
5 days	8	—	—	—	
6 days	8	—	—	—	7₁
7 days	7₁	8	8	7₁	7

Dilution: 100

	A	B	C	D	E
0Hr	8	—	—	—	
24Hr	8	—	—	—	—
48Hr	8	—	—	—	—
72Hr	8	—	—	—	
96Hr	8	—	—	—	6₂
5 days	8	—	—	—	6
6 days	8	—	—	—	6
7 days	8	—	—	—	6

Dilution: _____

	A	B	C	D	E
0Hr					
24Hr					
48Hr					
72Hr					
96Hr					
5 days					
6 days					
7 days					

Dilution: _____

	A	B	C	D	E
0Hr					
24Hr					
48Hr					
72Hr					
96Hr					
5 days					
6 days					
7 days					

Lined through spaces preceded by a number represent the same number. Lined spaces without a preceding number indicate unused or not applicable sp

BIO-AQUATIC TESTING, INC.

Chronic Pimephales promelas SURVIVAL Lab ID: **87720**

Client: **AECOM** Facility **US Navy** Outfall: RHS-EF- Sample Type Composite

TEST INSTRUCTIONS: Chronic Fathead Only

Test Temperatures

	0Hr	24Hr		48Hr		72Hr		96Hr		5 days		6 days		7 days
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Control	25.0	23.4	24.2	25.1	25.3	25.2	25.2	24.9	24.8	25.0	24.8	25.1	24.9	25.2
12.5														
25														
50														
75														
100														
TIME/DATE TECH	6-15-23 1629 JC	6-16-23 SDT 0748		6-17-23 SDT 1010		6-18-23 834 JC		6-19-23 1138 AR		6-20-23 1400 JC		6-21-23 1139 JC		6-22-23 928 JC
IR GUN ID #	020	IR-024		IR-024		024		024		020		024		020

Lined through spaces preceded by a number represent the same number. Lined spaces without a preceding number indicate unused or not applicable spaces.

1st Organism **BIO-AQUATIC TESTING, INC.** **TOXICITY TEST**

Chronic *Pimephales promelas*

Client: AECOM US Navy **Lab ID:** 87720

Permit Number:

Sample Type: Composite **Outfall Name:** RHS-EF-TRAIN-03

Receiving Water Name:

Synthetic

	ON	SN	Wt.	Avg.	SN Avg.
A	8	8	5.496	0.687	0.687
B	8	8	4.847	0.606	0.606
C	8	8	3.944	0.493	0.493
D	8	8	3.303	0.413	0.413
E	8	8	4.294	0.537	0.537

Mean	C.V. %
0.547	19.19

SN Mean	SN C.V. %
0.547	19.2

12.5

	ON	Wt.	Avg.
A	8	4.246	0.531
B	8	3.893	0.487
C	8	4.839	0.605
D	8	3.620	0.453
E	8	3.839	0.480

Mean	C.V. %
0.511	11.66

25

	ON	Wt.	Avg.
A	8	5.423	0.678
B	8	4.399	0.550
C	8	3.785	0.473
D	8	3.471	0.434
E	8	3.915	0.489

Mean	C.V. %
0.525	18.14

50

	ON	Wt.	Avg.
A	8	4.158	0.520
B	8	3.120	0.390
C	8	3.719	0.465
D	8	4.713	0.589
E	8	4.681	0.585

Mean	C.V. %
0.510	16.54

75

	ON	Wt.	Avg.
A	8	4.533	0.567
B	8	4.294	0.537
C	8	4.105	0.513
D	8	4.688	0.586
E	8	3.269	0.409

Mean	C.V. %
0.522	13.28

100

	ON	Wt.	Avg.
A	8	4.878	0.610
B	8	3.978	0.497
C	8	4.459	0.557
D	8	5.467	0.683
E	8	4.040	0.505

Mean	C.V. %
0.571	13.61

	ON	Wt.	Avg.
A			
B			
C			
D			
E			

Mean	C.V. %

	ON	Wt.	Avg.
A			
B			
C			
D			
E			

Mean	C.V. %

* = spilled cup

Note: ON stands for original number per replicate, while SN refers to the number surviving after test completion.

BIO-AQUATIC TESTING, INC.

Chronic Pimephales promelas TOXICITY TEST

Client: AECOM

Facility: US Navy

Lab ID: **87720**

Balance: Radwag BAL-007

Begin Date: 6/15/2023 End Date: 6/22/2023 Organism: Pimephales promelas

Analyst: [illegible]

Weigh Date: 06/24/23

Date/Time placed in Oven: 06/22/23 / 1530

Date/Time removed from Oven: 06/23/23 / 1530

Control

	Qty.	Wt.
A	8	5.496
B		4.847
C		3.944
D		3.303
E		4.294

12.5 %

	Qty.	Wt.
A	8	4.246
B	7	3.893
C	8	4.839
D	8	3.620
E	7	3.839

25 %

	Qty.	Wt.
A	8	5.423
B		4.399
C		3.785
D		3.471
E		3.915

50 %

	Qty.	Wt.
A	7	4.158
B	7	3.120
C	7	3.719
D	8	4.713
E	8	4.681

75 %

	Qty.	Wt.
A	7	4.533
B	8	4.294
C	8	4.105
D	7	4.688
E	7	3.269

100 %

	Qty.	Wt.
A	8	4.878
B		3.978
C		4.459
D		5.467
E	6	4.040

	Qty.	Wt.
A		
B		
C		
D		
E		

	Qty.	Wt.
A		
B		
C		
D		
E		

	Qty.	Wt.
A		
B		
C		
D		
E		

Lined through spaces preceded by a number represent the same number. Lined spaces without a preceding number indicate unused or not applicable spaces.

APPENDIX A

STATISTICS SUMMARY

Both the lethal and sub-lethal endpoints were statistically calculated according to their respective EPA guidelines. The Chronic Freshwater organisms were calculated according to EPA-821-R-02-013, October 2002 Fourth Edition. The Chronic Marine and Estuarine organisms were calculated according to EPA-821-R-02-014, October 2002 Third Edition. The Acute Freshwater and Marine organisms were calculated according to EPA-821-R-02-012, October 2002 Fifth Edition. The fertilization organisms were calculated according to EPA-600-R-95-136 or EPA-600-R-12-022, dependent upon the species. Listed below are the basic principles of these guidelines. If you would like a copy of the raw statistical calculations for your test then please contact us.

The chronic and acute *Pimephales promelas* and *Menidia beryllina* survival data is analyzed using Shapiro Wilks Test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts (parametric). If the data fails Shapiro Wilks Test or Bartlett's Test then Steels Many One Test (non-parametric) is used. The chronic *Pimephales promelas* and *Menidia beryllina* growth data is analyzed using Shapiro Wilks Test and Bartlett's Test. If the data passes one of these tests then the data is run through ANOVA and Dunnetts. If the data fails Shipiro Wilks Test and Bartlett's Test then Steels Many One Test is used. Point estimation may also be used.

The chronic *Mysidopsis bahia* survival data is analyzed using Chi-square test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts. If the data fails Chi-square test or Bartlett's Test then Steels Many One Test is used. *Mysidopsis bahia* growth data is analyzed using Chi-square test and Bartlett's Test. If the data passes one of these tests then the data is run through ANOVA and Dunnetts. If the data fails Chi-square test and Bartlett's Test then Steels Many One Test is used. Point estimation may also be used.

The acute *Mysidopsis bahia* survival data is analyzed using Shapiro Wilks Test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts. If the data fails Shipiro Wilks Test or Bartlett's Test then Steels Many One Test is used. Point estimation may also be used.

The chronic *Ceriodaphnia dubia* survival data are analyzed using the Fisher's Exact Test. The chronic *Ceriodaphnia dubia* reproduction and are analyzed using the Chi-square test and Bartlett Test. If the data passes one of these tests then the data is run through ANOVA and Dunnetts. If the data fails Chi-square test and Bartlett's Test then Steels Many One Test is used. Point estimation may also be used.

The acute *Daphnia pulex* and *Ceriodaphnia dubia* survival data is analyzed using Shapiro Wilks Test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts. If the data fails Shapiro Wilks Test or Bartlett's Test then Steels Many One Test is used. Point estimation may also be used.

The fertilization data is analyzed using Shapiro Wilks Test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts. If the data fails Shapiro Wilks Test or Bartlett's Test then Steels Many One Test is used. Point estimation or TST methodology may also be used.

```
fathead survival
File: 87720.pps       Transform: NO TRANSFORMATION

Shapiro - Wilk's test for normality
-------------------------------------------------------------------------------

D =    6.800

W =    0.874

Critical W (P = 0.05) (n = 30) = 0.927
Critical W (P = 0.01) (n = 30) = 0.900
-------------------------------------------------------------------------------

Data FAIL normality test. Try another transformation.

Warning -  The first three homogeneity tests are sensitive to non-normal
           data and should not be performed.



fathead survival
File: 87720.pps       Transform: NO TRANSFORMATION

Hartley's test for homogeneity of variance
Bartlett's test for homogeneity of variance
-------------------------------------------------------------------------------

These two tests can not be performed because at least one group has
zero variance.

Data FAIL to meet homogeneity of variance assumption.
Additional transformations are useless.

-------------------------------------------------------------------------------




fathead survival
File: 87720.pps        Transform: NO TRANSFORMATION

          STEEL'S MANY-ONE RANK TEST       -       Ho:Control<Treatment
-----------------------------------------------------------------------------
                                TRANSFORMED    RANK     CRIT.
GROUP    IDENTIFICATION            MEAN         SUM     VALUE     df    SIG
----- --------------------    -----------   -------   ------   -----  ---
  1                control       8.000
  2                   12.5       7.600       22.50     16.00    5.00
  3                     25       8.000       27.50     16.00    5.00
```

4	50	7.400	20.00	16.00	5.00
5	75	7.400	20.00	16.00	5.00
6	100	7.600	25.00	16.00	5.00

Critical values use k = 5, are 1 tailed, and alpha = 0.05

fathead growth
File: 87720.ppg Transform: NO TRANSFORMATION

Shapiro - Wilk's test for normality

D = 0.166

W = 0.979

Critical W (P = 0.05) (n = 30) = 0.927
Critical W (P = 0.01) (n = 30) = 0.900

Data PASS normality test at P=0.01 level. Continue analysis.

fathead growth
File: 87720.ppg Transform: NO TRANSFORMATION

Bartlett's test for homogeneity of variance
Calculated B1 statistic = 1.53

Table Chi-square value = 15.09 (alpha = 0.01, df = 5)
Table Chi-square value = 11.07 (alpha = 0.05, df = 5)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

fathead growth
File: 87720.ppg Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.014	0.003	0.400

Within (Error)	24	0.166	0.007
Total	29	0.180	

Critical F value = 2.62 (0.05,5,24)
Since F < Critical F FAIL TO REJECT Ho: All equal

fathead growth
File: 87720.ppg Transform: NO TRANSFORMATION

DUNNETT'S TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	0.547	0.547		
2	12.5	0.511	0.511	0.684	
3	25	0.525	0.525	0.426	
4	50	0.510	0.510	0.711	
5	75	0.522	0.522	0.471	
6	100	0.570	0.570	-0.441	

Dunnett table value = 2.36 (1 Tailed Value, P=0.05, df=24,5)

fathead growth
File: 87720.ppg Transform: NO TRANSFORMATION

DUNNETT'S TEST - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	5			
2	12.5	5	0.124	22.7	0.036
3	25	5	0.124	22.7	0.022
4	50	5	0.124	22.7	0.037
5	75	5	0.124	22.7	0.025
6	100	5	0.124	22.7	-0.023

Bio-Aquatic Testing, Inc.

FRESH WATER TEST SETUP FORM

Client: AECOM

Permit

Facility: US Navy

Lab Number 87720

Outfall Name: RHS-EF-TRAIN-03-061323-(01)-N

Number of samples 2

Dilution Water: Synthetic Lab

Receiving Water Name:

Dechlorinate Sample: No

Sx #	Rcvd Date	Rcvd Time	Sampling Dates		Sampling Times	
			Begin Date	End Date	Start	End
1	06/15/23	15:10	06/13/23	06/14/23	09:10	21:10
2	06/19/23	13:45	06/16/23	06/17/23	09:10	06:10

Type of Test(s)

Pimephales promelas	Chronic

Dilution Water

Sample #	Hardness As mg/L $CaCO_3$	Alkalinity as mg/L $CaCO_3$
1	114	52
2	114	52

Start Sx #	1	Date:	6/15/2023
Renew Sx #	1	Date:	6/16/2023
Renew Sx #	1	Date:	6/17/2023
Renew Sx #	1	Date:	6/18/2023
Renew Sx #	1	Date:	6/19/2023
Renew Sx #	2	Date:	6/20/2023
Renew Sx #	2	Date:	6/21/2023

Test Start Date: 6/15/2023

Test End Date: 6/22/2023

Pimephales Test Set Up: 5 Reps & 8 Organisms per Rep

Test Set Up:

Concentrations: 12.5 25 50 75 100

Test Chemistry on these dilutions: 12.5 25 50 75 100

Samples received by: ○ Express Delivery ○ UPS Next Day ◉ via Air Cargo ○ DHL ○ Federal Express ○ the Client ○ Bio-Aquatic personnel

Other:

BIO-AQUATIC TESTING, INC.

Hardness, Alkalinity, Residual Chlorine, Specific Conductivity, and Salinity Analysis Data

Client: AECOM
Facility: US Navy
Dilution Water(s): Synthetic Lab

Lab ID: 87720
Outfall: RHS-EF-TRAIN-03
Test Date: June 15, 2023

EFFLUENT PARAMETERS

Effluent Sample #	Received		Residual Cl_2 (mg/L)	DeChlor (ml/L)[1]	Ammonia (mg/L)	Analyst Initials	Temp. Received
	Date	Time					
1	6/15/23	15:10	<0.10	N/A	<0.25	JR	2.9
2	6/19/23	13:45	<0.10	N/A	<0.25	DT	3.5

[1]**Dechlorination Reagent:** 0.025 N Sodium Thiosulfate

Effluent Sample #	pH	DO (mg/L)	Hardness (mg/L $CaCO_3$)	Alkalinity (mg/L $CaCO_3$)	Conductivity (umhos/cm)	Analyst Initials
1	7.4	9.4	160	67	531	JR
2	7.8	8.1	170	65	665	DT

DAILY RENEWAL CONDUCTIVITY**

Date		Sample #	Values are at Highest Dilution: Specific Conductivity as umhos/cm	Values are at Highest Dilution: Salinity (ppt)	Analyst
6/15	Lab H2O		451	0.3	MM
6/16	Lab H2O		445	0.3	MM
6/17	Lab H2O		445	0.3	AR
6/18	Lab H2O		488	0.3	JC
6/19	Lab H2O		379	0.2	CG
6/20	Lab H2O		378	0.2	TM
6/21	Lab H2O		369	0.2	AR
6/15	OUTFALL*	1	524	0.3	MM
6/16	OUTFALL*	1	491	0.3	MM
6/17	OUTFALL*	1	480	0.3	AR
6/18	OUTFALL*	1	491	0.3	JC
6/19	OUTFALL*	1	585	0.3	CG
6/20	OUTFALL*	2	583	0.3	TM
6/21	OUTFALL*	2	574	0.3	AR

**Conductivity is taken on the highest remaining effluent concentration used for test renewal, not necessarily 100%

Analysis Methods: Chlorine: Hanna Colorimeter #HI711, Ammonia: Hanna Colorimeter #HI733, Hardness: Hanna Photometer #HI96735, Alkalinity: Hanna Colorimeter #HI775, pH, DO, Conductivity: Thermo Versa Star Benchtop Meter

BIO-AQUATIC TESTING, INC.

pH, Dissolved Oxygen

Chronic **Pimephales promelas**

Client: AECOM **Lab ID:** 87720

Facility: US Navy **Dilution Water(s):** Synthetic Lab

Outfall: RHS-EF-TRAIN-03-061323-(01)- **Test Begin Date:** June 15, 2023

NR indicates that the test is non-renewal.

					Concentration							
ANALYST	DATE	TIME	SX#	UNIT	Control	12.5	25	50	75	100		
MM	6/15	Start	1	pH	7.7	7.6	7.6	7.6	7.6	7.6		
		25 ± 1		DO (mg/L)	8.1	8.0	8.0	7.9	7.9	7.8		
MM	6/16	24 Hr	1	pH	8.1	8.0	8.0	7.8	7.8	7.7		
		25 ± 1		DO (mg/L)	7.9	7.8	7.8	7.8	7.8	7.8		
		Renew	1	pH	7.7	7.7	7.7	7.7	7.7	7.6		
				DO (mg/L)	7.7	7.5	7.5	7.6	7.9	8.3		
AR	6/17	48 Hr	1	pH	7.7	7.7	7.7	7.6	7.6	7.5		
		25 ± 1		DO (mg/L)	6.8	6.7	6.7	6.7	6.7	6.6		
		Renew	1	pH	7.7	7.7	7.7	7.7	7.7	7.7		
				DO (mg/L)	7.3	7.6	7.6	7.7	7.7	8.0		
JC	6/18	72 Hr	1	pH	7.9	7.8	7.8	7.7	7.7	7.7		
		25 ± 1		DO (mg/L)	7.3	70	7.0	6.8	6.8	6.9		
		Renew	1	pH	7.9	7.9	7.9	7.8	7.8	7.7		
				DO (mg/L)	7.9	7.6	7.6	8.0	8.0	8.2		
CG	6/19	96 Hr	1	pH	7.8	7.8	7.8	7.6	7.6	7.6		
		25 ± 1		DO (mg/L)	7.0	6.9	6.9	6.7	6.7	6.5		
		Renew	1	pH	7.8	7.8	7.8	7.8	7.8	7.8		
				DO (mg/L)	6.7	7.3	7.3	7.4	7.4	7.6		
TM	6/20	120 Hr	1	pH	7.5	7.3	7.5	7.5	7.4	7.4		
		25 ± 1		DO (mg/L)	7.6	7.3	7.3	7.2	7.2	7.1		
		Renew	2	pH	7.8	7.7	7.7	7.7	7.7	7.7		
				DO (mg/L)	8.6	8.6	8.6	8.6	8.6	8.5		
MM	6/21	144 Hr	2	pH	7.6	7.5	7.5	7.5	7.5	7.5		
		25 ± 1		DO (mg/L)	7.9	7.7	7.7	7.6	7.6	7.6		
		Renew	2	pH	7.7	7.7	7.7	7.7	7.7	7.7		
				DO (mg/L)	7.8	8.2	8.3	8.5	8.5	8.6		
AR	6/22	168 Hr	2	pH	7.4	7.5	7.5	7.5	7.5	7.6		
		25 ± 1		DO (mg/L)	7.6	7.3	7.3	7.3	7.3	7.3		

Appendix B

Pimephales promelas

BIO-AQUATIC TESTING, INC.

Carrollton, TX

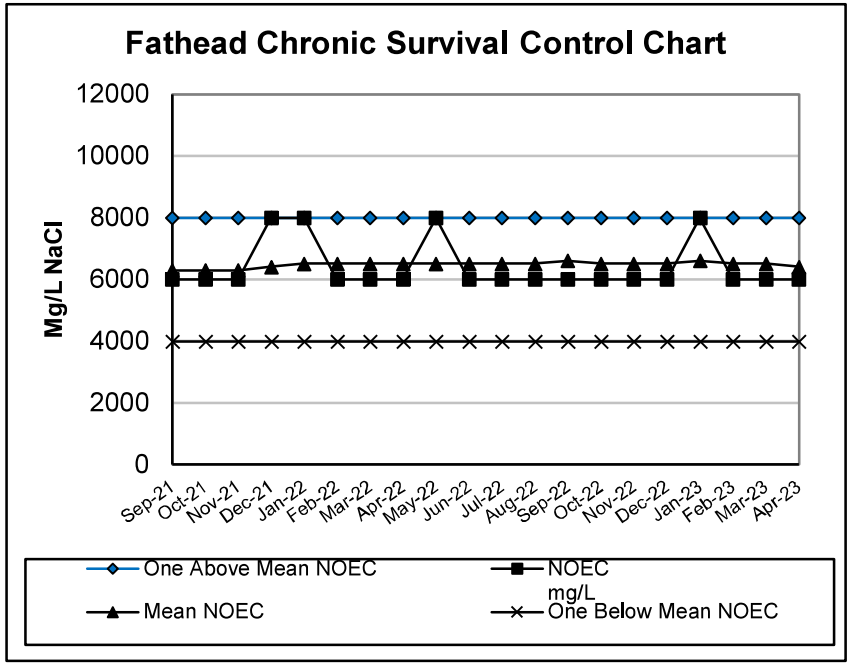
REFERENCE TOXICANTS

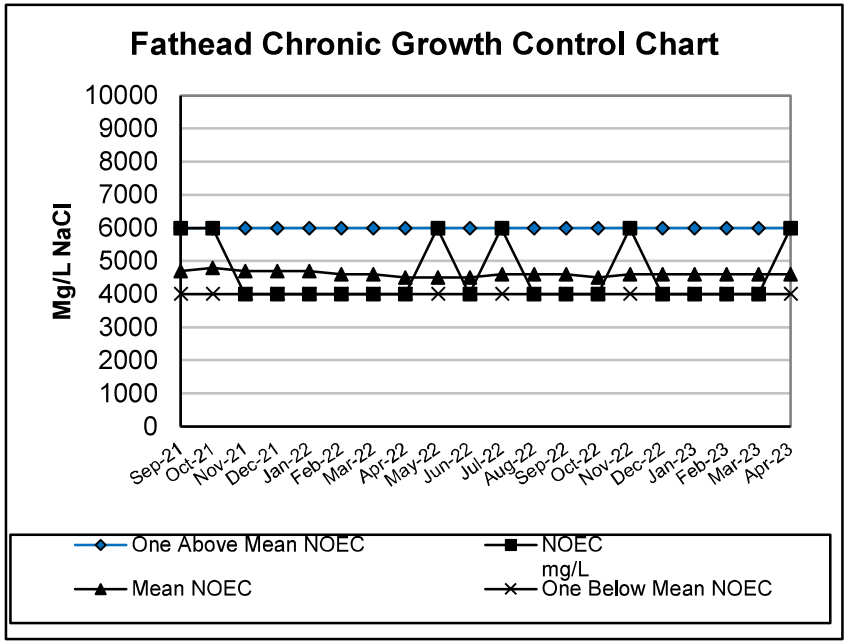
Bio-Aquatic Testing conducts reference toxicant testing monthly for organisms cultured in-house. For studies requiring purchased organisms, reference toxicant testing is performed simultaneously. Reference toxicant testing validates data and measures organism consistency. Only reagent grade chemicals are used of the following choices: sodium laurel sulfate (SLS), copper sulfate, copper chloride, potassium chloride, and sodium chloride. Organism responses are tracked with control charts for each reference toxicant/organism combination. The data are examined for sensitivity trends and to determine if results are within EPA described limits.

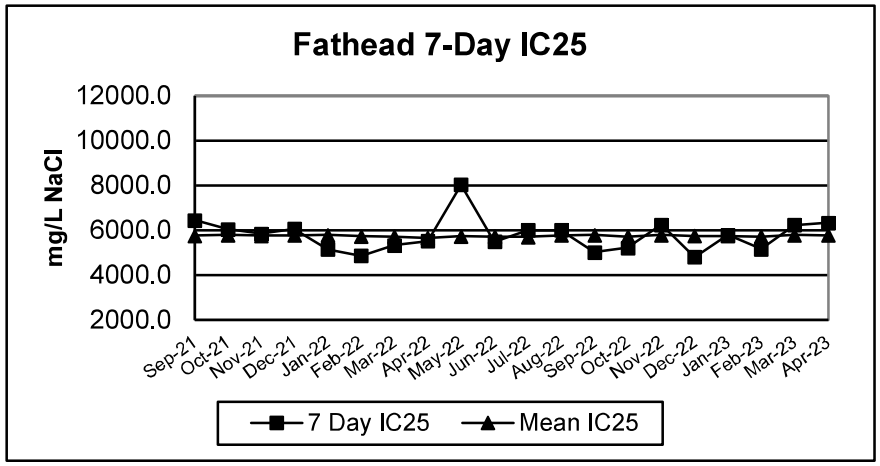
CHRONIC REFERENCE TOXICANT TEST RESULTS

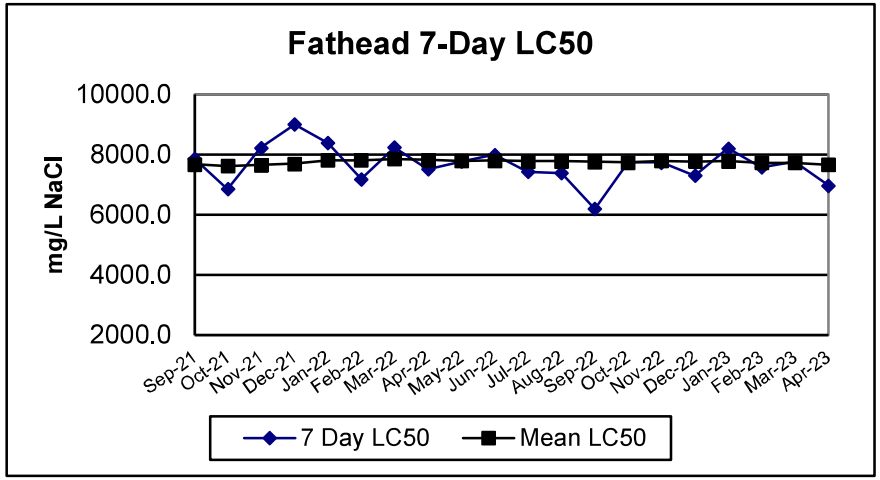
DILUTION WATER:	Standard Synthetic Freshwater						
CHEMICAL:	Sodium Chloride						
DURATION:	7 Days						
TEST NUMBER:	378						
PROJECT NUMBER:	86825						
START DATE:	4/26/2023						
START TIME:	17:25						
TOTAL NUMBER EXPOSED:	40 organisms per concentration						
CONCENTRATIONS (mg/L):	CON	2000	4000	6000	8000	10000	12000
NUMBER DEAD PER CONCENTRATION:	3	0	0	7	31	40	40
TEST METHODS:	As listed in EPA-821-R-02-013						
STATISTICAL METHODS:	SURVIVAL: Steel's Many-One Rank Test GROWTH: ANOVA-Dunnetts w/Bonf. Adj.						
NOEC FOR SURVIVAL:	6000 mg/L						
LOEC FOR SURVIVAL:	8000 mg/L						
NOEC FOR GROWTH:	6000 mg/L						
LOEC FOR GROWTH:	8000 mg/L						

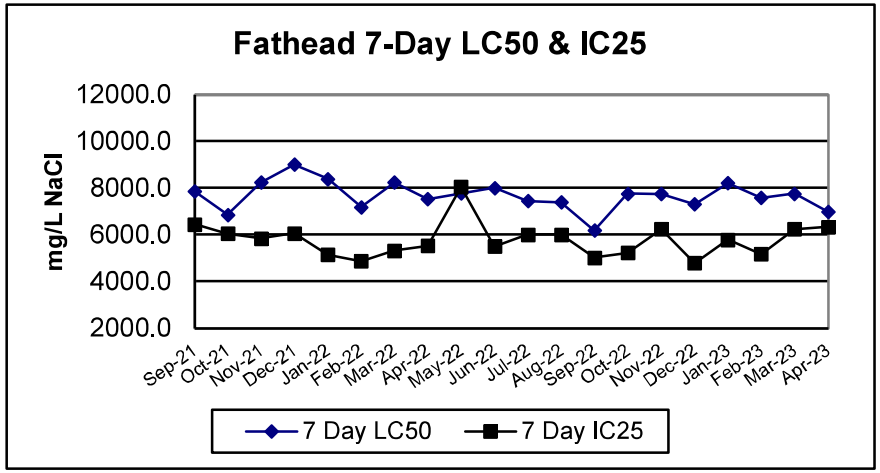
PMSD: 25.6


Fathead Chronic Survival Control Chart
Mg/L NaCl
12000
10000
8000
6000
4000
2000
0
Sep-21 Oct-21 Nov-21 Dec-21 Jan-22 Feb-22 Mar-22 Apr-22 May-22 Jun-22 Jul-22 Aug-22 Sep-22 Oct-22 Nov-22 Dec-22 Jan-23 Feb-23 Mar-23 Apr-23
One Above Mean NOEC
NOEC mg/L
Mean NOEC
One Below Mean NOEC


Fathead Chronic Growth Control Chart
Mg/L NaCl
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Sep-21 Oct-21 Nov-21 Dec-21 Jan-22 Feb-22 Mar-22 Apr-22 May-22 Jun-22 Jul-22 Aug-22 Sep-22 Oct-22 Nov-22 Dec-22 Jan-23 Feb-23 Mar-23 Apr-23
One Above Mean NOEC
NOEC mg/L
Mean NOEC
One Below Mean NOEC


Fathead 7-Day IC25
mg/L NaCl
12000.0
10000.0
8000.0
6000.0
4000.0
2000.0
Sep-21 Oct-21 Nov-21 Dec-21 Jan-22 Feb-22 Mar-22 Apr-22 May-22 Jun-22 Jul-22 Aug-22 Sep-22 Oct-22 Nov-22 Dec-22 Jan-23 Feb-23 Mar-23 Apr-23
7 Day IC25
Mean IC25


Fathead 7-Day LC50
mg/L NaCl
10000.0
8000.0
6000.0
4000.0
2000.0
Sep-21 Oct-21 Nov-21 Dec-21 Jan-22 Feb-22 Mar-22 Apr-22 May-22 Jun-22 Jul-22 Aug-22 Sep-22 Oct-22 Nov-22 Dec-22 Jan-23 Feb-23 Mar-23 Apr-23
7 Day LC50
Mean LC50


Fathead 7-Day LC50 & IC25
mg/L NaCl
12000.0
10000.0
8000.0
6000.0
4000.0
2000.0
Sep-21 Oct-21 Nov-21 Dec-21 Jan-22 Feb-22 Mar-22 Apr-22 May-22 Jun-22 Jul-22 Aug-22 Sep-22 Oct-22 Nov-22 Dec-22 Jan-23 Feb-23 Mar-23 Apr-23
7 Day LC50
7 Day IC25

APPENDIX C

LITERATURE REFERENCES

U.S.E.P.A., 2002. Short-Term Methods For Estimating The Chronic Toxicity Of Effluents And Receiving Water To Freshwater Organisms (Fifth Edition) U.S. Environmental Protection Agency, Office of Water, Washington D.C., EPA-821-R-02-012.

U.S.E.P.A., 2002. Short-Term Methods For Estimating The Chronic Toxicity Of Effluents and Receiving Water To Marine And Estuarine Organisms (Third Edition) U.S. Environmental Protection Agency, Office of Water, Washington D.C., EPA-821-R-02-014.

U.S.E.P.A., 2002. Short-Term Methods For Estimating The Chronic Toxicity Of Effluents And Receiving Water To Freshwater Organisms (Fourth Edition) U.S. Environmental Protection Agency, Office of Water, Washington D.C., EPA-821-R-02-013.

U.S.E.P.A., 2012. Tropical Collector Urchin, *Tripneustes gratilla* (First Edition) U.S. Environmental Protection Agency, Office of Research and Development and Region 9, EPA-600-R-12-022.

U.S.E.P.A., 1995. Short-Term Methods For Estimating The Chronic Toxicity Of Effluents And Receiving Water To West Coast Marine and Estuarine Organisms (First Edition) U.S. Environmental Protection Agency, EPA-600-R-95-136.

U.S.E.P.A., 2010. National Pollutant Discharge Elimination System Test of Significant Toxicity Technical Document, U.S. Environmental Protection Agency, Office of Wastewater, Washington D.C., EPA-833-R-10-004.

U.S.E.P.A., 1991. Technical Support Document For Water Quality-Based Toxics Control, U.S. Environmental Protection Agency, EPA-505-2-90-001.

Zarr, Jerrold, H., 1984. Biostatistical Analysis, (Second Edition). Prentice-Hall, Inc., Englewood Cliffs, N.J.

CHAIN-OF-CUSTODY SHEETS

Appendix D

BIO-AQUATIC TESTING, INC.
2501 MAYES RD., STE. 100
CARROLLTON, TX 75006
PH: 972-242-7750 FAX: 972-242-7749

CHAIN OF CUSTODY

☐ Bio Only: No Sample Left

Lab Id : 87720

Please Review & Complete Sections A, B, C, & D.

Sample No: ____ - ____

Revision 2 Effective Date 9/25/2017

Check Sample No. : ____ First, ____ Second, or ____ Third.

P.O. No:

Client: AECOM

Facility: US Navy - RH Shaft

Permit No:

Outfall:

Client Contact: Ann Bridge

Client Phone: 916-914-5864 ann.bridge@aecom.com

A. REVIEW SCHEDULED TEST(s):

Chronic	Pimephales promelas

Concentration: 12.5 25 50 75 100

(For TX) Setup separate 24hr Acute Test? No

To Ship the 1st Sample on:

B. Use area below to make changes, if the Scheduled Test(s) in "A" are incorrect:

Freshwater Species					Saltwater Species	
C. dubia (water flea)	*D. pulex* (water flea)	*D. magna* (water flea)	*P. promelas* (minnow)	*Selenastrum* (green algae)	*M. beryllina* (minnow)	*Mysidopsis* (shrimp)
☐Chronic	☐Chronic	☐Chronic	☑Chronic	☐96 Hour	☐Chronic	☐Chronic
☐96 Hour	☐96 Hour	☐96 Hour	☐96 Hour	☐48 Hour	☐96 Hour	☐96 Hour
☐48 Hour	☐48 Hour	☐48 Hour	☐48 Hour	☐24 Hour	☐48 Hour	☐48 Hour
☐24 Hour	☐24 Hour	☐24 Hour	☐24 Hour		☐24 Hour	☐24 Hour

Notes: Chronic Fathead

Dup.

C.

Sample ID or Location: (Outfall No. or Name)	Sample Type: E = Effluent, RS = Rec. Stream, S = Sediment	Sample Date From	Sample Date To	Sample Time (military) From	Sample Time (military) To	Grab or Composite	Sampled By: (Sign and Print Name)	Number Of Containers Shipped
1 RHS-EF TRAN-05 DUPB3 (w)	E	6/13/23	6/14/23	0910	2110	COMPOSITE Duplicate	CHRISTINA HARDTLE	16
2								
3								

D.

Relinquished By:	Date	Time	Received By:	Date	Time
1 CHRISTINA HARDTLE	6/13/23	1900	Angelo Cuenca	6/13/23	1900
2 Angelo Cuenca	6/14/23	1900	[illegible]	6/14/23	0700
3 [illegible]	6/14/23	1300	John Rea	6-15-23	1510

Bio-Aquatic Sample Login

BAT sample personnel: ● Yes ● No

Dechlorinate Sample: ○ Yes ● No

Dilution Water: ○ Receiving Stream ● Synthetic Lab

Date: 6-15-23	Time: 1510	By: [illegible]	Temperature: 2.9 (C) IR#: 002
Chlorine: <0.1 mg/l	Ammonia: <0.25 mg/l	Int. Sal\Cond 531 ppt/uS	Adj. Salinity ppt
pH: 7.4	Hardness: 160 mg/l LR	Other	
DO: 9.21 mg/l	Alkalinity: 167 mg/l	Condition: Good	

BIO-AQUATIC TESTING, INC.
2501 MAYES RD., STE. 100
CARROLLTON, TX 75006
PH: 972-242-7750 FAX: 972-242-7749

CHAIN OF CUSTODY

☐ Bio Only: No Sample Left

Lab Id : 87720

Please Review & Complete Sections A, B, C, & D.

Sample No: ____ - ____

Revision 2 Effective Date 9/25/2017

Check Sample No. : ____ First, ____ Second, or ____ Third.

P.O. No:

Client: AECOM

Facility: US Navy - RH Shaft

Permit No:

: Arin Bilay amphiage@aecom.com
916-414-5864

SCHEDULED TEST(s):

Color	Pimephales promelas

Concentration: 12.5 25 50 75 100

To Ship the 1st Sample on:

(For TX) Setup separate 24hr Acute Test? No

B. Use area below to make changes, if the Scheduled Test(s) in "A" are incorrect:

Freshwater Species					Saltwater Species	
C. dubia (water flea)	*D. pulex (water flea)*	*D. magna (water flea)*	*P. promelas (minnow)*	*Selenastrum (green algae)*	*M. beryllina (minnow)*	*Mysidopsis (shrimp)*
☐Chronic	☐Chronic	☐Chronic	☑Chronic	☐96 Hour	☐Chronic	☐Chronic
☐96 Hour	☐96 Hour	☐96 Hour	☐96 Hour	☐48 Hour	☐96 Hour	☐96 Hour
☐48 Hour	☐48 Hour	☐48 Hour	☐48 Hour	☐24 Hour	☐48 Hour	☐48 Hour
☐24 Hour	☐24 Hour	☐24 Hour	☐24 Hour		☐24 Hour	☐24 Hour

Notes: Chronic Fathead

C.

Sample ID or Location: (Outfall No. or Name)	Sample Type: E = Effluent RS = Rec. Stream S = Sediment	Sample Date From	Sample Date To	Sample Time (military) From	Sample Time (military) To	Grab or Composite	Sampled By: (Sign and Print Name)	Number Of Containers Shipped
1 RHS-EF-TRAINING-COLLECTION-N	E	6/16/23	6/17/23	0910	0610	(24hr) COMPOSITE	CHRISTINA HARDTLE	8
2								
3								

D.

Relinquished By:	Date	Time	Received By:	Date	Time
1 CHRISTINA HARDTLE	6/16/23	1845	Angelo Geraldo	6/16/23	1845
2 Angelo Geraldo	6/17/23	0645		6/17/23	0645
3	6/17/23	1230	DT	6.19.23	1345

Bio-Aquatic Sample Login

BAT sample personnel: ○ Yes ● No

Dechlorinate Sample: ○ Yes ◉ No

Dilution Water: ○ Receiving Stream ◉ Synthetic Lab

Date: 6.19.23	Time: 1345	By: DT	Temperature: 3.5 (C) IR#: 00
Chlorine: <0.1 mg/l	Ammonia: <0.25 mg/l	Int. Sal\Cond: 665 ppt/uS	Adj. Salinity ppt
pH: 7.7	Hardness: 170 mg/l	Other	
DO: 8.1 mg/l	Alkalinity: 65 mg/l	Condition: Good	

REGULATORY AGENCY TABLES

Appendix E

Table 1 (Sheet 1 of 2)

BIOMONITORING REPORT

Pimephales promelas SURVIVAL AND GROWTH TEST

Permittee: AECOM - US Navy

Permit No.:

Outfall No.: RHS-EF-TRAIN-03-061323-(01)-N

		Date/Time		Date/Time
Dates and times	FROM:	6/13/2023 @ 09:10	TO:	6/14/2023 @ 21:10
Composites were collected:	FROM:	6/16/2023 @ 09:10	TO:	6/17/2023 @ 06:10
	FROM:	@	TO:	@

Test Initiation: Time: 16:29 Date: 6/15/2023

Dilution Water Used: [ ] Receiving Water [X] Synthetic Dilution Water

DATA TABLE FOR GROWTH OF *Pimephales promelas*

Effluent Concentration	Average Dry Weight in milligrams (mg) per replicate					Mean Dry Weight (mg)	CV % [1]
	A	B	C	D	E		
0%	0.687	0.606	0.493	0.413	0.537	0.547	19.2
12.5 %	0.531	0.487	0.605	0.453	0.480	0.511	11.7
25 %	0.678	0.550	0.473	0.434	0.489	0.525	18.1
50 %	0.520	0.390	0.465	0.589	0.585	0.510	16.5
75 %	0.567	0.537	0.513	0.586	0.409	0.522	13.3
100 %	0.610	0.497	0.557	0.683	0.505	0.571	13.6
PMSD	Acceptable Range 30 or less					22.7 %	

DATA TABLE FOR SURVIVAL OF *Pimephales promelas*

Effluent Concentration	Percent Survival per replicate					Average % Survival			CV % [1]
	A	B	C	D	E	24 Hours	48 Hours	7-Day	
0%	100	100	100	100	100	100	100	100	0.0
12.5 %	100	87.5	100	100	87.5	100	97.5	95	7.2
25 %	100	100	100	100	100	100	100	100	0.0
50 %	87.5	87.5	87.5	100	100	100	100	92.5	7.4
75 %	87.5	100	100	87.5	87.5	100	100	92.5	7.4
100 %	100	100	100	100	75	100	100	95	11.8

[1] Coefficient of Variation = (standard deviation/mean) x 100

?= cannot be calculated due to 100% mortality or lab exception

Table 1 (Sheet 2 of 2)

BIOMONITORING REPORT

Pimephales promelas SURVIVAL AND GROWTH TEST

Permittee: AECOM - US Navy

Permit No.:

Outfall No.: RHS-EF-TRAIN-03-061323-(01)-N

1. DUNNETT'S PROCEDURE OR STEEL'S MANY-ONE RANK TEST OR WILCOXON RANK SUM TEST (with Bonferroni adjustment as appropriate for Sub-Lethality)

Is the mean dry weight at 7 days significantly less (p=0.05) than the control's mean dry weight for the % effluent corresponding to significant non-lethal effects?

CRITICAL DILUTION (100 %) : _____ YES ____X____ NO

If no is checked enter a '0' for Parameter TLP6C, otherwise enter a '1'.

2. DUNNETT'S PROCEDURE OR STEEL'S MANY-ONE RANK TEST OR WILCOXON RANK SUM TEST (as appropriate for Lethality)

Is the survival at 7 days significantly less (p=0.05) than the control's survival for % effluent corresponding to lethality?

CRITICAL DILUTION (100 %) : _____ YES ____X____ NO

If no is checked enter a '0' for Parameter TWP6C, otherwise enter a '1'.

3. Enter the percent effluent corresponding to each NOEC/LOEC below:

a. NOEC Survival = 100 % Effluent (Parameter TOP6C)

b. LOEC Survival = Q* % Effluent (Parameter TXP6C)

c. NOEC Growth = 100 % Effluent (Parameter TPP6C)

d. LOEC Growth = Q* % Effluent (Parameter TYP6C)

Q* refers to a value that is not calculable

Bio-Aquatic Testing, Inc.

TCEQ TNI ACCREDITED

Report Revision Form

Report Revision Number 1 **for Lab ID** 98831 **was revised on** 1802503134.

The revision was issued for the following reason(s):

- [x] **Typo in the report document or tables**
- [ ] **Missing sheets or tables**
- [ ] **Hard data was not scanned in as required by the client**
- [ ] **Missing specially requested forms or data for the client**
- [x] **Other (Please Specify):**

Vqebuf e Pvugmobn f

Bio-Aquatic Testing, Inc.

TCEQ TNI ACCREDITED

Report Revision Form

Report Revision Number 1 **for Lab ID** 87720 **was revised on** 07/14/223.

The revision was issued for the following reason(s):

- [x] **Typo in the report document or tables**
- [ ] **Missing sheets or tables**
- [ ] **Hard data was not scanned in as required by the client**
- [ ] **Missing specially requested forms or data for the client**
- [x] **Other (Please Specify):**

Corrected Outfall name.

FORM 10.6 Revision 1 *Effective: 08/07/2018*

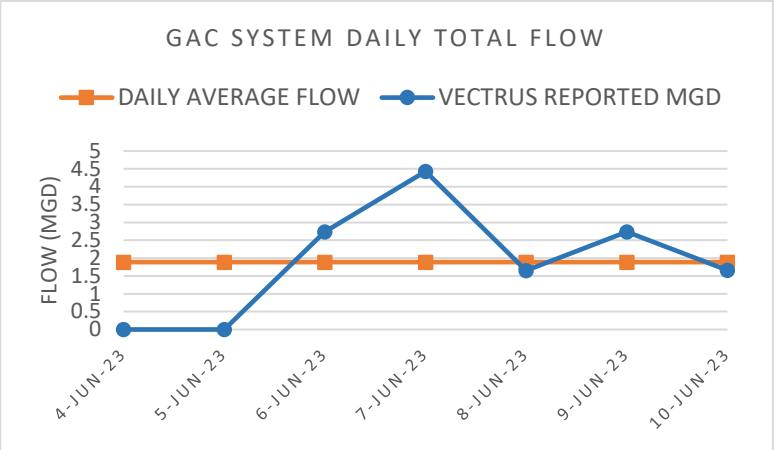
Red Hill Well Weekly Operations Report

0000, 04 JUNE 2023 – 2359, 10 JUNE 2023

Execution Summary: Over the period of this report, daily pumping operations averaged 1.89 million gallons per day. Eighteen samples taken per week due to intermittent pump shutdown/restart for RH Optimization Study; all influent/effluent results are non-detects. No turbulence noted inside boom and no sheen observed in Halawa stream. Pumps restarted on 06/06/23 at 0904, shutoff on 06/08/23 at 0900, startup on 06/09/23 at 0900 and shutoff on 06/10/23 at 0900. All other readings were within normal range. Ten of 10 inline analyzers are operational for the monitoring of influent/effluent along with benchtop analyzers IAW RHSRMP.

1. Production Data

Weekly Volume (MG)
13.22
Daily Average (MGD)
1.89
Total Pumped to Date (MGD)
238.79



2. GAC Operations

	In Operation During Period of Report	Date Since Last Operation	Date Since Media Change	Estimate Date of Media Change
Train 1	X	Restart on 03MAR2023	03 MAR 2023	TBD
Train 2	X	Restart on 22MAR2023	22 MAR 2023	TBD
Train 3	X	Restart on 10APR2023	10 APR 2023	TBD
Train 4		Off line but back in service on 02MAY2023	26 APR 2023	TBD

3. Process Control Sampling

Influent Parameter[2]	Number of Samples	Number of Detectable Samples	Highest Level Detected[3]	Units[4]
Total Petroleum Hydrocarbons as Gasoline	18	0	ND	ppm
Total Petroleum Hydrocarbons as Diesel	18	0	ND	ppm

Lead Tank Effluent Parameter[5]	Number of Samples	Number of Detectable Samples	Highest Level Detected[3]	Units[4]
Total Petroleum Hydrocarbons as Gasoline	18	0	ND	ppm
Total Petroleum Hydrocarbons as Diesel	18	0	ND	ppm

Lag Tank Effluent Parameter[5]	Number of Samples	HI DOH Effluent Limitations	Highest Level Detected[3]	Units[4]
Total Petroleum Hydrocarbons as Gasoline	18	0.30	ND	ppm
Total Petroleum Hydrocarbons as Diesel	18	0.40	ND	ppm

Notes:

1. Train 4 cycled for two hours to prevent stagnation of water inside GAC system.
2. Sampling taken every four hours starting at 0300; total of six samples per day
3. Minimum detection limit for Portable Analyzers: TPH-d at 0.1 ppm, and TPH-g at 0.2 ppm
4. One part per million (ppm) is equivalent to 1 milligram per liter (mg/L)
5. Sampling taken from one active train every four hours, in rotation, starting at 0300, after both the lead and the lag tanks; total of twelve samples per day

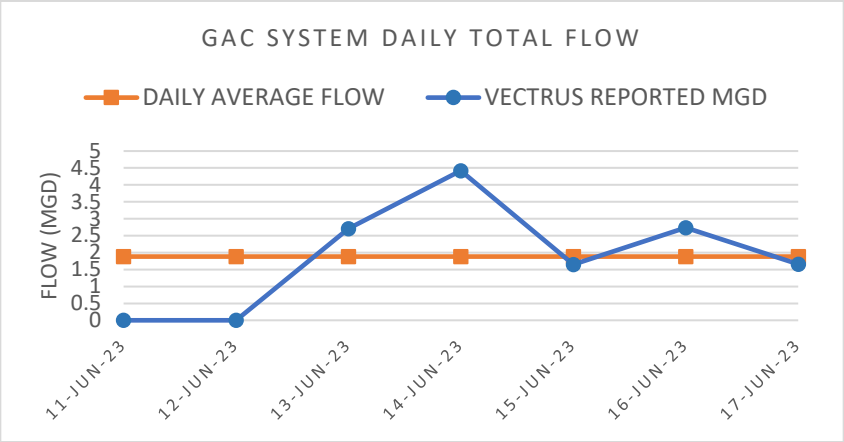
Red Hill Well Weekly Operations Report

0000, 11 JUNE 2023 – 2359, 17 JUNE 2023

Execution Summary: Over the period of this report, daily pumping operations averaged 1.88 million gallons per day. Eighteen samples taken per week due to intermittent pump shutdown/restart for RH Optimization Study; all influent/effluent results are non-detects. No turbulence noted inside boom and no sheen observed in Halawa stream. Pumps restarted on 06/13/23 at 0904, shutoff on 06/15/23 at 0900, startup on 06/16/23 at 0900 and shutoff on 06/17/23 at 0900. All other readings were within normal range. Ten of 10 inline analyzers are operational for the monitoring of influent/effluent along with benchtop analyzers IAW RHSRMP.

1. Production Data

Weekly Volume (MG)
13.20
Daily Average (MGD)
1.88
Total Pumped to Date (MGD)
251.99



2. GAC Operations

	In Operation During Period of Report	Date Since Last Operation	Date Since Media Change	Estimate Date of Media Change
Train 1	X	Restart on 03MAR2023	03 MAR 2023	TBD
Train 2	X	Restart on 22MAR2023	22 MAR 2023	TBD
Train 3	X	Restart on 10APR2023	10 APR 2023	TBD
Train 4		Off line but back in service on 02MAY2023	26 APR 2023	TBD

3. Process Control Sampling

Influent Parameter[2]	Number of Samples	Number of Detectable Samples	Highest Level Detected[3]	Units[4]
Total Petroleum Hydrocarbons as Gasoline	18	0	ND	ppm
Total Petroleum Hydrocarbons as Diesel	18	0	ND	ppm

Lead Tank Effluent Parameter[5]	Number of Samples	Number of Detectable Samples	Highest Level Detected[3]	Units[4]
Total Petroleum Hydrocarbons as Gasoline	18	0	ND	ppm
Total Petroleum Hydrocarbons as Diesel	18	0	ND	ppm

Lag Tank Effluent Parameter[5]	Number of Samples	HI DOH Effluent Limitations	Highest Level Detected[3]	Units[4]
Total Petroleum Hydrocarbons as Gasoline	18	0.30	ND	ppm
Total Petroleum Hydrocarbons as Diesel	18	0.40	ND	ppm

Notes:

1. Train 4 cycled for two hours to prevent stagnation of water inside GAC system.

2. Sampling taken every four hours starting at 0300; total of six samples per day

3. Minimum detection limit for Portable Analyzers: TPH-d at 0.1 ppm, and TPH-g at 0.2 ppm

4. One part per million (ppm) is equivalent to 1 milligram per liter (mg/L)

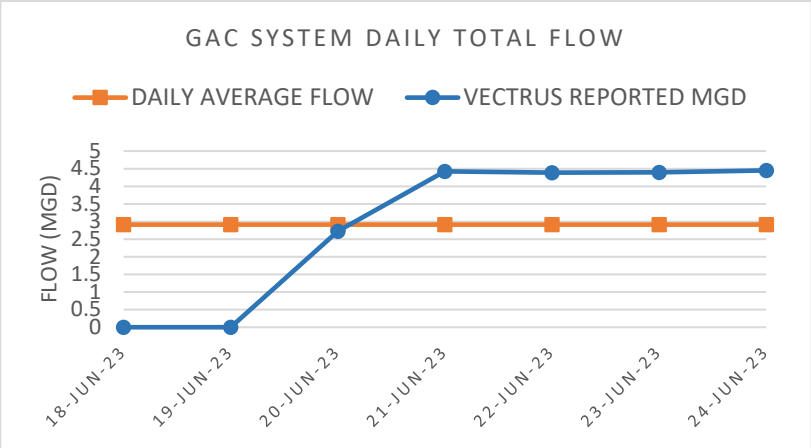
5. Sampling taken from one active train every four hours, in rotation, starting at 0300, after both the lead and the lag tanks; total of twelve samples per day

Red Hill Well Weekly Operations Report
0000, 18 JUNE 2023 – 2359, 24 JUNE 2023

Execution Summary: Over the period of this report, daily pumping operations averaged 2.91 million gallons per day. Twenty-four samples were taken this week due to intermittent pump shutdown/restart for RH Optimization Study; all influent/effluent results are non-detects. No turbulence noted inside boom and no sheen observed in Halawa stream. Pumps restarted on 06/20/23 at 0904 and normal operations resumed. End of Optimization Study. All other readings were within normal range. Ten of 10 inline analyzers are operational for the monitoring of influent/effluent along with benchtop analyzers IAW RHSRMP.

1. Production Data

Weekly Volume (MG)
20.39
Daily Average (MGD)
2.91
Total Pumped to Date (MGD)
272.38



2. GAC Operations

	In Operation During Period of Report	Date Since Last Operation	Date Since Media Change	Estimate Date of Media Change
Train 1	X	Restart on 03MAR2023	03 MAR 2023	TBD
Train 2	X	Restart on 22MAR2023	22 MAR 2023	TBD
Train 3	X	Restart on 10APR2023	10 APR 2023	TBD
Train 4		Off line but back in service on 02MAY2023	26 APR 2023	TBD

3. Process Control Sampling

Influent Parameter[2]	Number of Samples	Number of Detectable Samples	Highest Level Detected[3]	Units[4]
Total Petroleum Hydrocarbons as Gasoline	24	0	ND	ppm
Total Petroleum Hydrocarbons as Diesel	24	0	ND	ppm

Lead Tank Effluent Parameter[5]	Number of Samples	Number of Detectable Samples	Highest Level Detected[3]	Units[4]
Total Petroleum Hydrocarbons as Gasoline	24	0	ND	ppm
Total Petroleum Hydrocarbons as Diesel	24	0	ND	ppm

Lag Tank Effluent Parameter[5]	Number of Samples	HI DOH Effluent Limitations	Highest Level Detected[3]	Units[4]
Total Petroleum Hydrocarbons as Gasoline	24	0.30	ND	ppm
Total Petroleum Hydrocarbons as Diesel	24	0.40	ND	ppm

Notes:
1. Train 4 cycled for two hours to prevent stagnation of water inside GAC system.
2. Sampling taken every four hours starting at 0300; total of six samples per day
3. Minimum detection limit for Portable Analyzers: TPH-d at 0.1 ppm, and TPH-g at 0.2 ppm
4. One part per million (ppm) is equivalent to 1 milligram per liter (mg/L)
5. Sampling taken from one active train every four hours, in rotation, starting at 0300, after both the lead and the lag tanks; total of twelve samples per day

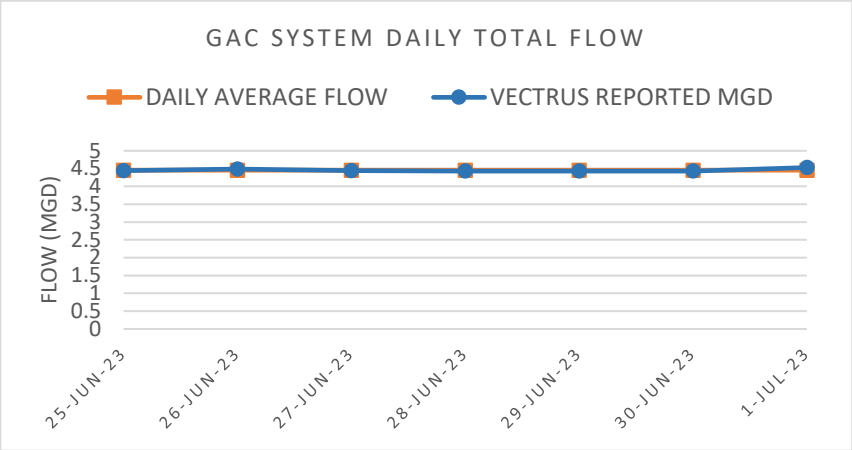
Red Hill Well Weekly Operations Report

0000, 25 JUNE 2023 – 2359, 01 JULY 2023

Execution Summary: Over the period of this report, daily pumping operations averaged 4.46 million gallons per day. Forty-Two (42) samples were taken this week; all influent/effluent results are non-detects. No turbulence noted inside boom and no sheen observed in Halawa stream. All other readings were within normal range. Ten of 10 inline analyzers are operational for the monitoring of influent/effluent along with benchtop analyzers IAW RHSRMP.

1. Production Data

Weekly Volume (MG)
26.74
Daily Average (MGD)
4.46
Total Pumped to Date (MGD)
303.57



2. GAC Operations

	In Operation During Period of Report	Date Since Last Operation	Date Since Media Change	Estimate Date of Media Change
Train 1	X	Restart on 03 MAR 2023	03 MAR 2023	TBD
Train 2	X	Restart on 22 MAR 2023	22 MAR 2023	TBD
Train 3	X	Restart on 10 APR 2023	10 APR 2023	TBD
Train 4		Off line but back in service on 02 MAY 2023	26 APR 2023	TBD

3. Process Control Sampling

Influent Parameter[2]	Number of Samples	Number of Detectable Samples	Highest Level Detected[3]	Units[4]
Total Petroleum Hydrocarbons as Gasoline	42	0	ND	ppm
Total Petroleum Hydrocarbons as Diesel	42	0	ND	ppm

Lead Tank Effluent Parameter[5]	Number of Samples	Number of Detectable Samples	Highest Level Detected[3]	Units[4]
Total Petroleum Hydrocarbons as Gasoline	42	0	ND	ppm
Total Petroleum Hydrocarbons as Diesel	42	0	ND	ppm

Lag Tank Effluent Parameter[5]	Number of Samples	HI DOH Effluent Limitations	Highest Level Detected[3]	Units[4]
Total Petroleum Hydrocarbons as Gasoline	42	0.30	ND	ppm
Total Petroleum Hydrocarbons as Diesel	42	0.40	ND	ppm

Notes:

1. Train 4 cycled for two hours to prevent stagnation of water inside GAC system.

2. Sampling taken every four hours starting at 0300; total of six samples per day

3. Minimum detection limit for Portable Analyzers: TPH-d at 0.1 ppm, and TPH-g at 0.2 ppm

4. One part per million (ppm) is equivalent to 1 milligram per liter (mg/L)

5. Sampling taken from one active train every four hours, in rotation, starting at 0300, after both the lead and the lag tanks; total of twelve samples per day

Halawa Stream Monitoring Data Sheet

Observer/s: ___[redacted]_____

Date: 6/5/2023 Site Name: Upstream Site Time: 0611

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 70 °F
☐ showers (intermittent)	☐ showers (intermittent)	
0 % cloud cover	50 % cloud cover or less	
☒ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment on bottom of streambed.
Water Color: Clear.
Estimated Depth: Less than 1 inch.
Visibility: Clear to bottom.
Tide (if applicable): N/A

Notes: Vegetation growth and leaf litter accumulation on sides of stream flow. Rocks, vegetation debris, and sediment piles present in stream. Matted yellow algae growth on bottom of stream bed. Large dead tree branches suspended over stream by fences. Side drainage is contributing to stream flow. Small amount of water flow in main channel as well as from side drainage.

SPECIES OBSERVATIONS
Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

Notes: No waterbirds or shorebirds observed.

Species Observed	# of individuals	Behavior	Notes/Observations
N/A			

PHOTOGRAPHS

	Photograph # 1: Upstream Site looking upstream.

	Photograph # 2: Upstream Site looking downstream.

Halawa Stream Monitoring Data Sheet

Observer/s: ___[redacted]___

Date: 6/5/2023 Site Name: Discharge Site Time: 0558

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 72 °F
☐ showers (intermittent)	☐ showers (intermittent)	
0 % cloud cover	50 % cloud cover or less	
☒ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment on bottom of streambed.
Water Color: Clear.
Estimated Depth: Less 1 inch below and above discharge pipes.
Visibility: Clear to bottom.
Tide (if applicable): N/A

Notes: Floating vegetation debris (sludge-like) build up between two waddles. Small amount of water flow on sides of channel above discharge pipes. No flow from discharged pipes. Vegetation upstream of discharge pipes next to stream channel recently cleared (near observation point). Vegetation debris, rocks, branches, and growing vegetation observed in stream.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

Notes: No waterbirds or shorebirds observed.

Species Observed	# of individuals	Behavior	Notes/Observations
N/A			

PHOTOGRAPHS

	Photograph # 1: Discharge Site looking upstream.

	Photograph # 2: Discharge Site looking downstream.

Halawa Stream Monitoring Data Sheet

Observer/s:___[redacted]_

Date: 6/5/2023 Site Name: Downstream Site # 1 Time: 0646

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature 73° F
☐ showers (intermittent)	☐ showers (intermittent)	
30 % cloud cover	50 % cloud cover or less	
☒ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☒ sheen visible
Observed Turbidity/Sedimentation: Sediment on bottom of streambed.
Water Color: Clear.
Estimated Depth: 1-3 inches.
Visibility: Clear to bottom.
Tide (if applicable): N/A.

Notes: Green filamentous algae growth on bottom of streambed. Sediment piles, with and without growing vegetation observed in stream. Approximately five sheen patches throughout middle portion of channel, area of sheen patches combined is roughly 1 foot by 1 foot.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

Notes:

Species Observed	# of individuals	Behavior	Notes/Observations
black-crowned night heron	2	Foraging	Juveniles foraging in back of stream.
mallard/Hawaiian duck hybrid	5	Foraging	Adults foraging in back of stream.

PHOTOGRAPHS

Photograph # 1:

Downstream Site #1 looking upstream. Sheen patch, circled in yellow, visible in bottom portion of photo.

Photograph # 2:

Zoomed in photo of sheen observed in stream amongst a patch of green algae at Downstream Site #1.

Halawa Stream Monitoring Data Sheet

Observer/s:___[redacted]_____

Date:___6/5/2023___Site Name:_____Downstream Site #2_____ Time: __0632_____

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 73 °F
☐ showers (intermittent)	☐ showers (intermittent)	
30% cloud cover	50 % cloud cover or less	
☒ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☒ sheen visible
Observed Turbidity/Sedimentation: Sediment on bottom of streambed.
Water Color: Clear.
Estimated Depth: 1-3 inches in shallow section of channel, 4+ feet in deep portion of channel.
Visibility: Clear to bottom in shallow section of channel, ~ 3 feet in deep portion of channel.
Tide (if applicable): N/A

Notes: Trash, vegetation debris, growing vegetation, and sediment piles with growing vegetation. A wheelbarrow, ground cloth, and cement bucket observed in channel. Small amounts of white foam and light brown foam observed where shallow section of stream meets estuary. Small sheen patch observed where shallow section meets estuary portion of stream, less than 1 foot by 1 foot in size. A school of roughly 100 small fish were observed gulping at the surface of the water near the same area.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish __0___
Fish Breathing Stress/Gulping ☐ None ☒ Yes
Fish Abnormal Behavior ☒ None ☐ Yes

Notes:

Species Observed	# of individuals	Behavior	Notes/Observations
black-crowned night heron	3	Foraging, Transitioning	Two juveniles foraging in the stream where shallow section meets estuary portion. One adult transitioning in stream.
unknown small fish species	100+	Gulping	Fish gulping where shallow section meets estuary portion of stream.

PHOTOGRAPHS

Photograph # 1:

Downstream Site # 2 looking downstream. A while bucket filled with cement and a black ground cloth, both circled in yellow, observed in channel.

Photograph # 2:

Small sheen patch, circled in yellow, observed where shallow section of stream meets estuary portion at Downstream Site # 2.

Halawa Stream Monitoring Data Sheet

Observer/s: [redacted]

Date: 6/5/2023 Site Name: Estuary Site #1 Time: 0807

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 80°F
☐ showers (intermittent)	☐ showers (intermittent)	
10 % cloud cover	50 % cloud cover or less	
☒ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐dry ☒wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment throughout water column.
Water Color: Greenish Brown.
Estimated Depth: 5+ feet.
Visibility: 3 feet.
Tide (if applicable): Falling, -0.40 feet.

Notes:

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☐ None ☒ Yes
Fish Abnormal Behavior ☒ None ☐ Yes

Notes: No waterbirds or shorebirds observed.

Species Observed	# of individuals	Behavior	Notes/Observations
unknown small fish species	10	Gulping	Some fish gulping near left shoreline.
unknown medium fish species	5	Schooling	Schooling near left shoreline.

PHOTOGRAPHS

	Photograph # 1: Estuary Site #1 looking upstream.

Halawa Stream Monitoring Data Sheet

Observer/s: ___[redacted]___

Date: 6/5/2023 Site Name: Estuary Site #2 Time: 0737

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 80 °F
☐ showers (intermittent)	☐ showers (intermittent)	
10 % cloud cover	50 % cloud cover or less	
☒ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐dry ☒wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment throughout water column.
Water Color: Brown, opaque.
Estimated Depth: 5+ feet.
Visibility: 2 feet.
Tide (if applicable): Falling, 0.40 feet.

Notes: New boom present along shoreline adjacent to previous boom. Floating vegetation debris observed in stream, as well as rubbish and vegetation debris along shoreline.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

Notes:

Species Observed	# of individuals	Behavior	Notes/Observations
unknown black crab species	2	Loafing	Loafing on pipe in shallow portion near shoreline.
white tern	2	Transitioning	Flying from trees on shoreline over stream.
unknown small fish species	5	Schooling	Schooling near shoreline.
mallard/ Hawaiian duck hybrid	1	Loafing	Loafing in water on shoreline.

PHOTOGRAPHS

	Photograph # 1: Estuary Site #2 looking upstream.

	Photograph # 2: Estuary Site #2 looking downstream.

Halawa Stream Monitoring Data Sheet

	Photograph # 3: Hawaiian duck/mallard hybrid, circled in yellow, loafing between waddles of shoreline at Estuary Site #2.

WATERBIRD SURVEY DATASHEET

WETLAND CONDTION CODES	
Water Level (WL)	**Human Impact (HI)**
0 = dry	0 = indirect (little garbage, few people)
1 = lower than normal	1 = moderate
2= normal	2 = heavy (many people present; e.g., wading, boating, fishing, etc)
3 = higher than normal	
Vegetation Cover (VC)	**Shoreline Condition of Tidal Wetlands (SC)**
0 = open water (<25% veg)	0 = water at high tide mark N/A=not applicable
1 = 26-50% veg cover	1 = water 25 ft from high tide mark
2 = 51-75% veg cover	2 = water 50 ft from high tide mark
3 = >75% cover	3 = water >50 ft from high tide mark

WEATHER CODES	
Rainfall (RF)	**Wind**
0 = no rain	0 = no wind, < 1 mph
1 = mist or fog	1 = smoke drifts, 1-3 mph
2 = drizzle	2 = wind felt on face, 4-7 mph
3 = light rain	3 = leaves and twigs rustle, 8-12 mph
4 = heavy rain	4 = dust raises, branches stir, 13-18 mph
5 = snow or hail	5 = small trees sway, >19 mph
Cloud Cover (CC) = Estimate to the n**earest 10%**	

Date 6-5-23

Island O'ahu

REMINDERS: If site it not accessible, include wetland name and write 'no access'
If no birds observed, fill out top portion and write 'no birds'
KEEP A COPY FOR YOUR RECORDS
Subadult includes juveniles and chicks

Observers [redacted]

Wetland Name	US				DC				DS 1				DS 2			
Condition	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC
	1	0	0	NA	1	0	0	NA	2	0	0	NA	2	0	0	NA
Weather	CC	RF	Wind		CC	RF	Wind		CC	RF	Wind		CC	RF	Wind	
	0	0	0		0	0	0		30	0	0		30	0	0	
Time	Start		Stop		Start		Stop		Start		Stop		Start		Stop	
	0611		0616		0558		0603		0646		0651		0632		0642	
COOT adult																
subadult																
GALLINULE/MOORHEN adult																
subadult																
STILT adult																
subadult																
KOLOA adult																
subadult																
Koloa/Mallard Hybrid									5 (Adults/Foraging)							
Mallard (domestic/feral)																
Other Domestic Duck																
Black-cr. Night Heron									2 (Juveniles/Foraging)				3 (Adult/Juveniles/ Foraging/Transitioning)			
Cattle Egret																
Pacific Golden Plover																
Ruddy Turnstone																
Sanderling																
Wandering Tattler																
Northern Pintail																
Mallard (migratory)																
Lesser scaup																
Comments	no waterbirds/shorebirds				no waterbirds/shorebirds											

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WATERBIRD SURVEY DATASHEET

WETLAND CONDTION CODES	
Water Level (WL) 0 = dry 1 = lower than normal 2= normal 3 = higher than normal	**Human Impact (HI)** 0 = indirect (little garbage, few people) 1 = moderate 2 = heavy (many people present; e.g., wading, boating, fishing, etc)
Vegetation Cover (VC) 0 = open water (<25% veg) 1 = 26-50% veg cover 2 = 51-75% veg cover 3 = >75% cover	**Shoreline Condition of Tidal Wetlands (SC)** 0 = water at high tide mark N/A=not applicable 1 = water 25 ft from high tide mark 2 = water 50 ft from high tide mark 3 = water >50 ft from high tide mark

WEATHER CODES	
Rainfall (RF) 0 = no rain 1 = mist or fog 2 = drizzle 3 = light rain 4 = heavy rain 5 = snow or hail	**Wind** 0 = no wind, < 1 mph 1 = smoke drifts, 1-3 mph 2 = wind felt on face, 4-7 mph 3 = leaves and twigs rustle, 8-12 mph 4 = dust raises, branches stir, 13-18 mph 5 = small trees sway, >19 mph
Cloud Cover (CC) = Estimate to the n**earest 10%**	

Date 6-5-23

Island O'ahu

REMINDERS: If site it not accessible, include wetland name and write 'no access'
If no birds observed, fill out top portion and write 'no birds'
KEEP A COPY FOR YOUR RECORDS
Subadult includes juveniles and chicks

Observers [redacted]

Wetland Name	ES 1				ES 2											
Condition	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC
	2	0	0	1	2	0	0	1								
Weather	CC	RF	Wind		CC	RF	Wind		CC	RF	Wind		CC	RF	Wind	
	10	0	0		10	0	0									
Time	Start		Stop		Start		Stop		Start		Stop		Start		Stop	
	0807		0812		0737		0745									
COOT adult																
subadult																
GALLINULE/MOORHEN adult																
subadult																
STILT adult																
subadult																
KOLOA adult																
subadult																
Koloa/Mallard Hybrid					1 (Adult/Loafing)											
Mallard (domestic/feral)																
Other Domestic Duck																
Black-cr. Night Heron																
Cattle Egret																
Pacific Golden Plover																
Ruddy Turnstone																
Sanderling																
Wandering Tattler																
Northern Pintail																
Mallard (migratory)																
Lesser scaup																
White Tern																
Comments	no waterbirds/shorebirds															

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Halawa Stream Monitoring Data Sheet

Observer/s: [redacted]

Date: 6/13/2023 Site Name: Upstream Site Time: 1048

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 79 °F
☒ showers (intermittent)	☐ showers (intermittent)	
100 % cloud cover	60 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment on bottom of streambed.
Water Color: Clear
Estimated Depth: ~ 1/2 inch.
Visibility: To bottom.
Tide (if applicable): N/A

Notes: Leaf litter throughout stream bed.

SPECIES OBSERVATIONS
Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

Notes: No waterbirds or shorebirds.

Species Observed	# of individuals	Behavior	Notes/Observations
NA			

PHOTOGRAPHS

Photograph # 1:

Upstream Site looking upstream.

Photograph # 2:

Upstream Site looking downstream.

Halawa Stream Monitoring Data Sheet

Observer/s: [redacted]

Date: 6/13/2023 Site Name: Discharge Site Time: 1100

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 79 °F
☒ showers (intermittent)	☐ showers (intermittent)	
100 % cloud cover	60 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment on bottom of streambed.
Water Color: Clear.
Estimated Depth: Above discharge ~ 1/2 inch, below discharge 3-5 inch.
Visibility: To bottom.
Tide (if applicable): N/A

Notes: Waddle present. Leaf litter throughout stream bed.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

Notes: No waterbirds or shorebirds.

Species Observed	# of individuals	Behavior	Notes/Observations
NA			

PHOTOGRAPHS

	Photograph # 1: Discharge Site looking upstream.

	Photograph # 2: Discharge Site looking downstream.

Halawa Stream Monitoring Data Sheet

Observer/s:___[redacted]_____

Date: 6/13/2023 Site Name: Downstream Site # 1 Time: 1123

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature 79° F
☐ showers (intermittent)	☐ showers (intermittent)	
100 % cloud cover	60 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment on bottom of streambed.
Water Color: Clear.
Estimated Depth: ~ 3-5 inches.
Visibility: To bottom.
Tide (if applicable): N/A.

Notes: N/A.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

Notes: No waterbirds or shorebirds.

Species Observed	# of individuals	Behavior	Notes/Observations
N/A			

PHOTOGRAPHS

	Photograph # 1: Downstream Site #1 looking upstream.

Halawa Stream Monitoring Data Sheet

Observer/s:____[redacted]____

Date:___6/13/2023___Site Name:_____Downstream Site #2_____ Time: __1117_____

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 79 °F
☐ showers (intermittent)	☐ showers (intermittent)	
100% cloud cover	60 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment on bottom of streambed.
Water Color: Clear.
Estimated Depth: ~ 3-5 inches in shallow section of channel, ~5+ feet in deep portion of channel.
Visibility: To bottom in shallow section of channel, ~ 2 inch in deep portion of channel.
Tide (if applicable): N/A.

Notes: Turbid. Foam/bubbles throughout.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish __0____
Fish Breathing Stress/Gulping ☒ None ☐ Yes
Fish Abnormal Behavior ☒ None ☐ Yes

Notes:

Species Observed	# of individuals	Behavior	Notes/Observations
black crowned night heron	4	Loafing, Foraging	Loafing along cement exposed portion of the stream. Foraging from trees along sides of the stream.
mallard/Hawaiian duck hybrid	2	Loafing	Loafing along cement exposed portion of the stream.

PHOTOGRAPHS

	Photograph # 1: Downstream Site # 2 looking downstream.

Halawa Stream Monitoring Data Sheet

Observer/s: [redacted]

Date: 6/13/2023 Site Name: Estuary Site #1 Time: 1141

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 81°F
☐ showers (intermittent)	☐ showers (intermittent)	
100 % cloud cover	60 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐dry ☒wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment throughout water column.
Water Color: Green/Brown.
Estimated Depth: 5+ feet.
Visibility: ~ 1 foot.
Tide (if applicable): Raising, 1.50 feet.

Notes: NA.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐ Yes
Fish Abnormal Behavior ☒ None ☐ Yes

Notes: No waterbirds or shorebirds.

Species Observed	# of individuals	Behavior	Notes/Observations
N/A.			

PHOTOGRAPHS

	Photograph # 1: Estuary Site #1 looking upstream.

Halawa Stream Monitoring Data Sheet

Observer/s: [redacted]

Date: 6/13/2023 Site Name: Estuary Site #2 Time: 1132

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 81 °F
☐ showers (intermittent)	☐ showers (intermittent)	
100 % cloud cover	60 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐dry ☒wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment throughout water column.
Water Color: Brown/green.
Estimated Depth: 5+ feet.
Visibility: ~ 1 foot.
Tide (if applicable): Rising, 1.46 feet.

Notes: Second boom present along with first boom.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

Notes: No waterbirds or shorebirds.

Species Observed	# of individuals	Behavior	Notes/Observations
N/A.			

PHOTOGRAPHS

	Photograph # 1: Estuary Site #2 looking downstream.

	Photograph # 2: Estuary Site #2 looking upstream.

WATERBIRD SURVEY DATASHEET

WETLAND CONDTION CODES	
Water Level (WL)	**Human Impact (HI)**
0 = dry	0 = indirect (little garbage, few people)
1 = lower than normal	1 = moderate
2= normal	2 = heavy (many people present; e.g., wading, boating, fishing, etc)
3 = higher than normal	
Vegetation Cover (VC)	**Shoreline Condition of Tidal Wetlands (SC)**
0 = open water (<25% veg)	0 = water at high tide mark N/A=not applicable
1 = 26-50% veg cover	1 = water 25 ft from high tide mark
2 = 51-75% veg cover	2 = water 50 ft from high tide mark
3 = >75% cover	3 = water >50 ft from high tide mark

WEATHER CODES	
Rainfall (RF)	**Wind**
0 = no rain	0 = no wind, < 1 mph
1 = mist or fog	1 = smoke drifts, 1-3 mph
2 = drizzle	2 = wind felt on face, 4-7 mph
3 = light rain	3 = leaves and twigs rustle, 8-12 mph
4 = heavy rain	4 = dust raises, branches stir, 13-18 mph
5 = snow or hail	5 = small trees sway, >19 mph
Cloud Cover (CC) = Estimate to the **nearest 10%**	

Date 6-13-23

Island O'ahu

REMINDERS: If site it not accessible, include wetland name and write 'no access'
If no birds observed, fill out top portion and write 'no birds'
KEEP A COPY FOR YOUR RECORDS
Subadult includes juveniles and chicks

Observers [redacted]

Wetland Name	US				DC				DS 1				DS 2			
Condition	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC
	1	0	0	NA	1	0	0	NA	1	0	0	NA	1	0	0	NA
Weather	CC	RF	Wind		CC	RF	Wind		CC	RF	Wind		CC	RF	Wind	
	100	1	1		100	1	1		100	0	1		100	0	1	
Time	Start		Stop		Start		Stop		Start		Stop		Start		Stop	
	1048		1053		1100		1105		1123		1128		1117		1122	
COOT adult																
subadult																
GALLINULE/MOORHEN adult																
subadult																
STILT adult																
subadult																
KOLOA adult																
subadult																
Koloa/Mallard Hybrid													2 (Adult/ Loafing)			
Mallard (domestic/feral)																
Other Domestic Duck																
Black-cr. Night Heron													4 (Adult/ Foraging/ Loafing)			
Cattle Egret																
Pacific Golden Plover																
Ruddy Turnstone																
Sanderling																
Wandering Tattler																
Northern Pintail																
Mallard (migratory)																
Lesser scaup																
Comments	no waterbirds/shorebirds				no waterbirds/shorebirds				no waterbirds/shorebirds							

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WATERBIRD SURVEY DATASHEET

WETLAND CONDTION CODES	
Water Level (WL) 0 = dry 1 = lower than normal 2= normal 3 = higher than normal	**Human Impact (HI)** 0 = indirect (little garbage, few people) 1 = moderate 2 = heavy (many people present; e.g., wading, boating, fishing, etc)
Vegetation Cover (VC) 0 = open water (<25% veg) 1 = 26-50% veg cover 2 = 51-75% veg cover 3 = >75% cover	**Shoreline Condition of Tidal Wetlands (SC)** 0 = water at high tide mark N/A=not applicable 1 = water 25 ft from high tide mark 2 = water 50 ft from high tide mark 3 = water >50 ft from high tide mark

WEATHER CODES	
Rainfall (RF) 0 = no rain 1 = mist or fog 2 = drizzle 3 = light rain 4 = heavy rain 5 = snow or hail	**Wind** 0 = no wind, < 1 mph 1 = smoke drifts, 1-3 mph 2 = wind felt on face, 4-7 mph 3 = leaves and twigs rustle, 8-12 mph 4 = dust raises, branches stir, 13-18 mph 5 = small trees sway, >19 mph
Cloud Cover (CC) = Estimate to the n**earest 10%**	

Date 6-13-23

Island O'ahu

REMINDERS: If site it not accessible, include wetland name and write 'no access'
If no birds observed, fill out top portion and write 'no birds'
KEEP A COPY FOR YOUR RECORDS
Subadult includes juveniles and chicks

Observers [redacted]

Wetland Name	ES 1				ES 2											
Condition	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC
	1	0	0	1	1	0	0	1								
Weather	CC	RF	Wind		CC	RF	Wind		CC	RF	Wind		CC	RF	Wind	
	100	0	1		100	0	1									
Time	Start		Stop		Start		Stop		Start		Stop		Start		Stop	
	1141		1146		1132		1137									
COOT adult																
subadult																
GALLINULE/MOORHEN adult																
subadult																
STILT adult																
subadult																
KOLOA adult																
subadult																
Koloa/Mallard Hybrid																
Mallard (domestic/feral)																
Other Domestic Duck																
Black-cr. Night Heron																
Cattle Egret																
Pacific Golden Plover																
Ruddy Turnstone																
Sanderling																
Wandering Tattler																
Northern Pintail																
Mallard (migratory)																
Lesser scaup																
White Tern																
Comments	no waterbirds/shorebirds				no waterbirds/shorebirds											

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Halawa Stream Monitoring Data Sheet

Observer/s: [redacted]

Date: 6/19/2023 Site Name: Upstream Site Time: 0616

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☒ yes ☐ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 75 °F
☐ showers (intermittent)	☐ showers (intermittent)	
60 % cloud cover	50 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment on bottom of streambed.
Water Color: Clear
Estimated Depth: ~ 1/2 inch.
Visibility: Clear to bottom.
Tide (if applicable): N/A

Notes: Leaf litter, rocks, rubbish, growing vegetation, and dead branches present in channel. Large dead tree hanging over channel downstream.

SPECIES OBSERVATIONS
Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

Notes: No waterbirds or shorebirds.

Species Observed	# of individuals	Behavior	Notes/Observations
red-vented bulbul	4	Foraging	Foraging in tree canopy above stream.

PHOTOGRAPHS

Photograph # 1:

Upstream Site looking upstream.

Photograph # 2:

Upstream Site looking downstream.

Halawa Stream Monitoring Data Sheet

Observer/s: [redacted]

Date: 6/19/2023 Site Name: Discharge Site Time: 0603

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☒ yes ☐ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 74 °F
☐ showers (intermittent)	☐ showers (intermittent)	
60 % cloud cover	50 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment on bottom of streambed.
Water Color: Clear.
Estimated Depth: Above discharge 1-3 inches, below discharge 3-5 inches.
Visibility: Clear to bottom.
Tide (if applicable): N/A

Notes: Waddle present with vegetation debris and some rubbish. Leaf litter mostly occurring in middle of channel due to previous fast moving waters along the sides of the channel. Discharge pipes not on. Living and dead branches hanging over stream. Four juvenile feral pigs were roughly 15 feet away from observer.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

Notes: No waterbirds or shorebirds.

Species Observed	# of individuals	Behavior	Notes/Observations
red-crested cardinal	1	Foraging	Foraging in upper portion of channel.

PHOTOGRAPHS

Photograph # 1:

Discharge Site looking upstream.

Photograph # 2:

Discharge Site looking downstream.

Halawa Stream Monitoring Data Sheet

Observer/s:[redacted]

Date: 6/19/2023 Site Name: Downstream Site # 1 Time: 0655

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☒ yes ☐ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature 78° F
☐ showers (intermittent)	☐ showers (intermittent)	
60 % cloud cover	50 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☒sheen visible
Observed Turbidity/Sedimentation: Sediment on bottom of streambed.
Water Color: Clear.
Estimated Depth: 1-5 inches.
Visibility: Clear to bottom.
Tide (if applicable): N/A.

Notes: Sediment piles with growing vegetation present on sides of channel. One patch of sheen, 1 foot by 1 foot, observed near bridge at observation point.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

Notes:

Species Observed	# of individuals	Behavior	Notes/Observations
wandering tattler	3	Foraging	Foraging in back of stream.

PHOTOGRAPHS

	Photograph # 1: Downstream Site #1 looking upstream. Sheen patch (yellow circle) present in bottom of photo.

Halawa Stream Monitoring Data Sheet

Observer/s:___[redacted]_____

Date:___6/19/2023___Site Name:_____Downstream Site #2_____ Time: __0642_____

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☒yes ☐ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 77 °F
☐ showers (intermittent)	☐ showers (intermittent)	
60% cloud cover	50 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment on bottom of streambed.
Water Color: Clear.
Estimated Depth: ~ 1-3 inches in shallow section of channel, ~5+ feet in deep portion of channel.
Visibility: Clear to bottom in shallow section of channel, ~ 2 feet in deep portion of channel.
Tide (if applicable): N/A.

Notes: Small amounts of white foam/bubbles where shallow sections meets estuary. Sediment piles with growing vegetation, leaf litter, and some rubbish present in stream.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish __0___
Fish Breathing Stress/Gulping ☒ None ☐ Yes
Fish Abnormal Behavior ☒ None ☐ Yes

Notes:

Species Observed	# of individuals	Behavior	Notes/Observations
Black-crowned night heron	1	Foraging	Foraging from mangrove along sides of the stream.
zebra dove	3	Foraging	Foraging along cement exposed portion of the stream.
common myna	2	Foraging	Foraging along cement exposed portion of the stream.
common waxbill	1	Foraging	Foraging from vegetation growing on sediment piles in estuary portion of stream.

PHOTOGRAPHS

	Photograph # 1: Downstream Site # 2 looking downstream.

Halawa Stream Monitoring Data Sheet

Observer/s: ___[redacted]_____

Date: 6/19/2023 Site Name: Estuary Site #1 Time: 0727

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☒yes ☐ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 81°F
☐ showers (intermittent)	☐ showers (intermittent)	
50 % cloud cover	50 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐dry ☒wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment throughout water column.
Water Color: Green/Brown.
Estimated Depth: 5+ feet.
Visibility: ~ 1 foot.
Tide (if applicable): Falling, 0.20 feet.

Notes: Sand spit present in the back of stream.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐ Yes
Fish Abnormal Behavior ☒ None ☐ Yes

Notes: No waterbirds or shorebirds.

Species Observed	# of individuals	Behavior	Notes/Observations
unknown medium fish species	20	Schooling	Swimming near shoreline on left side of stream.

PHOTOGRAPHS

	Photograph # 1: Estuary Site #1 looking upstream.

Halawa Stream Monitoring Data Sheet

Observer/s: ___[redacted]_____

Date: 6/19/2023 Site Name: Estuary Site #2 Time: 0712

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☒ yes ☐ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 80 °F
☐ showers (intermittent)	☐ showers (intermittent)	
50 % cloud cover	50 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐dry ☒wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment throughout water column. Turbidity increases with depth.
Water Color: Clear near shoreline and opaque in deeper portions.
Estimated Depth: 5+ feet.
Visibility: ~ 2 feet.
Tide (if applicable): Falling, 0.23 feet.

Notes: Second boom present along with first boom. Significant amount of rubbish and vegetation debris floating in water.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

Notes: No waterbirds or shorebirds.

Species Observed	# of individuals	Behavior	Notes/Observations
unknown small fish species	20	Schooling	Swimming near shoreline.
unknown medium fish species	3	Foraging	Foraging near shoreline.
mongoose	1	Transitioning	Moving along shoreline.

PHOTOGRAPHS

	Photograph # 1: Estuary Site #2 looking downstream.

	Photograph # 2: Estuary Site #2 looking upstream.

WATERBIRD SURVEY DATASHEET

WETLAND CONDTION CODES	
Water Level (WL)	**Human Impact (HI)**
0 = dry	0 = indirect (little garbage, few people)
1 = lower than normal	1 = moderate
2= normal	2 = heavy (many people present; e.g., wading, boating, fishing, etc)
3 = higher than normal	
Vegetation Cover (VC)	**Shoreline Condition of Tidal Wetlands (SC)**
0 = open water (<25% veg)	0 = water at high tide mark N/A=not applicable
1 = 26-50% veg cover	1 = water 25 ft from high tide mark
2 = 51-75% veg cover	2 = water 50 ft from high tide mark
3 = >75% cover	3 = water >50 ft from high tide mark

WEATHER CODES	
Rainfall (RF)	**Wind**
0 = no rain	0 = no wind, < 1 mph
1 = mist or fog	1 = smoke drifts, 1-3 mph
2 = drizzle	2 = wind felt on face, 4-7 mph
3 = light rain	3 = leaves and twigs rustle, 8-12 mph
4 = heavy rain	4 = dust raises, branches stir, 13-18 mph
5 = snow or hail	5 = small trees sway, >19 mph
Cloud Cover (CC) = Estimate to the **nearest 10%**	

Date 6-19-23

Island O'ahu

REMINDERS: If site it not accessible, include wetland name and write 'no access'
If no birds observed, fill out top portion and write 'no birds'
KEEP A COPY FOR YOUR RECORDS
Subadult includes juveniles and chicks

Observers [redacted]

Wetland Name	US				DC				DS 1				DS 2			
Condition	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC
	1	0	0	NA	2	0	0	NA	2	0	0	NA	2	0	0	NA
Weather	CC	RF	Wind		CC	RF	Wind		CC	RF	Wind		CC	RF	Wind	
	60	0	0		60	0	0		60	0	0		60	0	1	
Time	Start		Stop		Start		Stop		Start		Stop		Start		Stop	
	0616		0622		0603		0609		0655		0700		0642		0650	
COOT adult																
subadult																
GALLINULE/MOORHEN adult																
subadult																
STILT adult																
subadult																
KOLOA adult																
subadult																
Koloa/Mallard Hybrid																
Mallard (domestic/feral)																
Other Domestic Duck																
Black-cr. Night Heron													1 (Foraging)			
Cattle Egret																
Pacific Golden Plover																
Ruddy Turnstone																
Sanderling																
Wandering Tattler									3 (Foraging)							
Northern Pintail																
Mallard (migratory)																
Lesser scaup																
Comments	no waterbirds/shorebirds				no waterbirds/shorebirds											

Rev. Aug 2017

WATERBIRD SURVEY DATASHEET

WETLAND CONDTION CODES	
Water Level (WL) 0 = dry 1 = lower than normal 2= normal 3 = higher than normal	**Human Impact (HI)** 0 = indirect (little garbage, few people) 1 = moderate 2 = heavy (many people present; e.g., wading, boating, fishing, etc)
Vegetation Cover (VC) 0 = open water (<25% veg) 1 = 26-50% veg cover 2 = 51-75% veg cover 3 = >75% cover	**Shoreline Condition of Tidal Wetlands (SC)** 0 = water at high tide mark N/A=not applicable 1 = water 25 ft from high tide mark 2 = water 50 ft from high tide mark 3 = water >50 ft from high tide mark

WEATHER CODES	
Rainfall (RF) 0 = no rain 1 = mist or fog 2 = drizzle 3 = light rain 4 = heavy rain 5 = snow or hail	**Wind** 0 = no wind, < 1 mph 1 = smoke drifts, 1-3 mph 2 = wind felt on face, 4-7 mph 3 = leaves and twigs rustle, 8-12 mph 4 = dust raises, branches stir, 13-18 mph 5 = small trees sway, >19 mph
Cloud Cover (CC) = Estimate to the n**earest 10%**	

Date 6-19-23

Island O'ahu

REMINDERS: If site it not accessible, include wetland name and write 'no access'
If no birds observed, fill out top portion and write 'no birds'
KEEP A COPY FOR YOUR RECORDS
Subadult includes juveniles and chicks

Observers [redacted]

Wetland Name	ES 1				ES 2											
Condition	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC
	2	0	0	1	1	0	0	1								
Weather	CC	RF	Wind		CC	RF	Wind		CC	RF	Wind		CC	RF	Wind	
	50	0	0		50	0	0									
Time	Start		Stop		Start		Stop		Start		Stop		Start		Stop	
	0727		0733		0712		0719									
COOT adult																
subadult																
GALLINULE/MOORHEN adult																
subadult																
STILT adult																
subadult																
KOLOA adult																
subadult																
Koloa/Mallard Hybrid																
Mallard (domestic/feral)																
Other Domestic Duck																
Black-cr. Night Heron																
Cattle Egret																
Pacific Golden Plover																
Ruddy Turnstone																
Sanderling																
Wandering Tattler																
Northern Pintail																
Mallard (migratory)																
Lesser scaup																
White Tern																
Comments	no waterbirds/shorebirds				no waterbirds/shorebirds											

Rev. Aug 2017

Halawa Stream Monitoring Data Sheet

Observer/s: [redacted]

Date: 6/26/2023 Site Name: Upstream Site Time: 0655

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 74 °F
☐ showers (intermittent)	☐ showers (intermittent)	
60 % cloud cover	60 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment on bottom of streambed.
Water Color: Clear.
Estimated Depth: Less than 1 inch.
Visibility: Clear to bottom.
Tide (if applicable): N/A

Notes: Leaf litter, rocks, rubbish, and growing vegetation on sediment piles, present in channel. Large dead tree hanging over channel downstream. Slight water flow from side drainage.

SPECIES OBSERVATIONS
Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

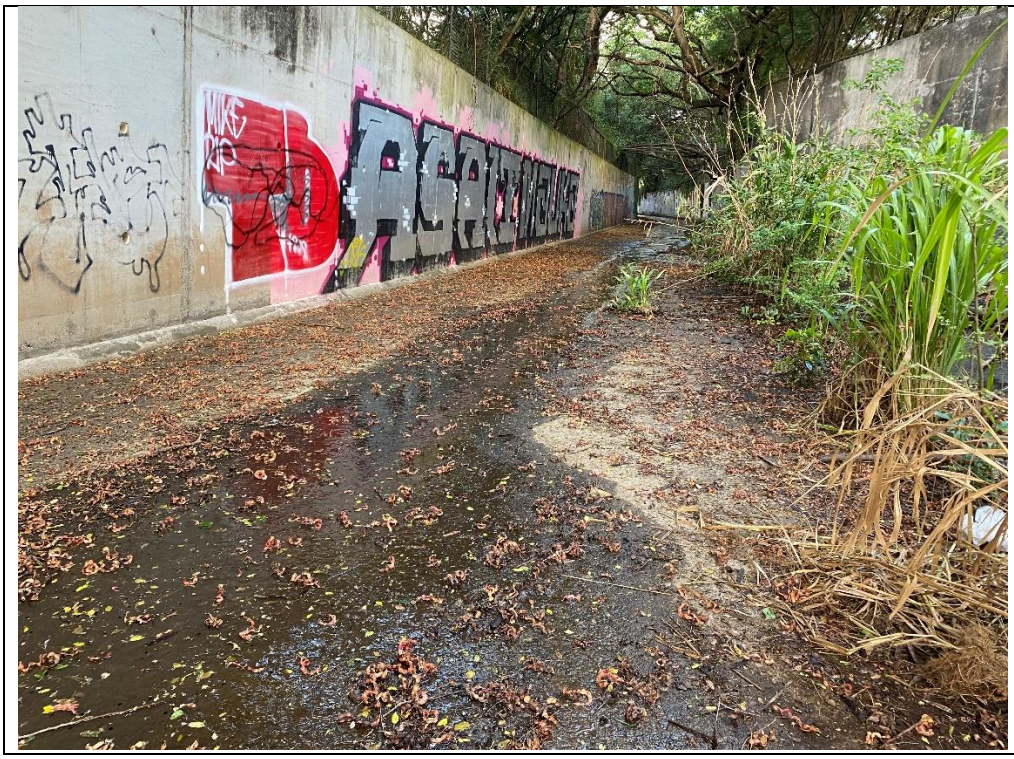
Notes: No waterbirds or shorebirds.

Species Observed	# of individuals	Behavior	Notes/Observations
red-vented bulbul	5	Transitioning	Transitioning in tree canopy above stream.

PHOTOGRAPHS

Photograph # 1:

Upstream Site looking upstream.



Photograph # 2:

Upstream Site looking downstream.

Halawa Stream Monitoring Data Sheet

Observer/s: ___[redacted]___

Date: 6/26/2023 Site Name: Discharge Site Time: 0636

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 71 °F
☐ showers (intermittent)	☐ showers (intermittent)	
80 % cloud cover	60 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment on bottom of streambed.
Water Color: Clear.
Estimated Depth: Above discharge less than 1 inch, below discharge 1-4 inches.
Visibility: Clear to bottom.
Tide (if applicable): N/A

Notes: Waddle present with vegetation debris and some rubbish. Leaf litter mostly occurring in middle of channel due to previous fast moving waters along the sides of the channel. Discharge pipes on. Living and dead branches hanging over stream and growing vegetation in the stream.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

Notes: No waterbirds or shorebirds.

Species Observed	# of individuals	Behavior	Notes/Observations
red-crested cardinal	2	Transitioning	Flying in trees next to stream.
unknown moth	1	Transitioning	Fluttering in channel.
zebra dove	2	Transitioning	Flying above channel in trees.

PHOTOGRAPHS

Photograph # 1:

Discharge Site looking upstream.

Photograph # 2:

Discharge Site looking downstream.

Halawa Stream Monitoring Data Sheet

Observer/s:___[redacted]_

Date: 6/26/2023 Site Name: Downstream Site # 1 Time: 0733

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature 78° F
☐ showers (intermittent)	☐ showers (intermittent)	
60 % cloud cover	60 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Little sediment on bottom of streambed.
Water Color: Clear.
Estimated Depth: 1-3 inches.
Visibility: Clear to bottom.
Tide (if applicable): N/A.

Notes: Sediment piles with growing vegetation present on sides of channel. Algae clumps with leaf litter present in stream. Water flow across whole channel.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

Notes:

Species Observed	# of individuals	Behavior	Notes/Observations
red-vented bulbul	1	Transitioning	Flying around bridge.

PHOTOGRAPHS

	Photograph # 1: Downstream Site #1 looking upstream.

Halawa Stream Monitoring Data Sheet

Observer/s:___[redacted]_____

Date:___6/26/2023___Site Name:_____Downstream Site #2_____ Time: __0721_____

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 75 °F
☐ showers (intermittent)	☐ showers (intermittent)	
60% cloud cover	60 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐ dry ☒ wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment on bottom of streambed.
Water Color: Clear.
Estimated Depth: 1-4 inches in shallow section of channel, 4+ feet in deep portion of channel.
Visibility: Clear to bottom in shallow section of channel, ~ 2 feet in deep portion of channel.
Tide (if applicable): N/A.

Notes: Small amounts of white foam/bubbles where shallow sections meets estuary. Sediment piles with growing vegetation, leaf litter, and some rubbish present in stream.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish __0___
Fish Breathing Stress/Gulping ☒ None ☐ Yes
Fish Abnormal Behavior ☒ None ☐ Yes

Notes: Two Hawaiian stilts were heard- and observed flying high over the area.

Species Observed	# of individuals	Behavior	Notes/Observations
black-crowned night heron	3	Foraging, Territorial, Transitioning	Adult foraging where shallow section meets estuary. Juveniles flying and chasing each other in mangrove tress along sides of the stream.
red-crested cardinal	1	Transitioning	Transitioning on island make of sediment in the back of stream

PHOTOGRAPHS

	Photograph # 1: Downstream Site # 2 looking downstream.

Halawa Stream Monitoring Data Sheet

Observer/s: ___[redacted]_____

Date: 6/26/2023 Site Name: Estuary Site #1 Time: 0811

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 81°F
☐ showers (intermittent)	☐ showers (intermittent)	
80 % cloud cover	60 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐dry ☒wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Sediment throughout water column.
Water Color: Green/Brown.
Estimated Depth: 5+ feet.
Visibility: ~ 1 foot.
Tide (if applicable): Rising, 0.67 feet.

Notes: Vegetation pile exposed in back of stream. One fisherman actively fishing from bridge with one fishing pole. Did not survey on other side of fisherman.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐ Yes
Fish Abnormal Behavior ☒ None ☐ Yes

Notes:

Species Observed	# of individuals	Behavior	Notes/Observations
unknown large fish species	2	Potentially mating	Chasing each other in middle of stream. Fish length at least 3 feet.
white tern	1	Transitioning	Flying/hovering over back of stream.
black-crowned night heron	1	Foraging	Foraging in back of stream along mangrove shoreline.

PHOTOGRAPHS

	Photograph # 1: Estuary Site #1 looking upstream.

	Photograph # 1: Two large fish at Estuary Site #1.

Halawa Stream Monitoring Data Sheet

Observer/s: ___[redacted]_____

Date: 6/26/2023 Site Name: Estuary Site #2 Time: 0752

WEATHER CONDITIONS

NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	☐ yes ☒ no
☐ rain (steady rain)	☐ rain (steady rain)	Air Temperature: 80 °F
☐ showers (intermittent)	☐ showers (intermittent)	
50 % cloud cover	60 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	

WATER QUALITY

Water level ☐dry ☒wet ☐ standing water ☒ flowing water ☐ sheen visible
Observed Turbidity/Sedimentation: Turbidity increases with depth.
Water Color: Clear near shoreline, opaque in deeper portions.
Estimated Depth: 5+ feet.
Visibility: ~ 2 feet.
Tide (if applicable): Rising, 0.61 feet.

Notes: Two booms present.

SPECIES OBSERVATIONS

Fish Kill? ☐ Yes ☒ No # Dead Fish 0
Fish Breathing Stress/Gulping ☒ None ☐Yes
Fish Abnormal Behavior ☒ None ☐Yes

Notes: No waterbirds or shorebirds.

Species Observed	# of individuals	Behavior	Notes/Observations
unknown small fish species	10	Schooling	Swimming near shoreline.
common myna	2	Transitioning	Flying from shoreline across stream.

PHOTOGRAPHS

	Photograph # 1: Estuary Site #2 looking downstream.

	Photograph # 2: Estuary Site #2 looking upstream.

WATERBIRD SURVEY DATASHEET

WETLAND CONDTION CODES	
Water Level (WL)	**Human Impact (HI)**
0 = dry	0 = indirect (little garbage, few people)
1 = lower than normal	1 = moderate
2= normal	2 = heavy (many people present; e.g., wading, boating, fishing, etc)
3 = higher than normal	
Vegetation Cover (VC)	**Shoreline Condition of Tidal Wetlands (SC)**
0 = open water (<25% veg)	0 = water at high tide mark N/A=not applicable
1 = 26-50% veg cover	1 = water 25 ft from high tide mark
2 = 51-75% veg cover	2 = water 50 ft from high tide mark
3 = >75% cover	3 = water >50 ft from high tide mark

WEATHER CODES	
Rainfall (RF)	**Wind**
0 = no rain	0 = no wind, < 1 mph
1 = mist or fog	1 = smoke drifts, 1-3 mph
2 = drizzle	2 = wind felt on face, 4-7 mph
3 = light rain	3 = leaves and twigs rustle, 8-12 mph
4 = heavy rain	4 = dust raises, branches stir, 13-18 mph
5 = snow or hail	5 = small trees sway, >19 mph
Cloud Cover (CC) = Estimate to the n**earest 10%**	

REMINDERS: If site it not accessible, include wetland name and write 'no access'
If no birds observed, fill out top portion and write 'no birds'
KEEP A COPY FOR YOUR RECORDS
Subadult includes juveniles and chicks

Observers [redacted]

Date 6-26-23

Island O'ahu

Wetland Name	US				DC				DS 1				DS 2			
Condition	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC
	1	0	0	NA	2	0	0	NA	2	0	0	NA	2	1	0	NA
Weather	CC	RF	Wind		CC	RF	Wind		CC	RF	Wind		CC	RF	Wind	
	60	0	1		80	0	0		60	0	1		60	0	1	
Time	Start		Stop		Start		Stop		Start		Stop		Start		Stop	
	0655		0702		0636		0643		0733		0738		0721		0728	
COOT adult																
subadult																
GALLINULE/MOORHEN adult																
subadult																
STILT adult																
subadult																
KOLOA adult																
subadult																
Koloa/Mallard Hybrid																
Mallard (domestic/feral)																
Other Domestic Duck																
Black-cr. Night Heron													3 (Adult/Juveniles Foraging/Transitioning/Territorial)			
Cattle Egret																
Pacific Golden Plover																
Ruddy Turnstone																
Sanderling																
Wandering Tattler																
Northern Pintail																
Mallard (migratory)																
Lesser scaup																
Comments	no waterbirds/shorebirds				no waterbirds/shorebirds				no waterbirds/shorebirds							

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WATERBIRD SURVEY DATASHEET

WETLAND CONDTION CODES	
Water Level (WL) 0 = dry 1 = lower than normal 2= normal 3 = higher than normal	**Human Impact (HI)** 0 = indirect (little garbage, few people) 1 = moderate 2 = heavy (many people present; e.g., wading, boating, fishing, etc)
Vegetation Cover (VC) 0 = open water (<25% veg) 1 = 26-50% veg cover 2 = 51-75% veg cover 3 = >75% cover	**Shoreline Condition of Tidal Wetlands (SC)** 0 = water at high tide mark N/A=not applicable 1 = water 25 ft from high tide mark 2 = water 50 ft from high tide mark 3 = water >50 ft from high tide mark

WEATHER CODES	
Rainfall (RF) 0 = no rain 1 = mist or fog 2 = drizzle 3 = light rain 4 = heavy rain 5 = snow or hail	**Wind** 0 = no wind, < 1 mph 1 = smoke drifts, 1-3 mph 2 = wind felt on face, 4-7 mph 3 = leaves and twigs rustle, 8-12 mph 4 = dust raises, branches stir, 13-18 mph 5 = small trees sway, >19 mph
Cloud Cover (CC) = Estimate to the n**earest 10%**	

Date 6-26-23

Island O'ahu

REMINDERS: If site it not accessible, include wetland name and write 'no access'
If no birds observed, fill out top portion and write 'no birds'
KEEP A COPY FOR YOUR RECORDS
Subadult includes juveniles and chicks

Observers [redacted]

Wetland Name	ES 1				ES 2											
Condition	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC
	2	0	0	1	2	0	0	1								
Weather	CC	RF	Wind		CC	RF	Wind		CC	RF	Wind		CC	RF	Wind	
	80	0	1		50	0	0									
Time	Start		Stop		Start		Stop		Start		Stop		Start		Stop	
	0811		0817		0752		0758									
COOT adult																
subadult																
GALLINULE/MOORHEN adult																
subadult																
STILT adult																
subadult																
KOLOA adult																
subadult																
Koloa/Mallard Hybrid																
Mallard (domestic/feral)																
Other Domestic Duck																
Black-cr. Night Heron	1 (Adult/Foraging)															
Cattle Egret																
Pacific Golden Plover																
Ruddy Turnstone																
Sanderling																
Wandering Tattler																
Northern Pintail																
Mallard (migratory)																
Lesser scaup																
White Tern																
Comments					no waterbirds/shorebirds											

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