## 10

PREPARED FOR

**ANALYTICAL REPORT** 

Attn: Terri Choy AECOM 1001 Bishop Street Honolulu, Hawaii 96813

Generated 1/30/2023 10:52:38 AM

## **JOB DESCRIPTION**

Red Hill - AFFF Assessment Sampling

## **JOB NUMBER**

580-122332-1

Eurofins Seattle 5755 8th Street East Tacoma WA 98424



## **Eurofins Seattle**

#### **Job Notes**

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The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

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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Client: AECOM

Laboratory Job ID: 580-122332-1

Project/Site: Red Hill - AFFF Assessment Sampling

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#### **Case Narrative**

Client: AECOM Job ID: 580-122332-1

Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-122332-1

**Laboratory: Eurofins Seattle** 

Narrative

## CASE NARRATIVE Client: AECOM

Project: Red Hill - AFFF Assessment Sampling Report Number: 580-122332-1

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 1/18/2023 10:00 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 4.6° 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.

#### **GLYCOLS**

Samples AF-RHMW17D-WGN01LF-2301W2 (580-122332-1), AF-RHMW17D-WQEB01-2301W2 (580-122332-2), AF-RHMW17D-WQFB01-2301W2 (580-122332-3) and AF-RHMW17-WGN01LF-2301W2 (580-122332-4) were analyzed for glycols in accordance with EPA SW-846 Method 8015B - DAI. The samples were analyzed on 01/25/2023 and 01/26/2023.

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

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Eurofins Seattle 1/30/2023

## **Definitions/Glossary**

Client: AECOM Job ID: 580-122332-1

Project/Site: Red Hill - AFFF Assessment Sampling

#### **Qualifiers**

#### **GC Semi VOA**

Qualifier **Qualifier Description** 

Undetected at the Limit of Detection.

#### **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

Percent Recovery %R **CFL** Contains Free Liquid CFU Colony Forming Unit CNF Contains No Free Liquid

Duplicate Error Ratio (normalized absolute difference) **DER** 

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)

Estimated Detection Limit (Dioxin) **EDL** 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 Method Quantitation Limit MQL

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** 

Relative Error Ratio (Radiochemistry) **RER** 

Reporting Limit or Requested Limit (Radiochemistry) RL

**RPD** Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) **TEQ** Toxicity Equivalent Quotient (Dioxin)

Too Numerous To Count **TNTC** 

**Eurofins Seattle** 

Client: AECOM Job ID: 580-122332-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW17D-WGN01LF-2301W2 Lab Sample ID: 580-122332-1

Date Received: 01/18/23 10:00

Method: SW846 8015C GLY - 0	Glycols- Dire	ect Injecti	on (GC/FID)						
Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fa
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L			01/26/23 21:54	

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Client: AECOM Job ID: 580-122332-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW17D-WQEB01-2301W2 Lab Sample ID: 580-122332-2

Date Collected: 01/13/23 15:00 Lab Sample 1B. 360-122332-2

Date Received: 01/18/23 10:00

<b>Glycols- Direct Injection (GC/FID)</b>	Method: SW846 8015C GLY - 0
---	-----------------------------

Analyte	Result (	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac	
2-(2-Butoxyethoxy)ethanol	30 [	IJ	5.0	1 1	ma/l			01/25/23 23:59	1	

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Client: AECOM Job ID: 580-122332-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW17D-WQFB01-2301W2 Lab Sample ID: 580-122332-3

Date Collected: 01/13/23 11:50

Matrix: Water

Date Received: 01/18/23 10:00

	Method: SW846 80150	GLY - G	lycols- Direct	Injection	(GC/FID)
--	---------------------	---------	----------------	-----------	----------

Analyte	Result Qualifier	LOQ	DL Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0 11	5.0	1.1 mg/l			01/26/23 00:22	1

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Client: AECOM Job ID: 580-122332-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW17-WGN01LF-2301W2 Lab Sample ID: 580-122332-4

Date Collected: 01/13/23 11:15

Date Received: 01/18/23 10:00

Method: SW846 8015C	GLY - GI	vcols- Direct In	iection (	GC/FID)
Mictilioa: 011040 00100	OL: OI		Jeenen (	OO/1 1D)

Analyte	Result	Qualifier	LOQ	DL Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	П	5.0	1.1 mg/l			01/26/23 23:04	1

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Job ID: 580-122332-1

Project/Site: Red Hill - AFFF Assessment Sampling

## Method: 8015C GLY - Glycols- Direct Injection (GC/FID)

Lab Sample ID: MB 680-760613/10 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

Client: AECOM

**Analysis Batch: 760613** 

MB MB

Result Qualifier LOQ DL Unit Dil Fac Analyte D Prepared Analyzed 2-(2-Butoxyethoxy)ethanol 3.0 U 5.0 1.1 mg/L 01/25/23 20:53

Lab Sample ID: LCS 680-760613/6 Client Sample ID: Lab Control Sample **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 760613** 

Spike LCS LCS %Rec Added Result Qualifier D %Rec Limits Unit 20.0 2-(2-Butoxyethoxy)ethanol 18.2 mg/L 91 50 - 150

Lab Sample ID: LCSD 680-760613/7 Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 760613** 

Spike LCSD LCSD %Rec **RPD** Added Result Qualifier Limits **RPD** Analyte Unit %Rec Limit 2-(2-Butoxyethoxy)ethanol 20.0 18.2 91 50 - 150 mg/L

Lab Sample ID: MB 680-760776/10 **Client Sample ID: Method Blank Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 760776** 

MB MB

Analyte Result Qualifier LOQ DL Unit Prepared Dil Fac Analyzed 3.0 U 1.1 mg/L 2-(2-Butoxyethoxy)ethanol 5.0 01/26/23 20:21

Lab Sample ID: LCS 680-760776/6 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 760776** 

LCS LCS Spike %Rec Added Limits Analyte Result Qualifier Unit %Rec 2-(2-Butoxyethoxy)ethanol 20.0 20.2 101 50 - 150 mg/L

Lab Sample ID: LCSD 680-760776/7 Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 760776** 

Spike LCSD LCSD %Rec **RPD** Added Result Qualifier Limits Unit %Rec **RPD** Limit Analyte D 20.0 2-(2-Butoxyethoxy)ethanol 21.6 mg/L 108 50 - 150

Lab Sample ID: 580-122332-1 MS Client Sample ID: AF-RHMW17D-WGN01LF-2301W2 Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 760776** 

Sample Sample Spike MS MS %Rec Result Qualifier Added Result Qualifier Limits Unit %Rec 2-(2-Butoxyethoxy)ethanol 3.0 U 20.0 15.0 mg/L 75 50 - 150

Lab Sample ID: 580-122332-1 MSD Client Sample ID: AF-RHMW17D-WGN01LF-2301W2

**Matrix: Water** 

**Analysis Batch: 760776** 

Spike MSD MSD %Rec **RPD** Sample Sample Result Qualifier Added **RPD** Analyte Result Qualifier Unit %Rec Limits Limit 3.0 U 2-(2-Butoxyethoxy)ethanol 20.0 18.4 mg/L 92 50 - 150

**Eurofins Seattle** 

Prep Type: Total/NA

#### **Lab Chronicle**

Client: AECOM Job ID: 580-122332-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW17D-WGN01LF-2301W2

Lab Sample ID: 580-122332-1 **Matrix: Water** 

Date Collected: 01/13/23 12:10 Date Received: 01/18/23 10:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number A	Analyst	Lab	or Analyzed
Total/NA	Analysis	8015C GLY			760776	DBM	EET SAV	01/26/23 21:54

Client Sample ID: AF-RHMW17D-WQEB01-2301W2

Date Collected: 01/13/23 15:00

Date Received: 01/18/23 10:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8015C GLY			760613	GEM	EET SAV	01/25/23 23:59

Client Sample ID: AF-RHMW17D-WQFB01-2301W2

Date Collected: 01/13/23 11:50

Date Received: 01/18/23 10:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8015C GLY		1	760613	GEM	EET SAV	01/26/23 00:22

Client Sample ID: AF-RHMW17-WGN01LF-2301W2

Date Collected: 01/13/23 11:15

Date Received: 01/18/23 10:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8015C GLY			760776	DBM	EET SAV	01/26/23 23:04

**Laboratory References:** 

EET SAV = Eurofins Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

**Matrix: Water** 

**Matrix: Water** 

**Matrix: Water** 

Lab Sample ID: 580-122332-2

Lab Sample ID: 580-122332-3

Lab Sample ID: 580-122332-4

## **Accreditation/Certification Summary**

Client: AECOM Job ID: 580-122332-1

Project/Site: Red Hill - AFFF Assessment Sampling

## **Laboratory: Eurofins Savannah**

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

Authority	Pı	rogram	Identification Number	Expiration Date
ANAB	De	ept. of Defense ELAP	L2463	09-22-24
The following analyte	a ara inaludad in thia ran	4 . 1 4 . 41 1 . 1		
the agency does not	•	ort, but the laboratory is not o	certified by the governing authority.	This list may include analytes for which
,	•	ort, but the laboratory is not o	Analyte	I his list may include analytes for whic

**Eurofins Seattle** 

1/30/2023

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## **Sample Summary**

Client: AECOM Job ID: 580-122332-1

Project/Site: Red Hill - AFFF Assessment Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-122332-1	AF-RHMW17D-WGN01LF-2301W2	Water	01/13/23 12:10	01/18/23 10:00
580-122332-2	AF-RHMW17D-WQEB01-2301W2	Water	01/13/23 15:00	01/18/23 10:00
580-122332-3	AF-RHMW17D-WQFB01-2301W2	Water	01/13/23 11:50	01/18/23 10:00
580-122332-4	AF-RHMW17-WGN01LF-2301W2	Water	01/13/23 11:15	01/18/23 10:00

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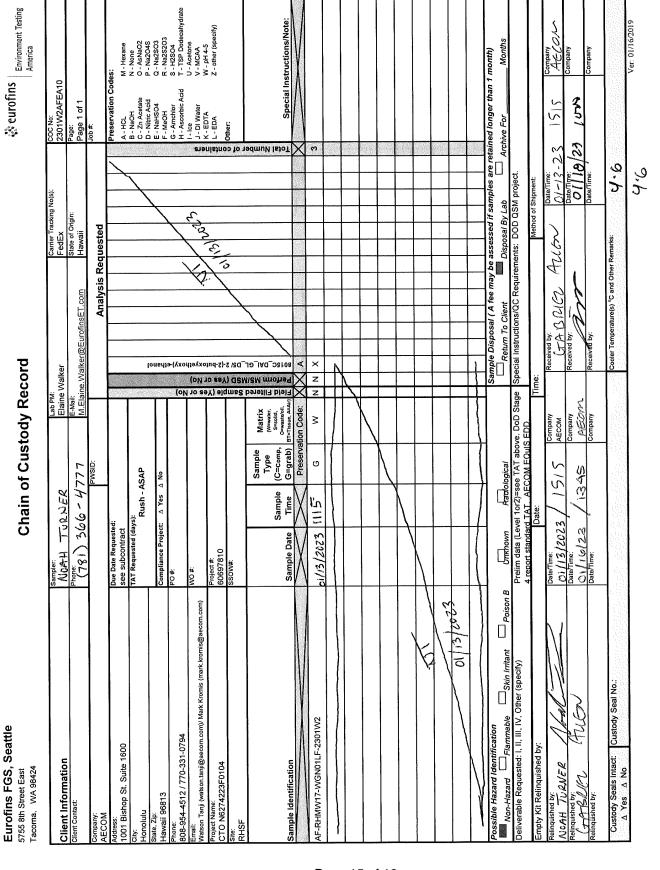
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Eurofins FGS, Seattle 5755 8th Street East Tacoma, WA 98424	ပ	Chain of Custody Record	Cust	ody Re	cord					्रैः eurofins	S Environment Testing America	bn
		04 101		Lab PM Flaine	Lab PM: Flaine Walker		Carrier	Carrier Tracking No(s): FedEx		COC No: 2301W2AFEA11		Г
Client Contact:	Phone: 756	アン マゴ・ケー ゲー	15	E-Mail:	reyle/v/ oc	E-Mail: M. Elsipa Malker@EumflosET.com		State of Origin: Hawaii		Page: Page 1 of 1		Ī
Company:	-	Ī	PWSID:	-	io vidino					Job #:		Τ
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Address: 1001 Bishop St. Suite 1600	Due Date Requested: see subcontract	#							_	A-HCL		***
	TAT Requested (day	/s): Rush - ASAP	AP						_	B - NaOH C - Zn Acetate		
20.73	Compliance Project	: A Yes A No	9		lonsh			/		D - Nitric Acid		
7770-331-0794	PO#:							_		G - Amchlor H - Ascorbic Acid	S - H2SO4 T - TSP Dodecahydrate	es es
Email: Watson Tanji (watson.tanji@aecom.com)/ Mark Kromis (mark.kromis@aecom.com)	WO #:				(on		Ź,	72	. s16	I - Ice J - Di Water		
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Non-Hazard Flammable Skin Imfant Foison B Deliverable Requested: II, III, IV, Other (specify)	۵.	rei 1or2)=see TAT	TAT above	. DoD Stage		nstructions/QC	Special Instructions/QC Requirements: DOD QSM project.	OD QSM pro		5 6 6		Τ
Emoty Kit Dolina lished hy:	4 report standard TAT. AECOM EQuIS EDD.   Date:	d TAT AEC	OM EQUIS	G	Time:			Method of Shipment:	ent:			Τ
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Custody Seals Intact: Custody Seal No.:  A Yes A No					Coole	ır Temperature(s) °	Cooler Temperature(s) °C and Other Remarks:	5	9.h			
								ş S	ه		Ver: 01/16/2019	



Eurofins FGS, Seattle

5755 8th Street East

Client: AECOM Job Number: 580-122332-1

List Source: Eurofins Savannah
List Number: 2
List Creation: 01/23/23 11:34 AM

Creator: Johnson, Corey M

orcator. Comison, Corcy in		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	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 ampered 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	
s the Field Sampler's name present on COC?	True	
here 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	