PREPARED FOR

**ANALYTICAL REPORT** 

Attn: Terri Choy AECOM 1001 Bishop Street Honolulu, Hawaii 96813 Generated 12/19/2022 4:41:01 PM

## **JOB DESCRIPTION**

Red Hill - AFFF Assessment Sampling

## **JOB NUMBER**

580-120925-1

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

Generated 12/19/2022 4:41:01 PM

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

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Client: AECOM

Project/Site: Red Hill - AFFF Assessment Sampling

Laboratory Job ID: 580-120925-1

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#### **Case Narrative**

Client: AECOM Job ID: 580-120925-1

Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-120925-1

**Laboratory: Eurofins Seattle** 

Narrative

### CASE NARRATIVE Client: AECOM

Project: Red Hill - AFFF Assessment Sampling Report Number: 580-120925-1

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.

Following DoD QSM guidelines, manual integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure, Acceptable Manual Integration Practices, SOP No.: Q-S-002. The reason(s) for manual integration have been documented on the affected chromatogram(s), which is/are provided in the raw data package. The raw data also includes the original chromatogram(s) prior to any manual integration being performed. Manual integrations are detailed in the manual integration summary forms following this narrative.

It should be noted that samples with elevated Limits of Quantitation (LOQs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the LOQs 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**

Three samples were received on 12/8/2022 11:00 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 3.4° 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 - 2-(2-BUTOXYLETHOXY)ETHANOL**

Samples AF-RHMW225401-WGN01B-2212W1 (580-120925-1), AF-RHMW03-WGN01LF-2212W1 (580-120925-2) and AF-RHMW02-WGN01LF-2212W1 (580-120925-3) were analyzed for glycols in accordance with EPA SW-846 Method 8015C- DAI. The samples were analyzed on 12/15/2022.

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

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## **Definitions/Glossary**

Client: AECOM Job ID: 580-120925-1

Project/Site: Red Hill - AFFF Assessment Sampling

#### **Qualifiers**

#### **GC Semi VOA**

 Qualifier
 Qualifier Description

 M
 Manual integrated compound.

 U
 Undetected at the Limit of Detection.

#### **Glossary**

DL, RA, RE, IN

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)

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
POL Present Over the tier

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

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## **Client Sample Results**

Client: AECOM Job ID: 580-120925-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW225401-WGN01B-2212W1 Lab Sample ID: 580-120925-1

Date Collected: 12/02/22 17:25 Matrix: Water

Date Received: 12/08/22 09:00

Analyte	Result	Qualifier	LOQ	DL Unit	D	Prepared	Analyzed	Dil Fac	
2-(2-Butoxyethoxy)ethanol	3.0	П	5.0	1.1 ma/l			12/15/22 20:16		

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## **Client Sample Results**

Client: AECOM Job ID: 580-120925-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW03-WGN01LF-2212W1 Lab Sample ID: 580-120925-2

Date Collected: 12/05/22 20:05 Matrix: Water

Date Received: 12/08/22 09:00

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac	
2-(2-Butoxyethoxy)ethanol	3.0	U M	5.0	1.1	ma/L			12/15/22 20:39	1	

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## **Client Sample Results**

Client: AECOM Job ID: 580-120925-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW02-WGN01LF-2212W1 Lab Sample ID: 580-120925-3

Date Collected: 12/05/22 16:45 Matrix: Water

Date Received: 12/08/22 09:00

Analyte	Result Qualifier	LOQ	DL Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	30 UM	5.0	1.1 mg/l			12/15/22 21:01	

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## QC Sample Results

Client: AECOM Job ID: 580-120925-1

Project/Site: Red Hill - AFFF Assessment Sampling

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

Lab Sample ID: MB 680-755296/22 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 755296

MB MB Result Qualifier LOQ DL Unit Analyzed Dil Fac Analyte Prepared 3.0 U M 5.0 1.1 mg/L 12/15/22 19:31 2-(2-Butoxyethoxy)ethanol

Lab Sample ID: LCS 680-755296/14 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 755296

Spike LCS LCS %Rec Added Result Qualifier D %Rec Limits Unit 20.0 50 - 150 2-(2-Butoxyethoxy)ethanol 21.9 mg/L 109

Lab Sample ID: LCSD 680-755296/15 Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 755296** 

Spike LCSD LCSD %Rec RPD Added Result Qualifier Limits RPD Analyte Unit %Rec Limit 2-(2-Butoxyethoxy)ethanol 20.0 22.6 50 - 150 mg/L

Lab Sample ID: 580-120925-3 MS Client Sample ID: AF-RHMW02-WGN01LF-2212W1 Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 755296** 

Spike MS MS %Rec Sample Sample Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits 2-(2-Butoxyethoxy)ethanol 3.0 U M 20.0 21.7 mg/L 109 50 - 150

Lab Sample ID: 580-120925-3 MSD Client Sample ID: AF-RHMW02-WGN01LF-2212W1

**Matrix: Water** 

Analysis Batch: 755296

MSD MSD Sample Sample Spike %Rec Analyte Result Qualifier Added Result Qualifier Limits Unit %Rec Limit 2-(2-Butoxyethoxy)ethanol 3.0 U M 20.0 22.5 112 mg/L 50 - 150 50

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12/19/2022

RPD

Prep Type: Total/NA

#### **Lab Chronicle**

Client: AECOM Job ID: 580-120925-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW225401-WGN01B-2212W1

Lab Sample ID: 580-120925-1 **Matrix: Water** 

Date Collected: 12/02/22 17:25 Date Received: 12/08/22 09:00

Batch Dilution **Batch** Batch Prepared Method Number Analyst or Analyzed **Prep Type** Type Run **Factor** Lab 12/15/22 20:16 Total/NA Analysis 8015C GLY 755296 JCK EET SAV

Client Sample ID: AF-RHMW03-WGN01LF-2212W1

Lab Sample ID: 580-120925-2

Date Collected: 12/05/22 20:05 Date Received: 12/08/22 09:00

Batch **Batch** Dilution Batch Prepared **Prep Type** Type Method Run **Factor** Number Analyst Lab or Analyzed 12/15/22 20:39 Total/NA Analysis 8015C GLY 755296 JCK EET SAV

Client Sample ID: AF-RHMW02-WGN01LF-2212W1

Lab Sample ID: 580-120925-3 Date Collected: 12/05/22 16:45 **Matrix: Water** 

Date Received: 12/08/22 09:00

Batch **Batch** Dilution Batch **Prepared** Method or Analyzed **Prep Type Factor Number Analyst** Type Run Lab 12/15/22 21:01 Total/NA Analysis 8015C GLY 755296 JCK **EET SAV** 

**Laboratory References:** 

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

**Matrix: Water** 

## **Accreditation/Certification Summary**

Client: AECOM Job ID: 580-120925-1

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	Pr	rogram	Identification Number	Expiration Date
ANAB	De	ept. of Defense ELAP	L2463	09-22-24
The following englyte	والمراجع المراجع المرا			
the agency does not		ort, but the laboratory is not o	certified by the governing authority.	This list may include analytes for whic
,		ort, but the laboratory is not o	certified by the governing authority.  Analyte	This list may include analytes for whic

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## **Sample Summary**

Client: AECOM Job ID: 580-120925-1

Project/Site: Red Hill - AFFF Assessment Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-120925-1	AF-RHMW225401-WGN01B-2212W1	Water	12/02/22 17:25	12/08/22 09:00
580-120925-2	AF-RHMW03-WGN01LF-2212W1	Water	12/05/22 20:05	12/08/22 09:00
580-120925-3	AF-RHMW02-WGN01LF-2212W1	Water	12/05/22 16:45	12/08/22 09:00

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	Sampler:	7	:NG	Carrier Tracking No(s):	: N OOO
Client Information	5 70	200	Elaine Walker	FedEx	22 12 WI EU - 01
Watson Tanji	Phone (3/8) 305-	296	E-Mail: M.Elaine.Walker@EurofinsET.com	State of Origin: Hawaii	Page: Page 1 of 1
Company:		PWSID:	-		. cg
Address			Analysis Requested	juested	
1001 Bishop St. Suite 1600	Due Date Requested: See subconfract		-(hx		Code
Crity: Honolulu	TAT Requested (days): Rush - ASAP	SAP	oth o		
State, Zip: Hawaii 96813	Compliance Project: A Yes	Δ No	yxol	_	D - Nitric Acid P - Na2O4S E - NaHSO4 O - Na2SO3
Phone: & 08 - 954 - 4512					F - MeOH R - Na2S203 G - Amchlor S - H2SO4
Email: watson.tan (i@ aecom.com	WO#:		(ov		
Project Name: N6274223 F0(04	Project#: 6069∓810		10 BE	Panlet	K - EDTA W - pH 4-5 L - EDA Z - other (specify)
Sie: SHSF 11/6/21	SSOW#:		Y) as	oj con	Other:
Sample Identification	Sample Date Time	Sample Matrix Type Matrix (C=comp, W=water, S=solid, G=qrab) BT=TRS=0.004	MRM motres AQ_JS108 Io na dt3	Fotal Number	Coorie Inchrinchiaco Massa
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Possible Hazard Identification			Sample Disposal ( A fee may be	sessed if samples are retaine	d longer than 1 month)
ested: I, II, IV, Other (specify)	Prelim data (I evel 10r2)=see TAT above DoD Stare	TAT above DoD Stag	Special Instructional Contract	Disposal By Lab Archive For	ve For Months
	4 report standard TAT. AECOM EQUIS EDD.	OM FOUIS EDD.		is: DOD USIM project.	
Empty Kit Relinquished by:	Date:		Time:	Method of Shipment:	
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Reinquished by:	Date/Time:	Company	Received by:	Date/Time: /	Company
Custody Seals Intact: Custody Seal No.:			Cooler Temperature(s) °C and Other Remarks:	narks:	1/2.4
					Ver: 01/16/2019

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Chain of Custody Record

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

Eurofins FGS, Seattle 5755 8th Street East Tacoma, WA 98424	ือ	Chain of Custody Record	. Cust	ody Re	corc							eurofins 🐫		Environment Testing America
Client Information	Sampler:	Narelyle	ره	Lab PM Elaine	Lab PM: Elaine Walker			Carr	Carrier Tracking No(s): FedEx	No(s):	000	COCNO:	£0-0	
Client Contact:	Phone:	, y	20	E-Mall: M.Elai	ne.Walk	E-Mail: M.Elaine.Walker@EurofinsET.com	sET.com	State Hav	State of Origin: Hawaii		<u>a. a.</u>	Page: Page 1 of 1		
Company: AECOM			NSID:				Analys	Analysis Requested	sted		<u> </u>	Job #:		
Address: 1001 Bishop St. Suite 1600	Due Date Requested: see subcontract											Preservation Codes A-HCL M		
City: Honolulu	TAT Requested (day	s): Rush - ASAP	ΑP		-/	- 1 ku				_		B - NaOH C - Zn Acetate		N - None O - AsnaO2
State, Zip: Hawaii 96813	Compliance Project:	∆ Yes ∆ No	No.		- offer	DU 3						- Nather Acid		m. 8
Phone: 808-954-4512	PO #:			(O)					a			S - Amchlor 1 - Ascorbic Aci		decahydrate
Email: Watson Tanji (watson.tanji@aecom.com)	: MO #:			0.00	(oN )			3	7			I - Ice J - DI Water		
Project Name: N 6274 223 F 0104	Project #: 60697810			X) 9	0 88)	. e la		<b>3</b>		<del></del>		K - EDTA L - EDA	W - pH 4-5 Z - other (s	oecify)
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Non-Hazard Flammable Skin Irritant Poison B Deliverable Requested: I, II, II, IV, Other (specify)	ison B Unknown Radiological Prelim data (Level 10r2)=see TAT above. DoD Stage	m Rau I 1or2)=see	- Radiological 2)=see TAT above.	DoD Stage	_	Return To Client al Instructions/QC	Slient Is/QC Rec	Special Instructions/QC Requirements: DOD QSM project.	Disposal By Lab ents: DOD QSM	M project	Archin	Archive For	Months	s
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21 1 22 1					-						2	<u> </u>	Ver: 01/16/2019	/2019

	Client Information	Sampler: CHRIS COMMEK	Lab PM: Elaine Walker	(er	Carrier Tracking No(s): FedEx	50CNO:
	Client Contact:	Phone: (9/6) 769-9323	E-Mail: M.Elaine.W	E-Mail: M.Elaine.Walker@EurofinsET.com	State of Origin: Hawaii	Page: Page 1 of 1
	Company:	:DWSID:			Beduested	Job #:
	Address:	Due Date Requested:				Preservation Codes:
	1001 Bishop St. Suite 1600	see subcontract		100		
2.2	City: Honolulu	TAT Requested (days): Rush - ASAP		rox4)		B - NaOH N - None C - Zn Acetate O - AsNaO2
.]ก/:	State, Zip: Hawaii 96813	Compliance Project: $\Delta$ Yes $\Delta$ No		43k,		
21 <i>Q</i>	Phone: Nb274223 F8104 808-954-4512	PO #:	(ON	cotud	70	0
,	Email: Watson Tanji (watson.tanji@aecom.com)	WO #:		-2)-	<u> </u>	
	Project Name: NG 274223 F0104	Project #: 60697810		•	nistro	K - EDIA W - pH 4-5 L - EDA Z - other (specify)
	Site: RH	SSOW#:			r of cc	Other:
	Sample Identification	Sample Date Time Gerrah)	Matrix ee SN (W=water, EE EE SIGN O O O O O O O O O O O O O O O O O O O	Polosc. DAL	edmuN lesoT	Special Instructions/Note:
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age	AF-RHMW03-WGN01LF-2212W1	9 5002 2202/50/21	2 2 %		2	
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	ested: I, II, III, IV, Other (specify)	Prelim data (Level 1or2)=see TAT above. DoD Stage	$\overline{}$	. Requirem	nts: DOD QSM project.	
	Emoty Kit Relinauished by:	4 report standard IAL. AECOM EQuiS EDD Date:	EDD. Time:		Method of Shipment:	
	Relinquished by:	7.17%	Company	Received by:	Date/Time: ) 15	Company Company
	CIRIS WOM ACIV. Reinquisted by: Children France 7	140 NO	Company Arcan	1	Date/Time:	Company
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12/1	Custody Seals Intact: Custody Seal No.:			Cooler Temperature(\$) °C and Other Remarks:	temarks:	1/3.4
9/2						Ver: 01/16/2019

& eurofins Environment Testing America

**Chain of Custody Record** 

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

Client: AECOM Job Number: 580-120925-1

Login Number: 120925
List Source: Eurofins Savannah
List Number: 2
List Creation: 12/13/22 12:56 PM

Creator: Johnson, Corey M

Creator. Johnson, Corey W		
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 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	
ls 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.	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	