

 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Terri Choy
AECOM

1001 Bishop Street
Honolulu, Hawaii 96813

Generated 12/21/2022 6:38:05 PM

JOB DESCRIPTION

Red Hill - AFFF Assessment Sampling

JOB NUMBER

580-121299-1

Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

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



Generated
12/21/2022 6:38:05 PM

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



Table of Contents

Cover Page	1
Table of Contents	3
Case Narrative	4
Definitions	5
Client Sample Results	6
QC Sample Results	10
Chronicle	11
Certification Summary	12
Sample Summary	13
Chain of Custody	14
Receipt Checklists	18

Case Narrative

Client: AECOM
Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-121299-1

Job ID: 580-121299-1

Laboratory: Eurofins Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Red Hill - AFFF Assessment Sampling

Report Number: 580-121299-1

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

Four samples were received on 12/15/2022 1:31 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice.

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-BUTOXYETHOXY)ETHANOL

Samples AF-RHMW225401-WGN01B-2212W2 (580-121299-1), AF-RHMW02-WGN01LF-2212W2 (580-121299-2), AF-RHMW03-WGN01LF-2212W2 (580-121299-3) and AF-HDMW225303-WGN01B-2212W2 (580-121299-4) were analyzed for glycols in accordance with EPA SW-846 Method 8015B - DAI. The samples were analyzed on 12/17/2022.

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

Definitions/Glossary

Client: AECOM

Job ID: 580-121299-1

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

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

Client Sample Results

Client: AECOM
Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-121299-1

Client Sample ID: AF-RHMW225401-WGN01B-2212W2

Lab Sample ID: 580-121299-1

Date Collected: 12/13/22 10:40

Matrix: Water

Date Received: 12/15/22 13:31

Method: SW846 8015C GLY - Glycols- Direct Injection (GC/FID)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U M	5.0	1.1	mg/L			12/17/22 21:36	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

Client Sample Results

Client: AECOM
Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-121299-1

Client Sample ID: AF-RHMW02-WGN01LF-2212W2

Lab Sample ID: 580-121299-2

Date Collected: 12/12/22 13:00

Matrix: Water

Date Received: 12/15/22 13:31

Method: SW846 8015C GLY - Glycols- Direct Injection (GC/FID)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L			12/17/22 21:58	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

Client Sample Results

Client: AECOM
Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-121299-1

Client Sample ID: AF-RHMW03-WGN01LF-2212W2

Lab Sample ID: 580-121299-3

Date Collected: 12/12/22 15:45

Matrix: Water

Date Received: 12/15/22 13:31

Method: SW846 8015C GLY - Glycols- Direct Injection (GC/FID)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L			12/17/22 22:21	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

Client Sample Results

Client: AECOM
Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-121299-1

Client Sample ID: AF-HDMW225303-WGN01B-2212W2

Lab Sample ID: 580-121299-4

Date Collected: 12/12/22 14:30

Matrix: Water

Date Received: 12/15/22 13:31

Method: SW846 8015C GLY - Glycols- Direct Injection (GC/FID)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L			12/17/22 22:43	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

QC Sample Results

Client: AECOM
 Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-121299-1

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

Lab Sample ID: MB 680-755698/10
Matrix: Water
Analysis Batch: 755698

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

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L			12/17/22 19:59	1

Lab Sample ID: LCS 680-755698/1006
Matrix: Water
Analysis Batch: 755698

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2-(2-Butoxyethoxy)ethanol	20.0	22.8		mg/L		114	50 - 150

Lab Sample ID: LCSD 680-755698/7
Matrix: Water
Analysis Batch: 755698

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
2-(2-Butoxyethoxy)ethanol	20.0	20.7		mg/L		103	50 - 150	10	50

Lab Chronicle

Client: AECOM

Job ID: 580-121299-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW225401-WGN01B-2212W2

Lab Sample ID: 580-121299-1

Date Collected: 12/13/22 10:40

Matrix: Water

Date Received: 12/15/22 13:31

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	755698	JCK	EET SAV	12/17/22 21:36

Client Sample ID: AF-RHMW02-WGN01LF-2212W2

Lab Sample ID: 580-121299-2

Date Collected: 12/12/22 13:00

Matrix: Water

Date Received: 12/15/22 13:31

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	755698	JCK	EET SAV	12/17/22 21:58

Client Sample ID: AF-RHMW03-WGN01LF-2212W2

Lab Sample ID: 580-121299-3

Date Collected: 12/12/22 15:45

Matrix: Water

Date Received: 12/15/22 13:31

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	755698	JCK	EET SAV	12/17/22 22:21

Client Sample ID: AF-HDMW225303-WGN01B-2212W2

Lab Sample ID: 580-121299-4

Date Collected: 12/12/22 14:30

Matrix: Water

Date Received: 12/15/22 13:31

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	755698	JCK	EET SAV	12/17/22 22:43

Laboratory References:

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

Accreditation/Certification Summary

Client: AECOM
Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-121299-1

Laboratory: Eurofins Savannah

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

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2463	09-22-24

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
8015C GLY		Water	2-(2-Butoxyethoxy)ethanol



Sample Summary

Client: AECOM

Job ID: 580-121299-1

Project/Site: Red Hill - AFFF Assessment Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-121299-1	AF-RHWMW225401-WGN01B-2212W2	Water	12/13/22 10:40	12/15/22 13:31
580-121299-2	AF-RHMW02-WGN01LF-2212W2	Water	12/12/22 13:00	12/15/22 13:31
580-121299-3	AF-RHMW03-WGN01LF-2212W2	Water	12/12/22 15:45	12/15/22 13:31
580-121299-4	AF-HDMW225303-WGN01B-2212W2	Water	12/12/22 14:30	12/15/22 13:31

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

Chain of Custody Record

Client Information	Sampler: CHRISTINA HARTLE Lab P# #: Elaine Walker Phone: 252-259-5993 E-Mail: M.Elaine.Walker@EurofinsET.com State of Origin: Hawaii Carrier Tracking No(s): FedEx COC No: 2212W2EU-10 Page: Page 1 of 1 Job #:	Due Date Requested: TAT Requested (days): Rush - ASAP Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No PO #: ASAP 12-13-22 WO #: ASAP 12-13-22 Project #: 60697810 SSO#: Project Name: Watson Tanji (watson.tanji@aecom.com) / Brant Landers (brant.landiers@aecom.com) CTO N6274223F0104 Site: RH5F	Analysis Requested 8015C_DAL_GL_D5/2-(2-butoxyethoxy)-ethanol Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> A Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> X Total Number of Containers <input checked="" type="checkbox"/> 3 Special Instructions/Note: Store ALL samples until notified by client to dispose
Sample Identification	AF-RHMW225401-WGN01B-2212W2 Sample Date: 12-13-22 Sample Time: 1040 Sample Type (C=comp, G=grab): G Matrix (W=water, S=solid, O=oil, B=biological, T=tissue, A=air): W Preservation Code: W	Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA Y - other (specify)	
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)			
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/QC Requirements: DOD QSM project.			
Empty Kit Relinquished by: _____ Date: _____ Relinquished by: CHRISTINA HARTLE Date/Time: 12-13-22 1130 Company: AECOM Relinquished by: Wendy McArthur Date/Time: 12-13-22 1200 Company: Company Relinquished by: _____ Date/Time: _____ Company: Company			
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Cooler Temperature(s) °C and Other Remarks:			



Chain of Custody Record

Client Information Client Contact: Andy Young Phone: 402-871-5712 Lab P#: Elaine Walker E-Mail: M.Elaine.Walker@EurofinsET.com State of Origin: Hawaii		Carrier Tracking No(s): 7AD COC No: 2212W2EU-07A Page: Page 1 of 1 Job #:	
Due Date Requested: TAT Requested (days): Rush - ASAP Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No PO #:		Analysis Requested Total Number of Containers: 3 Special Instructions/Note: Store ALL samples until notified by client to dispose	
Address: 1001 Bishop St. Suite 1600 City: Honolulu State: HI Zip: 96813 Phone: 808-954-4512 / 808-356-5311 Email: Watson.Tanji@aeocom.com / Brant.Landers@aeocom.com Project Name: CTO N6274223F0104 Site: RHSF		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 Other: 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)	
Sample Identification AF-RHMW02-WGN01LF-2212W2 Sample Date: 12/12/22 Sample Time: 1300 Sample Type: G Matrix: Water, Seawater, Urine, Tissue, A&A Preservation Code: W		Field Filtered Sample (Yes or No): <input checked="" type="checkbox"/> Perform MS/MSD (Yes or No): <input checked="" type="checkbox"/> 8015C_DAL_GL_DS/2-(2-butoxyethoxy)-ethanol: <input checked="" type="checkbox"/> A	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> UHKBW <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Empty Kit Relinquished by: Relinquished by: Andy Young Date/Time: 12/12/22 1707 Relinquished by: Andy Young Date/Time: 12/13/22 1345 Relinquished by:		Method of Shipment: Date/Time: 12/12/22 1707 Date/Time: Date/Time:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Cooler Temperature(s) °C and Other Remarks: Ver: 01/16/2019	



Chain of Custody Record

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

Client Information Client Contact: <u>Andy Young</u> Phone: <u>402-871-5712</u> PWSID:		Lab PM: <u>Elaime Walker</u> E-Mail: <u>M.Elaime.Walker@EurofinsET.com</u> Carrier Tracking No(s): <u>2212W2EU-075</u> FedEx: <u>MP</u> State of Origin: <u>Hawaii</u> Page: <u>1 of 1</u> Job #:	
Due Date Requested: See subcontract TAT Requested (days): <u>Rush - ASAP</u> Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No PO #:		Analysis Requested 8015C_DAL_GL_DS/2-(2-butylethoxy)-ethanol Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> A Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> N Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> N 8015C_DAL_GL_DS/2-(2-butylethoxy)-ethanol	
Company: <u>AECOM</u> Address: <u>1001 Bishop St. Suite 1600</u> City: <u>Honolulu</u> State/Zip: <u>Hawaii 96813</u> Phone: <u>808-954-4512 / 808-356-5311</u> Email: <u>Watson.Tanji@aecom.com / Brant.Landers@aecom.com</u> Project Name: <u>60697810</u> CTO: <u>N6274229F0104</u> Site: <u>RHSF</u>		Sample Identification Sample Date: <u>12/12/22</u> Sample Time: <u>1545</u> Sample Type (C=Comp, G=grab): <u>G</u> Preservation Code: <u>W</u> Matrix (Water, Soiled, On-site, BT, Tissue, A=All): <u>W</u> AF-RHMW03-WGN01F-2212W2	
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Empty Kit Relinquished by: <u>Andy Young</u> Relinquished by: <u>Andy Young</u> Relinquished by: <u>16</u> Relinquished by:		Method of Shipment: Date: <u>12/12/22</u> Time: <u>1707</u> Received by: <u>16</u> Received by: <u>AECOM</u> Received by: <u>AECOM</u> Received by: <u>AECOM</u> Cooler Temperature(s) °C and Other Remarks:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.:		Ver: 01/16/2019	



Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-121299-1

Login Number: 121299

List Number: 2

Creator: Johnson, Corey M

List Source: Eurofins Savannah

List Creation: 12/16/22 10:39 AM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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?	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 <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

