



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Terri Choy  
AECOM  
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Honolulu, Hawaii 96813  
Generated 7/19/2023 7:32:51 PM

## JOB DESCRIPTION

Red Hill - AFFF Assessment Sampling

## JOB NUMBER

580-129328-1

# 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



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Authorized for release by  
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# Case Narrative

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

Job ID: 580-129328-1

**Job ID: 580-129328-1**

**Laboratory: Eurofins Seattle**

**Narrative**

## CASE NARRATIVE

**Client: AECOM**  
**Project: Red Hill - AFFF Assessment Sampling**  
**Report Number: 580-129328-1**

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**

One sample was received on 7/12/2023 10:00 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.4° 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**

**Sample AF-HDMW225303-WGN01LF-2307 (580-129328-1) was analyzed for glycols in accordance with EPA SW-846 Method 8015B - DAI.** The samples were analyzed on 07/17/2023.

The continuing calibration verification (CCV) associated with batch 680-788635 recovered above the upper control limit for 2-(2-Butoxyethoxy)ethanol. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data has been reported. The associated sample is impacted: AF-HDMW225303-WGN01LF-2307 (580-129328-1).

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

# Definitions/Glossary

Client: AECOM

Job ID: 580-129328-1

Project/Site: Red Hill - AFFF Assessment Sampling

## Qualifiers

### GC Semi VOA

Qualifier	Qualifier Description
Q	One or more quality control criteria failed.
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

Job ID: 580-129328-1

Project/Site: Red Hill - AFFF Assessment Sampling

**Client Sample ID: AF-HDMW225303-WGN01LF-2307**

**Lab Sample ID: 580-129328-1**

**Date Collected: 07/11/23 10:55**

**Matrix: Water**

**Date Received: 07/12/23 10:00**

**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 Q	5.0	1.1	mg/L			07/17/23 21:48	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: 580-129328-1

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

**Lab Sample ID: MB 680-788635/11**  
**Matrix: Water**  
**Analysis Batch: 788635**

**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			07/17/23 19:06	1

**Lab Sample ID: LCS 680-788635/5**  
**Matrix: Water**  
**Analysis Batch: 788635**

**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	24.0		mg/L		120	50 - 150

**Lab Sample ID: LCSD 680-788635/6**  
**Matrix: Water**  
**Analysis Batch: 788635**

**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	26.6		mg/L		133	50 - 150	10	50

**Lab Sample ID: 580-129328-1 MS**  
**Matrix: Water**  
**Analysis Batch: 788635**

**Client Sample ID: AF-HDMW225303-WGN01LF-2307**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
2-(2-Butoxyethoxy)ethanol	3.0	U Q	20.0	25.5		mg/L		127	50 - 150

**Lab Sample ID: 580-129328-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 788635**

**Client Sample ID: AF-HDMW225303-WGN01LF-2307**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2-(2-Butoxyethoxy)ethanol	3.0	U Q	20.0	25.6		mg/L		128	50 - 150	1	50

# Lab Chronicle

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

Job ID: 580-129328-1

**Client Sample ID: AF-HDMW225303-WGN01LF-2307**

**Lab Sample ID: 580-129328-1**

**Date Collected: 07/11/23 10:55**

**Matrix: Water**

**Date Received: 07/12/23 10:00**

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Analyst</u>	<u>Lab</u>	<u>Prepared or Analyzed</u>
Total/NA	Analysis	8015C GLY		1	788635	JCK	EET SAV	07/17/23 21:48

**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: 580-129328-1

## 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  
Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-129328-1

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<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Collected</u>	<u>Received</u>
580-129328-1	AF-HDMW225303-WGN01LF-2307	Water	07/11/23 10:55	07/12/23 10:00

1

2

3

4

5

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7

8

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10

11

129328

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

**eurofins** Environment Testing  
America

**Chain of Custody Record**

<b>Client Information</b>		Company: AECOM		Lab PM: Elaine Walker		Carrier Tracking No(s): 2307AFEAD4	
Client Contact: Chris Womack		Phone: 916-769-9323		E-Mail: M.Elsaine.Walker@EurofinsE.I.com		Page: Page 1 of 1	
Address: 1001 Bishop St, Suite 1600		City: Honolulu		State: HI		Job #:	
Phone: 808-954-4512 / 770-331-0794		Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Rush - 5 Day		Preservation Codes:	
Email: Watson.Tang@aecon.com / Mark.Kromis@aecon.com		Project #:		Project #:		M - Hexane	
CTO: N6274223F0104		SSOW #:		Project #:		N - None	
Site: RH5F		Sample Date: 07/11/23		Sample Time: 1055		O - AsNaO2	
Sample Identification: AF-HIDMW225303-WGN01LF-2307		Sample Type: G		Matrix: (F=Water, S=Soil, O=Organic, B=Trace, A=Air)		P - Na2CO3	
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"/> Radioactive		Deliverable Requested: I, II, III, IV, Other (specify)		Empty Kit (Relinquished by):		R - Na2SO3	
Relinquished by: Chris Womack		Date/Time: 7/11/23 1220		Company: AECOM		S - H2SO4	
Relinquished by: Miranda DeCarimo		Date/Time: 7/11/23 1246		Company: AECOM		T - TSP Dodecylhydrate	
Custody Seals Intact: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Custody Seal No.:		Date/Time: 7/11/23 1230		U - Acetone	
				Date/Time: 7/11/23 1230		V - MCAA	
				Date/Time: 7/11/23 1230		W - pH 4.5	
				Date/Time: 7/11/23 1230		X - EDTA	
				Date/Time: 7/11/23 1230		Y - Other (specify)	
				Date/Time: 7/11/23 1230		Z - Other (specify)	
				Date/Time: 7/11/23 1230		Other:	
				Date/Time: 7/11/23 1230		Special Instructions/Note:	
				Date/Time: 7/11/23 1230		Total Number of Containers: 3	
				Date/Time: 7/11/23 1230		Analysis Requested:	
				Date/Time: 7/11/23 1230		801SC, DAL, GL, DS, 2-(2-butoxyethoxy)-ethanol	
				Date/Time: 7/11/23 1230		Field Filtered Samples (Yes or No):	
				Date/Time: 7/11/23 1230		N N X	
				Date/Time: 7/11/23 1230		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
				Date/Time: 7/11/23 1230		<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
				Date/Time: 7/11/23 1230		Special Instructions/QC Requirements: DOD GSM project.	
				Date/Time: 7/11/23 1230		Method of Shipment:	
				Date/Time: 7/11/23 1230		Received by: Miranda DeCarimo	
				Date/Time: 7/11/23 1230		Company: AECOM	
				Date/Time: 7/11/23 1230		Received by:	
				Date/Time: 7/11/23 1230		Company:	
				Date/Time: 7/11/23 1230		Cooler Temperature(s) °C and Other Remarks:	



# Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-129328-1

**Login Number: 129328**

**List Number: 1**

**Creator: Presley, Kim A**

**List Source: Eurofins Seattle**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> 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.	N/A	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
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.	N/A	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	N/A	
Containers are not broken or leaking.	N/A	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	N/A	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	N/A	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

