



AGRICULTURE & PRIORITY POLLUTANTS LABORATORIES

A METIRI GROUP COMPANY

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NELAP Certification Number: CA00046

DoD-ELAP Certification Number 4064.01

State Certification Number:

April 20, 2023

Watson Tanji
AECOM Honolulu
1001 Bishop Street, Suite 1600
Honolulu, HI 96813

RE: Red Hill AFFF Assessment Sampling
23D0056

Enclosed are the results of analyses for samples received by our laboratory on 4/7/2023. If you have any questions concerning this report, please feel free to contact me.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. These test results meet all requirements of NELAC and DoD QSM. Release of the hard copy has been authorized by the Laboratory Manager or designee, as verified by the following signature.

Sincerely,

Karen Volpendesta
Project Manager

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AECOM Honolulu
1001 Bishop Street, Suite 1600
Honolulu, HI 96813

Project: Red Hill AFFF Assessment Sampling
Project Number: Red Hill AFFF Assessment Sampling / 60697810
Project Manager: Watson Tanji

Reported: 04/20/2023 19:32

Analysis Case Narrative

EPA 1633: Manual integrations were performed for this method in accordance with APPL's SOP. Chromatograms after manual integration are enclosed for specific samples and analytes. Abbreviated flags for technical justification are listed on the chromatogram.

Some extracted internal standards recovered outside of control limits in some samples; these samples were diluted and recovered in control, unless stated otherwise.

The analyte PFOSA recovered above $\frac{1}{2}$ the LOQ in the BCD0235-BLK1. No PFOSA was detected in these samples.

Sample 02 - AF-RHMW02-WGN01LF-2304W1 was reextracted due to low recoveries of long chain and neutral PFAS. Only the reextracted data has been provided.

The analytes PFHxA, 6:2FTS, and 3:3FTcA recovered above the upper control limit in the SC01502-LCV1.

The analyte NMeFOSAA recovered below the lower control limit in the SC01534-LCV1.

The SC01534-PEM2 was miss-acquired and no TDCA peak can be seen in the chromatogram. The retention time check cannot be provided showing TDCA and the most branched peak for PFOS are more than 1 minute apart. The next TDCA check analyzed has been provided in leu of SC01534-PEM2.

Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
23D0056-01	AF-RHMW03-WGN01LF-2304W1	Water	04/06/2023 12:15	04/07/2023
23D0056-02	AF-RHMW02-WGN01LF-2304W1	Water	04/06/2023 10:20	04/07/2023

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Project Manager: Watson Tanji

Reported: 04/20/2023 19:32

Sample Results

Sample: AF-RHMW03-WGN01LF-2304W1
23D0056-01 (Water)

Per- and Polyfluoroalkyl Substances

Analyte	Result /Qual	LOQ	LOD	DL	Units	Date Analyzed	DF	Method	Prep Batch
PFBA	1.2 J	1.4	0.71	0.18	ng/L	04/14/23	1	EPA 1633	BCD0119
PFPEA	2.2	0.71	0.35	0.057	ng/L	04/14/23	1	EPA 1633	BCD0119
PFHXA	1.6	0.35	0.18	0.049	ng/L	04/14/23	1	EPA 1633	BCD0119
PFHPA	1.3	0.35	0.18	0.036	ng/L	04/14/23	1	EPA 1633	BCD0119
PFOA	0.31 J	0.35	0.27	0.13	ng/L	04/14/23	1	EPA 1633	BCD0119
PFNA	0.11 J	0.35	0.18	0.072	ng/L	04/14/23	1	EPA 1633	BCD0119
PFDA	0.15 J	0.35	0.18	0.090	ng/L	04/14/23	1	EPA 1633	BCD0119
PFUnA	0.27 U IR2,	0.35	0.27	0.14	ng/L	04/14/23	1	EPA 1633	BCD0119
PFDOA	0.18 U	0.35	0.18	0.099	ng/L	04/14/23	1	EPA 1633	BCD0119
PFTRDA	0.27 U	0.35	0.27	0.18	ng/L	04/14/23	1	EPA 1633	BCD0119
PFTEDA	0.27 U	0.35	0.27	0.17	ng/L	04/14/23	1	EPA 1633	BCD0119
PFBS	0.18 U	0.35	0.18	0.032	ng/L	04/14/23	1	EPA 1633	BCD0119
PFPE	0.18 U	0.35	0.18	0.055	ng/L	04/14/23	1	EPA 1633	BCD0119
PFHXS	0.18 U	0.35	0.18	0.028	ng/L	04/14/23	1	EPA 1633	BCD0119
PFHPS	0.18 U	0.35	0.18	0.045	ng/L	04/14/23	1	EPA 1633	BCD0119
PFOS	0.18 U	0.35	0.18	0.056	ng/L	04/14/23	1	EPA 1633	BCD0119
PFNS	0.18 U	0.35	0.18	0.11	ng/L	04/14/23	1	EPA 1633	BCD0119
PFDS	0.27 U	0.35	0.27	0.13	ng/L	04/14/23	1	EPA 1633	BCD0119
PFDOS	0.18 U	0.35	0.18	0.11	ng/L	04/14/23	1	EPA 1633	BCD0119
4:2FTS	0.71 U	1.4	0.71	0.26	ng/L	04/14/23	1	EPA 1633	BCD0119
6:2FTS	11	1.4	0.71	0.28	ng/L	04/14/23	1	EPA 1633	BCD0119
8:2FTS	0.71 U	1.4	0.71	0.073	ng/L	04/14/23	1	EPA 1633	BCD0119
PFOSA	0.18 U	0.35	0.18	0.092	ng/L	04/14/23	1	EPA 1633	BCD0119
NMeFOSA	0.71 U	1.4	0.71	0.42	ng/L	04/14/23	1	EPA 1633	BCD0119
NEtFOSA	0.71 U	1.4	0.71	0.36	ng/L	04/14/23	1	EPA 1633	BCD0119
NMeFOSAA	0.18 U	0.35	0.18	0.093	ng/L	04/14/23	1	EPA 1633	BCD0119
NEtFOSAA	0.18 U	0.35	0.18	0.10	ng/L	04/14/23	1	EPA 1633	BCD0119
NMeFOSE	1.1 U	1.4	1.1	0.89	ng/L	04/14/23	1	EPA 1633	BCD0119
NEtFOSE	1.1 U	1.4	1.1	0.93	ng/L	04/14/23	1	EPA 1633	BCD0119
HFPO-DA	0.35 U	0.71	0.35	0.15	ng/L	04/14/23	1	EPA 1633	BCD0119
ADONA	0.35 U	0.71	0.35	0.11	ng/L	04/14/23	1	EPA 1633	BCD0119
PFEESA	0.35 U	0.71	0.35	0.096	ng/L	04/14/23	1	EPA 1633	BCD0119
PFMPA	0.35 U	0.71	0.35	0.048	ng/L	04/14/23	1	EPA 1633	BCD0119
PFMBA	0.35 U	0.71	0.35	0.080	ng/L	04/14/23	1	EPA 1633	BCD0119
NFDHA	0.35 U	0.71	0.35	0.27	ng/L	04/14/23	1	EPA 1633	BCD0119
9CL-PF3ONS	0.35 U	0.71	0.35	0.18	ng/L	04/14/23	1	EPA 1633	BCD0119
11CL-PF3OUDS	0.35 U	0.71	0.35	0.18	ng/L	04/14/23	1	EPA 1633	BCD0119
3:3FTCA	0.71 U	1.4	0.71	0.51	ng/L	04/14/23	1	EPA 1633	BCD0119
5:3FTCA	0.71 U	1.4	0.71	0.39	ng/L	04/14/23	1	EPA 1633	BCD0119
7:3FTCA	0.71 U	1.4	0.71	0.49	ng/L	04/14/23	1	EPA 1633	BCD0119
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Surrogate: 13C4-PFBA	85.5%		10-130			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C5-PFPEA	58.3%		35-150			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C5-PFHXA	78.0%		55-150			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C4-PFHPA	78.6%		55-150			04/14/23	1	EPA 1633	BCD0119

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Sample Results (Continued)

Sample: AF-RHMW03-WGN01LF-2304W1 (Continued)
23D0056-01 (Water)

Per- and Polyfluoroalkyl Substances (Continued)

Analyte	Result /Qual	LOQ	LOD	DL	Units	Date Analyzed	DF	Method	Prep Batch
Surrogate: 13C8-PFOA	92.5%		60-140			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C9-PFNA	99.8%		55-140			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C6-PFDA	83.4%		50-140			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C7-PFUnA	85.6%		30-140			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C2-PFDOA	83.7%		10-150			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C2-PFTEDA	68.1%		10-130			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C3-PFBS	88.8%		55-150			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C3-PFHXS	90.1%		55-150			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C8-PFOS	87.9%		45-140			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C2-4:2FTS	120%		60-200			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C2-6:2FTS	147%		60-200			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C2-8:2FTS	164%		50-200			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C8-PFOA	60.4%		30-130			04/14/23	1	EPA 1633	BCD0119
Surrogate: D3-NMEFOA	49.3%		15-130			04/14/23	1	EPA 1633	BCD0119
Surrogate: D5-NETFOA	55.2%		10-130			04/14/23	1	EPA 1633	BCD0119
Surrogate: D3-NMEFOSAA	86.4%		45-200			04/14/23	1	EPA 1633	BCD0119
Surrogate: D5-NETFOSAA	92.8%		10-200			04/14/23	1	EPA 1633	BCD0119
Surrogate: D7-NMEFOSE	54.7%		10-150			04/14/23	1	EPA 1633	BCD0119
Surrogate: D9-NETFOSE	63.7%		10-150			04/14/23	1	EPA 1633	BCD0119
Surrogate: 13C3-HFPO-DA	78.6%		25-160			04/14/23	1	EPA 1633	BCD0119

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Reported: 04/20/2023 19:32

Sample Results (Continued)

**Sample: AF-RHMW02-WGN01LF-2304W1
23D0056-02 (Water)**

Per- and Polyfluoroalkyl Substances

Analyte	Result /Qual	LOQ	LOD	DL	Units	Date Analyzed	DF	Method	Prep Batch
PFBA	20	1.4	0.70	0.18	ng/L	04/19/23	1	EPA 1633	BCD0235
PFPEA	1.4	0.70	0.35	0.057	ng/L	04/19/23	1	EPA 1633	BCD0235
PFHXA	0.34 J	0.35	0.17	0.048	ng/L	04/19/23	1	EPA 1633	BCD0235
PFHPA	0.28 J	0.35	0.17	0.036	ng/L	04/19/23	1	EPA 1633	BCD0235
PFOA	0.26 U	0.35	0.26	0.13	ng/L	04/19/23	1	EPA 1633	BCD0235
PFNA	0.17 U	0.35	0.17	0.072	ng/L	04/19/23	1	EPA 1633	BCD0235
PFDA	0.17 U	0.35	0.17	0.089	ng/L	04/19/23	1	EPA 1633	BCD0235
PFUnA	0.26 U	0.35	0.26	0.14	ng/L	04/19/23	1	EPA 1633	BCD0235
PFDOA	0.17 U	0.35	0.17	0.098	ng/L	04/19/23	1	EPA 1633	BCD0235
PFTRDA	0.26 U	0.35	0.26	0.18	ng/L	04/19/23	1	EPA 1633	BCD0235
PFTEDA	0.26 U	0.35	0.26	0.17	ng/L	04/19/23	1	EPA 1633	BCD0235
PFBS	0.17 U	0.35	0.17	0.032	ng/L	04/19/23	1	EPA 1633	BCD0235
PFPEs	0.17 U	0.35	0.17	0.055	ng/L	04/19/23	1	EPA 1633	BCD0235
PFHXS	0.17 U	0.35	0.17	0.028	ng/L	04/19/23	1	EPA 1633	BCD0235
PFHPS	0.17 U	0.35	0.17	0.045	ng/L	04/19/23	1	EPA 1633	BCD0235
PFOS	0.11 J MI4,	0.35	0.17	0.056	ng/L	04/19/23	1	EPA 1633	BCD0235
PFNS	0.17 U	0.35	0.17	0.11	ng/L	04/19/23	1	EPA 1633	BCD0235
PFDS	0.26 U	0.35	0.26	0.13	ng/L	04/19/23	1	EPA 1633	BCD0235
PFDOS	0.17 U	0.35	0.17	0.11	ng/L	04/19/23	1	EPA 1633	BCD0235
4:2FTS	0.70 U	1.4	0.70	0.25	ng/L	04/19/23	1	EPA 1633	BCD0235
6:2FTS	6.4	1.4	0.70	0.27	ng/L	04/19/23	1	EPA 1633	BCD0235
8:2FTS	0.70 U	1.4	0.70	0.072	ng/L	04/19/23	1	EPA 1633	BCD0235
PFOSA	0.17 U	0.35	0.17	0.091	ng/L	04/19/23	1	EPA 1633	BCD0235
NMeFOSA	0.70 U	1.4	0.70	0.41	ng/L	04/19/23	1	EPA 1633	BCD0235
NEtFOSA	0.70 U	1.4	0.70	0.36	ng/L	04/19/23	1	EPA 1633	BCD0235
NMeFOSAA	0.17 U	0.35	0.17	0.092	ng/L	04/19/23	1	EPA 1633	BCD0235
NEtFOSAA	0.17 U	0.35	0.17	0.10	ng/L	04/19/23	1	EPA 1633	BCD0235
NMeFOSE	1.0 U	1.4	1.0	0.88	ng/L	04/19/23	1	EPA 1633	BCD0235
NEtFOSE	1.0 U	1.4	1.0	0.91	ng/L	04/19/23	1	EPA 1633	BCD0235
HFPO-DA	0.35 U	0.70	0.35	0.15	ng/L	04/19/23	1	EPA 1633	BCD0235
ADONA	0.35 U	0.70	0.35	0.11	ng/L	04/19/23	1	EPA 1633	BCD0235
PFEESA	0.35 U	0.70	0.35	0.095	ng/L	04/19/23	1	EPA 1633	BCD0235
PFMPA	0.35 U	0.70	0.35	0.047	ng/L	04/19/23	1	EPA 1633	BCD0235
PFMBA	0.35 U	0.70	0.35	0.079	ng/L	04/19/23	1	EPA 1633	BCD0235
NFDHA	0.35 U	0.70	0.35	0.26	ng/L	04/19/23	1	EPA 1633	BCD0235
9CL-PF3ONS	0.35 U	0.70	0.35	0.18	ng/L	04/19/23	1	EPA 1633	BCD0235
11CL-PF3OUDS	0.35 U	0.70	0.35	0.18	ng/L	04/19/23	1	EPA 1633	BCD0235
3:3FTCA	0.70 U	1.4	0.70	0.50	ng/L	04/19/23	1	EPA 1633	BCD0235
5:3FTCA	0.70 U	1.4	0.70	0.39	ng/L	04/19/23	1	EPA 1633	BCD0235
7:3FTCA	0.70 U	1.4	0.70	0.48	ng/L	04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C4-PFBA	64.6%		10-130			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C5-PFPEA	65.7%		35-150			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C5-PFHXA	85.8%		55-150			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C4-PFHPA	95.9%		55-150			04/19/23	1	EPA 1633	BCD0235

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Reported: 04/20/2023 19:32

Sample Results (Continued)

Sample: AF-RHMW02-WGN01LF-2304W1 (Continued)
23D0056-02 (Water)

Per- and Polyfluoroalkyl Substances (Continued)

Analyte	Result /Qual	LOQ	LOD	DL	Units	Date Analyzed	DF	Method	Prep Batch
Surrogate: 13C8-PFOA	102%		60-140			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C9-PFNA	96.6%		55-140			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C6-PFDA	97.8%		50-140			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C7-PFUnA	98.2%		30-140			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C2-PFDOA	91.8%		10-150			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C2-PFTEDA	61.1%		10-130			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C3-PFBS	93.9%		55-150			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C3-PFHXS	101%		55-150			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C8-PFOS	96.2%		45-140			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C2-4:2FTS	172%		60-200			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C2-6:2FTS	177%		60-200			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C2-8:2FTS	234% S2		50-200			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C2-8:2FTS	109%		50-200			04/19/23	10	EPA 1633	BCD0235
Surrogate: 13C8-PFOA	73.8%		30-130			04/19/23	1	EPA 1633	BCD0235
Surrogate: D3-NMEFOA	48.6%		15-130			04/19/23	1	EPA 1633	BCD0235
Surrogate: D5-NETFOA	45.9%		10-130			04/19/23	1	EPA 1633	BCD0235
Surrogate: D3-NMEFOSAA	101%		45-200			04/19/23	1	EPA 1633	BCD0235
Surrogate: D5-NETFOSAA	91.6%		10-200			04/19/23	1	EPA 1633	BCD0235
Surrogate: D7-NMEFOSE	46.9%		10-150			04/19/23	1	EPA 1633	BCD0235
Surrogate: D9-NETFOSE	44.0%		10-150			04/19/23	1	EPA 1633	BCD0235
Surrogate: 13C3-HFPO-DA	98.1%		25-160			04/19/23	1	EPA 1633	BCD0235

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Reported: 04/20/2023 19:32

PREPARATION BATCH SUMMARY

EPA 1633

Laboratory: APPL, LLC

Client: AECOM

Batch: BCD0119 Batch Matrix: Water Preparation: EPA 1633

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT mL	FINAL VOL. mL
AF-RHMW03-WGN01LF-2304W1	23D0056-01	04/10/23 08:18	565.66	2.00
Blank	BCD0119-BLK1	04/10/23 08:18	500.00	2.00
LCS	BCD0119-BS1	04/10/23 08:18	500.00	2.00
MRL Check	BCD0119-MRL1	04/10/23 08:18	500.00	2.00

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 Project Manager: Watson Tanji

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PREPARATION BATCH SUMMARY

EPA 1633

Laboratory: APPL, LLC
 Client: AECOM
 Batch: BCD0235 Batch Matrix: Water Preparation: EPA 1633

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT mL	FINAL VOL. mL
AF-RHMW02-WGN01LF-2304W1	23D0056-02RE3	04/17/23 11:15	572.06	2.00
AF-RHMW02-WGN01LF-2304W1	23D0056-02RE4	04/17/23 11:15	572.06	2.00
Blank	BCD0235-BLK1	04/17/23 11:15	500.00	2.00
LCS	BCD0235-BS1	04/17/23 11:15	500.00	2.00
MRL Check	BCD0235-MRL1	04/17/23 11:15	500.00	2.00

AECOM Honolulu 1001 Bishop Street, Suite 1600 Honolulu, HI 96813	Project: Red Hill AFFF Assessment Sampling Project Number: Red Hill AFFF Assessment Sampling / 60697810 Project Manager: Watson Tanji	Reported: 04/20/2023 19:32
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Quality Control

Per- and Polyfluoroalkyl Substances

Analyte	Result/Qual	LOQ	LOD	MDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Method: EPA 1633

Batch: BCD0119 - EPA 1633

	ng/L								
Blank (BCD0119-BLK1)									
PFBA	0.80 U	1.6	0.80	0.21					
PFPEA	0.40 U	0.80	0.40	0.065					
PFHXA	0.20 U	0.40	0.20	0.055					
PFHPA	0.20 U	0.40	0.20	0.041					
PFOA	0.30 U	0.40	0.30	0.15					
PFNA	0.20 U	0.40	0.20	0.082					
PFDA	0.20 U	0.40	0.20	0.10					
PFUnA	0.30 U	0.40	0.30	0.16					
PFDOA	0.20 U	0.40	0.20	0.11					
PFTRDA	0.30 U	0.40	0.30	0.20					
PFTEDA	0.30 U	0.40	0.30	0.20					
PFBS	0.20 U	0.40	0.20	0.037					
PFPEs	0.20 U	0.40	0.20	0.063					
PFHXS	0.20 U	0.40	0.20	0.032					
PFHPS	0.20 U	0.40	0.20	0.051					
PFOS	0.166 J MIZ,	0.40	0.20	0.064					
PFNS	0.20 U	0.40	0.20	0.12					
PFDS	0.30 U	0.40	0.30	0.15					
PFDOS	0.20 U	0.40	0.20	0.12					
4:2FTS	0.80 U	1.6	0.80	0.29					
6:2FTS	0.80 U	1.6	0.80	0.31					
8:2FTS	0.80 U	1.6	0.80	0.082					
PFOSA	0.20 U	0.40	0.20	0.10					
NMeFOSA	0.80 U	1.6	0.80	0.47					
NEtFOSA	0.80 U	1.6	0.80	0.41					
NMeFOSAA	0.20 U	0.40	0.20	0.11					
NEtFOSAA	0.20 U	0.40	0.20	0.11					
NMeFOSE	1.2 U	1.6	1.2	1.0					
NEtFOSE	1.2 U	1.6	1.2	1.0					
HFPO-DA	0.40 U	0.80	0.40	0.17					
ADONA	0.40 U	0.80	0.40	0.12					
PFEESA	0.40 U	0.80	0.40	0.11					
PFMPA	0.40 U	0.80	0.40	0.054					
PFMBA	0.40 U	0.80	0.40	0.091					
NFDHA	0.40 U	0.80	0.40	0.30					
9CL-PF3ONS	0.40 U	0.80	0.40	0.21					
11CL-PF3OUDS	0.40 U	0.80	0.40	0.21					
3:3FTCA	0.80 U	1.6	0.80	0.57					
5:3FTCA	0.80 U	1.6	0.80	0.44					
7:3FTCA	0.80 U	1.6	0.80	0.55					

Prepared: 04/10/23 08:18 Analyzed: 04/14/23 15:47

Surrogates

13C4-PFBA	28.6	32.0	89.3	10-130
13C5-PFPEA	14.1	16.0	88.4	35-150
13C5-PFHXA	7.08	8.00	88.5	55-150

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Project Manager: Watson Tanji

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Quality Control (Continued)

Per- and Polyfluoroalkyl Substances (Continued)

Analyte	Result/Qual	LOQ	LOD	MDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
ng/L										
Blank (BCD0119-BLK1)					Prepared: 04/10/23 08:18 Analyzed: 04/14/23 15:47					
<i>Surrogates</i>										
13C4-PFHFA	7.72				8.00		96.5	55-150		
13C8-PFOA	7.13				8.00		89.2	60-140		
13C9-PFNA	3.40				4.00		84.9	55-140		
13C6-PFDA	3.06				4.00		76.6	50-140		
13C7-PFUnA	3.33				4.00		83.1	30-140		
13C2-PFDOA	3.21				4.00		80.2	10-150		
13C2-PFTEDA	2.63				4.00		65.7	10-130		
13C3-PFBS	6.14				8.00		76.8	55-150		
13C3-PFHXS	6.83				8.00		85.4	55-150		
13C8-PFOS	6.55				8.00		81.9	45-140		
13C2-4:2FTS	13.5				16.0		84.6	60-200		
13C2-6:2FTS	13.9				16.0		86.9	60-200		
13C2-8:2FTS	11.4				16.0		71.1	50-200		
13C8-PFOA	5.40				8.00		67.4	30-130		
D3-NMEFOSA	2.09				8.00		26.1	15-130		
D5-NETFOA	1.78				8.00		22.3	10-130		
D3-NMEFOSAA	11.2				16.0		69.8	45-200		
D5-NETFOSAA	10.5				16.0		65.9	10-200		
D7-NMEFOSE	37.1				80.0		46.3	10-150		
D9-NETFOSE	41.3				80.0		51.7	10-150		
13C3-HFPO-DA	25.8				32.0		80.5	25-160		

ng/L										
LCS (BCD0119-BS1)					Prepared: 04/10/23 08:18 Analyzed: 04/14/23 16:00					
PFBA	16.2				16.0		101	58-148		
PFPEA	7.80				8.00		97.5	54-152		
PFHXA	4.00				4.00		99.9	55-152		
PFHPA	4.25				4.00		106	54-154		
PFOA	4.07				4.00		102	52-161		
PFNA	4.03				4.00		101	59-149		
PFDA	3.70				4.00		92.6	52-147		
PFUnA	3.66				4.00		91.5	48-159		
PFDOA	4.35				4.00		109	64-142		
PFTRDA	3.99				4.00		99.8	49-148		
PFTEDA	4.44				4.00		111	47-161		
PFBS	3.43				3.54		96.8	62-144		
PFPEA	3.83				3.76		102	59-151		
PFHXS	3.64				3.66		99.5	57-146		
PFHPS	4.01				3.82		105	55-152		
PFOS	3.74				3.72		100	58-149		
PFNS	3.55				3.84		92.5	52-148		
PFDS	3.21				3.86		83.2	51-147		
PFDOS	3.19				3.88		82.1	36-145		
4:2FTS	14.4				15.0		96.1	67-146		
6:2FTS	17.2				15.2		113	61-151		
8:2FTS	14.9				15.4		97.0	63-152		
PFOSA	4.73				4.00		118	61-148		

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Quality Control (Continued)

Per- and Polyfluoroalkyl Substances (Continued)

Analyte	Result/Qual	LOQ	LOD	MDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
ng/L										
LCS (BCD0119-BS1)						Prepared: 04/10/23 08:18		Analyzed: 04/14/23 16:00		
NMeFOSA	15.6				16.0		97.7	63-145		
NETFOSA	15.4				16.0		96.6	65-139		
NMeFOSAA	3.67				4.00		91.8	58-144		
NETFOSAA	3.58				4.00		89.5	59-146		
NMeFOSE	17.2				16.0		107	71-136		
NETFOSE	15.7				16.0		97.9	69-137		
HFPO-DA	7.95				8.00		99.4	63-144		
ADONA	8.44				7.56		112	68-146		
PFEESA	6.95				7.12		97.6	56-151		
PFMPA	8.79				8.00		110	51-145		
PFMBA	7.79				8.00		97.3	55-148		
NFDHA	7.68				8.00		96.0	48-161		
9CL-PF3ONS	7.99				7.48		107	56-156		
11CL-PF3OUDS	7.13				7.56		94.3	46-156		
3:3FTCA	16.1				16.0		100	62-129		
5:3FTCA	14.8				16.0		92.7	63-134		
7:3FTCA	15.5				16.0		97.0	50-138		
Surrogates										
13C4-PFBA	31.0				32.0		97.0	10-130		
13C5-PFPEA	15.8				16.0		98.8	35-150		
13C5-PFHXA	7.79				8.00		97.4	55-150		
13C4-PFHFA	8.39				8.00		105	55-150		
13C8-PFOA	7.98				8.00		99.8	60-140		
13C9-PFNA	3.88				4.00		97.1	55-140		
13C6-PFDA	3.94				4.00		98.4	50-140		
13C7-PFUnA	4.37				4.00		109	30-140		
13C2-PFDOA	3.91				4.00		97.8	10-150		
13C2-PFTEDA	3.33				4.00		83.2	10-130		
13C3-PFBS	7.22				8.00		90.2	55-150		
13C3-PFHXS	7.61				8.00		95.1	55-150		
13C8-PFOS	7.11				8.00		88.9	45-140		
13C2-4:2FTS	15.1				16.0		94.3	60-200		
13C2-6:2FTS	15.8				16.0		98.5	60-200		
13C2-8:2FTS	14.9				16.0		93.3	50-200		
13C8-PFOSA	5.71				8.00		71.4	30-130		
D3-NMEFOSA	2.94				8.00		36.7	15-130		
D5-NETFOSA	3.10				8.00		38.8	10-130		
D3-NMEFOSAA	12.2				16.0		76.3	45-200		
D5-NETFOSAA	11.6				16.0		72.3	10-200		
D7-NMEFOSE	35.5				80.0		44.3	10-150		
D9-NETFOSE	63.2				80.0		79.0	10-150		
13C3-HFPO-DA	29.1				32.0		90.8	25-160		

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Quality Control (Continued)

Per- and Polyfluoroalkyl Substances (Continued)

Analyte	Result/Qual	LOQ	LOD	MDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
ng/L										
MRL Check (BCD0119-MRL1)						Prepared: 04/10/23 08:18		Analyzed: 04/14/23 16:12		
PFBA	1.42 J				1.60		88.7	44-157		
PFPEA	0.746 J				0.800		93.3	57-148		
PFHXA	0.462				0.400		116	62-149		
PFHPA	0.483 IR2				0.400		121	56-150		
PFOA	0.523				0.400		131	57-161		
PFNA	0.440				0.400		110	53-157		
PFDA	0.477 IR1				0.400		119	43-158		
PFUnA	0.306 J				0.400		76.6	50-155		
PFDOA	0.412				0.400		103	60-141		
PFTRDA	0.365 J				0.400		91.3	52-140		
PFTEDA	0.406				0.400		101	52-156		
PFBS	0.309 J				0.354		87.4	63-145		
PFPEs	0.330 J				0.376		87.8	58-144		
PFHXS	0.384 J				0.366		105	44-158		
PFHPS	0.353 J				0.382		92.4	51-150		
PFOS	0.450 M12				0.372		121	43-162		
PFNS	0.340 J				0.384		88.5	46-151		
PFDS	0.324 J				0.386		83.9	50-144		
PFDOS	0.282 J				0.388		72.6	30-138		
4:2FTS	1.36 J				1.50		90.9	52-158		
6:2FTS	2.39				1.52		157	48-158		
8:2FTS	1.41 J				1.54		92.0	46-165		
PFOSA	0.498				0.400		125	47-163		
NMeFOSA	1.53 J				1.60		95.7	54-155		
NETFOSA	1.40 J				1.60		87.7	49-156		
NMeFOSAA	0.322 J				0.400		80.4	32-160		
NETFOSAA	0.348 J				0.400		86.9	51-154		
NMeFOSE	1.42 J				1.60		88.5	56-151		
NETFOSE	1.34 J				1.60		84.0	60-147		
HFPO-DA	0.742 J				0.800		92.8	58-154		
ADONA	0.761 J				0.756		101	61-148		
PFEESA	0.581 J				0.712		81.6	56-144		
PFMPA	0.802				0.800		100	48-150		
PFMBA	0.860				0.800		108	49-154		
NFDHA	0.650 J				0.800		81.2	47-160		
9CL-PF3ONS	0.615 J				0.748		82.2	44-167		
11CL-PF3OUDS	0.703 J				0.756		93.0	36-158		
3:3FTCA	1.39 J				1.60		86.8	32-161		
5:3FTCA	1.63				1.60		102	39-156		
7:3FTCA	1.61				1.60		101	36-149		
Surrogates										
13C4-PFBA	31.7				32.0		99.2	10-130		
13C5-PFPEA	15.8				16.0		98.7	35-150		
13C5-PFHXA	7.90				8.00		98.7	55-150		
13C4-PFHPA	8.14				8.00		102	55-150		
13C8-PFOA	7.52				8.00		94.0	60-140		
13C9-PFNA	3.46				4.00		86.5	55-140		

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Quality Control (Continued)

Per- and Polyfluoroalkyl Substances (Continued)

Analyte	Result/Qual	LOQ	LOD	MDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
ng/L										
MRL Check (BCD0119-MRL1)					Prepared: 04/10/23 08:18 Analyzed: 04/14/23 16:12					
Surrogates										
13C6-PFDA	3.62				4.00		90.4	50-140		
13C7-PFUnA	3.90				4.00		97.5	30-140		
13C2-PFDOA	3.89				4.00		97.3	10-150		
13C2-PFTEDA	3.58				4.00		89.4	10-130		
13C3-PFBS	6.52				8.00		81.5	55-150		
13C3-PFHXS	7.64				8.00		95.5	55-150		
13C8-PFOS	7.08				8.00		88.5	45-140		
13C2-4:2FTS	15.2				16.0		94.9	60-200		
13C2-6:2FTS	15.9				16.0		99.6	60-200		
13C2-8:2FTS	13.3				16.0		83.1	50-200		
13C8-PFOA	5.82				8.00		72.8	30-130		
D3-NMEFOSA	2.70				8.00		33.8	15-130		
D5-NETFOSA	2.79				8.00		34.9	10-130		
D3-NMEFOSAA	13.0				16.0		81.3	45-200		
D5-NETFOSAA	12.1				16.0		75.4	10-200		
D7-NMEFOSE	51.0				80.0		63.8	10-150		
D9-NETFOSSE	59.3				80.0		74.1	10-150		
13C3-HFPO-DA	30.4				32.0		94.9	25-160		

Method: EPA 1633

Batch: BCD0235 - EPA 1633

ng/L										
Blank (BCD0235-BLK1)					Prepared: 04/17/23 11:15 Analyzed: 04/18/23 22:56					
PFBA	0.80 U	1.6	0.80	0.21						
PFPEA	0.40 U	0.80	0.40	0.065						
PFHXA	0.20 U	0.40	0.20	0.055						
PFHPA	0.20 U	0.40	0.20	0.041						
PFOA	0.30 U	0.40	0.30	0.15						
PFNA	0.20 U	0.40	0.20	0.082						
PFDA	0.20 U	0.40	0.20	0.10						
PFUnA	0.30 U	0.40	0.30	0.16						
PFDOA	0.20 U	0.40	0.20	0.11						
PFTRDA	0.30 U	0.40	0.30	0.20						
PFTEDA	0.30 U	0.40	0.30	0.20						
PFBS	0.20 U	0.40	0.20	0.037						
PFPEA	0.20 U	0.40	0.20	0.063						
PFHXS	0.20 U	0.40	0.20	0.032						
PFHPS	0.20 U	0.40	0.20	0.051						
PFOS	0.20 U	0.40	0.20	0.064						
PFNS	0.20 U	0.40	0.20	0.12						
PFDS	0.30 U	0.40	0.30	0.15						
PFDOS	0.20 U	0.40	0.20	0.12						
4:2FTS	0.80 U	1.6	0.80	0.29						
6:2FTS	0.80 U	1.6	0.80	0.31						
8:2FTS	0.80 U	1.6	0.80	0.082						

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Quality Control (Continued)

Per- and Polyfluoroalkyl Substances (Continued)

Analyte	Result/Qual	LOQ	LOD	MDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Blank (BCD0235-BLK1)		Prepared: 04/17/23 11:15 Analyzed: 04/18/23 22:56								
	ng/L									
PFOSA	0.246 J B,	0.40	0.20	0.10						
NMeFOSA	0.80 U	1.6	0.80	0.47						
NETFOSA	0.80 U	1.6	0.80	0.41						
NMeFOSAA	0.20 U	0.40	0.20	0.11						
NETFOSAA	0.20 U	0.40	0.20	0.11						
NMeFOSE	1.2 U	1.6	1.2	1.0						
NETFOSE	1.2 U	1.6	1.2	1.0						
HFPO-DA	0.40 U	0.80	0.40	0.17						
ADONA	0.40 U	0.80	0.40	0.12						
PFEESA	0.40 U	0.80	0.40	0.11						
PFMPA	0.40 U	0.80	0.40	0.054						
PFMBA	0.40 U	0.80	0.40	0.091						
NFDHA	0.40 U	0.80	0.40	0.30						
9CL-PF3ONS	0.40 U	0.80	0.40	0.21						
11CL-PF3OUDS	0.40 U	0.80	0.40	0.21						
3:3FTCA	0.80 U	1.6	0.80	0.57						
5:3FTCA	0.80 U	1.6	0.80	0.44						
7:3FTCA	0.80 U	1.6	0.80	0.55						
Surrogates										
13C4-PFBA	30.3				32.0		94.7	10-130		
13C5-PFPEA	15.2				16.0		95.0	35-150		
13C5-PFHXA	7.58				8.00		94.8	55-150		
13C4-PFHHPA	6.93				8.00		86.7	55-150		
13C8-PFOA	7.16				8.00		89.6	60-140		
13C9-PFNA	3.53				4.00		88.3	55-140		
13C6-PFDA	3.42				4.00		85.5	50-140		
13C7-PFUnA	3.48				4.00		87.0	30-140		
13C2-PFDOA	3.31				4.00		82.8	10-150		
13C2-PFTEDA	3.19				4.00		79.7	10-130		
13C3-PFBS	8.51				8.00		106	55-150		
13C3-PFHXS	7.80				8.00		97.5	55-150		
13C8-PFOS	7.30				8.00		91.3	45-140		
13C2-4:2FTS	16.8				16.0		105	60-200		
13C2-6:2FTS	15.6				16.0		97.6	60-200		
13C2-8:2FTS	28.5				16.0		178	50-200		
13C8-PFOA	5.56				8.00		69.5	30-130		
D3-NMEFOSA	3.12				8.00		39.0	15-130		
D5-NETFOSA	3.07				8.00		38.4	10-130		
D3-NMEFOSAA	14.7				16.0		91.9	45-200		
D5-NETFOSAA	13.7				16.0		85.6	10-200		
D7-NMEFOSE	40.2				80.0		50.3	10-150		
D9-NETFOSE	39.0				80.0		48.8	10-150		
13C3-HFPO-DA	29.5				32.0		92.2	25-160		

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Quality Control (Continued)

Per- and Polyfluoroalkyl Substances (Continued)

Analyte	Result/Qual	LOQ	LOD	MDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
LCS (BCD0235-BS1)		ng/L						Prepared: 04/17/23 11:15 Analyzed: 04/18/23 23:12		
PFBA	16.3				16.0		102	58-148		
PFPEA	8.13				8.00		102	54-152		
PFHXA	4.24				4.00		106	55-152		
PFHPA	3.81				4.00		95.2	54-154		
PFOA	3.95				4.00		98.8	52-161		
PFNA	4.16				4.00		104	59-149		
PFDA	4.11				4.00		103	52-147		
PFUnA	3.79				4.00		94.8	48-159		
PFDOA	4.03				4.00		101	64-142		
PFTRDA	4.07				4.00		102	49-148		
PFTEDA	4.19				4.00		105	47-161		
PFBS	3.46				3.54		97.7	62-144		
PFPEs	3.82				3.76		102	59-151		
PFHXS	3.80 MI4				3.66		104	57-146		
PFHPS	4.42				3.82		116	55-152		
PFOS	4.07				3.72		109	58-149		
PFNS	3.95				3.84		103	52-148		
PFDS	4.13				3.86		107	51-147		
PFDOS	3.69				3.88		95.0	36-145		
4:2FTS	14.8				15.0		98.8	67-146		
6:2FTS	16.5				15.2		109	61-151		
8:2FTS	15.5				15.4		101	63-152		
PFOSA	4.20				4.00		105	61-148		
NMeFOSA	16.2				16.0		101	63-145		
NETFOSA	16.1				16.0		101	65-139		
NMeFOSAA	3.97				4.00		99.1	58-144		
NETFOSAA	3.85				4.00		96.3	59-146		
NMeFOSE	15.5				16.0		96.8	71-136		
NETFOSE	15.7				16.0		98.2	69-137		
HFPO-DA	7.54				8.00		94.2	63-144		
ADONA	7.94				7.56		105	68-146		
PFEESA	7.29				7.12		102	56-151		
PFMPA	7.46				8.00		93.3	51-145		
PFMBA	8.33				8.00		104	55-148		
NFDHA	7.97				8.00		99.7	48-161		
9CL-PF3ONS	8.09				7.48		108	56-156		
11CL-PF3OUDS	8.37				7.56		111	46-156		
3:3FTCA	14.4				16.0		89.9	62-129		
5:3FTCA	16.5				16.0		103	63-134		
7:3FTCA	15.3				16.0		95.4	50-138		
Surrogates										
13C4-PFBA	32.8				32.0		103	10-130		
13C5-PFPEA	16.2				16.0		101	35-150		
13C5-PFHXA	7.80				8.00		97.5	55-150		
13C4-PFHPA	8.16				8.00		102	55-150		
13C8-PFOA	8.27				8.00		103	60-140		
13C9-PFNA	4.34				4.00		108	55-140		

AECOM Honolulu
1001 Bishop Street, Suite 1600
Honolulu, HI 96813

Project: Red Hill AFFF Assessment Sampling
Project Number: Red Hill AFFF Assessment Sampling / 60697810
Project Manager: Watson Tanji

Reported: 04/20/2023 19:32

Quality Control (Continued)

Per- and Polyfluoroalkyl Substances (Continued)

Analyte	Result/Qual	LOQ	LOD	MDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
ng/L										
LCS (BCD0235-BS1)		Prepared: 04/17/23 11:15 Analyzed: 04/18/23 23:12								
Surrogates										
13C6-PFDA	3.87				4.00		96.7	50-140		
13C7-PFUnA	4.11				4.00		103	30-140		
13C2-PFDOA	3.63				4.00		90.8	10-150		
13C2-PFTEDA	3.87				4.00		96.6	10-130		
13C3-PFBS	8.24				8.00		103	55-150		
13C3-PFHXS	7.93				8.00		99.1	55-150		
13C8-PFOS	7.76				8.00		96.9	45-140		
13C2-4:2FTS	16.2				16.0		102	60-200		
13C2-6:2FTS	15.4				16.0		96.3	60-200		
13C2-8:2FTS	27.0				16.0		169	50-200		
13C8-PFOA	6.41				8.00		80.1	30-130		
D3-NMEFOA	3.65				8.00		45.6	15-130		
D5-NETFOA	3.72				8.00		46.5	10-130		
D3-NMEFOA	16.3				16.0		102	45-200		
D5-NETFOA	15.3				16.0		95.6	10-200		
D7-NMEFOA	50.4				80.0		63.0	10-150		
D9-NETFOA	50.2				80.0		62.8	10-150		
13C3-HFOA-DA	31.8				32.0		99.3	25-160		

ng/L										
MRL Check (BCD0235-MRL1)		Prepared: 04/17/23 11:15 Analyzed: 04/18/23 23:28								
PFBA	2.94				3.20		91.7	44-157		
PFPEA	1.41				1.60		88.3	57-148		
PFHXA	0.797				0.800		99.6	62-149		
PFHPA	0.652				0.800		81.5	56-150		
PFOA	0.762				0.800		95.3	57-161		
PFNA	0.738				0.800		92.2	53-157		
PFDA	0.772				0.800		96.5	43-158		
PFUnA	0.714				0.800		89.2	50-155		
PFDOA	0.755				0.800		94.4	60-141		
PFTRDA	0.685				0.800		85.7	52-140		
PFTEDA	0.722 IR2				0.800		90.3	52-156		
PFBS	0.696				0.708		98.4	63-145		
PFPEA	0.730				0.752		97.1	58-144		
PFHXS	0.731 MI4				0.732		99.9	44-158		
PFHPS	0.880				0.764		115	51-150		
PFOS	0.694				0.744		93.3	43-162		
PFNS	0.780				0.768		102	46-151		
PFDS	0.808				0.772		105	50-144		
PFDOS	0.617				0.776		79.5	30-138		
4:2FTS	3.14				3.00		105	52-158		
6:2FTS	2.96				3.04		97.5	48-158		
8:2FTS	3.08				3.07		100	46-165		
PFOA	0.850				0.800		106	47-163		
NMeFOA	2.76				3.20		86.1	54-155		
NETFOA	2.93				3.20		91.5	49-156		
NMeFOA	0.471 MI4				0.800		58.9	32-160		

AECOM Honolulu
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Project: Red Hill AFFF Assessment Sampling
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Reported: 04/20/2023 19:32

Quality Control
 (Continued)

Per- and Polyfluoroalkyl Substances (Continued)

Analyte	Result/Qual	LOQ	LOD	MDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
MRL Check (BCD0235-MRL1)		ng/L		Prepared: 04/17/23 11:15 Analyzed: 04/18/23 23:28						
NETFOSAA	0.681 MI4				0.800		85.1	51-154		
NMeFOSE	3.12				3.20		97.4	56-151		
NETFOSE	3.12				3.20		97.5	60-147		
HFPO-DA	1.66				1.60		103	58-154		
ADONA	1.57				1.51		104	61-148		
PFEESA	1.23				1.42		86.6	56-144		
PFMPA	1.37				1.60		85.5	48-150		
PFMBA	1.49				1.60		93.2	49-154		
NFDHA	1.46				1.60		91.1	47-160		
9CL-PF3ONS	1.43				1.50		95.9	44-167		
11CL-PF3OUDS	1.36				1.51		90.0	36-158		
3:3FTCA	2.49				3.20		77.7	32-161		
5:3FTCA	3.39				3.20		106	39-156		
7:3FTCA	2.93				3.20		91.5	36-149		
Surrogates										
13C4-PFBA	32.7				32.0		102	10-130		
13C5-PFPEA	15.7				16.0		98.3	35-150		
13C5-PFHXA	7.66				8.00		95.8	55-150		
13C4-PFHPA	7.67				8.00		95.8	55-150		
13C8-PFOA	8.17				8.00		102	60-140		
13C9-PFNA	3.97				4.00		99.3	55-140		
13C6-PFDA	3.91				4.00		97.8	50-140		
13C7-PFUnA	3.61				4.00		90.3	30-140		
13C2-PFDOA	3.51				4.00		87.9	10-150		
13C2-PFTEDA	3.53				4.00		88.2	10-130		
13C3-PFBS	8.51				8.00		106	55-150		
13C3-PFHXS	7.81				8.00		97.6	55-150		
13C8-PFOS	7.87				8.00		98.4	45-140		
13C2-4:2FTS	16.3				16.0		102	60-200		
13C2-6:2FTS	15.5				16.0		96.7	60-200		
13C2-8:2FTS	31.7				16.0		198	50-200		
13C8-PFOA	6.57				8.00		82.2	30-130		
D3-NMEFOSA	4.86				8.00		60.7	15-130		
D5-NETFOSA	4.81				8.00		60.2	10-130		
D3-NMEFOSAA	16.2				16.0		101	45-200		
D5-NETFOSAA	15.5				16.0		97.2	10-200		
D7-NMEFOSE	49.2				80.0		61.4	10-150		
D9-NETFOSE	47.3				80.0		59.1	10-150		
13C3-HFPO-DA	29.7				32.0		92.7	25-160		

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Project: Red Hill AFFF Assessment Sampling
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Notes and Definitions

Item	Definition
B	Blank contamination
CV1	Calibration verification recovered below the lower control limit
CV2	Calibration verification recovered above the upper control limit
E	Response exceeds linear range
IR1	Ion ratio below the lower control limit
IR2	Ion ratio above the upper control limit
IS1	Internal standard recovered below the lower control limit
J	Estimated value
MI2	Manual integration, non-target peak interference
MI4	Manual integration, peak unsplit
MI5	Manual integration, whole peak was not integrated
S1	Surrogate recovered below the lower control limit
S2	Surrogate recovered above the upper control limit
U	Not detected
Dry	Sample results reported on a dry weight basis.
DF	Dilution Factor
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
RPD	Relative Percent Difference
%REC	Percent Recovery
Source	Sample that was matrix spiked or duplicated.
LOQ, Limit of Quantitation = Method Reporting Limit (MRL).	

AECOM Honolulu
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Project: Red Hill AFFF Assessment Sampling
 Project Number: Red Hill AFFF Assessment Sampling / 60697810
 Project Manager: Watson Tanji

Reported: 04/20/2023 19:32



WORK ORDER

23D0056

Printed: 04/20/2023 7:33 pm

Project: Red Hill AFFF Assessment Sampling
Project Number: Red Hill AFFF Assessment Sampling / 60697810
Project Manager: Karen Volpendesta
PO Number: 150712

Report To:

AECOM Honolulu
 Watson Tanji
 1001 Bishop Street, Suite 1600
 Honolulu, HI 96813
 Phone: (808) 954-4512
 Fax: (808) 523-8950

Invoice To:

AECOM Honolulu
 Watson Tanji
 1001 Bishop Street, Suite 1600
 Honolulu, HI 96813
 Phone: (808) 954-4512
 Fax: (808) 523-8950

Date Received: 04/07/2023 09:45 AM
 Date Due: 04/14/2023 (5.00 day TAT)

Logged In By: Megan Salata
 Received By: Megan Salata

Analysis	Comments
23D0056-01 AF-RHMW03-WGN01LF-2304W1 [Water] Sampled 4/6/2023 12:15:00PM 1633 NONE	"Report relevant surrogates"

AECOM Honolulu
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 Honolulu, HI 96813

Project: Red Hill AFFF Assessment Sampling
 Project Number: Red Hill AFFF Assessment Sampling / 60697810
 Project Manager: Watson Tanji

Reported: 04/20/2023 19:32

23D0056

Sample Receipt Log

Default Cooler

Samples Received at: **-1.1°C**

Custody Seals	Yes	Were all containers sealed in separate bags?	Yes
Containers Intact	Yes	Did all containers arrive in good condition?	Yes
COC/Labels Agree	Yes	Correct containers/preserv. for tests indicated?	Yes
Preservation Confirmed	No	Sufficient volume sent for tests requested?	Yes
Received On Ice	Yes	Were bubbles absent in volatile samples?	No
Was a chain of custody received?	Yes	Sufficient remaining holding time for analyses?	Yes
COCs complete/signed in the appropriate places?	Yes	pH of non-VOA preserved containers documented?	No
Sample labels complete? Sample ID, date/time, etc.	Yes	Unpreserved vials received for VOA analysis?	No
Did all container labels agree with COCs?	Yes	If "yes", are unpreserved VOA vials noted on ARF?	No



APPL, Inc.
 908 N Temperance Ave
 Clovis, CA 93611
 www.applinc.com

ELECTRONIC CHAIN OF CUSTODY RECORD
 Phone: (559) 275-2175
 Fax: (559) 275-4422
 coc@applinc.com C.O.C. 2304W1AFAL02

23D0056

Report to: <u>PLEASE PRINT</u>	Invoice to: <u>PLEASE PRINT</u>
Company Name: <u>AECOM</u> Phone: <u>808-954-4512 / 303-796-4624</u>	Company Name: <u>AECOM</u> Phone: _____
Address: <u>1001 Bishop St ste1600</u> <u>Honolulu, HI 96813</u> Fax: _____	Address: _____ Fax: _____
Attn: <u>Watson Tanji / Katie Abbott</u>	Attn: <u>Sheree Smith</u>
Email: <u>watson.tanji@aecom.com/katie.abbott@aecom.com</u>	Email: <u>USAPimaging@aecom.com</u>

Project Name/Number	Sampler (Print)	Analysis Requested/Method Number					Date Shipped:
		Matrix					
Purchase Order Number	Sampler (Signature)	No. of Containers	Aq	Sed.	Soil	PFAS EPA Draft 1633	Carrier:
							Waybill No.:
CTO N6274223F0104 / 60697810	Eli Martin						
	[Signature]						Comments: EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GWEDMS Coverage:
Sample Identification	Location	Date Collected	Time Collected	Time Zone			
AF-RHMW03-WGN01LF-2304W1	RHMW03	04/06/23	1215	HST	2	✓	

Shuttle Temperature: <u>IRB 1.5/-1.1°C</u>	Turnaround Requested: Check one <input type="checkbox"/> Standard 2-3 wk <input type="checkbox"/> One week <input type="checkbox"/> 3 days <input type="checkbox"/> 24/48 Hrs. <input checked="" type="checkbox"/> Other: <u>5 day TAT</u>	Sample Disposal: <input type="checkbox"/> Return to client <input type="checkbox"/> Disposal by Lab (30-day retention)
Relinquished by sampler: <u>Eli Martin</u>	Date: <u>04/06/23</u> Time: <u>1345</u>	Received by: <u>Alex Edwards</u>
Relinquished by:	Date: _____ Time: _____	Received at lab by:

Note: The first sampled date of the ARF will be used as the COC number unless indicated otherwise.



APPL, Inc.
908 N Temperance Ave
Clovis, CA 93611
www.applinc.com

ELECTRONIC CHAIN OF CUSTODY RECORD
Phone: (559) 275-2175
Fax: (559) 275-4422
coc@applinc.com C.O.C. 2304W1AFAL01

Report to: PLEASE PRINT
Company Name: **AECOM** Phone: 808-954-4512 / 303-796-4624
Address: **1001 Bishop St ste1600**
Honolulu, HI 96813 Fax:
Attn: **Watson Tanji / Katie Abbott**
Email: **watson.tanji@aecom.com/katie.abbott@aecom.com**

Invoice to: PLEASE PRINT
Company Name: **AECOM** Phone:
Address: Fax:
Attn: **Sheree Smith**
Email: **USAPimaging@aecom.com**

Project Name/Number CTO N6274223F0104 / 60697810		Sampler (Print) <i>Eli Martin</i>			Analysis Requested/Method Number										Date Shipped:																	
Purchase Order Number		Sampler (Signature) <i>[Signature]</i>			No. of Containers	Matrix			PFAS EPA Draft 1633	<i>[Handwritten Signature]</i> <i>EM 04/06/23</i>										Carrier:												
Sample Identification		Location	Date Collected	Time Collected		Time Zone	Aq	Sed.												Soil	Comments: EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW											
AF-RHMW02-WGN01LF-2304W1		RHMW02	04/06/23	1020	HST	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																						
<i>[Large Handwritten Signature]</i>																																
															Shuttle Temperature:		Turnaround Requested: Check one <input type="checkbox"/> Standard 2-3 wk <input type="checkbox"/> One week <input type="checkbox"/> 3 days <input type="checkbox"/> 24/48 Hrs <input checked="" type="checkbox"/> Other: 5 day TAT										Sample Disposal: <input type="checkbox"/> Return to client <input type="checkbox"/> Disposal by Lab (30-day retention)					
Relinquished by sampler: <i>Eli Martin</i>		Date <i>04/06/23</i>	Time <i>1343</i>	Received by: <i>ALEX EDWARDS</i>			Relinquished by: <i>ALEX EDWARDS</i>			Date <i>4/6/23</i>	Time <i>1300</i>	Received by:																				
Relinquished by:		Date	Time	Received by:			Relinquished by:			Date <i>4/7/23</i>	Time <i>0945</i>	Received at lab by: <i>[Signature]</i>																				

Note: The first sampled date of the ARF will be used as the COC number unless indicated otherwise.

CUSTODY SEAL

AECOM (808)-521-3051

Initials: llw Date 4/6/23
llw