



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 13, 2023

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

RE: Red Hill AFFF Assessment Sampling
23C0222

Enclosed are the results of analyses for samples received by our laboratory on 3/24/2023. 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: 04/13/2023 11:08

Analysis Case Narrative

EPA 1633: Manual integrations were performed for this method in accordance with APPL's SOP. Abbreviated flags for technical justification are provided as data qualifiers.

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

The extracted internal standard D3-NMeFOSA and D5-NEtFOSA recovered below the lower control limit in sample 02 - AF-RHMW02-WGN01LF-2303W3. The sample was reextracted to similar results. Only the reextract data has been reported.

The BCC0442-MRL1 was contaminated and all samples in that extraction set were reextracted. Results between the original analysis and the reextraction were compared and sample results appear unaffected.

The analyte PFOS recovered above the upper control limit in the BCC0569-MRL1. The extracted internal standard 13C5-PFPeA, 13C5-PFHxA, 134-PFHpA, and 13C3-HFPO-DA recovered above the upper control limit.

The analyte PFOS recovered above the upper control limit in the BCD0035-MRL1.

The extracted internal standard 13C5-PFPeA, 13C5-PFHxA, and 134-PFHpA recovered above the upper control limit in the BCC0569-BS1.

The analyte HFPO-DA recovered above the upper control limit in the SC01339-LCV1.

Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
23C0222-01	AF-RHMW03-WGN01LF-2303W3	Water	03/23/2023 12:55	03/24/2023
23C0222-02	AF-RHMW02-WGN01LF-2303W3	Water	03/23/2023 10:50	03/24/2023

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Sample Results

Sample: AF-RHMW03-WGN01LF-2303W3
23C0222-01 (Water)

Per- and Polyfluoroalkyl Substances

Analyte	Result /Qual	LOQ	LOD	DL	Units	Date Analyzed	DF	Method	Prep Batch
PFBA	1.6	1.4	0.68	0.18	ng/L	04/07/23	1	EPA 1633	BCD0035
PFPEA	2.5	0.68	0.34	0.055	ng/L	04/07/23	1	EPA 1633	BCD0035
PFHXA	1.8	0.34	0.17	0.047	ng/L	04/07/23	1	EPA 1633	BCD0035
PFHPA	1.5	0.34	0.17	0.035	ng/L	04/07/23	1	EPA 1633	BCD0035
PFOA	0.28 J	0.34	0.26	0.13	ng/L	04/07/23	1	EPA 1633	BCD0035
PFNA	0.14 J	0.34	0.17	0.070	ng/L	04/07/23	1	EPA 1633	BCD0035
PFDA	0.15 J	0.34	0.17	0.086	ng/L	04/07/23	1	EPA 1633	BCD0035
PFUnA	0.26 U	0.34	0.26	0.14	ng/L	04/07/23	1	EPA 1633	BCD0035
PFDOA	0.17 U	0.34	0.17	0.095	ng/L	04/07/23	1	EPA 1633	BCD0035
PFTRDA	0.26 U	0.34	0.26	0.17	ng/L	04/07/23	1	EPA 1633	BCD0035
PFTEDA	0.26 U	0.34	0.26	0.17	ng/L	04/07/23	1	EPA 1633	BCD0035
PFBS	0.17 U	0.34	0.17	0.031	ng/L	04/07/23	1	EPA 1633	BCD0035
PFPEs	0.17 U	0.34	0.17	0.054	ng/L	04/07/23	1	EPA 1633	BCD0035
PFHXS	0.11 J	0.34	0.17	0.027	ng/L	04/07/23	1	EPA 1633	BCD0035
PFHPS	0.17 U	0.34	0.17	0.044	ng/L	04/07/23	1	EPA 1633	BCD0035
PFOS	0.18 J	0.34	0.17	0.054	ng/L	04/07/23	1	EPA 1633	BCD0035
PFNS	0.17 U	0.34	0.17	0.11	ng/L	04/07/23	1	EPA 1633	BCD0035
PFDS	0.26 U	0.34	0.26	0.13	ng/L	04/07/23	1	EPA 1633	BCD0035
PFDOS	0.17 U	0.34	0.17	0.10	ng/L	04/07/23	1	EPA 1633	BCD0035
4:2FTS	0.68 U	1.4	0.68	0.25	ng/L	04/07/23	1	EPA 1633	BCD0035
6:2FTS	15	1.4	0.68	0.27	ng/L	04/07/23	1	EPA 1633	BCD0035
8:2FTS	0.68 U	1.4	0.68	0.070	ng/L	04/07/23	1	EPA 1633	BCD0035
PFOSA	0.17 U	0.34	0.17	0.089	ng/L	04/07/23	1	EPA 1633	BCD0035
NMeFOSA	0.68 U	1.4	0.68	0.40	ng/L	04/07/23	1	EPA 1633	BCD0035
NEtFOSA	0.68 U	1.4	0.68	0.35	ng/L	04/07/23	1	EPA 1633	BCD0035
NMeFOSAA	0.17 U	0.34	0.17	0.090	ng/L	04/07/23	1	EPA 1633	BCD0035
NEtFOSAA	0.17 U	0.34	0.17	0.098	ng/L	04/07/23	1	EPA 1633	BCD0035
NMeFOSE	1.0 U	1.4	1.0	0.86	ng/L	04/07/23	1	EPA 1633	BCD0035
NEtFOSE	1.0 U	1.4	1.0	0.89	ng/L	04/07/23	1	EPA 1633	BCD0035
HFPO-DA	0.34 U	0.68	0.34	0.15	ng/L	04/07/23	1	EPA 1633	BCD0035
ADONA	0.34 U	0.68	0.34	0.11	ng/L	04/07/23	1	EPA 1633	BCD0035
PFEESA	0.34 U	0.68	0.34	0.093	ng/L	04/07/23	1	EPA 1633	BCD0035
PFMPA	0.34 U	0.68	0.34	0.046	ng/L	04/07/23	1	EPA 1633	BCD0035
PFMBA	0.34 U	0.68	0.34	0.077	ng/L	04/07/23	1	EPA 1633	BCD0035
NFDHA	0.34 U	0.68	0.34	0.26	ng/L	04/07/23	1	EPA 1633	BCD0035
9CL-PF3ONS	0.34 U	0.68	0.34	0.18	ng/L	04/07/23	1	EPA 1633	BCD0035
11CL-PF3OUDS	0.34 U	0.68	0.34	0.18	ng/L	04/07/23	1	EPA 1633	BCD0035
3:3FTCA	0.68 U	1.4	0.68	0.49	ng/L	04/07/23	1	EPA 1633	BCD0035
5:3FTCA	0.68 U	1.4	0.68	0.38	ng/L	04/07/23	1	EPA 1633	BCD0035
7:3FTCA	0.68 U	1.4	0.68	0.47	ng/L	04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C4-PFBA	64.0%		10-130			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C5-PFPEA	50.8%		35-150			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C5-PFHXA	71.8%		55-150			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C4-PFHPA	62.7%		55-150			04/07/23	1	EPA 1633	BCD0035

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Sample Results (Continued)

Sample: AF-RHMW03-WGN01LF-2303W3 (Continued)
23C0222-01 (Water)

Per- and Polyfluoroalkyl Substances (Continued)

Analyte	Result /Qual	LOQ	LOD	DL	Units	Date Analyzed	DF	Method	Prep Batch
Surrogate: 13C8-PFOA	105%		60-140			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C9-PFNA	98.0%		55-140			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C6-PFDA	103%		50-140			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C7-PFUnA	110%		30-140			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C2-PFDOA	89.1%		10-150			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C2-PFTEDA	75.9%		10-130			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C3-PFBS	107%		55-150			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C3-PFHXS	98.2%		55-150			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C8-PFOS	97.6%		45-140			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C2-4:2FTS	188%		60-200			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C2-6:2FTS	166%		60-200			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C2-8:2FTS	204% S2		50-200			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C2-8:2FTS	122%		50-200			04/07/23	10	EPA 1633	BCD0035
Surrogate: 13C8-PFOA	77.0%		30-130			04/07/23	1	EPA 1633	BCD0035
Surrogate: D3-NMEFOA	54.9%		15-130			04/07/23	1	EPA 1633	BCD0035
Surrogate: D5-NETFOA	53.3%		10-130			04/07/23	1	EPA 1633	BCD0035
Surrogate: D3-NMEFOSAA	133%		45-200			04/07/23	1	EPA 1633	BCD0035
Surrogate: D5-NETFOSAA	158%		10-200			04/07/23	1	EPA 1633	BCD0035
Surrogate: D7-NMEFOSE	57.8%		10-150			04/07/23	1	EPA 1633	BCD0035
Surrogate: D9-NETFOSE	63.9%		10-150			04/07/23	1	EPA 1633	BCD0035
Surrogate: 13C3-HFPO-DA	70.1%		25-160			04/07/23	1	EPA 1633	BCD0035

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Reported: 04/13/2023 11:08

Sample Results (Continued)

**Sample: AF-RHMW02-WGN01LF-2303W3
23C0222-02 (Water)**

Per- and Polyfluoroalkyl Substances

Analyte	Result /Qual	LOQ	LOD	DL	Units	Date Analyzed	DF	Method	Prep Batch
PFBA	0.71 U	1.4	0.71	0.18	ng/L	04/06/23	1	EPA 1633	BCC0569
PFPEA	0.65 J	0.71	0.35	0.057	ng/L	04/06/23	1	EPA 1633	BCC0569
PFHXA	0.71	0.35	0.18	0.048	ng/L	04/06/23	1	EPA 1633	BCC0569
PFHPA	0.62	0.35	0.18	0.036	ng/L	04/06/23	1	EPA 1633	BCC0569
PFOA	0.26 U	0.35	0.26	0.13	ng/L	04/06/23	1	EPA 1633	BCC0569
PFNA	0.18 U	0.35	0.18	0.072	ng/L	04/06/23	1	EPA 1633	BCC0569
PFDA	0.18 U	0.35	0.18	0.089	ng/L	04/06/23	1	EPA 1633	BCC0569
PFUnA	0.26 U	0.35	0.26	0.14	ng/L	04/06/23	1	EPA 1633	BCC0569
PFDOA	0.18 U	0.35	0.18	0.099	ng/L	04/06/23	1	EPA 1633	BCC0569
PFRDA	0.26 U	0.35	0.26	0.18	ng/L	04/06/23	1	EPA 1633	BCC0569
PFTEDA	0.26 U	0.35	0.26	0.17	ng/L	04/06/23	1	EPA 1633	BCC0569
PFBS	0.18 U	0.35	0.18	0.032	ng/L	04/06/23	1	EPA 1633	BCC0569
PFPE	0.18 U	0.35	0.18	0.055	ng/L	04/06/23	1	EPA 1633	BCC0569
PFHXS	0.18 U	0.35	0.18	0.028	ng/L	04/06/23	1	EPA 1633	BCC0569
PFHPS	0.18 U	0.35	0.18	0.045	ng/L	04/06/23	1	EPA 1633	BCC0569
PFOS	0.062 J IR2,	0.35	0.18	0.056	ng/L	04/06/23	1	EPA 1633	BCC0569
PFNS	0.18 U	0.35	0.18	0.11	ng/L	04/06/23	1	EPA 1633	BCC0569
PFDS	0.26 U	0.35	0.26	0.13	ng/L	04/06/23	1	EPA 1633	BCC0569
PFDOS	0.18 U	0.35	0.18	0.11	ng/L	04/06/23	1	EPA 1633	BCC0569
4:2FTS	0.71 U	1.4	0.71	0.26	ng/L	04/06/23	1	EPA 1633	BCC0569
6:2FTS	21	1.4	0.71	0.28	ng/L	04/06/23	1	EPA 1633	BCC0569
8:2FTS	0.71 U	1.4	0.71	0.073	ng/L	04/06/23	1	EPA 1633	BCC0569
PFOSA	0.18 U	0.35	0.18	0.092	ng/L	04/06/23	1	EPA 1633	BCC0569
NMeFOSA	0.71 U	1.4	0.71	0.42	ng/L	04/06/23	1	EPA 1633	BCC0569
NEtFOSA	0.71 U	1.4	0.71	0.36	ng/L	04/06/23	1	EPA 1633	BCC0569
NMeFOSAA	0.18 U	0.35	0.18	0.093	ng/L	04/06/23	1	EPA 1633	BCC0569
NEtFOSAA	0.18 U	0.35	0.18	0.10	ng/L	04/06/23	1	EPA 1633	BCC0569
NMeFOSE	1.1 U	1.4	1.1	0.89	ng/L	04/06/23	1	EPA 1633	BCC0569
NEtFOSE	1.1 U	1.4	1.1	0.92	ng/L	04/06/23	1	EPA 1633	BCC0569
HFPO-DA	0.35 U	0.71	0.35	0.15	ng/L	04/06/23	1	EPA 1633	BCC0569
ADONA	0.35 U	0.71	0.35	0.11	ng/L	04/06/23	1	EPA 1633	BCC0569
PFEESA	0.35 U	0.71	0.35	0.096	ng/L	04/06/23	1	EPA 1633	BCC0569
PFMPA	0.35 U	0.71	0.35	0.048	ng/L	04/06/23	1	EPA 1633	BCC0569
PFMBA	0.35 U	0.71	0.35	0.080	ng/L	04/06/23	1	EPA 1633	BCC0569
NFDHA	0.35 U	0.71	0.35	0.27	ng/L	04/06/23	1	EPA 1633	BCC0569
9CL-PF3ONS	0.35 U	0.71	0.35	0.18	ng/L	04/06/23	1	EPA 1633	BCC0569
11CL-PF3OUDS	0.35 U	0.71	0.35	0.18	ng/L	04/06/23	1	EPA 1633	BCC0569
3:3FTCA	0.71 U	1.4	0.71	0.51	ng/L	04/06/23	1	EPA 1633	BCC0569
5:3FTCA	0.71 U	1.4	0.71	0.39	ng/L	04/06/23	1	EPA 1633	BCC0569
7:3FTCA	0.71 U	1.4	0.71	0.49	ng/L	04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C4-PFBA	39.4%		10-130			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C5-PFPEA	54.5%		35-150			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C5-PFHXA	63.0%		55-150			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C4-PFHPA	66.8%		55-150			04/06/23	1	EPA 1633	BCC0569

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Project Manager: Watson Tanji

Reported: 04/13/2023 11:08

Sample Results (Continued)

Sample: AF-RHMW02-WGN01LF-2303W3 (Continued)
23C0222-02 (Water)

Per- and Polyfluoroalkyl Substances (Continued)

Analyte	Result /Qual	LOQ	LOD	DL	Units	Date Analyzed	DF	Method	Prep Batch
Surrogate: 13C8-PFOA	98.8%		60-140			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C9-PFNA	102%		55-140			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C6-PFDA	104%		50-140			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C7-PFUnA	113%		30-140			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C2-PFDOA	116%		10-150			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C2-PFTEDA	85.7%		10-130			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C3-PFBS	114%		55-150			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C3-PFHXS	96.8%		55-150			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C8-PFOS	101%		45-140			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C2-4:2FTS	128%		60-200			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C2-6:2FTS	170%		60-200			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C2-8:2FTS	159%		50-200			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C8-PFOA	64.9%		30-130			04/06/23	1	EPA 1633	BCC0569
Surrogate: D3-NMEFOA	6.27% S1		15-130			04/06/23	1	EPA 1633	BCC0569
Surrogate: D3-NMEFOA	7.75% S1		15-130			04/06/23	10	EPA 1633	BCC0569
Surrogate: D5-NETFOA	4.38% S1		10-130			04/06/23	1	EPA 1633	BCC0569
Surrogate: D5-NETFOA	4.49% S1		10-130			04/06/23	10	EPA 1633	BCC0569
Surrogate: D3-NMEFOSAA	122%		45-200			04/06/23	1	EPA 1633	BCC0569
Surrogate: D5-NETFOSAA	128%		10-200			04/06/23	1	EPA 1633	BCC0569
Surrogate: D7-NMEFOSE	27.2%		10-150			04/06/23	1	EPA 1633	BCC0569
Surrogate: D9-NETFOSE	29.4%		10-150			04/06/23	1	EPA 1633	BCC0569
Surrogate: 13C3-HFPO-DA	69.1%		25-160			04/06/23	1	EPA 1633	BCC0569

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 Project Manager: Watson Tanji

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PREPARATION BATCH SUMMARY

EPA 1633

Laboratory: APPL, LLC

Client: AECOM

Batch: BCC0569 Batch Matrix: Water Preparation: EPA 1633

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT mL	FINAL VOL. mL
AF-RHMW02-WGN01LF-2303W3	23C0222-02RE2	03/26/23 15:40	566.30	2.00
AF-RHMW02-WGN01LF-2303W3	23C0222-02RE3	03/26/23 15:40	566.30	2.00
Blank	BCC0569-BLK1	03/30/23 14:56	500.00	2.00
LCS	BCC0569-BS1	03/30/23 14:56	500.00	2.00
MRL Check	BCC0569-MRL1	03/30/23 14:56	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: BCD0035 Batch Matrix: Water Preparation: EPA 1633

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT mL	FINAL VOL. mL
AF-RHMW03-WGN01LF-2303W3	23C0222-01RE2	04/04/23 12:20	586.02	2.00
AF-RHMW03-WGN01LF-2303W3	23C0222-01RE3	04/04/23 12:20	586.02	2.00
Blank	BCD0035-BLK1	04/04/23 12:20	500.00	2.00
LCS	BCD0035-BS1	04/04/23 12:20	500.00	2.00
MRL Check	BCD0035-MRL1	04/04/23 12:20	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: 04/13/2023 11:08
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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: BCC0569 - EPA 1633

	ng/L			
Blank (BCC0569-BLK1)				Prepared: 03/30/23 14:56 Analyzed: 04/06/23 10:46
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	0.20 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
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

Surrogates

13C4-PFBA	35.4	32.0	111	10-130
13C5-PFPEA	23.0	16.0	144	35-150
13C5-PFHXA	11.0	8.00	137	55-150

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: 04/13/2023 11:08

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 (BCC0569-BLK1)										
Prepared: 03/30/23 14:56 Analyzed: 04/06/23 10:46										
<i>Surrogates</i>										
13C4-PFHPA	11.5				8.00		144	55-150		
13C8-PFOA	8.68				8.00		108	60-140		
13C9-PFNA	4.27				4.00		107	55-140		
13C6-PFDA	3.91				4.00		97.7	50-140		
13C7-PFUnA	4.40				4.00		110	30-140		
13C2-PFDOA	4.19				4.00		105	10-150		
13C2-PFTEDA	3.98				4.00		99.6	10-130		
13C3-PFBS	9.52				8.00		119	55-150		
13C3-PFHXS	8.54				8.00		107	55-150		
13C8-PFOS	8.48				8.00		106	45-140		
13C2-4:2FTS	17.6				16.0		110	60-200		
13C2-6:2FTS	17.0				16.0		106	60-200		
13C2-8:2FTS	16.1				16.0		100	50-200		
13C8-PFOA	7.94				8.00		99.3	30-130		
D3-NMEFOSA	4.18				8.00		52.2	15-130		
D5-NETFOA	4.39				8.00		54.9	10-130		
D3-NMEFOSAA	15.7				16.0		98.2	45-200		
D5-NETFOSAA	15.5				16.0		97.0	10-200		
D7-NMEFOSE	56.0				80.0		70.0	10-150		
D9-NETFOSE	66.9				80.0		83.6	10-150		
13C3-HFPO-DA	46.3				32.0		145	25-160		

LCS (BCC0569-BS1)										
Prepared: 03/30/23 14:56 Analyzed: 04/06/23 10:59										
PFBA	17.3				16.0		108	58-148		
PFPEA	7.95				8.00		99.3	54-152		
PFHXA	4.15				4.00		104	55-152		
PFHPA	3.93				4.00		98.3	54-154		
PFOA	4.15				4.00		104	52-161		
PFNA	4.13				4.00		103	59-149		
PFDA	4.37				4.00		109	52-147		
PFUnA	3.99				4.00		99.8	48-159		
PFDOA	4.50				4.00		113	64-142		
PFTRDA	4.38				4.00		110	49-148		
PFTEDA	3.96				4.00		99.1	47-161		
PFBS	3.69				3.54		104	62-144		
PFPEA	4.22				3.76		112	59-151		
PFHXS	3.72				3.66		102	57-146		
PFHPS	3.85				3.82		101	55-152		
PFOS	3.76 MI2				3.72		101	58-149		
PFNS	3.55				3.84		92.4	52-148		
PFDS	3.63				3.86		94.1	51-147		
PFDOS	3.47				3.88		89.4	36-145		
4:2FTS	15.8				15.0		105	67-146		
6:2FTS	14.7				15.2		96.8	61-151		
8:2FTS	16.3				15.4		106	63-152		
PFOSA	4.31				4.00		108	61-148		

AECOM Honolulu
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Project: Red Hill AFFF Assessment Sampling
 Project Number: Red Hill AFFF Assessment Sampling / 60697810
 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
LCS (BCC0569-BS1)		Prepared: 03/30/23 14:56 Analyzed: 04/06/23 10:59								
	ng/L									
NMeFOSA	17.1				16.0		107	63-145		
NETFOSA	16.7				16.0		104	65-139		
NMeFOSAA	4.20				4.00		105	58-144		
NETFOSAA	4.25				4.00		106	59-146		
NMeFOSE	17.3				16.0		108	71-136		
NETFOSE	15.9				16.0		99.3	69-137		
HFPO-DA	8.40				8.00		105	63-144		
ADONA	8.51				7.56		113	68-146		
PFEESA	8.33				7.12		117	56-151		
PFMPA	7.85				8.00		98.1	51-145		
PFMBA	7.67				8.00		95.8	55-148		
NFDHA	8.37				8.00		105	48-161		
9CL-PF3ONS	7.66				7.48		102	56-156		
11CL-PF3OUDS	7.63				7.56		101	46-156		
3:3FTCA	14.5				16.0		90.5	62-129		
5:3FTCA	15.8				16.0		98.8	63-134		
7:3FTCA	13.8				16.0		86.4	50-138		
Surrogates										
13C4-PFBA	36.1				32.0		113	10-130		
13C5-PFPEA	26.9 S2				16.0		168	35-150		
13C5-PFHXA	12.6 S2				8.00		157	55-150		
13C4-PFHFA	14.0 S2				8.00		175	55-150		
13C8-PFOA	9.04				8.00		113	60-140		
13C9-PFNA	4.59				4.00		115	55-140		
13C6-PFDA	4.03				4.00		101	50-140		
13C7-PFUnA	4.13				4.00		103	30-140		
13C2-PFDOA	4.13				4.00		103	10-150		
13C2-PFTEDA	4.40				4.00		110	10-130		
13C3-PFBS	9.39				8.00		117	55-150		
13C3-PFHXS	8.78				8.00		110	55-150		
13C8-PFOS	8.35				8.00		104	45-140		
13C2-4:2FTS	17.8				16.0		111	60-200		
13C2-6:2FTS	18.2				16.0		113	60-200		
13C2-8:2FTS	16.0				16.0		99.7	50-200		
13C8-PFOA	7.79				8.00		97.4	30-130		
D3-NMEFOSA	4.67				8.00		58.3	15-130		
D5-NETFOSA	4.77				8.00		59.7	10-130		
D3-NMEFOSAA	16.3				16.0		102	45-200		
D5-NETFOSAA	15.8				16.0		99.0	10-200		
D7-NMEFOSE	59.0				80.0		73.8	10-150		
D9-NETFOSE	70.9				80.0		88.7	10-150		
13C3-HFPO-DA	50.4				32.0		157	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 (BCC0569-MRL1)								Prepared: 03/30/23 14:56	Analyzed: 04/06/23 11:12	
PFBA	1.88				1.60		118	44-157		
PFPEA	0.862				0.800		108	57-148		
PFHXA	0.413				0.400		103	62-149		
PFHPA	0.526				0.400		131	56-150		
PFOA	0.540				0.400		135	57-161		
PFNA	0.484				0.400		121	53-157		
PFDA	0.463				0.400		116	43-158		
PFUnA	0.448				0.400		112	50-155		
PFDOA	0.453				0.400		113	60-141		
PFTRDA	0.406				0.400		102	52-140		
PFTEDA	0.464				0.400		116	52-156		
PFBS	0.391 J				0.354		111	63-145		
PFPEs	0.443				0.376		118	58-144		
PFHXS	0.370 J				0.366		101	44-158		
PFHPS	0.426				0.382		111	51-150		
PFOS	0.660 BS2				0.372		177	43-162		
PFNS	0.346 J				0.384		90.2	46-151		
PFDS	0.382 J				0.386		99.0	50-144		
PFDOS	0.407				0.388		105	30-138		
4:2FTS	1.50 J				1.50		100	52-158		
6:2FTS	2.16				1.52		142	48-158		
8:2FTS	1.69				1.54		110	46-165		
PFOSA	0.470				0.400		117	47-163		
NMeFOSA	1.69				1.60		106	54-155		
NETFOSA	1.70				1.60		107	49-156		
NMeFOSAA	0.423				0.400		106	32-160		
NETFOSAA	0.369 J				0.400		92.2	51-154		
NMeFOSE	1.97				1.60		123	56-151		
NETFOSE	1.75				1.60		109	60-147		
HFPO-DA	0.990				0.800		124	58-154		
ADONA	0.840				0.756		111	61-148		
PFEESA	0.935				0.712		131	56-144		
PFMPA	0.771 J				0.800		96.3	48-150		
PFMBA	0.844				0.800		105	49-154		
NFDHA	0.841				0.800		105	47-160		
9CL-PF3ONS	0.815				0.748		109	44-167		
11CL-PF3OUDS	0.791 J				0.756		105	36-158		
3:3FTCA	1.84				1.60		115	32-161		
5:3FTCA	1.32 J				1.60		82.8	39-156		
7:3FTCA	1.72				1.60		108	36-149		
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Surrogates										
13C4-PFBA	34.6				32.0		108	10-130		
13C5-PFPEA	28.4 S2				16.0		177	35-150		
13C5-PFHXA	12.3 S2				8.00		153	55-150		
13C4-PFHPA	13.1 S2				8.00		163	55-150		
13C8-PFOA	8.83				8.00		110	60-140		
13C9-PFNA	4.50				4.00		113	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: 04/13/2023 11:08
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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 (BCC0569-MRL1)					Prepared: 03/30/23 14:56 Analyzed: 04/06/23 11:12					
<i>Surrogates</i>										
13C6-PFDA	4.27				4.00		107	50-140		
13C7-PFUnA	4.47				4.00		112	30-140		
13C2-PFDOA	4.51				4.00		113	10-150		
13C2-PFTEDA	4.61				4.00		115	10-130		
13C3-PFBS	9.15				8.00		114	55-150		
13C3-PFHXS	9.39				8.00		117	55-150		
13C8-PFOS	7.84				8.00		98.0	45-140		
13C2-4:2FTS	20.1				16.0		126	60-200		
13C2-6:2FTS	18.7				16.0		117	60-200		
13C2-8:2FTS	17.8				16.0		111	50-200		
13C8-PFOA	7.79				8.00		97.3	30-130		
D3-NMEFOSA	4.96				8.00		62.0	15-130		
D5-NETFOSA	5.09				8.00		63.6	10-130		
D3-NMEFOSAA	15.3				16.0		95.7	45-200		
D5-NETFOSAA	15.9				16.0		99.2	10-200		
D7-NMEFOSE	60.7				80.0		75.9	10-150		
D9-NETFOSSE	73.2				80.0		91.5	10-150		
13C3-HFPO-DA	52.5 S2				32.0		164	25-160		

Method: EPA 1633

Batch: BCD0035 - EPA 1633

ng/L										
Blank (BCD0035-BLK1)					Prepared: 04/04/23 12:20 Analyzed: 04/07/23 17:34					
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						
PFOA	0.20 U	0.40	0.20	0.10						

The contents of this report apply to the sample(s) analyzed in accordance with the chain of custody document. No duplication of this report is allowed, except in its entirety.

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Project: Red Hill AFFF Assessment Sampling
 Project Number: Red Hill AFFF Assessment Sampling / 60697810
 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 (BCD0035-BLK1)						Prepared: 04/04/23 12:20 Analyzed: 04/07/23 17:34				
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						
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Surrogates										
13C4-PFBA	34.1				32.0		107	10-130		
13C5-PFPEA	20.5				16.0		128	35-150		
13C5-PFHXA	9.91				8.00		124	55-150		
13C4-PFHFA	9.84				8.00		123	55-150		
13C8-PFOA	8.56				8.00		107	60-140		
13C9-PFNA	4.83				4.00		121	55-140		
13C6-PFDA	4.31				4.00		108	50-140		
13C7-PFUnA	4.49				4.00		112	30-140		
13C2-PFDOA	4.06				4.00		102	10-150		
13C2-PFTEDA	4.13				4.00		103	10-130		
13C3-PFBS	8.45				8.00		106	55-150		
13C3-PFHXS	8.37				8.00		105	55-150		
13C8-PFOS	7.83				8.00		97.9	45-140		
13C2-4:2FTS	18.4				16.0		115	60-200		
13C2-6:2FTS	17.9				16.0		112	60-200		
13C2-8:2FTS	17.6				16.0		110	50-200		
13C8-PFOA	7.69				8.00		96.2	30-130		
D3-NMEFOSA	4.55				8.00		56.9	15-130		
D5-NETFOSA	4.86				8.00		60.8	10-130		
D3-NMEFOSAA	16.0				16.0		100	45-200		
D5-NETFOSAA	15.3				16.0		95.6	10-200		
D7-NMEFOSE	58.2				80.0		72.8	10-150		
D9-NETFOSE	67.4				80.0		84.2	10-150		
13C3-HFPO-DA	39.4				32.0		123	25-160		

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Project: Red Hill AFFF Assessment Sampling
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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 (BCD0035-BS1)		ng/L		Prepared: 04/04/23 12:20 Analyzed: 04/07/23 17:47						
PFBA	16.7				16.0		104	58-148		
PFPEA	7.86				8.00		98.2	54-152		
PFHXA	4.39				4.00		110	55-152		
PFHPA	4.41				4.00		110	54-154		
PFOA	3.99				4.00		99.9	52-161		
PFNA	4.44				4.00		111	59-149		
PFDA	3.74				4.00		93.4	52-147		
PFUnA	3.83				4.00		95.8	48-159		
PFDOA	4.66				4.00		116	64-142		
PFTRDA	4.40				4.00		110	49-148		
PFTEDA	4.22				4.00		105	47-161		
PFBS	3.65				3.54		103	62-144		
PFPEs	3.88				3.76		103	59-151		
PFHXS	3.55				3.66		97.0	57-146		
PFHPS	3.61				3.82		94.4	55-152		
PFOS	3.54				3.72		95.2	58-149		
PFNS	3.80				3.84		98.9	52-148		
PFDS	3.83				3.86		99.3	51-147		
PFDOS	3.78				3.88		97.5	36-145		
4:2FTS	14.1				15.0		94.2	67-146		
6:2FTS	16.4				15.2		108	61-151		
8:2FTS	17.3				15.4		112	63-152		
PFOSA	4.20				4.00		105	61-148		
NMeFOSA	17.7				16.0		111	63-145		
NETFOSA	16.7				16.0		104	65-139		
NMeFOSAA	3.95				4.00		98.9	58-144		
NETFOSAA	4.20				4.00		105	59-146		
NMeFOSE	15.9				16.0		99.4	71-136		
NETFOSE	15.4				16.0		96.2	69-137		
HFPO-DA	8.10				8.00		101	63-144		
ADONA	8.22				7.56		109	68-146		
PFEESA	7.19				7.12		101	56-151		
PFMPA	7.40				8.00		92.5	51-145		
PFMBA	7.36				8.00		92.0	55-148		
NFDHA	8.02				8.00		100	48-161		
9CL-PF3ONS	7.72				7.48		103	56-156		
11CL-PF3OUDS	7.22				7.56		95.6	46-156		
3:3FTCA	13.9				16.0		87.0	62-129		
5:3FTCA	17.0				16.0		106	63-134		
7:3FTCA	14.6				16.0		91.4	50-138		
Surrogates										
13C4-PFBA	33.0				32.0		103	10-130		
13C5-PFPEA	20.1				16.0		126	35-150		
13C5-PFHXA	9.65				8.00		121	55-150		
13C4-PFHPA	9.36				8.00		117	55-150		
13C8-PFOA	8.51				8.00		106	60-140		
13C9-PFNA	4.10				4.00		103	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: 04/13/2023 11:08

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 (BCD0035-BS1)		Prepared: 04/04/23 12:20 Analyzed: 04/07/23 17:47								
Surrogates										
13C6-PFDA	4.61				4.00		115	50-140		
13C7-PFUnA	4.98				4.00		125	30-140		
13C2-PFDOA	4.37				4.00		109	10-150		
13C2-PFTEDA	4.37				4.00		109	10-130		
13C3-PFBS	8.39				8.00		105	55-150		
13C3-PFHXS	8.28				8.00		104	55-150		
13C8-PFOS	8.06				8.00		101	45-140		
13C2-4:2FTS	17.4				16.0		109	60-200		
13C2-6:2FTS	17.1				16.0		107	60-200		
13C2-8:2FTS	16.2				16.0		101	50-200		
13C8-PFOA	7.36				8.00		92.0	30-130		
D3-NMEFOSA	3.79				8.00		47.4	15-130		
D5-NETFOA	3.92				8.00		49.0	10-130		
D3-NMEFOSAA	15.3				16.0		95.3	45-200		
D5-NETFOSAA	15.1				16.0		94.2	10-200		
D7-NMEFOSE	56.9				80.0		71.1	10-150		
D9-NETFOSE	63.8				80.0		79.7	10-150		
13C3-HFPO-DA	39.1				32.0		122	25-160		

ng/L										
MRL Check (BCD0035-MRL1)		Prepared: 04/04/23 12:20 Analyzed: 04/07/23 18:00								
PFBA	1.61				1.60		100	44-157		
PFPEA	0.770 J				0.800		96.2	57-148		
PFHXA	0.458				0.400		114	62-149		
PFHPA	0.413				0.400		103	56-150		
PFOA	0.416				0.400		104	57-161		
PFNA	0.433				0.400		108	53-157		
PFDA	0.456				0.400		114	43-158		
PFUnA	0.418				0.400		104	50-155		
PFDOA	0.512				0.400		128	60-141		
PFTRDA	0.428				0.400		107	52-140		
PFTEDA	0.368 J				0.400		91.9	52-156		
PFBS	0.425				0.354		120	63-145		
PFPEA	0.352 J				0.376		93.6	58-144		
PFHXS	0.574				0.366		157	44-158		
PFHPS	0.417				0.382		109	51-150		
PFOS	1.20 BS2, MI4				0.372		323	43-162		
PFNS	0.341 J				0.384		88.8	46-151		
PFDS	0.330 J				0.386		85.5	50-144		
PFDOS	0.344 J				0.388		88.7	30-138		
4:2FTS	1.49 J				1.50		99.0	52-158		
6:2FTS	1.49 J				1.52		97.9	48-158		
8:2FTS	1.30 J				1.54		84.5	46-165		
PFOA	0.455				0.400		114	47-163		
NMeFOSA	1.83				1.60		114	54-155		
NETFOA	1.64				1.60		103	49-156		
NMeFOSAA	0.423				0.400		106	32-160		

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Reported: 04/13/2023 11:08

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 (BCD0035-MRL1)						Prepared: 04/04/23 12:20		Analyzed: 04/07/23 18:00		
NETFOSAA	0.432				0.400		108	51-154		
NMeFOSE	1.68				1.60		105	56-151		
NETFOSE	1.55 J				1.60		96.8	60-147		
HFPO-DA	0.775 J				0.800		96.8	58-154		
ADONA	0.843				0.756		112	61-148		
PFEESA	0.661 J				0.712		92.8	56-144		
PFMPA	0.742 J				0.800		92.7	48-150		
PFMBA	0.834				0.800		104	49-154		
NFDHA	0.772 J				0.800		96.6	47-160		
9CL-PF3ONS	0.799 J				0.748		107	44-167		
11CL-PF3OUDS	0.732 J				0.756		96.8	36-158		
3:3FTCA	1.50 J				1.60		93.4	32-161		
5:3FTCA	1.32 J IR2,				1.60		82.5	39-156		
7:3FTCA	1.58 J				1.60		98.7	36-149		
Surrogates										
13C4-PFBA	34.4				32.0		108	10-130		
13C5-PFPEA	20.0				16.0		125	35-150		
13C5-PFHXA	9.84				8.00		123	55-150		
13C4-PFHFA	10.1				8.00		126	55-150		
13C8-PFOA	8.45				8.00		106	60-140		
13C9-PFNA	4.15				4.00		104	55-140		
13C6-PFDA	4.30				4.00		107	50-140		
13C7-PFUnA	4.41				4.00		110	30-140		
13C2-PFDOA	3.79				4.00		94.7	10-150		
13C2-PFTEDA	4.29				4.00		107	10-130		
13C3-PFBS	8.96				8.00		112	55-150		
13C3-PFHXS	9.04				8.00		113	55-150		
13C8-PFOS	8.16				8.00		102	45-140		
13C2-4:2FTS	21.9				16.0		137	60-200		
13C2-6:2FTS	19.2				16.0		120	60-200		
13C2-8:2FTS	17.7				16.0		111	50-200		
13C8-PFOA	7.73				8.00		96.6	30-130		
D3-NMEFOSA	4.08				8.00		51.1	15-130		
D5-NETFOSA	4.39				8.00		54.8	10-130		
D3-NMEFOSAA	15.6				16.0		97.3	45-200		
D5-NETFOSAA	15.7				16.0		97.8	10-200		
D7-NMEFOSE	53.7				80.0		67.1	10-150		
D9-NETFOSE	59.4				80.0		74.3	10-150		
13C3-HFPO-DA	39.1				32.0		122	25-160		

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Project: Red Hill AFFF Assessment Sampling
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Notes and Definitions

Item	Definition
BS2	Blank spike recovered above the upper control limit
CV2	Calibration verification recovered above the upper control limit
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
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
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: 04/13/2023 11:08



WORK ORDER

23C0222

Printed: 04/13/2023 11:09 am

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: 03/24/2023 02:55 PM
Date Due: 03/31/2023 (5.00 day TAT)

Logged In By: Megan Salata
Received By: Lincoln Hooper

Analysis

Comments

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: 04/13/2023 11:08

23C0222

Sample Receipt Log

Default Cooler

Samples Received at: **-0.3°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. 2303W3AFAL01

2300222

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		Sampler (Print)		Analysis Requested/Method Number										Date Shipped: 3/23/23		
Purchase Order Number		Sampler (Signature)		No. of Containers	Matrix			PFAS EPA Draft 1633								Carrier: <u>United</u>
Sample Identification		Location	Date Collected		Time Collected	Time Zone	Aq		Sed.	Soil						
CTO N6274223F0104 / 60697810		<u>Andy Young</u>		2	✓			✓	ASYS 3/23/23							Comments: EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW
AF-RHMW02-WGN01LF-2303W3		<u>RHMW02</u>	<u>3/23/23</u>						<u>1050</u>	<u>HST</u>						

Shuttle Temperature: IRB: 2.3/-0.3°C

Turnaround Requested: Check one
 Standard 2-3 wk One week 3 days 24/48 Hrs Other: 5 day TAT

Sample Disposal: Return to client Disposal by Lab (30-day retention)

Relinquished by sampler: Andy Young Date: 3/23/23 Time: 1430

Received by: Brittany Tominez Date: 03/23/23 Time: 1450

Relinquished by: _____ Date: _____ Time: _____

Received at lab by: Judith Lopez Date: 03/25/23 Time: 1455

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. 2303W3AFAL02

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	Sampler (Print)		Analysis Requested/Method Number					Date Shipped: 3/23/23						
	Sampler (Signature)		No. of Containers	Matrix			PFAS EPA Draft 1633							
Purchase Order Number				Aq	Sed.	Soil							Carrier: <i>United</i>	
Sample Identification	Location	Date Collected	Time Collected	Time Zone									Waybill No: <i>16 74633871</i>	
CTO N6274223F0104 / 60697810	<i>Andy Young</i>					2	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>			Comments: EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GWEDMS Coverage:
	<i>R1TRW03</i>	<i>3/23/23</i>	<i>1255</i>	<i>HST</i>										

Shuttle Temperature: Turnaround Requested: Check one
 Standard 2-3 wk One week 3 days 24/48 Hrs. Other: **5 day TAT**
 Sample Disposal: Return to client Disposal by Lab (30-day retention)

Relinquished by sampler: *Andy Young* Date: *3/23/23* Time: *1430* Received by: *Brittany Tominez*
 Relinquished by: *Brittany Tominez* Date: *03/23/23* Time: *1460* Received by:
 Relinquished by: Date: *03/24/23* Time: *1455* Received at lab by: *[Signature]*

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

12/05/20

CUSTODY SEAL

AECOM (808) 521-3051

Initials [Signature] Date 3/23/20



EQ-100-93

12/05/20

With The Incentive...