Regional Water Authority

90 Sargent Drive • New Haven, Connecticut 06511-5966

203-401-6743 or 877-894-5773 (Telephone) • Website: www.rwater.com

Laboratory Certification IDs

CT: PH-0411, NH: 2239, NY: 11867, PA: 68-05519, RI: LAO00339, MA: M-CT004

See website, www.rwalab.com/rwa-lab-certifications, for certified analyte list.

Client:

Paul Hennessy
Randolph-Holbrook Joint Water

275 Pond St
Randolph, MA 02368

781-964-9292
phennessy@holbrookmassachusetts.us

ANALYTICAL REPORT

Project: FEE-RANDOLPHHOLBROOK-23-000009

Report Date: 8/15/2023

This Laboratory is in compliance with the NELAP requirements of procedures used except where indicated .
This report contains results for the analysis tested, under the sampling conditions described on the Chain Of Custody (COC), as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.
The COC form has been scanned to accompany the analytical report and is an exact copy of the original.
If you are the client above and have any questions concerning this testing, please do not hesitate to contact RWA Client Services at (203) 401-6743 or (877) 894-5773. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Technical Representative

Regional Water Authority
90 Sargent Drive • New Haven, Connecticut 06511-5966
203-401-6743 or 877-894-5773 (Telephone) • Website: www.rwater.com

SAMPLE SUMMARY

Sample ID	Customer ID	Collection Date/Time	Receipt Date
300379873	RAW	7/11/2023 1300	7/12/23
300379874	FINISHED	7/11/2023 1300	7/12/23
300379898	FB - RAW	7/11/2023 1300	7/12/23
300379899	FB - FINISHED	7/11/2023 1300	7/12/23

Regional Water Authority

90 Sargent Drive • New Haven, Connecticut 06511-5966

203-401-6743 or 877-894-5773 (Telephone) • Website: www.rwater.com

Case Narrative and Comments

All QC passes criteria unless noted in a Comment below.

Samples were received at the appropriate temperature and in accordance with the chain of custody unless noted.

E = Exceeds calibration range **ND** = Non Detect **FB** = Field Blank

RL = Minimum Reporting Level **MDL** = Method Detection Limit

J = The reported result is below RL but greater than the MDL. The reported result is an estimate.

Massachusetts samples for required water quality sampling are included.

Samples and FBs were received in bottles with preservatives Trizma HCL & Trizma base per method requirements.

"FB" added at beginning/end designates "Field Blank" (Field Reagent Blank) for associated Customer ID sample. Field Blank analytes (unless noted) were shown to be less than 1/3 of the RL as per EPA537 or EPA537.1.

Method EPA537 or EPA537.1 Analyte Results, MDL and RL are adjusted to reflect the actual Final (mL) volume used.

Method	CAS#	PFAS Analyte (Acronymn)
537, 537.1	1763-23-1	Perfluorooctanesulfonic acid (PFOS)
537, 537.1	335-67-1	Perfluorooctanoic acid (PFOA)
537, 537.1	355-46-4	Perfluorohexanesulfonic acid (PFHxS)
537, 537.1	375-95-1	Perfluorononanoic acid (PFNA)
537, 537.1	375-85-9	Perfluorohepatanoic acid (PFHpA)
537, 537.1	335-76-2	Perfluorodecanoic acid (PFDA)
537, 537.1	375-73-5	Perfluorobutanesulfonic acid (PFBS)
537, 537.1	307-55-1	Perfluorododecanoic acid (PFDoA)
537, 537.1	307-24-4	Perfluorohexanoic acid (PFHxA)
537, 537.1	376-06-7	Perfluorotetradecanoic acid (PFTA)
537, 537.1	72629-94-8	Perfluorotridecanoic acid (PFTrDA)
537, 537.1	2058-94-8	Perfluoroundecanoic acid (PFUnA)
537, 537.1	2991-50-6	N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537, 537.1	2355-31-9	N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537.1	763051-92-9	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
537.1	756426-58-1	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)
537.1	919005-14-4	4,8-dioxa-3H-perfluorononanoic acid (ADONA)
537.1	13252-13-6	Hexafluoropropylene oxide dimer acid (HFPO-DA)

PFAS6 (MassDEP) = sum of PFOS, PFOA, PFHxS, PFNA, PFHpA and PFDA (only include Results at or above the RL)

MassDEP has established a maximum contaminant level (MCL) of 20 ng/L for PFAS6.

Method EPA537 Analyte Results and RL are adjusted to reflect the actual sample Final (mL) volume used.

Sample# 300379899 Field Blank for EPA 537: fails low for d5-NEtFOSAA surrogate recovery; the associated analytes NMeFOSAA and NEtFOSAA are suspect. This surrogate does not affect the data for the PFAS6 MassDEP compounds; the data for PFAS6 is valid.

Regional Water Authority
90 Sargent Drive • New Haven, Connecticut 06511-5966
203-401-6743 or 877-894-5773 (Telephone) • Website: www.rwater.com

Sample ID: 300379873
Collection Date: 07/11/2023 13:00

Customer ID: RAW
PWS ID# / LOC ID#: RAW
Project: FEE-RANDOLPHHOLBROOK-23-000009

Analyte	CAS#	Results	MDL	RL	Units	Dilution	Qualifier	Method	Date Time/ Analyzed	Analyst
PFBS	375-73-5	2.13	0.92	2.06	ng/L	1.03		EPA537	7/30/23 2159	CSS/GMA
PFHxA	307-24-4	3.33	0.70	2.06	ng/L	1.03		EPA537	7/30/23 2159	CSS/GMA
PFHpA	375-85-9	1.94	0.64	2.06	ng/L	1.03	J	EPA537	7/30/23 2159	CSS/GMA
PFHxS	355-46-4	2.68	0.93	2.06	ng/L	1.03		EPA537	7/30/23 2159	CSS/GMA
PFOA	335-67-1	4.97	0.74	2.06	ng/L	1.03		EPA537	7/30/23 2159	CSS/GMA
PFOS	1763-23-1	7.62	0.92	2.06	ng/L	1.03		EPA537	7/30/23 2159	CSS/GMA
PFNA	375-95-1	1.03	0.65	2.06	ng/L	1.03	J	EPA537	7/30/23 2159	CSS/GMA
PFDA	335-76-2	ND	0.74	2.06	ng/L	1.03		EPA537	7/30/23 2159	CSS/GMA
PFUnA	2058-94-8	ND	0.94	2.06	ng/L	1.03		EPA537	7/30/23 2159	CSS/GMA
NMeFOSAA	2355-31-9	ND	1.23	2.06	ng/L	1.03		EPA537	7/30/23 2159	CSS/GMA
NEtFOSAA	2991-50-6	ND	1.06	2.06	ng/L	1.03		EPA537	7/30/23 2159	CSS/GMA
PFDoA	307-55-1	ND	0.85	2.06	ng/L	1.03		EPA537	7/30/23 2159	CSS/GMA
PFTrDA	72629-94-8	ND	0.93	2.06	ng/L	1.03		EPA537	7/30/23 2159	CSS/GMA
PFTA	376-06-7	ND	1.00	2.06	ng/L	1.03		EPA537	7/30/23 2159	CSS/GMA
PFAS6 (MassDEP)		15.27	2.06	2.06	ng/L	1.03				

Surrogates	Results	Recovery Limits	Pass/Fail
13C-PFHxA (SUR) % Recovery	90.90	70 - 130	Pass
13C-PFDA (SUR) % Recovery	87.70	70 - 130	Pass
d5-NEtFOSAA (SUR) % Recovery	82.00	70 - 130	Pass

Sample Extraction Data:

Lab Number (Field ID)	Prep Method	Batch	Final (mL)	Date
300379873	PFAS_537	537_EXT-230717-1	242	07/17/2023

Regional Water Authority

90 Sargent Drive • New Haven, Connecticut 06511-5966

203-401-6743 or 877-894-5773 (Telephone) • Website: www.rwater.com

Sample ID: 300379874

Collection Date: 07/11/2023 13:00

Customer ID: FINISHED

PWS ID# / LOC ID#: 4244001 / 10296

Project: FEE-RANDOLPHHOLBROOK-23-000009

Analyte	CAS#	Results	MDL	RL	Units	Dilution	Qualifier	Method	Date Time/ Analyzed	Analyst
PFBS	375-73-5	1.74	0.89	2.0	ng/L	1.0	J	EPA537	7/30/23 2228	CSS/GMA
PFHxA	307-24-4	3.20	0.68	2.0	ng/L	1.0		EPA537	7/30/23 2228	CSS/GMA
PFHpA	375-85-9	1.88	0.62	2.0	ng/L	1.0	J	EPA537	7/30/23 2228	CSS/GMA
PFHxS	355-46-4	2.61	0.90	2.0	ng/L	1.0		EPA537	7/30/23 2228	CSS/GMA
PFOA	335-67-1	4.58	0.72	2.0	ng/L	1.0		EPA537	7/30/23 2228	CSS/GMA
PFOS	1763-23-1	7.30	0.89	2.0	ng/L	1.0		EPA537	7/30/23 2228	CSS/GMA
PFNA	375-95-1	0.96	0.63	2.0	ng/L	1.0	J	EPA537	7/30/23 2228	CSS/GMA
PFDA	335-76-2	ND	0.72	2.0	ng/L	1.0		EPA537	7/30/23 2228	CSS/GMA
PFUnA	2058-94-8	ND	0.91	2.0	ng/L	1.0		EPA537	7/30/23 2228	CSS/GMA
NMeFOSAA	2355-31-9	ND	1.19	2.0	ng/L	1.0		EPA537	7/30/23 2228	CSS/GMA
NEtFOSAA	2991-50-6	ND	1.03	2.0	ng/L	1.0		EPA537	7/30/23 2228	CSS/GMA
PFDoA	307-55-1	ND	0.83	2.0	ng/L	1.0		EPA537	7/30/23 2228	CSS/GMA
PFTrDA	72629-94-8	ND	0.90	2.0	ng/L	1.0		EPA537	7/30/23 2228	CSS/GMA
PFTA	376-06-7	ND	0.97	2.0	ng/L	1.0		EPA537	7/30/23 2228	CSS/GMA
PFAS6 (MassDEP)		14.49	2.00	2.00	ng/L	1.0				

Surrogates	Results	Recovery Limits	Pass/Fail
13C-PFHxA (SUR) % Recovery	86.20	70 - 130	Pass
13C-PFDA (SUR) % Recovery	82.50	70 - 130	Pass
d5-NEtFOSAA (SUR) % Recovery	77.10	70 - 130	Pass

Sample Extraction Data:

Lab Number (Field ID)	Prep Method	Batch	Final (mL)	Date
300379874	PFAS_537	537_EXT-230717-1	250	07/17/2023

Regional Water Authority
90 Sargent Drive • New Haven, Connecticut 06511-5966
203-401-6743 or 877-894-5773 (Telephone) • Website: www.rwater.com

Sample ID: 300379898
Collection Date: 07/11/2023 13:00

Customer ID: FB - RAW
PWS ID# / LOC ID#: FB - RAW
Project: FEE-RANDOLPHHOLBROOK-23-000009

Analyte	CAS#	Results	MDL	RL	Units	Dilution	Qualifier	Method	Date Time/ Analyzed	Analyst
PFBS	375-73-5	ND	0.89	2.0	ng/L	1.0		EPA537	7/30/23 2214	CSS/GMA
PFHxA	307-24-4	ND	0.68	2.0	ng/L	1.0		EPA537	7/30/23 2214	CSS/GMA
PFHpA	375-85-9	ND	0.62	2.0	ng/L	1.0		EPA537	7/30/23 2214	CSS/GMA
PFHxS	355-46-4	ND	0.90	2.0	ng/L	1.0		EPA537	7/30/23 2214	CSS/GMA
PFOA	335-67-1	ND	0.72	2.0	ng/L	1.0		EPA537	7/30/23 2214	CSS/GMA
PFOS	1763-23-1	ND	0.89	2.0	ng/L	1.0		EPA537	7/30/23 2214	CSS/GMA
PFNA	375-95-1	ND	0.63	2.0	ng/L	1.0		EPA537	7/30/23 2214	CSS/GMA
PFDA	335-76-2	ND	0.72	2.0	ng/L	1.0		EPA537	7/30/23 2214	CSS/GMA
PFUnA	2058-94-8	ND	0.91	2.0	ng/L	1.0		EPA537	7/30/23 2214	CSS/GMA
NMeFOSAA	2355-31-9	ND	1.19	2.0	ng/L	1.0		EPA537	7/30/23 2214	CSS/GMA
NEtFOSAA	2991-50-6	ND	1.03	2.0	ng/L	1.0		EPA537	7/30/23 2214	CSS/GMA
PFDoA	307-55-1	ND	0.83	2.0	ng/L	1.0		EPA537	7/30/23 2214	CSS/GMA
PFTrDA	72629-94-8	ND	0.90	2.0	ng/L	1.0		EPA537	7/30/23 2214	CSS/GMA
PFTA	376-06-7	ND	0.97	2.0	ng/L	1.0		EPA537	7/30/23 2214	CSS/GMA
PFAS6 (MassDEP)		ND	2.00	2.00	ng/L	1.0				

Surrogates	Results	Recovery Limits	Pass/Fail
13C-PFHxA (SUR) % Recovery	100.20	70 - 130	Pass
13C-PFDA (SUR) % Recovery	88.00	70 - 130	Pass
d5-NEtFOSAA (SUR) % Recovery	88.70	70 - 130	Pass

Sample Extraction Data:

Lab Number (Field ID)	Prep Method	Batch	Final (mL)	Date
300379898	PFAS_537	537_EXT-230717-1	250	07/17/2023

Regional Water Authority

90 Sargent Drive • New Haven, Connecticut 06511-5966

203-401-6743 or 877-894-5773 (Telephone) • Website: www.rwater.com

Sample ID: 300379899

Collection Date: 07/11/2023 13:00

Customer ID: FB - FINISHED

PWS ID# / LOC ID#: FB - FINISHED

Project: FEE-RANDOLPHHOLBROOK-23-000009

Analyte	CAS#	Results	MDL	RL	Units	Dilution	Qualifier	Method	Date Time/ Analyzed	Analyst
PFBS	375-73-5	ND	0.92	2.06	ng/L	1.03		EPA537	7/30/23 2243	CSS/GMA
PFHxA	307-24-4	ND	0.70	2.06	ng/L	1.03		EPA537	7/30/23 2243	CSS/GMA
PFHpA	375-85-9	ND	0.64	2.06	ng/L	1.03		EPA537	7/30/23 2243	CSS/GMA
PFHxS	355-46-4	ND	0.93	2.06	ng/L	1.03		EPA537	7/30/23 2243	CSS/GMA
PFOA	335-67-1	ND	0.74	2.06	ng/L	1.03		EPA537	7/30/23 2243	CSS/GMA
PFOS	1763-23-1	ND	0.92	2.06	ng/L	1.03		EPA537	7/30/23 2243	CSS/GMA
PFNA	375-95-1	ND	0.65	2.06	ng/L	1.03		EPA537	7/30/23 2243	CSS/GMA
PFDA	335-76-2	ND	0.74	2.06	ng/L	1.03		EPA537	7/30/23 2243	CSS/GMA
PFUnA	2058-94-8	ND	0.94	2.06	ng/L	1.03		EPA537	7/30/23 2243	CSS/GMA
NMeFOSAA	2355-31-9	ND	1.23	2.06	ng/L	1.03		EPA537	7/30/23 2243	CSS/GMA
NEtFOSAA	2991-50-6	ND	1.06	2.06	ng/L	1.03		EPA537	7/30/23 2243	CSS/GMA
PFDoA	307-55-1	ND	0.85	2.06	ng/L	1.03		EPA537	7/30/23 2243	CSS/GMA
PFTrDA	72629-94-8	ND	0.93	2.06	ng/L	1.03		EPA537	7/30/23 2243	CSS/GMA
PFTA	376-06-7	ND	1.00	2.06	ng/L	1.03		EPA537	7/30/23 2243	CSS/GMA
PFAS6 (MassDEP)		ND	2.06	2.06	ng/L	1.03				

Surrogates	Results	Recovery Limits	Pass/Fail
13C-PFHxA (SUR) % Recovery	85.10	70 - 130	Pass
13C-PFDA (SUR) % Recovery	73.30	70 - 130	Pass
d5-NEtFOSAA (SUR) % Recovery	68.30	70 - 130	Fail

Sample Extraction Data:

Lab Number (Field ID)	Prep Method	Batch	Final (mL)	Date
300379899	PFAS_537	537_EXT-230717-1	242	07/17/2023

Regional Water Authority
90 Sargent Dr, New Haven, CT 06511
Phone: 203-401-2700
Fax: 203-401-6799

Chain of Custody Form

Company Name	Company Address
RANDOLPH/HOLBROOK JOINT WATER	275 POND ST. RANDOLPH, MA 02368

Sampler	PO Number

RWA LIMS Number	Date Collected	Time Collected	Sample ID / Sample Location	Number of Bottles	Test Requested, Container, & Preservative: PFAS PFAS 14 250mL Plastic w/Trizma & Tris (Hydroxymethyl) Aminomethane	Test Requested, Container, & Preservative: PFAS Poured Field Blank 250mL Plastic w/Trizma & Tris (Hydroxymethyl) Aminomethane					Comments
3003 79873	7/11/23	1PM	① RAN	5	4	1	FB-	898			NOT FOR COMPLIANCE
874	7/11/23	1PM	② FINISHED	5	4	1	FB-	899			MA DEP COMPLIANCE

State Sample Collected:
CT___ NY___ Other(specify) MA

Evidence of Cooling (Circle): Y or N
Cooler Temp °C: 1.9

Container & Preservative Meet Criteria (Circle): Yes/ No

LOT # SLCN1650
LOT # SLCN1665

Relinquished By (Signature):	Relinquished by (Signature):
PAUL HENNESSY	
Date & Time: 7/11/23 1:15 PM	Date & Time:
Received By (Signature):	Received By (Signature):
Date & Time: 7/12/23 8:30 AM	Date & Time:

Comments: PFAS 14

Fee - RANDOLPHHOLBROOK-23-000009

South Central Connecticut Regional Water Authority PFAS QA/QC Summary

Extraction Batch QC for: EPA 537.1 **MA Lab Cert.#:** M-CT004

Extraction Batch Date: 7/30/2023 **Sample ID for LFSM/LFSMD:** 300381602

Analyte	LFSM %Recovery	LFSMD %Recovery	RPD of LFSM/LFSMD	LRB (MRL is 2)		LFB 10 ng/L %Recovery
	Acceptance Range 70-130%	Acceptance Range 70-130%	Acceptance Limit <30%	Result, ng/L	Meets < 1/3 of MRL criteria?	Acceptance Range 70-130%
PFBS	99.6	99.0	0.6	ND	[Y]	103.8
PFHxA	91.4	96.9	5.8	ND	[Y]	95.6
HFPO-DA	88.3	94.0	6.3	ND	[Y]	93.4
PFHpA	91.6	97.3	6.0	ND	[Y]	94.4
PFHxS	99.8	106.0	6.0	ND	[Y]	101.5
ADONA	90.5	95.8	5.6	ND	[Y]	96.8
PFOA	95.9	100.2	4.4	ND	[Y]	103.5
PFOS	88.0	92.3	4.7	ND	[Y]	95.8
PFNA	93.7	99.2	5.8	ND	[Y]	96.8
9Cl-PF3ONS	87.6	89.3	1.9	ND	[Y]	88.8
PFDA	93.6	92.6	1.1	ND	[Y]	94.4
PFUnA	93.0	89.6	3.8	ND	[Y]	96.2
11Cl-PF3OUdS	86.9	85.8	1.3	ND	[Y]	87.9
NMeFOSAA	89.4	95.9	7.0	ND	[Y]	82.1
NEtFOSAA	86.2	79.6	7.9	ND	[Y]	94.2
PFDoA	94.0	89.1	5.4	ND	[Y]	90.0
PFTrDA	93.4	88.7	5.2	ND	[Y]	89.2
PFTA	90.7	86.4	4.9	ND	[Y]	91.4

Surrogate %Recovery

$^{13}C_2$-PFHxA	$^{13}C_3$-HFPO-DA	$^{13}C_2$-PFDA	$^{d}_5$-NEtFOSAA	
95.50	92.80	90.80	87.80	LFSM
101.80	101.60	93.50	86.00	LFSMD
90.90	89.00	84.70	80.30	LRB
100.00	98.60	90.60	89.20	LFB

Note: The Surrogate %Recovery for Samples and Poured Field Blanks is included on Final Reports.

All Batch QC passes method criteria unless noted in "Comments" section below

Comments: The matrix spike data ***is not*** from a sample submitted on this Chain of Custody.

LRB = Laboratory Reagent Blank
LFB = Laboratory Fortified Blank
LFSM = Laboratory Fortified Sample Matrix
LFSMD = Laboratory Fortified Sample Matrix Duplicate
RPD = relative percent difference
MRL = Method Reporting Level
FB = Field Blank
ND = Non-Detect
Results are ng/L (ppt)
LFSM/LFSMD spike concentration is 20 ng/L, unless noted otherwise
Surrogate Acceptance Limit is 70 - 130% Recovery