

From: Paul Lindquist <PLINDQUIST@ramboll.com>
Sent: Monday, October 17, 2022 1:46 PM
To: Beggs, Tauren R - DNR
Cc: Kristin Jones (Kristin.Jones@newellco.com); Jeanne Tarvin; Susan Petrofske
Subject: BRRTS #02-36-588656 (Former Mirro Plant No. 2) Potable Well Sampling Results: 1750 Mirro Dr
Attachments: Data Transmittal Letter-1750 Mirro Drive_Redacted.pdf

Hello Tauren,

Attached is a copy of the data transmittal letter being provided to the property owner at 1750 Mirro Drive for the August 2022 potable well sampling activities completed as part of the Immediate Action Work Plan for the former Mirro Plant No. 2 project (BRRTS #02-36-588656). We received the Level IV analytical reports from the second laboratory for this property on October 13, 2022. The property owner's name has been redacted for privacy purposes. No compounds were detected above the WDHS recommended criteria for select PFAS listed in Cycle 10 and 11 of Groundwater Standards Proposals.

Please let us know if you have any questions or if you would like us to upload the letter to the WDNR submittal portal.

Paul Lindquist

Managing Consultant
1692722 - Great Lakes

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Classification: Confidential

Sent Via Overnight Delivery

██████████
1750 Mirro Drive
Manitowoc, WI 54220

**POTABLE WELL SAMPLING RESULTS AT 1750 MIRRO DRIVE
FORMER MIRRO PLANT NO. 2, 2009 MIRRO DRIVE
MANITOWOC, WISCONSIN, BRRTS NO. 02-36-588656**

Dear ██████████:

The purpose of this letter is to provide you with the results of the recent potable well testing from your property completed by Newell Operating Company (NOC) with the oversight of the Wisconsin Department of Natural Resources (WDNR). As you are aware, this testing was conducted because of the potential for per- and polyfluoroalkyl substances (PFAS) contaminated groundwater to migrate off site from the nearby former Mirro Plant No. 2 facility.

On August 25, 2022, NOC's environmental consultant, Ramboll US Consulting, Inc. (Ramboll), collected water samples from your potable well using the spigot prior to your pressure tank. Ramboll submitted the samples to two different State of Wisconsin PFAS certified laboratories: Eurofins Environment Testing (Eurofins) in Sacramento, California, and Pace Analytical Services, Inc. (Pace) in Baton Rouge, Louisiana.

Your Test Results

Copies of the laboratory reports for your potable well samples are enclosed. The analyses did not detect any PFAS in your potable well sample.

If you have any questions regarding the quality of your potable well water, please contact the following:


- Tauren Beggs, WDNR, (920) 510-3472, Tauren.Beggs@wisconsin.gov; or
- Nathan Kloczko, WDHS, (608) 267-3227, Nathan.Kloczko@dhs.wisconsin.gov.

For any other questions regarding this letter, please contact Lou Meschede at (219) 781-7177.

Sincerely,


Paul Lindquist
Managing Consultant

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plindquist@ramboll.com


Jeanne M. Tarvin, PG, CPG
E&H Americas Country Market Director

D +1 262 901 0085
jtarkin@ramboll.com

cc: Kristin Jones, NOC
Tauren Beggs, WDNR
Nathan Kloczko, WDHS

October 14, 2022

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Ref 1690026073



ENCLOSURES

EUROFINS AND PACE LABORATORY ANALYTICAL REPORTS

ANALYTICAL REPORT

Eurofins Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-221455-1
Client Project/Site: Manitowoc, WI - 1690026073

For:
Ramboll US Corporation
234 W. Florida Street
Fifth Floor
Milwaukee, Wisconsin 53204

Attn: Paul Lindquist



Authorized for release by:
9/28/2022 8:20:25 PM

Sandie Fredrick, Project Manager II
(920)261-1660
Sandra.Fredrick@et.eurofinsus.com

LINKS

Review your project
results through



Have a Question?



Visit us at:

www.eurofinsus.com/Env

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: Ramboll US Corporation
Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Job ID: 500-221455-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative 500-221455-1

Comments

No additional comments.

Receipt

The samples were received on 8/26/2022 8:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.1° C.

Receipt Exceptions

The container label for the following samples did not match the information listed on the Chain-of-Custody (COC): 1750-E (500-221455-1), 1750-E (500-221455-1[MSJ]), 1750-E (500-221455-1[MSD]) and 1750-E-FB (500-221455-2). Samples 1 & 2 (including MS/MSD), all have container ID as 1750-P but COC/Login lists ID as 1750-E. Client confirmed COC is correct.

LCMS

Method 537 (modified): 13C2-PFOA Internal standard (ISTD) response for the following samples was outside control limits: 1750-E (500-221455-1), 1750-E (500-221455-1[MSJ]), 1750-E (500-221455-1[MSD]), 1750-E-FB (500-221455-2) and (LCS 320-616181/2-A). The samples were re-analyzed and the results confirmed. The ISTD is not used to quantitate any client target analytes, therefore the original data were reported.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples are below the method recommended limit: 1750-E (500-221455-1[MSJ]) and 1750-E (500-221455-1[MSD]). The samples were re-analyzed and the low IDA recoveries confirmed. The original data were reported. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

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

Organic Prep

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

Detection Summary

Client: Ramboll US Corporation
Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Client Sample ID: 1750-E

Lab Sample ID: 500-221455-1

No Detections.

Client Sample ID: 1750-E-FB

Lab Sample ID: 500-221455-2

No Detections.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

This Detection Summary does not include radiochemical test results.

Eurofins Chicago

Method Summary

Client: Ramboll US Corporation
Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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- 4
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- 7
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- 11
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- 13
- 14
- 15
- 16

Sample Summary

Client: Ramboll US Corporation
Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-221455-1	1750-E	Water	08/25/22 09:15	08/26/22 08:50
500-221455-2	1750-E-FB	Water	08/25/22 09:20	08/26/22 08:50

- 1
- 2
- 3
- 4
- 5
- 6
- 7
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- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

Client Sample Results

Client: Ramboll US Corporation
 Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Client Sample ID: 1750-E

Lab Sample ID: 500-221455-1

Date Collected: 08/25/22 09:15

Matrix: Water

Date Received: 08/26/22 08:50

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.2		4.5	2.2	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluoropentanoic acid (PFPeA)	<0.44		1.8	0.44	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluorohexanoic acid (PFHxA)	<0.53		1.8	0.53	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluoroheptanoic acid (PFHpA)	<0.23		1.8	0.23	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluorooctanoic acid (PFOA)	<0.77		1.8	0.77	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluorodecanoic acid (PFDA)	<0.28		1.8	0.28	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.8	1.0	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluorododecanoic acid (PFDoA)	<0.50		1.8	0.50	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluorotridecanoic acid (PFTrDA)	<1.2		1.8	1.2	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluorotetradecanoic acid (PFTeA)	<0.66		1.8	0.66	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluoropentanesulfonic acid (PFPeS)	<0.27		1.8	0.27	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluorohexanesulfonic acid (PFHxS)	<0.52		1.8	0.52	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.17		1.8	0.17	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluorooctanesulfonic acid (PFOS)	<0.49		1.8	0.49	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluorononanesulfonic acid (PFNS)	<0.34		1.8	0.34	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluorodecanesulfonic acid (PFDS)	<0.29		1.8	0.29	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluorododecanesulfonic acid (PFDoS)	<0.88		1.8	0.88	ng/L		09/12/22 19:09	09/15/22 06:15	1
Perfluorooctanesulfonamide (FOSA)	<0.89		1.8	0.89	ng/L		09/12/22 19:09	09/15/22 06:15	1
NEtFOSA	<0.79		1.8	0.79	ng/L		09/12/22 19:09	09/15/22 06:15	1
NMeFOSA	<0.39		1.8	0.39	ng/L		09/12/22 19:09	09/15/22 06:15	1
NMeFOSAA	<1.1		4.5	1.1	ng/L		09/12/22 19:09	09/15/22 06:15	1
NEtFOSAA	<1.2		4.5	1.2	ng/L		09/12/22 19:09	09/15/22 06:15	1
NMeFOSE	<1.3		3.6	1.3	ng/L		09/12/22 19:09	09/15/22 06:15	1
NEtFOSE	<0.77		1.8	0.77	ng/L		09/12/22 19:09	09/15/22 06:15	1
4:2 FTS	<0.22		1.8	0.22	ng/L		09/12/22 19:09	09/15/22 06:15	1
6:2 FTS	<2.3		4.5	2.3	ng/L		09/12/22 19:09	09/15/22 06:15	1
8:2 FTS	<0.42		1.8	0.42	ng/L		09/12/22 19:09	09/15/22 06:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.36		1.8	0.36	ng/L		09/12/22 19:09	09/15/22 06:15	1
HFPO-DA (GenX)	<1.4		3.6	1.4	ng/L		09/12/22 19:09	09/15/22 06:15	1
9Cl-PF3ONS	<0.22		1.8	0.22	ng/L		09/12/22 19:09	09/15/22 06:15	1
11Cl-PF3OUdS	<0.29		1.8	0.29	ng/L		09/12/22 19:09	09/15/22 06:15	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	26		25 - 150	09/12/22 19:09	09/15/22 06:15	1
13C5 PFPeA	27		25 - 150	09/12/22 19:09	09/15/22 06:15	1
13C2 PFHxA	27		25 - 150	09/12/22 19:09	09/15/22 06:15	1
13C4 PFHpA	27		25 - 150	09/12/22 19:09	09/15/22 06:15	1
13C4 PFOA	27		25 - 150	09/12/22 19:09	09/15/22 06:15	1
13C5 PFNA	28		25 - 150	09/12/22 19:09	09/15/22 06:15	1
13C2 PFDA	28		25 - 150	09/12/22 19:09	09/15/22 06:15	1
13C2 PFUnA	30		25 - 150	09/12/22 19:09	09/15/22 06:15	1
13C2 PFDoA	31		25 - 150	09/12/22 19:09	09/15/22 06:15	1
13C2 PFTeDA	37		25 - 150	09/12/22 19:09	09/15/22 06:15	1
13C3 PFBS	32		25 - 150	09/12/22 19:09	09/15/22 06:15	1
18O2 PFHxS	32		25 - 150	09/12/22 19:09	09/15/22 06:15	1

Eurofins Chicago

Client Sample Results

Client: Ramboll US Corporation
Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Client Sample ID: 1750-E

Date Collected: 08/25/22 09:15

Date Received: 08/26/22 08:50

Lab Sample ID: 500-221455-1

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFOS	30		25 - 150	09/12/22 19:09	09/15/22 06:15	1
13C8 FOSA	28		10 - 150	09/12/22 19:09	09/15/22 06:15	1
d3-NMeFOSAA	30		25 - 150	09/12/22 19:09	09/15/22 06:15	1
d5-NEtFOSAA	33		25 - 150	09/12/22 19:09	09/15/22 06:15	1
d-N-MeFOSA-M	27		10 - 150	09/12/22 19:09	09/15/22 06:15	1
d-N-EtFOSA-M	27		10 - 150	09/12/22 19:09	09/15/22 06:15	1
d7-N-MeFOSE-M	28		10 - 150	09/12/22 19:09	09/15/22 06:15	1
d9-N-EtFOSE-M	32		10 - 150	09/12/22 19:09	09/15/22 06:15	1
M2-4:2 FTS	29		25 - 150	09/12/22 19:09	09/15/22 06:15	1
M2-6:2 FTS	28		25 - 150	09/12/22 19:09	09/15/22 06:15	1
M2-8:2 FTS	32		25 - 150	09/12/22 19:09	09/15/22 06:15	1
13C3 HFPO-DA	25		25 - 150	09/12/22 19:09	09/15/22 06:15	1
13C2 10:2 FTS	36		25 - 150	09/12/22 19:09	09/15/22 06:15	1

Client Sample Results

Client: Ramboll US Corporation
 Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Client Sample ID: 1750-E-FB

Lab Sample ID: 500-221455-2

Date Collected: 08/25/22 09:20

Matrix: Water

Date Received: 08/26/22 08:50

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<2.1		4.5	2.1	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluoropentanoic acid (PFPeA)	<0.44		1.8	0.44	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluorohexanoic acid (PFHxA)	<0.52		1.8	0.52	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.8	0.22	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluorooctanoic acid (PFOA)	<0.76		1.8	0.76	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluorodecanoic acid (PFDA)	<0.28		1.8	0.28	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluoroundecanoic acid (PFUnA)	<0.98		1.8	0.98	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluorododecanoic acid (PFDoA)	<0.49		1.8	0.49	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluorotridecanoic acid (PFTrDA)	<1.2		1.8	1.2	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluorotetradecanoic acid (PFTeA)	<0.65		1.8	0.65	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluoropentanesulfonic acid (PFPeS)	<0.27		1.8	0.27	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluorohexanesulfonic acid (PFHxS)	<0.51		1.8	0.51	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.17		1.8	0.17	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluorooctanesulfonic acid (PFOS)	<0.48		1.8	0.48	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluorononanesulfonic acid (PFNS)	<0.33		1.8	0.33	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluorodecanesulfonic acid (PFDS)	<0.29		1.8	0.29	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluorododecanesulfonic acid (PFDoS)	<0.87		1.8	0.87	ng/L		09/12/22 19:09	09/15/22 06:46	1
Perfluorooctanesulfonamide (FOSA)	<0.87		1.8	0.87	ng/L		09/12/22 19:09	09/15/22 06:46	1
NEtFOSA	<0.78		1.8	0.78	ng/L		09/12/22 19:09	09/15/22 06:46	1
NMeFOSA	<0.38		1.8	0.38	ng/L		09/12/22 19:09	09/15/22 06:46	1
NMeFOSAA	<1.1		4.5	1.1	ng/L		09/12/22 19:09	09/15/22 06:46	1
NEtFOSAA	<1.2		4.5	1.2	ng/L		09/12/22 19:09	09/15/22 06:46	1
NMeFOSE	<1.2		3.6	1.2	ng/L		09/12/22 19:09	09/15/22 06:46	1
NEtFOSE	<0.76		1.8	0.76	ng/L		09/12/22 19:09	09/15/22 06:46	1
4:2 FTS	<0.21		1.8	0.21	ng/L		09/12/22 19:09	09/15/22 06:46	1
6:2 FTS	<2.2		4.5	2.2	ng/L		09/12/22 19:09	09/15/22 06:46	1
8:2 FTS	<0.41		1.8	0.41	ng/L		09/12/22 19:09	09/15/22 06:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.36		1.8	0.36	ng/L		09/12/22 19:09	09/15/22 06:46	1
HFPO-DA (GenX)	<1.3		3.6	1.3	ng/L		09/12/22 19:09	09/15/22 06:46	1
9Cl-PF3ONS	<0.21		1.8	0.21	ng/L		09/12/22 19:09	09/15/22 06:46	1
11Cl-PF3OUdS	<0.29		1.8	0.29	ng/L		09/12/22 19:09	09/15/22 06:46	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFBA	33		25 - 150				09/12/22 19:09	09/15/22 06:46	1
13C5 PFPeA	35		25 - 150				09/12/22 19:09	09/15/22 06:46	1
13C2 PFHxA	35		25 - 150				09/12/22 19:09	09/15/22 06:46	1
13C4 PFHpA	36		25 - 150				09/12/22 19:09	09/15/22 06:46	1
13C4 PFOA	36		25 - 150				09/12/22 19:09	09/15/22 06:46	1
13C5 PFNA	37		25 - 150				09/12/22 19:09	09/15/22 06:46	1
13C2 PFDA	37		25 - 150				09/12/22 19:09	09/15/22 06:46	1
13C2 PFUnA	36		25 - 150				09/12/22 19:09	09/15/22 06:46	1
13C2 PFDoA	36		25 - 150				09/12/22 19:09	09/15/22 06:46	1
13C2 PFTeDA	37		25 - 150				09/12/22 19:09	09/15/22 06:46	1
13C3 PFBS	41		25 - 150				09/12/22 19:09	09/15/22 06:46	1
18O2 PFHxS	42		25 - 150				09/12/22 19:09	09/15/22 06:46	1

Eurofins Chicago

Client Sample Results

Client: Ramboll US Corporation
 Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Client Sample ID: 1750-E-FB

Lab Sample ID: 500-221455-2

Date Collected: 08/25/22 09:20

Matrix: Water

Date Received: 08/26/22 08:50

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C4 PFOS	40		25 - 150	09/12/22 19:09	09/15/22 06:46	1
13C8 FOSA	36		10 - 150	09/12/22 19:09	09/15/22 06:46	1
d3-NMeFOSAA	38		25 - 150	09/12/22 19:09	09/15/22 06:46	1
d5-NEtFOSAA	40		25 - 150	09/12/22 19:09	09/15/22 06:46	1
d-N-MeFOSA-M	34		10 - 150	09/12/22 19:09	09/15/22 06:46	1
d-N-EtFOSA-M	35		10 - 150	09/12/22 19:09	09/15/22 06:46	1
d7-N-MeFOSE-M	30		10 - 150	09/12/22 19:09	09/15/22 06:46	1
d9-N-EtFOSE-M	33		10 - 150	09/12/22 19:09	09/15/22 06:46	1
M2-4:2 FTS	40		25 - 150	09/12/22 19:09	09/15/22 06:46	1
M2-6:2 FTS	38		25 - 150	09/12/22 19:09	09/15/22 06:46	1
M2-8:2 FTS	44		25 - 150	09/12/22 19:09	09/15/22 06:46	1
13C3 HFPO-DA	34		25 - 150	09/12/22 19:09	09/15/22 06:46	1
13C2 10:2 FTS	44		25 - 150	09/12/22 19:09	09/15/22 06:46	1

Definitions/Glossary

Client: Ramboll US Corporation
Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.

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

QC Association Summary

Client: Ramboll US Corporation
Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

LCMS

Prep Batch: 616181

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-221455-1	1750-E	Total/NA	Water	3535	
500-221455-2	1750-E-FB	Total/NA	Water	3535	
MB 320-616181/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-616181/2-A	Lab Control Sample	Total/NA	Water	3535	
500-221455-1 MS	1750-E	Total/NA	Water	3535	
500-221455-1 MSD	1750-E	Total/NA	Water	3535	

Analysis Batch: 616819

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-221455-1	1750-E	Total/NA	Water	537 (modified)	616181
500-221455-2	1750-E-FB	Total/NA	Water	537 (modified)	616181
MB 320-616181/1-A	Method Blank	Total/NA	Water	537 (modified)	616181
LCS 320-616181/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	616181
500-221455-1 MS	1750-E	Total/NA	Water	537 (modified)	616181
500-221455-1 MSD	1750-E	Total/NA	Water	537 (modified)	616181

QC Sample Results

Client: Ramboll US Corporation
 Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-616181/1-A
Matrix: Water
Analysis Batch: 616819

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 616181

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	<2.4		5.0	2.4	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluoropentanoic acid (PFPeA)	<0.49		2.0	0.49	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluorotridecanoic acid (PFTrDA)	<1.3		2.0	1.3	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluorotetradecanoic acid (PFTeA)	<0.73		2.0	0.73	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluoropentanesulfonic acid (PFPeS)	<0.30		2.0	0.30	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluorohexanesulfonic acid (PFHxS)	<0.57		2.0	0.57	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.19		2.0	0.19	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluorononanesulfonic acid (PFNS)	<0.37		2.0	0.37	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluorodecanesulfonic acid (PFDS)	<0.32		2.0	0.32	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluorododecanesulfonic acid (PFDoS)	<0.97		2.0	0.97	ng/L		09/12/22 19:09	09/15/22 05:55	1
Perfluorooctanesulfonamide (FOSA)	<0.98		2.0	0.98	ng/L		09/12/22 19:09	09/15/22 05:55	1
NEtFOSA	<0.87		2.0	0.87	ng/L		09/12/22 19:09	09/15/22 05:55	1
NMeFOSA	<0.43		2.0	0.43	ng/L		09/12/22 19:09	09/15/22 05:55	1
NMeFOSAA	<1.2		5.0	1.2	ng/L		09/12/22 19:09	09/15/22 05:55	1
NEtFOSAA	<1.3		5.0	1.3	ng/L		09/12/22 19:09	09/15/22 05:55	1
NMeFOSE	<1.4		4.0	1.4	ng/L		09/12/22 19:09	09/15/22 05:55	1
NEtFOSE	<0.85		2.0	0.85	ng/L		09/12/22 19:09	09/15/22 05:55	1
4:2 FTS	<0.24		2.0	0.24	ng/L		09/12/22 19:09	09/15/22 05:55	1
6:2 FTS	<2.5		5.0	2.5	ng/L		09/12/22 19:09	09/15/22 05:55	1
8:2 FTS	<0.46		2.0	0.46	ng/L		09/12/22 19:09	09/15/22 05:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.40		2.0	0.40	ng/L		09/12/22 19:09	09/15/22 05:55	1
HFPO-DA (GenX)	<1.5		4.0	1.5	ng/L		09/12/22 19:09	09/15/22 05:55	1
9Cl-PF3ONS	<0.24		2.0	0.24	ng/L		09/12/22 19:09	09/15/22 05:55	1
11Cl-PF3OUdS	<0.32		2.0	0.32	ng/L		09/12/22 19:09	09/15/22 05:55	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C4 PFBA	39		25 - 150	09/12/22 19:09	09/15/22 05:55	1
13C5 PFPeA	40		25 - 150	09/12/22 19:09	09/15/22 05:55	1
13C2 PFHxA	41		25 - 150	09/12/22 19:09	09/15/22 05:55	1
13C4 PFHpA	41		25 - 150	09/12/22 19:09	09/15/22 05:55	1
13C4 PFOA	43		25 - 150	09/12/22 19:09	09/15/22 05:55	1
13C5 PFNA	42		25 - 150	09/12/22 19:09	09/15/22 05:55	1
13C2 PFDA	42		25 - 150	09/12/22 19:09	09/15/22 05:55	1
13C2 PFUnA	42		25 - 150	09/12/22 19:09	09/15/22 05:55	1
13C2 PFDoA	41		25 - 150	09/12/22 19:09	09/15/22 05:55	1
13C2 PFTeDA	44		25 - 150	09/12/22 19:09	09/15/22 05:55	1

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QC Sample Results

Client: Ramboll US Corporation
 Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-616181/1-A
Matrix: Water
Analysis Batch: 616819

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 616181

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C3 PFBS	44		25 - 150	09/12/22 19:09	09/15/22 05:55	1
18O2 PFHxS	44		25 - 150	09/12/22 19:09	09/15/22 05:55	1
13C4 PFOS	41		25 - 150	09/12/22 19:09	09/15/22 05:55	1
13C8 FOSA	41		10 - 150	09/12/22 19:09	09/15/22 05:55	1
d3-NMeFOSAA	41		25 - 150	09/12/22 19:09	09/15/22 05:55	1
d5-NEtFOSAA	44		25 - 150	09/12/22 19:09	09/15/22 05:55	1
d-N-MeFOSA-M	37		10 - 150	09/12/22 19:09	09/15/22 05:55	1
d-N-EtFOSA-M	37		10 - 150	09/12/22 19:09	09/15/22 05:55	1
d7-N-MeFOSE-M	38		10 - 150	09/12/22 19:09	09/15/22 05:55	1
d9-N-EtFOSE-M	39		10 - 150	09/12/22 19:09	09/15/22 05:55	1
M2-4:2 FTS	43		25 - 150	09/12/22 19:09	09/15/22 05:55	1
M2-6:2 FTS	45		25 - 150	09/12/22 19:09	09/15/22 05:55	1
M2-8:2 FTS	47		25 - 150	09/12/22 19:09	09/15/22 05:55	1
13C3 HFPO-DA	41		25 - 150	09/12/22 19:09	09/15/22 05:55	1
13C2 10:2 FTS	45		25 - 150	09/12/22 19:09	09/15/22 05:55	1

Lab Sample ID: LCS 320-616181/2-A
Matrix: Water
Analysis Batch: 616819

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 616181

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec
							Limits
Perfluorobutanoic acid (PFBA)	40.0	42.8		ng/L		107	60 - 135
Perfluoropentanoic acid (PFPeA)	40.0	42.8		ng/L		107	60 - 135
Perfluorohexanoic acid (PFHxA)	40.0	43.9		ng/L		110	60 - 135
Perfluoroheptanoic acid (PFHpA)	40.0	43.9		ng/L		110	60 - 135
Perfluorooctanoic acid (PFOA)	40.0	42.3		ng/L		106	60 - 135
Perfluorononanoic acid (PFNA)	40.0	43.3		ng/L		108	60 - 135
Perfluorodecanoic acid (PFDA)	40.0	40.9		ng/L		102	60 - 135
Perfluoroundecanoic acid (PFUnA)	40.0	42.7		ng/L		107	60 - 135
Perfluorododecanoic acid (PFDoA)	40.0	40.7		ng/L		102	60 - 135
Perfluorotridecanoic acid (PFTrDA)	40.0	42.9		ng/L		107	60 - 135
Perfluorotetradecanoic acid (PFTeA)	40.0	42.1		ng/L		105	60 - 135
Perfluorobutanesulfonic acid (PFBS)	35.5	37.3		ng/L		105	60 - 135
Perfluoropentanesulfonic acid (PFPeS)	37.5	40.6		ng/L		108	60 - 135
Perfluorohexanesulfonic acid (PFHxS)	36.5	35.4		ng/L		97	60 - 135
Perfluoroheptanesulfonic acid (PFHpS)	38.2	43.2		ng/L		113	60 - 135
Perfluorooctanesulfonic acid (PFOS)	37.2	40.3		ng/L		108	60 - 135
Perfluorononanesulfonic acid (PFNS)	38.5	42.5		ng/L		111	60 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	41.9		ng/L		109	60 - 135
Perfluorododecanesulfonic acid (PFDoS)	38.8	41.0		ng/L		106	60 - 135

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QC Sample Results

Client: Ramboll US Corporation
 Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-616181/2-A
Matrix: Water
Analysis Batch: 616819

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 616181

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorooctanesulfonamide (FOSA)	40.0	42.9		ng/L		107	60 - 135
NEtFOSA	40.0	41.9		ng/L		105	60 - 135
NMeFOSA	40.0	44.4		ng/L		111	60 - 135
NMeFOSAA	40.0	44.0		ng/L		110	60 - 135
NEtFOSAA	40.0	42.2		ng/L		106	60 - 135
NMeFOSE	40.0	41.5		ng/L		104	60 - 135
NEtFOSE	40.0	41.5		ng/L		104	60 - 135
4:2 FTS	37.5	39.3		ng/L		105	60 - 135
6:2 FTS	38.1	42.2		ng/L		111	60 - 135
8:2 FTS	38.4	41.3		ng/L		108	60 - 135
4,8-Dioxa-3H-perfluoronanoic acid (ADONA)	37.8	38.9		ng/L		103	60 - 135
HFPO-DA (GenX)	40.0	43.8		ng/L		109	60 - 135
9Cl-PF3ONS	37.4	40.8		ng/L		109	60 - 135
11Cl-PF3OUdS	37.8	41.2		ng/L		109	60 - 135

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	35		25 - 150
13C5 PFPeA	36		25 - 150
13C2 PFHxA	36		25 - 150
13C4 PFHpA	36		25 - 150
13C4 PFOA	39		25 - 150
13C5 PFNA	37		25 - 150
13C2 PFDA	38		25 - 150
13C2 PFUnA	38		25 - 150
13C2 PFDoA	40		25 - 150
13C2 PFTeDA	40		25 - 150
13C3 PFBS	39		25 - 150
18O2 PFHxS	40		25 - 150
13C4 PFOS	38		25 - 150
13C8 FOSA	36		10 - 150
d3-NMeFOSAA	37		25 - 150
d5-NEtFOSAA	39		25 - 150
d-N-MeFOSA-M	35		10 - 150
d-N-EtFOSA-M	35		10 - 150
d7-N-MeFOSE-M	34		10 - 150
d9-N-EtFOSE-M	36		10 - 150
M2-4:2 FTS	38		25 - 150
M2-6:2 FTS	39		25 - 150
M2-8:2 FTS	42		25 - 150
13C3 HFPO-DA	36		25 - 150
13C2 10:2 FTS	47		25 - 150

QC Sample Results

Client: Ramboll US Corporation
 Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 500-221455-1 MS
Matrix: Water
Analysis Batch: 616819

Client Sample ID: 1750-E
Prep Type: Total/NA
Prep Batch: 616181

Isotope Dilution	MS MS		Limits
	%Recovery	Qualifier	
13C4 PFHpA	24	*5-	25 - 150
13C4 PFOA	26		25 - 150
13C5 PFNA	25		25 - 150
13C2 PFDA	25		25 - 150
13C2 PFUnA	25		25 - 150
13C2 PFDoA	26		25 - 150
13C2 PFTeDA	27		25 - 150
13C3 PFBS	29		25 - 150
18O2 PFHxS	29		25 - 150
13C4 PFOS	27		25 - 150
13C8 FOSA	26		10 - 150
d3-NMeFOSAA	26		25 - 150
d5-NEtFOSAA	28		25 - 150
d-N-MeFOSA-M	23		10 - 150
d-N-EtFOSA-M	22		10 - 150
d7-N-MeFOSE-M	23		10 - 150
d9-N-EtFOSE-M	25		10 - 150
M2-4:2 FTS	27		25 - 150
M2-6:2 FTS	25		25 - 150
M2-8:2 FTS	28		25 - 150
13C3 HFPO-DA	23	*5-	25 - 150
13C2 10:2 FTS	28		25 - 150

Lab Sample ID: 500-221455-1 MSD
Matrix: Water
Analysis Batch: 616819

Client Sample ID: 1750-E
Prep Type: Total/NA
Prep Batch: 616181

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec		RPD	Limit
				Result	Qualifier				Limits	RPD		
Perfluorobutanoic acid (PFBA)	<2.2		36.2	38.4		ng/L		106	70 - 130	4	30	
Perfluoropentanoic acid (PFPeA)	<0.44		36.2	38.3		ng/L		106	70 - 130	3	30	
Perfluorohexanoic acid (PFHxA)	<0.53		36.2	37.4		ng/L		103	70 - 130	5	30	
Perfluoroheptanoic acid (PFHpA)	<0.23		36.2	41.9		ng/L		116	70 - 130	7	30	
Perfluorooctanoic acid (PFOA)	<0.77		36.2	39.8		ng/L		110	70 - 130	6	30	
Perfluorononanoic acid (PFNA)	<0.24		36.2	39.3		ng/L		109	70 - 130	6	30	
Perfluorodecanoic acid (PFDA)	<0.28		36.2	36.7		ng/L		102	70 - 130	1	30	
Perfluoroundecanoic acid (PFUnA)	<1.0		36.2	38.0		ng/L		105	70 - 130	0	30	
Perfluorododecanoic acid (PFDoA)	<0.50		36.2	38.7		ng/L		107	70 - 130	3	30	
Perfluorotridecanoic acid (PFTTrDA)	<1.2		36.2	40.0		ng/L		111	70 - 130	6	30	
Perfluorotetradecanoic acid (PFTeA)	<0.66		36.2	37.9		ng/L		105	70 - 130	2	30	
Perfluorobutanesulfonic acid (PFBS)	<0.18		32.1	34.7		ng/L		108	70 - 130	5	30	
Perfluoropentanesulfonic acid (PFPeS)	<0.27		33.9	36.6		ng/L		108	70 - 130	6	30	
Perfluorohexanesulfonic acid (PFHxS)	<0.52		33.0	32.9		ng/L		100	70 - 130	6	30	
Perfluoroheptanesulfonic acid (PFHpS)	<0.17		34.5	38.5		ng/L		112	70 - 130	0	30	

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QC Sample Results

Client: Ramboll US Corporation
 Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 500-221455-1 MSD

Matrix: Water

Analysis Batch: 616819

Client Sample ID: 1750-E

Prep Type: Total/NA

Prep Batch: 616181

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	<0.49		33.6	35.5		ng/L		106	70 - 130	0	30
Perfluorononanesulfonic acid (PFNS)	<0.34		34.8	37.4		ng/L		108	70 - 130	3	30
Perfluorodecanesulfonic acid (PFDS)	<0.29		34.9	39.1		ng/L		112	70 - 130	6	30
Perfluorododecanesulfonic acid (PFDoS)	<0.88		35.1	40.6		ng/L		116	70 - 130	5	30
Perfluorooctanesulfonamide (FOSA)	<0.89		36.2	40.6		ng/L		112	70 - 130	2	30
NEtFOSA	<0.79		36.2	40.5		ng/L		112	70 - 130	0	30
NMeFOSA	<0.39		36.2	42.0		ng/L		116	70 - 130	0	30
NMeFOSAA	<1.1		36.2	39.3		ng/L		109	70 - 130	1	30
NEtFOSAA	<1.2		36.2	36.0		ng/L		99	70 - 130	1	30
NMeFOSE	<1.3		36.2	38.3		ng/L		106	70 - 130	2	30
NEtFOSE	<0.77		36.2	36.2		ng/L		100	70 - 130	4	30
4:2 FTS	<0.22		33.9	37.8		ng/L		111	70 - 130	11	30
6:2 FTS	<2.3		34.4	38.2		ng/L		111	70 - 130	1	30
8:2 FTS	<0.42		34.7	36.9		ng/L		106	70 - 130	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.36		34.1	30.3		ng/L		89	70 - 130	6	30
HFPO-DA (GenX)	<1.4		36.2	37.4		ng/L		104	70 - 130	2	30
9Cl-PF3ONS	<0.22		33.8	35.5		ng/L		105	70 - 130	3	30
11Cl-PF3OUdS	<0.29		34.1	38.3		ng/L		112	70 - 130	4	30

Isotope Dilution	MSD MSD		Limits
	%Recovery	Qualifier	
13C4 PFBA	29		25 - 150
13C5 PFPeA	29		25 - 150
13C2 PFHxA	31		25 - 150
13C4 PFHpA	29		25 - 150
13C4 PFOA	31		25 - 150
13C5 PFNA	31		25 - 150
13C2 PFDA	31		25 - 150
13C2 PFUnA	33		25 - 150
13C2 PFDoA	34		25 - 150
13C2 PFTeDA	37		25 - 150
13C3 PFBS	36		25 - 150
18O2 PFHxS	36		25 - 150
13C4 PFOS	36		25 - 150
13C8 FOSA	33		10 - 150
d3-NMeFOSAA	34		25 - 150
d5-NEtFOSAA	36		25 - 150
d-N-MeFOSA-M	30		10 - 150
d-N-EtFOSA-M	30		10 - 150
d7-N-MeFOSE-M	30		10 - 150
d9-N-EtFOSE-M	33		10 - 150
M2-4:2 FTS	33		25 - 150
M2-6:2 FTS	33		25 - 150
M2-8:2 FTS	38		25 - 150
13C3 HFPO-DA	30		25 - 150

Eurofins Chicago

QC Sample Results

Client: Ramboll US Corporation
Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 500-221455-1 MSD
Matrix: Water
Analysis Batch: 616819

Client Sample ID: 1750-E
Prep Type: Total/NA
Prep Batch: 616181

<i>Isotope Dilution</i>	<i>MSD MSD</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C2 10:2 FTS	42		25 - 150

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Lab Chronicle

Client: Ramboll US Corporation
Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Client Sample ID: 1750-E
Date Collected: 08/25/22 09:15
Date Received: 08/26/22 08:50

Lab Sample ID: 500-221455-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			616181	FUB	EET SAC	09/12/22 19:09
Total/NA	Analysis	537 (modified)		1	616819	K1S	EET SAC	09/15/22 06:15

Client Sample ID: 1750-E-FB
Date Collected: 08/25/22 09:20
Date Received: 08/26/22 08:50

Lab Sample ID: 500-221455-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3535			616181	FUB	EET SAC	09/12/22 19:09
Total/NA	Analysis	537 (modified)		1	616819	K1S	EET SAC	09/15/22 06:46

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Accreditation/Certification Summary

Client: Ramboll US Corporation
Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	998204680	08-31-23

- 1
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Eurofins Chicago


24 Bond Street
Chicago, IL 60644
Phone: 773-420-1200 Fax: 773-420-1207

Chain of Custody Record

EUROFINS

Client Information	Sample ID: DUNCAN GLASFORD	Lab ID: Fredrick Sample	Client Name: Frederick Sample	CU No: 570 1041 3 44-81
Client Address: 262573 6315	Client Contact: Sandra Fredrick@eurofins.com	Client Phone: 773-420-1200	Client Email: Sandra Fredrick@eurofins.com	Page: Page 1 of 1

Ramboll S Comp ratio	Analysis Requested	Lab ID: 500-221455
----------------------	--------------------	---------------------------

Address: 262573 6315	Duo Date Requested	 500-221455 COC	500-221455
Material: Water	TAT Requested (days)		
Quantity: 3	Compliance Project: Yes No		
Order #: 22901251011e	Purchase Order Requested		

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Field Filtered Sample (Yes or No)	Performance (Yes or No)	Special Instructions/Note
1750-E	8-25	915	G	Water	XX	N	
1750-E-FB		920	G	Water	XX	N	
				Water			
				Water			
				Water			
				Water			
				Water			
				Water			
				Water			

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	Permit To Client <input type="checkbox"/> Retain <input type="checkbox"/> Archive For
Special Instructions/QC Requirements	

Signature: [Handwritten Signature]	Date/Time: 8-25-22 1600	Company: Ramboll	Signature: [Handwritten Signature]	Date/Time: 8-25-22 1600	Company: FEDEX
			Signature: [Handwritten Signature]	Date/Time: 8-25-22 950	Company: FEDEX

Eurofins Chicago

2417 Bond Street
University Park, IL 60484
Phone: 708-534-5200 Fax: 708-534-5211

Chain of Custody Record



Environment
America

Client Information		Sample: DUNCAN GLASFORD	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 500-104113-44581.1																																																																							
Client Contact: Paul Lindquist		Phone: 262-573-6315	E-Mail: Sandra.Fredrick@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1																																																																							
Company: Ramboll US Corporation		PWSID:	Analysis Requested																																																																									
Address: 234 W. Florida Street Fifth Floor		Due Date Requested:	<table border="1"> <tr> <td rowspan="5">Total Number of containers</td> <td colspan="2">Preservation Codes:</td> </tr> <tr> <td>A - HCL</td> <td>M - Hexane</td> </tr> <tr> <td>B - NaOH</td> <td>N - None</td> </tr> <tr> <td>C - Zn Acetate</td> <td>O - AsNaO2</td> </tr> <tr> <td>D - Nitric Acid</td> <td>P - Na2O4S</td> </tr> <tr> <td>E - NaHSO4</td> <td>Q - Na2SO3</td> </tr> <tr> <td>F - MeOH</td> <td>R - Na2S2O3</td> </tr> <tr> <td>G - Amchlor</td> <td>S - H2SO4</td> </tr> <tr> <td>H - Ascorbic Acid</td> <td>T - TSP Dodecahydrate</td> </tr> <tr> <td>I - Ice</td> <td>U - Acetone</td> </tr> <tr> <td>J - DI Water</td> <td>V - MCAA</td> </tr> <tr> <td>K - EDTA</td> <td>W - pH 4-5</td> </tr> <tr> <td>L - EDA</td> <td>Y - Trizma</td> </tr> <tr> <td></td> <td>Z - other (specify)</td> </tr> <tr> <td colspan="2">City: Milwaukee</td> <td>TAT Requested (days):</td> <td colspan="3">Other:</td> </tr> <tr> <td colspan="2">State, Zip: WI, 53204</td> <td>Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No</td> <td colspan="3"></td> </tr> <tr> <td colspan="2">Phone: 262-901-3510(Tel)</td> <td>PO #:</td> <td colspan="3"></td> </tr> <tr> <td colspan="2">Email: plindquist@ramboll.com</td> <td>Purchase Order Requested</td> <td colspan="3"></td> </tr> <tr> <td colspan="2">Project Name: Manitowoc, WI</td> <td>WO #:</td> <td colspan="3"></td> </tr> <tr> <td colspan="2">Site:</td> <td>Project #:</td> <td colspan="3"></td> </tr> <tr> <td colspan="2"></td> <td>SSOW#:</td> <td colspan="3"></td> </tr> </table>			Total Number of containers	Preservation Codes:		A - HCL	M - Hexane	B - NaOH	N - None	C - Zn Acetate	O - AsNaO2	D - Nitric Acid	P - Na2O4S	E - NaHSO4	Q - Na2SO3	F - MeOH	R - Na2S2O3	G - Amchlor	S - H2SO4	H - Ascorbic Acid	T - TSP Dodecahydrate	I - Ice	U - Acetone	J - DI Water	V - MCAA	K - EDTA	W - pH 4-5	L - EDA	Y - Trizma		Z - other (specify)	City: Milwaukee		TAT Requested (days):	Other:			State, Zip: WI, 53204		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No				Phone: 262-901-3510(Tel)		PO #:				Email: plindquist@ramboll.com		Purchase Order Requested				Project Name: Manitowoc, WI		WO #:				Site:		Project #:						SSOW#:			
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Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA_WI - PFAS, Standard List (33 analytes)
				Preservation Code:			
1750-E	8-25	915	G	Water	X	X	
1750-E-FB	↓	920	↓	Water		X	
				Water			
				Water			
				Water			
				Water			
				Water			
				Water			
				Water			
				Water			
				Water			



Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
<input type="checkbox"/> Non-Hazard	<input type="checkbox"/> Flammable	<input type="checkbox"/> Skin Irritant	<input type="checkbox"/> Poison B
<input type="checkbox"/> Unknown	<input type="checkbox"/> Radiological	<input type="checkbox"/> Return To Client	<input type="checkbox"/> Disposal By Lab
Deliverable Requested: I, II, III, IV, Other (specify)		<input type="checkbox"/> Archive For _____ Months	
Special Instructions/QC Requirements:			

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: <i>[Signature]</i>	Date/Time: 8-25-22 1600	Company: RAMBOLL	Received by: FEDEX
Relinquished by:	Date/Time:	Company:	Date/Time: 8-25-22 1600
Relinquished by:	Date/Time:	Company:	Received by: <i>[Signature]</i>
Relinquished by:	Date/Time:	Company:	Date/Time: 8/26/22 830
Relinquished by:	Date/Time:	Company:	Received by: <i>[Signature]</i>

Page 23 of 27

9/28/2022

Custody Seals Intact: Custody Seal No.: 10: 1750-P 508-222



Login Sample Receipt Checklist

Client: Ramboll US Corporation

Job Number: 500-221455-1

Login Number: 221455

List Number: 1

Creator: Oropeza, Salvador

List Source: Eurofins Sacramento

List Creation: 08/27/22 04:24 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
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.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.1C
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?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Ramboll US Corporation
 Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
500-221455-1	1750-E	26	27	27	27	27	28	28	30
500-221455-1 MS	1750-E	21 *5-	23 *5-	24 *5-	24 *5-	26	25	25	25
500-221455-1 MSD	1750-E	29	29	31	29	31	31	31	33
500-221455-2	1750-E-FB	33	35	35	36	36	37	37	36
LCS 320-616181/2-A	Lab Control Sample	35	36	36	36	39	37	38	38
MB 320-616181/1-A	Method Blank	39	40	41	41	43	42	42	42

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (10-150)	d3NMFOS (25-150)	d5NEFOS (25-150)
500-221455-1	1750-E	31	37	32	32	30	28	30	33
500-221455-1 MS	1750-E	26	27	29	29	27	26	26	28
500-221455-1 MSD	1750-E	34	37	36	36	36	33	34	36
500-221455-2	1750-E-FB	36	37	41	42	40	36	38	40
LCS 320-616181/2-A	Lab Control Sample	40	40	39	40	38	36	37	39
MB 320-616181/1-A	Method Blank	41	44	44	44	41	41	41	44

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	dMeFOSA (10-150)	dEtFOSA (10-150)	NMFM (10-150)	NEFM (10-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)	HFPODA (25-150)
500-221455-1	1750-E	27	27	28	32	29	28	32	25
500-221455-1 MS	1750-E	23	22	23	25	27	25	28	23 *5-
500-221455-1 MSD	1750-E	30	30	30	33	33	33	38	30
500-221455-2	1750-E-FB	34	35	30	33	40	38	44	34
LCS 320-616181/2-A	Lab Control Sample	35	35	34	36	38	39	42	36
MB 320-616181/1-A	Method Blank	37	37	38	39	43	45	47	41

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	M102FTS (25-150)
500-221455-1	1750-E	36
500-221455-1 MS	1750-E	28
500-221455-1 MSD	1750-E	42
500-221455-2	1750-E-FB	44
LCS 320-616181/2-A	Lab Control Sample	47
MB 320-616181/1-A	Method Blank	45

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFOSA = 13C8 FOSA

Isotope Dilution Summary

Client: Ramboll US Corporation

Project/Site: Manitowoc, WI - 1690026073

Job ID: 500-221455-1

d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
dMeFOSA = d-N-MeFOSA-M
dEtFOSA = d-N-EtFOSA-M
NMFm = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA
M102FTS = 13C2 10:2 FTS

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October 07, 2022

Paul Lindquist
Ramboll US Consulting, Inc.
234 W. Florida Street
Fifth Floor
Milwaukee, WI 53204

RE: Project: 1690026073
Pace Project No.: 40250494

Dear Paul Lindquist:

Enclosed are the analytical results for sample(s) received by the laboratory on August 26, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Gulf Coast

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Steven Mleczko
steve.mleczko@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Susan Petrofske, Ramboll US Consulting, Inc.
Jeanne Tarvin, Ramboll US Consulting, Inc.



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 1690026073

Pace Project No.: 40250494

Pace Analytical Gulf Coast

7979 Innovation Park Drive, Baton Rouge, LA 70820

Arkansas Certification #: 88-0655

DoD ELAP Certification #: 6429-01

Florida Certification #: E87854

Illinois Certification #: 004585

Kansas Certification #: E-10354

Louisiana/LELAP Certification #: 01955

North Carolina Certification #: 618

North Dakota Certification #: R-195

Oklahoma Certification #: 2019-101

South Carolina Certification #: 73006001

Texas Certification #: T104704178-19-11

USDA Soil Permit # P330-19-00209

Virginia Certification #: 460215

Washington Certification #: C929

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1690026073

Pace Project No.: 40250494

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40250494001	1750-P	Water	08/25/22 09:15	08/26/22 10:13
40250494002	1750-P-FB	Water	08/25/22 09:20	08/26/22 10:13

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1690026073
Pace Project No.: 40250494

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40250494001	1750-P	EPA 537 Modified	SLR2	58	GCLA
40250494002	1750-P-FB	EPA 537 Modified	SLR2	58	GCLA

GCLA = Pace Analytical Gulf Coast

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 1690026073

Pace Project No.: 40250494

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40250494002	1750-P-FB					
EPA 537 Modified	NEtFOSA	51.4	ng/L	4.08	09/24/22 00:30	
EPA 537 Modified	NEtFOSE	27.3	ng/L	4.08	09/24/22 00:30	
EPA 537 Modified	NMeFOSA	66.6	ng/L	4.08	09/24/22 00:30	
EPA 537 Modified	NMeFOSE	14.6	ng/L	4.08	09/24/22 00:30	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690026073

Pace Project No.: 40250494

Sample: 1750-P **Lab ID: 40250494001** Collected: 08/25/22 09:15 Received: 08/26/22 10:13 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
EPA 537 Mod Full Water									
Analytical Method: EPA 537 Modified Preparation Method: METHOD									
Pace Analytical Gulf Coast									
4:2 FTS	<0.620	ng/L	2.00	0.620	1	09/20/22 12:15	09/24/22 01:37	757124-72-4	
6:2 Fluorotelomer sulfonate	<0.750	ng/L	2.00	0.750	1	09/20/22 12:15	09/24/22 01:37	27619-97-2	
8:2 FTS	<0.530	ng/L	2.00	0.530	1	09/20/22 12:15	09/24/22 01:37	39108-34-4	
9CI-PF3ONS	<0.450	ng/L	2.00	0.450	1	09/20/22 12:15	09/24/22 01:37	756426-58-1	
11CI-PF3OUdS	<0.450	ng/L	2.00	0.450	1	09/20/22 12:15	09/24/22 01:37	763051-92-9	
ADONA	<0.430	ng/L	2.00	0.430	1	09/20/22 12:15	09/24/22 01:37	919005-14-4	
Perfluorooctanesulfonamide	<0.370	ng/L	2.00	0.370	1	09/20/22 12:15	09/24/22 01:37	754-91-6	
HFPO-DA	<3.34	ng/L	10.0	3.34	1	09/20/22 12:15	09/24/22 01:37	13252-13-6	
NEtFOSA	<0.700	ng/L	4.00	0.700	1	09/20/22 12:15	09/24/22 01:37	4151-50-2	
NEtFOSAA	<0.790	ng/L	4.00	0.790	1	09/20/22 12:15	09/24/22 01:37	2991-50-6	
NEtFOSE	<0.505	ng/L	4.00	0.505	1	09/20/22 12:15	09/24/22 01:37	1691-99-2	
NMeFOSA	<0.830	ng/L	4.00	0.830	1	09/20/22 12:15	09/24/22 01:37	31506-32-8	
NMeFOSAA	<0.450	ng/L	4.00	0.450	1	09/20/22 12:15	09/24/22 01:37	2355-31-9	
NMeFOSE	<0.650	ng/L	4.00	0.650	1	09/20/22 12:15	09/24/22 01:37	24448-09-7	
Perfluorobutanoic acid	<0.760	ng/L	2.00	0.760	1	09/20/22 12:15	09/24/22 01:37	375-22-4	
Perfluorobutanesulfonic acid	<0.310	ng/L	2.00	0.310	1	09/20/22 12:15	09/24/22 01:37	375-73-5	
Perfluorodecanoic acid	<0.720	ng/L	2.00	0.720	1	09/20/22 12:15	09/24/22 01:37	335-76-2	
Perfluorododecanoic acid	<0.650	ng/L	2.00	0.650	1	09/20/22 12:15	09/24/22 01:37	307-55-1	
PFDoS	<0.655	ng/L	2.00	0.655	1	09/20/22 12:15	09/24/22 01:37	79780-39-5	
PFDS	<0.610	ng/L	2.00	0.610	1	09/20/22 12:15	09/24/22 01:37	335-77-3	
Perfluoroheptanoic acid	<0.580	ng/L	2.00	0.580	1	09/20/22 12:15	09/24/22 01:37	375-85-9	
PFHpS	<0.610	ng/L	2.00	0.610	1	09/20/22 12:15	09/24/22 01:37	375-92-8	
Perfluorohexanoic acid	<0.470	ng/L	2.00	0.470	1	09/20/22 12:15	09/24/22 01:37	307-24-4	
Perfluorohexanesulfonic acid	<0.620	ng/L	2.00	0.620	1	09/20/22 12:15	09/24/22 01:37	355-46-4	
Perfluorononanoic acid	<0.490	ng/L	2.00	0.490	1	09/20/22 12:15	09/24/22 01:37	375-95-1	
PFNS	<0.870	ng/L	2.00	0.870	1	09/20/22 12:15	09/24/22 01:37	68259-12-1	
Perfluorooctanoic acid	<0.420	ng/L	2.00	0.420	1	09/20/22 12:15	09/24/22 01:37	335-67-1	
Perfluorooctanesulfonic acid	<0.380	ng/L	2.00	0.380	1	09/20/22 12:15	09/24/22 01:37	1763-23-1	
Perfluoropentanoic acid	<0.440	ng/L	2.00	0.440	1	09/20/22 12:15	09/24/22 01:37	2706-90-3	
PFPeS	<0.510	ng/L	2.00	0.510	1	09/20/22 12:15	09/24/22 01:37	2706-91-4	
Perfluorotetradecanoic acid	<0.570	ng/L	2.00	0.570	1	09/20/22 12:15	09/24/22 01:37	376-06-7	
Perfluorotridecanoic acid	<0.615	ng/L	2.00	0.615	1	09/20/22 12:15	09/24/22 01:37	72629-94-8	
Perfluoroundecanoic acid	<0.620	ng/L	2.00	0.620	1	09/20/22 12:15	09/24/22 01:37	2058-94-8	
Surrogates									
d-NEtFOSA	89	%	50-150		1	09/20/22 12:15	09/24/22 01:37	4151-50-2-EI	
d-NMeFOSA	90	%	50-150		1	09/20/22 12:15	09/24/22 01:37	31506-32-8-	
d3-NMeFOSAA	112	%	50-150		1	09/20/22 12:15	09/24/22 01:37	2355-31-9-EI	
d5-NEtFOSAA	117	%	50-150		1	09/20/22 12:15	09/24/22 01:37	2991-50-6-EI	
d7-NMeFOSE	97	%	50-150		1	09/20/22 12:15	09/24/22 01:37	24448-09-7-	
d9-NEtFOSE	92	%	50-150		1	09/20/22 12:15	09/24/22 01:37	1691-99-2-EI	
M2 4:2 FTS	116	%	50-150		1	09/20/22 12:15	09/24/22 01:37	757124-72-4	
M2 6:2 FTS	122	%	50-150		1	09/20/22 12:15	09/24/22 01:37	27619-97-2-	
M2 8:2 FTS	110	%	50-150		1	09/20/22 12:15	09/24/22 01:37	39108-34-4-	
M2PFHxDA	116	%	50-150		1	09/20/22 12:15	09/24/22 01:37	67905-19-5-	
M2PFTeDA	109	%	50-150		1	09/20/22 12:15	09/24/22 01:37	376-06-7-EI	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690026073

Pace Project No.: 40250494

Sample: 1750-P **Lab ID: 40250494001** Collected: 08/25/22 09:15 Received: 08/26/22 10:13 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
EPA 537 Mod Full Water									
Analytical Method: EPA 537 Modified Preparation Method: METHOD									
Pace Analytical Gulf Coast									
Surrogates									
M3HFPODA	103	%	50-150		1	09/20/22 12:15	09/24/22 01:37	13252-13-6-	
M3PFBS	109	%	50-150		1	09/20/22 12:15	09/24/22 01:37	375-73-5-EI	
M3PFHxS	107	%	50-150		1	09/20/22 12:15	09/24/22 01:37	355-46-4-EI	
M4PFHpA	108	%	50-150		1	09/20/22 12:15	09/24/22 01:37	375-85-9-EI	
M5PFHxA	113	%	50-150		1	09/20/22 12:15	09/24/22 01:37	307-24-4-EI	
M5PFPeA	108	%	50-150		1	09/20/22 12:15	09/24/22 01:37	2706-90-3-EI	
M6PFDA	109	%	50-150		1	09/20/22 12:15	09/24/22 01:37	335-76-2-EI	
M7PFUdA	115	%	50-150		1	09/20/22 12:15	09/24/22 01:37	2058-94-8-EI	
M8FOSA	93	%	50-150		1	09/20/22 12:15	09/24/22 01:37	754-91-6-EI	
M8PFOA	108	%	50-150		1	09/20/22 12:15	09/24/22 01:37	335-67-1-EI	
M8PFOS	105	%	50-150		1	09/20/22 12:15	09/24/22 01:37	1763-23-1-EI	
M9PFNA	109	%	50-150		1	09/20/22 12:15	09/24/22 01:37	375-95-1-EI	
MPFBA	109	%	50-150		1	09/20/22 12:15	09/24/22 01:37	375-22-4-EI	
MPFDoA	100	%	50-150		1	09/20/22 12:15	09/24/22 01:37	307-55-1-EI	

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ANALYTICAL RESULTS

Project: 1690026073

Pace Project No.: 40250494

Sample: 1750-P-FB **Lab ID: 40250494002** Collected: 08/25/22 09:20 Received: 08/26/22 10:13 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
EPA 537 Mod Full Water									
Analytical Method: EPA 537 Modified Preparation Method: METHOD									
Pace Analytical Gulf Coast									
4:2 FTS	<0.633	ng/L	2.04	0.633	1	09/19/22 09:45	09/24/22 00:30	757124-72-4	
4:2 FTS	<0.643	ng/L	2.07	0.643	1	09/30/22 12:30	10/04/22 13:13	757124-72-4	H1
6:2 Fluorotelomer sulfonate	<0.765	ng/L	2.04	0.765	1	09/19/22 09:45	09/24/22 00:30	27619-97-2	
6:2 Fluorotelomer sulfonate	<0.778	ng/L	2.07	0.778	1	09/30/22 12:30	10/04/22 13:13	27619-97-2	H1
8:2 FTS	<0.541	ng/L	2.04	0.541	1	09/19/22 09:45	09/24/22 00:30	39108-34-4	
8:2 FTS	<0.550	ng/L	2.07	0.550	1	09/30/22 12:30	10/04/22 13:13	39108-34-4	H1
9CI-PF3ONS	<0.459	ng/L	2.04	0.459	1	09/19/22 09:45	09/24/22 00:30	756426-58-1	
9CI-PF3ONS	<0.467	ng/L	2.07	0.467	1	09/30/22 12:30	10/04/22 13:13	756426-58-1	H1
11CI-PF3OUdS	<0.459	ng/L	2.04	0.459	1	09/19/22 09:45	09/24/22 00:30	763051-92-9	
11CI-PF3OUdS	<0.467	ng/L	2.07	0.467	1	09/30/22 12:30	10/04/22 13:13	763051-92-9	H1
ADONA	<0.439	ng/L	2.04	0.439	1	09/19/22 09:45	09/24/22 00:30	919005-14-4	
ADONA	<0.446	ng/L	2.07	0.446	1	09/30/22 12:30	10/04/22 13:13	919005-14-4	H1
Perfluorooctanesulfonamide	<0.378	ng/L	2.04	0.378	1	09/19/22 09:45	09/24/22 00:30	754-91-6	
Perfluorooctanesulfonamide	<0.384	ng/L	2.07	0.384	1	09/30/22 12:30	10/04/22 13:13	754-91-6	H1
HFPO-DA	<3.40	ng/L	10.2	3.40	1	09/19/22 09:45	09/24/22 00:30	13252-13-6	
HFPO-DA	<3.46	ng/L	10.4	3.46	1	09/30/22 12:30	10/04/22 13:13	13252-13-6	H1
NEtFOSA	51.4	ng/L	4.08	0.714	1	09/19/22 09:45	09/24/22 00:30	4151-50-2	
NEtFOSA	<0.726	ng/L	4.15	0.726	1	09/30/22 12:30	10/04/22 13:13	4151-50-2	H1
NEtFOSAA	<0.806	ng/L	4.08	0.806	1	09/19/22 09:45	09/24/22 00:30	2991-50-6	
NEtFOSAA	<0.820	ng/L	4.15	0.820	1	09/30/22 12:30	10/04/22 13:13	2991-50-6	H1
NEtFOSE	27.3	ng/L	4.08	0.515	1	09/19/22 09:45	09/24/22 00:30	1691-99-2	
NEtFOSE	<0.524	ng/L	4.15	0.524	1	09/30/22 12:30	10/04/22 13:13	1691-99-2	H1
NMeFOSA	66.6	ng/L	4.08	0.847	1	09/19/22 09:45	09/24/22 00:30	31506-32-8	
NMeFOSA	<0.861	ng/L	4.15	0.861	1	09/30/22 12:30	10/04/22 13:13	31506-32-8	H1
NMeFOSAA	<0.459	ng/L	4.08	0.459	1	09/19/22 09:45	09/24/22 00:30	2355-31-9	
NMeFOSAA	<0.467	ng/L	4.15	0.467	1	09/30/22 12:30	10/04/22 13:13	2355-31-9	H1
NMeFOSE	14.6	ng/L	4.08	0.663	1	09/19/22 09:45	09/24/22 00:30	24448-09-7	
NMeFOSE	<0.674	ng/L	4.15	0.674	1	09/30/22 12:30	10/04/22 13:13	24448-09-7	H1
Perfluorobutanoic acid	<0.776	ng/L	2.04	0.776	1	09/19/22 09:45	09/24/22 00:30	375-22-4	
Perfluorobutanoic acid	<0.788	ng/L	2.07	0.788	1	09/30/22 12:30	10/04/22 13:13	375-22-4	H1
Perfluorobutanesulfonic acid	<0.316	ng/L	2.04	0.316	1	09/19/22 09:45	09/24/22 00:30	375-73-5	
Perfluorobutanesulfonic acid	<0.322	ng/L	2.07	0.322	1	09/30/22 12:30	10/04/22 13:13	375-73-5	H1
Perfluorodecanoic acid	<0.735	ng/L	2.04	0.735	1	09/19/22 09:45	09/24/22 00:30	335-76-2	
Perfluorodecanoic acid	<0.747	ng/L	2.07	0.747	1	09/30/22 12:30	10/04/22 13:13	335-76-2	H1
Perfluorododecanoic acid	<0.663	ng/L	2.04	0.663	1	09/19/22 09:45	09/24/22 00:30	307-55-1	
Perfluorododecanoic acid	<0.674	ng/L	2.07	0.674	1	09/30/22 12:30	10/04/22 13:13	307-55-1	H1
PFDoS	<0.668	ng/L	2.04	0.668	1	09/19/22 09:45	09/24/22 00:30	79780-39-5	
PFDoS	<0.679	ng/L	2.07	0.679	1	09/30/22 12:30	10/04/22 13:13	79780-39-5	H1
PFDS	<0.622	ng/L	2.04	0.622	1	09/19/22 09:45	09/24/22 00:30	335-77-3	
PFDS	<0.633	ng/L	2.07	0.633	1	09/30/22 12:30	10/04/22 13:13	335-77-3	H1
Perfluoroheptanoic acid	<0.592	ng/L	2.04	0.592	1	09/19/22 09:45	09/24/22 00:30	375-85-9	
Perfluoroheptanoic acid	<0.602	ng/L	2.07	0.602	1	09/30/22 12:30	10/04/22 13:13	375-85-9	H1
PFHpS	<0.622	ng/L	2.04	0.622	1	09/19/22 09:45	09/24/22 00:30	375-92-8	
PFHpS	<0.633	ng/L	2.07	0.633	1	09/30/22 12:30	10/04/22 13:13	375-92-8	H1
Perfluorohexanoic acid	<0.480	ng/L	2.04	0.480	1	09/19/22 09:45	09/24/22 00:30	307-24-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690026073

Pace Project No.: 40250494

Sample: 1750-P-FB **Lab ID: 40250494002** Collected: 08/25/22 09:20 Received: 08/26/22 10:13 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
EPA 537 Mod Full Water									
Analytical Method: EPA 537 Modified Preparation Method: METHOD									
Pace Analytical Gulf Coast									
Perfluorohexanoic acid	<0.488	ng/L	2.07	0.488	1	09/30/22 12:30	10/04/22 13:13	307-24-4	H1
Perfluorohexanesulfonic acid	<0.633	ng/L	2.04	0.633	1	09/19/22 09:45	09/24/22 00:30	355-46-4	
Perfluorohexanesulfonic acid	<0.643	ng/L	2.07	0.643	1	09/30/22 12:30	10/04/22 13:13	355-46-4	H1
Perfluorononanoic acid	<0.500	ng/L	2.04	0.500	1	09/19/22 09:45	09/24/22 00:30	375-95-1	
Perfluorononanoic acid	<0.508	ng/L	2.07	0.508	1	09/30/22 12:30	10/04/22 13:13	375-95-1	H1
PFNS	<0.888	ng/L	2.04	0.888	1	09/19/22 09:45	09/24/22 00:30	68259-12-1	
PFNS	<0.902	ng/L	2.07	0.902	1	09/30/22 12:30	10/04/22 13:13	68259-12-1	H1
Perfluorooctanoic acid	<0.429	ng/L	2.04	0.429	1	09/19/22 09:45	09/24/22 00:30	335-67-1	
Perfluorooctanoic acid	<0.436	ng/L	2.07	0.436	1	09/30/22 12:30	10/04/22 13:13	335-67-1	H1
Perfluorooctanesulfonic acid	<0.388	ng/L	2.04	0.388	1	09/19/22 09:45	09/24/22 00:30	1763-23-1	
Perfluorooctanesulfonic acid	<0.394	ng/L	2.07	0.394	1	09/30/22 12:30	10/04/22 13:13	1763-23-1	H1
Perfluoropentanoic acid	<0.449	ng/L	2.04	0.449	1	09/19/22 09:45	09/24/22 00:30	2706-90-3	
Perfluoropentanoic acid	<0.456	ng/L	2.07	0.456	1	09/30/22 12:30	10/04/22 13:13	2706-90-3	H1
PFPeS	<0.520	ng/L	2.04	0.520	1	09/19/22 09:45	09/24/22 00:30	2706-91-4	
PFPeS	<0.529	ng/L	2.07	0.529	1	09/30/22 12:30	10/04/22 13:13	2706-91-4	H1
Perfluorotetradecanoic acid	<0.582	ng/L	2.04	0.582	1	09/19/22 09:45	09/24/22 00:30	376-06-7	
Perfluorotetradecanoic acid	<0.591	ng/L	2.07	0.591	1	09/30/22 12:30	10/04/22 13:13	376-06-7	H1
Perfluorotridecanoic acid	<0.628	ng/L	2.04	0.628	1	09/19/22 09:45	09/24/22 00:30	72629-94-8	
Perfluorotridecanoic acid	<0.638	ng/L	2.07	0.638	1	09/30/22 12:30	10/04/22 13:13	72629-94-8	H1
Perfluoroundecanoic acid	<0.633	ng/L	2.04	0.633	1	09/19/22 09:45	09/24/22 00:30	2058-94-8	
Perfluoroundecanoic acid	<0.643	ng/L	2.07	0.643	1	09/30/22 12:30	10/04/22 13:13	2058-94-8	H1
Surrogates									
d-NEtFOSA	100	%	50-150		1	09/30/22 12:30	10/04/22 13:13	4151-50-2-EI	
d-NEtFOSA	0.7	%	50-150		1	09/19/22 09:45	09/24/22 00:30	4151-50-2-EI	
d-NMeFOSA	0.5	%	50-150		1	09/19/22 09:45	09/24/22 00:30	31506-32-8-	
d-NMeFOSA	95	%	50-150		1	09/30/22 12:30	10/04/22 13:13	31506-32-8-	
d3-NMeFOSAA	68	%	50-150		1	09/19/22 09:45	09/24/22 00:30	2355-31-9-EI	
d3-NMeFOSAA	97	%	50-150		1	09/30/22 12:30	10/04/22 13:13	2355-31-9-EI	
d5-NEtFOSAA	74	%	50-150		1	09/19/22 09:45	09/24/22 00:30	2991-50-6-EI	
d5-NEtFOSAA	108	%	50-150		1	09/30/22 12:30	10/04/22 13:13	2991-50-6-EI	
d7-NMeFOSE	99	%	50-150		1	09/30/22 12:30	10/04/22 13:13	24448-09-7-	
d7-NMeFOSE	3	%	50-150		1	09/19/22 09:45	09/24/22 00:30	24448-09-7-	
d9-NEtFOSE	2	%	50-150		1	09/19/22 09:45	09/24/22 00:30	1691-99-2-EI	
d9-NEtFOSE	99	%	50-150		1	09/30/22 12:30	10/04/22 13:13	1691-99-2-EI	
M2 4:2 FTS	106	%	50-150		1	09/30/22 12:30	10/04/22 13:13	757124-72-4	
M2 4:2 FTS	84	%	50-150		1	09/19/22 09:45	09/24/22 00:30	757124-72-4	
M2 6:2 FTS	100	%	50-150		1	09/30/22 12:30	10/04/22 13:13	27619-97-2-	
M2 6:2 FTS	74	%	50-150		1	09/19/22 09:45	09/24/22 00:30	27619-97-2-	
M2 8:2 FTS	85	%	50-150		1	09/19/22 09:45	09/24/22 00:30	39108-34-4-	
M2 8:2 FTS	104	%	50-150		1	09/30/22 12:30	10/04/22 13:13	39108-34-4-	
M2PFHxDA	14	%	50-150		1	09/19/22 09:45	09/24/22 00:30	67905-19-5-	
M2PFHxDA	143	%	50-150		1	09/30/22 12:30	10/04/22 13:13	67905-19-5-	
M2PFTeDA	57	%	50-150		1	09/19/22 09:45	09/24/22 00:30	376-06-7-EI	
M2PFTeDA	100	%	50-150		1	09/30/22 12:30	10/04/22 13:13	376-06-7-EI	
M3HFPODA	79	%	50-150		1	09/19/22 09:45	09/24/22 00:30	13252-13-6-	

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ANALYTICAL RESULTS

Project: 1690026073
Pace Project No.: 40250494

Sample: 1750-P-FB **Lab ID: 40250494002** Collected: 08/25/22 09:20 Received: 08/26/22 10:13 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
EPA 537 Mod Full Water									
Analytical Method: EPA 537 Modified Preparation Method: METHOD Pace Analytical Gulf Coast									
Surrogates									
M3HFPODA	131	%	50-150		1	09/30/22 12:30	10/04/22 13:13	13252-13-6-	
M3PFBS	105	%	50-150		1	09/30/22 12:30	10/04/22 13:13	375-73-5-EI	
M3PFBS	81	%	50-150		1	09/19/22 09:45	09/24/22 00:30	375-73-5-EI	
M3PFHxS	105	%	50-150		1	09/30/22 12:30	10/04/22 13:13	355-46-4-EI	
M3PFHxS	80	%	50-150		1	09/19/22 09:45	09/24/22 00:30	355-46-4-EI	
M4PFHpA	110	%	50-150		1	09/30/22 12:30	10/04/22 13:13	375-85-9-EI	
M4PFHpA	82	%	50-150		1	09/19/22 09:45	09/24/22 00:30	375-85-9-EI	
M5PFHxA	110	%	50-150		1	09/30/22 12:30	10/04/22 13:13	307-24-4-EI	
M5PFHxA	84	%	50-150		1	09/19/22 09:45	09/24/22 00:30	307-24-4-EI	
M5PFPeA	81	%	50-150		1	09/19/22 09:45	09/24/22 00:30	2706-90-3-EI	
M5PFPeA	109	%	50-150		1	09/30/22 12:30	10/04/22 13:13	2706-90-3-EI	
M6PFDA	81	%	50-150		1	09/19/22 09:45	09/24/22 00:30	335-76-2-EI	
M6PFDA	106	%	50-150		1	09/30/22 12:30	10/04/22 13:13	335-76-2-EI	
M7PFUdA	75	%	50-150		1	09/19/22 09:45	09/24/22 00:30	2058-94-8-EI	
M7PFUdA	104	%	50-150		1	09/30/22 12:30	10/04/22 13:13	2058-94-8-EI	
M8FOSA	92	%	50-150		1	09/30/22 12:30	10/04/22 13:13	754-91-6-EI	
M8FOSA	55	%	50-150		1	09/19/22 09:45	09/24/22 00:30	754-91-6-EI	
M8PFOA	112	%	50-150		1	09/30/22 12:30	10/04/22 13:13	335-67-1-EI	
M8PFOA	85	%	50-150		1	09/19/22 09:45	09/24/22 00:30	335-67-1-EI	
M8PFOS	101	%	50-150		1	09/30/22 12:30	10/04/22 13:13	1763-23-1-EI	
M8PFOS	80	%	50-150		1	09/19/22 09:45	09/24/22 00:30	1763-23-1-EI	
M9PFNA	108	%	50-150		1	09/30/22 12:30	10/04/22 13:13	375-95-1-EI	
M9PFNA	83	%	50-150		1	09/19/22 09:45	09/24/22 00:30	375-95-1-EI	
MPFBA	107	%	50-150		1	09/30/22 12:30	10/04/22 13:13	375-22-4-EI	
MPFBA	77	%	50-150		1	09/19/22 09:45	09/24/22 00:30	375-22-4-EI	
MPFDoA	99	%	50-150		1	09/30/22 12:30	10/04/22 13:13	307-55-1-EI	
MPFDoA	70	%	50-150		1	09/19/22 09:45	09/24/22 00:30	307-55-1-EI	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690026073
Pace Project No.: 40250494

QC Batch: 750010 Analysis Method: EPA 537 Modified
QC Batch Method: METHOD Analysis Description: PFAS 537 Mod Analysis Water
Laboratory: Pace Analytical Gulf Coast

Associated Lab Samples: 40250494002

METHOD BLANK: 2397093 Matrix: Water
Associated Lab Samples: 40250494002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4:2 FTS	ng/L	<1.24	4.00	09/23/22 23:30	
6:2 Fluorotelomer sulfonate	ng/L	<1.50	4.00	09/23/22 23:30	
8:2 FTS	ng/L	<1.06	4.00	09/23/22 23:30	
9Cl-PF3ONS	ng/L	<0.900	4.00	09/23/22 23:30	
11Cl-PF3OUdS	ng/L	<0.900	4.00	09/23/22 23:30	
ADONA	ng/L	<0.860	4.00	09/23/22 23:30	
Perfluorooctanesulfonamide	ng/L	<0.740	4.00	09/23/22 23:30	
HFPO-DA	ng/L	<6.67	20.0	09/23/22 23:30	
NEtFOSA	ng/L	<1.40	8.00	09/23/22 23:30	
NEtFOSAA	ng/L	<1.58	8.00	09/23/22 23:30	
NEtFOSE	ng/L	<1.01	8.00	09/23/22 23:30	
NMeFOSA	ng/L	<1.66	8.00	09/23/22 23:30	
NMeFOSAA	ng/L	<0.900	8.00	09/23/22 23:30	
NMeFOSE	ng/L	<1.30	8.00	09/23/22 23:30	
Perfluorobutanoic acid	ng/L	<1.52	4.00	09/23/22 23:30	
Perfluorobutanesulfonic acid	ng/L	<0.620	4.00	09/23/22 23:30	
Perfluorodecanoic acid	ng/L	<1.44	4.00	09/23/22 23:30	
Perfluorododecanoic acid	ng/L	<1.30	4.00	09/23/22 23:30	
PFDoS	ng/L	<1.31	4.00	09/23/22 23:30	
PFDS	ng/L	<1.22	4.00	09/23/22 23:30	
Perfluoroheptanoic acid	ng/L	<1.16	4.00	09/23/22 23:30	
PFHpS	ng/L	<1.22	4.00	09/23/22 23:30	
Perfluorohexanoic acid	ng/L	<0.940	4.00	09/23/22 23:30	
Perfluorohexanesulfonic acid	ng/L	<1.24	4.00	09/23/22 23:30	
Perfluorononanoic acid	ng/L	<0.980	4.00	09/23/22 23:30	
PFNS	ng/L	<1.74	4.00	09/23/22 23:30	
Perfluorooctanoic acid	ng/L	<0.840	4.00	09/23/22 23:30	
Perfluorooctanesulfonic acid	ng/L	<0.760	4.00	09/23/22 23:30	
Perfluoropentanoic acid	ng/L	<0.880	4.00	09/23/22 23:30	
PFPeS	ng/L	<1.02	4.00	09/23/22 23:30	
Perfluorotetradecanoic acid	ng/L	<1.14	4.00	09/23/22 23:30	
Perfluorotridecanoic acid	ng/L	<1.23	4.00	09/23/22 23:30	
Perfluoroundecanoic acid	ng/L	<1.24	4.00	09/23/22 23:30	
d-NEtFOSA	%	79	50-150	09/23/22 23:30	
d-NMeFOSA	%	74	50-150	09/23/22 23:30	
d3-NMeFOSAA	%	80	50-150	09/23/22 23:30	
d5-NEtFOSAA	%	87	50-150	09/23/22 23:30	
d7-NMeFOSE	%	79	50-150	09/23/22 23:30	
d9-NEtFOSE	%	76	50-150	09/23/22 23:30	
M2 4:2 FTS	%	86	50-150	09/23/22 23:30	

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QUALITY CONTROL DATA

Project: 1690026073
Pace Project No.: 40250494

METHOD BLANK: 2397093

Matrix: Water

Associated Lab Samples: 40250494002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
M2 6:2 FTS	%	79	50-150	09/23/22 23:30	
M2 8:2 FTS	%	87	50-150	09/23/22 23:30	
M2PFHxDA	%	105	50-150	09/23/22 23:30	
M2PFTeDA	%	86	50-150	09/23/22 23:30	
M3HFPODA	%	79	50-150	09/23/22 23:30	
M3PFBS	%	79	50-150	09/23/22 23:30	
M3PFHxS	%	81	50-150	09/23/22 23:30	
M4PFHpA	%	84	50-150	09/23/22 23:30	
M5PFHxA	%	83	50-150	09/23/22 23:30	
M5PFPeA	%	80	50-150	09/23/22 23:30	
M6PFDA	%	88	50-150	09/23/22 23:30	
M7PFUdA	%	87	50-150	09/23/22 23:30	
M8FOSA	%	75	50-150	09/23/22 23:30	
M8PFOA	%	88	50-150	09/23/22 23:30	
M8PFOS	%	84	50-150	09/23/22 23:30	
M9PFNA	%	87	50-150	09/23/22 23:30	
MPFBA	%	76	50-150	09/23/22 23:30	
MPFD _o A	%	86	50-150	09/23/22 23:30	

LABORATORY CONTROL SAMPLE & LCSD: 2397094

2397095

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
4:2 FTS	ng/L	75	89.7	96.5	120	129	70-130	7	30	
6:2 Fluorotelomer sulfonate	ng/L	76.1	96.4	95.5	127	126	70-130	1	30	
8:2 FTS	ng/L	76.8	92.2	99.7	120	130	70-130	8	30	
9Cl-PF3ONS	ng/L	74.6	86.9	88.7	116	119	70-130	2	30	
11Cl-PF3OUdS	ng/L	75.4	92.4	93.2	122	124	70-130	1	30	
ADONA	ng/L	75.6	87.8	90.0	116	119	70-130	2	30	
Perfluorooctanesulfonamide	ng/L	80	95.6	97.9	120	122	70-130	2	30	
HFPO-DA	ng/L	160	209	211	131	132	70-130	1	30	
NEtFOSA	ng/L	80	107	113	134	141	70-130	5	30	
NEtFOSAA	ng/L	80	92.5	93.6	116	117	70-130	1	30	
NEtFOSE	ng/L	80	116	115	144	144	70-130	0	30	
NMeFOSA	ng/L	80	104	111	130	139	70-130	7	30	
NMeFOSAA	ng/L	80	93.0	92.3	116	115	70-130	1	30	
NMeFOSE	ng/L	80	106	107	133	133	70-130	0	30	
Perfluorobutanoic acid	ng/L	80	97.5	99.5	122	124	70-130	2	30	
Perfluorobutanesulfonic acid	ng/L	71	86.3	86.7	122	122	70-130	0	30	
Perfluorodecanoic acid	ng/L	80	97.8	97.9	122	122	70-130	0	30	
Perfluorododecanoic acid	ng/L	80	95.6	98.2	120	123	70-130	3	30	
PFDoS	ng/L	77.6	108	110	139	141	70-130	2	30	
PFDS	ng/L	77.2	93.4	95.2	121	123	70-130	2	30	
Perfluoroheptanoic acid	ng/L	80	95.3	96.7	119	121	70-130	1	30	
PFHpS	ng/L	76.2	94.0	94.4	123	124	70-130	0	30	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690026073
Pace Project No.: 40250494

LABORATORY CONTROL SAMPLE & LCSD: 2397094		2397095								
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Perfluorohexanoic acid	ng/L	80	97.3	98.0	122	122	70-130	1	30	
Perfluorohexanesulfonic acid	ng/L	73.1	90.3	89.5	124	122	70-130	1	30	
Perfluorononanoic acid	ng/L	80	97.3	97.6	122	122	70-130	0	30	
PFNS	ng/L	77	95.6	93.0	124	121	70-130	3	30	
Perfluorooctanoic acid	ng/L	80	96.6	97.7	121	122	70-130	1	30	
Perfluorooctanesulfonic acid	ng/L	74.2	89.5	89.0	121	120	70-130	1	30	
Perfluoropentanoic acid	ng/L	80	97.6	97.7	122	122	70-130	0	30	
PFPeS	ng/L	75.3	95.2	93.0	126	124	70-130	2	30	
Perfluorotetradecanoic acid	ng/L	80	100	102	125	127	70-130	2	30	
Perfluorotridecanoic acid	ng/L	80	97.9	101	122	126	70-130	3	30	
Perfluoroundecanoic acid	ng/L	80	96.4	96.7	120	121	70-130	0	30	
d-NEtFOSA	%				49	42	50-150			
d-NMeFOSA	%				48	48	50-150			
d3-NMeFOSAA	%				51	74	50-150			
d5-NEtFOSAA	%				53	77	50-150			
d7-NMeFOSE	%				48	74	50-150			
d9-NEtFOSE	%				46	66	50-150			
M2 4:2 FTS	%				53	75	50-150			
M2 6:2 FTS	%				51	70	50-150			
M2 8:2 FTS	%				60	80	50-150			
M2PFHxDA	%				66	103	50-150			
M2PFTeDA	%				55	81	50-150			
M3HFPODA	%				50	77	50-150			
M3PFBS	%				51	78	50-150			
M3PFHxS	%				52	78	50-150			
M4PFHpA	%				54	80	50-150			
M5PFHxA	%				53	80	50-150			
M5PFPeA	%				51	78	50-150			
M6PFDA	%				55	80	50-150			
M7PFUdA	%				56	83	50-150			
M8FOSA	%				48	70	50-150			
M8PFOA	%				55	81	50-150			
M8PFOS	%				54	79	50-150			
M9PFNA	%				55	82	50-150			
MPFBA	%				49	74	50-150			
MPFD _o A	%				55	81	50-150			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690026073
Pace Project No.: 40250494

QC Batch: 750105 Analysis Method: EPA 537 Modified
QC Batch Method: METHOD Analysis Description: PFAS 537 Mod Analysis Water
Laboratory: Pace Analytical Gulf Coast

Associated Lab Samples: 40250494001

METHOD BLANK: 2397429 Matrix: Water
Associated Lab Samples: 40250494001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4:2 FTS	ng/L	<1.24	4.00	09/23/22 23:25	
6:2 Fluorotelomer sulfonate	ng/L	<1.50	4.00	09/23/22 23:25	
8:2 FTS	ng/L	<1.06	4.00	09/23/22 23:25	
9Cl-PF3ONS	ng/L	<0.900	4.00	09/23/22 23:25	
11Cl-PF3OUdS	ng/L	<0.900	4.00	09/23/22 23:25	
ADONA	ng/L	<0.860	4.00	09/23/22 23:25	
Perfluorooctanesulfonamide	ng/L	<0.740	4.00	09/23/22 23:25	
HFPO-DA	ng/L	<6.67	20.0	09/23/22 23:25	
NEtFOSA	ng/L	<1.40	8.00	09/23/22 23:25	
NEtFOSAA	ng/L	<1.58	8.00	09/23/22 23:25	
NEtFOSE	ng/L	<1.01	8.00	09/23/22 23:25	
NMeFOSA	ng/L	<1.66	8.00	09/23/22 23:25	
NMeFOSAA	ng/L	<0.900	8.00	09/23/22 23:25	
NMeFOSE	ng/L	<1.30	8.00	09/23/22 23:25	
Perfluorobutanoic acid	ng/L	<1.52	4.00	09/23/22 23:25	
Perfluorobutanesulfonic acid	ng/L	<0.620	4.00	09/23/22 23:25	
Perfluorodecanoic acid	ng/L	<1.44	4.00	09/23/22 23:25	
Perfluorododecanoic acid	ng/L	<1.30	4.00	09/23/22 23:25	
PFDoS	ng/L	<1.31	4.00	09/23/22 23:25	
PFDS	ng/L	<1.22	4.00	09/23/22 23:25	
Perfluoroheptanoic acid	ng/L	<1.16	4.00	09/23/22 23:25	
PFHpS	ng/L	<1.22	4.00	09/23/22 23:25	
Perfluorohexanoic acid	ng/L	<0.940	4.00	09/23/22 23:25	
Perfluorohexanesulfonic acid	ng/L	<1.24	4.00	09/23/22 23:25	
Perfluorononanoic acid	ng/L	<0.980	4.00	09/23/22 23:25	
PFNS	ng/L	<1.74	4.00	09/23/22 23:25	
Perfluorooctanoic acid	ng/L	<0.840	4.00	09/23/22 23:25	
Perfluorooctanesulfonic acid	ng/L	4.00	4.00	09/23/22 23:25	MSSV41.1
Perfluoropentanoic acid	ng/L	<0.880	4.00	09/23/22 23:25	
PFPeS	ng/L	<1.02	4.00	09/23/22 23:25	
Perfluorotetradecanoic acid	ng/L	<1.14	4.00	09/23/22 23:25	
Perfluorotridecanoic acid	ng/L	<1.23	4.00	09/23/22 23:25	
Perfluoroundecanoic acid	ng/L	<1.24	4.00	09/23/22 23:25	
d-NEtFOSA	%	87	50-150	09/23/22 23:25	
d-NMeFOSA	%	90	50-150	09/23/22 23:25	
d3-NMeFOSAA	%	111	50-150	09/23/22 23:25	
d5-NEtFOSAA	%	118	50-150	09/23/22 23:25	
d7-NMeFOSE	%	90	50-150	09/23/22 23:25	
d9-NEtFOSE	%	81	50-150	09/23/22 23:25	
M2 4:2 FTS	%	115	50-150	09/23/22 23:25	

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QUALITY CONTROL DATA

Project: 1690026073
Pace Project No.: 40250494

METHOD BLANK: 2397429 Matrix: Water
Associated Lab Samples: 40250494001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
M2 6:2 FTS	%	136	50-150	09/23/22 23:25	
M2 8:2 FTS	%	111	50-150	09/23/22 23:25	
M2PFHxDA	%	123	50-150	09/23/22 23:25	
M2PFTeDA	%	111	50-150	09/23/22 23:25	
M3HFPODA	%	104	50-150	09/23/22 23:25	
M3PFBS	%	116	50-150	09/23/22 23:25	
M3PFHxS	%	113	50-150	09/23/22 23:25	
M4PFHpA	%	110	50-150	09/23/22 23:25	
M5PFHxA	%	113	50-150	09/23/22 23:25	
M5PFPeA	%	109	50-150	09/23/22 23:25	
M6PFDA	%	113	50-150	09/23/22 23:25	
M7PFUdA	%	117	50-150	09/23/22 23:25	
M8FOSA	%	79	50-150	09/23/22 23:25	
M8PFOA	%	113	50-150	09/23/22 23:25	
M8PFOS	%	111	50-150	09/23/22 23:25	
M9PFNA	%	113	50-150	09/23/22 23:25	
MPFBA	%	109	50-150	09/23/22 23:25	
MPFD _o A	%	106	50-150	09/23/22 23:25	

LABORATORY CONTROL SAMPLE & LCSD: 2397430

Parameter	Units	2397431		LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers	
		Spike Conc.	LCS Result							LCSD Result
4:2 FTS	ng/L	75	92.4	87.0	123	116	70-130	6	30	
6:2 Fluorotelomer sulfonate	ng/L	76.1	90.8	91.1	119	120	70-130	0	30	
8:2 FTS	ng/L	76.8	90.8	91.6	118	119	70-130	1	30	
9Cl-PF3ONS	ng/L	74.6	81.5	80.0	109	107	70-130	2	30	
11Cl-PF3OUdS	ng/L	75.4	81.2	79.3	108	105	70-130	2	30	
ADONA	ng/L	75.6	84.2	83.9	111	111	70-130	0	30	
Perfluorooctanesulfonamide	ng/L	80	91.7	89.3	115	112	70-130	3	30	
HFPO-DA	ng/L	160	188	180	118	112	70-130	5	30	
NEtFOSA	ng/L	80	100.0	97.9	125	122	70-130	2	30	
NEtFOSAA	ng/L	80	86.1	86.0	108	108	70-130	0	30	
NEtFOSE	ng/L	80	97.6	89.0	122	111	70-130	9	30	
NMeFOSA	ng/L	80	107	97.5	134	122	70-130	10	30	L3
NMeFOSAA	ng/L	80	86.2	87.4	108	109	70-130	1	30	
NMeFOSE	ng/L	80	98.4	91.6	123	114	70-130	7	30	
Perfluorobutanoic acid	ng/L	80	88.8	88.0	111	110	70-130	1	30	
Perfluorobutanesulfonic acid	ng/L	71	80.6	77.6	114	109	70-130	4	30	
Perfluorodecanoic acid	ng/L	80	87.5	86.2	109	108	70-130	2	30	
Perfluorododecanoic acid	ng/L	80	87.7	86.2	110	108	70-130	2	30	
PFDoS	ng/L	77.6	87.2	84.9	112	109	70-130	3	30	
PFDS	ng/L	77.2	82.9	78.4	107	102	70-130	6	30	
Perfluoroheptanoic acid	ng/L	80	87.7	87.5	110	109	70-130	0	30	
PFHpS	ng/L	76.2	83.9	81.9	110	107	70-130	2	30	

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QUALITY CONTROL DATA

Project: 1690026073
Pace Project No.: 40250494

LABORATORY CONTROL SAMPLE & LCSD: 2397430		2397431								
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Perfluorohexanoic acid	ng/L	80	86.7	86.6	108	108	70-130	0	30	
Perfluorohexanesulfonic acid	ng/L	73.1	79.6	77.6	109	106	70-130	3	30	
Perfluorononanoic acid	ng/L	80	87.6	86.9	109	109	70-130	1	30	
PFNS	ng/L	77	83.5	80.2	108	104	70-130	4	30	
Perfluorooctanoic acid	ng/L	80	87.6	86.9	110	109	70-130	1	30	
Perfluorooctanesulfonic acid	ng/L	74.2	81.0	80.1	109	108	70-130	1	30	
Perfluoropentanoic acid	ng/L	80	88.3	87.9	110	110	70-130	1	30	
PFPeS	ng/L	75.3	84.8	81.4	113	108	70-130	4	30	
Perfluorotetradecanoic acid	ng/L	80	88.2	87.6	110	110	70-130	1	30	
Perfluorotridecanoic acid	ng/L	80	90.5	90.8	113	114	70-130	0	30	
Perfluoroundecanoic acid	ng/L	80	89.7	87.3	112	109	70-130	3	30	
d-NEtFOSA	%				74	90	50-150			
d-NMeFOSA	%				69	89	50-150			
d3-NMeFOSAA	%				118	114	50-150			
d5-NEtFOSAA	%				118	111	50-150			
d7-NMeFOSE	%				76	90	50-150			
d9-NEtFOSE	%				77	90	50-150			
M2 4:2 FTS	%				109	111	50-150			
M2 6:2 FTS	%				122	121	50-150			
M2 8:2 FTS	%				104	100	50-150			
M2PFHxDA	%				122	123	50-150			
M2PFTeDA	%				111	107	50-150			
M3HFPODA	%				107	105	50-150			
M3PFBS	%				110	110	50-150			
M3PFHxS	%				111	108	50-150			
M4PFHpA	%				111	107	50-150			
M5PFHxA	%				115	111	50-150			
M5PFPeA	%				111	108	50-150			
M6PFDA	%				114	111	50-150			
M7PFUdA	%				117	112	50-150			
M8FOSA	%				98	90	50-150			
M8PFOA	%				113	108	50-150			
M8PFOS	%				111	110	50-150			
M9PFNA	%				113	109	50-150			
MPFBA	%				111	109	50-150			
MPFD _o A	%				108	104	50-150			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2389021		2389022													
Parameter	Units	40250494001		MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec						
4:2 FTS	ng/L	ND	37.5	37.2	45.3	41.9	121	113	70-130	8	30				
6:2 Fluorotelomer sulfonate	ng/L	ND	38	37.7	48.8	43.7	127	115	70-130	11	30				
8:2 FTS	ng/L	ND	38.4	38.1	46.2	42.7	120	112	70-130	8	30				
9CI-PF3ONS	ng/L	ND	37.3	37	40.7	40.4	109	109	70-130	1	30				

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QUALITY CONTROL DATA

Project: 1690026073
 Pace Project No.: 40250494

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2389021												2389022	
Parameter	Units	40250494001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max	Qual		
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD		RPD	
11CI-PF3OUdS	ng/L	ND	37.7	37.4	40.7	41.9	108	112	70-130	3	30		
ADONA	ng/L	ND	37.8	37.5	40.6	40.1	107	107	70-130	1	30		
Perfluorooctanesulfonamide	ng/L	ND	40	39.7	48.7	45.1	120	111	70-130	8	30		
HFPO-DA	ng/L	ND	80	79.4	91.0	86.8	114	109	70-130	5	30		
NEtFOSA	ng/L	ND	40	39.7	46.8	45.5	117	115	70-130	3	30		
NEtFOSAA	ng/L	ND	40	39.7	41.8	42.9	104	108	70-130	3	30		
NEtFOSE	ng/L	ND	40	39.7	47.6	46.7	119	118	70-130	2	30		
NMeFOSA	ng/L	ND	40	39.7	50.5	48.8	126	123	70-130	3	30		
NMeFOSAA	ng/L	ND	40	39.7	43.5	43.4	108	109	70-130	0	30		
NMeFOSE	ng/L	ND	40	39.7	44.9	45.3	112	114	70-130	1	30		
Perfluorobutanoic acid	ng/L	ND	40	39.7	44.4	43.1	110	108	70-130	3	30		
Perfluorobutanesulfonic acid	ng/L	ND	35.5	35.2	39.2	38.0	111	108	70-130	3	30		
Perfluorodecanoic acid	ng/L	ND	40	39.7	43.8	42.5	109	107	70-130	3	30		
Perfluorododecanoic acid	ng/L	ND	40	39.7	44.4	42.5	111	107	70-130	4	30		
PFDoS	ng/L	ND	38.8	38.5	40.4	43.3	104	113	70-130	7	30		
PFDS	ng/L	ND	38.6	38.3	39.8	40.1	103	105	70-130	1	30		
Perfluoroheptanoic acid	ng/L	ND	40	39.7	43.7	43.0	109	108	70-130	2	30		
PFHpS	ng/L	ND	38.1	37.8	40.3	39.7	106	105	70-130	1	30		
Perfluorohexanoic acid	ng/L	ND	40	39.7	43.1	42.8	107	107	70-130	1	30		
Perfluorohexanesulfonic acid	ng/L	ND	36.6	36.3	39.8	37.9	109	104	70-130	5	30		
Perfluorononanoic acid	ng/L	ND	40	39.7	43.9	42.2	110	106	70-130	4	30		
PFNS	ng/L	ND	38.5	38.2	42.0	40.9	109	107	70-130	3	30		
Perfluorooctanoic acid	ng/L	ND	40	39.7	42.9	42.5	107	107	70-130	1	30		
Perfluorooctanesulfonic acid	ng/L	ND	37.1	36.8	44.2	39.9	118	108	70-130	10	30		
Perfluoropentanoic acid	ng/L	ND	40	39.7	44.8	43.3	112	109	70-130	3	30		
PFPeS	ng/L	ND	37.6	37.3	40.6	40.3	108	108	70-130	1	30		
Perfluorotetradecanoic acid	ng/L	ND	40	39.7	44.3	42.7	111	107	70-130	4	30		
Perfluorotridecanoic acid	ng/L	ND	40	39.7	44.1	44.4	110	112	70-130	1	30		
Perfluoroundecanoic acid	ng/L	ND	40	39.7	43.1	43.1	108	109	70-130	0	30		
d-NEtFOSA	%						86	66	50-150				
d-NMeFOSA	%						84	70	50-150				
d3-NMeFOSAA	%						111	111	50-150				
d5-NEtFOSAA	%						116	115	50-150				
d7-NMeFOSE	%						95	93	50-150				
d9-NEtFOSE	%						89	87	50-150				
M2 4:2 FTS	%						106	113	50-150				
M2 6:2 FTS	%						117	122	50-150				
M2 8:2 FTS	%						93	106	50-150				
M2PFHxDA	%						116	114	50-150				
M2PFTeDA	%						107	108	50-150				
M3HFPODA	%						105	109	50-150				
M3PFBS	%						113	110	50-150				
M3PFHxS	%						110	109	50-150				

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QUALITY CONTROL DATA

Project: 1690026073

Pace Project No.: 40250494

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2389021												2389022	
Parameter	Units	40250494001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
			Spike Conc.	Spike Conc.									
M4PFHpA	%						107	107	50-150				
M5PFHxA	%						111	110	50-150				
M5PFPeA	%						108	105	50-150				
M6PFDA	%						113	112	50-150				
M7PFUdA	%						113	114	50-150				
M8FOSA	%						97	101	50-150				
M8PFOA	%						112	109	50-150				
M8PFOS	%						107	106	50-150				
M9PFNA	%						108	110	50-150				
MPFBA	%						110	107	50-150				
MPFD _o A	%						104	106	50-150				

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QUALITY CONTROL DATA

Project: 1690026073
Pace Project No.: 40250494

QC Batch: 750885	Analysis Method: EPA 537 Modified
QC Batch Method: METHOD	Analysis Description: PFAS 537 Mod Analysis Water
	Laboratory: Pace Analytical Gulf Coast

Associated Lab Samples: 40250494002

METHOD BLANK: 2401950 Matrix: Water
Associated Lab Samples: 40250494002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4:2 FTS	ng/L	<1.24	4.00	10/04/22 12:29	
6:2 Fluorotelomer sulfonate	ng/L	<1.50	4.00	10/04/22 12:29	
8:2 FTS	ng/L	<1.06	4.00	10/04/22 12:29	
9Cl-PF3ONS	ng/L	<0.900	4.00	10/04/22 12:29	
11Cl-PF3OUdS	ng/L	<0.900	4.00	10/04/22 12:29	
ADONA	ng/L	<0.860	4.00	10/04/22 12:29	
Perfluorooctanesulfonamide	ng/L	<0.740	4.00	10/04/22 12:29	
HFPO-DA	ng/L	<6.67	20.0	10/04/22 12:29	
NEtFOSA	ng/L	<1.40	8.00	10/04/22 12:29	
NEtFOSAA	ng/L	<1.58	8.00	10/04/22 12:29	
NEtFOSE	ng/L	<1.01	8.00	10/04/22 12:29	
NMeFOSA	ng/L	<1.66	8.00	10/04/22 12:29	
NMeFOSAA	ng/L	<0.900	8.00	10/04/22 12:29	
NMeFOSE	ng/L	<1.30	8.00	10/04/22 12:29	
Perfluorobutanoic acid	ng/L	<1.52	4.00	10/04/22 12:29	
Perfluorobutanesulfonic acid	ng/L	<0.620	4.00	10/04/22 12:29	
Perfluorodecanoic acid	ng/L	<1.44	4.00	10/04/22 12:29	
Perfluorododecanoic acid	ng/L	<1.30	4.00	10/04/22 12:29	
PFDoS	ng/L	<1.31	4.00	10/04/22 12:29	
PFDS	ng/L	<1.22	4.00	10/04/22 12:29	
Perfluoroheptanoic acid	ng/L	<1.16	4.00	10/04/22 12:29	
PFHpS	ng/L	<1.22	4.00	10/04/22 12:29	
Perfluorohexanoic acid	ng/L	<0.940	4.00	10/04/22 12:29	
Perfluorohexanesulfonic acid	ng/L	<1.24	4.00	10/04/22 12:29	
Perfluorononanoic acid	ng/L	<0.980	4.00	10/04/22 12:29	
PFNS	ng/L	<1.74	4.00	10/04/22 12:29	
Perfluorooctanoic acid	ng/L	<0.840	4.00	10/04/22 12:29	
Perfluorooctanesulfonic acid	ng/L	<0.760	4.00	10/04/22 12:29	
Perfluoropentanoic acid	ng/L	<0.880	4.00	10/04/22 12:29	
PFPeS	ng/L	<1.02	4.00	10/04/22 12:29	
Perfluorotetradecanoic acid	ng/L	<1.14	4.00	10/04/22 12:29	
Perfluorotridecanoic acid	ng/L	<1.23	4.00	10/04/22 12:29	
Perfluoroundecanoic acid	ng/L	<1.24	4.00	10/04/22 12:29	
d-NEtFOSA	%	100	50-150	10/04/22 12:29	
d-NMeFOSA	%	91	50-150	10/04/22 12:29	
d3-NMeFOSAA	%	103	50-150	10/04/22 12:29	
d5-NEtFOSAA	%	108	50-150	10/04/22 12:29	
d7-NMeFOSE	%	98	50-150	10/04/22 12:29	
d9-NEtFOSE	%	91	50-150	10/04/22 12:29	
M2 4:2 FTS	%	96	50-150	10/04/22 12:29	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690026073
Pace Project No.: 40250494

METHOD BLANK: 2401950 Matrix: Water
Associated Lab Samples: 40250494002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
M2 6:2 FTS	%	92	50-150	10/04/22 12:29	
M2 8:2 FTS	%	104	50-150	10/04/22 12:29	
M2PFHxDA	%	144	50-150	10/04/22 12:29	
M2PFTeDA	%	99	50-150	10/04/22 12:29	
M3HFPODA	%	118	50-150	10/04/22 12:29	
M3PFBS	%	91	50-150	10/04/22 12:29	
M3PFHxS	%	91	50-150	10/04/22 12:29	
M4PFHpA	%	99	50-150	10/04/22 12:29	
M5PFHxA	%	100	50-150	10/04/22 12:29	
M5PFPeA	%	99	50-150	10/04/22 12:29	
M6PFDA	%	105	50-150	10/04/22 12:29	
M7PFUdA	%	107	50-150	10/04/22 12:29	
M8FOSA	%	88	50-150	10/04/22 12:29	
M8PFOA	%	103	50-150	10/04/22 12:29	
M8PFOS	%	96	50-150	10/04/22 12:29	
M9PFNA	%	102	50-150	10/04/22 12:29	
MPFBA	%	98	50-150	10/04/22 12:29	
MPFDoA	%	101	50-150	10/04/22 12:29	

LABORATORY CONTROL SAMPLE & LCSD: 2401951

Parameter	Units	2401952		LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
		Spike Conc.	LCS Result						
4:2 FTS	ng/L	75	90.6	91.6	121	122	70-130	1	30
6:2 Fluorotelomer sulfonate	ng/L	76.1	93.8	89.4	123	118	70-130	5	30
8:2 FTS	ng/L	76.8	96.5	98.8	126	129	70-130	2	30
9Cl-PF3ONS	ng/L	74.6	86.0	85.2	115	114	70-130	1	30
11Cl-PF3OUdS	ng/L	75.4	89.2	85.7	118	114	70-130	4	30
ADONA	ng/L	75.6	85.4	82.8	113	109	70-130	3	30
Perfluorooctanesulfonamide	ng/L	80	95.8	91.3	120	114	70-130	5	30
HFPO-DA	ng/L	160	175	177	109	111	70-130	1	30
NEtFOSA	ng/L	80	86.9	82.3	109	103	70-130	5	30
NEtFOSAA	ng/L	80	90.6	86.7	113	108	70-130	4	30
NEtFOSE	ng/L	80	92.9	87.7	116	110	70-130	6	30
NMeFOSA	ng/L	80	92.3	88.5	115	111	70-130	4	30
NMeFOSAA	ng/L	80	94.5	90.5	118	113	70-130	4	30
NMeFOSE	ng/L	80	89.2	82.5	111	103	70-130	8	30
Perfluorobutanoic acid	ng/L	80	95.2	91.3	119	114	70-130	4	30
Perfluorobutanesulfonic acid	ng/L	71	83.9	82.9	118	117	70-130	1	30
Perfluorodecanoic acid	ng/L	80	91.4	88.4	114	111	70-130	3	30
Perfluorododecanoic acid	ng/L	80	95.2	92.4	119	115	70-130	3	30
PFDoS	ng/L	77.6	87.5	88.4	113	114	70-130	1	30
PFDS	ng/L	77.2	83.4	84.3	108	109	70-130	1	30
Perfluoroheptanoic acid	ng/L	80	93.7	89.7	117	112	70-130	4	30
PFHpS	ng/L	76.2	89.4	86.9	117	114	70-130	3	30

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QUALITY CONTROL DATA

Project: 1690026073
Pace Project No.: 40250494

LABORATORY CONTROL SAMPLE & LCSD:		2401951		2401952							
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers	
Perfluorohexanoic acid	ng/L	80	94.2	91.1	118	114	70-130	3	30		
Perfluorohexanesulfonic acid	ng/L	73.1	84.9	82.6	116	113	70-130	3	30		
Perfluorononanoic acid	ng/L	80	93.1	89.9	116	112	70-130	3	30		
PFNS	ng/L	77	87.6	85.8	114	112	70-130	2	30		
Perfluorooctanoic acid	ng/L	80	92.5	88.6	116	111	70-130	4	30		
Perfluorooctanesulfonic acid	ng/L	74.2	86.1	82.8	116	112	70-130	4	30		
Perfluoropentanoic acid	ng/L	80	94.7	91.5	118	114	70-130	3	30		
PFPeS	ng/L	75.3	89.9	86.4	119	115	70-130	4	30		
Perfluorotetradecanoic acid	ng/L	80	98.0	90.3	122	113	70-130	8	30		
Perfluorotridecanoic acid	ng/L	80	97.5	97.3	122	122	70-130	0	30		
Perfluoroundecanoic acid	ng/L	80	92.6	91.3	116	114	70-130	1	30		
d-NEtFOSA	%				95	110	50-150				
d-NMeFOSA	%				88	107	50-150				
d3-NMeFOSAA	%				103	113	50-150				
d5-NEtFOSAA	%				106	116	50-150				
d7-NMeFOSE	%				99	106	50-150				
d9-NEtFOSE	%				96	101	50-150				
M2 4:2 FTS	%				103	103	50-150				
M2 6:2 FTS	%				95	101	50-150				
M2 8:2 FTS	%				98	99	50-150				
M2PFHxDA	%				146	152	50-150			MSSV12.6	
M2PFTeDA	%				98	106	50-150				
M3HFPODA	%				128	139	50-150				
M3PFBS	%				102	107	50-150				
M3PFHxS	%				104	110	50-150				
M4PFHpA	%				107	115	50-150				
M5PFHxA	%				108	114	50-150				
M5PFPeA	%				106	113	50-150				
M6PFDA	%				106	115	50-150				
M7PFUdA	%				101	111	50-150				
M8FOSA	%				94	102	50-150				
M8PFOA	%				109	117	50-150				
M8PFOS	%				102	111	50-150				
M9PFNA	%				107	115	50-150				
MPFBA	%				104	111	50-150				
MPFD _o A	%				96	105	50-150				

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QUALIFIERS

Project: 1690026073

Pace Project No.: 40250494

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

WORKORDER QUALIFIERS

WO: 40250494

[1] Revised - sub lab - revised to get -001 to merge into Green Bay report per error in GC. SVM 10/7/2022

[1] Sample 22208270404 (1750-P-FB) was re-extracted outside holding time due to some high detections for associated target compounds. Both extracts are being reported.

ANALYTE QUALIFIERS

H1 Analysis was conducted outside of the recognized method holding time.

H1 Extraction or preparation was conducted outside of the recognized method holding time.

L3 Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.

MSSV12.6 In the EPA 537 Mod Isotope Dilution analysis, the recovery for the extracted internal standard M2PFHxDA is outside the control limits for sample 2401952 (LCSD for HBN 750885 [LCMS/6688]). The recovery of the associated compounds is within control limits.

MSSV41.1 In the EPA 537 Mod Isotope Dilution analysis for prep batch 750105, PFOS was detected at an estimated concentration in the method blank. This compound was not detected in any of the associated samples.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1690026073
Pace Project No.: 40250494

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40250494001	1750-P	METHOD	750105	EPA 537 Modified	750435
40250494002	1750-P-FB	METHOD	750010	EPA 537 Modified	750428
40250494002	1750-P-FB	METHOD	750885	EPA 537 Modified	750352

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