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ANALYTICAL REPORT

Eurofins Lancaster Laboratories Env, LLC
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Tel: (717)656-2300

Laboratory Job ID: 410-53637-1
Client Project/Site: PFAS & Perchlorate

For:
Pittsburgh Water and Sewer Authority
900 Freeport Road
Pittsburgh, Pennsylvania 15238

Attn: Aimee Butch

Authorized for release by:
9/15/2021 8:46:07 AM

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

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

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Stephen Gordon
Senior Project Manager
9/15/2021 8:46:07 AM

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Definitions/Glossary

Client: Pittsburgh Water and Sewer Authority
Project/Site: PFAS & Perchlorate

Job ID: 410-53637-1

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Analyte was found in the blank.
E	Result exceeded calibration range.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
1C	Result is from the primary column on a dual-column method.
2C	Result is from the confirmation column on a dual-column method.
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

Job ID: 410-53637-1

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Narrative

Job Narrative
410-53637-1

Receipt
The samples were received on 9/2/2021 11:04 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 time was 5.3°C

Receipt Exceptions
coc lists DW Raw (300) as having 2 plastic 250 trizmas, received 4

coc lists DW Finished (101) as having 2 plastic 250 trizmas, received 4

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

PFAS
Method PFC_IDA: Target analyte(s) were detected in the method blank associated with the following sample: Raw (300). The following action was taken: This sample(s) was re-extracted within the required holding time and target analyte(s) were not detected in the re-extracted method blank. The recovery for the labeled isotope(s) in the re-extracted sample is outside the QC acceptance limits. The values here are from the initial injection of the sample.

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

Detection Summary

Client: Pittsburgh Water and Sewer Authority
Project/Site: PFAS & Perchlorate

Job ID: 410-53637-1

Client Sample ID: Raw (300) — Lab Sample ID: 410-53637-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid	2.0		1.9	0.46	ng/L	1		EPA 537.1	Total/NA
Perfluoroheptanoic acid	0.60	J	1.9	0.46	ng/L	1		EPA 537.1	Total/NA
Perfluorohexanesulfonic acid	0.50	J	1.9	0.46	ng/L	1		EPA 537.1	Total/NA
Perfluorohexanoic acid	0.77	J	1.9	0.46	ng/L	1		EPA 537.1	Total/NA
Perfluorooctanesulfonic acid	1.8	J	1.9	0.46	ng/L	1		EPA 537.1	Total/NA
Perfluorooctanoic acid	1.2	J	1.9	0.46	ng/L	1		EPA 537.1	Total/NA

Client Sample ID: Finished (101) — Lab Sample ID: 410-53637-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid	0.77	J	1.7	0.42	ng/L	1		EPA 537.1	Total/NA
Perfluoroheptanoic acid	0.76	J	1.7	0.42	ng/L	1		EPA 537.1	Total/NA
Perfluorohexanoic acid	0.98	J	1.7	0.42	ng/L	1		EPA 537.1	Total/NA
Perfluorooctanesulfonic acid	1.3	J	1.7	0.42	ng/L	1		EPA 537.1	Total/NA
Perfluorooctanoic acid	1.1	J	1.7	0.42	ng/L	1		EPA 537.1	Total/NA

Client Sample ID: Raw (300) — Lab Sample ID: 410-53637-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid	1.1	J	1.7	0.42	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid	0.68	J	1.7	0.42	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid	1.4	J	1.7	0.42	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid	0.44	J	1.7	0.42	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid	0.79	J	1.7	0.42	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid	1.8	B	1.7	0.42	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid	1.8	J	4.2	1.7	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid	0.93	J	1.7	0.42	ng/L	1		537 (modified)	Total/NA

Client Sample ID: Finished (101) — Lab Sample ID: 410-53637-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid	0.89	J	1.7	0.43	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid	0.85	J	1.7	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid	1.3	J	1.7	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid	0.43	J	1.7	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid	0.59	J	1.7	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid	0.46	J	1.7	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid	2.2		1.7	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonamide	0.75	J	1.7	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid	2.0	J	4.3	1.7	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid	0.82	J	1.7	0.43	ng/L	1		537 (modified)	Total/NA

Client Sample ID: Field Blank-Raw — Lab Sample ID: 410-53637-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid	0.73	J	1.8	0.45	ng/L	1		EPA 537.1	Total/NA

Client Sample ID: Field Blank Finished — Lab Sample ID: 410-53637-6

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Env, LLC

Client Sample ID: Raw (300)

Date Collected: 08/31/21 07:35
Date Received: 09/02/21 11:04

Lab Sample ID: 410-53637-1
Matrix: Drinking Water

Method: EPA 537.1 - EPA 537.1, Ver 1.0 Nov 2018

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NEtFOSAA	ND		1.9	0.46	ng/L		09/03/21 17:12	09/09/21 02:38	1
NMeFOSAA	ND		1.9	0.46	ng/L		09/03/21 17:12	09/09/21 02:38	1
Perfluorobutanesulfonic acid	**2.0**		1.9	0.46	ng/L		09/03/21 17:12	09/09/21 02:38	1
Perfluorodecanoic acid	ND		1.9	0.46	ng/L		09/03/21 17:12	09/09/21 02:38	1
Perfluorododecanoic acid	ND		1.9	0.46	ng/L		09/03/21 17:12	09/09/21 02:38	1
Perfluoroheptanoic acid	**0.60**	**J**	1.9	0.46	ng/L		09/03/21 17:12	09/09/21 02:38	1
Perfluorohexanesulfonic acid	**0.50**	**J**	1.9	0.46	ng/L		09/03/21 17:12	09/09/21 02:38	1
Perfluorohexanoic acid	**0.77**	**J**	1.9	0.46	ng/L		09/03/21 17:12	09/09/21 02:38	1
Perfluorononanoic acid	ND		1.9	0.46	ng/L		09/03/21 17:12	09/09/21 02:38	1
Perfluorooctanesulfonic acid	**1.8**	**J**	1.9	0.46	ng/L		09/03/21 17:12	09/09/21 02:38	1
Perfluorooctanoic acid	**1.2**	**J**	1.9	0.46	ng/L		09/03/21 17:12	09/09/21 02:38	1
Perfluorotetradecanoic acid	ND		1.9	0.46	ng/L		09/03/21 17:12	09/09/21 02:38	1
Perfluorotridecanoic acid	ND		1.9	0.46	ng/L		09/03/21 17:12	09/09/21 02:38	1
Perfluoroundecanoic acid	ND		1.9	0.46	ng/L		09/03/21 17:12	09/09/21 02:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*97*		*70 - 130*	*09/03/21 17:12*	*09/09/21 02:38*	*1*
13C2 PFHxA	*91*		*70 - 130*	*09/03/21 17:12*	*09/09/21 02:38*	*1*
13C3 HFPO-DA	*80*		*70 - 130*	*09/03/21 17:12*	*09/09/21 02:38*	*1*
d5-NEtFOSAA	*79*		*70 - 130*	*09/03/21 17:12*	*09/09/21 02:38*	*1*

Method: SW846 6850 - Perchlorate by LC/MS or LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		1.0	0.23	ug/L		09/08/21 11:51	09/08/21 16:04	1

Client Sample ID: Finished (101)

Date Collected: 08/31/21 08:05
Date Received: 09/02/21 11:04

Lab Sample ID: 410-53637-2
Matrix: Drinking Water

Method: EPA 537.1 - EPA 537.1, Ver 1.0 Nov 2018

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NEtFOSAA	ND		1.7	0.42	ng/L		09/03/21 17:12	09/10/21 20:43	1
NMeFOSAA	ND		1.7	0.42	ng/L		09/03/21 17:12	09/10/21 20:43	1
Perfluorobutanesulfonic acid	**0.77**	**J**	1.7	0.42	ng/L		09/03/21 17:12	09/10/21 20:43	1
Perfluorodecanoic acid	ND		1.7	0.42	ng/L		09/03/21 17:12	09/10/21 20:43	1
Perfluorododecanoic acid	ND		1.7	0.42	ng/L		09/03/21 17:12	09/10/21 20:43	1
Perfluoroheptanoic acid	**0.76**	**J**	1.7	0.42	ng/L		09/03/21 17:12	09/10/21 20:43	1
Perfluorohexanesulfonic acid	ND		1.7	0.42	ng/L		09/03/21 17:12	09/10/21 20:43	1
Perfluorohexanoic acid	**0.98**	**J**	1.7	0.42	ng/L		09/03/21 17:12	09/10/21 20:43	1
Perfluorononanoic acid	ND		1.7	0.42	ng/L		09/03/21 17:12	09/10/21 20:43	1
Perfluorooctanesulfonic acid	**1.3**	**J**	1.7	0.42	ng/L		09/03/21 17:12	09/10/21 20:43	1
Perfluorooctanoic acid	**1.1**	**J**	1.7	0.42	ng/L		09/03/21 17:12	09/10/21 20:43	1
Perfluorotetradecanoic acid	ND		1.7	0.42	ng/L		09/03/21 17:12	09/10/21 20:43	1
Perfluorotridecanoic acid	ND		1.7	0.42	ng/L		09/03/21 17:12	09/10/21 20:43	1
Perfluoroundecanoic acid	ND		1.7	0.42	ng/L		09/03/21 17:12	09/10/21 20:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*90*		*70 - 130*	*09/03/21 17:12*	*09/10/21 20:43*	*1*
13C2 PFHxA	*91*		*70 - 130*	*09/03/21 17:12*	*09/10/21 20:43*	*1*
13C3 HFPO-DA	*79*		*70 - 130*	*09/03/21 17:12*	*09/10/21 20:43*	*1*
d5-NEtFOSAA	*73*		*70 - 130*	*09/03/21 17:12*	*09/10/21 20:43*	*1*

Client Sample ID: Finished (101)

Date Collected: 08/31/21 08:05
Date Received: 09/02/21 11:04

Lab Sample ID: 410-53637-2
Matrix: Drinking Water

Method: SW846 6850 - Perchlorate by LC/MS or LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		1.0	0.23	ug/L		09/08/21 11:51	09/08/21 16:10	1

Client Sample ID: Raw (300)

Date Collected: 08/31/21 07:35
Date Received: 09/02/21 11:04

Lab Sample ID: 410-53637-3
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	**1.1**	**J**	1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluoroheptanoic acid	**0.68**	**J**	1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorooctanoic acid	**1.4**	**J**	1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorononanoic acid	**0.44**	**J**	1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorodecanoic acid	ND		1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorotridecanoic acid	ND		1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorotetradecanoic acid	ND		1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorobutanesulfonic acid	**0.79**	**J**	1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorohexanesulfonic acid	ND		1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorooctanesulfonic acid	**1.8**	**B**	1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
NEtFOSAA	ND		2.5	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
NMeFOSAA	ND		1.7	0.50	ng/L		09/13/21 08:05	09/13/21 20:48	1
10:2 FTS	ND		4.2	0.84	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluoropentanesulfonic acid	ND		1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluoroheptanesulfonic acid	ND		1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorononanesulfonic acid	ND		1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorodecanesulfonic acid	ND		1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.5	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorooctanesulfonamide	ND		1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorohexadecanoic acid	ND		2.5	0.84	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorooctadecanoic acid	ND		2.5	0.84	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorobutanoic acid	**1.8**	**J**	4.2	1.7	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluoropentanoic acid	**0.93**	**J**	1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
NMeFOSE	ND		2.5	0.84	ng/L		09/13/21 08:05	09/13/21 20:48	1
NMeFOSA	ND		2.5	0.84	ng/L		09/13/21 08:05	09/13/21 20:48	1
NEtFOSE	ND		2.5	0.84	ng/L		09/13/21 08:05	09/13/21 20:48	1
NEtFOSA	ND		4.2	0.84	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluorododecanoic acid	ND		1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
Perfluoroundecanoic acid	ND		1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
4:2 Fluorotelomer sulfonic acid	ND		1.7	0.42	ng/L		09/13/21 08:05	09/13/21 20:48	1
6:2 Fluorotelomer sulfonic acid	ND		4.2	1.7	ng/L		09/13/21 08:05	09/13/21 20:48	1
8:2 Fluorotelomer sulfonic acid	ND		2.5	0.84	ng/L		09/13/21 08:05	09/13/21 20:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-4:2 FTS	*119*		*20 - 187*	*09/13/21 08:05*	*09/13/21 20:48*	*1*
M2-8:2 FTS	*127*		*34 - 182*	*09/13/21 08:05*	*09/13/21 20:48*	*1*
M2-6:2 FTS	*125*		*29 - 189*	*09/13/21 08:05*	*09/13/21 20:48*	*1*
13C5 PFHxA	*100*		*31 - 142*	*09/13/21 08:05*	*09/13/21 20:48*	*1*
13C4 PFHpA	*104*		*30 - 144*	*09/13/21 08:05*	*09/13/21 20:48*	*1*
13C8 PFOA	*109*		*49 - 127*	*09/13/21 08:05*	*09/13/21 20:48*	*1*
13C9 PFNA	*102*		*47 - 136*	*09/13/21 08:05*	*09/13/21 20:48*	*1*
13C6 PFDA	*109*		*47 - 128*	*09/13/21 08:05*	*09/13/21 20:48*	*1*

Client Sample ID: Raw (300)

Date Collected: 08/31/21 07:35
Date Received: 09/02/21 11:04

Lab Sample ID: 410-53637-3
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C7 PFUnA	105		40 - 135	09/13/21 08:05	09/13/21 20:48	1
13C2-PFDoDA	92		28 - 136	09/13/21 08:05	09/13/21 20:48	1
13C2 PFTeDA	56		10 - 144	09/13/21 08:05	09/13/21 20:48	1
13C3 PFBS	138		19 - 178	09/13/21 08:05	09/13/21 20:48	1
13C3 PFHxS	107		32 - 145	09/13/21 08:05	09/13/21 20:48	1
13C8 PFOS	102		49 - 126	09/13/21 08:05	09/13/21 20:48	1
d3-NMeFOSAA	117		32 - 151	09/13/21 08:05	09/13/21 20:48	1
d5-NEtFOSAA	112		37 - 164	09/13/21 08:05	09/13/21 20:48	1
13C8 FOSA	74		10 - 143	09/13/21 08:05	09/13/21 20:48	1
13C4 PFBA	104		41 - 132	09/13/21 08:05	09/13/21 20:48	1
13C5 PFPeA	127		33 - 155	09/13/21 08:05	09/13/21 20:48	1
d7-N-MeFOSE-M	57		10 - 143	09/13/21 08:05	09/13/21 20:48	1
d3-NMePFOSA	24		10 - 107	09/13/21 08:05	09/13/21 20:48	1
d9-N-EtFOSE-M	50		10 - 142	09/13/21 08:05	09/13/21 20:48	1
d5-NEtPFOSA	24		10 - 108	09/13/21 08:05	09/13/21 20:48	1

Client Sample ID: Finished (101)

Date Collected: 08/31/21 08:05
Date Received: 09/02/21 11:04

Lab Sample ID: 410-53637-4
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	**0.89**	**J**	1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluoroheptanoic acid	**0.85**	**J**	1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluorooctanoic acid	**1.3**	**J**	1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluorononanoic acid	ND		1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluorodecanoic acid	**0.43**	**J**	1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluorotridecanoic acid	ND		1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluorotetradecanoic acid	ND		1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluorobutanesulfonic acid	**0.59**	**J**	1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluorohexanesulfonic acid	**0.46**	**J**	1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluorooctanesulfonic acid	**2.2**		1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
NEtFOSAA	ND		2.6	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
NMeFOSAA	ND		1.7	0.51	ng/L		09/08/21 09:14	09/10/21 04:45	1
10:2 FTS	ND		4.3	0.85	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluoropentanesulfonic acid	ND		1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluoroheptanesulfonic acid	ND		1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluorononanesulfonic acid	ND		1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluorodecanesulfonic acid	ND		1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.6	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluorooctanesulfonamide	**0.75**	**J**	1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluorohexadecanoic acid	ND		2.6	0.85	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluorooctadecanoic acid	ND		2.6	0.85	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluorobutanoic acid	**2.0**	**J**	4.3	1.7	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluoropentanoic acid	**0.82**	**J**	1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
NMeFOSE	ND		2.6	0.85	ng/L		09/08/21 09:14	09/10/21 04:45	1
NMeFOSA	ND		2.6	0.85	ng/L		09/08/21 09:14	09/10/21 04:45	1
NEtFOSE	ND		2.6	0.85	ng/L		09/08/21 09:14	09/10/21 04:45	1
NEtFOSA	ND		4.3	0.85	ng/L		09/08/21 09:14	09/10/21 04:45	1

Client Sample ID: Finished (101)

Date Collected: 08/31/21 08:05
Date Received: 09/02/21 11:04

Lab Sample ID: 410-53637-4

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorododecanoic acid	ND		1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
Perfluoroundecanoic acid	ND		1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
4:2 Fluorotelomer sulfonic acid	ND		1.7	0.43	ng/L		09/08/21 09:14	09/10/21 04:45	1
6:2 Fluorotelomer sulfonic acid	ND		4.3	1.7	ng/L		09/08/21 09:14	09/10/21 04:45	1
8:2 Fluorotelomer sulfonic acid	ND		2.6	0.85	ng/L		09/08/21 09:14	09/10/21 04:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-4:2 FTS	*138*		*20 - 187*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
M2-8:2 FTS	*130*		*34 - 182*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
M2-6:2 FTS	*146*		*29 - 189*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
13C5 PFHxA	*111*		*31 - 142*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
13C4 PFHpA	*109*		*30 - 144*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
13C8 PFOA	*116*		*49 - 127*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
13C9 PFNA	*106*		*47 - 136*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
13C6 PFDA	*103*		*47 - 128*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
13C7 PFUnA	*116*		*40 - 135*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
13C2-PFDoDA	*92*		*28 - 136*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
13C2 PFTeDA	*97*		*10 - 144*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
13C3 PFBS	*143*		*19 - 178*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
13C3 PFHxS	*113*		*32 - 145*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
13C8 PFOS	*107*		*49 - 126*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
d3-NMeFOSAA	*103*		*32 - 151*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
d5-NEtFOSAA	*112*		*37 - 164*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
13C8 FOSA	*83*		*10 - 143*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
13C4 PFBA	*101*		*41 - 132*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
13C5 PFPeA	*110*		*33 - 155*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
d7-N-MeFOSE-M	*87*		*10 - 143*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
d3-NMePFOSA	*23*		*10 - 107*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
d9-N-EtFOSE-M	*81*		*10 - 142*	*09/08/21 09:14*	*09/10/21 04:45*	*1*
d5-NEtPFOSA	*25*		*10 - 108*	*09/08/21 09:14*	*09/10/21 04:45*	*1*

Client Sample ID: Field Blank-Raw

Date Collected: 08/31/21 07:35
Date Received: 09/02/21 11:04

Lab Sample ID: 410-53637-5

Matrix: Drinking Water

Method: EPA 537.1 - EPA 537.1, Ver 1.0 Nov 2018

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NEtFOSAA	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:01	1
NMeFOSAA	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:01	1
Perfluorobutanesulfonic acid	**0.73**	**J**	1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:01	1
Perfluorodecanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:01	1
Perfluorododecanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:01	1
Perfluoroheptanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:01	1
Perfluorohexanesulfonic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:01	1
Perfluorohexanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:01	1
Perfluorononanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:01	1
Perfluorooctanesulfonic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:01	1
Perfluorooctanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:01	1
Perfluorotetradecanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:01	1
Perfluorotridecanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:01	1
Perfluoroundecanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:01	1

Client Sample ID: Field Blank-Raw

Date Collected: 08/31/21 07:35
Date Received: 09/02/21 11:04

Lab Sample ID: 410-53637-5
Matrix: Drinking Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*89*		*70 - 130*	*09/03/21 17:12*	*09/09/21 03:01*	*1*
13C2 PFHxA	*91*		*70 - 130*	*09/03/21 17:12*	*09/09/21 03:01*	*1*
13C3 HFPO-DA	*80*		*70 - 130*	*09/03/21 17:12*	*09/09/21 03:01*	*1*
d5-NEtFOSAA	*82*		*70 - 130*	*09/03/21 17:12*	*09/09/21 03:01*	*1*

Client Sample ID: Field Blank Finished

Date Collected: 08/31/21 08:05
Date Received: 09/02/21 11:04

Lab Sample ID: 410-53637-6
Matrix: Drinking Water

Method: EPA 537.1 - EPA 537.1, Ver 1.0 Nov 2018

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NEtFOSAA	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:13	1
NMeFOSAA	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:13	1
Perfluorobutanesulfonic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:13	1
Perfluorodecanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:13	1
Perfluorododecanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:13	1
Perfluoroheptanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:13	1
Perfluorohexanesulfonic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:13	1
Perfluorohexanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:13	1
Perfluorononanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:13	1
Perfluorooctanesulfonic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:13	1
Perfluorooctanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:13	1
Perfluorotetradecanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:13	1
Perfluorotridecanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:13	1
Perfluoroundecanoic acid	ND		1.8	0.45	ng/L		09/03/21 17:12	09/09/21 03:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*103*		*70 - 130*	*09/03/21 17:12*	*09/09/21 03:13*	*1*
13C2 PFHxA	*108*		*70 - 130*	*09/03/21 17:12*	*09/09/21 03:13*	*1*
13C3 HFPO-DA	*97*		*70 - 130*	*09/03/21 17:12*	*09/09/21 03:13*	*1*
d5-NEtFOSAA	*89*		*70 - 130*	*09/03/21 17:12*	*09/09/21 03:13*	*1*

Surrogate Summary

Client: Pittsburgh Water and Sewer Authority
Project/Site: PFAS & Perchlorate

Job ID: 410-53637-1

Method: EPA 537.1 - EPA 537.1, Ver 1.0 Nov 2018

Matrix: Drinking Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	PFDA (70-130)	PFHxA (70-130)	HFPODA (70-130)	d5NEFOS (70-130)
410-53637-1	Raw (300)	97	91	80	79
410-53637-2	Finished (101)	90	91	79	73
410-53637-5	Field Blank-Raw	89	91	80	82
410-53637-6	Field Blank Finished	103	108	97	89
LCS 410-167997/2-A	Lab Control Sample	97	102	90	86
MB 410-167997/1-A	Method Blank	87	92	82	89

Surrogate Legend

PFDA = 13C2 PFDA
PFHxA = 13C2 PFHxA
HFPODA = 13C3 HFPO-DA
d5NEFOS = d5-NEtFOSAA

Isotope Dilution Summary

Client: Pittsburgh Water and Sewer Authority
Project/Site: PFAS & Perchlorate

Job ID: 410-53637-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M242FTS (20-187)	M282FTS (34-182)	M262FTS (29-189)	13C5PHA (31-142)	C4PFHA (30-144)	C8PFOA (49-127)	C9PFNA (47-136)	C6PFDA (47-128)
410-53637-3	Raw (300)	119	127	125	100	104	109	102	109
410-53637-4	Finished (101)	138	130	146	111	109	116	106	103
LCS 410-168919/2-A	Lab Control Sample	101	96	103	96	95	101	95	94
LCS 410-170472/2-A	Lab Control Sample	130	132	132	115	119	122	113	120
LCSD 410-170472/3-A	Lab Control Sample Dup	133	126	128	116	115	119	114	120
MB 410-168919/1-A	Method Blank	112	106	112	97	101	102	100	98
MB 410-170472/1-A	Method Blank	137	138	132	124	118	127	108	118

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	13C7PUA (40-135)	PFDoDA (28-136)	PFTDA (10-144)	C3PFBS (19-178)	C3PFHS (32-145)	C8PFOS (49-126)	d3NMFOS (32-151)	d5NEFOS (37-164)
410-53637-3	Raw (300)	105	92	56	138	107	102	117	112
410-53637-4	Finished (101)	116	92	97	143	113	107	103	112
LCS 410-168919/2-A	Lab Control Sample	97	88	99	115	93	93	98	95
LCS 410-170472/2-A	Lab Control Sample	111	113	113	128	128	121	129	123
LCSD 410-170472/3-A	Lab Control Sample Dup	114	113	114	117	117	115	133	137
MB 410-168919/1-A	Method Blank	97	85	94	114	105	99	92	96
MB 410-170472/1-A	Method Blank	117	122	117	118	127	110	133	134

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFOSA (10-143)	PFBA (41-132)	PFPeA (33-155)	NMFM (10-143)	d3NMFSA (10-107)	NEFM (10-142)	d5NPFSA (10-108)	
410-53637-3	Raw (300)	74	104	127	57	24	50	24	
410-53637-4	Finished (101)	83	101	110	87	23	81	25	
LCS 410-168919/2-A	Lab Control Sample	86	96	95	88	75	87	85	
LCS 410-170472/2-A	Lab Control Sample	98	116	117	110	85	114	93	
LCSD 410-170472/3-A	Lab Control Sample Dup	94	111	116	115	96	114	102	
MB 410-168919/1-A	Method Blank	83	95	102	90	74	89	83	
MB 410-170472/1-A	Method Blank	99	110	115	109	89	112	93	

Surrogate Legend

M242FTS = M2-4:2 FTS
M282FTS = M2-8:2 FTS
M262FTS = M2-6:2 FTS
13C5PHA = 13C5 PFHxA
C4PFHA = 13C4 PFHpA
C8PFOA = 13C8 PFOA
C9PFNA = 13C9 PFNA
C6PFDA = 13C6 PFDA
13C7PUA = 13C7 PFUnA
PFDoDA = 13C2-PFDoDA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
C3PFHS = 13C3 PFHxS
C8PFOS = 13C8 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
PFOSA = 13C8 FOSA
PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
NMFM = d7-N-MeFOSE-M

Isotope Dilution Summary

Client: Pittsburgh Water and Sewer Authority
Job ID: 410-53637-1
Project/Site: PFAS & Perchlorate

d3NMFSA = d3-NMePFOSA
NEFM = d9-N-EtFOSE-M
d5NPFSA = d5-NEtPFOSA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 410-168919/1-A
Matrix: Water
Analysis Batch: 169745

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 168919

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluoroheptanoic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorooctanoic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorononanoic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorodecanoic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorotridecanoic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorotetradecanoic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorobutanesulfonic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorohexanesulfonic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorooctanesulfonic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
NEtFOSAA	ND		3.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
NMeFOSAA	ND		2.0	0.60	ng/L		09/08/21 09:14	09/10/21 01:59	1
10:2 FTS	ND		5.0	1.0	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluoropentanesulfonic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluoroheptanesulfonic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorononanesulfonic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorodecanesulfonic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorododecanesulfonic acid (PFDoS)	ND		3.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorooctanesulfonamide	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorohexadecanoic acid	ND		3.0	1.0	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorooctadecanoic acid	ND		3.0	1.0	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorobutanoic acid	ND		5.0	2.0	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluoropentanoic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
NMeFOSE	ND		3.0	1.0	ng/L		09/08/21 09:14	09/10/21 01:59	1
NMeFOSA	ND		3.0	1.0	ng/L		09/08/21 09:14	09/10/21 01:59	1
NEtFOSE	ND		3.0	1.0	ng/L		09/08/21 09:14	09/10/21 01:59	1
NEtFOSA	ND		5.0	1.0	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluorododecanoic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
Perfluoroundecanoic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
4:2 Fluorotelomer sulfonic acid	ND		2.0	0.50	ng/L		09/08/21 09:14	09/10/21 01:59	1
6:2 Fluorotelomer sulfonic acid	ND		5.0	2.0	ng/L		09/08/21 09:14	09/10/21 01:59	1
8:2 Fluorotelomer sulfonic acid	ND		3.0	1.0	ng/L		09/08/21 09:14	09/10/21 01:59	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-4:2 FTS	*112*		*20 - 187*	*09/08/21 09:14*	*09/10/21 01:59*	*1*
M2-8:2 FTS	*106*		*34 - 182*	*09/08/21 09:14*	*09/10/21 01:59*	*1*
M2-6:2 FTS	*112*		*29 - 189*	*09/08/21 09:14*	*09/10/21 01:59*	*1*
13C5 PFHxA	*97*		*31 - 142*	*09/08/21 09:14*	*09/10/21 01:59*	*1*
13C4 PFHpA	*101*		*30 - 144*	*09/08/21 09:14*	*09/10/21 01:59*	*1*
13C8 PFOA	*102*		*49 - 127*	*09/08/21 09:14*	*09/10/21 01:59*	*1*
13C9 PFNA	*100*		*47 - 136*	*09/08/21 09:14*	*09/10/21 01:59*	*1*
13C6 PFDA	*98*		*47 - 128*	*09/08/21 09:14*	*09/10/21 01:59*	*1*
13C7 PFUnA	*97*		*40 - 135*	*09/08/21 09:14*	*09/10/21 01:59*	*1*
13C2-PFDoDA	*85*		*28 - 136*	*09/08/21 09:14*	*09/10/21 01:59*	*1*
13C2 PFTeDA	*94*		*10 - 144*	*09/08/21 09:14*	*09/10/21 01:59*	*1*
13C3 PFBS	*114*		*19 - 178*	*09/08/21 09:14*	*09/10/21 01:59*	*1*
13C3 PFHxS	*105*		*32 - 145*	*09/08/21 09:14*	*09/10/21 01:59*	*1*
13C8 PFOS	*99*		*49 - 126*	*09/08/21 09:14*	*09/10/21 01:59*	*1*

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

Lab Sample ID: MB 410-168919/1-A
Matrix: Water
Analysis Batch: 169745

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 168919

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	92		32 - 151	09/08/21 09:14	09/10/21 01:59	1
d5-NEtFOSAA	96		37 - 164	09/08/21 09:14	09/10/21 01:59	1
13C8 FOSA	83		10 - 143	09/08/21 09:14	09/10/21 01:59	1
13C4 PFBA	95		41 - 132	09/08/21 09:14	09/10/21 01:59	1
13C5 PFPeA	102		33 - 155	09/08/21 09:14	09/10/21 01:59	1
d7-N-MeFOSE-M	90		10 - 143	09/08/21 09:14	09/10/21 01:59	1
d3-NMePFOSA	74		10 - 107	09/08/21 09:14	09/10/21 01:59	1
d9-N-EtFOSE-M	89		10 - 142	09/08/21 09:14	09/10/21 01:59	1
d5-NEtPFOSA	83		10 - 108	09/08/21 09:14	09/10/21 01:59	1

Lab Sample ID: LCS 410-168919/2-A
Matrix: Water
Analysis Batch: 169745

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 168919

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid	25.6	26.7		ng/L		104	66 - 137
Perfluoroheptanoic acid	25.6	31.8		ng/L		124	66 - 141
Perfluorooctanoic acid	25.6	29.2		ng/L		114	65 - 136
Perfluorononanoic acid	25.6	30.6		ng/L		119	65 - 140
Perfluorodecanoic acid	25.6	32.7		ng/L		128	63 - 137
Perfluorotridecanoic acid	25.6	32.6		ng/L		127	58 - 146
Perfluorotetradecanoic acid	25.6	31.1		ng/L		121	64 - 141
Perfluorobutanesulfonic acid	22.7	21.7		ng/L		96	65 - 132
Perfluorohexanesulfonic acid	23.3	26.1		ng/L		112	60 - 128
Perfluorooctanesulfonic acid	23.7	28.7		ng/L		121	51 - 126
NEtFOSAA	25.6	32.4		ng/L		127	54 - 134
NMeFOSAA	25.6	30.0		ng/L		117	58 - 143
10:2 FTS	24.7	27.4		ng/L		111	44 - 141
Perfluoropentanesulfonic acid	24.0	23.1		ng/L		96	71 - 136
Perfluoroheptanesulfonic acid	24.4	27.5		ng/L		113	67 - 135
Perfluorononanesulfonic acid	24.6	25.4		ng/L		103	67 - 137
Perfluorodecanesulfonic acid	24.7	25.3		ng/L		103	61 - 134
Perfluorododecanesulfonic acid (PFDoS)	24.8	23.1		ng/L		93	54 - 136
Perfluorooctanesulfonamide	25.6	28.4		ng/L		111	55 - 130
Perfluorohexadecanoic acid	25.6	29.4		ng/L		115	52 - 149
Perfluorooctadecanoic acid	25.6	27.6		ng/L		108	32 - 167
Perfluorobutanoic acid	25.6	26.9		ng/L		105	62 - 156
Perfluoropentanoic acid	25.6	28.8		ng/L		112	72 - 139
NMeFOSE	25.6	27.1		ng/L		106	52 - 131
NMeFOSA	25.6	27.0		ng/L		106	49 - 141
NEtFOSE	25.6	26.7		ng/L		104	49 - 128
NEtFOSA	25.6	25.2		ng/L		98	50 - 136
Perfluorododecanoic acid	25.6	32.5		ng/L		127	63 - 140
Perfluoroundecanoic acid	25.6	34.4		ng/L		134	62 - 138
4:2 Fluorotelomer sulfonic acid	23.9	26.3		ng/L		110	59 - 130
6:2 Fluorotelomer sulfonic acid	24.3	26.5		ng/L		109	57 - 137
8:2 Fluorotelomer sulfonic acid	24.5	30.2		ng/L		123	56 - 140

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

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
M2-4:2 FTS	101		20 - 187
M2-8:2 FTS	96		34 - 182
M2-6:2 FTS	103		29 - 189
13C5 PFHxA	96		31 - 142
13C4 PFHpA	95		30 - 144
13C8 PFOA	101		49 - 127
13C9 PFNA	95		47 - 136
13C6 PFDA	94		47 - 128
13C7 PFUnA	97		40 - 135
13C2-PFDoDA	88		28 - 136
13C2 PFTeDA	99		10 - 144
13C3 PFBS	115		19 - 178
13C3 PFHxS	93		32 - 145
13C8 PFOS	93		49 - 126
d3-NMeFOSAA	98		32 - 151
d5-NEtFOSAA	95		37 - 164
13C8 FOSA	86		10 - 143
13C4 PFBA	96		41 - 132
13C5 PFPeA	95		33 - 155
d7-N-MeFOSE-M	88		10 - 143
d3-NMePFOSA	75		10 - 107
d9-N-EtFOSE-M	87		10 - 142
d5-NEtPFOSA	85		10 - 108

Lab Sample ID: MB 410-170472/1-A
Matrix: Water
Analysis Batch: 170761

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 170472

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluoroheptanoic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorooctanoic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorononanoic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorodecanoic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorotridecanoic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorotetradecanoic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorobutanesulfonic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorohexanesulfonic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorooctanesulfonic acid	0.608	J B	2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
NEtFOSAA	ND		3.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
NMeFOSAA	ND		2.0	0.60	ng/L		09/13/21 08:05	09/13/21 20:14	1
10:2 FTS	ND		5.0	1.0	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluoropentanesulfonic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluoroheptanesulfonic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorononanesulfonic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorodecanesulfonic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorododecanesulfonic acid (PFDoS)	ND		3.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorooctanesulfonamide	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorohexadecanoic acid	ND		3.0	1.0	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorooctadecanoic acid	ND		3.0	1.0	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorobutanoic acid	ND		5.0	2.0	ng/L		09/13/21 08:05	09/13/21 20:14	1

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

Lab Sample ID: MB 410-170472/1-A
Matrix: Water
Analysis Batch: 170761

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 170472

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
NMeFOSE	ND		3.0	1.0	ng/L		09/13/21 08:05	09/13/21 20:14	1
NMeFOSA	ND		3.0	1.0	ng/L		09/13/21 08:05	09/13/21 20:14	1
NEtFOSE	ND		3.0	1.0	ng/L		09/13/21 08:05	09/13/21 20:14	1
NEtFOSA	ND		5.0	1.0	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluorododecanoic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
Perfluoroundecanoic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
4:2 Fluorotelomer sulfonic acid	ND		2.0	0.50	ng/L		09/13/21 08:05	09/13/21 20:14	1
6:2 Fluorotelomer sulfonic acid	ND		5.0	2.0	ng/L		09/13/21 08:05	09/13/21 20:14	1
8:2 Fluorotelomer sulfonic acid	ND		3.0	1.0	ng/L		09/13/21 08:05	09/13/21 20:14	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-4:2 FTS	*137*		*20 - 187*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
M2-8:2 FTS	*138*		*34 - 182*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
M2-6:2 FTS	*132*		*29 - 189*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
13C5 PFHxA	*124*		*31 - 142*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
13C4 PFHpA	*118*		*30 - 144*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
13C8 PFOA	*127*		*49 - 127*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
13C9 PFNA	*108*		*47 - 136*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
13C6 PFDA	*118*		*47 - 128*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
13C7 PFUnA	*117*		*40 - 135*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
13C2-PFDoDA	*122*		*28 - 136*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
13C2 PFTeDA	*117*		*10 - 144*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
13C3 PFBS	*118*		*19 - 178*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
13C3 PFHxS	*127*		*32 - 145*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
13C8 PFOS	*110*		*49 - 126*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
d3-NMeFOSAA	*133*		*32 - 151*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
d5-NEtFOSAA	*134*		*37 - 164*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
13C8 FOSA	*99*		*10 - 143*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
13C4 PFBA	*110*		*41 - 132*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
13C5 PFPeA	*115*		*33 - 155*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
d7-N-MeFOSE-M	*109*		*10 - 143*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
d3-NMePFOSA	*89*		*10 - 107*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
d9-N-EtFOSE-M	*112*		*10 - 142*	*09/13/21 08:05*	*09/13/21 20:14*	*1*
d5-NEtPFOSA	*93*		*10 - 108*	*09/13/21 08:05*	*09/13/21 20:14*	*1*

Lab Sample ID: LCS 410-170472/2-A
Matrix: Water
Analysis Batch: 170761

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 170472

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid	25.6	24.5		ng/L		96	66 - 137
Perfluoroheptanoic acid	25.6	25.2		ng/L		99	66 - 141
Perfluorooctanoic acid	25.6	24.0		ng/L		94	65 - 136
Perfluorononanoic acid	25.6	25.3		ng/L		99	65 - 140
Perfluorodecanoic acid	25.6	24.7		ng/L		97	63 - 137
Perfluorotridecanoic acid	25.6	27.0		ng/L		105	58 - 146
Perfluorotetradecanoic acid	25.6	26.4		ng/L		103	64 - 141
Perfluorobutanesulfonic acid	22.7	20.1		ng/L		89	65 - 132

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

Lab Sample ID: LCS 410-170472/2-A
Matrix: Water
Analysis Batch: 170761

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 170472

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid	23.3	19.3		ng/L		83	60 - 128
Perfluorooctanesulfonic acid	23.7	21.6		ng/L		91	51 - 126
NEtFOSAA	25.6	22.2		ng/L		87	54 - 134
NMeFOSAA	25.6	23.3		ng/L		91	58 - 143
10:2 FTS	24.7	21.3		ng/L		86	44 - 141
Perfluoropentanesulfonic acid	24.0	21.9		ng/L		91	71 - 136
Perfluoroheptanesulfonic acid	24.4	20.9		ng/L		86	67 - 135
Perfluorononanesulfonic acid	24.6	21.7		ng/L		88	67 - 137
Perfluorodecanesulfonic acid	24.7	23.9		ng/L		97	61 - 134
Perfluorododecanesulfonic acid (PFDoS)	24.8	24.2		ng/L		97	54 - 136
Perfluorooctanesulfonamide	25.6	23.4		ng/L		91	55 - 130
Perfluorohexadecanoic acid	25.6	27.0		ng/L		105	52 - 149
Perfluorooctadecanoic acid	25.6	27.4		ng/L		107	32 - 167
Perfluorobutanoic acid	25.6	21.5		ng/L		84	62 - 156
Perfluoropentanoic acid	25.6	23.6		ng/L		92	72 - 139
NMeFOSE	25.6	22.4		ng/L		88	52 - 131
NMeFOSA	25.6	24.1		ng/L		94	49 - 141
NEtFOSE	25.6	20.4		ng/L		80	49 - 128
NEtFOSA	25.6	22.4		ng/L		88	50 - 136
Perfluorododecanoic acid	25.6	24.4		ng/L		95	63 - 140
Perfluoroundecanoic acid	25.6	26.7		ng/L		104	62 - 138
4:2 Fluorotelomer sulfonic acid	23.9	20.7		ng/L		87	59 - 130
6:2 Fluorotelomer sulfonic acid	24.3	19.6		ng/L		81	57 - 137
8:2 Fluorotelomer sulfonic acid	24.5	22.7		ng/L		92	56 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
M2-4:2 FTS	*130*		*20 - 187*
M2-8:2 FTS	*132*		*34 - 182*
M2-6:2 FTS	*132*		*29 - 189*
13C5 PFHxA	*115*		*31 - 142*
13C4 PFHpA	*119*		*30 - 144*
13C8 PFOA	*122*		*49 - 127*
13C9 PFNA	*113*		*47 - 136*
13C6 PFDA	*120*		*47 - 128*
13C7 PFUnA	*111*		*40 - 135*
13C2-PFDoDA	*113*		*28 - 136*
13C2 PFTeDA	*113*		*10 - 144*
13C3 PFBS	*128*		*19 - 178*
13C3 PFHxS	*128*		*32 - 145*
13C8 PFOS	*121*		*49 - 126*
d3-NMeFOSAA	*129*		*32 - 151*
d5-NEtFOSAA	*123*		*37 - 164*
13C8 FOSA	*98*		*10 - 143*
13C4 PFBA	*116*		*41 - 132*
13C5 PFPeA	*117*		*33 - 155*
d7-N-MeFOSE-M	*110*		*10 - 143*
d3-NMePFOSA	*85*		*10 - 107*
d9-N-EtFOSE-M	*114*		*10 - 142*

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

Lab Sample ID: LCS 410-170472/2-A
Matrix: Water
Analysis Batch: 170761

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 170472

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
d5-NEtPFOSA	93		10 - 108

Lab Sample ID: LCSD 410-170472/3-A
Matrix: Water
Analysis Batch: 170761

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 170472

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid			25.6	24.2		ng/L		94	66 - 137	1	30
Perfluoroheptanoic acid			25.6	24.4		ng/L		95	66 - 141	4	30
Perfluorooctanoic acid			25.6	23.3		ng/L		91	65 - 136	3	30
Perfluorononanoic acid			25.6	25.1		ng/L		98	65 - 140	1	30
Perfluorodecanoic acid			25.6	23.6		ng/L		92	63 - 137	5	30
Perfluorotridecanoic acid			25.6	24.4		ng/L		95	58 - 146	10	30
Perfluorotetradecanoic acid			25.6	25.0		ng/L		98	64 - 141	5	30
Perfluorobutanesulfonic acid			22.7	21.0		ng/L		93	65 - 132	4	30
Perfluorohexanesulfonic acid			23.3	18.8		ng/L		81	60 - 128	3	30
Perfluorooctanesulfonic acid			23.7	22.7		ng/L		96	51 - 126	5	30
NEtFOSAA			25.6	20.1		ng/L		78	54 - 134	10	30
NMeFOSAA			25.6	21.5		ng/L		84	58 - 143	8	30
10:2 FTS			24.7	20.7		ng/L		84	44 - 141	3	30
Perfluoropentanesulfonic acid			24.0	23.0		ng/L		96	71 - 136	5	30
Perfluoroheptanesulfonic acid			24.4	21.5		ng/L		88	67 - 135	3	30
Perfluorononanesulfonic acid			24.6	20.3		ng/L		83	67 - 137	6	30
Perfluorodecanesulfonic acid			24.7	23.2		ng/L		94	61 - 134	3	30
Perfluorododecanesulfonic acid (PFDoS)			24.8	24.1		ng/L		97	54 - 136	0	30
Perfluorooctanesulfonamide			25.6	22.5		ng/L		88	55 - 130	4	30
Perfluorohexadecanoic acid			25.6	25.2		ng/L		99	52 - 149	7	30
Perfluorooctadecanoic acid			25.6	25.3		ng/L		99	32 - 167	8	30
Perfluorobutanoic acid			25.6	20.2		ng/L		79	62 - 156	6	30
Perfluoropentanoic acid			25.6	23.7		ng/L		93	72 - 139	1	30
NMeFOSE			25.6	21.5		ng/L		84	52 - 131	4	30
NMeFOSA			25.6	22.0		ng/L		86	49 - 141	9	30
NEtFOSE			25.6	21.3		ng/L		83	49 - 128	4	30
NEtFOSA			25.6	21.7		ng/L		85	50 - 136	3	30
Perfluorododecanoic acid			25.6	23.7		ng/L		92	63 - 140	3	30
Perfluoroundecanoic acid			25.6	25.4		ng/L		99	62 - 138	5	30
4:2 Fluorotelomer sulfonic acid			23.9	20.6		ng/L		86	59 - 130	1	30
6:2 Fluorotelomer sulfonic acid			24.3	19.0		ng/L		78	57 - 137	3	30
8:2 Fluorotelomer sulfonic acid			24.5	21.4		ng/L		87	56 - 140	6	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
M2-4:2 FTS	133		20 - 187
M2-8:2 FTS	126		34 - 182
M2-6:2 FTS	128		29 - 189
13C5 PFHxA	116		31 - 142
13C4 PFHpA	115		30 - 144
13C8 PFOA	119		49 - 127
13C9 PFNA	114		47 - 136

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

Lab Sample ID: LCSD 410-170472/3-A
Matrix: Water
Analysis Batch: 170761

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 170472

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C6 PFDA	120		47 - 128
13C7 PFUnA	114		40 - 135
13C2-PFDoDA	113		28 - 136
13C2 PFTeDA	114		10 - 144
13C3 PFBS	117		19 - 178
13C3 PFHxS	117		32 - 145
13C8 PFOS	115		49 - 126
d3-NMeFOSAA	133		32 - 151
d5-NEtFOSAA	137		37 - 164
13C8 FOSA	94		10 - 143
13C4 PFBA	111		41 - 132
13C5 PFPeA	116		33 - 155
d7-N-MeFOSE-M	115		10 - 143
d3-NMePFOSA	96		10 - 107
d9-N-EtFOSE-M	114		10 - 142
d5-NEtPFOSA	102		10 - 108

Method: EPA 537.1 - EPA 537.1, Ver 1.0 Nov 2018

Lab Sample ID: MB 410-167997/1-A
Matrix: Drinking Water
Analysis Batch: 169067

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 167997

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NEtFOSAA	ND		2.0	0.50	ng/L		09/03/21 17:12	09/09/21 02:03	1
NMeFOSAA	ND		2.0	0.50	ng/L		09/03/21 17:12	09/09/21 02:03	1
Perfluorobutanesulfonic acid	ND		2.0	0.50	ng/L		09/03/21 17:12	09/09/21 02:03	1
Perfluorodecanoic acid	ND		2.0	0.50	ng/L		09/03/21 17:12	09/09/21 02:03	1
Perfluorododecanoic acid	ND		2.0	0.50	ng/L		09/03/21 17:12	09/09/21 02:03	1
Perfluoroheptanoic acid	ND		2.0	0.50	ng/L		09/03/21 17:12	09/09/21 02:03	1
Perfluorohexanesulfonic acid	ND		2.0	0.50	ng/L		09/03/21 17:12	09/09/21 02:03	1
Perfluorohexanoic acid	ND		2.0	0.50	ng/L		09/03/21 17:12	09/09/21 02:03	1
Perfluorononanoic acid	ND		2.0	0.50	ng/L		09/03/21 17:12	09/09/21 02:03	1
Perfluorooctanesulfonic acid	ND		2.0	0.50	ng/L		09/03/21 17:12	09/09/21 02:03	1
Perfluorooctanoic acid	ND		2.0	0.50	ng/L		09/03/21 17:12	09/09/21 02:03	1
Perfluorotetradecanoic acid	ND		2.0	0.50	ng/L		09/03/21 17:12	09/09/21 02:03	1
Perfluorotridecanoic acid	ND		2.0	0.50	ng/L		09/03/21 17:12	09/09/21 02:03	1
Perfluoroundecanoic acid	ND		2.0	0.50	ng/L		09/03/21 17:12	09/09/21 02:03	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	87		70 - 130	09/03/21 17:12	09/09/21 02:03	1
13C2 PFHxA	92		70 - 130	09/03/21 17:12	09/09/21 02:03	1
13C3 HFPO-DA	82		70 - 130	09/03/21 17:12	09/09/21 02:03	1
d5-NEtFOSAA	89		70 - 130	09/03/21 17:12	09/09/21 02:03	1

Method: EPA 537.1 - EPA 537.1, Ver 1.0 Nov 2018 (Continued)

Lab Sample ID: LCS 410-167997/2-A
Matrix: Drinking Water
Analysis Batch: 169067

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 167997

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
NEtFOSAA	80.0	81.1	E	ng/L		101	70 - 130
NMeFOSAA	80.0	85.8	E	ng/L		107	70 - 130
Perfluorobutanesulfonic acid	70.8	72.8	E	ng/L		103	70 - 130
Perfluorodecanoic acid	80.0	86.3	E	ng/L		108	70 - 130
Perfluorododecanoic acid	80.0	79.8		ng/L		100	70 - 130
Perfluoroheptanoic acid	80.0	83.1	E	ng/L		104	70 - 130
Perfluorohexanesulfonic acid	73.0	79.0	E	ng/L		108	70 - 130
Perfluorohexanoic acid	80.0	85.5	E	ng/L		107	70 - 130
Perfluorononanoic acid	80.0	80.8	E	ng/L		101	70 - 130
Perfluorooctanesulfonic acid	74.0	76.7	E	ng/L		104	70 - 130
Perfluorooctanoic acid	80.0	82.5	E	ng/L		103	70 - 130
Perfluorotetradecanoic acid	80.0	75.6		ng/L		95	70 - 130
Perfluorotridecanoic acid	80.0	77.2		ng/L		96	70 - 130
Perfluoroundecanoic acid	80.0	79.2		ng/L		99	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFDA	*97*		*70 - 130*
13C2 PFHxA	*102*		*70 - 130*
13C3 HFPO-DA	*90*		*70 - 130*
d5-NEtFOSAA	*86*		*70 - 130*

Method: SW846 6850 - Perchlorate by LC/MS or LC/MS/MS

Lab Sample ID: MB 410-167874/1-A
Matrix: Drinking Water
Analysis Batch: 169054

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 167874

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		1.0	0.23	ug/L		09/08/21 11:51	09/08/21 15:45	1

Lab Sample ID: LCS 410-167874/2-A
Matrix: Drinking Water
Analysis Batch: 169054

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 167874

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	1.00	0.883	J	ug/L		88	80 - 120

LCMS

Prep Batch: 167874

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-53637-1	Raw (300)	Total/NA	Drinking Water	6850 Prep	
410-53637-2	Finished (101)	Total/NA	Drinking Water	6850 Prep	
MB 410-167874/1-A	Method Blank	Total/NA	Drinking Water	6850 Prep	
LCS 410-167874/2-A	Lab Control Sample	Total/NA	Drinking Water	6850 Prep	

Prep Batch: 167997

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-53637-1	Raw (300)	Total/NA	Drinking Water	537.1 DW Prep	
410-53637-2	Finished (101)	Total/NA	Drinking Water	537.1 DW Prep	
410-53637-5	Field Blank-Raw	Total/NA	Drinking Water	537.1 DW Prep	
410-53637-6	Field Blank Finished	Total/NA	Drinking Water	537.1 DW Prep	
MB 410-167997/1-A	Method Blank	Total/NA	Drinking Water	537.1 DW Prep	
LCS 410-167997/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW Prep	

Prep Batch: 168919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-53637-3 - RE	Raw (300)	Total/NA	Water	3535	
410-53637-4	Finished (101)	Total/NA	Water	3535	
MB 410-168919/1-A	Method Blank	Total/NA	Water	3535	
LCS 410-168919/2-A	Lab Control Sample	Total/NA	Water	3535	

Analysis Batch: 169054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-53637-1	Raw (300)	Total/NA	Drinking Water	SW846 6850	167874
410-53637-2	Finished (101)	Total/NA	Drinking Water	SW846 6850	167874
MB 410-167874/1-A	Method Blank	Total/NA	Drinking Water	SW846 6850	167874
LCS 410-167874/2-A	Lab Control Sample	Total/NA	Drinking Water	SW846 6850	167874

Analysis Batch: 169067

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-53637-1	Raw (300)	Total/NA	Drinking Water	EPA 537.1	167997
410-53637-5	Field Blank-Raw	Total/NA	Drinking Water	EPA 537.1	167997
410-53637-6	Field Blank Finished	Total/NA	Drinking Water	EPA 537.1	167997
MB 410-167997/1-A	Method Blank	Total/NA	Drinking Water	EPA 537.1	167997
LCS 410-167997/2-A	Lab Control Sample	Total/NA	Drinking Water	EPA 537.1	167997

Analysis Batch: 169745

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-53637-3 - RE	Raw (300)	Total/NA	Water	537 (modified)	168919
410-53637-4	Finished (101)	Total/NA	Water	537 (modified)	168919
MB 410-168919/1-A	Method Blank	Total/NA	Water	537 (modified)	168919
LCS 410-168919/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	168919

Analysis Batch: 169874

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-53637-2	Finished (101)	Total/NA	Drinking Water	EPA 537.1	167997

Prep Batch: 170472

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-53637-3	Raw (300)	Total/NA	Water	3535	
MB 410-170472/1-A	Method Blank	Total/NA	Water	3535	

LCMS (Continued)

Prep Batch: 170472 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 410-170472/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 410-170472/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 170761

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-53637-3	Raw (300)	Total/NA	Water	537 (modified)	170472
MB 410-170472/1-A	Method Blank	Total/NA	Water	537 (modified)	170472
LCS 410-170472/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	170472
LCSD 410-170472/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	170472

Lab Chronicle

Client: Pittsburgh Water and Sewer Authority
Project/Site: PFAS & Perchlorate

Job ID: 410-53637-1

Client Sample ID: Raw (300)
Date Collected: 08/31/21 07:35
Date Received: 09/02/21 11:04

Lab Sample ID: 410-53637-1
Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW Prep			167997	09/03/21 17:12	GU2F	ELLE
Total/NA	Analysis	EPA 537.1		1	169067	09/09/21 02:38	Y6ZN	ELLE
Total/NA	Prep	6850 Prep			167874	09/08/21 11:51	VK3G	ELLE
Total/NA	Analysis	SW846 6850		1	169054	09/08/21 16:04	UAD3	ELLE

Client Sample ID: Finished (101)
Date Collected: 08/31/21 08:05
Date Received: 09/02/21 11:04

Lab Sample ID: 410-53637-2
Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW Prep			167997	09/03/21 17:12	GU2F	ELLE
Total/NA	Analysis	EPA 537.1		1	169874	09/10/21 20:43	DCS9	ELLE
Total/NA	Prep	6850 Prep			167874	09/08/21 11:51	VK3G	ELLE
Total/NA	Analysis	SW846 6850		1	169054	09/08/21 16:10	UAD3	ELLE

Client Sample ID: Raw (300)
Date Collected: 08/31/21 07:35
Date Received: 09/02/21 11:04

Lab Sample ID: 410-53637-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	RE		168919	09/08/21 09:14	D5VP	ELLE
Total/NA	Analysis	537 (modified)	RE	1	169745	09/10/21 04:34	UCD3	ELLE
Total/NA	Prep	3535			170472	09/13/21 08:05	ZWK6	ELLE
Total/NA	Analysis	537 (modified)		1	170761	09/13/21 20:48	QD9Y	ELLE

Client Sample ID: Finished (101)
Date Collected: 08/31/21 08:05
Date Received: 09/02/21 11:04

Lab Sample ID: 410-53637-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			168919	09/08/21 09:14	D5VP	ELLE
Total/NA	Analysis	537 (modified)		1	169745	09/10/21 04:45	UCD3	ELLE

Client Sample ID: Field Blank-Raw
Date Collected: 08/31/21 07:35
Date Received: 09/02/21 11:04

Lab Sample ID: 410-53637-5
Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW Prep			167997	09/03/21 17:12	GU2F	ELLE
Total/NA	Analysis	EPA 537.1		1	169067	09/09/21 03:01	Y6ZN	ELLE

Lab Chronicle

Client: Pittsburgh Water and Sewer Authority
Project/Site: PFAS & Perchlorate

Job ID: 410-53637-1

Client Sample ID: Field Blank Finished

Lab Sample ID: 410-53637-6

Date Collected: 08/31/21 08:05

Matrix: Drinking Water

Date Received: 09/02/21 11:04

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW Prep			167997	09/03/21 17:12	GU2F	ELLE
Total/NA	Analysis	EPA 537.1		1	169067	09/09/21 03:13	Y6ZN	ELLE

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: Pittsburgh Water and Sewer Authority
Job ID: 410-53637-1
Project/Site: PFAS & Perchlorate

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Pennsylvania	NELAP	36-00037	01-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
SW846 6850	6850 Prep	Drinking Water	Perchlorate

Method Summary

Client: Pittsburgh Water and Sewer Authority
Project/Site: PFAS & Perchlorate

Job ID: 410-53637-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	ELLE
EPA 537.1	EPA 537.1, Ver 1.0 Nov 2018	EPA	ELLE
SW846 6850	Perchlorate by LC/MS or LC/MS/MS	SW846	ELLE
3535	Solid-Phase Extraction (SPE)	SW846	ELLE
537.1 DW Prep	Extraction of Perfluorinated Alkyl Acids	EPA	ELLE
6850 Prep	Perchlorate Water Prep	EPA	ELLE

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:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: Pittsburgh Water and Sewer Authority
Project/Site: PFAS & Perchlorate

Job ID: 410-53637-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-53637-1	Raw (300)	Drinking Water	08/31/21 07:35	09/02/21 11:04
410-53637-2	Finished (101)	Drinking Water	08/31/21 08:05	09/02/21 11:04
410-53637-3	Raw (300)	Water	08/31/21 07:35	09/02/21 11:04
410-53637-4	Finished (101)	Water	08/31/21 08:05	09/02/21 11:04
410-53637-5	Field Blank-Raw	Drinking Water	08/31/21 07:35	09/02/21 11:04
410-53637-6	Field Blank Finished	Drinking Water	08/31/21 08:05	09/02/21 11:04

Eurofins Lancaster Laboratories Env, LLC
2425 New Holland Pike
Lancaster, PA 17601
Phone: 717-656-2300 Fax: 717-656-2681

Chain of Custody Record

410-53637 Chain of Custody

eurofins Environment Testing America

Client Information	Sampler: Robert Gomez	Lab PM: Gordon, Stephen J	COC No: 410-25347-7775.1
Client Contact: Linda Leopold	Phone:	E-Mail: Stephen.Gordon@eurofinset.com	State of Origin:	Page: Page 1 of 1
Company: Pittsburgh Water and Sewer Authority	PWSID:	Analysis Requested	Job #:
Address: 900 Freeport Road	Due Date Requested:		Preservation Codes:
City: Pittsburgh	TAT Requested (days):		A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
State, Zip: PA, 15238	Compliance Project: Δ Yes Δ No		
Phone:	PO #: Purchase Order not required		Other:
Email:	WO #:		
Project Name: PFAS & Perchlorate	Project #: 41004440		
Site:	SSOW#:		

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)	537.1_DW - PFAS DW 14 compounds	6850 - Perchlorate by LC/MS or LC/MS/MS	PFC_IDA - PFAS 32 Compounds	537.1_DW - PFAS DW 14 compounds	Total Number of containers	Special Instructions/Note:
			Preservation Code:					N	N	N		
Raw (300)	8/31/21	0735	G	Drinking Wate			2					
Finished (101)	8/31/21	0805	G	Drinking Wate			2					
Raw (300) ✓	8/31/21	0735	G	Water					2			
Finished (101) ✓	8/31/21	0805	G	Water					2			
Raw (300) ✓	8/31/21	0735	G	Drinking Wate				2				
Finished (101) ✓	8/31/21	0805	G	Drinking Wate				2				
Field Blank - Raw	8/31/21	0735	G	DW						2		
Field Blank Finished	8/31/21	0805	G	DW						2		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Edwin Hernandez	8/12/21 9:25				
Robert Gomez	8/1/21 0855	PWSA			
				9/2/21 1104	EAL

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 5.3

Ver: 06/08/2021

AGH

9/15/2021 AGH

Login Sample Receipt Checklist

Client: Pittsburgh Water and Sewer Authority

Job Number: 410-53637-1

Login Number: 53637
List Number: 1
Creator: Hess, Anna

List Source: Eurofins Lancaster Laboratories Env, LLC

Question	Answer	Comment
The cooler's custody seal is intact.	True	
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 (</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (</=6C, not frozen).	True	
WV: Container Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
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	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	True	
Sample custody seals are intact.	N/A	