

## ANALYTICAL REPORT

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

Laboratory Job ID: 410-68504-1  
Client Project/Site: PFAS & Perchlorate

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

Attn: Aimee Butch



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Authorized for release by:  
1/14/2022 8:11:56 AM

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*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.*



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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A handwritten signature in black ink, appearing to read "Stephen Gordon".

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Stephen Gordon  
Senior Project Manager  
1/14/2022 8:11:56 AM



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# Definitions/Glossary

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

Job ID: 410-68504-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
!	Laboratory is not accredited for this parameter.
*-	LCS and/or LCSD is outside acceptance limits, low biased.
*1	LCS/LCSD RPD exceeds control limits.
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
cn	Refer to Case Narrative for further detail
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1-	Surrogate recovery exceeds control 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
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

# Case Narrative

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

Job ID: 410-68504-1

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## Job ID: 410-68504-1

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### Laboratory: Eurofins Lancaster Laboratories Env, LLC

#### Narrative

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#### Job Narrative 410-68504-1

#### Receipt

The samples were received on 12/30/2021 11:41 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 2.9°C

#### Receipt Exceptions

The container count for the following samples did not match the information listed on the Chain-of-Custody (COC): Raw Water 300 and Finished Water EP 101. The lab received 4 containers, while the COC lists 2.

#### LCMS

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

#### PFAS

Method 537.1\_DW: The recovery for a target analyte(s) and the recovery for the labeled isotope(s) in the laboratory control spike sample associated with the following sample: Finished Water EP 101 is outside the QC acceptance limits. The following action was taken: This sample was re-extracted within the required holding time and the recovery for a target analyte(s) and the recovery for the labeled isotope(s) in the laboratory control spike sample(s) is within the QC acceptance limits, however the recovery for the sample surrogates(s) in the re-extracted sample is outside the QC acceptance limits.

Method PFC\_IDA: The recovery for the labeled isotope(s) in the following sample: Raw Water 300 is outside the QC acceptance limits. The following action was taken: This sample was re-extracted within the required holding time and the recovery for the labeled isotope(s) is again outside the QC acceptance limits.

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: 410-68504-1

## Client Sample ID: Raw Water 300

Lab Sample ID: 410-68504-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid	0.63	J	1.9	0.47	ng/L	1		EPA 537.1	Total/NA
Perfluorohexanoic acid	0.80	J	1.9	0.47	ng/L	1		EPA 537.1	Total/NA
Perfluorooctanesulfonic acid	1.9		1.9	0.47	ng/L	1		EPA 537.1	Total/NA
Perfluorooctanoic acid	1.1	J	1.9	0.47	ng/L	1		EPA 537.1	Total/NA

## Client Sample ID: Finished Water EP 101

Lab Sample ID: 410-68504-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid	0.65	J cn	1.8	0.45	ng/L	1		EPA 537.1	Total/NA
Perfluoroheptanoic acid	0.46	J cn	1.8	0.45	ng/L	1		EPA 537.1	Total/NA
Perfluorohexanoic acid	0.86	J cn	1.8	0.45	ng/L	1		EPA 537.1	Total/NA
Perfluorooctanesulfonic acid	1.4	J cn	1.8	0.45	ng/L	1		EPA 537.1	Total/NA
Perfluorooctanoic acid	1.0	J cn	1.8	0.45	ng/L	1		EPA 537.1	Total/NA

## Client Sample ID: Raw Water 300

Lab Sample ID: 410-68504-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid	0.77	J cn	1.7	0.44	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid	0.47	J cn	1.7	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid	1.1	J cn	1.7	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid	0.61	J cn	1.7	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid	0.46	J cn	1.7	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid	1.9	cn	1.7	0.44	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid	0.64	J cn	1.7	0.44	ng/L	1		537 (modified)	Total/NA

## Client Sample ID: Finished Water EP 101

Lab Sample ID: 410-68504-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid	0.69	J	1.7	0.42	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid	1.0	J	1.7	0.42	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid	0.58	J	1.7	0.42	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid	1.4	J	1.7	0.42	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid	0.48	J	1.7	0.42	ng/L	1		537 (modified)	Total/NA

## Client Sample ID: Raw Water 300

Lab Sample ID: 410-68504-5

No Detections.

## Client Sample ID: Finished Water EP 101

Lab Sample ID: 410-68504-6

No Detections.

## Client Sample ID: Field Blank Raw 300

Lab Sample ID: 410-68504-7

No Detections.

## Client Sample ID: Field Blank EP101

Lab Sample ID: 410-68504-8

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Env, LLC

# Client Sample Results

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

Job ID: 410-68504-1

**Client Sample ID: Raw Water 300**

**Lab Sample ID: 410-68504-1**

Date Collected: 12/29/21 07:50

Matrix: Drinking Water

Date Received: 12/30/21 11:41

**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	0.47	ng/L		01/12/22 16:41	01/13/22 14:50	1
NMeFOSAA	ND		1.9	0.47	ng/L		01/12/22 16:41	01/13/22 14:50	1
<b>Perfluorobutanesulfonic acid</b>	<b>0.63</b>	<b>J</b>	1.9	0.47	ng/L		01/12/22 16:41	01/13/22 14:50	1
Perfluorodecanoic acid	ND		1.9	0.47	ng/L		01/12/22 16:41	01/13/22 14:50	1
Perfluorododecanoic acid	ND		1.9	0.47	ng/L		01/12/22 16:41	01/13/22 14:50	1
Perfluoroheptanoic acid	ND		1.9	0.47	ng/L		01/12/22 16:41	01/13/22 14:50	1
Perfluorohexanesulfonic acid	ND		1.9	0.47	ng/L		01/12/22 16:41	01/13/22 14:50	1
<b>Perfluorohexanoic acid</b>	<b>0.80</b>	<b>J</b>	1.9	0.47	ng/L		01/12/22 16:41	01/13/22 14:50	1
Perfluorononanoic acid	ND		1.9	0.47	ng/L		01/12/22 16:41	01/13/22 14:50	1
<b>Perfluorooctanesulfonic acid</b>	<b>1.9</b>		1.9	0.47	ng/L		01/12/22 16:41	01/13/22 14:50	1
<b>Perfluorooctanoic acid</b>	<b>1.1</b>	<b>J</b>	1.9	0.47	ng/L		01/12/22 16:41	01/13/22 14:50	1
Perfluorotetradecanoic acid	ND		1.9	0.47	ng/L		01/12/22 16:41	01/13/22 14:50	1
Perfluorotridecanoic acid	ND		1.9	0.47	ng/L		01/12/22 16:41	01/13/22 14:50	1
Perfluoroundecanoic acid	ND		1.9	0.47	ng/L		01/12/22 16:41	01/13/22 14:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	88		70 - 130	01/12/22 16:41	01/13/22 14:50	1
13C2 PFHxA	96		70 - 130	01/12/22 16:41	01/13/22 14:50	1
13C3 HFPO-DA	88		70 - 130	01/12/22 16:41	01/13/22 14:50	1
d5-NEtFOSAA	78		70 - 130	01/12/22 16:41	01/13/22 14:50	1

**Client Sample ID: Finished Water EP 101**

**Lab Sample ID: 410-68504-2**

Date Collected: 12/29/21 08:12

Matrix: Drinking Water

Date Received: 12/30/21 11:41

**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 cn	1.8	0.45	ng/L		01/06/22 17:01	01/10/22 19:24	1
NMeFOSAA	ND	*- *1 cn	1.8	0.45	ng/L		01/06/22 17:01	01/10/22 19:24	1
<b>Perfluorobutanesulfonic acid</b>	<b>0.65</b>	<b>J cn</b>	1.8	0.45	ng/L		01/06/22 17:01	01/10/22 19:24	1
Perfluorodecanoic acid	ND	cn	1.8	0.45	ng/L		01/06/22 17:01	01/10/22 19:24	1
Perfluorododecanoic acid	ND	cn	1.8	0.45	ng/L		01/06/22 17:01	01/10/22 19:24	1
<b>Perfluoroheptanoic acid</b>	<b>0.46</b>	<b>J cn</b>	1.8	0.45	ng/L		01/06/22 17:01	01/10/22 19:24	1
Perfluorohexanesulfonic acid	ND	cn	1.8	0.45	ng/L		01/06/22 17:01	01/10/22 19:24	1
<b>Perfluorohexanoic acid</b>	<b>0.86</b>	<b>J cn</b>	1.8	0.45	ng/L		01/06/22 17:01	01/10/22 19:24	1
Perfluorononanoic acid	ND	cn	1.8	0.45	ng/L		01/06/22 17:01	01/10/22 19:24	1
<b>Perfluorooctanesulfonic acid</b>	<b>1.4</b>	<b>J cn</b>	1.8	0.45	ng/L		01/06/22 17:01	01/10/22 19:24	1
<b>Perfluorooctanoic acid</b>	<b>1.0</b>	<b>J cn</b>	1.8	0.45	ng/L		01/06/22 17:01	01/10/22 19:24	1
Perfluorotetradecanoic acid	ND	cn	1.8	0.45	ng/L		01/06/22 17:01	01/10/22 19:24	1
Perfluorotridecanoic acid	ND	cn	1.8	0.45	ng/L		01/06/22 17:01	01/10/22 19:24	1
Perfluoroundecanoic acid	ND	cn	1.8	0.45	ng/L		01/06/22 17:01	01/10/22 19:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	94	cn	70 - 130	01/06/22 17:01	01/10/22 19:24	1
13C2 PFHxA	99	cn	70 - 130	01/06/22 17:01	01/10/22 19:24	1
13C3 HFPO-DA	84	cn	70 - 130	01/06/22 17:01	01/10/22 19:24	1
d5-NEtFOSAA	75	cn	70 - 130	01/06/22 17:01	01/10/22 19:24	1

# Client Sample Results

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

Job ID: 410-68504-1

**Client Sample ID: Raw Water 300**

**Lab Sample ID: 410-68504-3**

Date Collected: 12/29/21 07:50

Matrix: Water

Date Received: 12/30/21 11:41

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	0.77	J cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluoroheptanoic acid	0.47	J cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorooctanoic acid	1.1	J cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorononanoic acid	ND	cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorodecanoic acid	ND	cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorotridecanoic acid	ND	cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorotetradecanoic acid	ND	cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorobutanesulfonic acid	0.61	J cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorohexanesulfonic acid	0.46	J cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorooctanesulfonic acid	1.9	cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
NEtFOSAA	ND	cn	2.6	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
NMeFOSAA	ND	cn	1.7	0.52	ng/L		01/05/22 10:18	01/06/22 03:42	1
10:2 FTS	ND	cn	4.4	0.87	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluoropentanesulfonic acid	ND	cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluoroheptanesulfonic acid	ND	cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorononanesulfonic acid	ND	cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorodecanesulfonic acid	ND	cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorododecanesulfonic acid (PFDoS)	ND	cn	2.6	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorooctanesulfonamide	ND	cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorohexadecanoic acid	ND	cn	2.6	0.87	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorooctadecanoic acid	ND	cn	2.6	0.87	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorobutanoic acid	ND	cn	4.4	1.7	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluoropentanoic acid	0.64	J cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
NMeFOSE	ND	cn	2.6	0.87	ng/L		01/05/22 10:18	01/06/22 03:42	1
NMeFOSA	ND	*5- cn	2.6	0.87	ng/L		01/05/22 10:18	01/06/22 03:42	1
NEtFOSE	ND	cn	2.6	0.87	ng/L		01/05/22 10:18	01/06/22 03:42	1
NEtFOSA	ND	*5- cn	4.4	0.87	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluorododecanoic acid	ND	cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
Perfluoroundecanoic acid	ND	cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
4:2 Fluorotelomer sulfonic acid	ND	cn	1.7	0.44	ng/L		01/05/22 10:18	01/06/22 03:42	1
6:2 Fluorotelomer sulfonic acid	ND	cn	4.4	1.7	ng/L		01/05/22 10:18	01/06/22 03:42	1
8:2 Fluorotelomer sulfonic acid	ND	cn	2.6	0.87	ng/L		01/05/22 10:18	01/06/22 03:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	186	cn	20 - 187	01/05/22 10:18	01/06/22 03:42	1
M2-8:2 FTS	116	cn	34 - 182	01/05/22 10:18	01/06/22 03:42	1
M2-6:2 FTS	115	cn	29 - 189	01/05/22 10:18	01/06/22 03:42	1
13C5 PFHxA	108	cn	31 - 142	01/05/22 10:18	01/06/22 03:42	1
13C4 PFHpA	112	cn	30 - 144	01/05/22 10:18	01/06/22 03:42	1
13C8 PFOA	113	cn	49 - 127	01/05/22 10:18	01/06/22 03:42	1
13C9 PFNA	122	cn	47 - 136	01/05/22 10:18	01/06/22 03:42	1
13C6 PFDA	110	cn	47 - 128	01/05/22 10:18	01/06/22 03:42	1
13C7 PFUnA	103	cn	40 - 135	01/05/22 10:18	01/06/22 03:42	1
13C2-PFDoDA	82	cn	28 - 136	01/05/22 10:18	01/06/22 03:42	1
13C2 PFTeDA	21	cn	10 - 144	01/05/22 10:18	01/06/22 03:42	1
13C3 PFBS	143	cn	19 - 178	01/05/22 10:18	01/06/22 03:42	1
13C3 PFHxS	104	cn	32 - 145	01/05/22 10:18	01/06/22 03:42	1
13C8 PFOS	112	cn	49 - 126	01/05/22 10:18	01/06/22 03:42	1
d3-NMeFOSAA	100	cn	32 - 151	01/05/22 10:18	01/06/22 03:42	1



# Client Sample Results

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

Job ID: 410-68504-1

**Client Sample ID: Raw Water 300**

**Lab Sample ID: 410-68504-3**

Date Collected: 12/29/21 07:50

Matrix: Water

Date Received: 12/30/21 11:41

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	107	cn	37 - 164	01/05/22 10:18	01/06/22 03:42	1
13C8 FOSA	79	cn	10 - 143	01/05/22 10:18	01/06/22 03:42	1
13C4 PFBA	111	cn	41 - 132	01/05/22 10:18	01/06/22 03:42	1
13C5 PFPeA	135	cn	33 - 155	01/05/22 10:18	01/06/22 03:42	1
d7-N-MeFOSE-M	33	cn	10 - 143	01/05/22 10:18	01/06/22 03:42	1
d3-NMePFOSA	9	*5- cn	10 - 107	01/05/22 10:18	01/06/22 03:42	1
d9-N-EtFOSE-M	29	cn	10 - 142	01/05/22 10:18	01/06/22 03:42	1
d5-NEtPFOSA	8	*5- cn	10 - 108	01/05/22 10:18	01/06/22 03:42	1

**Client Sample ID: Finished Water EP 101**

**Lab Sample ID: 410-68504-4**

Date Collected: 12/29/21 08:12

Matrix: Water

Date Received: 12/30/21 11:41

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	0.69	J	1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluoroheptanoic acid	ND		1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorooctanoic acid	1.0	J	1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorononanoic acid	ND		1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorodecanoic acid	ND		1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorotridecanoic acid	ND		1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorotetradecanoic acid	ND		1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorobutanesulfonic acid	0.58	J	1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorohexanesulfonic acid	ND		1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorooctanesulfonic acid	1.4	J	1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
NEtFOSAA	ND		2.5	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
NMeFOSAA	ND		1.7	0.50	ng/L		01/05/22 10:18	01/06/22 03:53	1
10:2 FTS	ND		4.2	0.84	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluoropentanesulfonic acid	ND		1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluoroheptanesulfonic acid	ND		1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorononanesulfonic acid	ND		1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorodecanesulfonic acid	ND		1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.5	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorooctanesulfonamide	ND		1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorohexadecanoic acid	ND		2.5	0.84	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorooctadecanoic acid	ND		2.5	0.84	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorobutanoic acid	ND		4.2	1.7	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluoropentanoic acid	0.48	J	1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
NMeFOSE	ND		2.5	0.84	ng/L		01/05/22 10:18	01/06/22 03:53	1
NMeFOSA	ND		2.5	0.84	ng/L		01/05/22 10:18	01/06/22 03:53	1
NEtFOSE	ND		2.5	0.84	ng/L		01/05/22 10:18	01/06/22 03:53	1
NEtFOSA	ND		4.2	0.84	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluorododecanoic acid	ND		1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
Perfluoroundecanoic acid	ND		1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
4:2 Fluorotelomer sulfonic acid	ND		1.7	0.42	ng/L		01/05/22 10:18	01/06/22 03:53	1
6:2 Fluorotelomer sulfonic acid	ND		4.2	1.7	ng/L		01/05/22 10:18	01/06/22 03:53	1
8:2 Fluorotelomer sulfonic acid	ND		2.5	0.84	ng/L		01/05/22 10:18	01/06/22 03:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
M2-4:2 FTS	173		20 - 187				01/05/22 10:18	01/06/22 03:53	1

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# Client Sample Results

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

Job ID: 410-68504-1

**Client Sample ID: Finished Water EP 101**

**Lab Sample ID: 410-68504-4**

Date Collected: 12/29/21 08:12

Matrix: Water

Date Received: 12/30/21 11:41

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-8:2 FTS	113		34 - 182	01/05/22 10:18	01/06/22 03:53	1
M2-6:2 FTS	114		29 - 189	01/05/22 10:18	01/06/22 03:53	1
13C5 PFHxA	105		31 - 142	01/05/22 10:18	01/06/22 03:53	1
13C4 PFHpA	115		30 - 144	01/05/22 10:18	01/06/22 03:53	1
13C8 PFOA	114		49 - 127	01/05/22 10:18	01/06/22 03:53	1
13C9 PFNA	123		47 - 136	01/05/22 10:18	01/06/22 03:53	1
13C6 PFDA	112		47 - 128	01/05/22 10:18	01/06/22 03:53	1
13C7 PFUnA	103		40 - 135	01/05/22 10:18	01/06/22 03:53	1
13C2-PFDoDA	105		28 - 136	01/05/22 10:18	01/06/22 03:53	1
13C2 PFTeDA	98		10 - 144	01/05/22 10:18	01/06/22 03:53	1
13C3 PFBS	130		19 - 178	01/05/22 10:18	01/06/22 03:53	1
13C3 PFHxS	106		32 - 145	01/05/22 10:18	01/06/22 03:53	1
13C8 PFOS	111		49 - 126	01/05/22 10:18	01/06/22 03:53	1
d3-NMeFOSAA	98		32 - 151	01/05/22 10:18	01/06/22 03:53	1
d5-NEtFOSAA	114		37 - 164	01/05/22 10:18	01/06/22 03:53	1
13C8 FOSA	93		10 - 143	01/05/22 10:18	01/06/22 03:53	1
13C4 PFBA	107		41 - 132	01/05/22 10:18	01/06/22 03:53	1
13C5 PFPeA	131		33 - 155	01/05/22 10:18	01/06/22 03:53	1
d7-N-MeFOSE-M	91		10 - 143	01/05/22 10:18	01/06/22 03:53	1
d3-NMePFOSA	40		10 - 107	01/05/22 10:18	01/06/22 03:53	1
d9-N-EtFOSE-M	87		10 - 142	01/05/22 10:18	01/06/22 03:53	1
d5-NEtPFOSA	37		10 - 108	01/05/22 10:18	01/06/22 03:53	1

**Client Sample ID: Raw Water 300**

**Lab Sample ID: 410-68504-5**

Date Collected: 12/29/21 07:50

Matrix: Drinking Water

Date Received: 12/30/21 11:41

**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		01/06/22 11:56	01/06/22 13:41	1

**Client Sample ID: Finished Water EP 101**

**Lab Sample ID: 410-68504-6**

Date Collected: 12/29/21 08:12

Matrix: Drinking Water

Date Received: 12/30/21 11:41

**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		01/06/22 11:56	01/06/22 13:49	1

**Client Sample ID: Field Blank Raw 300**

**Lab Sample ID: 410-68504-7**

Date Collected: 12/29/21 07:50

Matrix: Drinking Water

Date Received: 12/30/21 11:41

**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	0.44	ng/L		01/12/22 16:41	01/13/22 15:13	1
NMeFOSAA	ND		1.7	0.44	ng/L		01/12/22 16:41	01/13/22 15:13	1
Perfluorobutanesulfonic acid	ND		1.7	0.44	ng/L		01/12/22 16:41	01/13/22 15:13	1
Perfluorodecanoic acid	ND		1.7	0.44	ng/L		01/12/22 16:41	01/13/22 15:13	1
Perfluorododecanoic acid	ND		1.7	0.44	ng/L		01/12/22 16:41	01/13/22 15:13	1
Perfluoroheptanoic acid	ND		1.7	0.44	ng/L		01/12/22 16:41	01/13/22 15:13	1

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# Client Sample Results

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

Job ID: 410-68504-1

## Client Sample ID: Field Blank Raw 300

## Lab Sample ID: 410-68504-7

Date Collected: 12/29/21 07:50

Matrix: Drinking Water

Date Received: 12/30/21 11:41

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid	ND		1.7	0.44	ng/L		01/12/22 16:41	01/13/22 15:13	1
Perfluorohexanoic acid	ND		1.7	0.44	ng/L		01/12/22 16:41	01/13/22 15:13	1
Perfluorononanoic acid	ND		1.7	0.44	ng/L		01/12/22 16:41	01/13/22 15:13	1
Perfluorooctanesulfonic acid	ND		1.7	0.44	ng/L		01/12/22 16:41	01/13/22 15:13	1
Perfluorooctanoic acid	ND		1.7	0.44	ng/L		01/12/22 16:41	01/13/22 15:13	1
Perfluorotetradecanoic acid	ND		1.7	0.44	ng/L		01/12/22 16:41	01/13/22 15:13	1
Perfluorotridecanoic acid	ND		1.7	0.44	ng/L		01/12/22 16:41	01/13/22 15:13	1
Perfluoroundecanoic acid	ND		1.7	0.44	ng/L		01/12/22 16:41	01/13/22 15:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	86		70 - 130	01/12/22 16:41	01/13/22 15:13	1
13C2 PFHxA	101		70 - 130	01/12/22 16:41	01/13/22 15:13	1
13C3 HFPO-DA	88		70 - 130	01/12/22 16:41	01/13/22 15:13	1
d5-NEtFOSAA	82		70 - 130	01/12/22 16:41	01/13/22 15:13	1

## Client Sample ID: Field Blank EP101

## Lab Sample ID: 410-68504-8

Date Collected: 12/29/21 08:12

Matrix: Drinking Water

Date Received: 12/30/21 11:41

### 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	0.44	ng/L		01/12/22 16:41	01/13/22 15:24	1
NMeFOSAA	ND		1.8	0.44	ng/L		01/12/22 16:41	01/13/22 15:24	1
Perfluorobutanesulfonic acid	ND		1.8	0.44	ng/L		01/12/22 16:41	01/13/22 15:24	1
Perfluorodecanoic acid	ND		1.8	0.44	ng/L		01/12/22 16:41	01/13/22 15:24	1
Perfluorododecanoic acid	ND		1.8	0.44	ng/L		01/12/22 16:41	01/13/22 15:24	1
Perfluoroheptanoic acid	ND		1.8	0.44	ng/L		01/12/22 16:41	01/13/22 15:24	1
Perfluorohexanesulfonic acid	ND		1.8	0.44	ng/L		01/12/22 16:41	01/13/22 15:24	1
Perfluorohexanoic acid	ND		1.8	0.44	ng/L		01/12/22 16:41	01/13/22 15:24	1
Perfluorononanoic acid	ND		1.8	0.44	ng/L		01/12/22 16:41	01/13/22 15:24	1
Perfluorooctanesulfonic acid	ND		1.8	0.44	ng/L		01/12/22 16:41	01/13/22 15:24	1
Perfluorooctanoic acid	ND		1.8	0.44	ng/L		01/12/22 16:41	01/13/22 15:24	1
Perfluorotetradecanoic acid	ND		1.8	0.44	ng/L		01/12/22 16:41	01/13/22 15:24	1
Perfluorotridecanoic acid	ND		1.8	0.44	ng/L		01/12/22 16:41	01/13/22 15:24	1
Perfluoroundecanoic acid	ND		1.8	0.44	ng/L		01/12/22 16:41	01/13/22 15:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	91		70 - 130	01/12/22 16:41	01/13/22 15:24	1
13C2 PFHxA	102		70 - 130	01/12/22 16:41	01/13/22 15:24	1
13C3 HFPO-DA	92		70 - 130	01/12/22 16:41	01/13/22 15:24	1
d5-NEtFOSAA	74		70 - 130	01/12/22 16:41	01/13/22 15:24	1

# Surrogate Summary

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

Job ID: 410-68504-1

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

**Matrix: Drinking Water**

**Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		PFDA (70-130)	PFHxA (70-130)	HFPODA (70-130)	d5NEFOS (70-130)
410-68504-1	Raw Water 300	88	96	88	78
410-68504-2	Finished Water EP 101	94 cn	99 cn	84 cn	75 cn
410-68504-7	Field Blank Raw 300	86	101	88	82
410-68504-8	Field Blank EP101	91	102	92	74
LCS 410-212469/2-A	Lab Control Sample	86	85	80	53 S1-
LCS 410-214038/2-A	Lab Control Sample	93	104	92	95
LCSD 410-212469/3-A	Lab Control Sample Dup	90	99	89	81
LCSD 410-214038/3-A	Lab Control Sample Dup	84	99	88	87
MB 410-212469/1-A	Method Blank	95	107	97	90
MB 410-214038/1-A	Method Blank	102	121	107	85

**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: 410-68504-1

## 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)
410-68504-3	Raw Water 300	186 cn	116 cn	115 cn	108 cn	112 cn	113 cn	122 cn	110 cn
410-68504-4	Finished Water EP 101	173	113	114	105	115	114	123	112
LCS 410-211938/2-A	Lab Control Sample	120	113	96	108	112	109	122	116
MB 410-211938/1-A	Method Blank	117	103	102	105	107	108	109	106

		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)
410-68504-3	Raw Water 300	103 cn	82 cn	21 cn	143 cn	104 cn	112 cn	100 cn	107 cn
410-68504-4	Finished Water EP 101	103	105	98	130	106	111	98	114
LCS 410-211938/2-A	Lab Control Sample	115	111	100	108	100	112	113	116
MB 410-211938/1-A	Method Blank	105	101	95	100	98	103	101	104

		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)
410-68504-3	Raw Water 300	79 cn	111 cn	135 cn	33 cn	9 *5- cn	29 cn	8 *5- cn
410-68504-4	Finished Water EP 101	93	107	131	91	40	87	37
LCS 410-211938/2-A	Lab Control Sample	99	107	122	107	83	103	89
MB 410-211938/1-A	Method Blank	88	99	111	91	77	94	85

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

# QC Sample Results

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

Job ID: 410-68504-1

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

**Lab Sample ID: MB 410-211938/1-A**  
**Matrix: Water**  
**Analysis Batch: 211879**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 211938**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluoroheptanoic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorooctanoic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorononanoic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorodecanoic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorotridecanoic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorotetradecanoic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorobutanesulfonic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorohexanesulfonic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorooctanesulfonic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
NEtFOSAA	ND		3.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
NMeFOSAA	ND		2.0	0.60	ng/L		01/05/22 10:18	01/06/22 00:34	1
10:2 FTS	ND		5.0	1.0	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluoropentanesulfonic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluoroheptanesulfonic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorononanesulfonic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorodecanesulfonic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorododecanesulfonic acid (PFDoS)	ND		3.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorooctanesulfonamide	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorohexadecanoic acid	ND		3.0	1.0	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorooctadecanoic acid	ND		3.0	1.0	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorobutanoic acid	ND		5.0	2.0	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluoropentanoic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
NMeFOSE	ND		3.0	1.0	ng/L		01/05/22 10:18	01/06/22 00:34	1
NMeFOSA	ND		3.0	1.0	ng/L		01/05/22 10:18	01/06/22 00:34	1
NEtFOSE	ND		3.0	1.0	ng/L		01/05/22 10:18	01/06/22 00:34	1
NEtFOSA	ND		5.0	1.0	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluorododecanoic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
Perfluoroundecanoic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
4:2 Fluorotelomer sulfonic acid	ND		2.0	0.50	ng/L		01/05/22 10:18	01/06/22 00:34	1
6:2 Fluorotelomer sulfonic acid	ND		5.0	2.0	ng/L		01/05/22 10:18	01/06/22 00:34	1
8:2 Fluorotelomer sulfonic acid	ND		3.0	1.0	ng/L		01/05/22 10:18	01/06/22 00:34	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	117		20 - 187	01/05/22 10:18	01/06/22 00:34	1
M2-8:2 FTS	103		34 - 182	01/05/22 10:18	01/06/22 00:34	1
M2-6:2 FTS	102		29 - 189	01/05/22 10:18	01/06/22 00:34	1
13C5 PFHxA	105		31 - 142	01/05/22 10:18	01/06/22 00:34	1
13C4 PFHpA	107		30 - 144	01/05/22 10:18	01/06/22 00:34	1
13C8 PFOA	108		49 - 127	01/05/22 10:18	01/06/22 00:34	1
13C9 PFNA	109		47 - 136	01/05/22 10:18	01/06/22 00:34	1
13C6 PFDA	106		47 - 128	01/05/22 10:18	01/06/22 00:34	1
13C7 PFUnA	105		40 - 135	01/05/22 10:18	01/06/22 00:34	1
13C2-PFDoDA	101		28 - 136	01/05/22 10:18	01/06/22 00:34	1
13C2 PFTeDA	95		10 - 144	01/05/22 10:18	01/06/22 00:34	1
13C3 PFBS	100		19 - 178	01/05/22 10:18	01/06/22 00:34	1
13C3 PFHxS	98		32 - 145	01/05/22 10:18	01/06/22 00:34	1
13C8 PFOS	103		49 - 126	01/05/22 10:18	01/06/22 00:34	1

Eurofins Lancaster Laboratories Env, LLC

# QC Sample Results

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

Job ID: 410-68504-1

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

**Lab Sample ID: MB 410-211938/1-A**  
**Matrix: Water**  
**Analysis Batch: 211879**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 211938**

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
d3-NMeFOSAA	101		32 - 151	01/05/22 10:18	01/06/22 00:34	1
d5-NEtFOSAA	104		37 - 164	01/05/22 10:18	01/06/22 00:34	1
13C8 FOSA	88		10 - 143	01/05/22 10:18	01/06/22 00:34	1
13C4 PFBA	99		41 - 132	01/05/22 10:18	01/06/22 00:34	1
13C5 PFPeA	111		33 - 155	01/05/22 10:18	01/06/22 00:34	1
d7-N-MeFOSE-M	91		10 - 143	01/05/22 10:18	01/06/22 00:34	1
d3-NMePFOSA	77		10 - 107	01/05/22 10:18	01/06/22 00:34	1
d9-N-EtFOSE-M	94		10 - 142	01/05/22 10:18	01/06/22 00:34	1
d5-NEtPFOSA	85		10 - 108	01/05/22 10:18	01/06/22 00:34	1

**Lab Sample ID: LCS 410-211938/2-A**  
**Matrix: Water**  
**Analysis Batch: 211879**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 211938**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
Perfluorohexanoic acid	25.6	24.1		ng/L		94	66 - 137
Perfluoroheptanoic acid	25.6	23.2		ng/L		91	66 - 141
Perfluorooctanoic acid	25.6	23.2		ng/L		91	65 - 136
Perfluorononanoic acid	25.6	22.3		ng/L		87	65 - 140
Perfluorodecanoic acid	25.6	22.0		ng/L		86	63 - 137
Perfluorotridecanoic acid	25.6	24.1		ng/L		94	58 - 146
Perfluorotetradecanoic acid	25.6	24.8		ng/L		97	64 - 141
Perfluorobutanesulfonic acid	22.7	21.0		ng/L		93	65 - 132
Perfluorohexanesulfonic acid	23.3	22.5		ng/L		96	60 - 128
Perfluorooctanesulfonic acid	23.7	21.5		ng/L		91	51 - 126
NEtFOSAA	25.6	24.3		ng/L		95	54 - 134
NMeFOSAA	25.6	24.1		ng/L		94	58 - 143
10:2 FTS	24.7	22.4		ng/L		91	44 - 141
Perfluoropentanesulfonic acid	24.0	22.0		ng/L		92	71 - 136
Perfluoroheptanesulfonic acid	24.4	22.9		ng/L		94	67 - 135
Perfluorononanesulfonic acid	24.6	22.4		ng/L		91	67 - 137
Perfluorodecanesulfonic acid	24.7	21.6		ng/L		88	61 - 134
Perfluorododecanesulfonic acid (PFDoS)	24.8	21.7		ng/L		88	54 - 136
Perfluorooctanesulfonamide	25.6	27.9		ng/L		109	55 - 130
Perfluorohexadecanoic acid	25.6	23.5		ng/L		92	52 - 149
Perfluorooctadecanoic acid	25.6	22.9		ng/L		89	32 - 167
Perfluorobutanoic acid	25.6	23.0		ng/L		90	62 - 156
Perfluoropentanoic acid	25.6	21.8		ng/L		85	72 - 139
NMeFOSE	25.6	23.6		ng/L		92	52 - 131
NMeFOSA	25.6	24.0		ng/L		94	49 - 141
NEtFOSE	25.6	24.1		ng/L		94	49 - 128
NEtFOSA	25.6	22.8		ng/L		89	50 - 136
Perfluorododecanoic acid	25.6	23.2		ng/L		91	63 - 140
Perfluoroundecanoic acid	25.6	24.2		ng/L		94	62 - 138
4:2 Fluorotelomer sulfonic acid	23.9	21.9		ng/L		92	59 - 130
6:2 Fluorotelomer sulfonic acid	24.3	26.0		ng/L		107	57 - 137
8:2 Fluorotelomer sulfonic acid	24.5	20.6		ng/L		84	56 - 140

# QC Sample Results

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

Job ID: 410-68504-1

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

<i>Isotope Dilution</i>	<i>LCS</i>	<i>LCS</i>	<i>Limits</i>
<i>%Recovery</i>	<i>Qualifier</i>		
M2-4:2 FTS	120		20 - 187
M2-8:2 FTS	113		34 - 182
M2-6:2 FTS	96		29 - 189
13C5 PFHxA	108		31 - 142
13C4 PFHpA	112		30 - 144
13C8 PFOA	109		49 - 127
13C9 PFNA	122		47 - 136
13C6 PFDA	116		47 - 128
13C7 PFUnA	115		40 - 135
13C2-PFDoDA	111		28 - 136
13C2 PFTeDA	100		10 - 144
13C3 PFBS	108		19 - 178
13C3 PFHxS	100		32 - 145
13C8 PFOS	112		49 - 126
d3-NMeFOSAA	113		32 - 151
d5-NEtFOSAA	116		37 - 164
13C8 FOSA	99		10 - 143
13C4 PFBA	107		41 - 132
13C5 PFPeA	122		33 - 155
d7-N-MeFOSE-M	107		10 - 143
d3-NMePFOSA	83		10 - 107
d9-N-EtFOSE-M	103		10 - 142
d5-NEtPFOSA	89		10 - 108

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

**Lab Sample ID: MB 410-212469/1-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 213052**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 212469**

<i>Analyte</i>	<i>MB</i>	<i>MB</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>Result</i>	<i>Qualifier</i>							
NEtFOSAA	ND		2.0	0.50	ng/L		01/06/22 17:01	01/10/22 18:26	1
NMeFOSAA	ND		2.0	0.50	ng/L		01/06/22 17:01	01/10/22 18:26	1
Perfluorobutanesulfonic acid	ND		2.0	0.50	ng/L		01/06/22 17:01	01/10/22 18:26	1
Perfluorodecanoic acid	ND		2.0	0.50	ng/L		01/06/22 17:01	01/10/22 18:26	1
Perfluorododecanoic acid	ND		2.0	0.50	ng/L		01/06/22 17:01	01/10/22 18:26	1
Perfluoroheptanoic acid	ND		2.0	0.50	ng/L		01/06/22 17:01	01/10/22 18:26	1
Perfluorohexanesulfonic acid	ND		2.0	0.50	ng/L		01/06/22 17:01	01/10/22 18:26	1
Perfluorohexanoic acid	ND		2.0	0.50	ng/L		01/06/22 17:01	01/10/22 18:26	1
Perfluorononanoic acid	ND		2.0	0.50	ng/L		01/06/22 17:01	01/10/22 18:26	1
Perfluorooctanesulfonic acid	ND		2.0	0.50	ng/L		01/06/22 17:01	01/10/22 18:26	1
Perfluorooctanoic acid	ND		2.0	0.50	ng/L		01/06/22 17:01	01/10/22 18:26	1
Perfluorotetradecanoic acid	ND		2.0	0.50	ng/L		01/06/22 17:01	01/10/22 18:26	1
Perfluorotridecanoic acid	ND		2.0	0.50	ng/L		01/06/22 17:01	01/10/22 18:26	1
Perfluoroundecanoic acid	ND		2.0	0.50	ng/L		01/06/22 17:01	01/10/22 18:26	1

<i>Surrogate</i>	<i>MB</i>	<i>MB</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>				
13C2 PFDA	95		70 - 130	01/06/22 17:01	01/10/22 18:26	1
13C2 PFHxA	107		70 - 130	01/06/22 17:01	01/10/22 18:26	1
13C3 HFPO-DA	97		70 - 130	01/06/22 17:01	01/10/22 18:26	1
d5-NEtFOSAA	90		70 - 130	01/06/22 17:01	01/10/22 18:26	1



# QC Sample Results

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

Job ID: 410-68504-1

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

**Lab Sample ID: LCS 410-212469/2-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 213052**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 212469**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
NEtFOSAA	20.5	12.6	*-	ng/L		61	70 - 130
NMeFOSAA	20.5	12.4	*-	ng/L		61	70 - 130
Perfluorobutanesulfonic acid	18.1	19.0		ng/L		105	70 - 130
Perfluorodecanoic acid	20.5	21.0		ng/L		103	70 - 130
Perfluorododecanoic acid	20.5	20.3		ng/L		99	70 - 130
Perfluoroheptanoic acid	20.5	20.0		ng/L		98	70 - 130
Perfluorohexanesulfonic acid	18.7	19.6		ng/L		105	70 - 130
Perfluorohexanoic acid	20.5	19.0		ng/L		93	70 - 130
Perfluorononanoic acid	20.5	20.2		ng/L		99	70 - 130
Perfluorooctanesulfonic acid	19.0	18.6		ng/L		98	70 - 130
Perfluorooctanoic acid	20.5	20.4		ng/L		100	70 - 130
Perfluorotetradecanoic acid	20.5	20.7		ng/L		101	70 - 130
Perfluorotridecanoic acid	20.5	21.2		ng/L		103	70 - 130
Perfluoroundecanoic acid	20.5	21.6		ng/L		105	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
13C2 PFDA	86		70 - 130
13C2 PFHxA	85		70 - 130
13C3 HFPO-DA	80		70 - 130
d5-NEtFOSAA	53	S1-	70 - 130

**Lab Sample ID: LCSD 410-212469/3-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 213052**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 212469**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
NEtFOSAA	20.5	19.9	*1	ng/L		97	70 - 130	45	30
NMeFOSAA	20.5	19.8	*1	ng/L		97	70 - 130	46	30
Perfluorobutanesulfonic acid	18.1	17.3		ng/L		96	70 - 130	10	30
Perfluorodecanoic acid	20.5	22.1		ng/L		108	70 - 130	5	30
Perfluorododecanoic acid	20.5	21.0		ng/L		103	70 - 130	3	30
Perfluoroheptanoic acid	20.5	23.1		ng/L		113	70 - 130	14	30
Perfluorohexanesulfonic acid	18.7	17.8		ng/L		95	70 - 130	10	30
Perfluorohexanoic acid	20.5	23.1		ng/L		113	70 - 130	20	30
Perfluorononanoic acid	20.5	22.7		ng/L		111	70 - 130	11	30
Perfluorooctanesulfonic acid	19.0	17.4		ng/L		92	70 - 130	6	30
Perfluorooctanoic acid	20.5	23.0		ng/L		112	70 - 130	12	30
Perfluorotetradecanoic acid	20.5	20.3		ng/L		99	70 - 130	2	30
Perfluorotridecanoic acid	20.5	20.9		ng/L		102	70 - 130	1	30
Perfluoroundecanoic acid	20.5	21.8		ng/L		107	70 - 130	1	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
13C2 PFDA	90		70 - 130
13C2 PFHxA	99		70 - 130
13C3 HFPO-DA	89		70 - 130
d5-NEtFOSAA	81		70 - 130

# QC Sample Results

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

Job ID: 410-68504-1

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

**Lab Sample ID: MB 410-214038/1-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 214317**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 214038**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
NEtFOSAA	ND		2.0	0.50	ng/L		01/12/22 16:41	01/13/22 14:04	1
NMeFOSAA	ND		2.0	0.50	ng/L		01/12/22 16:41	01/13/22 14:04	1
Perfluorobutanesulfonic acid	ND		2.0	0.50	ng/L		01/12/22 16:41	01/13/22 14:04	1
Perfluorodecanoic acid	ND		2.0	0.50	ng/L		01/12/22 16:41	01/13/22 14:04	1
Perfluorododecanoic acid	ND		2.0	0.50	ng/L		01/12/22 16:41	01/13/22 14:04	1
Perfluoroheptanoic acid	ND		2.0	0.50	ng/L		01/12/22 16:41	01/13/22 14:04	1
Perfluorohexanesulfonic acid	ND		2.0	0.50	ng/L		01/12/22 16:41	01/13/22 14:04	1
Perfluorohexanoic acid	ND		2.0	0.50	ng/L		01/12/22 16:41	01/13/22 14:04	1
Perfluorononanoic acid	ND		2.0	0.50	ng/L		01/12/22 16:41	01/13/22 14:04	1
Perfluorooctanesulfonic acid	ND		2.0	0.50	ng/L		01/12/22 16:41	01/13/22 14:04	1
Perfluorooctanoic acid	ND		2.0	0.50	ng/L		01/12/22 16:41	01/13/22 14:04	1
Perfluorotetradecanoic acid	ND		2.0	0.50	ng/L		01/12/22 16:41	01/13/22 14:04	1
Perfluorotridecanoic acid	ND		2.0	0.50	ng/L		01/12/22 16:41	01/13/22 14:04	1
Perfluoroundecanoic acid	ND		2.0	0.50	ng/L		01/12/22 16:41	01/13/22 14:04	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFDA	102		70 - 130	01/12/22 16:41	01/13/22 14:04	1
13C2 PFHxA	121		70 - 130	01/12/22 16:41	01/13/22 14:04	1
13C3 HFPO-DA	107		70 - 130	01/12/22 16:41	01/13/22 14:04	1
d5-NEtFOSAA	85		70 - 130	01/12/22 16:41	01/13/22 14:04	1

**Lab Sample ID: LCS 410-214038/2-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 214317**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 214038**

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	Limits
		Result	Qualifier				
NEtFOSAA	20.5	19.8		ng/L		97	70 - 130
NMeFOSAA	20.5	20.5		ng/L		100	70 - 130
Perfluorobutanesulfonic acid	18.1	15.0		ng/L		83	70 - 130
Perfluorodecanoic acid	20.5	18.6		ng/L		91	70 - 130
Perfluorododecanoic acid	20.5	14.9		ng/L		73	70 - 130
Perfluoroheptanoic acid	20.5	19.8		ng/L		96	70 - 130
Perfluorohexanesulfonic acid	18.7	15.6		ng/L		83	70 - 130
Perfluorohexanoic acid	20.5	20.0		ng/L		98	70 - 130
Perfluorononanoic acid	20.5	18.6		ng/L		91	70 - 130
Perfluorooctanesulfonic acid	19.0	14.7		ng/L		77	70 - 130
Perfluorooctanoic acid	20.5	18.9		ng/L		92	70 - 130
Perfluorotetradecanoic acid	20.5	17.5		ng/L		85	70 - 130
Perfluorotridecanoic acid	20.5	16.9		ng/L		83	70 - 130
Perfluoroundecanoic acid	20.5	17.8		ng/L		87	70 - 130

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
13C2 PFDA	93		70 - 130
13C2 PFHxA	104		70 - 130
13C3 HFPO-DA	92		70 - 130
d5-NEtFOSAA	95		70 - 130

# QC Sample Results

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

Job ID: 410-68504-1

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

**Lab Sample ID: LCSD 410-214038/3-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 214317**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 214038**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD
									Limit
NEtFOSAA	20.5	19.0		ng/L		93	70 - 130	4	30
NMeFOSAA	20.5	19.8		ng/L		97	70 - 130	3	30
Perfluorobutanesulfonic acid	18.1	14.8		ng/L		82	70 - 130	1	30
Perfluorodecanoic acid	20.5	18.5		ng/L		91	70 - 130	1	30
Perfluorododecanoic acid	20.5	16.6		ng/L		81	70 - 130	11	30
Perfluoroheptanoic acid	20.5	19.2		ng/L		94	70 - 130	3	30
Perfluorohexanesulfonic acid	18.7	15.3		ng/L		82	70 - 130	2	30
Perfluorohexanoic acid	20.5	19.0		ng/L		93	70 - 130	5	30
Perfluorononanoic acid	20.5	18.7		ng/L		91	70 - 130	0	30
Perfluorooctanesulfonic acid	19.0	14.3		ng/L		75	70 - 130	3	30
Perfluorooctanoic acid	20.5	19.0		ng/L		93	70 - 130	1	30
Perfluorotetradecanoic acid	20.5	17.5		ng/L		85	70 - 130	0	30
Perfluorotridecanoic acid	20.5	16.8		ng/L		82	70 - 130	0	30
Perfluoroundecanoic acid	20.5	17.6		ng/L		86	70 - 130	1	30

Surrogate	LCSD	LCSD	Limits
	%Recovery	Qualifier	
13C2 PFDA	84		70 - 130
13C2 PFHxA	99		70 - 130
13C3 HFPO-DA	88		70 - 130
d5-NEtFOSAA	87		70 - 130

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

**Lab Sample ID: MB 410-212348/1-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 212356**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 212348**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perchlorate	ND		1.0	0.23	ug/L		01/06/22 11:56	01/06/22 12:56	1

**Lab Sample ID: LCS 410-212348/2-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 212356**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 212348**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits	RPD
								Limit
Perchlorate	1.00	0.875	J	ug/L		87	80 - 120	

**Lab Sample ID: LCSD 410-212348/3-A**  
**Matrix: Drinking Water**  
**Analysis Batch: 212356**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 212348**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD
								Limit
Perchlorate	1.00	0.832	J	ug/L		83	80 - 120	5 15

# QC Association Summary

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

Job ID: 410-68504-1

## LCMS

### Analysis Batch: 211879

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-68504-3	Raw Water 300	Total/NA	Water	537 (modified)	211938
410-68504-4	Finished Water EP 101	Total/NA	Water	537 (modified)	211938
MB 410-211938/1-A	Method Blank	Total/NA	Water	537 (modified)	211938
LCS 410-211938/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	211938

### Prep Batch: 211938

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-68504-3	Raw Water 300	Total/NA	Water	3535	
410-68504-4	Finished Water EP 101	Total/NA	Water	3535	
MB 410-211938/1-A	Method Blank	Total/NA	Water	3535	
LCS 410-211938/2-A	Lab Control Sample	Total/NA	Water	3535	

### Prep Batch: 212348

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-68504-5	Raw Water 300	Total/NA	Drinking Water	6850 Prep	
410-68504-6	Finished Water EP 101	Total/NA	Drinking Water	6850 Prep	
MB 410-212348/1-A	Method Blank	Total/NA	Drinking Water	6850 Prep	
LCS 410-212348/2-A	Lab Control Sample	Total/NA	Drinking Water	6850 Prep	
LCSD 410-212348/3-A	Lab Control Sample Dup	Total/NA	Drinking Water	6850 Prep	

### Analysis Batch: 212356

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-68504-5	Raw Water 300	Total/NA	Drinking Water	SW846 6850	212348
410-68504-6	Finished Water EP 101	Total/NA	Drinking Water	SW846 6850	212348
MB 410-212348/1-A	Method Blank	Total/NA	Drinking Water	SW846 6850	212348
LCS 410-212348/2-A	Lab Control Sample	Total/NA	Drinking Water	SW846 6850	212348
LCSD 410-212348/3-A	Lab Control Sample Dup	Total/NA	Drinking Water	SW846 6850	212348

### Prep Batch: 212469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-68504-2	Finished Water EP 101	Total/NA	Drinking Water	537.1 DW Prep	
MB 410-212469/1-A	Method Blank	Total/NA	Drinking Water	537.1 DW Prep	
LCS 410-212469/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW Prep	
LCSD 410-212469/3-A	Lab Control Sample Dup	Total/NA	Drinking Water	537.1 DW Prep	

### Prep Batch: 212765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-68504-3 - RE	Raw Water 300	Total/NA	Water	3535	
MB 410-212765/1-A	Method Blank	Total/NA	Water	3535	
LCS 410-212765/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 410-212765/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

### Analysis Batch: 213052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-68504-2	Finished Water EP 101	Total/NA	Drinking Water	EPA 537.1	212469
MB 410-212469/1-A	Method Blank	Total/NA	Drinking Water	EPA 537.1	212469
LCS 410-212469/2-A	Lab Control Sample	Total/NA	Drinking Water	EPA 537.1	212469
LCSD 410-212469/3-A	Lab Control Sample Dup	Total/NA	Drinking Water	EPA 537.1	212469

# QC Association Summary

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

Job ID: 410-68504-1

## LCMS

### Analysis Batch: 213089

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-68504-3 - RE	Raw Water 300	Total/NA	Water	537 (modified)	212765
MB 410-212765/1-A	Method Blank	Total/NA	Water	537 (modified)	212765
LCS 410-212765/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	212765
LCSD 410-212765/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	212765

### Prep Batch: 214038

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-68504-1	Raw Water 300	Total/NA	Drinking Water	537.1 DW Prep	
410-68504-2 - RE	Finished Water EP 101	Total/NA	Drinking Water	537.1 DW Prep	
410-68504-7	Field Blank Raw 300	Total/NA	Drinking Water	537.1 DW Prep	
410-68504-8	Field Blank EP101	Total/NA	Drinking Water	537.1 DW Prep	
MB 410-214038/1-A	Method Blank	Total/NA	Drinking Water	537.1 DW Prep	
LCS 410-214038/2-A	Lab Control Sample	Total/NA	Drinking Water	537.1 DW Prep	
LCSD 410-214038/3-A	Lab Control Sample Dup	Total/NA	Drinking Water	537.1 DW Prep	

### Analysis Batch: 214317

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-68504-1	Raw Water 300	Total/NA	Drinking Water	EPA 537.1	214038
410-68504-2 - RE	Finished Water EP 101	Total/NA	Drinking Water	EPA 537.1	214038
410-68504-7	Field Blank Raw 300	Total/NA	Drinking Water	EPA 537.1	214038
410-68504-8	Field Blank EP101	Total/NA	Drinking Water	EPA 537.1	214038
MB 410-214038/1-A	Method Blank	Total/NA	Drinking Water	EPA 537.1	214038
LCS 410-214038/2-A	Lab Control Sample	Total/NA	Drinking Water	EPA 537.1	214038
LCSD 410-214038/3-A	Lab Control Sample Dup	Total/NA	Drinking Water	EPA 537.1	214038

# Lab Chronicle

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

Job ID: 410-68504-1

## Client Sample ID: Raw Water 300

Date Collected: 12/29/21 07:50

Date Received: 12/30/21 11:41

## Lab Sample ID: 410-68504-1

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			214038	01/12/22 16:41	GU2F	ELLE
Total/NA	Analysis	EPA 537.1		1	214317	01/13/22 14:50	PY4D	ELLE

## Client Sample ID: Finished Water EP 101

Date Collected: 12/29/21 08:12

Date Received: 12/30/21 11:41

## Lab Sample ID: 410-68504-2

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	RE		214038	01/12/22 16:41	GU2F	ELLE
Total/NA	Analysis	EPA 537.1	RE	1	214317	01/13/22 15:01	PY4D	ELLE
Total/NA	Prep	537.1 DW Prep			212469	01/06/22 17:01	GU2F	ELLE
Total/NA	Analysis	EPA 537.1		1	213052	01/10/22 19:24	V3JD	ELLE

## Client Sample ID: Raw Water 300

Date Collected: 12/29/21 07:50

Date Received: 12/30/21 11:41

## Lab Sample ID: 410-68504-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			211938	01/05/22 10:18	D5VP	ELLE
Total/NA	Analysis	537 (modified)		1	211879	01/06/22 03:42	ZG8V	ELLE
Total/NA	Prep	3535	RE		212765	01/07/22 17:53	ZWK6	ELLE
Total/NA	Analysis	537 (modified)	RE	1	213089	01/10/22 20:16	PY4D	ELLE

## Client Sample ID: Finished Water EP 101

Date Collected: 12/29/21 08:12

Date Received: 12/30/21 11:41

## Lab Sample ID: 410-68504-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			211938	01/05/22 10:18	D5VP	ELLE
Total/NA	Analysis	537 (modified)		1	211879	01/06/22 03:53	ZG8V	ELLE

## Client Sample ID: Raw Water 300

Date Collected: 12/29/21 07:50

Date Received: 12/30/21 11:41

## Lab Sample ID: 410-68504-5

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	6850 Prep			212348	01/06/22 11:56	VK3G	ELLE
Total/NA	Analysis	SW846 6850		1	212356	01/06/22 13:41	VK3G	ELLE

## Client Sample ID: Finished Water EP 101

Date Collected: 12/29/21 08:12

Date Received: 12/30/21 11:41

## Lab Sample ID: 410-68504-6

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	6850 Prep			212348	01/06/22 11:56	VK3G	ELLE
Total/NA	Analysis	SW846 6850		1	212356	01/06/22 13:49	VK3G	ELLE

# Lab Chronicle

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

Job ID: 410-68504-1

## Client Sample ID: Field Blank Raw 300

Lab Sample ID: 410-68504-7

Date Collected: 12/29/21 07:50

Matrix: Drinking Water

Date Received: 12/30/21 11:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW Prep			214038	01/12/22 16:41	GU2F	ELLE
Total/NA	Analysis	EPA 537.1		1	214317	01/13/22 15:13	PY4D	ELLE

## Client Sample ID: Field Blank EP101

Lab Sample ID: 410-68504-8

Date Collected: 12/29/21 08:12

Matrix: Drinking Water

Date Received: 12/30/21 11:41

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537.1 DW Prep			214038	01/12/22 16:41	GU2F	ELLE
Total/NA	Analysis	EPA 537.1		1	214317	01/13/22 15:24	PY4D	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  
Project/Site: PFAS & Perchlorate

Job ID: 410-68504-1

## 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	01-30-22

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: 410-68504-1

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: 410-68504-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-68504-1	Raw Water 300	Drinking Water	12/29/21 07:50	12/30/21 11:41
410-68504-2	Finished Water EP 101	Drinking Water	12/29/21 08:12	12/30/21 11:41
410-68504-3	Raw Water 300	Water	12/29/21 07:50	12/30/21 11:41
410-68504-4	Finished Water EP 101	Water	12/29/21 08:12	12/30/21 11:41
410-68504-5	Raw Water 300	Drinking Water	12/29/21 07:50	12/30/21 11:41
410-68504-6	Finished Water EP 101	Drinking Water	12/29/21 08:12	12/30/21 11:41
410-68504-7	Field Blank Raw 300	Drinking Water	12/29/21 07:50	12/30/21 11:41
410-68504-8	Field Blank EP101	Drinking Water	12/29/21 08:12	12/30/21 11:41

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**Eurofins Lancaster Laboratories Env, LLC**

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

**Chain of Custody Record**



eurofins  
Environment Testing  
America

<b>Client Information</b>		Sampler: <u>Robert Gomez</u>		Lab PM: Gordon, Stephen J		410-68504 Chain of Custody		JC No: 10-42126-7775.1	
Client Contact: Linda Leopold		Phone:		E-Mail: Stephen.Gordon@eurofinset.com				Page 1 of 1	
Company: Pittsburgh Water and Sewer Authority				PWSID:		<b>Analysis Requested</b>			
Address: 900 Freeport Road		Due Date Requested:		TAT Requested (days):		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No		Preservation Codes:	
City: Pittsburgh		PO #:		Purchase Order not required		WO #:		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                      Z - other (specify)	
Project Name: PFAS & Perchlorate		Project #: 41004440		SSOW#:		Other:			
Site:									
<b>Sample Identification</b>		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/soil, BT=Tissue, A=Air)	
								537.1_DW - PFAS DW 14 compounds 6850 - Perchlorate by LC/MS or LC/MS/MS PFC_IDA - PFAS 32 Compounds 637.1_DW - PFAS DW 14 compounds	
Raw Water 300		12/29/21		0750		G		Drinking Water	
Finished Water EP 101		12/29/21		0812		G		Drinking Water	
Raw Water 300		12/29/21		0750		G		Water	
Finished Water EP 101		12/29/21		0812		G		Water	
Raw Water 300		12/29/21		0750		G		Drinking Water	
Finish Water EP 101		12/29/21		0812		G		Drinking Water	
Field Blank Raw 300		12/29/21		0750		G		DW	
Field Blank EP 101		12/29/21		0812		G		DW	
<b>Possible Hazard Identification</b>		<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		<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>		<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Deliverable Requested: I, II, III, IV, Other (specify)	
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:		Special Instructions/QC Requirements:	
Relinquished by: <u>Karen A. Smith</u>		Date/Time: 12-17-21 06:45		Company: <u>EH&amp;E</u>		Received by:		Date/Time:	
Relinquished by: <u>Robert Gomez</u>		Date/Time: 12/29/21 0850		Company: <u>PWSA</u>		Received by:		Date/Time:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time: 12/30/21 1141	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: <u>2.9</u>					



# Login Sample Receipt Checklist

Client: Pittsburgh Water and Sewer Authority

Job Number: 410-68504-1

**Login Number: 68504**

**List Source: Eurofins Lancaster Laboratories Env, LLC**

**List Number: 1**

**Creator: Lugardo, Tamara**

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 ( $\leq 6^{\circ}\text{C}$ , not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable ( $\leq 6^{\circ}\text{C}$ , not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
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	Received extra samples not listed on COC.
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	