



ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Merrimack Village District
2 Greens Pond Road
Merrimack NH 03054

Report Date: October 23, 2019 10:50

Project: PFC Investigation

Account #: 38083
Group Number: 2066584
PO Number: 3332
State of Sample Origin: NH

Electronic Copy To Merrimack Village District

Attn: Jill Lavoie

Respectfully Submitted,



Mary Kate Izzo
Project Manager

(717) 556-4656

To view our laboratory's current scopes of accreditation please go to <https://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/> . Historical copies may be requested through your project manager.



SAMPLE INFORMATION

<u>Client Sample Description</u>	<u>Sample Collection Date/Time</u>	<u>ELLE#</u>
1531010_008 Grab Potable Water	09/26/2019 13:22	1163104
1531010_003 Grab Potable Water	09/26/2019 13:40	1163105
1531010_007 Grab Potable Water	09/26/2019 13:50	1163106
1531010_009 Grab Potable Water	09/26/2019 14:08	1163107
1531010_508 Grab Potable Water	09/26/2019 14:15	1163108

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: 1531010_008 Grab Potable Water
MVD-2(T)

Merrimack Village District
ELLE Sample #: PW 1163104
ELLE Group #: 2066584
Matrix: Potable Water

Project Name: PFC Investigation

Submission Date/Time: 09/27/2019 10:28
Collection Date/Time: 09/26/2019 13:22

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Isotope Dilution						
14473	10:2Fluorotelomersulfonic acid ¹	120226-60-0	N.D.	0.87	4.4	1
14473	4:2-Fluorotelomersulfonic acid ¹	757124-72-4	N.D.	0.44	1.7	1
14473	6:2-Fluorotelomersulfonic acid ¹	27619-97-2	N.D.	1.7	4.4	1
14473	8:2-Fluorotelomersulfonic acid ¹	39108-34-4	N.D.	0.87	2.6	1
14473	NEtFOSAA ¹	2991-50-6	N.D.	0.44	2.6	1
NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.						
14473	NEtPFOSA ¹	4151-50-2	N.D.	0.87	4.4	1
NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide						
14473	NEtPFOSAE ¹	1691-99-2	N.D.	0.87	2.6	1
NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol						
14473	NMeFOSAA ¹	2355-31-9	N.D.	0.52	1.7	1
NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.						
14473	NMePFOSA ¹	31506-32-8	N.D.	0.87	2.6	1
NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide						
14473	NMePFOSAE ¹	24448-09-7	N.D.	0.87	2.6	1
NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol						
14473	Perfluorobutanesulfonic acid ¹	375-73-5	3.3	0.44	1.7	1
14473	Perfluorobutanoic acid ¹	375-22-4	5.2	1.7	4.4	1
14473	Perfluorodecanesulfonic acid ¹	335-77-3	N.D.	0.44	1.7	1
14473	Perfluorodecanoic acid ¹	335-76-2	N.D.	0.44	1.7	1
14473	Perfluorododecanesulfonic acid ¹	79780-39-5	N.D.	0.44	2.6	1
14473	Perfluorododecanoic acid ¹	307-55-1	N.D.	0.44	1.7	1
14473	Perfluoroheptanesulfonic acid ¹	375-92-8	N.D.	0.44	1.7	1
14473	Perfluoroheptanoic acid ¹	375-85-9	4.9	0.44	1.7	1
14473	Perfluorohexadecanoic acid ¹	67905-19-5	N.D.	0.87	2.6	1
14473	Perfluorohexanesulfonic acid ¹	355-46-4	1.1 J	0.44	1.7	1
14473	Perfluorohexanoic acid ¹	307-24-4	8.7	0.44	1.7	1
14473	Perfluorononanesulfonic acid ¹	68259-12-1	N.D.	0.44	1.7	1
14473	Perfluorononanoic acid ¹	375-95-1	0.65 J	0.44	1.7	1
14473	Perfluorooctadecanoic acid ¹	16517-11-6	N.D.	0.87	2.6	1
14473	Perfluorooctanesulfonamide ¹	754-91-6	N.D.	0.44	1.7	1
14473	Perfluorooctanesulfonic acid ¹	1763-23-1	2.2	0.44	1.7	1
14473	Perfluorooctanoic acid ¹	335-67-1	24	0.44	1.7	1
14473	Perfluoropentanesulfonate ¹	2706-91-4	N.D.	0.44	1.7	1
14473	Perfluoropentanoic acid ¹	2706-90-3	6.5	0.44	1.7	1
14473	Perfluorotetradecanoic acid ¹	376-06-7	N.D.	0.44	1.7	1
14473	Perfluorotridecanoic acid ¹	72629-94-8	N.D.	0.44	1.7	1
14473	Perfluoroundecanoic acid ¹	2058-94-8	N.D.	0.44	1.7	1

*=This limit was used in the evaluation of the final result

Sample Description: 1531010_008 Grab Potable Water
MVD-2(T)

Merrimack Village District
ELLE Sample #: PW 1163104
ELLE Group #: 2066584
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 09/27/2019 10:28
Collection Date/Time: 09/26/2019 13:22

Sample Comments

¹ = This analyte was not on the laboratory's NH ELAP Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	32 PFAS	EPA 537 Isotope Dilution	1	19281004	10/11/2019 14:09	Jason W Knight	1
14091	PFAS Water Prep	EPA 537 Isotope Dilution	1	19281004	10/08/2019 07:00	Pamela Rothharp	1

*=This limit was used in the evaluation of the final result

Sample Description: 1531010_003 Grab Potable Water
MVD-3(R)

Merrimack Village District
ELLE Sample #: PW 1163105
ELLE Group #: 2066584
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 09/27/2019 10:28
Collection Date/Time: 09/26/2019 13:40

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Isotope Dilution						
			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid ¹	120226-60-0	N.D.	0.89	4.5	1
14473	4:2-Fluorotelomersulfonic acid ¹	757124-72-4	N.D.	0.45	1.8	1
14473	6:2-Fluorotelomersulfonic acid ¹	27619-97-2	N.D.	1.8	4.5	1
14473	8:2-Fluorotelomersulfonic acid ¹	39108-34-4	N.D.	0.89	2.7	1
14473	NEtFOSAA ¹	2991-50-6	N.D.	0.45	2.7	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA ¹	4151-50-2	N.D.	0.89	4.5	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE ¹	1691-99-2	N.D.	0.89	2.7	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA ¹	2355-31-9	N.D.	0.53	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA ¹	31506-32-8	N.D.	0.89	2.7	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE ¹	24448-09-7	N.D.	0.89	2.7	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid ¹	375-73-5	4.6	0.45	1.8	1
14473	Perfluorobutanoic acid ¹	375-22-4	5.3	1.8	4.5	1
14473	Perfluorodecanesulfonic acid ¹	335-77-3	N.D.	0.45	1.8	1
14473	Perfluorodecanoic acid ¹	335-76-2	N.D.	0.45	1.8	1
14473	Perfluorododecanesulfonic acid ¹	79780-39-5	N.D.	0.45	2.7	1
14473	Perfluorododecanoic acid ¹	307-55-1	N.D.	0.45	1.8	1
14473	Perfluoroheptanesulfonic acid ¹	375-92-8	N.D.	0.45	1.8	1
14473	Perfluoroheptanoic acid ¹	375-85-9	5.0	0.45	1.8	1
14473	Perfluorohexadecanoic acid ¹	67905-19-5	N.D.	0.89	2.7	1
14473	Perfluorohexanesulfonic acid ¹	355-46-4	1.2 J	0.45	1.8	1
14473	Perfluorohexanoic acid ¹	307-24-4	8.3	0.45	1.8	1
14473	Perfluorononanesulfonic acid ¹	68259-12-1	N.D.	0.45	1.8	1
14473	Perfluorononanoic acid ¹	375-95-1	0.86 J	0.45	1.8	1
14473	Perfluorooctadecanoic acid ¹	16517-11-6	N.D.	0.89	2.7	1
14473	Perfluorooctanesulfonamide ¹	754-91-6	N.D.	0.45	1.8	1
14473	Perfluorooctanesulfonic acid ¹	1763-23-1	3.2	0.45	1.8	1
14473	Perfluorooctanoic acid ¹	335-67-1	21	0.45	1.8	1
14473	Perfluoropentanesulfonate ¹	2706-91-4	N.D.	0.45	1.8	1
14473	Perfluoropentanoic acid ¹	2706-90-3	7.2	0.45	1.8	1
14473	Perfluorotetradecanoic acid ¹	376-06-7	N.D.	0.45	1.8	1
14473	Perfluorotridecanoic acid ¹	72629-94-8	N.D.	0.45	1.8	1
14473	Perfluoroundecanoic acid ¹	2058-94-8	N.D.	0.45	1.8	1

The recovery for labeled compound used as extraction standards is outside of QC acceptance limits as noted on the QC Summary.

*=This limit was used in the evaluation of the final result

Sample Description: 1531010_003 Grab Potable Water
MVD-3(R)

Merrimack Village District
ELLE Sample #: PW 1163105
ELLE Group #: 2066584
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 09/27/2019 10:28
Collection Date/Time: 09/26/2019 13:40

Sample Comments

¹ = This analyte was not on the laboratory's NH ELAP Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	32 PFAS	EPA 537 Isotope Dilution	1	19281004	10/11/2019 14:18	Jason W Knight	1
14091	PFAS Water Prep	EPA 537 Isotope Dilution	1	19281004	10/08/2019 07:00	Pamela Rothharp	1

*=This limit was used in the evaluation of the final result

Sample Description: 1531010_007 Grab Potable Water
MVD-7(R)

Merrimack Village District
ELLE Sample #: PW 1163106
ELLE Group #: 2066584
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 09/27/2019 10:28
Collection Date/Time: 09/26/2019 13:50

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Isotope Dilution						
			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid ¹	120226-60-0	N.D.	0.86	4.3	1
14473	4:2-Fluorotelomersulfonic acid ¹	757124-72-4	N.D.	0.43	1.7	1
14473	6:2-Fluorotelomersulfonic acid ¹	27619-97-2	N.D.	1.7	4.3	1
14473	8:2-Fluorotelomersulfonic acid ¹	39108-34-4	N.D.	0.86	2.6	1
14473	NEtFOSAA ¹	2991-50-6	N.D.	0.43	2.6	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA ¹	4151-50-2	N.D.	0.86	4.3	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE ¹	1691-99-2	N.D.	0.86	2.6	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA ¹	2355-31-9	N.D.	0.51	1.7	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA ¹	31506-32-8	N.D.	0.86	2.6	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE ¹	24448-09-7	N.D.	0.86	2.6	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid ¹	375-73-5	1.9	0.43	1.7	1
14473	Perfluorobutanoic acid ¹	375-22-4	2.3 J	1.7	4.3	1
14473	Perfluorodecanesulfonic acid ¹	335-77-3	N.D.	0.43	1.7	1
14473	Perfluorodecanoic acid ¹	335-76-2	N.D.	0.43	1.7	1
14473	Perfluorododecanesulfonic acid ¹	79780-39-5	N.D.	0.43	2.6	1
14473	Perfluorododecanoic acid ¹	307-55-1	N.D.	0.43	1.7	1
14473	Perfluoroheptanesulfonic acid ¹	375-92-8	N.D.	0.43	1.7	1
14473	Perfluoroheptanoic acid ¹	375-85-9	3.1	0.43	1.7	1
14473	Perfluorohexadecanoic acid ¹	67905-19-5	N.D.	0.86	2.6	1
14473	Perfluorohexanesulfonic acid ¹	355-46-4	1.5 J	0.43	1.7	1
14473	Perfluorohexanoic acid ¹	307-24-4	2.8	0.43	1.7	1
14473	Perfluorononanesulfonic acid ¹	68259-12-1	N.D.	0.43	1.7	1
14473	Perfluorononanoic acid ¹	375-95-1	0.75 J	0.43	1.7	1
14473	Perfluorooctadecanoic acid ¹	16517-11-6	N.D.	0.86	2.6	1
14473	Perfluorooctanesulfonamide ¹	754-91-6	N.D.	0.43	1.7	1
14473	Perfluorooctanesulfonic acid ¹	1763-23-1	3.0	0.43	1.7	1
14473	Perfluorooctanoic acid ¹	335-67-1	25	0.43	1.7	1
14473	Perfluoropentanesulfonate ¹	2706-91-4	N.D.	0.43	1.7	1
14473	Perfluoropentanoic acid ¹	2706-90-3	2.3	0.43	1.7	1
14473	Perfluorotetradecanoic acid ¹	376-06-7	N.D.	0.43	1.7	1
14473	Perfluorotridecanoic acid ¹	72629-94-8	N.D.	0.43	1.7	1
14473	Perfluoroundecanoic acid ¹	2058-94-8	N.D.	0.43	1.7	1

The recovery for labeled compound used as extraction standards is outside of QC acceptance limits as noted on the QC Summary.

*=This limit was used in the evaluation of the final result

Sample Description: 1531010_007 Grab Potable Water
MVD-7(R)

Merrimack Village District
ELLE Sample #: PW 1163106
ELLE Group #: 2066584
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 09/27/2019 10:28
Collection Date/Time: 09/26/2019 13:50

Sample Comments

¹ = This analyte was not on the laboratory's NH ELAP Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	32 PFAS	EPA 537 Isotope Dilution	1	19281004	10/11/2019 14:27	Jason W Knight	1
14091	PFAS Water Prep	EPA 537 Isotope Dilution	1	19281004	10/08/2019 07:00	Pamela Rothharp	1

*=This limit was used in the evaluation of the final result

Sample Description: 1531010_009 Grab Potable Water
MVD-8(R)

Merrimack Village District
ELLE Sample #: PW 1163107
ELLE Group #: 2066584
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 09/27/2019 10:28
Collection Date/Time: 09/26/2019 14:08

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Isotope Dilution						
			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid ¹	120226-60-0	N.D.	0.87	4.3	1
14473	4:2-Fluorotelomersulfonic acid ¹	757124-72-4	N.D.	0.43	1.7	1
14473	6:2-Fluorotelomersulfonic acid ¹	27619-97-2	N.D.	1.7	4.3	1
14473	8:2-Fluorotelomersulfonic acid ¹	39108-34-4	N.D.	0.87	2.6	1
14473	NEtFOSAA ¹	2991-50-6	N.D.	0.43	2.6	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA ¹	4151-50-2	N.D.	0.87	4.3	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE ¹	1691-99-2	N.D.	0.87	2.6	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA ¹	2355-31-9	N.D.	0.52	1.7	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA ¹	31506-32-8	N.D.	0.87	2.6	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE ¹	24448-09-7	N.D.	0.87	2.6	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid ¹	375-73-5	1.5 J	0.43	1.7	1
14473	Perfluorobutanoic acid ¹	375-22-4	N.D.	1.7	4.3	1
14473	Perfluorodecanesulfonic acid ¹	335-77-3	N.D.	0.43	1.7	1
14473	Perfluorodecanoic acid ¹	335-76-2	N.D.	0.43	1.7	1
14473	Perfluorododecanesulfonic acid ¹	79780-39-5	N.D.	0.43	2.6	1
14473	Perfluorododecanoic acid ¹	307-55-1	N.D.	0.43	1.7	1
14473	Perfluoroheptanesulfonic acid ¹	375-92-8	N.D.	0.43	1.7	1
14473	Perfluoroheptanoic acid ¹	375-85-9	2.3	0.43	1.7	1
14473	Perfluorohexadecanoic acid ¹	67905-19-5	N.D.	0.87	2.6	1
14473	Perfluorohexanesulfonic acid ¹	355-46-4	1.2 J	0.43	1.7	1
14473	Perfluorohexanoic acid ¹	307-24-4	2.4	0.43	1.7	1
14473	Perfluorononanesulfonic acid ¹	68259-12-1	N.D.	0.43	1.7	1
14473	Perfluorononanoic acid ¹	375-95-1	N.D.	0.43	1.7	1
14473	Perfluorooctadecanoic acid ¹	16517-11-6	N.D.	0.87	2.6	1
14473	Perfluorooctanesulfonamide ¹	754-91-6	N.D.	0.43	1.7	1
14473	Perfluorooctanesulfonic acid ¹	1763-23-1	1.6 J	0.43	1.7	1
14473	Perfluorooctanoic acid ¹	335-67-1	19	0.43	1.7	1
14473	Perfluoropentanesulfonate ¹	2706-91-4	N.D.	0.43	1.7	1
14473	Perfluoropentanoic acid ¹	2706-90-3	2.0	0.43	1.7	1
14473	Perfluorotetradecanoic acid ¹	376-06-7	N.D.	0.43	1.7	1
14473	Perfluorotridecanoic acid ¹	72629-94-8	N.D.	0.43	1.7	1
14473	Perfluoroundecanoic acid ¹	2058-94-8	N.D.	0.43	1.7	1

The recovery for extraction standards is outside of the QC acceptance limits as noted on the QC Summary. The following action was taken:
The sample was re-extracted outside of the method holding time and

*=This limit was used in the evaluation of the final result

Sample Description: 1531010_009 Grab Potable Water
MVD-8(R)

Merrimack Village District
ELLE Sample #: PW 1163107
ELLE Group #: 2066584
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 09/27/2019 10:28
Collection Date/Time: 09/26/2019 14:08

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	the recovery for extraction standards was again outside of the QC acceptance limits.					

Sample Comments

¹ = This analyte was not on the laboratory's NH ELAP Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	32 PFAS	EPA 537 Isotope Dilution	1	19281004	10/11/2019 14:36	Jason W Knight	1
14091	PFAS Water Prep	EPA 537 Isotope Dilution	1	19281004	10/08/2019 07:00	Pamela Rothhapt	1

*=This limit was used in the evaluation of the final result

Sample Description: 1531010_508 Grab Potable Water
MVD-TP

Merrimack Village District
ELLE Sample #: PW 1163108
ELLE Group #: 2066584
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 09/27/2019 10:28
Collection Date/Time: 09/26/2019 14:15

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Isotope Dilution						
14473	10:2-Fluorotelomersulfonic acid ¹	120226-60-0	N.D.	0.87	4.4	1
14473	4:2-Fluorotelomersulfonic acid ¹	757124-72-4	N.D.	0.44	1.7	1
14473	6:2-Fluorotelomersulfonic acid ¹	27619-97-2	N.D.	1.7	4.4	1
14473	8:2-Fluorotelomersulfonic acid ¹	39108-34-4	N.D.	0.87	2.6	1
14473	NEtFOSAA ¹	2991-50-6	N.D.	0.44	2.6	1
NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.						
14473	NEtPFOSA ¹	4151-50-2	N.D.	0.87	4.4	1
NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide						
14473	NEtPFOSAE ¹	1691-99-2	N.D.	0.87	2.6	1
NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol						
14473	NMeFOSAA ¹	2355-31-9	N.D.	0.52	1.7	1
NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.						
14473	NMePFOSA ¹	31506-32-8	N.D.	0.87	2.6	1
NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide						
14473	NMePFOSAE ¹	24448-09-7	N.D.	0.87	2.6	1
NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol						
14473	Perfluorobutanesulfonic acid ¹	375-73-5	1.7 J	0.44	1.7	1
14473	Perfluorobutanoic acid ¹	375-22-4	1.7 J	1.7	4.4	1
14473	Perfluorodecanesulfonic acid ¹	335-77-3	N.D.	0.44	1.7	1
14473	Perfluorodecanoic acid ¹	335-76-2	N.D.	0.44	1.7	1
14473	Perfluorododecanesulfonic acid ¹	79780-39-5	N.D.	0.44	2.6	1
14473	Perfluorododecanoic acid ¹	307-55-1	N.D.	0.44	1.7	1
14473	Perfluoroheptanesulfonic acid ¹	375-92-8	N.D.	0.44	1.7	1
14473	Perfluoroheptanoic acid ¹	375-85-9	2.5	0.44	1.7	1
14473	Perfluorohexadecanoic acid ¹	67905-19-5	N.D.	0.87	2.6	1
14473	Perfluorohexanesulfonic acid ¹	355-46-4	1.3 J	0.44	1.7	1
14473	Perfluorohexanoic acid ¹	307-24-4	2.7	0.44	1.7	1
14473	Perfluorononanesulfonic acid ¹	68259-12-1	N.D.	0.44	1.7	1
14473	Perfluorononanoic acid ¹	375-95-1	0.55 J	0.44	1.7	1
14473	Perfluorooctadecanoic acid ¹	16517-11-6	N.D.	0.87	2.6	1
14473	Perfluorooctanesulfonamide ¹	754-91-6	N.D.	0.44	1.7	1
14473	Perfluorooctanesulfonic acid ¹	1763-23-1	2.2	0.44	1.7	1
14473	Perfluorooctanoic acid ¹	335-67-1	20	0.44	1.7	1
14473	Perfluoropentanesulfonate ¹	2706-91-4	N.D.	0.44	1.7	1
14473	Perfluoropentanoic acid ¹	2706-90-3	1.9	0.44	1.7	1
14473	Perfluorotetradecanoic acid ¹	376-06-7	N.D.	0.44	1.7	1
14473	Perfluorotridecanoic acid ¹	72629-94-8	N.D.	0.44	1.7	1
14473	Perfluoroundecanoic acid ¹	2058-94-8	N.D.	0.44	1.7	1

The recovery for labeled compound used as extraction standards is outside of QC acceptance limits as noted on the QC Summary.

*=This limit was used in the evaluation of the final result

Sample Description: 1531010_508 Grab Potable Water
MVD-TP

Merrimack Village District
ELLE Sample #: PW 1163108
ELLE Group #: 2066584
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 09/27/2019 10:28
Collection Date/Time: 09/26/2019 14:15

Sample Comments

¹ = This analyte was not on the laboratory's NH ELAP Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	32 PFAS	EPA 537 Isotope Dilution	1	19281004	10/11/2019 14:55	Jason W Knight	1
14091	PFAS Water Prep	EPA 537 Isotope Dilution	1	19281004	10/08/2019 07:00	Pamela Rothharp	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: Merrimack Village District
Reported: 10/23/2019 10:50

Group Number: 2066584

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 was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL**	LOQ
	ng/l	ng/l	ng/l
Batch number: 19281004	Sample number(s): 1163104-1163108		
10:2-Fluorotelomersulfonic acid	N.D.	1.0	5.0
4:2-Fluorotelomersulfonic acid	N.D.	0.50	2.0
6:2-Fluorotelomersulfonic acid	N.D.	2.0	5.0
8:2-Fluorotelomersulfonic acid	N.D.	1.0	3.0
NEtFOSAA	N.D.	0.50	3.0
NEtPFOSA	N.D.	1.0	5.0
NEtPFOSAE	N.D.	1.0	3.0
NMeFOSAA	N.D.	0.60	2.0
NMePFOSA	N.D.	1.0	3.0
NMePFOSAE	N.D.	1.0	3.0
Perfluorobutanesulfonic acid	N.D.	0.50	2.0
Perfluorobutanoic acid	N.D.	2.0	5.0
Perfluorodecanesulfonic acid	N.D.	0.50	2.0
Perfluorodecanoic acid	N.D.	0.50	2.0
Perfluorododecanesulfonic acid	N.D.	0.50	3.0
Perfluorododecanoic acid	N.D.	0.50	2.0
Perfluoroheptanesulfonic acid	N.D.	0.50	2.0
Perfluoroheptanoic acid	N.D.	0.50	2.0
Perfluorohexadecanoic acid	N.D.	1.0	3.0
Perfluorohexanesulfonic acid	N.D.	0.50	2.0
Perfluorohexanoic acid	N.D.	0.50	2.0
Perfluorononanesulfonic acid	N.D.	0.50	2.0
Perfluorononanoic acid	N.D.	0.50	2.0
Perfluorooctadecanoic acid	N.D.	1.0	3.0
Perfluorooctanesulfonamide	N.D.	0.50	2.0
Perfluorooctanesulfonic acid	N.D.	0.50	2.0
Perfluorooctanoic acid	N.D.	0.50	2.0
Perfluoropentanesulfonate	N.D.	0.50	2.0
Perfluoropentanoic acid	N.D.	0.50	2.0
Perfluorotetradecanoic acid	N.D.	0.50	2.0
Perfluorotridecanoic acid	N.D.	0.50	2.0
Perfluoroundecanoic acid	N.D.	0.50	2.0

LCS/LCSD

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Merrimack Village District
Reported: 10/23/2019 10:50

Group Number: 2066584

LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 19281004	Sample number(s): 1163104-1163108								
10:2Fluorotelomersulfonic acid	24.68	19.62			79		45-143		
4:2-Fluorotelomersulfonic acid	23.92	21.49			90		61-131		
6:2-Fluorotelomersulfonic acid	24.28	23.02			95		56-140		
8:2-Fluorotelomersulfonic acid	24.52	22.54			92		58-143		
NEtFOSAA	25.6	21.85			85		53-140		
NEtPFOSA	25.6	24.03			94		56-136		
NEtPFOSAE	25.6	21.89			86		56-130		
NMeFOSAA	25.6	26.62			104		59-141		
NMePFOSA	25.6	21.01			82		49-134		
NMePFOSAE	25.6	21.26			83		61-133		
Perfluorobutanesulfonic acid	22.64	21.36			94		67-135		
Perfluorobutanoic acid	25.6	25.05			98		63-160		
Perfluorodecanesulfonic acid	24.64	22.68			92		62-135		
Perfluorodecanoic acid	25.6	25.3			99		66-141		
Perfluorododecanesulfonic acid	24.8	22.21			90		57-134		
Perfluorododecanoic acid	25.6	21.57			84		65-143		
Perfluoroheptanesulfonic acid	24.36	23.23			95		67-138		
Perfluoroheptanoic acid	25.6	26.09			102		69-144		
Perfluorohexadecanoic acid	25.6	27.21			106		60-148		
Perfluorohexanesulfonic acid	24.2	21.23			88		63-132		
Perfluorohexanoic acid	25.6	24.4			95		69-139		
Perfluorononanesulfonic acid	24.56	23.26			95		70-137		
Perfluorononanoic acid	25.6	24.93			97		66-144		
Perfluorooctadecanoic acid	25.6	25.99			102		47-159		
Perfluorooctanesulfonamide	25.6	24.28			95		67-126		
Perfluorooctanesulfonic acid	24.48	18.57			76		53-129		
Perfluorooctanoic acid	25.6	24.21			95		67-139		
Perfluoropentanesulfonate	24	24.81			103		73-134		
Perfluoropentanoic acid	25.6	25.43			99		73-135		
Perfluorotetradecanoic acid	25.6	25.17			98		69-141		
Perfluorotridecanoic acid	25.6	22.62			88		66-146		
Perfluoroundecanoic acid	25.6	25.48			100		66-140		

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Merrimack Village District
Reported: 10/23/2019 10:50

Group Number: 2066584

Labeled Isotope Quality Control

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: 32 PFAS
Batch number: 19281004

	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C2-4:2-FTS	13C5-PFHxA	13C3-PFHxS
1163104	88	107	115	169	87	66
1163105	90	111	133	206*	88	64
1163106	95	122	136	217*	91	97
1163107	96	117	137	238*	99	73
1163108	95	121	137	215*	91	71
Blank	86	81	80	94	78	83
LCS	95	95	89	114	96	93

Limits: 43-130 38-150 23-175 22-169 36-137 35-143

	13C4-PFHpA	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
1163104	49	113	88	89	96	82
1163105	50	135	91	90	94	88
1163106	100	145	94	97	105	88
1163107	56	141	102	100	105	92
1163108	56	143	98	98	107	97
Blank	78	102	85	84	98	89
LCS	95	114	96	95	98	91

Limits: 33-140 29-182 52-124 52-121 48-130 50-124

	13C2-8:2-FTS	d3-NMeFOSAA	13C7-PFUnDA	d5-NEIFOSAA	13C2-PFDoDA	13C2-PFTeDA
1163104	106	92	88	101	84	81
1163105	112	92	96	112	89	87
1163106	119	86	89	94	82	76
1163107	129	108	89	111	95	89
1163108	127	108	91	115	93	92
Blank	115	95	86	103	82	84
LCS	118	97	93	114	95	85

Limits: 37-169 36-143 44-128 42-149 36-127 21-134

	13C8-PFOSA	d7-NMePFOSAE	d3-NMePFOSA	d9-NEIPFOSAE	d5-NEIPFOSA
1163104	92	86	58	87	60
1163105	76	53	12	49	14
1163106	37	24	10	27	13
1163107	45	25	9*	27	11
1163108	94	83	40	81	40
Blank	86	74	34	71	30
LCS	92	87	36	83	36

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Merrimack Village District
Reported: 10/23/2019 10:50

Group Number: 2066584

Labeled Isotope Quality Control (continued)

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: 32 PFAS
Batch number: 19281004

Limits:	10-134	10-137	10-107	10-135	10-107
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*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody



Lancaster Laboratories
Environmental

Acct. # 38083 Group # 260584 Sample # 11631M-08

Client: <u>Merrimack Village District</u>				Matrix			Analyses Requested								For Lab Use Only							
Project Name/#: <u>PFC Investigation</u>		Site ID #:		<input type="checkbox"/> Soil	<input type="checkbox"/> Sediment	<input type="checkbox"/> Tissue	<input type="checkbox"/> Potable	<input type="checkbox"/> Ground	<input type="checkbox"/> Surface	Preservation and Filtration Codes								SF #: _____				
Project Manager: <u>Jill Lavoie</u>		P.O. #:		<input type="checkbox"/> Water	<input type="checkbox"/> NPDES	<input type="checkbox"/> Other:	<input checked="" type="checkbox"/> NPDES	32 Compounds								SCR #: _____						
Sampler: <u>Ronald Miner</u>		PWSID #: <u>1531010</u>		Total # of Containers			PPAS by 100% filtration															
Phone #: <u>(603) 424-9241 x103</u>		Quote #:																				
State where samples were collected: <u>NH</u>		For Compliance: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																				
Collection		Composite																				
Sample Identification				Date	Time	Grab																
<u>MVD-2 (T) / 1531010-008</u>				<u>9/26/19</u>	<u>1322</u>	<input checked="" type="checkbox"/>																
<u>MVD-3 (T) / 1531010-003</u>				<u>9/26/19</u>	<u>1340</u>	<input checked="" type="checkbox"/>																
<u>MVD-7 (R) / 1531010-007</u>				<u>9/26/19</u>	<u>1350</u>	<input checked="" type="checkbox"/>																
<u>MVD-8 (R) / 1531010-009</u>				<u>9/26/19</u>	<u>1408</u>	<input checked="" type="checkbox"/>																
<u>MVD-TP / 1531010-508</u>				<u>9/26/19</u>	<u>1415</u>	<input checked="" type="checkbox"/>																
Turnaround Time Requested (TAT) (please check): Standard <input checked="" type="checkbox"/> Rush <input type="checkbox"/>				Relinquished by: <u>Ronald Miner</u>		Date	Time	Received by:		Date	Time											
(Rush TAT is subject to laboratory approval and surcharges.)						<u>9/26</u>	<u>15:01</u>															
Date results are needed:				Relinquished by:		Date	Time	Received by:		Date	Time											
Rush results requested by (please check): E-Mail <input type="checkbox"/> Phone <input type="checkbox"/>																						
E-mail Address:				Relinquished by:		Date	Time	Received by:		Date	Time											
Phone:																						
Data Package Options (please check if required)				Relinquished by:		Date	Time	Received by:		Date	Time											
Type I (Validation/non-CLP) <input type="checkbox"/>		MA MCP <input type="checkbox"/>																				
Type III (Reduced non-CLP) <input type="checkbox"/>		CT RCP <input type="checkbox"/>																				
Type VI (Raw Data Only) <input type="checkbox"/>		TX TRRP-13 <input type="checkbox"/>																				
NJ-DKQP <input type="checkbox"/>		NYSDEC Category <input type="checkbox"/> A or <input type="checkbox"/> B																				
EDD Required? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, format: _____				Relinquished by Commercial Carrier:				Received by: <u>Ronald Miner</u>		Date	Time											
										<u>9/27/19</u>	<u>1025</u>											
				UPS <input type="checkbox"/> FedEx <input checked="" type="checkbox"/> Other <input type="checkbox"/>				Temperature upon receipt		<u>2.1</u>	°C											



Group Number(s): 2066584

Client: Merrimack Village District

Delivery and Receipt Information

Delivery Method:	<u>Fed Ex</u>	Arrival Date:	09/28/2019 9/27/19
Number of Packages:	<u>1</u>	Number of Projects:	1 (3) MK1 30410
State/Province of Origin:	<u>NH</u>		10/1/19

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	Total Trip Blank Qty:	0
Samples Chilled:	Yes	Air Quality Samples Present:	No
Paperwork Enclosed:	Yes		
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Darian Jaynes (29 952) at 11:45 on 09/28/2019

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	192099059	2.1	IR	Wet	Y	Bagged	N

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mL	milliliter(s)
C	degrees Celsius	MPN	Most Probable Number
cfu	colony forming units	N.D.	non-detect
CP Units	cobalt-chloroplatinate units	ng	nanogram(s)
F	degrees Fahrenheit	NTU	nephelometric turbidity units
g	gram(s)	pg/L	picogram/liter
IU	International Units	RL	Reporting Limit
kg	kilogram(s)	TNTC	Too Numerous To Count
L	liter(s)	µg	microgram(s)
lb.	pound(s)	µL	microliter(s)
m3	cubic meter(s)	umhos/cm	micromhos/cm
meq	milliequivalents	MCL	Maximum Contamination Limit
mg	milligram(s)		
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

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

Tests 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.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value \geq the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
P^	Concentration difference between the primary and confirmation column $> 40\%$. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.