



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: April 03, 2019 11:05

Project: PFC Investigation

Account #: 38083
Group Number: 2034988
PO Number: 1531010
State of Sample Origin: NH

Electronic Copy To Merrimack Village District

Attn: Jill Lavoie

Respectfully Submitted,



Lyssa M. Longenecker
Specialist

(717) 556-7321

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SAMPLE INFORMATION

| <u>Client Sample Description</u> | <u>Sample Collection Date/Time</u> | <u>ELLE#</u> |
|----------------------------------|--|--------------|
| 1531010_008 Grab Potable Water | 03/21/2019 11:10 | 1015516 |
| 1531010_003 Grab Potable Water | 03/21/2019 10:55 | 1015517 |
| 1531010_007 Grab Potable Water | 03/21/2019 10:20 | 1015518 |
| 1531010_009 Grab Potable Water | 03/21/2019 10:30 | 1015519 |
| 1531010_508 Grab Potable Water | 03/21/2019 10:40 | 1015520 |

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
PFC Investigation

Merrimack Village District
ELLE Sample #: PW 1015516
ELLE Group #: 2034988
Matrix: Potable Water

Project Name: PFC Investigation

Submission Date/Time: 03/22/2019 10:20
Collection Date/Time: 03/21/2019 11:10

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|------------------------|--|------------------------------|--------|-------------------------|-----------------------|-----------------|
| LC/MS/MS Miscellaneous | | EPA 537 Version 1.1 Modified | ng/l | ng/l | ng/l | |
| 14473 | 10:2-fluorotelomersulfonate | 120226-60-0 | N.D. | 0.85 | 2.5 | 1 |
| 14473 | 4:2 fluorotelomersulfonate | 757124-72-4 | N.D. | 0.85 | 2.5 | 1 |
| 14473 | 6:2 fluorotelomersulfonate | 27619-97-2 | N.D. | 0.85 | 1.7 | 1 |
| 14473 | 8:2 fluorotelomersulfonate | 39108-34-4 | N.D. | 1.7 | 5.1 | 1 |
| 14473 | NEtFOSAA | 2991-50-6 | N.D. | 0.85 | 2.5 | 1 |
| | NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | NEtPFOSA | 4151-50-2 | N.D. | 2.5 | 7.6 | 1 |
| | NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide | | | | | |
| 14473 | NEtPFOSAE | 1691-99-2 | N.D. | 1.0 | 2.5 | 1 |
| | NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol | | | | | |
| 14473 | NMeFOSAA | 2355-31-9 | N.D. | 0.85 | 2.5 | 1 |
| | NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | NMePFOSA | 31506-32-8 | N.D. | 2.5 | 7.6 | 1 |
| | NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide | | | | | |
| 14473 | NMePFOSAE | 24448-09-7 | N.D. | 0.85 | 2.5 | 1 |
| | NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol | | | | | |
| 14473 | Perfluorobutanesulfonate | 375-73-5 | 1.5 | 0.25 | 0.85 | 1 |
| 14473 | Perfluorobutanoic acid | 375-22-4 | N.D. | 1.7 | 5.1 | 1 |
| 14473 | Perfluorodecanesulfonate | 335-77-3 | N.D. | 0.51 | 1.7 | 1 |
| 14473 | Perfluorodecanoic acid | 335-76-2 | N.D. | 0.76 | 1.7 | 1 |
| 14473 | Perfluorododecanesulfonate | 79780-39-5 | N.D. | 0.25 | 0.85 | 1 |
| 14473 | Perfluorododecanoic acid | 307-55-1 | N.D. | 0.42 | 1.7 | 1 |
| 14473 | Perfluoroheptanesulfonate | 375-92-8 | N.D. | 0.34 | 1.7 | 1 |
| 14473 | Perfluoroheptanoic acid | 375-85-9 | 1.1 | 0.34 | 0.85 | 1 |
| 14473 | Perfluorohexadecanoic acid | 67905-19-5 | N.D. | 0.25 | 0.85 | 1 |
| 14473 | Perfluorohexanesulfonate | 355-46-4 | 0.65 J | 0.34 | 1.7 | 1 |
| 14473 | Perfluorohexanoic acid | 307-24-4 | 1.3 J | 0.34 | 1.7 | 1 |
| 14473 | Perfluorononanesulfonate | 68259-12-1 | N.D. | 0.51 | 1.7 | 1 |
| 14473 | Perfluorononanoic acid | 375-95-1 | N.D. | 0.34 | 1.7 | 1 |
| 14473 | Perfluorooctadecanoic acid | 16517-11-6 | N.D. | 0.42 | 1.7 | 1 |
| 14473 | Perfluorooctanesulfonamide | 754-91-6 | N.D. | 0.42 | 2.5 | 1 |
| 14473 | Perfluoro-octanesulfonate | 1763-23-1 | 1.1 J | 0.34 | 1.7 | 1 |
| 14473 | Perfluorooctanoic acid | 335-67-1 | 7.5 | 0.25 | 0.85 | 1 |
| 14473 | Perfluoropentanesulfonate | 2706-91-4 | N.D. | 0.34 | 1.7 | 1 |
| 14473 | Perfluoropentanoic acid | 2706-90-3 | N.D. | 1.7 | 5.1 | 1 |
| 14473 | Perfluorotetradecanoic acid | 376-06-7 | N.D. | 0.25 | 0.85 | 1 |
| 14473 | Perfluorotridecanoic acid | 72629-94-8 | N.D. | 0.34 | 0.85 | 1 |
| 14473 | Perfluoroundecanoic acid | 2058-94-8 | N.D. | 0.34 | 1.7 | 1 |

The LCS/LCSD extraction standard recovery is outside the QC acceptance limits as noted on the QC Summary. Since the

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

Sample Description: 1531010_008 Grab Potable Water
PFC Investigation

Merrimack Village District
ELLE Sample #: PW 1015516
ELLE Group #: 2034988
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 03/22/2019 10:20
Collection Date/Time: 03/21/2019 11:10

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|--|--|------------|--------|-------------------------|-----------------------|-----------------|
| | recovery for the target analytes is compliant, the data is reported. | | | | | |
| The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. | | | | | | |

Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---------|---------------------------|------------------------------|--------|----------|------------------------|------------------|-----------------|
| 14473 | PFAS in Water by LC/MS/MS | EPA 537 Version 1.1 Modified | 1 | 19084008 | 03/28/2019 11:21 | Jason W Knight | 1 |
| 14091 | PFAS Water Prep | EPA 537 Version 1.1 Modified | 1 | 19084008 | 03/25/2019 08:25 | Courtney J Fatta | 1 |

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

Sample Description: 1531010_003 Grab Potable Water
PFC Investigation

Merrimack Village District
ELLE Sample #: PW 1015517
ELLE Group #: 2034988
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 03/22/2019 10:20
Collection Date/Time: 03/21/2019 10:55

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|---------|--|------------------------------|--------|-------------------------|-----------------------|-----------------|
| | LC/MS/MS Miscellaneous | EPA 537 Version 1.1 Modified | ng/l | ng/l | ng/l | |
| 14473 | 10:2-fluorotelomersulfonate | 120226-60-0 | N.D. | 0.87 | 2.6 | 1 |
| 14473 | 4:2 fluorotelomersulfonate | 757124-72-4 | N.D. | 0.87 | 2.6 | 1 |
| 14473 | 6:2 fluorotelomersulfonate | 27619-97-2 | N.D. | 0.87 | 1.7 | 1 |
| 14473 | 8:2 fluorotelomersulfonate | 39108-34-4 | N.D. | 1.7 | 5.2 | 1 |
| 14473 | NEtFOSAA | 2991-50-6 | N.D. | 0.87 | 2.6 | 1 |
| | NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | NEtPFOSA | 4151-50-2 | N.D. | 2.6 | 7.8 | 1 |
| | NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide | | | | | |
| 14473 | NEtPFOSAE | 1691-99-2 | N.D. | 1.0 | 2.6 | 1 |
| | NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol | | | | | |
| 14473 | NMeFOSAA | 2355-31-9 | N.D. | 0.87 | 2.6 | 1 |
| | NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | NMePFOSA | 31506-32-8 | N.D. | 2.6 | 7.8 | 1 |
| | NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide | | | | | |
| 14473 | NMePFOSAE | 24448-09-7 | N.D. | 0.87 | 2.6 | 1 |
| | NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol | | | | | |
| 14473 | Perfluorobutanesulfonate | 375-73-5 | 4.2 | 0.26 | 0.87 | 1 |
| 14473 | Perfluorobutanoic acid | 375-22-4 | 5.3 | 1.7 | 5.2 | 1 |
| 14473 | Perfluorodecanesulfonate | 335-77-3 | N.D. | 0.52 | 1.7 | 1 |
| 14473 | Perfluorodecanoic acid | 335-76-2 | N.D. | 0.78 | 1.7 | 1 |
| 14473 | Perfluorododecanesulfonate | 79780-39-5 | N.D. | 0.26 | 0.87 | 1 |
| 14473 | Perfluorododecanoic acid | 307-55-1 | N.D. | 0.44 | 1.7 | 1 |
| 14473 | Perfluoroheptanesulfonate | 375-92-8 | N.D. | 0.35 | 1.7 | 1 |
| 14473 | Perfluoroheptanoic acid | 375-85-9 | 3.8 | 0.35 | 0.87 | 1 |
| 14473 | Perfluorohexadecanoic acid | 67905-19-5 | N.D. | 0.26 | 0.87 | 1 |
| 14473 | Perfluorohexanesulfonate | 355-46-4 | 0.49 J | 0.35 | 1.7 | 1 |
| 14473 | Perfluorohexanoic acid | 307-24-4 | 3.5 | 0.35 | 1.7 | 1 |
| 14473 | Perfluorononanesulfonate | 68259-12-1 | N.D. | 0.52 | 1.7 | 1 |
| 14473 | Perfluorononanoic acid | 375-95-1 | 0.64 J | 0.35 | 1.7 | 1 |
| 14473 | Perfluorooctadecanoic acid | 16517-11-6 | N.D. | 0.44 | 1.7 | 1 |
| 14473 | Perfluorooctanesulfonamide | 754-91-6 | N.D. | 0.44 | 2.6 | 1 |
| 14473 | Perfluoro-octanesulfonate | 1763-23-1 | 1.7 J | 0.35 | 1.7 | 1 |
| 14473 | Perfluorooctanoic acid | 335-67-1 | 21 | 0.26 | 0.87 | 1 |
| 14473 | Perfluoropentanesulfonate | 2706-91-4 | N.D. | 0.35 | 1.7 | 1 |
| 14473 | Perfluoropentanoic acid | 2706-90-3 | 3.3 J | 1.7 | 5.2 | 1 |
| 14473 | Perfluorotetradecanoic acid | 376-06-7 | N.D. | 0.26 | 0.87 | 1 |
| 14473 | Perfluorotridecanoic acid | 72629-94-8 | N.D. | 0.35 | 0.87 | 1 |
| 14473 | Perfluoroundecanoic acid | 2058-94-8 | N.D. | 0.35 | 1.7 | 1 |

Extraction standard d3-NMeFOSAA in the closing continuing calibration verification standard is outside the QC acceptance

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

Sample Description: 1531010_003 Grab Potable Water
PFC Investigation

Merrimack Village District
ELLE Sample #: PW 1015517
ELLE Group #: 2034988
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 03/22/2019 10:20
Collection Date/Time: 03/21/2019 10:55

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|---------|---------------|------------|--------|-------------------------|-----------------------|-----------------|
|---------|---------------|------------|--------|-------------------------|-----------------------|-----------------|

The LCS/LCSD extraction standard recovery is outside the QC acceptance limits as noted on the QC Summary. Since the recovery for the target analytes is compliant, the data is reported.

The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.

Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---------|---------------------------|------------------------------|--------|----------|------------------------|------------------|-----------------|
| 14473 | PFAS in Water by LC/MS/MS | EPA 537 Version 1.1 Modified | 1 | 19084008 | 03/27/2019 22:02 | Amanda S Estelle | 1 |
| 14091 | PFAS Water Prep | EPA 537 Version 1.1 Modified | 1 | 19084008 | 03/25/2019 08:25 | Courtney J Fatta | 1 |

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

Sample Description: 1531010_007 Grab Potable Water
PFC Investigation

Merrimack Village District
ELLE Sample #: PW 1015518
ELLE Group #: 2034988
Matrix: Potable Water

Project Name: PFC Investigation

Submission Date/Time: 03/22/2019 10:20
Collection Date/Time: 03/21/2019 10:20

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|------------------------|--|------------------------------|--------|-------------------------|-----------------------|-----------------|
| LC/MS/MS Miscellaneous | | EPA 537 Version 1.1 Modified | ng/l | ng/l | ng/l | |
| 14473 | 10:2-fluorotelomersulfonate | 120226-60-0 | N.D. | 0.85 | 2.6 | 1 |
| 14473 | 4:2 fluorotelomersulfonate | 757124-72-4 | N.D. | 0.85 | 2.6 | 1 |
| 14473 | 6:2 fluorotelomersulfonate | 27619-97-2 | N.D. | 0.85 | 1.7 | 1 |
| 14473 | 8:2 fluorotelomersulfonate | 39108-34-4 | N.D. | 1.7 | 5.1 | 1 |
| 14473 | NEtFOSAA | 2991-50-6 | N.D. | 0.85 | 2.6 | 1 |
| | NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | NEtPFOSA | 4151-50-2 | N.D. | 2.6 | 7.7 | 1 |
| | NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide | | | | | |
| 14473 | NEtPFOSAE | 1691-99-2 | N.D. | 1.0 | 2.6 | 1 |
| | NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol | | | | | |
| 14473 | NMeFOSAA | 2355-31-9 | N.D. | 0.85 | 2.6 | 1 |
| | NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | NMePFOSA | 31506-32-8 | N.D. | 2.6 | 7.7 | 1 |
| | NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide | | | | | |
| 14473 | NMePFOSAE | 24448-09-7 | N.D. | 0.85 | 2.6 | 1 |
| | NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol | | | | | |
| 14473 | Perfluorobutanesulfonate | 375-73-5 | 1.5 | 0.26 | 0.85 | 1 |
| 14473 | Perfluorobutanoic acid | 375-22-4 | 2.3 J | 1.7 | 5.1 | 1 |
| 14473 | Perfluorodecanesulfonate | 335-77-3 | N.D. | 0.51 | 1.7 | 1 |
| 14473 | Perfluorodecanoic acid | 335-76-2 | N.D. | 0.77 | 1.7 | 1 |
| 14473 | Perfluorododecanesulfonate | 79780-39-5 | N.D. | 0.26 | 0.85 | 1 |
| 14473 | Perfluorododecanoic acid | 307-55-1 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluoroheptanesulfonate | 375-92-8 | N.D. | 0.34 | 1.7 | 1 |
| 14473 | Perfluoroheptanoic acid | 375-85-9 | 2.2 | 0.34 | 0.85 | 1 |
| 14473 | Perfluorohexadecanoic acid | 67905-19-5 | N.D. | 0.26 | 0.85 | 1 |
| 14473 | Perfluorohexanesulfonate | 355-46-4 | 1.2 J | 0.34 | 1.7 | 1 |
| 14473 | Perfluorohexanoic acid | 307-24-4 | 2.1 | 0.34 | 1.7 | 1 |
| 14473 | Perfluorononanesulfonate | 68259-12-1 | N.D. | 0.51 | 1.7 | 1 |
| 14473 | Perfluorononanoic acid | 375-95-1 | 0.71 J | 0.34 | 1.7 | 1 |
| 14473 | Perfluorooctadecanoic acid | 16517-11-6 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluorooctanesulfonamide | 754-91-6 | N.D. | 0.43 | 2.6 | 1 |
| 14473 | Perfluoro-octanesulfonate | 1763-23-1 | 2.1 | 0.34 | 1.7 | 1 |
| 14473 | Perfluorooctanoic acid | 335-67-1 | 19 | 0.26 | 0.85 | 1 |
| 14473 | Perfluoropentanesulfonate | 2706-91-4 | N.D. | 0.34 | 1.7 | 1 |
| 14473 | Perfluoropentanoic acid | 2706-90-3 | N.D. | 1.7 | 5.1 | 1 |
| 14473 | Perfluorotetradecanoic acid | 376-06-7 | N.D. | 0.26 | 0.85 | 1 |
| 14473 | Perfluorotridecanoic acid | 72629-94-8 | N.D. | 0.34 | 0.85 | 1 |
| 14473 | Perfluoroundecanoic acid | 2058-94-8 | N.D. | 0.34 | 1.7 | 1 |

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

Sample Description: 1531010_007 Grab Potable Water
PFC Investigation

Merrimack Village District
ELLE Sample #: PW 1015518
ELLE Group #: 2034988
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 03/22/2019 10:20
Collection Date/Time: 03/21/2019 10:20

Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---------|---------------------------|------------------------------|--------|----------|------------------------|-------------------|-----------------|
| 14473 | PFAS in Water by LC/MS/MS | EPA 537 Version 1.1 Modified | 1 | 19088006 | 04/01/2019 12:41 | Jason W Knight | 1 |
| 14091 | PFAS Water Prep | EPA 537 Version 1.1 Modified | 2 | 19088006 | 03/29/2019 16:00 | Anthony C Polaski | 1 |

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

Sample Description: 1531010_009 Grab Potable Water
PFC Investigation

Merrimack Village District
ELLE Sample #: PW 1015519
ELLE Group #: 2034988
Matrix: Potable Water

Project Name: PFC Investigation

Submission Date/Time: 03/22/2019 10:20
Collection Date/Time: 03/21/2019 10:30

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|--|-----------------------------|------------------------------|--------|-------------------------|-----------------------|-----------------|
| LC/MS/MS Miscellaneous | | EPA 537 Version 1.1 Modified | ng/l | ng/l | ng/l | |
| 14473 | 10:2-fluorotelomersulfonate | 120226-60-0 | N.D. | 0.87 | 2.6 | 1 |
| 14473 | 4:2 fluorotelomersulfonate | 757124-72-4 | N.D. | 0.87 | 2.6 | 1 |
| 14473 | 6:2 fluorotelomersulfonate | 27619-97-2 | N.D. | 0.87 | 1.7 | 1 |
| 14473 | 8:2 fluorotelomersulfonate | 39108-34-4 | N.D. | 1.7 | 5.2 | 1 |
| 14473 | NEtFOSAA | 2991-50-6 | N.D. | 0.87 | 2.6 | 1 |
| NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. | | | | | | |
| 14473 | NEtPFOSA | 4151-50-2 | N.D. | 2.6 | 7.8 | 1 |
| NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide | | | | | | |
| 14473 | NEtPFOSAE | 1691-99-2 | N.D. | 1.0 | 2.6 | 1 |
| NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol | | | | | | |
| 14473 | NMeFOSAA | 2355-31-9 | N.D. | 0.87 | 2.6 | 1 |
| NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid. | | | | | | |
| 14473 | NMePFOSA | 31506-32-8 | N.D. | 2.6 | 7.8 | 1 |
| NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide | | | | | | |
| 14473 | NMePFOSAE | 24448-09-7 | N.D. | 0.87 | 2.6 | 1 |
| NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol | | | | | | |
| 14473 | Perfluorobutanesulfonate | 375-73-5 | 1.3 | 0.26 | 0.87 | 1 |
| 14473 | Perfluorobutanoic acid | 375-22-4 | 1.9 J | 1.7 | 5.2 | 1 |
| 14473 | Perfluorodecanesulfonate | 335-77-3 | N.D. | 0.52 | 1.7 | 1 |
| 14473 | Perfluorodecanoic acid | 335-76-2 | N.D. | 0.78 | 1.7 | 1 |
| 14473 | Perfluorododecanesulfonate | 79780-39-5 | N.D. | 0.26 | 0.87 | 1 |
| 14473 | Perfluorododecanoic acid | 307-55-1 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluoroheptanesulfonate | 375-92-8 | N.D. | 0.35 | 1.7 | 1 |
| 14473 | Perfluoroheptanoic acid | 375-85-9 | 2.1 | 0.35 | 0.87 | 1 |
| 14473 | Perfluorohexadecanoic acid | 67905-19-5 | N.D. | 0.26 | 0.87 | 1 |
| 14473 | Perfluorohexanesulfonate | 355-46-4 | 1.1 J | 0.35 | 1.7 | 1 |
| 14473 | Perfluorohexanoic acid | 307-24-4 | 1.9 | 0.35 | 1.7 | 1 |
| 14473 | Perfluorononanesulfonate | 68259-12-1 | N.D. | 0.52 | 1.7 | 1 |
| 14473 | Perfluorononanoic acid | 375-95-1 | 0.36 J | 0.35 | 1.7 | 1 |
| 14473 | Perfluorooctadecanoic acid | 16517-11-6 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluorooctanesulfonamide | 754-91-6 | N.D. | 0.43 | 2.6 | 1 |
| 14473 | Perfluoro-octanesulfonate | 1763-23-1 | 1.4 J | 0.35 | 1.7 | 1 |
| 14473 | Perfluorooctanoic acid | 335-67-1 | 18 | 0.26 | 0.87 | 1 |
| 14473 | Perfluoropentanesulfonate | 2706-91-4 | N.D. | 0.35 | 1.7 | 1 |
| 14473 | Perfluoropentanoic acid | 2706-90-3 | N.D. | 1.7 | 5.2 | 1 |
| 14473 | Perfluorotetradecanoic acid | 376-06-7 | N.D. | 0.26 | 0.87 | 1 |
| 14473 | Perfluorotridecanoic acid | 72629-94-8 | N.D. | 0.35 | 0.87 | 1 |
| 14473 | Perfluoroundecanoic acid | 2058-94-8 | N.D. | 0.35 | 1.7 | 1 |

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

Sample Description: 1531010_009 Grab Potable Water
PFC Investigation

Merrimack Village District
ELLE Sample #: PW 1015519
ELLE Group #: 2034988
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 03/22/2019 10:20
Collection Date/Time: 03/21/2019 10:30

Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---------|---------------------------|------------------------------|--------|----------|------------------------|-------------------|-----------------|
| 14473 | PFAS in Water by LC/MS/MS | EPA 537 Version 1.1 Modified | 1 | 19088006 | 04/01/2019 12:50 | Jason W Knight | 1 |
| 14091 | PFAS Water Prep | EPA 537 Version 1.1 Modified | 2 | 19088006 | 03/29/2019 16:00 | Anthony C Polaski | 1 |

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

Sample Description: 1531010_508 Grab Potable Water
PFC Investigation

Merrimack Village District
ELLE Sample #: PW 1015520
ELLE Group #: 2034988
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 03/22/2019 10:20
Collection Date/Time: 03/21/2019 10:40

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|---------|--|------------------------------|--------|-------------------------|-----------------------|-----------------|
| | LC/MS/MS Miscellaneous | EPA 537 Version 1.1 Modified | ng/l | ng/l | ng/l | |
| 14473 | 10:2-fluorotelomersulfonate | 120226-60-0 | N.D. | 0.85 | 2.5 | 1 |
| 14473 | 4:2 fluorotelomersulfonate | 757124-72-4 | N.D. | 0.85 | 2.5 | 1 |
| 14473 | 6:2 fluorotelomersulfonate | 27619-97-2 | N.D. | 0.85 | 1.7 | 1 |
| 14473 | 8:2 fluorotelomersulfonate | 39108-34-4 | N.D. | 1.7 | 5.1 | 1 |
| 14473 | NEtFOSAA | 2991-50-6 | N.D. | 0.85 | 2.5 | 1 |
| | NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | NEtPFOSA | 4151-50-2 | N.D. | 2.5 | 7.6 | 1 |
| | NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide | | | | | |
| 14473 | NEtPFOSAE | 1691-99-2 | N.D. | 1.0 | 2.5 | 1 |
| | NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol | | | | | |
| 14473 | NMeFOSAA | 2355-31-9 | N.D. | 0.85 | 2.5 | 1 |
| | NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | NMePFOSA | 31506-32-8 | N.D. | 2.5 | 7.6 | 1 |
| | NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide | | | | | |
| 14473 | NMePFOSAE | 24448-09-7 | N.D. | 0.85 | 2.5 | 1 |
| | NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol | | | | | |
| 14473 | Perfluorobutanesulfonate | 375-73-5 | 1.3 | 0.25 | 0.85 | 1 |
| 14473 | Perfluorobutanoic acid | 375-22-4 | N.D. | 1.7 | 5.1 | 1 |
| 14473 | Perfluorodecanesulfonate | 335-77-3 | N.D. | 0.51 | 1.7 | 1 |
| 14473 | Perfluorodecanoic acid | 335-76-2 | N.D. | 0.76 | 1.7 | 1 |
| 14473 | Perfluorododecanesulfonate | 79780-39-5 | N.D. | 0.25 | 0.85 | 1 |
| 14473 | Perfluorododecanoic acid | 307-55-1 | N.D. | 0.42 | 1.7 | 1 |
| 14473 | Perfluoroheptanesulfonate | 375-92-8 | N.D. | 0.34 | 1.7 | 1 |
| 14473 | Perfluoroheptanoic acid | 375-85-9 | 2.2 | 0.34 | 0.85 | 1 |
| 14473 | Perfluorohexadecanoic acid | 67905-19-5 | N.D. | 0.25 | 0.85 | 1 |
| 14473 | Perfluorohexanesulfonate | 355-46-4 | 1.1 J | 0.34 | 1.7 | 1 |
| 14473 | Perfluorohexanoic acid | 307-24-4 | 1.9 | 0.34 | 1.7 | 1 |
| 14473 | Perfluorononanesulfonate | 68259-12-1 | N.D. | 0.51 | 1.7 | 1 |
| 14473 | Perfluorononanoic acid | 375-95-1 | 0.42 J | 0.34 | 1.7 | 1 |
| 14473 | Perfluorooctadecanoic acid | 16517-11-6 | N.D. | 0.42 | 1.7 | 1 |
| 14473 | Perfluorooctanesulfonamide | 754-91-6 | N.D. | 0.42 | 2.5 | 1 |
| 14473 | Perfluoro-octanesulfonate | 1763-23-1 | 1.6 J | 0.34 | 1.7 | 1 |
| 14473 | Perfluorooctanoic acid | 335-67-1 | 17 | 0.25 | 0.85 | 1 |
| 14473 | Perfluoropentanesulfonate | 2706-91-4 | N.D. | 0.34 | 1.7 | 1 |
| 14473 | Perfluoropentanoic acid | 2706-90-3 | N.D. | 1.7 | 5.1 | 1 |
| 14473 | Perfluorotetradecanoic acid | 376-06-7 | N.D. | 0.25 | 0.85 | 1 |
| 14473 | Perfluorotridecanoic acid | 72629-94-8 | N.D. | 0.34 | 0.85 | 1 |
| 14473 | Perfluoroundecanoic acid | 2058-94-8 | N.D. | 0.34 | 1.7 | 1 |

Extraction standard d3-NMeFOSAA in the closing continuing calibration verification standard is outside the QC acceptance

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

Sample Description: 1531010_508 Grab Potable Water
PFC Investigation

Merrimack Village District
ELLE Sample #: PW 1015520
ELLE Group #: 2034988
Matrix: Potable Water

Project Name: PFC Investigation

Submittal Date/Time: 03/22/2019 10:20
Collection Date/Time: 03/21/2019 10:40

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|---------|---------------|------------|--------|-------------------------|-----------------------|-----------------|
|---------|---------------|------------|--------|-------------------------|-----------------------|-----------------|

The LCS/LCSD extraction standard recovery is outside the QC acceptance limits as noted on the QC Summary. Since the recovery for the target analytes is compliant, the data is reported.

The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.

Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---------|---------------------------|------------------------------|--------|----------|------------------------|------------------|-----------------|
| 14473 | PFAS in Water by LC/MS/MS | EPA 537 Version 1.1 Modified | 1 | 19084008 | 03/27/2019 22:29 | Amanda S Estelle | 1 |
| 14091 | PFAS Water Prep | EPA 537 Version 1.1 Modified | 1 | 19084008 | 03/25/2019 08:25 | Courtney J Fatta | 1 |

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

Quality Control Summary

Client Name: Merrimack Village District
Reported: 04/03/2019 11:05

Group Number: 2034988

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: 19084008 | Sample number(s): 1015516-1015517,1015520 | | |
| 10:2-fluorotelomersulfonate | N.D. | 1.0 | 3.0 |
| 4:2 fluorotelomersulfonate | N.D. | 1.0 | 3.0 |
| 6:2 fluorotelomersulfonate | N.D. | 1.0 | 2.0 |
| 8:2 fluorotelomersulfonate | N.D. | 2.0 | 6.0 |
| NEtFOSAA | N.D. | 1.0 | 3.0 |
| NEtPFOSA | N.D. | 3.0 | 9.0 |
| NEtPFOSAE | N.D. | 1.2 | 3.0 |
| NMeFOSAA | N.D. | 1.0 | 3.0 |
| NMePFOSA | N.D. | 3.0 | 9.0 |
| NMePFOSAE | N.D. | 1.0 | 3.0 |
| Perfluorobutanesulfonate | N.D. | 0.30 | 1.0 |
| Perfluorobutanoic acid | N.D. | 2.0 | 6.0 |
| Perfluorodecanesulfonate | N.D. | 0.60 | 2.0 |
| Perfluorodecanoic acid | N.D. | 0.90 | 2.0 |
| Perfluorododecanesulfonate | N.D. | 0.30 | 1.0 |
| Perfluorododecanoic acid | N.D. | 0.50 | 2.0 |
| Perfluoroheptanesulfonate | N.D. | 0.40 | 2.0 |
| Perfluoroheptanoic acid | N.D. | 0.40 | 1.0 |
| Perfluorohexadecanoic acid | N.D. | 0.30 | 1.0 |
| Perfluorohexanesulfonate | N.D. | 0.40 | 2.0 |
| Perfluorohexanoic acid | N.D. | 0.40 | 2.0 |
| Perfluorononanesulfonate | N.D. | 0.60 | 2.0 |
| Perfluorononanoic acid | N.D. | 0.40 | 2.0 |
| Perfluorooctadecanoic acid | N.D. | 0.50 | 2.0 |
| Perfluorooctanesulfonamide | N.D. | 0.50 | 3.0 |
| Perfluoro-octanesulfonate | N.D. | 0.40 | 2.0 |
| Perfluorooctanoic acid | N.D. | 0.30 | 1.0 |
| Perfluoropentanesulfonate | N.D. | 0.40 | 2.0 |
| Perfluoropentanoic acid | N.D. | 2.0 | 6.0 |
| Perfluorotetradecanoic acid | N.D. | 0.30 | 1.0 |
| Perfluorotridecanoic acid | N.D. | 0.40 | 1.0 |
| Perfluoroundecanoic acid | N.D. | 0.40 | 2.0 |
| Batch number: 19088006 | Sample number(s): 1015518-1015519 | | |
| 10:2-fluorotelomersulfonate | N.D. | 1.0 | 3.0 |
| 4:2 fluorotelomersulfonate | N.D. | 1.0 | 3.0 |
| 6:2 fluorotelomersulfonate | N.D. | 1.0 | 2.0 |
| 8:2 fluorotelomersulfonate | N.D. | 2.0 | 6.0 |
| NEtFOSAA | N.D. | 1.0 | 3.0 |

*- 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: 04/03/2019 11:05

Group Number: 2034988

Method Blank (continued)

| Analysis Name | Result | MDL** | LOQ |
|-----------------------------|--------|-------|------|
| | ng/l | ng/l | ng/l |
| NEtPFOSA | N.D. | 3.0 | 9.0 |
| NEtPFOSAE | N.D. | 1.2 | 3.0 |
| NMeFOSAA | N.D. | 1.0 | 3.0 |
| NMePFOSA | N.D. | 3.0 | 9.0 |
| NMePFOSAE | N.D. | 1.0 | 3.0 |
| Perfluorobutanesulfonate | N.D. | 0.30 | 1.0 |
| Perfluorobutanoic acid | N.D. | 2.0 | 6.0 |
| Perfluorodecanesulfonate | N.D. | 0.60 | 2.0 |
| Perfluorodecanoic acid | N.D. | 0.90 | 2.0 |
| Perfluorododecanesulfonate | N.D. | 0.30 | 1.0 |
| Perfluorododecanoic acid | N.D. | 0.50 | 2.0 |
| Perfluoroheptanesulfonate | N.D. | 0.40 | 2.0 |
| Perfluoroheptanoic acid | N.D. | 0.40 | 1.0 |
| Perfluorohexadecanoic acid | N.D. | 0.30 | 1.0 |
| Perfluorohexanesulfonate | N.D. | 0.40 | 2.0 |
| Perfluorohexanoic acid | N.D. | 0.40 | 2.0 |
| Perfluorononanesulfonate | N.D. | 0.60 | 2.0 |
| Perfluorononanoic acid | N.D. | 0.40 | 2.0 |
| Perfluorooctadecanoic acid | N.D. | 0.50 | 2.0 |
| Perfluorooctanesulfonamide | N.D. | 0.50 | 3.0 |
| Perfluoro-octanesulfonate | N.D. | 0.40 | 2.0 |
| Perfluorooctanoic acid | N.D. | 0.30 | 1.0 |
| Perfluoropentanesulfonate | N.D. | 0.40 | 2.0 |
| Perfluoropentanoic acid | N.D. | 2.0 | 6.0 |
| Perfluorotetradecanoic acid | N.D. | 0.30 | 1.0 |
| Perfluorotridecanoic acid | N.D. | 0.40 | 1.0 |
| Perfluoroundecanoic acid | N.D. | 0.40 | 2.0 |

LCS/LCSD

| Analysis Name | LCS Spike Added | LCS Conc | LCSD Spike Added | LCSD Conc | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|-----------------------------|---|----------|------------------|-----------|----------|-----------|-----------------|-----|---------|
| | ng/l | ng/l | ng/l | ng/l | | | | | |
| Batch number: 19084008 | Sample number(s): 1015516-1015517,1015520 | | | | | | | | |
| 10:2-fluorotelomersulfonate | 15.42 | 14.18 | 15.42 | 13.62 | 92 | 88 | 49-186 | 4 | 30 |
| 4:2 fluorotelomersulfonate | 14.94 | 14.07 | 14.94 | 14.39 | 94 | 96 | 82-152 | 2 | 30 |
| 6:2 fluorotelomersulfonate | 15.17 | 14.11 | 15.17 | 13.24 | 93 | 87 | 66-155 | 6 | 30 |
| 8:2 fluorotelomersulfonate | 15.33 | 15.59 | 15.33 | 15.5 | 102 | 101 | 66-148 | 1 | 30 |
| NEtFOSAA | 5.44 | 4.19 | 5.44 | 3.80 | 77 | 70 | 55-169 | 10 | 30 |
| NEtPFOSA | 5.44 | 4.68 | 5.44 | 4.18 | 86 | 77 | 70-130 | 11 | 30 |
| NEtPFOSAE | 5.44 | 3.92 | 5.44 | 4.61 | 72 | 85 | 70-130 | 16 | 30 |
| NMeFOSAA | 5.44 | 5.74 | 5.44 | 4.65 | 105 | 85 | 44-147 | 21 | 30 |

*- 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: 04/03/2019 11:05

Group Number: 2034988

LCS/LCSD (continued)

| 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 |
|-----------------------------|-----------------------------------|---------------|-----------------------|----------------|----------|-----------|-----------------|-----|---------|
| NMePFOSA | 5.44 | 3.53 | 5.44 | 3.84 | 65* | 71 | 70-130 | 8 | 30 |
| NMePFOSAE | 5.44 | 4.36 | 5.44 | 4.63 | 80 | 85 | 70-130 | 6 | 30 |
| Perfluorobutanesulfonate | 4.81 | 4.66 | 4.81 | 4.48 | 97 | 93 | 73-128 | 4 | 30 |
| Perfluorobutanoic acid | 5.44 | 5.81 | 5.44 | 5.70 | 107 | 105 | 74-142 | 2 | 30 |
| Perfluorodecanesulfonate | 5.24 | 5.09 | 5.24 | 4.81 | 97 | 92 | 60-135 | 6 | 30 |
| Perfluorodecanoic acid | 5.44 | 5.66 | 5.44 | 5.17 | 104 | 95 | 69-148 | 9 | 30 |
| Perfluorododecanesulfonate | 5.26 | 4.97 | 5.26 | 5.07 | 94 | 96 | 70-130 | 2 | 30 |
| Perfluorododecanoic acid | 5.44 | 5.49 | 5.44 | 4.79 | 101 | 88 | 75-136 | 13 | 30 |
| Perfluoroheptanesulfonate | 5.18 | 5.23 | 5.18 | 5.36 | 101 | 104 | 64-135 | 2 | 30 |
| Perfluoroheptanoic acid | 5.44 | 5.85 | 5.44 | 5.29 | 108 | 97 | 76-140 | 10 | 30 |
| Perfluorohexadecanoic acid | 5.44 | 5.92 | 5.44 | 5.34 | 109 | 98 | 21-151 | 10 | 30 |
| Perfluorohexanesulfonate | 5.14 | 4.86 | 5.14 | 4.72 | 94 | 92 | 71-131 | 3 | 30 |
| Perfluorohexanoic acid | 5.44 | 5.16 | 5.44 | 5.43 | 95 | 100 | 75-135 | 5 | 30 |
| Perfluorononanesulfonate | 5.22 | 5.30 | 5.22 | 5.10 | 101 | 98 | 66-133 | 4 | 30 |
| Perfluorononanoic acid | 5.44 | 5.22 | 5.44 | 5.72 | 96 | 105 | 72-148 | 9 | 30 |
| Perfluorooctadecanoic acid | 5.44 | 5.69 | 5.44 | 4.92 | 105 | 90 | 70-130 | 14 | 30 |
| Perfluorooctanesulfonamide | 5.44 | 4.97 | 5.44 | 4.82 | 91 | 89 | 65-164 | 3 | 30 |
| Perfluoro-octanesulfonate | 5.20 | 4.43 | 5.20 | 4.23 | 85 | 81 | 67-138 | 5 | 30 |
| Perfluorooctanoic acid | 5.44 | 5.47 | 5.44 | 5.46 | 101 | 100 | 72-138 | 0 | 30 |
| Perfluoropentanesulfonate | 5.10 | 5.14 | 5.10 | 4.91 | 101 | 96 | 76-127 | 5 | 30 |
| Perfluoropentanoic acid | 5.44 | 5.64 | 5.44 | 5.53 | 104 | 102 | 74-134 | 2 | 30 |
| Perfluorotetradecanoic acid | 5.44 | 5.87 | 5.44 | 5.27 | 108 | 97 | 74-135 | 11 | 30 |
| Perfluorotridecanoic acid | 5.44 | 6.13 | 5.44 | 5.38 | 113 | 99 | 61-145 | 13 | 30 |
| Perfluoroundecanoic acid | 5.44 | 5.24 | 5.44 | 5.34 | 96 | 98 | 75-146 | 2 | 30 |
| Batch number: 19088006 | Sample number(s): 1015518-1015519 | | | | | | | | |
| 10:2-fluorotelomersulfonate | 15.42 | 16.23 | | | 105 | | 49-186 | | |
| 4:2 fluorotelomersulfonate | 14.94 | 15.57 | | | 104 | | 82-152 | | |
| 6:2 fluorotelomersulfonate | 15.17 | 15.3 | | | 101 | | 66-155 | | |
| 8:2 fluorotelomersulfonate | 15.33 | 17.35 | | | 113 | | 66-148 | | |
| NEtFOSAA | 5.44 | 6.13 | | | 113 | | 55-169 | | |
| NEtPFOSA | 5.44 | 5.30 | | | 97 | | 70-130 | | |
| NEtPFOSAE | 5.44 | 5.40 | | | 99 | | 70-130 | | |
| NMeFOSAA | 5.44 | 6.11 | | | 112 | | 44-147 | | |
| NMePFOSA | 5.44 | 5.98 | | | 110 | | 70-130 | | |
| NMePFOSAE | 5.44 | 5.59 | | | 103 | | 70-130 | | |
| Perfluorobutanesulfonate | 4.81 | 4.64 | | | 96 | | 73-128 | | |
| Perfluorobutanoic acid | 5.44 | 7.11 | | | 131 | | 74-142 | | |
| Perfluorodecanesulfonate | 5.24 | 5.45 | | | 104 | | 60-135 | | |
| Perfluorodecanoic acid | 5.44 | 6.02 | | | 111 | | 69-148 | | |
| Perfluorododecanesulfonate | 5.26 | 5.17 | | | 98 | | 70-130 | | |
| Perfluorododecanoic acid | 5.44 | 5.72 | | | 105 | | 75-136 | | |
| Perfluoroheptanesulfonate | 5.18 | 5.63 | | | 109 | | 64-135 | | |
| Perfluoroheptanoic acid | 5.44 | 5.94 | | | 109 | | 76-140 | | |

*- 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: 04/03/2019 11:05

Group Number: 2034988

LCS/LCSD (continued)

| 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 |
|-----------------------------|----------------------|---------------|-----------------------|----------------|----------|-----------|-----------------|-----|---------|
| Perfluorohexadecanoic acid | 5.44 | 5.92 | | | 109 | | 21-151 | | |
| Perfluorohexanesulfonate | 5.14 | 5.25 | | | 102 | | 71-131 | | |
| Perfluorohexanoic acid | 5.44 | 5.85 | | | 107 | | 75-135 | | |
| Perfluorononanesulfonate | 5.22 | 5.65 | | | 108 | | 66-133 | | |
| Perfluorononanoic acid | 5.44 | 5.93 | | | 109 | | 72-148 | | |
| Perfluorooctadecanoic acid | 5.44 | 5.91 | | | 109 | | 70-130 | | |
| Perfluorooctanesulfonamide | 5.44 | 6.35 | | | 117 | | 65-164 | | |
| Perfluoro-octanesulfonate | 5.20 | 4.63 | | | 89 | | 67-138 | | |
| Perfluorooctanoic acid | 5.44 | 5.13 | | | 94 | | 72-138 | | |
| Perfluoropentanesulfonate | 5.10 | 5.57 | | | 109 | | 76-127 | | |
| Perfluoropentanoic acid | 5.44 | 5.97 | | | 110 | | 74-134 | | |
| Perfluorotetradecanoic acid | 5.44 | 5.53 | | | 102 | | 74-135 | | |
| Perfluorotridecanoic acid | 5.44 | 6.42 | | | 118 | | 61-145 | | |
| Perfluoroundecanoic acid | 5.44 | 5.93 | | | 109 | | 75-146 | | |

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: PFAS in Water by LC/MS/MS
Batch number: 19084008

| | 13C4-PFBA | 13C5-PFPeA | 13C3-PFBS | 13C2-4:2-FTS | 13C5-PFHxA | 13C3-PFHxS |
|---------|------------|--------------|-----------|--------------|------------|------------|
| 1015516 | 107 | 113 | 123 | 101 | 99 | 86 |
| 1015517 | 94 | 100 | 116 | 97 | 86 | 81 |
| 1015520 | 100 | 113 | 127 | 100 | 91 | 89 |
| Blank | 95 | 95 | 99 | 93 | 99 | 105 |
| LCS | 92 | 93 | 93 | 87 | 96 | 100 |
| LCSD | 105 | 103 | 103 | 99 | 109 | 111 |
| Limits: | 33-123 | 31-157 | 26-148 | 21-182 | 35-138 | 34-126 |
| | 13C4-PFHpA | 13C2-6:2-FTS | 13C8-PFOA | 13C8-PFOS | 13C9-PFNA | 13C6-PFDA |
| 1015516 | 63 | 122 | 104 | 114 | 106 | 103 |
| 1015517 | 60 | 110 | 97 | 91 | 88 | 88 |
| 1015520 | 63 | 117 | 99 | 93 | 92 | 103 |
| Blank | 96 | 109 | 97 | 93 | 97 | 102 |
| LCS | 93 | 107 | 95 | 94 | 92 | 92 |
| LCSD | 113 | 124 | 108 | 99 | 94 | 105 |
| Limits: | 35-126 | 32-170 | 48-122 | 50-121 | 41-144 | 47-125 |

*- 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: 04/03/2019 11:05

Group Number: 2034988

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: PFAS in Water by LC/MS/MS
Batch number: 19084008

| | 13C2-8:2-FTS | d3-NMeFOSAA | 13C7-PFUnDA | d5-NEIFOSAA | 13C2-PFDoDA | 13C2-PFTeDA |
|---------|--------------|-------------|-------------|-------------|-------------|-------------|
| 1015516 | 123 | 123 | 105 | 138 | 102 | 92 |
| 1015517 | 112 | 95 | 86 | 110 | 82 | 84 |
| 1015520 | 126 | 113 | 97 | 137 | 99 | 93 |
| Blank | 114 | 108 | 93 | 124 | 97 | 88 |
| LCS | 115 | 108 | 98 | 127 | 92 | 86 |
| LCSD | 117 | 121 | 106 | 148* | 106 | 106 |
| Limits: | 27-164 | 30-127 | 30-128 | 30-142 | 39-130 | 26-119 |

| | 13C8-PFOA | d7-NMePFOSAE | d3-NMePFOSA | d9-NEIPFOSAE | d5-NEIPFOA |
|---------|-----------|--------------|-------------|--------------|------------|
| 1015516 | 100 | 84 | 57 | 92 | 50 |
| 1015517 | 88 | 64 | 46 | 66 | 40 |
| 1015520 | 75 | 41 | 17 | 39 | 15 |
| Blank | 97 | 67 | 45 | 75 | 40 |
| LCS | 65 | 34 | 13 | 35 | 12 |
| LCSD | 105 | 86 | 78 | 90 | 76 |
| Limits: | 11-127 | 10-128 | 10-104 | 10-121 | 10-106 |

Analysis Name: PFAS in Water by LC/MS/MS
Batch number: 19088006

| | 13C4-PFBA | 13C5-PFPeA | 13C3-PFBS | 13C2-4:2-FTS | 13C5-PFHxA | 13C3-PFHxS |
|---------|-----------|------------|-----------|--------------|------------|------------|
| 1015518 | 93 | 102 | 111 | 106 | 88 | 77 |
| 1015519 | 100 | 104 | 120 | 109 | 92 | 84 |
| Blank | 89 | 86 | 85 | 84 | 91 | 92 |
| LCS | 91 | 89 | 88 | 88 | 89 | 89 |
| Limits: | 33-123 | 31-157 | 26-148 | 21-182 | 35-138 | 34-126 |

| | 13C4-PFHpA | 13C2-6:2-FTS | 13C8-PFOA | 13C8-PFOS | 13C9-PFNA | 13C6-PFDA |
|---------|------------|--------------|-----------|-----------|-----------|-----------|
| 1015518 | 56 | 112 | 94 | 88 | 82 | 94 |
| 1015519 | 63 | 117 | 98 | 92 | 96 | 91 |
| Blank | 91 | 103 | 97 | 89 | 92 | 94 |
| LCS | 91 | 106 | 103 | 91 | 96 | 94 |
| Limits: | 35-126 | 32-170 | 48-122 | 50-121 | 41-144 | 47-125 |

| | 13C2-8:2-FTS | d3-NMeFOSAA | 13C7-PFUnDA | d5-NEIFOSAA | 13C2-PFDoDA | 13C2-PFTeDA |
|---------|--------------|-------------|-------------|-------------|-------------|-------------|
| 1015518 | 98 | 99 | 82 | 102 | 82 | 47 |
| 1015519 | 103 | 111 | 94 | 119 | 89 | 78 |
| Blank | 101 | 100 | 88 | 121 | 87 | 91 |
| LCS | 103 | 105 | 103 | 121 | 94 | 92 |

*- 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: 04/03/2019 11:05

Group Number: 2034988

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: PFAS in Water by LC/MS/MS
Batch number: 19088006

| Limits: | 27-164 | 30-127 | 30-128 | 30-142 | 39-130 | 26-119 |
|---------|------------|--------------|-------------|--------------|-------------|--------|
| | 13C8-PFOSA | d7-NMePFOSAE | d3-NMePFOSA | d9-NEIPFOSAE | d5-NEIPFOSA | |
| 1015518 | 70 | 42 | 12 | 40 | 13 | |
| 1015519 | 73 | 57 | 23 | 57 | 23 | |
| Blank | 80 | 73 | 67 | 77 | 66 | |
| LCS | 81 | 81 | 70 | 84 | 74 | |
| Limits: | 11-127 | 10-128 | 10-104 | 10-121 | 10-106 | |

*- 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.

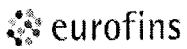
Environmental Analysis Request/Chain of Custody



Lancaster Laboratories
Environmental

Acct. # 38083 Group # 2034988 Sample # 1015516-20

| | | | | | | | | | | | | | |
|---|--|--|-------------|--|--|--|--|-----------------------------------|--|--|--|-------------------------------|--|
| 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 | | | | Preservation and Filtration Codes | | | | SF #: _____ | |
| Project Manager: <u>Jill Lavoie</u> P.O. #: | | | | <input type="checkbox"/> Potable <input checked="" type="checkbox"/> Ground <input type="checkbox"/> Surface | | | | 32 Compounds | | | | SCR #: _____ | |
| Sampler: <u>Ronald Miner</u> PWSID #: <u>1531010</u> | | | | <input type="checkbox"/> Water <input type="checkbox"/> NPDES | | | | | | | | Preservation Codes | |
| Phone #: <u>(603) 424-9241 x103</u> Quote #: | | | | Other: _____ | | | | PFA5 by isotope dilution | | | | H = HCl T = Thiosulfate | |
| State where samples were collected: <u>NH</u> For Compliance: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | | | Total # of Containers | | | | | | | | N = HNO ₃ B = NaOH | |
| Sample Identification | | | | Collection | | Grab | | Composite | | Remarks | | | |
| | | Date | Time | | | | | | | | | | |
| <u>MVD-2 (T) / 1531010-008</u> | | <u>3/21/19</u> | <u>1110</u> | <input checked="" type="checkbox"/> | | | | | | | | | |
| <u>MVD-3 (R) / 1531010-003</u> | | <u>3/21/19</u> | <u>1055</u> | <input checked="" type="checkbox"/> | | | | | | | | | |
| <u>MVD-7 (R) / 1531010-007</u> | | <u>3/21/19</u> | <u>1020</u> | <input checked="" type="checkbox"/> | | | | | | | | | |
| <u>MVD-8 (R) / 1531010-009</u> | | <u>3/21/19</u> | <u>1030</u> | <input checked="" type="checkbox"/> | | | | | | | | | |
| <u>MVD-TP / 1531010-508</u> | | <u>3/21/19</u> | <u>1040</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: <u>3/21/19</u> Time: <u>1220</u> | | Received by: _____ | | Date: _____ Time: _____ | | | |
| (Rush TAT is subject to laboratory approval and surcharges.) | | | | Relinquished by: _____ | | Date: _____ Time: _____ | | Received by: _____ | | Date: _____ Time: _____ | | | |
| 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"/> | | | | Relinquished by: _____ | | Date: _____ Time: _____ | | Received by: _____ | | Date: _____ Time: _____ | | | |
| E-mail Address: _____ | | | | Relinquished by: _____ | | Date: _____ Time: _____ | | Received by: _____ | | Date: _____ Time: _____ | | | |
| Phone: _____ | | | | Relinquished by: _____ | | Date: _____ Time: _____ | | Received by: _____ | | Date: _____ Time: _____ | | | |
| 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"/> | | Relinquished by: _____ | | Date: _____ Time: _____ | | Received by: <u>[Signature]</u> | | Date: <u>3/21/19</u> Time: <u>1020</u> | | | |
| Type III (Reduced non-CLP) <input type="checkbox"/> | | CT RCP <input type="checkbox"/> | | Relinquished by: _____ | | Date: _____ Time: _____ | | Received by: _____ | | Date: _____ Time: _____ | | | |
| Type VI (Raw Data Only) <input type="checkbox"/> | | TX TRRP-13 <input type="checkbox"/> | | Relinquished by: _____ | | Date: _____ Time: _____ | | Received by: _____ | | Date: _____ Time: _____ | | | |
| NJ DKQP <input type="checkbox"/> | | NYSDEC Category <input type="checkbox"/> A or <input type="checkbox"/> B | | Relinquished by Commercial Carrier: _____ | | Date: _____ Time: _____ | | Received by: _____ | | Date: _____ Time: _____ | | | |
| EDD Required? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, format: _____ | | | | UPS _____ FedEx <input checked="" type="checkbox"/> Other _____ | | Temperature upon receipt <u>1.3</u> °C | | | | | | | |



Lancaster Laboratories
Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 244380



Group Number(s):

2034988

Client: Merrimack Village

Delivery and Receipt Information

| | | | |
|---------------------------|---------------|---------------------|-------------------------|
| Delivery Method: | <u>Fed Ex</u> | Arrival Timestamp: | <u>03/22/2019 10:20</u> |
| Number of Packages: | <u>1</u> | Number of Projects: | <u>1</u> |
| State/Province of Origin: | <u>NH</u> | | |

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 | VOA Vial Headspace \geq 6mm: | N/A |
| Samples Chilled: | Yes | Total Trip Blank Qty: | 0 |
| Paperwork Enclosed: | Yes | Air Quality Samples Present: | No |
| Samples Intact: | Yes | | |
| Missing Samples: | No | | |
| Extra Samples: | No | | |
| Discrepancy in Container Qty on COC: | No | | |

Unpacked by Brandy Barclay (2299) at 15:09 on 03/22/2019

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 | DT42-03 | 1.3 | DT | 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.